PROTECT WILDLIFE
FINAL REPORT

May 2021

CONTENTS

ABBREVIATIONS

BCC	behavior change communication
BRAIN	Biodiversity Resources Access Information Network
C4C	Campaigning for Conservation
CAPTURED	Concealable, Available, Processable, Transferrable, Useable, Removable, Enjoyable, Desirable
CENRO	Community Environment and Natural Resources Office
CFLET	Composite Fisheries Law Enforcement Team
CHED	Commission on Higher Education
CITES	Convention on International Trade in Endangered Species
CLUP	comprehensive land use plan
CLWUP	comprehensive land and water use plan
CSO	civil society organization
CWT	combating wildlife trafficking
DA-BFAR	Department of Agriculture-Bureau of Fisheries and Aquatic Resources
DENR	Department of Environment and Natural Resources
DENR-BMB	DENR Biodiversity Management Bureau
DENR-FMB	DENR Forest Management Bureau
DOJ	Department of Justice
DOST	Department of Science and Technology
ECAN	Environmentally Critical Areas Network
EG	economic growth
ELP	environmental law and protection
ENIPAS	Expanded National Integrated Protected Areas System
EPEB	Environmental Protection and Enforcement Bureau
FLUP	forest land use plan
GHG	greenhouse gas
GIS	geographic information system
IDEAS	Institute for the Development of Educational and Ecological Alternatives
IPAF	Integrated Protected Area Fund
ITD	inception to date
IUCN	International Union for Conservation of Nature
KAP	knowledge, attitudes and practices
LGU	local government unit

LOP	life of project
METT	Management Effectiveness Tracking Tool
NALECC-SCENR	National Law Enforcement Coordinating Committee-Subcommittee on Environment and Natural Resources
NCIP	National Commission on Indigenous Peoples
NGO	non-government organization
NIPAS	National Integrated Protected Areas System
NWRRC	National Wildlife Rescue and Research Center
OCENR	Office of the City Environment and Natural Resources
PALAWEEN	Palawan Environmental Enforcement Network
PAMB	protected area management board
PBC 3	Partnership for Biodiversity Conservation Phase 3
PBSAP	Philippine Biodiversity Strategy and Action Plan
PCSD	Palawan Council for Sustainable Development
PCSDS	Palawan Council for Sustainable Development Staff
PEF	Philippine Eagle Foundation
PENRO	Provincial Environment and Natural Resources Office
PES	payment for ecosystem services
PhilBio	Philippines Biodiversity Conservation Foundation
PhilCAFE	Philippine Coffee Advancement and Farm Enterprise
PhilFIDA	Philippine Fiber Industry Development Authority
PhilMech	Philippine Center for Postharvest Development and Mechanization
PNP	Philippine National Police
PSCCJP	Philippine Society of Criminologist and Criminal Justice Professionals
RESPONSE	Rapid Enforcement Support, Planning, Operation and Network System Enhancement
SA	Strategic Approach
USAID	United States Agency for International Development
USFWS	United States Fish and Wildlife Service
USG	United States government
VIIRS	Visible Infrared Imaging Radiometer Suite
WEO	wildlife enforcement officer
W-GDP	Women's Global Development and Prosperity
WildLEAP	Wildlife Law Enforcement Action Plan
ZCAWTTF	Zamboanga City Anti-Wildlife Trafficking Task Force
ZCWD	Zamboanga City Water District

TABLES

FIGURES

INTRODUCTION

The Protect Wildlife activity supported initiatives to align conservation policy with on-the-ground wildlife management actions and enforcement in the Philippines. The activity worked in target landscapes and seascapes to reduce threats to biodiversity, reduce poaching and use of illegally harvested wildlife species and by-products, and improve ecosystem goods and services for human well-being.

Protect Wildlife fits within the United States Agency for International Development Biodiversity Policy (USAID 2014) that "builds upon the Agency's long history of conserving a global biological heritage for current and future generations, and reflects a deep understanding of the role that healthy natural systems play in achieving the Agency's human-development goals." The activity was the first USAID/Philippines initiative to combat wildlife trafficking and to directly implement the U.S. Government's Eliminate, Neutralize and Disrupt Wildlife Trafficking Act of 2016. The activity supported the Philippines' current policies and programs on biodiversity conservation and combating wildlife trafficking (CWT) under the National Integrated Protected Areas System (NIPAS) Act and the Wildlife Resources Conservation and Protection Act.

Protect Wildlife's principal counterpart was the Department of Environment and Natural Resources (DENR) Biodiversity Management Bureau (DENR-BMB), in coordination with DENR Forest Management Bureau (DENR-FMB), Department of Agriculture-Bureau of Fisheries and Aquatic Resources (DA-BFAR), National Commission on Indigenous Peoples (NCIP), and various national-level law enforcement agencies. At the local level, the activity worked directly with DENR regional offices; Provincial and Community Environment and Natural Resources Offices (PENROs and CENROs); and provincial, city and municipal local government units (LGUs), as well as local offices of DA-BFAR and NCIP. In Palawan, the activity coordinated with Palawan Council for Sustainable Development Staff (PCSDS). At various levels, the activity worked with non-government and civil society organizations (NGOs and CSOs); colleges and universities; and land and resource managers, such as ancestral domain and tenure holders and fisherfolk and coastal community organizations.

ACTIVITY OVERVIEW

As a megadiverse country, the Philippines claims to be the "center of the center" of nearshore marine diversity, including corals and reef fishes. The country is home to approximately 1,100 terrestrial vertebrates and five percent of the world's flora, a significant proportion of which is endemic. However, much of these biodiversity assets continue to face risks and pressures from both natural and human interventions, such as land conversion for agriculture and settlements; illegal, unregulated and unreported harvesting; and destructive mining and quarrying. The value of biodiversity and the ecosystem goods and services they provide are not effectively communicated to local stakeholders. Capacities are limited by unrealized economic incentives and inadequate financial support to manage wildlife habitats and regulate uses in highly diverse areas.

TARGET SITES

Protect Wildlife targeted wildlife trafficking hotspots and worked with local stakeholders on initiatives to improve local capacities; incentivize communities and LGUs; leverage financing support; and deepen knowledge, attitudes and practices for the effective management, regulation and enforcement of wildlife habitats and wildlife trafficking transshipment points. The activity worked across geographies in the Philippines to address wildlife trafficking transshipment and implemented a more comprehensive ecosystem-based approach in the following biologically significant areas:

- **Palawan province.** From its site office in Puerto Princesa City, Protect Wildlife implemented technical activities in wildlife habitats in forestlands and protected areas, such as Mount Mantalingahan Protected Landscape, Tubbataha Reefs Natural Park, Rasa Island Wildlife Sanctuary, Cleopatra's Needle Critical Habitat, El Nido-Taytay Managed Resource Protected Area, and Puerto Princesa Subterranean River National Park.
- **Zamboanga City and Sulu Archipelago.** From its sites offices in Zamboanga City and Tawi-Tawi province, Protect Wildlife led activities in forestlands, mangrove areas, watersheds, and protection and conservation areas, such as Pasonanca Natural Park, Great and Little Santa Cruz Islands Protected Landscape and Seascape, and Bud Bongao.
- **Sarangani province, South Cotabato province and General Santos City in Region 12.** From its site office in General Santos City, Protect Wildlife completed activities in forestlands and protection and conservation areas, such as Mount Matutum Protected Landscape, Sarangani Bay Protected Seascape and Allah Valley Protected Landscape, and Mount Busa.
- **Region 3 or Central Luzon, with sites in Aurora, Nueva Ecija and Bataan provinces.** From its site office in Palayan City, Protect Wildlife led activities in Aurora Memorial National Park, Mount Mingan, and coastal areas in Bataan along Manila Bay.

Protect Wildlife's Manila office maintained national advisors and specialists, who led the development of activity work plans; provided technical support to site activities; and worked with national-level agencies, Manila-based private sector and non-government organizations, and relevant donor-funded projects.

FINAL REPORT STRUCTURE

The Protect Wildlife Final Report showcases accomplishments against the tasks, targets and deliverables set forth in the task order and in the Monitoring and Evaluation Plan; highlights major achievements; addresses lessons learned during implementation; recommends ways to resolve identified constraints; and presents a final overview of the financial status of the task order.

Protect Wildlife structured its Final Report around an Executive Summary and the following six chapters:

1. **Context and Technical Approach.** This chapter presents Protect Wildlife's operating context, introduction to the activity's Theory of Change and technical approach, and review of entry points for implementation.
2. **Activity Accomplishments.** This chapter presents an analysis of the activity's performance through the lens of Theory of Change results chains, exploring the progression from lower-

order results linked to improved knowledge and capacity and their application at activity sites and in the government, to higher-order results on threat reduction and human well-being.

3. **Site Case Studies.** This chapter presents narratives from the sites, highlighting Protect Wildlife's most impactful activities and results from each site, with focus on how the team delivered technical assistance in an integrated, self-reinforcing manner across each Strategic Approach (SA) in target landscapes and seascapes, and how it advanced conservation and CWT objectives through off-site activities at the regional or provincial level.

4. **Lessons Learned.** This chapter presents an honest review of Protect Wildlife's successes, missed opportunities, lessons learned and recommendations for conservation and CWT stakeholders told through an activity-level assessment, and a deeper exploration of seven replicable practices that may be localized or improved.

5. **Monitoring, Evaluation and Learning.** This chapter presents Year 5 and life-of-project (LOP) results for all contractual deliverables and outcome and output indicators.

6. **Finance Report**. This chapter presents the activity budget pipeline, featuring both Year 5 and LOP expenditures.

EXECUTIVE SUMMARY

With an area approximately three-fourths the size of California, the archipelagic nation of the Philippines is bursting at the seams with biodiversity. It is among the world's 17 megadiverse countries that host two-thirds of the earth's biodiversity and more than 70 percent of the world's plant and animal species. However, systems and local capacity to conserve, protect and channel rich biodiversity and ecosystems toward sustainable development are underdeveloped leaving the country's more than 700 threatened species and their habitats at high risk to unchecked resource extraction, poaching and illegal trade.

The Protect Wildlife activity set out in 2016 to partner with the Philippine government and local partners to counter these threats in the country's biodiversity hotspots, and to mobilize public support, research and education, conservation financing and economic benefits toward sustained ecosystem goods and services and conservation-oriented livelihoods. A rich array of resources and opportunities to meet these ends stood side-by-side, however, with the following challenges to their realization.

The wealth of biodiversity is not being channeled into a wealth of opportunity. Landscapes and seascapes in the Philippines overflow with biodiversity and potential. Natural wonders, like Puerto Princesa Subterranean River in Palawan and pink sand beaches of Santa Cruz Islands in Zamboanga City, are global ecotourism draws, offering a tantalizing promise of foreign currency and opportunities for local residents. Rich volcanic soil and forest ecosystems in upland areas are ideal for agricultural commodities like abaca and coffee, which are experiencing global and domestic demand booms, respectively. Mountains and watersheds, rich in natural beauty and iconic species, can fuel growing downstream populations with water and flood-regulating services and economic opportunities for ecotourism and non-timber forest products. Too often, however:

- Tourism has grown out of sync with land use management policies, threatening the health of ecosystems and linked industries in agriculture, fisheries and tourism.
- Support is limited for farmers and rural communities who are best positioned to cultivate crops like abaca and coffee in agroforestry systems, and who count among the country's poorest and closest to nature—and most likely to be tempted by poaching and illegal wildlife trade.
- Government funding is insufficient to watershed management demands, and local actors lack knowledge and skills needed to properly monetize ecosystem goods and services and channel payments into improved resource management planning and implementation.

Planning and management tools do not facilitate ecological connectivity. Ecosystems that underpin the country's biodiversity are spread liberally across regions, provinces and cities, with segments under different land and resource use systems and only limited coordination by their respective management authorities. One key biodiversity area in the Philippines may contain a legislated protected area, an LGU-managed forestland and an ancestral domain, with each having different management requirements and governance bodies. Although the same ecosystem spreads across political boundaries, tools and management approaches for each land classification were not developed to ensure ecological connectivity.

Figure 1. Illegal Wildlife Trade Routes in the Philippines

The bounty of biodiversity and uneven capacity and enforcement draw illegal wildlife trade networks. Its geography and highly dispersed natural resources make the Philippines one of the greatest draws for poaching, trafficking and illegal trade of wildlife species and by-products. Illegal wildlife trade is the fourth largest illicit trade in the world—following trafficking of weapons, drugs and people. Asian Development Bank estimated in 2019 that the illicit market value of trafficked Philippine wildlife and resources, impact of their loss to local ecosystems, and damage to wildlife habitats from poaching was roughly US$1 billion. Notable interdictions and seizures in recent years includes 450 pieces of endangered wildlife valued at US$1 million from Indonesia in April 2019, more than 1,100 kilos of pangolin scales valued at nearly US$1 million in September 2019, more than 120,000 tons of giant clam shells worth approximately US$41 million from General Santos City in October 2019, and 40 live and dressed pangolins valued at approximately US$16,000 seized in July 2018 and January 2020 operations in Palawan.

Wildlife trafficking networks and syndicates leverage existing weak points in natural resources governance and enforcement—upland and rural poverty, limited coordination between enforcement units and uneven capacity—to manage poaching and trafficking of wildlife and transshipment through the Philippines toward end-markets (Figure 1). Traffickers corrupt local communities who engage as poachers and consolidators, and officials who act as fixers to facilitate transport to transshipment hubs and export via forged paperwork and other forms of smuggling. Increasingly, international criminal syndicates carry out transactions online to hide illegal finance flows and protect network leaders.

PROTECT WILDLIFE'S APPROACH

Rather than introduce new tools and approaches, Protect Wildlife sought to leverage what was in place to help partners view their natural resources and operate at scale at the landscape and seascape level. This approach features two key themes: integration of land and resource use management plans, policies and stakeholder groups; and the concept of adding value—approaching partners where they are and offering to help them strengthen and align their ongoing initiatives to better conserve and protect biodiversity and promote their constituents' well-being.

INTEGRATION

By raising greater awareness on stakeholders' dependence on ecosystem goods and services—provisioning water supply, regulating flooding and storm surges, and supporting nutrient cycling that produces fertile lands—and the ecological connectivity that underpins them, Protect Wildlife drew in partners with a joint commitment to work together across jurisdictions at the landscape-seascape scale. This awareness was central to the activity's success in securing stakeholders' commitment to coordination and complementarity between management plans and activities.

With those commitments, Protect Wildlife sought to map landscapes and seascapes, and use this as a guide to plan activities with partners. Partners provided representatives for multi-disciplinary technical working groups that would lead the process with activity support. Mapping went beyond geographic information systems (GIS) to chart the following characteristics or features in a landscape-seascape:

- **Biophysical Characteristics.** Watersheds, biodiversity corridors, forestlands, grasslands, wildlife habitats and vulnerable or disaster-prone areas.

- **Legal Classifications.** Laws and policies on land and resource uses, environmental protection and economic development set forth by different levels and line agencies of the government; and legally designated ancestral domains, alienable and disposable lands, protected areas, forestlands and conservation areas.
- **Flow of Ecosystem Goods and Services.** Distribution of services, infrastructure, capital and political power, and access to knowledge, data and resources between those who protect or conserve ecosystem goods and services and those who depend upon or exploit them. This includes the flow of wildlife species and by-products from or through landscapes-seascapes to off-site areas.

After identifying these features, Protect Wildlife worked with partners to incorporate these as layers in landscape-seascape maps. From this tableau, the activity worked directly with communities to map their actual land and resource use practices, which do not always align directly with policy or comport with objectives on ecological connectivity. Once complete, the activity and technical working groups compare validated and policy-designated land and resource use maps and open discussion on adjustments needed to promote flow of ecosystem goods and services across land use boundaries, conserve critical biodiversity assets, and maintain and strengthen local livelihoods. The activity defines policy-designated land uses as protected area and subzone boundaries, and land use restrictions prescribed in national and local policies for forestlands, conservation sites and other areas.

Technical working groups engage in consensus-building to reach agreements on protection zones that bound key ecosystems, habitats and unique natural and cultural attractions; production areas, which become focal sites for social, technical, economic and infrastructure investments that can increase productivity and strengthen value chains in upland areas; and settlements and built-up areas that are properly zoned to reduce negative impacts of climate-related disasters and economic activities.

To ensure connectivity, technical working groups negotiate between DENR and LGU authorities regarding zoning decisions in a shared landscape-seascape. Their goal is to ensure border areas between their respective management plans and zoning regimes are complementary and feature compatible land and resource use classifications and rules. Once complete, technical working groups develop management and financial plans, which function as a guidebook for protection, conservation and development activities, with rules on restricted land and resource uses and requirements for permitting.

ADDING VALUE

Together, maps and management plans serve as a roadmap and investment guide for conservation and development activities within a landscape-seascape. It is here that Protect Wildlife opened partners' doors by helping add value to their activities and contribute to their conservation, protection and development objectives. The activity delivered this support through the following Strategic Approaches to reduce threats to habitats and wildlife species and promote the flow of ecosystem goods and services to benefit human well-being:
- **Strategic Approach 1 on behavior change communication.** Local campaigners trained on behavior change communication (BCC) designed and led campaigns to promote awareness of land and resource use rules and restrictions, generate pride of place, and sow seeds for positive changes in behavior that result in wildlife and habitat conservation.

- **Strategic Approach 2 on conservation financing and livelihoods.** Protect Wildlife built bridges between communities closest to nature and the private sector to invigorate triple bottom line enterprises and sustainable livelihood opportunities in production zones that relieve pressure on the resource base; and to work with LGUs and utilities to generate conservation financing under payment for ecosystem services (PES) schemes that fund implementation of management plans.
- **Strategic Approach 3 on conservation and governance.** Through experiential training on integrated conservation and development, conservation managers and communities made tangible contributions to protected area and forestland zoning and management plans—building networks that contribute to improved governance of landscapes-seascapes.
- **Strategic Approach 4 on conservation research and curriculum development.** With Protect Wildlife support, colleges and universities engaged in researches relevant to conservation and development issues within their landscape-seascape, while strengthening curriculum to ensure that future scientists, businesspeople, policymakers and enforcers enter their careers informed about the significance of wildlife and biodiversity conservation, as well as the laws that govern them.
- **Strategic Approach 5 on wildlife and environmental law enforcement.** Protect Wildlife supported building enforcement capacity to execute environmental and wildlife laws through surveillance, enforcement operations and prosecution of offenders, while also strengthening policy and processes in alignment with management plans and zoning regimes.

By employing these Strategic Approaches, DENR, LGUs, land and resource management units, communities, civil society and private sector can create a self-reinforcing system that sustains and perpetuates land use zones and the flow of ecosystem goods and services. People can now better understand their connection to nature. Market failures are corrected, and ecosystem goods and services are properly valued. Research informs science-based policy decisions that strengthen biodiversity conservation and promote sustainable development. Lastly, communities and LGUs join forces to safeguard protection and conservation areas and prevent illegal poaching and resource extraction, doing their part to preserve ecosystem balance.

TARGET LANDSCAPES AND SEASCAPES

Protect Wildlife applied the landscape-seascape approach in four activity sites. On Year 1, the activity launched implementation in Palawan and Zamboanga City-Sulu Archipelago, followed by Region 12 in Year 2 and Region 3 in Year 3.

In each site, Protect Wildlife promoted integrated planning and implementation in well-defined target landscapes-seascapes that captured connectivity between ecosystems and sources and destinations of ecosystem goods and services, while also adding value to partner initiatives within and outside landscapes-seascapes based on needs and opportunities as they arose.

In the following sections, Protect Wildlife presents how it applied its technical approach in each site through narratives and maps to identify where the activity specifically worked; and showcases notable activities and results through infographics and accompanying texts.

PALAWAN

Protect Wildlife executed its landscape approach in southern Palawan—targeting Mount Mantalingahan and the five municipalities that border it. Outside of the landscape, the activity worked closely with PCSDS to add value to their work in BCC and enforcement, and engaged strategically with other partners to contribute to ongoing land use planning and conservation management work in areas with critical biodiversity assets.

Accomplishments Supported in Palawan

The Palawan map (Figure 2) depicts protected areas and forestlands where Protect Wildlife worked, and icons to identify various technical activities. The map shows that the activity implemented a full suite of interventions in southern Palawan and worked more selectively based on opportunities and needs in remaining sites. Notable activities and results include the following:

Harmonized zones and management plans for Mount Mantalingahan and municipal forestlands to place 206,567 hectares under improved management

Strengthened livelihoods for 210 armers through conservation-oriented cultivation of purple yam in partnership with Sunlight Foods Corporation—which committed to purchase purple yams from farmers at 150 percent of the prevailing market price—and a local NGO as a consolidator of purple yam harvests

Worked with PCSDS, Katala Foundation and Palawan State University on a study of Philippine pangolins in Victoria-Anepahan mountain range, contributing meaningful findings on Philippine pangolin presence and their forest habitats to the Philippine Pangolin Conservation Roadmap

Supported efforts of Puerto Princesa City LGU to put in place a management plan for Cleopatra's Needle. Protect Wildlife designed activities with an eye toward deep engagement of indigenous communities in conservation and protection in the critical habitat.

Worked with Conservation International and PCSDS to pilot Wildlife Insights, a new wildlife monitoring system that uses camera traps and powered by artificial intelligence, machine learning and advanced analytics to assess species population and inform conservation decision-making in protected areas. Wildlife Insights was piloted in Mount Mantalingahan, El Nido-Taytay and Puerto Princesa Subterranean River National Park.

Figure 2. Palawan Site Map and Protect Wildlife Activities
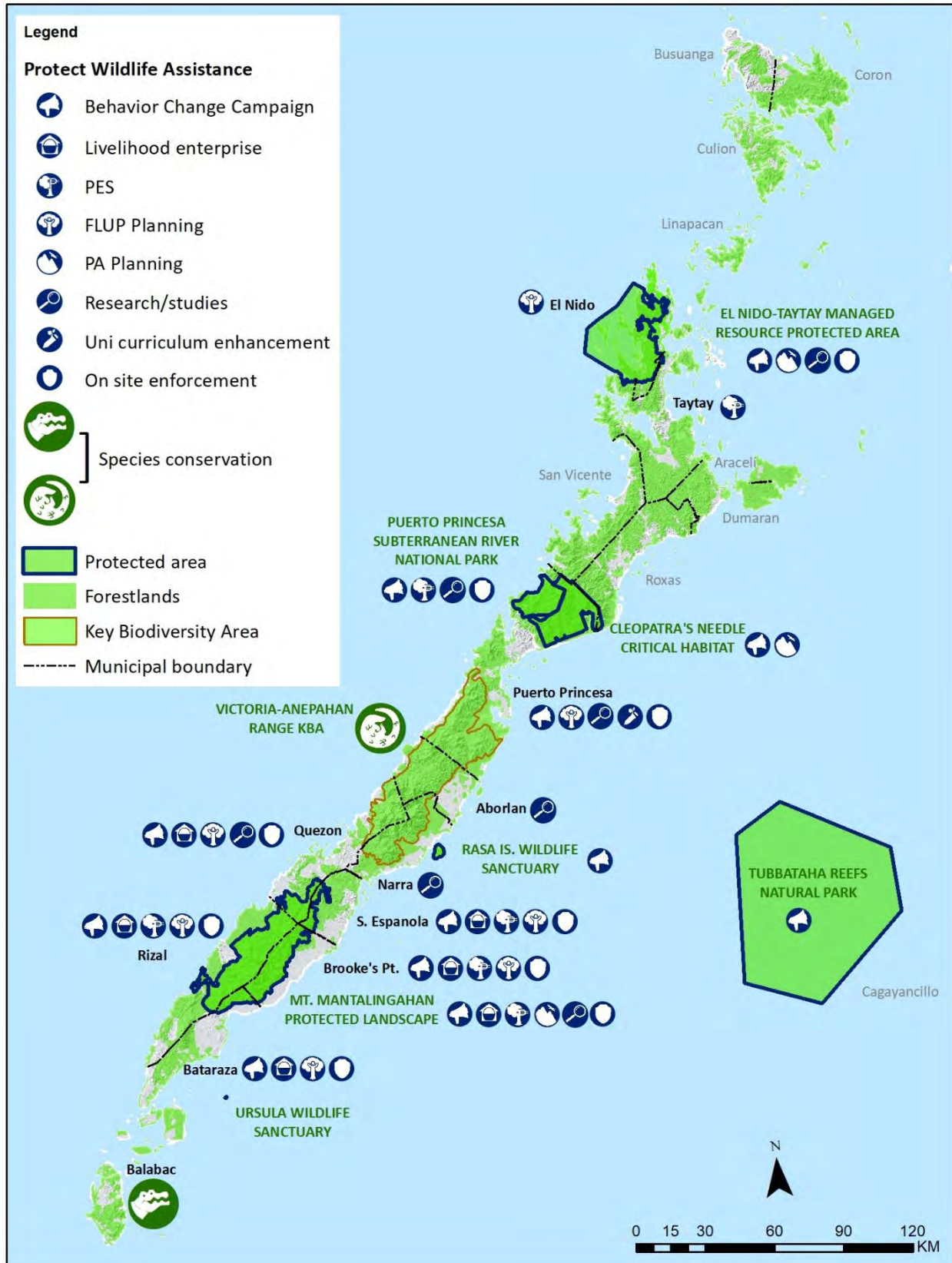
Adding Value to Conservation and Enforcement in Palawan

Conservation and Development Partners
- Across Palawan, 46 campaigners led 12 BCC campaigns—raising awareness on PES among water consumers in southern Palawan, promoting conservation-oriented on-board behaviors for divers in Tubbataha Reefs, and generating pride of place by introducing Makmak, the blue-naped parrot mascot, in Mount Mantalingahan communities.
- Nearly 300 upland community members are now practicing sustainable agriculture and agroforestry methods while limiting their cultivation of agricultural commodities and fruit-bearing trees to multiple-use zones in protected areas and to production zones in forestlands.
- Upon completion of integrated conservation and development training that fed into management planning work, nearly 2,300 community members and LGU officials are now poised to execute management plans and oversee revisions during the next planning period.

Trained Enforcers with New Enforcement Systems Drive Increased Results

In Palawan, 104 deputized wildlife enforcement officers (WEOs) in LGUs and 68 certified WEOs in communities now help to lead the charge in monitoring wildlife-related activities, reporting violations and, in the absence of authorities, arresting violators. The project helped protected area management offices to develop enforcement protocols that delineate functions across enforcement agencies working in protected areas and provide a step-by-step process for enforcement operations. Thanks in part to the new WEOs' work, collaboration across units under the protocols, and more active reporting, the number of apprehensions since 2017 has nearly doubled the total as compared from 2013 to 2016.

Protect Wildlife helped PCSDS design, develop and roll out the Biodiversity Resources Access Information Network (BRAIN) system for enforcement planning and coordination, environmental permit management and public reporting. BRAIN has three main stakeholders, with the following user-centered modules for each:
- Enforcers use the Rapid Enforcement Support, Planning, Operation and Network System Enhancement (RESPONSE) module to efficiently coordinate, plan and execute enforcement actions. It helps them plan and track operation movements; coordinate with other users; and document, store and share enforcement and regulatory information to partners. The module's mapping tools are used in analyzing crime incidences; sharing real-time information with partners; and plotting enforcement routes, target locations and entry and exit points.
- Permit applicants use the BRAIN system's online permitting module, which allows PCSDS clients to submit various permits—such as wildlife collector's permit, wildlife special use permit and local transport permit—and track their applications online. Aside from reducing the time period for processing permits, the module also promotes transparency and accountability and limits face-to-face transactions, which means less opportunities for graft and corruption.
- Lastly, the public can use the reporting module, which applies crowdsourcing principles as a way for citizens to anonymously report illegal activities. The module helps diversify sources of information and enforcement leads and complement traditional intelligence-gathering techniques. The public can use online public reporting to submit reports and upload photos that will be used to confirm cases and to make decisions in rescues and operations.

Figure 3. Protect Wildlife Highlights in Palawan

Capacity Building for Conservation and Development Partners

	Male	Female	Total
CONSERVATION COMMUNICATORS	18	28	46
CONSERVATION AGRICULTURE FARMERS	115	169	284

INTEGRATED CONSERVATION AND DEVELOPMENT ON-SITE MANAGERS

	Male	Female	Total
• LGU staff	56	35	91
• Community Members	1,487	691	2,178

WILDLIFE AND ENVIRONMENTAL LAW ENFORCERS

	Male	Female	Total
• National Government Agencies	67	53	120
• LGU staff	96	8	104
• Community Members	62	6	68

Current and Projected 5-Year PES Collection of Mount Mantalingahan Municipalities

	Total Amount Generated as of December 2020 (₱)	Average Annual Projected PES	Total Projected PES for 5 Years (2021-2025)
Brooke's Point (since 2017)	2,156,082	1,700,000	8,500,000
Rizal (since 2018)	543,158	300,000	1,500,000
Sofronio Espanola (since 2019)	300,000	780,000	3,900,000
Bataraza		900,000	4,500,000
Quezon		900,000	4,500,000
Total	**₱ 2,999,240 (US$ 61,751)**	**₱ 4,580,000 (US$ 94,297)**	**₱ 22,900,000 (US$ 471,484)**

PES revenue will be used by officials from the five Mount Mantalingahan municipalities for management and rehabilitation of 442 hectares of local watersheds.

PCSD BRAIN System

- Permit Applications
- Public Reporting
- Geospatial Tools
- Intelligence Database
- Case Build-up and Documentation
- Inter-Agency Coordination
- Criminal Reports and Analysis
- Policy and Research Data

Annual Apprehensions and Geographic Coverage

Number of Municipalities — Number of Apprehensions

Year	Number of Municipalities	Number of Apprehensions
2010	10	15
2011	5	7
2012	12	52
2013	11	54
2014	11	56
2015	13	72
2016	11	39
2017	15	71
2018	15	94
2019	15	100
2020	15	151

CALENDAR YEAR

ZAMBOANGA CITY AND SULU ARCHIPELAGO

Protect Wildlife executed its landscape and seascape approach within political unit boundaries of Zamboanga City, which houses two protected areas, forestlands, watersheds, mangrove forests, island habitats and coastal and marine areas. The activity also seized strategic opportunities to add value to activities in Tawi-Tawi and emerging conservation and enforcement demands for management planning and zoning, research and livelihoods support.

Accomplishments Supported in Zamboanga City and Sulu Archipelago

The Zamboanga City and Sulu Archipelago map (Figure 4) depicts biologically significant areas where Protect Wildlife worked, and icons to identify various technical activities. The map shows that the activity implemented the full suite of interventions in Zamboanga City, and worked more selectively based on opportunities and needs in Isabela City in Basilan and Tawi-Tawi. Notable activities and results include the following:

Harmonized Pasonanca Natural Park and Zamboanga City's land use zones and management plans to place 91,652 hectares under improved management, and helped delineate and demarcate strict protection and multiple-use zones. Protect Wildlife also supported development and approval of Santa Cruz Islands management plan, and helped launch installation of 46 buoys around shallow reef areas and 10 buoys to designate mooring areas in the islands.

Helped generate more than US$540,000 for Pasonanca Natural Park through support that led to recognition of the protection and management budget of Zamboanga City Water District (ZCWD) as investment similar to PES, and a DENR policy establishing new fees for entry and use of facilities and resources in the protected area

Supported research expeditions which confirmed the presence of a breeding pair of Philippine eagles and their nest in Pasonanca Natural Park—validating the protected area as a nesting habitat for the critically endangered and endemic raptors

Supported passage of a management plan for Bud Bongao Forest Park, a natural monument and sacred site to local Muslim and indigenous communities. With activity support, local officials adopted new financial management guidelines for collection and use of environmental user fees.

Supported research expeditions that studied the presence of breeding populations of critically endangered Sulu hornbills in Malum watershed in Panglima Sugala municipality in Tawi-Tawi

Figure 4. Zamboanga City and Sulu Archipelago Site Map and Protect Wildlife Activities

Legend

Protect Wildlife Assistance

- Behavior Change Campaign
- Livelihood enterprise
- PES
- FLUP Planning
- Land/Resource Use Planning
- PA/LCA Planning
- Research/studies
- On site enforcement

] Species conservation

- Protected area
- Forestlands
- Other conservation area
- Municipal boundary
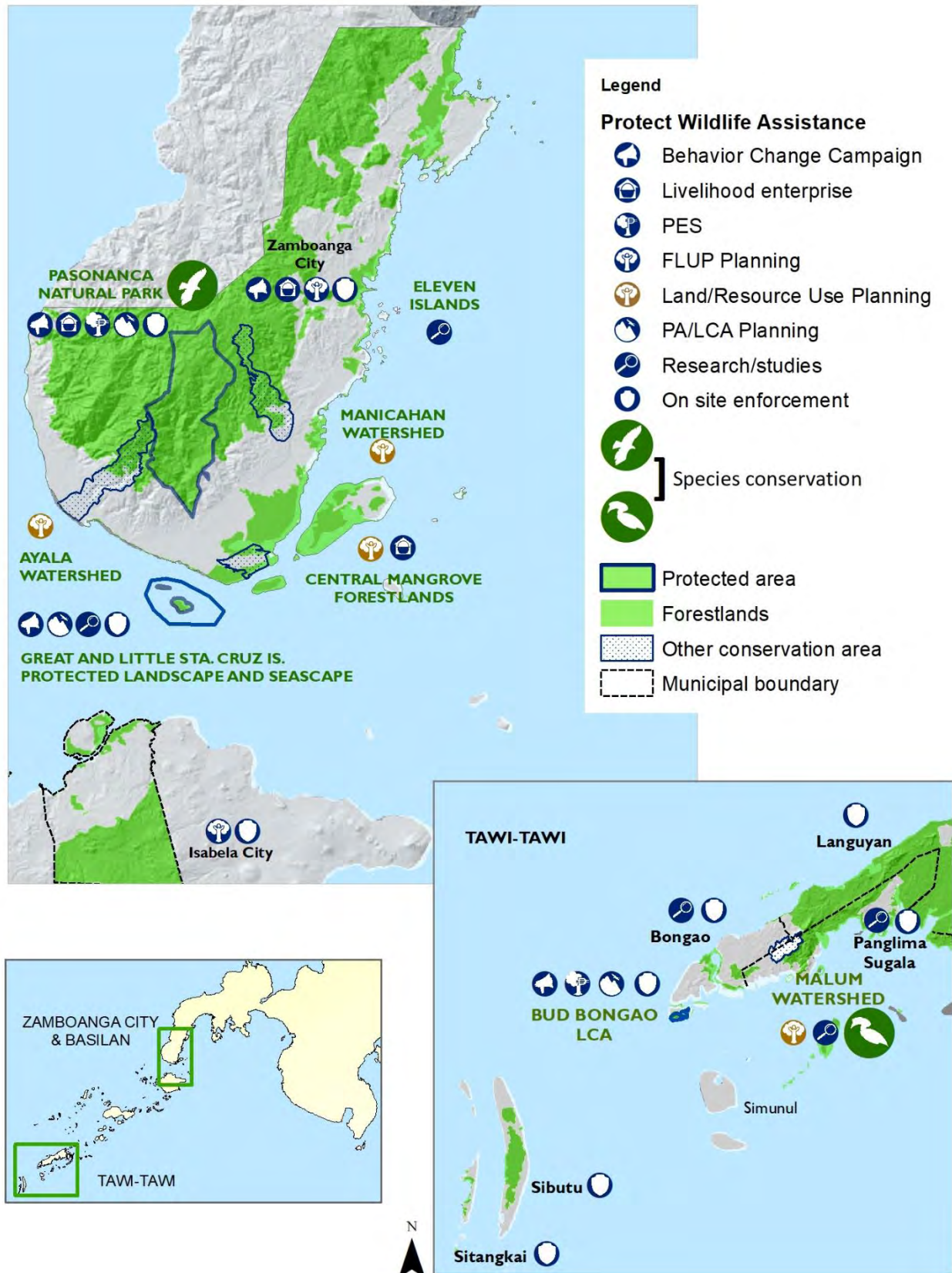
Adding Value to Conservation and Enforcement in Zamboanga City and Sulu Archipelago

Conservation and Development Partners
- With Protect Wildlife support, 23 campaigners led four BCC campaigns—promoting conservation behaviors among Santa Cruz Islands tourists, targeting children with CWT messages through conservation-themed games in Bongao in Tawi-Tawi, promoting marine turtle conservation among students and their parents in Turtle Islands in Tawi-Tawi, and promoting protection of migratory birds in a local poaching hotspot.
- More than 200 residents in Pasonanca Natural Park buffer zones learned updated and sustainable practices in production and postharvest processing of cacao that will help make their forestlands more productive and diversify their income sources.
- Upon completion of integrated conservation and development training that fed into management planning work, 29 LGU staff and 137 community members are now poised to execute management plan activities and oversee revisions during the next planning period.

Positioning DENR and LGUs to Fulfill Planning Mandates

Protect Wildlife helped partners cut through multiple and overlapping management plans by setting their sights on integration and complementarity. Within Zamboanga City sit 95,077 hectares of biologically significant areas managed under two protected area management plans and a forest land use plan (FLUP)—which itself includes sub-plans for two watersheds and mangrove forests.
- Through integration under a localized Philippine Biodiversity Strategy and Action Plan (PBSAP) for Zamboanga City, the activity helped officials use biodiversity as the thread to tie plans together. Management plans sit like nesting dolls within the Zamboanga City Biodiversity Strategy and Action Plan—the umbrella repository for all biodiversity assets, with a central purpose of conserving local biodiversity and managing ecosystem goods and services.
- The activity also promoted complementarity, supporting development of an FLUP aligned with growth and development objectives set out in Zamboanga City's comprehensive land use plan (CLUP). Sustainable urban development in the city will depend on the supply of ecosystem goods and services from forestlands, which comprise around half of the city's total area. Forestland zones were set to further the city's development goals while also incorporating conservation measures needed to ensure that these can be sustained over the long term.

Trained Enforcers with Strengthened Enforcement Coordination Drive Increased Results

In the site, 314 community WEOs, 30 LGU WEOs and 31 national government agency enforcers are now applying improved practices to pursue CWT activities, especially in coastal and marine areas. Most importantly, the activity united these enforcers under two coordination bodies: Zamboanga City Anti-Wildlife Trafficking Task Force (ZCAWTTF) unites enforcement authorities in the city to pool resources for wildlife law enforcement focused on ports of entry and terrestrial areas, while the Composite Fisheries Law Enforcement Team (CFLET) are focused on curbing illegal and destructive fishing activities in the city's coastal waters.

Figure 5. Protect Wildlife Highlights in Zamboanga City and Sulu Archipelago

Promoting Compatibility Between Land and Resource Management Plans

We strengthened on-site management through participatory planning, balancing conservation and development, and ensuring compatibility between plans in a single landscape.

A&D

Protected Areas

Forestlands

A&D

Coastal and Marine Areas

A&D

Biodiversity Strategy and Action Plan (BSAP)

Comprehensive Land and Water Use Plan (CLWUP)

Protected Area Management Plan

Forest Land Use Plan (FLUP)

Coastal Resource Management Plan

Watershed Mgt. Plan/Tenure Mgt. Plan

Capacity Building for Conservation and Development Partners

	Male	Female	Total
CONSERVATION COMMUNICATORS	14	9	23
CONSERVATION AGRICULTURE FARMERS	130	106	236

INTEGRATED CONSERVATION AND DEVELOPMENT ON-SITE MANAGERS

	Male	Female	Total
• LGU staff	21	8	29
• Community Members	88	49	137

WILDLIFE AND ENVIRONMENTAL LAW ENFORCERS

	Male	Female	Total
• National Government Agencies	23	8	31
• LGU staff	24	6	30
• Community Members	306	8	314

Strengthening Enforcement Task Forces

▶ **From**
- Siloed approaches
- Limited data sharing
- Lack of trained environmental law enforcers

▶ **To**
- Coordinated enforcement by task force members
- Increase in trained wildlife and environment law enforcers
- Sharing data across units through new enforcement management database

ZCAWTTF

DENR and OCENR

17 units in Zamboanga City Anti-Wildlife Trafficking Task Force

CFLET

8 units in the composite Fisheries Law Enforcement Team

Improved CWT Operations and Environment Law Enforcement

Top Environmental Crimes

Blast Fishing Encroachment Habitat Destruction

Illegally Traded Wildlife

Sea Turtles Sea Turtle Eggs Seahorses Corals Wildbirds

REGION 12

Protect Wildlife executed its landscape and seascape approach in Mount Matutum and Sarangani Bay—targeting municipalities in Sarangani and South Cotabato that border the protected areas. The activity seized strategic opportunities to add value to stakeholders' ongoing activities and emerging conservation and enforcement demands for management planning and zoning, research and livelihoods support.

Accomplishments Supported in Region 12

The Region 12 map (Figure 6) depicts protected areas and forestlands where Protect Wildlife worked, and icons to identify various technical activities. The map shows that the activity implemented a full suite of interventions in Mount Matutum and Sarangani Bay and worked more selectively based on opportunities and needs in remaining sites. Notable activities and results include the following:

Worked with DENR, LGU and community partners to develop protected area management plans for Mount Matutum and Sarangani Bay—helping place nearly 225,000 hectares of biologically significant areas under improved management

Supported Mindanao State University-General Santos City in its study to identify, map and document medicinal plants used by indigenous communities in Mount Matutum for traditional healing practices. Researchers completed a collection of 101 plant specimens, which are now preserved at the university's herbarium.

Worked with DENR, LGU, civil society and community partners to strengthen marine turtle conservation in Sarangani Bay. Building from training on protection of marine turtles and their nests, eggs and hatchlings, the activity supported partners in launching a marine turtle conservation learning center in Glan municipality, as well as producing BCC campaign materials, including comics and billboards.

Enhanced the knowledge and skills of partners in Sarangani Bay on proper protocols and response to marine mammal strandings—contributing to increased protection of various marine mammals in the bay, including Risso's dolphins, Fraser's dolphins, spinner dolphins and short-finned pilot whales, among others

Figure 6. Region 12 Site Map and Protect Wildlife Activities

Legend
- Protected area
- Forestland
- Provincial boundary
- Municipal boundary

Protect Wildlife Assistance
- Behavior Change Campaign
- Livelihood enterprise
- PES
- FLUP Planning
- PA Planning
- Research/studies
- Uni curriculum enhancement
- On site enforcement
- Species conservation

MT. MATUTUM PROTECTED LANDSCAPE

ALLAH VALLEY PROTECTED LANDSCAPE

MT. BUSA LCA

SARANGANI BAY PROTECTED SEASCAPE

SOUTH COTABATO

SARANGANI

SARANGANI

0 4.5 9 18 27 36 KM

N

Adding Value to Conservation and Livelihoods in Region 12

Conservation and Development Partners

- Across the region, 32 trained campaigners helped lead six BCC campaigns, including *Perya para sa Konserbasyon* (Conservation Fair). The campaign featured conservation-oriented games inspired by local *perya* or country fairs, including a large plinko board that helped explain the effects of marine litter, wire buzzer games in the shape of iconic species, and a large tilt game that taught players about human-induced threats to coastal wildlife. The campaign was launched at the 2019 Sarangani Bay Festival, an annual beach party that emphasizes environmental conservation and sustainable tourism, attracting around 150,000 guests from all over the country.
- Nearly 70 enterprises opened negotiations with DENR Region 12, Mount Matutum protected area management board and LGU officials on voluntary PES contributions for protection of local watersheds. Of these, 45 made commitments valued at US$1.9 million over the next ten years.
- Nearly 300 WEOs are trained to support enforcement operations across the region—including 37 LGU-based WEOs and 134 community-based WEOs who are supporting execution of enforcement measures outlined in the Sarangani Bay protected area management plan, enforcement protocols and LGU flagship species ordinances.

Promoting Conservation-Oriented Livelihoods Under W-GDP Initiative

Under USAID's Women's Global Development and Prosperity (W-GDP) Initiative, Protect Wildlife strengthened 15 triple bottom line enterprises in Region 12, generating economic and natural resources management benefits for 20,450 individuals. To achieve women's empowerment and economic well-being while reinforcing natural resources management objectives, the activity targeted people's organizations with women leaders or high women membership that operate enterprise activities in multiple-use zones of protected areas and production zones of forestlands.

Protect Wildlife worked with various partners—including Philippine Fiber Industry Development Authority, Philippine Coffee Advancement and Farm Enterprise Project, Conrado and Ladislawa Alcantara Foundation, Foundation for a Sustainable Society, and Philippine Institute of Certified Public Accountants—to deliver trainings ranging from highly technical initiatives on postharvest processing of coffee beans and conservation-oriented agriculture, to business planning and bookkeeping sessions for enterprise managers and officers.

Building on these trainings, Protect Wildlife made catalytic investments in postharvest processing equipment, such as abaca spindle stripping machines, solar dryers and coffee roasters, while also facilitating access to credit for consolidators and access to market for producers.

Figure 7. Protect Wildlife Highlights in Region 12

People's Organization Enterprises

ABACA
Number of members: 1,246

CACAO
Number of members: 1,372

COFFEE
Number of members: 1,350

FISH
Number of members: 122

Number of individuals with improved economic benefits
20,450 (4.090 households)

Projected 10-Year PES Collection for Mount Matutum Protected Landscape

		Number	₱
SMALL	Rural Waterworks and Water refilling stations	30	1,141,236
	Farms/resorts	7	996,906
MEDIUM	Water District	4	33,067,384
	Farms/resorts	2	550,000
LARGE	Agri-plantation	2	54,161,063

₱ 89,916,590 (US$ 1,851,278)
Initial PES revenue has the potential to fund rehabilitation of approximately 760 hectares in Mount Matutum.

Capacity Building for Conservation and Development Partners

	Male	Female	Total
CONSERVATION COMMUNICATORS	15	17	32
CONSERVATION AGRICULTURE FARMERS	2,381	1,709	4,090

INTEGRATED CONSERVATION AND DEVELOPMENT ON-SITE MANAGERS

	Male	Female	Total
• LGU staff	62	30	92
• Community Members	930	600	1,530

WILDLIFE AND ENVIRONMENTAL LAW ENFORCERS

	Male	Female	Total
• National Government Agencies	50	16	66
• LGU staff	54	23	77
• Community Members	206	15	221

REGION 3

Protect Wildlife focused its landscape approach in Aurora Memorial National Park; added value to existing initiatives and opportunities, such as marine turtle conservation and PES activities in Bataan; and pivoted BCC work in the region to maximize campaign impact even during the COVID-19 pandemic.

Accomplishments Supported in Region 3

The Region 3 map (Figure 8) depicts Protect Wildlife's activities in two primary areas: Aurora Memorial National Park and Mount Mingan in the Sierra Madre mountain range; and the province of Bataan, with focus on Mariveles and Bagac municipalities. Icons in the map identify technical activities supported in each area. The map shows that the activity implemented a more robust suite of interventions in Aurora Memorial National Park and worked more selectively in Bataan, with focus on marine turtle conservation and PES activities. Notable activities and results include the following:

Helped zone 5,288 hectares of strict protection zones and 1,228 hectares of multiple-use zones in Aurora Memorial National Park, and craft and secure approval of a ten-year management plan for the protected area. Also, partners collaborated to put in place a protected area manual of operations and an enforcement committee.

Supported DENR, LGU and communities in Mariveles municipality in Bataan to strengthen marine turtle conservation efforts in three nesting sites. Protect Wildlife helped partners adopt best practices and protocols in rescuing marine turtles, handling eggs and releasing hatchlings— contributing to improved capacity in managing and protecting marine turtle nesting grounds and hatcheries.

Advanced PES initiatives with LGU officials and private sector stakeholders who rely on ecosystem goods and services provided by Bataan National Park and Mariveles watershed. PES partners calculated that Bagac LGU could generate more than ₱7.5 million (US$150,000) and Mariveles LGU could generate more than ₱45 million (US$900,000) from local water users over a ten-year period.

Collaborated with Pampanga State Agricultural University to better align its Bachelor of Science in Agroforestry program to forestry development challenges and opportunities in Region 3. Protect Wildlife helped the university to strengthen its agroforestry curriculum, with enhanced focus on entrepreneurship and closer alignment with agro-industries in the region.

Figure 8. Region 3 Site Map and Protect Wildlife Activities

Legend

Protect Wildlife Assistance

- Behavior Change Campaign
- Livelihood enterprise
- PES
- PA Planning
- Research/studies
- On site enforcement
- Species conservation
- Bamboo Road Map
- Protected Areas
- Forestlands
- Other conservation area
- Provincial boundary
- Municipal boundary
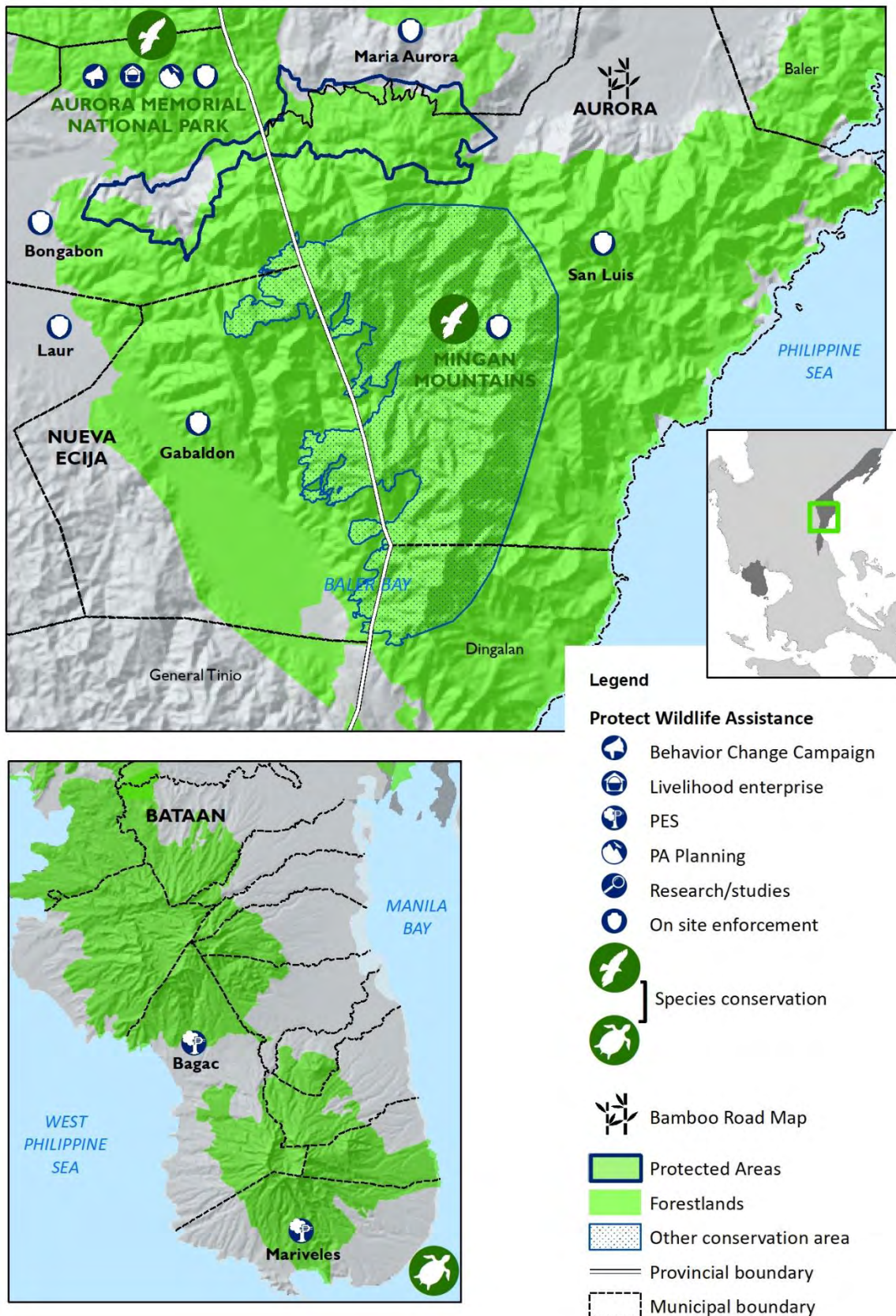
Adding Value to Conservation and Livelihoods in Region 3

Conservation and Development Partners

- In Aurora Memorial National Park, 22 integrated conservation and development trainees from LGUs and local communities are poised to build on their zoning and management planning work by supporting its implementation in compliance with new land and resource use restrictions.
- The 29 new community WEOs for Aurora Memorial National Park and Mount Mingan are helping enforce land and resource use restrictions outlined in management plans, and protect local iconic species, such as the Philippine eagle, in line with wildlife and environmental laws and local ordinances on flagship species. Following passage of the AMNP management plan, the project helped the protected area management office to establish an enforcement committee for the management board, restock its roster of trained enforcement personnel and establish protocols to guide the committee and enforcement personnel in carrying out their duties. The enforcement protocol is a playbook for the committee, identifying coordination mechanisms between offices and officials, hot spot areas, and patrol sectors.

Enriching Women-led Livelihoods

Protect Wildlife saw an opportunity to add value to Salabusob Integrated Livelihood Association of Women, who plants turmeric in a multiple-use zone at the foothills of Aurora Memorial National Park and processes it for sale in Manila. Although they had a buyer with consistent demand for dried turmeric, the women's group struggled to capitalize on this due to outdated and inefficient processing equipment, limited business management capacity, and challenges in logistics and distribution.

Under the W-GDP Initiative, Protect Wildlife stepped in with an organizational assessment and designed a targeted technical assistance program that featured practical business planning and bookkeeping trainings, catalytic investments in postharvest processing, and measures to revitalize its market linkages and network with support organizations.

The activity supported the women's group with clear policies, strengthened accounting procedures, a technical committee structure, and a three-year organizational plan that addresses development activities, such as maintaining agroforestry practices and recruiting more women members. W-GDP Initiative investments in improved processing equipment positions the women's group to process up to 700 kilos of turmeric every week, while the technical assistance helped revitalize their relationship with their primary buyer.

Pivoting BCC Work to Maximize Impact During the Pandemic

Plans to launch Protect Wildlife's Wild and Alive CWT campaign at Clark International Airport were stymied by the COVID-19 pandemic. In turn, the activity repurposed Wild and Alive's cascade designs for use in a Facebook campaign rolled out by DENR Region 3 that targeted audiences sheltering at home due to the pandemic. The online campaign featured 48 Facebook posts from June to September 2020 and reached more than 900,000 individuals.

Figure 9. Protect Wildlife Highlights in Region 3

Capacity Building for Conservation and Development Partners

	Male	Female	Total
CONSERVATION AGRICULTURE FARMERS	0	17	17

INTEGRATED CONSERVATION AND DEVELOPMENT ON-SITE MANAGERS

	Male	Female	Total
• LGU staff	2	1	3
• Community Members	11	8	19

WILDLIFE AND ENVIRONMENTAL LAW ENFORCERS

	Male	Female	Total
• National Government Agencies	4	3	7
• Community Members	21	8	29

Adding Value to Existing Livelihood Opportunities

Implementation of the Aurora Memorial National Park protected area plan started with support in improving a people's organization's livelihood in the multiple-use zone.

Management zone
Multiple-use zone
Strict protection zone

Before

Slicing turmeric into chips using kitchen tools **7 kg per hour**

Drying of chips using screen frames fits only **20 kg and takes 3 days**

Now

With mechanized slicer **25 kg per hour**

Solar tunnel dryer fits **150 kg and takes only 2 days**

Turmeric

Mechanized slicer

Solar tunnel dryer

Wild and Alive Campaign

DENR Region 3's Public Affairs team applied BCC lessons to design and lead a virtual "Wild and Alive" campaign on Facebook—capturing attention of a homebound audience during the pandemic.

Audience reach of the Wild and Alive Facebook campaign
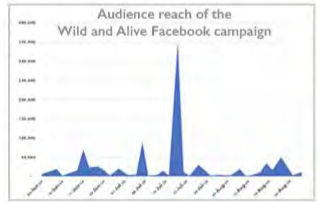
Total of **907,840 UNIQUE VIEWS June-Sept 2020**

Good News Mondays!

DENR Central Luzon
7 Dec 2020 ·

GOOD NEWS MONDAYS!

The DENR-Provincial Environment and Natural Resources Office (PENRO) in Iba, Zambales recently rescued a wounded Luzon Tarictic Hornbill (Penelopides manillae) after it was reported by a concerned citizen. Aaron Sanchez, a campus nurse of the President Ramon Magsaysay State University (PRMSU) in Botolan town found the wounded bird during their recent tree planting activity... See More

117   2 Comments · 44 Shares

Wild and Alive Wednesdays!

DENR Central Luzon
16 Dec 2020 ·

WILD AND ALIVE WEDNESDAYS!

White Lauan scientific Shorea contorta is a species of dipterocarpaceae family that is endemic to the Philippines. ... See More

Shorea contorta
Common Name: White Lauan

Edward Lorenzo and 61 others   32 Shares

Amazing Eco-Facts Fridays!

DENR Central Luzon
18 Dec 2020 ·

AMAZING ECO-FACTS FRIDAYS!

Talaytay Protected Landscape is a key biodiversity area in the North Central Sierra Madre. It covers 3,598 hectares ... See More

TALAYTAY PROTECTED LANDSCAPE

113   1 Comment · 29 Shares

OFF-SITE ENFORCEMENT AND NATIONAL-LEVEL ACTIVITIES

Protect Wildlife recognized that not all conservation obstacles and biodiversity threats could be addressed within a single landscape or seascape. Violators who break wildlife and environmental laws transport their contraband between municipalities, provinces and regions, while transnational criminal networks use ports of entry in the Philippines as transshipment points in the global illegal wildlife trade.

Beyond enforcement, Protect Wildlife also supported national-level BCC campaigns, curriculum development and research initiatives, and public and private sector partnerships; and scaled up enforcement lessons learned from activity sites through policy and knowledge management interventions at national government agencies.

OFF-SITE WILDLIFE AND ENVIRONMENTAL LAW ENFORCEMENT

Taking cue from DENR's Wildlife Law Enforcement Action Plan (WildLEAP)—a national framework for CWT in the Philippines through improved capacity, systems and policy, among other focal areas—Protect Wildlife aligned its technical assistance to advance WildLEAP priorities.

The activity's initial focus was on facilitating the rollout of DENR-BMB's basic training on Wildlife Law Enforcement Manual of Operations across the country, and supplementing existing curriculum with new sessions to introduce specialized skills in wildlife identification and handling, specimen collection and preservation for forensics, and intelligence-led law enforcement.

Over the life of the activity, Protect Wildlife trained 799 personnel from DENR, PCSDS and other national government agencies on basic enforcement skills; and 602 personnel on more specialized enforcement courses. These trainings established a framework to guide capacity development for wildlife and environmental law enforcement across the country.

Protect Wildlife then turned its focus in later years to scaling up capacity-building initiatives through support for creating an Environmental Protection and Enforcement Bureau (EPEB) under DENR. The activity facilitated development of draft content for the EPEB bill—wherein both versions from the House of Representatives and the Senate have already been filed—and produced a compendium of its basic and advanced training course outlines so that DENR may apply them as part of a future enforcement academy.

The activity also led national-level efforts to develop digital systems and tools to facilitate application of enforcers' enhanced skills and networking between enforcement units. One of these systems, WildALERT, is a mobile tool and web interface for wildlife species identification and wildlife crime reporting. WildALERT features 480 fauna species in its current library, which is searchable using a filtering feature that narrows down selections using descriptive categories, such as animal group, size, color, body cover and additional features. After identifying the wildlife, users can easily file reports of suspected wildlife crimes directly to enforcement authorities.

Lastly, Protect Wildlife recognized that DENR needed support to manage externalities of enforcement operations, including rescue, confiscation and seizure of trafficked and illegally traded wildlife. The

activity invested in DENR's capacity to provide veterinary services to wildlife in their care, and to better nurse them back to health for eventual release into their natural habitats. To this end, the activity supported investments in new x-ray and ultrasound machines, and customization of a vehicle that will serve as a wildlife ambulance for DENR's National Wildlife Rescue and Research Center (NWRRC). The wildlife ambulance positions veterinary officials to apply immediate aid to distressed wildlife and ensure safe transportation from retrieval sites to NWRRC. Also, wildlife rescue center personnel across the Philippines will be using WILDBase, a centralized online database developed by the activity for systematic recording and monitoring of rescued wildlife. WILDBase will help DENR-established wildlife rescue centers transition from paper-based to digital systems to efficiently manage their records of confiscated and rescued wildlife.

NATIONAL-LEVEL ACTIVITIES AND SCALING UP

Although Protect Wildlife is proud of its successful work and accomplishments with partners in the sites, the activity recognizes that these comprise only a small fraction of the Philippines' biodiversity assets that need stronger protection and more coherent management. To improve conservation planning and management on a wider scale in the final years of the activity, Protect Wildlife sought to use experience and lessons to develop or refine national policies, processes and standards, and to scale up tools, resources and lessons through preparation of knowledge products and support for national policy.

To better position DENR with knowledge, skills and resources needed to effectively and equitably manage integrated landscapes and seascapes, Protect Wildlife incorporated field-tested training modules, tools and materials into protected area management planning and FLUP training guides. These comprehensive guides were developed to ensure complementarity and promote alignment between protected areas and forestlands that surround them. The guides will position DENR and LGU officials to standardize planning and management protocols across protected areas and forestlands. The activity also anticipates that the protected area management planning guide will be incorporated as a module in DENR's proposed Protected Area Academy, which will provide comprehensive training on protected area management, with customized modules for target audiences, specifically protected area management boards, superintendents and personnel.

To build on ongoing calls for action—such as calls for LGUs to identify wildlife species for protection under Wildlife Resources Conservation and Protection Act—Protect Wildlife collaborated with DENR-BMB to develop a clearer framework on selecting flagship species and building meaningful species conservation plans. With DENR-BMB, the activity helped revise existing guidelines to help LGUs to not only select their flagship species but also to prepare conservation plans for their protection, while also more clearly defining key terms, like flagship species and management indicator species, around their specific uses in biodiversity conservation. Protected area and LGU officials across the country are now using the policy and guidelines to inform their selection of management indicator species and flagship species and the preparation of conservation plans to further their protection.

Applying content from its proof-of-concept advanced wildlife and environmental law enforcement trainings, Protect Wildlife worked with DENR to develop draft training

curriculum that could be incorporated under the envisioned Environmental Protection and Enforcement Bureau. The activity was in a strong position to support DENR's work to develop its concept for the EPEB, thanks to its years of enforcement training experience for officials across DENR bureaus and regional offices, and studies on wildlife forensics and illegal wildlife trade trends and practices. To contribute to DENR's efforts and help incorporate best practices and lessons learned from its enforcement work into bureau structure and functions, Protect Wildlife provided content for a draft EPEB bill. The activity also provided DENR with a compendium of basic and advanced training courses for incorporation into a proposed enforcement academy that EPEB can adopt should legislation be passed into law.

With the Biodiversity Finance Initiative project, Protect Wildlife led a pilot activity that informed guidelines for the national rollout of localized PBSAP. The Philippine Biodiversity Strategy and Action Plan is the country's roadmap to conserve its biodiversity and to mainstream Convention on Biological Diversity objectives into national development and sectoral planning frameworks. While strategy and targets are established at the national level, it falls upon regional DENR offices and LGUs to set local targets and operationalize PBSAP for local implementation. With Biodiversity Finance Initiative project of United Nations Development Programme, Protect Wildlife piloted an approach to developing local biodiversity strategy and action plans for Aurora, Zamboanga City, Zamboanga Sibugay and South Cotabato. The activity also incorporated lessons learned from these initiatives into formal guidelines for the national rollout by DENR-BMB.

SUMMARY

Through site-level and national-level activities, Protect Wildlife eclipsed major activity targets, notably the following (life-of-project targets in parentheses):
- Improving natural resource management of more than 750,000 hectares of biologically significant areas (500,000 hectares);
- Avoiding more than 1.25 million metric tons of greenhouse gas emissions through sustainable landscape activities focused on protection and management of forest cover in protected areas and forestlands (703,930 metric tons avoided);
- Reaching nearly 1.12 million people through 25 site-level BCC campaigns (300,000 reached and 25 campaigns, respectively);
- Generating more than US$625,000 in revenues from sale of ecosystem goods and services in activity sites (US$500,000 generated);
- Helping administrators and faculty from 19 universities and colleges develop or strengthen environmental science, marine biology, environmental law and protection, and agroforestry curricula; and
- Training 1,116 national government enforcement staff (1,00 staff), 211 LGU WEOs (200 staff) and 630 community WEOs (500 staff), who went on to apply improved wildlife and environmental law enforcement practices to conduct operations against violators, resulting in 1,301 confiscations, seizures and arrests (1,000 confiscations, seizures or arrests).

Actual impacts of Protect Wildlife activities on biodiversity threat reduction and advancements in human well-being, however, will take time to materialize and to study. This will depend largely on continued

national government support and an increasing flow of technical and financial resources to sites over the coming years.

Although evidence is limited at this stage—as expected given the limited time for partners to apply new knowledge, skills and resources—initial analysis from activity-led capacity, performance and behavior change assessments indicate that Protect Wildlife has had a positive impact that resulted in improved partner performance. If properly harnessed and cultivated, the activity's work to strengthen capacities in habitat management and wildlife and environmental law enforcement; to generate increased support and coordination from LGUs, civil society, private sector and academe; and to improve attitudes and behaviors of communities and institutions will set conservation, national resource management and enforcement practitioners in the Philippines on a pathway to meet Protect Wildlife's desired final outcomes.

CONTEXT AND TECHNICAL APPROACH

In this chapter, Protect Wildlife introduces the local operating context, the activity's Theory of Change, technical approach and guiding principles, and entry points that the activity leveraged to execute its approach.

OPERATING CONTEXT

A biodiversity hotspot, the Philippines is one of the world's 17 megadiverse countries that host two-thirds of the earth's biodiversity and more than 70 percent of the world's plant and animal species. The archipelagic nation is home to more than 700 threatened species and serves as a key cog in the international wildlife trade. Philippine biodiversity is increasingly at risk from domestic poaching and an organized network of international illegal wildlife traffickers and traders from Southeast Asia, China, Africa, Europe and the United States[1].

As complex as it is rich, the boundary-defying nature of Philippine biodiversity presents significant challenges to those who try to manage and protect it. Based on a sample of 61 protected areas surveyed across various regions in the country from 2013 to 2014, the GIZ-funded Protected Area Management Effectiveness project reported that the management effectiveness of the Philippines' 240 legislated or proclaimed protected areas was only rated to be "poor to fair."[2] Underregulated forestlands, alienable and disposable lands, and coastal and marine areas that are home to the other half of the country's biodiversity face even greater risk.

In addition to challenges of working across political and geophysical boundaries, conservation managers must also navigate different land classifications, management systems and local and national policies.

BIODIVERSITY THAT CUTS ACROSS MANAGEMENT SYSTEMS

In an era of extremes and concentrations of power, the Philippines' bounty of biodiversity sprawls liberally across the archipelago. Protected areas, however, capture less than half of the country's key biodiversity areas, which are distributed across 228 terrestrial and coastal and marine areas[3] in 17 regions, 81 provinces, 122 cities and 1,488 municipalities. Critical biodiversity assets, habitats of flagship species, and ecosystems that provide important goods and services are scattered not just in protected areas but also in other land and marine legal classifications. In some cases, ancestral domains overlap in

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[1] Vinluan R., G Forbes, and T Isorena. 2019. Mapping the Illegal Wildlife Trade Route in a Biodiversity Hotspot: The Philippines.
[2] GIZ. 2014. Report on the Management Effectiveness and Capacity Assessment of Protected Areas in the Philippines. DENR-BMB, Quezon City.
[3] Ambal. 2005. Conservation International-Haribon-DENR-BMB 2010.

protected areas, forestlands, alienable and disposable lands, and coastal and marine areas, while the country's 18 river basins and 143 priority watersheds[4] cut across all of them. These management systems and authorities are governed by separate oversight bodies, who use different terms for land use and zoning classifications, with only limited or informal attempts at coordination and co-management.

OVERLAPPING POLICIES TO MANAGE BIODIVERSITY

While protected areas are governed under the National Integrated Protected Areas System Act of 1992 and the Expanded NIPAS (ENIPAS) Act of 2018 that designated 94 new protected areas and mobilized resources for their management, biologically significant areas are not confined within these protected areas. No less critical to the sustainable flow of ecosystem goods and services, these areas are governed under different laws and administrative bodies. The following policies either directly or indirectly impact protection and conservation initiatives both within and outside of protected areas.

- Wildlife Resources Conservation and Protection Act of 2001 and National Caves and Cave Resources Management and Conservation Act of 2001 designate areas covered under the policies as protection and conservation areas if these are outside protected areas, and as strict protection zones if within a protected area. Wildlife habitats and caves that are found in other land classification systems are designated as protection and conservation areas and managed as such under various tenure and management regimes.
- Revised Forestry Code of 1975, including Executive Order 23 Declaring a Moratorium on the Cutting and Harvesting of Timber in Natural and Residual Forests, calls for natural forests that are outside protected areas to be delineated and managed as protection and conservation areas under a forest land use plan. It also calls for FLUPs to be incorporated in comprehensive land use plans of LGUs.
- Agriculture and Fisheries Modernization Act of 1997 addresses productive alienable and disposable lands and coastal and marine areas. Habitats, critical watersheds that support national irrigation systems, and unique ecosystems in alienable and disposable lands and coastal and marine areas must be zoned as protection and conservation areas in the CLUP process.
- Indigenous Peoples' Rights Act of 1997 calls for ancestral domains in protected areas, forestlands, alienable and disposable lands, and coastal and marine areas to be designated and managed as protection and conservation areas jointly by indigenous communities, LGUs and DENR.
- Philippine Fisheries Code of 1998 outlines designation and management responsibilities for marine protected areas and wildlife habitat conservation in coastal and marine areas.

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[4] 18 Major River Basins and 3 Principal River Basins in the Philippines. https://www.google.com/maps/d/viewer?mid=1tWPz0l4Cu9021ny2h-5wFtp2cs8&hl=en_US&ll=13.621191884118309%2C119.82819618331928&z=5

There are also several cross-cutting policies that impact conservation, including Local Government Code, Climate Change Act, Disaster Risk and Reduction Act, Philippine Mining Act and Philippine Clean Water Act. The Local Government Code authorizes LGUs to protect and manage areas not exceeding 5,000 hectares as communal forests, parks and watersheds.
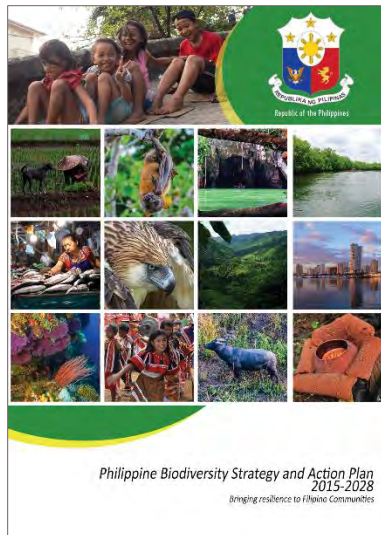
There are large areas of overlap between the policies for any given conservation and protection area in the Philippines. This creates challenges for conservation managers in sites who must interpret and execute them. Protection and conservation of key biodiversity areas require a deep knowledge and understanding of applicable local and national sectoral policies in a landscape-seascape area, as well as the policies' complementarity and contradictions. Beyond knowledge of the policies, it is essential for managers to understand where and how they are applied in practice, details on biodiversity assets' health or condition, impacts of natural calamities and human-induced disasters, and the manner in which people interact with them.

Most important to effective conservation is the nature in which the work is conducted. The success of conservation area management depends in part on the extent to which participatory processes were applied to engage and build consensus between users of ecosystem goods and services and those who govern them.

CAPACITIES AND SYSTEMS ARE NOT PRIORITIZED

Beyond overlapping political and institutional structures, conservation managers are also hobbled by siloed, sector-driven approaches, limited capacities, and lack of general public awareness of direct links between ecosystem goods and services and their own well-being. The following challenges must also be addressed for this activity, or any conservation initiative, to successfully protect biodiversity.

- **Conservation policies and initiatives are often seen as a means to restrict, withhold or punish, rather than preserve, protect or restore.** A lack of understanding and appreciation of the value of biodiversity—genetic resources, species and ecosystems—allows negative attitudes toward conservation and wildlife protection to persist.
- **Policymakers lack data needed to inform policies and leverage resources.** Investments from the government and academe in conservation area-based research and development are limited. The lack of investment begets a lack of policy and development initiatives informed by scientific discoveries and data on wildlife and ecosystems.
- **Wildlife traffickers and illegal traders have more sophisticated systems and networks than those who neutralize them.** Enforcement units at DENR, LGUs, Philippine National Police (PNP) and Bureau of Customs lack the capacity, tools and coordination mechanisms needed to surveil, track, arrest and adjudicate illegal wildlife trade and trafficking in the Philippines. These shortcomings have led to the country's emergence as a hotspot—both as a source of wildlife species and by-products, and as a transit point for trafficking and trading of

*Philippine Biodiversity Strategy and Action Plan
2015-2028
Bringing resilience to Filipino Communities*

The **Philippine Biodiversity Strategy and Action Plan** is the country's roadmap to achieve a vision where "biodiversity is restored and rehabilitated, valued, effectively managed and secured, maintaining ecosystem services to sustain healthy, resilient Filipino communities and delivering benefits to all."

valuable wildlife species classified under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)[5].

- **Land and resource restrictions on upland communities are heavy, but sources of livelihoods and technical assistance are light.** Upland communities often lack the tools (tenure instruments), resources (social infrastructure and access to capital) and assistance (government development plans and extension services) needed to climb out of poverty and to join the government as partners in conservation.

FINDING A THROUGHLINE TO NAVIGATE CHALLENGES AND COMPLEXITIES

The Philippine Biodiversity Strategy and Action Plan 2015-2028—the government commitment to the Convention on Biological Diversity and the global Aichi Biodiversity Targets in 2010—was written to capture the complex biophysical, policy and governance elements of biodiversity conservation in the Philippines. The action plan provides a broad strategy of how conservation in the Philippines' rich landscapes and seascapes may be executed. The plan identifies major ecosystems, assesses their conditions and health, and presents opportunities and conservation strategies designed to conserve and protect flora, fauna and genetic resources that abound in forests, inland waters and wetlands, and coastal and marine areas. It also identifies major ecosystem goods and services that promote human well-being.

PBSAP strategies cut across various sectors, land classifications, political boundaries and landscape-seascape forms. The action plan identifies technical, policy, governance

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[5] The DENR reported that "the number of confiscations of illegally traded wildlife species regulated under CITES increased from 513 in 2005 to 2,691 in 2007." Based on data from USFWS Law Enforcement Management Information System, there were 643 confiscations involving 83,323 wildlife items sourced from the Philippines from January 2003 to January 2011. These included 38 ivory items from African elephants, 115 ivory items from walruses, 639 snake products, 216 specimens of macaques and 269 coral products. A United Nations office also placed the Philippines on the illegal pangolin trade map. Species included in those traded and trafficked include the IUCN Red List of threatened (critically endangered, endangered and vulnerable) species includes 778 native flora and fauna species in the Philippines.

and capacity development interventions to address major threats to biodiversity assets and ecosystems, such as the following:

- Habitat loss due to deforestation, mining and degradation of coastal and marine ecosystems;
- Overexploitation of fisheries resources; illegal wildlife harvesting, trading and trafficking; and land conversion and urban expansion into coastal areas;
- Pollution, especially of freshwater resources, inland and wetlands, and marine waters;
- Erratic and extreme weather conditions and negative externalities resulting from natural calamities and climate change; and
- Increasing number and widening diffusion of invasive species across landscapes and seascapes.

MODELING THE LESSONS OF PBSAP

From the PBSAP, Protect Wildlife understood that land classifications, national-level policies and many other ingredients to improve conservation practices were in place but were not bound together in a way that incentivized collective action. Protect Wildlife determined that integration of policies, land use systems and jurisdictional plans would be a central tenet of the activity's approach, and an offer of helping partners to add value to their current initiatives as a way to open doors.

From a landscape-seascape level, one can gather all stakeholder groups, governance authorities, policies and area designations. By cataloging actors, rules and components of a landscape-seascape, interactions, interdependence and contradictions can be assessed. Integration of systems and policies at this scale requires a shared understanding and appreciation of the value of biodiversity, a process to generate consensus, and a commitment to coordination and complementarity between stakeholders.

To be effective, protection and conservation areas must clearly link biodiversity conservation with threats to ecosystem goods and services. Framing is essential. Awareness of government, private sector and community stakeholders' shared dependence on the preservation of biodiversity in forestlands, alienable and disposable lands, and coastal and marine areas for the health of local economies and livelihoods is central to forging consensus at the landscape-seascape scale. With a commitment to work together, across jurisdictions, stakeholders are in position to implement the following actions:

- Forge common strategies to develop and approve land and resource regulations that are consistent between management systems, such as protected areas and forestlands that are managed by national and local government authorities, respectively;
- Build enforcement networks and databases to encourage the flow of information and cooperation between enforcement units in communities, law enforcement, and local and national governments; and
- Align or redirect public and private investments from protection and conservation zones toward sustainable value chains that operate in production or multiple-use zones, while also correcting market failures that do not reward upland residents for their work to protect and preserve ecosystem goods and services for downstream communities and industries.

THEORY OF CHANGE

With a deeper understanding of the context, its opportunities and challenges, and takeaways that integration and adding value would be central to the activity's success, USAID officials, Protect Wildlife and activity stakeholders gathered to chart a Theory of Change to help partners improve actions in biodiversity conservation and combating wildlife trafficking.

A development hypothesis, the Theory of Change posited the conditions under which USAID could reduce threats to biodiversity, wildlife and natural resources, and promote human well-being. Building from the Theory of Change narrative, Protect Wildlife developed a visual representation (Figure 10) of the progression of results that would eventually lead to threat reduction and human well-being.

PROTECT WILDLIFE THEORY OF CHANGE

IF national and local stakeholders understand the economic value and sociocultural significance of habitats and wildlife species, including the ecosystem goods and services that they provide in conservation areas, as a combined result of:
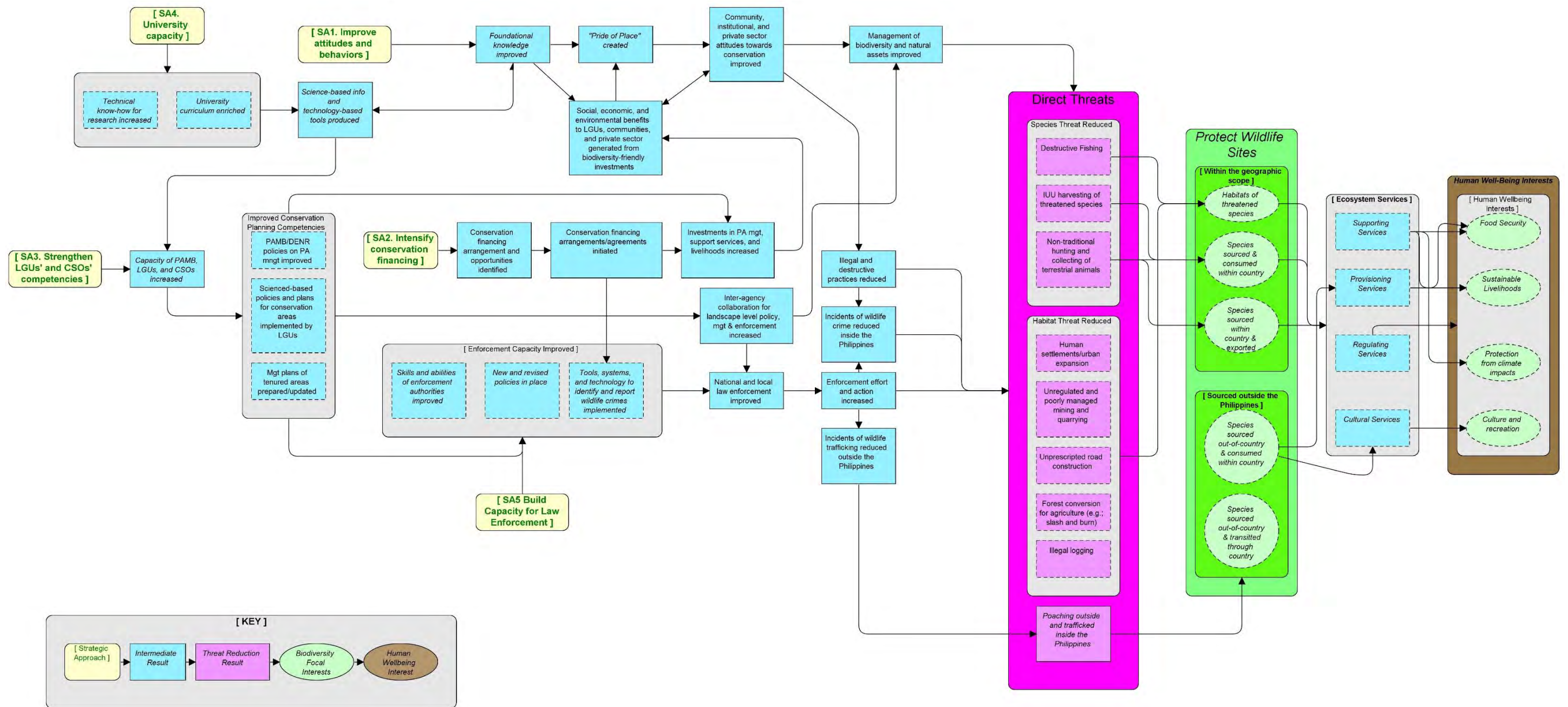
- Improved and positively changed communities' knowledge, attitudes and behaviors toward wildlife and biodiversity conservation;
- Increased public and private sector investments and increased revenues from environment and natural resources-related enterprises to finance conservation, and support biodiversity-friendly and sustainable livelihoods and enterprises for local communities in priority sites;
- Improved conservation competencies of governance bodies, local government units, civil society organizations, landowners and tenure and domain holders in managing and regulating land and resource uses in landscapes of habitats and wildlife species;
- Improved capacities of higher education institutions to generate scientifically rigorous evidence and knowledge essential for conservation and for enriching curricula and outreach programs; and
- Enhanced capacities of national and local enforcement entities to identify, capture, prosecute and adjudicate wildlife crimes and habitat losses,

THEN, Protect Wildlife can significantly contribute to the reduction of threats to habitats and to wildlife species,

THEREBY, directly and indirectly enhancing capacities of various threatened habitats of wildlife species, as part of larger ecosystems and landscapes-seascapes, to supply and provide ecosystem goods and services that benefit human well-being.

Figure 10. Protect Wildlife Theory of Change Results Chain

[SA4. University capacity]

[SA1. Improve attitudes and behaviors]

Technical know-how for research increased

University curriculum enriched

Science-based info and technology-based tools produced

Foundational knowledge improved

"Pride of Place" created

Community, institutional, and private sector attitudes towards conservation improved

Management of biodiversity and natural assets improved

Social, economic, and environmental benefits to LGUs, communities, and private sector generated from biodiversity-friendly investments

Improved Conservation Planning Competencies

PAMB/DENR policies on PA mngt improved

Scienced-based policies and plans for conservation areas implemented by LGUs

Mgt plans of tenured areas prepared/updated

[SA3. Strengthen LGUs' and CSOs' competencies]

Capacity of PAMB, LGUs, and CSOs increased

[SA2. Intensify conservation financing]

Conservation financing arrangement and opportunities identified

Conservation financing arrangements/agreements initiated

Investments in PA mgt, support services, and livelihoods increased

Inter-agency collaboration for landscape level policy, mgt & enforcement increased

Illegal and destructive practices reduced

Incidents of wildlife crime reduced inside the Philippines

[Enforcement Capacity Improved]

Skills and abilities of enforcement authorities improved

New and revised policies in place

Tools, systems, and technology to identify and report wildlife crimes implemented

National and local law enforcement improved

Enforcement effort and action increased

Incidents of wildlife trafficking reduced outside the Philippines

[SA5 Build Capacity for Law Enforcement]

Direct Threats

Species Threat Reduced

Destructive Fishing

IUU harvesting of threatened species

Non-traditional hunting and collecting of terrestrial animals

Habitat Threat Reduced

Human settlements/urban expansion

Unregulated and poorly managed mining and quarrying

Unprescribed road construction

Forest conversion for agriculture (e.g.; slash and burn)

Illegal logging

Poaching outside and trafficked inside the Philippines

Protect Wildlife Sites

[Within the geographic scope]

Habitats of threatened species

Species sourced & consumed within country

Species sourced within country & exported

[Sourced outside the Philippines]

Species sourced out-of-country & consumed within country

Species sourced out-of-country & transitted through country

[Ecosystem Services]

Supporting Services

Provisioning Services

Regulating Services

Cultural Services

Human Well-Being Interests

[Human Wellbeing interests]

Food Security

Sustainable Livelihoods

Protection from climate impacts

Culture and recreation

[KEY]

[Strategic Approach]

Intermediate Result

Threat Reduction Result

Biodiversity Focal Interests

Human Wellbeing Interest

Moving from theory to strategy, USAID, Protect Wildlife and partners highlighted five Strategic Approaches that would serve as pathways to traverse challenges, embrace opportunities and work toward threat reduction and human well-being objectives.

Strategic Approach 1. Improve attitudes and behavior toward biodiversity and its conservation in target areas at a statistically significant level, with the following five-year targets:

- 100 people trained to lead behavior change communication campaigns
- 25 BCC campaigns implemented
- 300,000 people reached by BCC campaigns

Strategic Approach 2. Intensify financing from private and public sectors and internally generated revenues for biodiversity conservation, with the following five-year targets:

- US$500,000 revenues generated from the sale of ecosystem goods and services in target sites
- 100 payment for ecosystem services or tourism initiatives
- US$5 million in public-private investments in Protect Wildlife anti-poaching and trafficking efforts

Strategic Approach 3. Improve biodiversity conservation competencies of local government units, governance bodies, civil society organizations, and land and resource management units, with the following five-year targets:

- 200 LGU staff trained in participatory planning for integrated conservation and development
- 2,500 community members trained in planning and implementation of integrated conservation and development
- 200 LGU staff trained, certified and formally deputized as wildlife enforcement officers by government agencies
- 500 community members trained and certified as WEOs by government agencies

Strategic Approach 4. Enhance capacities of universities to advance biodiversity conservation education, research, monitoring and innovation, with the following five-year targets:

- 25 university-supported research initiatives implemented at Protect Wildlife sites
- 10 universities developing conservation curricula with support from Protect Wildlife

Strategic Approach 5. Enhance competencies of national and local government agencies in enforcing biodiversity conservation-related laws and policies, with the following five-year targets:

- 1,000 government staff trained in combating wildlife and environmental crimes
- 50 new or revised laws and regulations adopted to combat wildlife and environmental crimes
- 1,000 confiscations, seizures and arrests resulting from capacity building provided by Protect Wildlife

PROTECT WILDLIFE'S TECHNICAL APPROACH AND CALL TO ACTION

Protect Wildlife set out to implement the Theory of Change using a landscape-seascape approach that applies mapping and collaboration to zone and manage conservation areas, enforce laws and policies to protect biodiversity assets, and mitigate climate change impacts. More than a geospatial layout, these participatory exercises involve mapping of the biophysical, legal and political economy of landscapes or seascapes. Biodiversity assets and ecosystem goods and services, including carbon sequestration, are not constrained by jurisdictional boundaries. These flow across protected areas and between LGUs, and connect upland farmers in rural upstream communities with consumers and markets in downstream communities.

The supply of ecosystem goods and services within a landscape-seascape links biodiversity conservation and climate change mitigation with development. To maintain the flow of ecosystem goods and services—water supply, forest products, healthy soil for agriculture, and regulating functions that help supply the air we breathe and prevent floods during heavy rains—there must be balance between development and conservation. Weighed down by unchecked resource extraction, encroachment and low investment in upstream conservation, downstream development initiatives threaten to drain ecosystem goods and services from the uplands.

Conversely, the balance can also be tipped by failure to invest in sustainable livelihood opportunities and social services in upland communities. Without other opportunities or the attention of the government, these communities may be left to poaching, land conversion and other destructive practices that threaten local biodiversity and disrupt the downstream flow of ecosystem goods and services.

Protect Wildlife sought to balance these scales under a landscape-seascape approach that takes both development and conservation imperatives into account. The approach involved mapping the following characteristics or features within the activity's targeted landscapes and seascapes.

PRACTITIONER PERSPECTIVES ON THEORY OF CHANGE

"We now see logical frameworks as important, but basic, helping in a mechanistic way to deliver activities, while the Theory of Change required us to think beyond what is required in a logframe matrix.

"A Theory of Change gives team leaders a frame for a flexible approach, allowing adaptive management and learning within the boundaries of contract terms.

"A Theory of Change enables more conscious design thinking. Without a Theory of Change, it would have been difficult to track and integrate all activities in the sites. It also helped us develop work plans, keeping results chains and links between them in mind. It reminded us of why we were doing the activities and helped us understand how they contributed to higher-level goals. It gave us a sense of direction and purpose. A Theory of Change requires us to dig into what works and why.

"Also, very importantly, the team has been able to get an overview of the issues behind wildlife trafficking, and they were able to respond in a more holistic way."

Rebecca Paz
Protect Wildlife Chief of Party

- **Biophysical Characteristics.** Watersheds, biodiversity corridors, forestlands, grasslands, wildlife habitats and vulnerable or disaster-prone areas.
- **Legal Classifications.** Laws and policies on land and resource uses, environmental protection and economic development set forth by different levels and line agencies of the government; and legally designated ancestral domains, alienable and disposable lands, protected areas, forestlands and conservation areas.
- **Flow of Ecosystem Goods and Services.** Distribution of services, infrastructure, capital and political power, and access to knowledge, data and resources between those who protect or conserve ecosystem goods and services and those who depend upon or exploit them. This includes the flow of wildlife species and by-products from or through landscapes-seascapes to off-site areas.

This landscape-seascape view allowed stakeholders to view biodiversity, livelihoods and governance as parts of one system. Mapping exercises at this scale helped the same stakeholders to reconfigure policies and practices to preserve the functioning of the system for their own well-being, regardless of whether it is managed under a protected area, forestland or ancestral domain framework.

DEFINING A LANDSCAPE-SEASCAPE

Among Protect Wildlife's sites, there were no true closed systems, so the activity conducted assessments of each site to define target landscapes or seascapes that captured connectivity between ecosystems and sources and destinations of ecosystem goods and services. The activity's primary landscapes and seascapes and their characteristics are presented in the following:
- **Southern Palawan.** Mount Mantalingahan Protected Landscape and its surrounding municipalities of Bataraza, Brooke's Point, Quezon, Rizal and Sofronio Española.
- **Zamboanga City.** Administrative boundaries of the city, including protected areas, forestlands, watersheds, coastal and marine areas, island habitats, and alienable and disposable lands.
- **Mount Matutum Protected Landscape.** General Santos City and municipalities in South Cotabato and Sarangani that surround Mount Matutum in Region 12.
- **Sarangani Bay Protected Seascape.** The protected seascape in Sarangani and coastal municipalities of Maitum, Kiamba, Maasim, Alabel, Malapatan and Glan, as well as General Santos City.
- **Region 3 or Central Luzon.** Aurora Memorial National Park and estimated habitats of the Philippine eagle in the Aurora and Nueva Ecija portions of the Sierra Madre mountain range.

Within these boundaries, Protect Wildlife launched data collection, mapping and spatial analyses of biophysical characteristics, legal classifications, and flow of ecosystem goods and services in each landscape-seascape. Using these data, maps can be produced to illustrate the landscape's or seascape's biogeoclimatic features, protected areas, forestlands, and other management system boundaries and zones for production and protection of resources. The activity defined all land use boundaries depicted on maps as policy designated land use areas. This is a reference to legally defined boundaries of protected areas and subzones, and land-use restrictions defined in LGU policy for forestlands, conservation sites and other areas.

These maps were the starting point of Protect Wildlife's work with partners at DENR and LGUs, and the joint outreach to private sector and community stakeholders. From maps that illustrated biophysical and legal features of a defined area, partners could trace the flow of water, soil and forest products to urban centers, plantations and enterprises. Gazing back upstream, they could identify upland communities and explore their proximity to sources of ecosystem goods and services that they rely on. This led to questions regarding what motivates poaching, land conversion and encroachment of settlements. In turn, one could question whether active investments in these areas—to extend social services and promote sustainable enterprise opportunities—could sate needs for community livelihoods while deterring activities that put wildlife species and habitats at risk.

Following illegal wildlife trade and trafficking patterns, the exercise also showed that wildlife poached locally or trafficked into transportation hubs often flows beyond the borders of the landscape-seascape, requiring regional, national and even international interventions.

IMPROVING ON-SITE MANAGEMENT AND ENFORCEMENT IN EACH LANDSCAPE-SEASCAPE

With DENR and LGU partners, Protect Wildlife began site-based implementation through validation exercises with upland communities residing in or near conservation sites. The activity worked with communities to develop their own maps based on actual land and resource uses, which do not always align directly with policy designated land uses. Here, Protect Wildlife executed activities under the five Strategic Approaches.

Incorporating experiential learning under **Strategic Approach 3 on improved biodiversity conservation competencies**, Protect Wildlife trained community members and LGU officials on integrated conservation and development. Following theory and technical discussions, the trainees applied management planning skills through land use validation and mapping exercises within their own lands. The end product was a validated map and initial written inputs into what will later become a management plan for the area.

Maps featured protection zones that bound key ecosystems, habitats and unique natural and cultural attractions; production areas, which became focal sites for important social, technical, economic and infrastructure investments that can increase productivity and strengthen value chains in upland areas; and settlements and built-up areas that were properly zoned to reduce negative impacts of economic activities and climate-related calamities. Guidelines accompanied the maps, serving as a user manual on permitted activities and restricted land and resource uses, as well as requirements for permitting.

Protect Wildlife worked with all partners within a landscape-seascape to ensure complementarity between various management systems that govern the area. This ensured consistency in zoning between one area of the landscape-seascape that may be governed by a protected area management plan, and an area that abuts it that is governed by an LGU-level forest land use plan. Together, these management plans served as a roadmap and investment guide for conservation and development activities within the landscape-seascape. Guided by these plans, Protect Wildlife worked with partners to execute the following Strategic Approaches.

- **Strategic Approach 1 on behavior change communication.** Locally trained BCC practitioners designed and led campaigns to promote awareness of land and resource use rules and restrictions, generate pride of place, and sow seeds for positive changes in behavior that result in wildlife and habitat conservation.
- **Strategic Approach 2 on conservation financing and livelihoods.** Protect Wildlife built bridges between communities closest to nature and the private sector to invigorate triple bottom line enterprises and sustainable livelihood opportunities in production zones that relieve pressure on the resource base. The activity also worked with LGUs and utilities to generate conservation financing from users and consumers of ecosystem goods and services under PES schemes.
- **Strategic Approach 4 on conservation research and curriculum development.** With Protect Wildlife support, colleges and universities engaged in researches relevant to conservation and development issues within their landscape-seascape, while strengthening curriculum to ensure that future scientists, businesspeople, policymakers and enforcers enter their careers informed about the significance of wildlife and biodiversity conservation, as well as the laws that govern them.
- **Strategic Approach 5 on wildlife and environmental law enforcement.** Protect Wildlife supported building enforcement capacity to execute environmental and wildlife laws through surveillance, enforcement operations and prosecution of offenders, while also strengthening policy and processes in alignment with management plans and zoning regimes.

By employing these Strategic Approaches, DENR, LGUs, land and resource management units, communities, civil society and private sector can create a self-reinforcing system that sustains and perpetuates land use zones and the flow of ecosystem goods and services. People can now better understand their connection to nature. Market failures are corrected, and ecosystem goods and services are properly valued. Research informs science-based policy decisions that strengthen biodiversity conservation and promote sustainable development. Lastly, communities and LGUs join forces to safeguard protection and conservation areas and prevent illegal poaching and resource extraction, doing their part to preserve ecosystem balance.

BOOSTING OFF-SITE ENFORCEMENT

With on-site enforcement systems incorporated under protected area management and forest land use plans, Protect Wildlife helped promote protection of wildlife and enforce environmental laws within a landscape-seascape. Off-site enforcement systems and networks, however, are called for when wildlife and illegally extracted products are trafficked outside the boundaries of a landscape-seascape.

Wider curtailment of illegally harvested or transshipped contrabands must be coordinated at an inter-agency level. This relies on collaborative institutional arrangements, clear protocols that govern joint enforcement actions, and systems that allow data on wildlife crimes to follow traffickers across borders. This level of networking and connectivity is necessary to track and apprehend any illegally harvested or trafficked wildlife species that are banned under national and international lists.

Protect Wildlife's support for strengthening off-site enforcement began with an assessment of enforcement knowledge and capacity at national, regional, provincial and local levels. The activity worked with DENR and environmental law enforcement units at PNP, Bureau of Customs and National Bureau of Investigation to incorporate findings from the assessment into existing training programs, and to develop complementary trainings and mentoring on more specialized enforcement skills, such as wildlife identification and handling, specimen collection and preservation for DNA forensics, and intelligence-led law enforcement.

Protect Wildlife also collaborated with DENR to develop or strengthen enforcement networks; and to make catalytic investments in new systems for managing data and planning and executing operations, and in tools that can be used to support wildlife identification and reporting. Lastly, the activity recognized that DENR needed support to manage externalities of enforcement operations, such as confiscation and seizure of illegally trafficked wildlife. Protect Wildlife also invested in DENR's capacity to provide veterinary services to wildlife in their care, and to better nurse them back to health for eventual release back into their natural habitats.

ACTIVITY ACCOMPLISHMENTS

While the Theory of Change informed the development of Protect Wildlife's integrated landscape-seascape approach, during implementation, the Theory of Change also served as an important guidepost when designing and executing interventions. Strategies and interventions were measured against the Theory of Change before being executed. At the end of the activity, it served as the framework through which Protect Wildlife evaluated its performance and results.

In this chapter, Protect Wildlife analyses the activity's performance through the lens of the Theory of Change and results chain and shares an initial assessment of whether the interventions produced the envisioned outcomes. Under the results chain, the activity must progress through a series of results that focus initially on outputs linked to improved stakeholder knowledge and capacity and the application of those skills through policy, planning and execution of activities at the site level. The activity explores how Strategic Approach activities contributed to higher-order results outlined in the Theory of Change—reduction of threats to habitats and to wildlife species, and less encumbered flow of ecosystem goods and services that benefit human well-being.

Protect Wildlife grouped ten intermediate results[6] captured in the Theory of Change results chain into three levels (Figure 11), which correspond roughly to improved capacity, execution of new skills and knowledge, and achievement of targeted outcomes for threat reduction and human well-being.

Level 1 Results: Foundational Knowledge and Skills
Activity strategy, interventions and outputs linked to conservation capacity-building efforts for resource managers, enforcers, policymakers, educators, researchers and campaigners.

Level 2 Results: Applied Conservation and Enforcement
Technical assistance delivered to help partners in applying foundational knowledge and skills to execute conservation and enforcement initiatives through policy, planning and management, systems development, conservation education, and public and private sector partnerships.
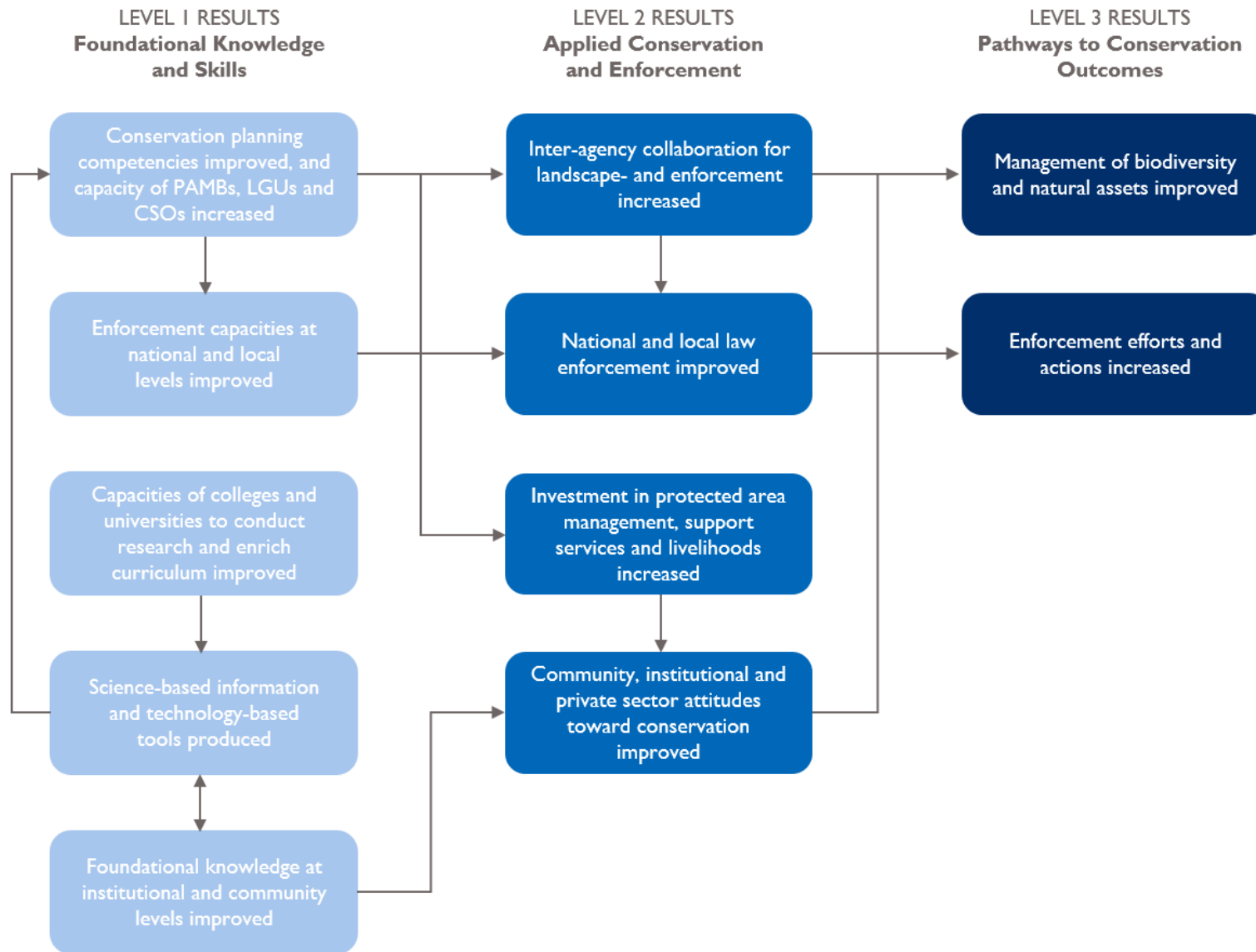
Level 3 Results: Pathways to Conservation Outcomes
Analysis of findings from Management Effectiveness Tracking Tool assessment of protected areas and assessment of enforcement capacities as proxy indicators of improved management and enforcement and threat reduction outcomes.

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[6] The Theory of Change results chain features 24 intermediate results. For its Final Report, Protect Wildlife grouped similar or related results into ten intermediate results.

Figure 11. Three Levels of Theory of Change Intermediate Results

LEVEL 1 RESULTS **Foundational Knowledge and Skills**	LEVEL 2 RESULTS **Applied Conservation and Enforcement**	LEVEL 3 RESULTS **Pathways to Conservation Outcomes**
Conservation planning competencies improved, and capacity of PAMBs, LGUs and CSOs increased	Inter-agency collaboration for landscape- and enforcement increased	Management of biodiversity and natural assets improved
Enforcement capacities at national and local levels improved	National and local law enforcement improved	Enforcement efforts and actions increased
Capacities of colleges and universities to conduct research and enrich curriculum improved	Investment in protected area management, support services and livelihoods increased	
Science-based information and technology-based tools produced	Community, institutional and private sector attitudes toward conservation improved	
Foundational knowledge at institutional and community levels improved		

LEVEL 1:
FOUNDATIONAL KNOWLEDGE AND SKILLS

Results in this level lay the foundation for sound resource management planning and informed decision-making on actions that in the long term will achieve conservation objectives. Activities covered here also prepared individuals and institutions to carry out their respective implementation responsibilities or roles through enhanced knowledge of policies, improved processes and tools, advanced enforcement skills, and science-based knowledge and communication skills.

In the overall Theory of Change, the following five key results or outputs belong to this level:
- Conservation planning competencies improved, and capacity of protected area management boards (PAMBs), LGUs and CSOs increased;
- Enforcement capacities at national and local levels improved;
- Capacities of colleges and universities to conduct research and enrich curriculum improved;
- Science-based information and technology-based tools produced; and
- Foundational knowledge at institutional and community levels improved.

These were the focus of Protect Wildlife's interventions during its initial years and at the start of its engagement in each of the activity sites.

CONSERVATION PLANNING COMPETENCIES IMPROVED AND CAPACITY OF PAMBs, LGUs AND CSOs INCREASED

The landscape-seascape and integrated planning approach adopted by Protect Wildlife considered the connectivity of wildlife habitats within protected areas and adjoining forestlands. It also recognizes the development link between protection and conservation areas and production areas that extends to downstream areas. Management of protection and conservation areas should support development objectives for production areas. If managed effectively, these production areas can bring about positive impacts on biodiversity and climate change.

Central to improving management of these areas is the preparation of management plans for protected areas and forestlands. A protected area's management plan sets the governance direction of its management board; zoning plan; and protection, conservation and development actions to be undertaken, including targets, funding sources and responsibility centers. The same can be said for forest land use plans. The FLUP guides LGUs and DENR in enforcing land use zoning (protection and production) and determining investments and services needed by communities to support their livelihoods and socioeconomic well-being.

The complex nature of planning for protected area management and forest land use needed to be harmonized so that land and resource uses, respectively, support biodiversity objectives for the larger landscape-seascape. A unified approach to zoning of both areas ensures coordination across protected
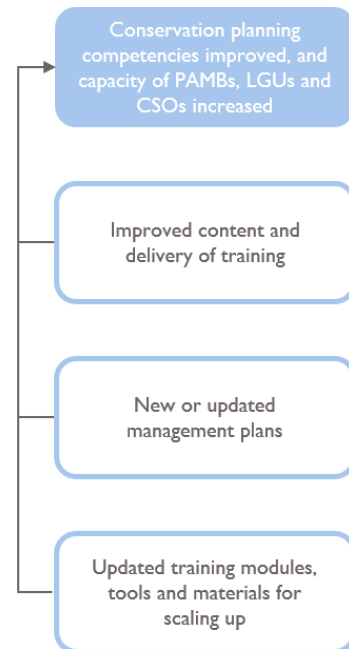
area, forestland, and comprehensive land use planning bodies, and builds stronger collaboration between LGUs that manage forestlands and DENR that oversees protected areas.

Protect Wildlife presents its approach to strengthening conservation planning through practical training and mentoring. It also introduces outputs of initial seeds of the activity's impact, as well as efforts to scale up tools and resources for conservation planning and management.
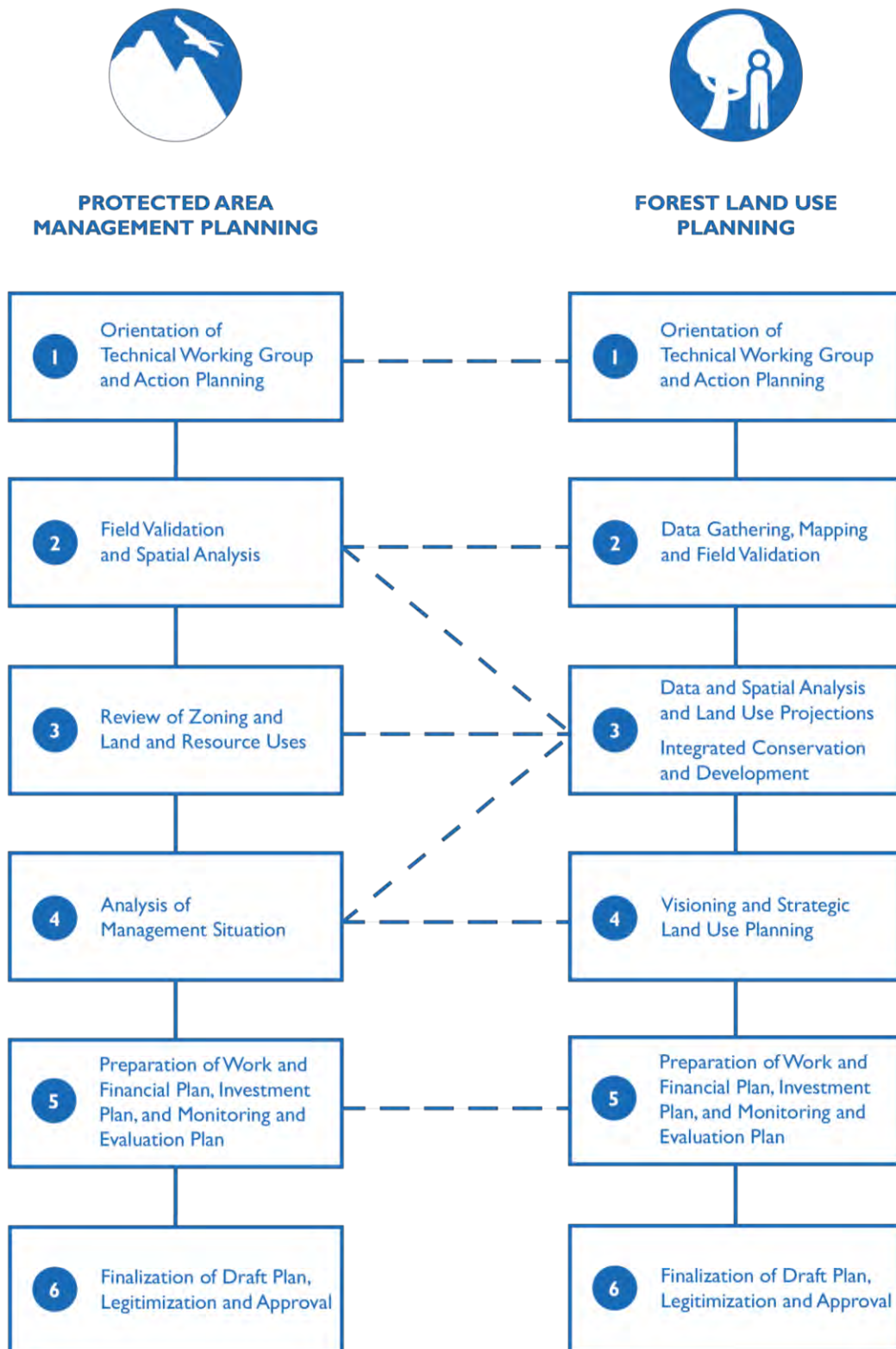
IMPROVED CONTENT AND DELIVERY OF PROTECTED AREA AND FORESTLAND MANAGEMENT PLANNING AND TRAINING

Assessments conducted in each site at the start of activity engagement showed that most protected area management plans had either expired or about to expire. Across all sites, past and current management plans were not in compliance with the official protected area management planning process outlined in DENR Memo Circular 1993-04: General Management Planning Process, DENR-BMB Technical Bulletin 2016-08, and zoning guidelines in DENR-BMB Technical Bulletin 2018-01. The plans lacked a clear zoning scheme, while management prescriptions were not specific to zones or subzones. Similarly, forestlands in activity sites were not covered in LGU zoning ordinances.

With management plan preparation as its entry point, Protect Wildlife developed parallel training modules for protected area management planning and FLUP preparation (Figure 12). These modules were designed to build on existing practices with new methods to improve analysis and responses to biodiversity threats, introduce a clear basis for zoning and enforcement, and address governance arrangements. The modules were crafted to ensure complementarity between LGUs' resource management plans and comprehensive land use plans, ensuring that the former could be easily absorbed as a component of the latter. As the activity engaged partners in new sites, the training modules and planning approach were adopted for application in resource management units, such as local conservation areas, forest reserves or parks and critical watersheds.

Conservation planning competencies improved, and capacity of PAMBs, LGUs and CSOs increased

Improved content and delivery of training

New or updated management plans

Updated training modules, tools and materials for scaling up

Figure 12. Complementary Protected Area Management Planning and Forest Land Use Planning Modules

PROTECTED AREA MANAGEMENT PLANNING

1. Orientation of Technical Working Group and Action Planning
2. Field Validation and Spatial Analysis
3. Review of Zoning and Land and Resource Uses
4. Analysis of Management Situation
5. Preparation of Work and Financial Plan, Investment Plan, and Monitoring and Evaluation Plan
6. Finalization of Draft Plan, Legitimization and Approval

FOREST LAND USE PLANNING

1. Orientation of Technical Working Group and Action Planning
2. Data Gathering, Mapping and Field Validation
3. Data and Spatial Analysis and Land Use Projections — Integrated Conservation and Development
4. Visioning and Strategic Land Use Planning
5. Preparation of Work and Financial Plan, Investment Plan, and Monitoring and Evaluation Plan
6. Finalization of Draft Plan, Legitimization and Approval

Training Features

The training process on protected area management and FLUP included important core elements.

Creation of technical working groups in the protected area or LGU, who will learn and lead the planning process. Technical working groups were formally created for each protected area and LGU. Multi-sectoral in composition, the groups have representatives from DENR, LGUs, relevant government agencies such as PCSDS, civil society, academe, private sector and communities. Protected area technical working groups were led by the protected area superintendent, while FLUP technical working groups were headed by LGU officials from the environment office or planning and development office. The groups were guided by the activity through all stages of planning, from orientation to data collection, processing and spatial analysis; to identification of management strategies and development of management interventions and financing plans; and, lastly, to legitimization or formal approval of completed plans. This approach ensured that improved conservation planning capabilities will remain with the partner groups and institutions.

Experiential, sequentially organized training tied directly to integrative development of management plans. Each module consisted of formal sessions, workshops and exercises, with components of the management plan as core outputs. With Protect Wildlife coaching and mentoring, technical working groups produced a new segment of the plan through training application exercises prior to the succeeding training module.

Parallel application of protected area management planning and FLUP training modules in specific landscapes-seascapes to bring about better coordination among technical working groups. Rather than treat the management planning work as separate exercises, Protect Wildlife executed this in parallel to promote complementarity and sharing of resources and skills. The paired implementation approach eased the process of harmonizing zoning plans, policies and programs between protected area management plans and FLUPs to emphasize the landscape-seascape approach. In Bataraza and El Nido in Palawan, the FLUP and comprehensive land and water use plan (CLWUP) were simultaneously pursued to demonstrate the integration of FLUP into the CLWUP.

Meaningful community participation. Local community leaders completed an integrated conservation and development training module, which drew them into the protected area management and forest land use planning process. During these sessions, communities provided critical inputs for land use validation. Through participatory community mapping, trainees plotted out their land and resource use practices, discussed boundary and resource use conflicts, identified local actions for conservation and development, and discussed consensus on zoning and management prescriptions for their community.

Initiatives to Strengthen Training Methodologies and Planning Practices

While existing training methodologies and land use planning practices incorporate some of these themes and approaches, Protect Wildlife brought them together into a single experiential training program that is applicable for sites across the Philippines. Beyond pulling these elements together under one approach, the activity also introduced a number of improvements to standard practices.

Participatory mapping activities with communities during planning for protected area or forestland management were effective exercises in identifying current land and resource uses in Protect Wildlife target sites.

Landscape-seascape-based spatial analysis. A wide-angle view of spatial data highlights the connectedness of protected areas, forestlands and alienable and disposable lands within a landscape-seascape. This approach—rather than standard spatial analysis bound within protected areas or forestlands—allows for an integrated analysis of biophysical and socioeconomic characteristics of an area. Through the use of GIS tools and compound map overlays of at least 12 map themes (including slope, elevation, NIPAS and ENIPAS areas, community boundaries and tenure, among others), Protect Wildlife produced data sets and maps that provided technical working groups with a comprehensive picture of landscape-seascape features, resources and risk areas. Within this spatial layout, the technical working group is in a position to plot policy-designated protection and conservation areas within legally defined boundaries of protected areas and forestlands, and to identify bountiful production areas that are insulated from risk zones and can be harnessed to produce food, fiber and timber for settlements and industries. Spatial analysis was also used to identify the location of potential land use conflicts and areas highly susceptible to landslides or flooding—issues that technical working groups have to address in defining zones and management prescriptions.

Field validation of current land uses. Community members were engaged in mapping exercises to identify current land uses in their areas. As part of the exercise, they pinpointed locations of tenured and non-tenured settlers, crop production areas, agricultural expansion sites, built-up sites and proposed sites for infrastructure development. As those who best know their local landscape-seascape, they were also in a position to flag problem areas, such as areas where environmental law violations frequently occur and areas prone to effects of natural hazards. Protect Wildlife completed this exercise in all communities within protected areas and forestlands. It provided local officials and communities with the opportunity to lend their expertise to the management plans and ensure that their local concerns were reflected on it. Community partners provided inputs to the zoning plan given their familiarity with land uses within their respective areas, participated in discussions on land use conflicts, and left the training enriched with knowledge on existing land and resource use policies and restrictions.

Policy-based zoning. Foremost in zoning protected areas and forestlands is the establishment of land uses that conform with national and local policies (policy-designated land uses). Areas are set aside for

protection and conservation or assigned for other uses on the basis of policy-based criteria that considers land cover, wildlife habitat status, slope and elevation, safety and security risks, tenure and cultural value. After policy-based zones are determined, adjustments may be allowed to reflect on-the-ground realities identified through field validation, but these must be based on spatial analysis and consensus among technical working group members. Zoning recommendations by the group must be approved by the management board before further planning activities can proceed.

Management prescriptions for zones and subzones. Management prescriptions refer to land and resources uses that are permitted and prohibited, respectively, in zones and subzones. For most production zones, land and resource uses are based on current and potential future uses, which are determined through consensus among stakeholders, including local communities.

Land use-based based strategies and investments. The zoning plan and management prescriptions serve as clear guidelines for formulating conservation and development programs related to forest management and restoration, management of tenured areas and ancestral domain, conservation education, enforcement activities, community livelihoods and delivery of social services. Consistent zoning and clear rules around land and resource use throughout the landscape-seascape provide the security and predictability needed to inspire investments by communities, tenure and ancestral domain title holders and the private sector. These also provide a framework for enforcement officials to police land and resource uses within the landscape-seascape.

Legitimization of plans. In protected areas, management plans are approved by the management board through a resolution and are submitted by the DENR regional director to DENR-BMB for review and affirmation. LGU adoption of the protected area management plan is by virtue of their membership in the management board. Formal adoption by an LGU legislative council is encouraged, especially for funding allocation. For FLUPs, plans are first presented by the technical working group to the municipal or city development council. The plan is then endorsed to the city or municipal legislative council for approval. In Palawan,

PCSDS endorsement is by virtue of their membership in FLUP technical working groups. Upon issuance of the legislative council resolution, the FLUP is submitted to the DENR regional office for final approval. Legitimization provides the legal basis for joint implementation of the plans by DENR and the LGU.

Facilitating Integration Between FLUPS and CLUPs. Integration of FLUPs into comprehensive land use plans (or comprehensive land and water use plans) and zoning ordinances has long been a challenge to LGUs. Although most LGUs have significant forestlands under their jurisdiction, they are often left out of their CLUP or CLWUP and zoning ordinance, or are simply classified as forestlands with no detailed zoning designations. For LGUs with FLUPs, zoning of forestlands may not be in sync with zoning of downstream areas, creating fragmentation and challenges in conducting oversight.

To help fix this issue, the activity considered the land use planning guidelines of the Housing and Land Use Regulatory Board in designing the FLUP modules. The regulatory board is the approving authority for LGU land use plans and is responsible for setting guidelines for CLUP or CLWUP development. Adjusting the FLUP process to align with regulation standards was an approach to resolve challenges in LGUs while also ensuring that the resulting land use plans would be meaningful management tools. FLUP data sets were reformatted and sectoral and intersectoral data analysis was adjusted to complement the requirements of CLUP or CLWUP preparation. With similar data entry tables, it is simpler for LGUs to incorporate the two plans. Pilot integration exercises in Bataraza and El Nido in Palawan showed where the FLUP and CLWUP preparation steps intersect and what FLUP data and analysis feed into the CLWUP. From these learning activities, Protect Wildlife formulated recommendations that include the joint approval and regulation by the LGU and DENR of land uses in forestlands.

EVIDENCE OF IMPROVED CONSERVATION PLANNING COMPETENCIES

One of the outcomes of Protect Wildlife's approach to conservation planning and specific improvements to prevailing practices is the strengthened human capital that will influence planning and management in years to come. The technical working groups remain active in their respective sites and even followed the completion and legitimization of their protected area management plans and FLUPs. The group members drove the planning work from start to finish and left the process with a deep understanding of the rationale and process for zoning and the resulting management focuses and investment plans. They also served as the protected area and LGU core teams, who will see through the implementation of the plans and ensure the integration of conservation into other development plans and programs.

A testament to their improved capacities are the completed and legitimized management plans, which served as the technical working groups' final products and results of Protect Wildlife assistance. The activity presents ten protected area and local conservation area management plans, eight FLUPs and three watershed management plans, which collectively cover around 750,000 hectares of biologically significant areas (Table 1). The management plan for Mount Busa in Sarangani and four FLUPs in South Cotabato, which have been drafted, would add more than 190,000 hectares to the total.

Through their execution, these approved management plans produced 1,250,257 metric tons of avoided greenhouse gas (GHG) emissions as of June 2020. This will rise to more than 1.9 million metric tons of avoided GHG emissions by June 2021. The impacts of GHG emissions avoided represent globally important achievements in climate change mitigation. Locally, the impacts pay dividends for the health of

watersheds, threatened wildlife and communities who depend on ecosystem goods and services from forests, watersheds and protected areas for their health, wealth and resilience to natural calamities.

Table 1. Legitimized Protected Area and Local Conservation Area Management Plans and Forest Land Use Plans

MANAGEMENT PLANS	APPROVAL RESOLUTION	AREA (ha)	GHG EMISSIONS AVOIDED (mt)
Mount Mantalingahan Protected Landscape (2021-2030)	PAMB Resolution No. 2019-09 (December 16, 2019)	120,457	599,702
Cleopatra's Needle Critical Habitat (2021-2025)	Management Committee Resolution (August 20, 2020)	41,304	47,727
El Nido-Taytay Managed Resource Protected Area (2020-2029)	PAMB Resolution No. 2020-26 (November 10, 2020)	89,135	45,364
Rasa Island Wildlife Sanctuary	PAMB resolution issued in 2019	2,349	3,351
Pasonanca Natural Park (2019-2028)	PAMB Resolution No. 2020-20 (September 30, 2020)	12,102	35,273
Great and Little Santa Cruz Islands Protected Landscape and Seascape (2019-2023)	PAMB Resolution No. 2019-1 (February 20, 2019)	3,425	1,204
Mount Matutum Protected Landscape (2020-2029)	PAMB Resolution No. 2019-18 (December 6, 2019)	13,947	5,264
Sarangani Bay Protected Seascape (2020-2024)	PAMB Resolution No. 2019-74 (December 12, 2019)	210,883	397
Aurora Memorial National Park (2020-2029)	PAMB Resolution No. 2019-12 (November 28, 2019)	5,676	2,803
Bud Bongao Forest Park (2019-2023)	Legislative Council Resolution No. 2020-06 (February 21, 2020)	193	183
Protected Area and Local Conservation Area Management Plans Subtotal		**499,471**	**741,268**
Quezon, Palawan (2019-2028)	Legislative Council Resolution No. 2019-34 (March 19, 2019)	40,421	233,804
Sofronio Española, Palawan (2019-2027)	Legislative Council Resolution No. 2019-03 (January 7, 2019)	24,421	18,656
Rizal, Palawan (2019-2027)	Legislative Council Resolution No. 2020-039 (March 16, 2020)	45,689	97,827
Brooke's Point, Palawan (2019-2028)	Legislative Council Resolution No. 2019-43 (February 22, 2019)	6,095	4,528
Bataraza, Palawan	(For incorporation into CLUP)	23,558	51,256
El Nido, Palawan	(For incorporation into CLUP)	17,710	19,759
Zamboanga City (2020-2028)	City Council Resolution No. 1011 (July 28, 2020)	79,550	81,470
Ayala Watershed, Zamboanga City (2020-2028)	City Council Resolution No. 1385-2020 (October 6, 2020)	1,972*	*Part of Zamboanga City FLUP
Manicahan Watershed, Zamboanga City (2020-2028)	City Council Resolution No. 1386-2020 (October 6, 2020)	4,466*	
Isabela City, Basilan (2021-2029)	City Council Resolution No. 20-6143 (October 7, 2020)	11,769	1,120
Malum Watershed, Panglima Sugala, Tawi-Tawi (2020-2029)	Executive Order No. 2020-11 (September 30, 2020)	658	569
Forest Land Use and Watershed Management Plans Subtotal		**249,871**	**508,989**
TOTAL		**749,342**	**1,250,257**

Through experiential training and mentoring that led to the production of these management plans, Protect Wildlife trained 4,500 individuals from various government agencies, sectors and communities (Table 2). Approximately five percent of the trained individuals are LGU staff, while 91 percent are community members, who are residing within protected areas and forestlands and have completed the integrated conservation and development module designed by the activity.

Table 2. Number of Individuals Trained in Integrated Conservation Planning and Implementation

SECTORS	Palawan	Zamboanga City and Sulu Archipelago	Region 12	Region 3	TOTAL
National government agencies (DENR, DA-BFAR)	70	87	158	86	401
LGU staff	91	29	92	3	215
Sub-national government agencies	10	12	-	-	22
Community members	2,178	137	1,530	19	3,864
Academe	1	4	2		7
Civil society and private sector	2	2	1	-	5
TOTAL	**2,352**	**271**	**1,783**	**108**	**4,514**

SCALING UP CAPACITY BUILDING IN CONSERVATION PLANNING

While Protect Wildlife has introduced new tools at its sites, and local partners have completed training on integrated conservation and development and applied their lessons and new tools to create long-term management plans that will govern land and resource uses for the coming decade, the activity recognizes that the sites comprise only a small fraction of the Philippines' biodiversity assets that need stronger protection and more coherent management. To improve conservation planning and management on a wider scale, in the final year of the activity, Protect Wildlife sought to scale up tools, resources and lesson plans through preparation of knowledge products.

To better position DENR with the knowledge, skills and resources needed to effectively and equitably manage integrated landscapes and seascapes, Protect Wildlife assessed its lessons learned from management planning across its four sites and integrated them into field-tested training modules, tools and materials, producing protected area management planning and FLUP training guides. These comprehensive guides will help DENR standardize planning and management protocols across protected areas and forestlands. The training guides shall serve as tools for frontline technical cadres to build the capacity of personnel and governance units across line units and LGUs for preparation of integrated conservation and development plans and practicing the science of holistic resource management.

Protect Wildlife anticipates that the protected area management planning guide will be incorporated as a module in DENR's planned Protected Area Academy, which will provide comprehensive training on protected area management with customized modules for target audiences, specifically the protected area superintendent, staff and board members. The management plans that were completed with activity assistance can be models and examples that protected area planners and managers can use in formulating their plans.

The activity also worked with partners to formally institutionalize its training guides and resources into DENR practices through the following technical bulletins.

- With Protect Wildlife support, DENR-BMB revised its Technical Bulletin 2016-08 to incorporate the improved protected area management planning steps and methods outlined in the training guide. A draft administrative order amending the bulletin and DENR Memorandum Circular No. 4, Series of 1993 has been prepared.
- Protect Wildlife, with a joint DENR-BMB and DENR-FMB technical working group, has laid the groundwork to produce a technical bulletin on harmonizing land and resource uses, definitions and statistical reporting strategies across bureaus. The technical working group focused on zoning, land and resource use rules, and data and statistics, aiming to standardize naming and data collection between bureaus to improve resource planning and establish clear management standards and protocols. Protect Wildlife expects the technical working group to issue a bulletin to formally adopt the new practices and standards.

ENFORCEMENT CAPACITIES AT NATIONAL AND LOCAL LEVELS IMPROVED

Protect Wildlife assistance to strengthen enforcement capacities of DENR, LGU and other partners was targeted to the following main intervention areas:

- Building knowledge and skills through enforcement training;
- Developing enforcement systems and protocols to strengthen performance and to position enforcers to achieve outcomes; and
- Promoting local and national policy development to incorporate, institutionalize and scale up best practices and lessons from on-the-ground enforcement.

A focus on building new or strengthening existing enforcement networks to track wildlife and environmental

PROTECTED AREA ACADEMY

The proposed Protected Area Academy by DENR is expected to provide comprehensive training on protected area management for a range of stakeholders, with customized modules for DENR senior officials, technical field staff, protected area management board and staff, LGU officials, policymakers and community stakeholders.

The customized modules for each target audience shall have common lecture topics, including implementing rules and regulations of the NIPAS and ENIPAS laws; integrated landscape, seascape and protected area management planning; governance and management zoning; investment planning for multiple-use zones, enforcement and dispute resolution; payment for ecosystem services and integrated protected area fund; tenure management; and wildlife and habitat management, among other topics.

Enforcement capacities at
national and local
levels improved

Basic and advanced
enforcement skills training

Networks and protocols for
on-site and off-site
enforcement

Systems for enforcement and
public reporting

Capability on wildlife
management and care
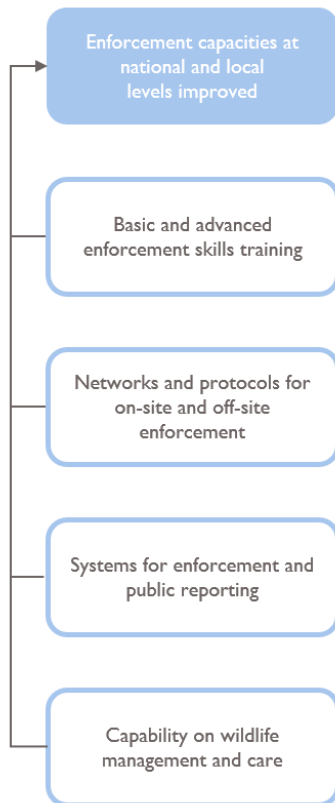
law violators across jurisdictions and sharing best practices,
which is critical to both on-site and off-site enforcement
operations, was woven into all three intervention areas.

Through an initial assessment of enforcement capacities and
opportunities conducted from 2016 to 2017, Protect
Wildlife identified the following initiatives as entry points for
the activity to begin capacity-building work at both national
and site levels:
• Priority objectives on building capacities on law
enforcement skills, systems and policies as part of the
Wildlife Law Enforcement Action Plan, the Philippines'
national framework on combating wildlife trafficking.
• Amendment of the Wildlife Resources Conservation
and Protection Act or Wildlife Act to align it with new
trends in wildlife trafficking and to increase criminal fines and
penalties. While DENR-BMB had identified their proposed
amendments, the bureau needed support for consultations
and drafting the new bill.

These initiatives provided an opportunity for Protect
Wildlife to add value, immediately commencing its policy
work and jumpstarting efforts to strengthen training
activities and expand their reach. The activity supported the
first WildLEAP development workshop in November 2016
during the first National Wildlife Law Enforcement Summit,
and later participated in various workshops and writeshops
for the plan. In partnership with DENR and Conservation
International, Protect Wildlife organized the Combating
Wildlife Trafficking: Thinking Ahead, Acting Together forum
in June 2018, where the draft WildLEAP was presented. The
forum served to secure new advocates from government
agencies and civil society groups for the adoption of
WildLEAP and to attract support from funding agencies.

To support the development of the Philippine House of
Representatives' version of the amended Wildlife Act, the
activity sponsored workshops and writeshops and
contributed to technical writing. The activity also provided
documentation, facilitation and logistics support to DENR-
BMB and Asian Development Bank in drafting the Philippine
Senate version of the bill. Insights from experiences in
engaging in WildLEAP and the amended Wildlife Act and the
networks built through them uniquely positioned the activity

to tailor its capacity-building program to the priority needs of DENR.

Protect Wildlife presents details on the core thrusts of capacity-building initiatives: building knowledge and skills through enforcement training, developing enforcement systems, and promoting policy development.

ENFORCEMENT SKILLS TRAINING FOR NATIONAL AGENCIES: BASIC AND SPECIALIZED

Protect Wildlife, together with DENR-BMB Wildlife Resources Division, developed work plans that focused on the nationwide rollout of a series of training of trainers on the Wildlife Law Enforcement Manual of Operations. This was an opportunity to advance and mainstream wildlife law enforcement training within DENR and law enforcement agencies. Efforts to strengthen the training design, which was already aligned to WildLEAP priorities, were focused on ensuring that the curriculum was tailored based on the needs and threats specific to the regions and sites.

Protect Wildlife also collaborated with DA-BFAR and Department of Justice (DOJ), which also had ongoing programs related to wildlife law enforcement. The activity assisted DENR-BMB, DA-BFAR and DOJ to review and enhance their existing basic training courses and contributed resource persons and funding support for the national rollout of the training of trainers. With partners, the activity designed trainings for delivery in regions, focusing on batches of trainees from a particular agency or department. Each training batch was composed of 50 to 60 participants.

Protect Wildlife also led trainings that moved across three general phases (Figure 13). After focusing initial support on basic knowledge and skills, the activity helped trainees to build on their knowledge through advanced enforcement methods and capacity, and, lastly, closed its support with a focus on applied skills and knowledge through mentoring and field exercises. In the following sections, Protect Wildlife provides background on its training initiatives for each phase.
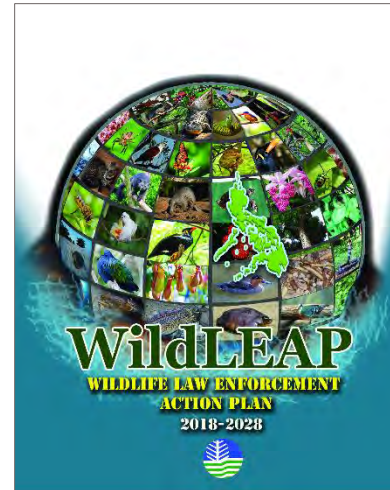
The **Wildlife Law Enforcement Action Plan** serves as the national framework of the Philippine government in combating illegal activities against wildlife, with the aim of ensuring the protection of wild fauna and flora for sustainability, while contributing to the global fight to end wildlife trafficking. WildLEAP is envisioned to serve as a guide in resource generation and allocation, prioritization of enforcement activities, and evaluation of impacts of enforcement work in the country.

Figure 13: Phases of Capacity Building for Wildlife Law Enforcement

1 Basic Enforcement Knowledge and Skills → **2** Advanced Enforcement Knowledge and Skills → **3** Post-Training Assistance (Field Exercises and Monitoring)

Basic Environmental Law Enforcement Training under the Standard Training Module	Environmental Crime Investigation Course	Capacity Improvement Monitoring
Environmental Paralegal Training	Forensics Training	Legal and Technical Coaching
Field Practice and Exercise	Wildlife Identification	Policy and Procedural Enhancement
	Enforcement Management	
	Advanced Technical and Operational Skills	

Basic Knowledge and Skills on Wildlife and Environmental Law Enforcement

The training of trainers series was the flagship training program of DENR-BMB Wildlife Resources Division, which sought to create a cadre of DENR field staff and partner agencies who are knowledgeable on the Wildlife Law Enforcement Manual of Operations and could train LGUs and other enforcement agency partners on wildlife and environmental laws; protocols on arrests, searches and seizures; wildlife identification and handling; and criminal court procedures. In addition to regional DENR officials, Protect Wildlife and DENR-BMB engaged enforcement officials from DA-BFAR, PCSDS, PNP, Philippine Coast Guard, National Bureau of Investigation and Bureau of Customs, among others. The training of trainers was executed with a multi-agency framework in mind, so that participants from various agencies could build relationships and networks as they operate in their assigned regions.

Protect Wildlife worked with DENR-BMB to plan, tailor and execute the series of training of trainers for the following four batches:

- **Training of Trainers Batch 6.** Most of the trainees were from PNP Maritime Group.
- **Training of Trainers Batch 7.** The training was tailored based on pertinent enforcement issues in Zamboanga City and Sulu Archipelago, and focused on highly trafficked aquatic species and products in the region, such as marine turtles, marine turtle eggs, giant clams and seahorses, among others.
- **Training of Trainers Batches 8 and 9.** Protect Wildlife modified training designs to expand topics on wildlife crime scene preservation, and documentation and evidence gathering. Graduates of the Wildlife Crime Scene Investigation Course were also engaged in the training. To further improve the capacities of future trainers, the activity led a special course on adult education techniques.

In addition to the trainings on Wildlife Law Enforcement Manual of Operations, Protect Wildlife contributed to the following partner-led training and capacity-building initiatives:

- **Orientation workshops on inspection protocols at selected hotspots and transshipment points.** Protect Wildlife supported DENR-BMB Wildlife Resources Division in the rollout of workshops on inspection procedures at airports and seaports. The activity provided resource speakers for two-day workshops that brought together law enforcement agencies operating in the country's local and international airports and seaports. The resource speakers delivered lectures on inspection protocols contained in the Wildlife Law Enforcement Manual of Operations. This assistance was in line with the WildLEAP goal of addressing transboundary and domestic wildlife trafficking in transport hubs across the Philippines.
- **Training on environmental laws for DOJ prosecutors assigned to green courts.** Protect Wildlife collaborated with United States Department of the Interior's Partnership for Biodiversity Conservation Phase 3 (PBC 3) project to develop the DOJ handbook on environmental laws, which will serve as a reference manual for the National Prosecution Service training team. Protect Wildlife and PBC 3 also supported the training that served as practicum for the prosecutor-trainers. The activity helped incorporate case analysis as part of the training design, wherein participants reviewed and responded to case studies focused on laws applicable to various aspects of the environment. Protect Wildlife supported six training sessions, reaching 213 participants from all regions in the country. Lastly, the activity supported a training of trainers on adult education techniques for selected DOJ prosecutor-trainers.
- **Fisheries law enforcement training for DA-BFAR staff.** Protect Wildlife provided resource speakers to DA-BFAR for its annual fisheries law enforcement training course. The assistance to DA-BFAR later expanded to incorporate design and facilitation of workshops, and technical writing support for the preparation of a five-year fisheries law enforcement operations plan that identified poaching and trafficking of aquatic species as a key area of concern. The development of the plan institutionalized the use of spatial tools that are critical in analyzing hotspots and planning enforcement responses. With the approval of the operations plan, the activity then supported the annual assessment and planning of DA-BFAR's fisheries protection and law enforcement group.

Advanced Knowledge and Skills on Wildlife and Environmental Law Enforcement

In the second year of Protect Wildlife implementation, the activity transitioned to provide higher-level capacity-building programs. DENR-BMB's holistic approach to wildlife law enforcement goes beyond mere apprehension of wildlife law violators. It covers regulatory aspects, as well as more sophisticated science-based approach to building cases and gathering and documenting evidences. Protect Wildlife collaborated with the bureau to incorporate these elements into advanced trainings on specialized enforcement skills.

Directed by transboundary syndicates, networks of illegal trade of wildlife and timber are constantly increasing their sophistication and financial capabilities. Protect Wildlife and DENR-BMB aimed to achieve a parallel increase in law enforcers' investigative and intelligence analysis skills. With traditional enforcement agencies focused on mainstream crimes against persons and property and human, narcotics and weapons trafficking, environmental crimes, such as illegal logging and poaching, are often not prioritized. Enforcement actions are often limited to less sophisticated and most expendable links in the trafficking chain, such as individual poachers and consolidators. This leaves the middle and higher

echelons of wildlife crime networks untouched and easily able to recruit new individuals to avoid disruption to their operations.

To advance enforcement capacity and better counter increasingly sophisticated environmental crimes, Protect Wildlife helped develop two highly specialized investigative training courses—Wildlife Crime Scene Investigation Course and Intelligence, Surveillance and Investigation Course—in partnership with DENR-BMB, PBC 3 and United States Fish and Wildlife Service (USFWS). Both trainings were developed and executed under the auspices of the National Law Enforcement Coordinating Committee-Subcommittee on Environment and Natural Resources (NALECC-SCENR). In line with the practice of building networks among enforcers under NALECC-SCENR and other allied agencies, the two advanced trainings were designed for enforcers from DENR, PCSDS, DA-BFAR, PNP, Bureau of Customs, and Office of the Special Envoy on Transnational Crime, among others. Strict qualification standards were adopted due to the technically sensitive nature of techniques presented in the trainings.

Wildlife Crime Scene Investigation Course. This course focused on wildlife crime scene preservation; collection of DNA, fingerprints and other physical evidence that can be used forensically to build cases against violators; and other subjects, such as management of interrogations and witnesses. Through the course, Protect Wildlife helped mainstream enforcement agencies to broaden their skill sets in the areas of environmental and wildlife crimes. The objective of the training was to instill a mindset that a case does not end merely with the arrest of the perpetrator. The trainees gained skills to help them build cases that are supported with proper evidence gathering techniques that can clearly link perpetrators to the crimes. Course participants also learned to use evidence found in crime scenes to expand their analysis beyond immediate perpetrators and build cases against their network.

Intelligence, Surveillance and Investigation Course. This course focused on improving capacities in building cases and identifying criminal networks involved in wildlife and timber trafficking, strengthening inter-agency collaboration on CWT, and improving safety of environmental law enforcers, who were increasingly being killed or attacked in the line of duty. This involved network-tracing by building contact matrices using government databases and phone records, building case folders of persons of interest by analyzing different points of contact of a suspect, learning to case a target to assess the potential threat levels and analyze point of entry and exit, build rapport with informants, gather information through elicitation of a suspect and their compatriots, and build better operational security for enforcement operations. DA-BFAR also adopted this course as part of their training program for senior fisheries enforcers.

Other Advanced Training Programs

In addition to advanced trainings, Protect Wildlife also supported the following training programs:
- **Wildlife Identification Training.** To improve DENR regulatory capacities and develop technical skills in identifying wildlife species in criminal cases, Protect Wildlife developed with DENR-BMB Wildlife Resources Division and University of the Philippines Los Baños Museum of Natural History a series of wildlife identification trainings. At regional and local levels, there have been cases of look-alike species being misidentified by inspection teams. The training series,

which had a two-week training period per session, covered birds, mammals, reptiles, insects and plants. Participants in the training included staff from licensing, conservation and enforcement units of DENR, PCSDS and protected areas offices.

- **Wildlife Forensics Study Tour.** With PBC 3 and USFWS, Protect Wildlife supported in December 2018 a study tour of a seven-person Philippine delegation to USFWS forensics laboratory in Oregon to learn about the organization and functional capabilities of the National Fish and Wildlife Forensics Laboratory. The delegation included representatives from DENR, PCSDS, DOJ, PNP, National Bureau of Investigation and University of the Philippines Institute of Biology. The study tour sought to generate ideas for potential development of a wildlife forensics laboratory in the Philippines. In July 2019, the activity and its partners supported a follow-on Conference on Wildlife Forensics as a Tool to Combat Wildlife Trafficking, targeting graduates of Wildlife Crime Scene Investigation Course. The conference workshops provided a venue for participants to present case studies on how the course assisted them in their work.

Summary

Applying content from these proof-of-concept advanced trainings, Protect Wildlife worked with DENR to develop a draft training curriculum that could be incorporated under a proposed Environmental Protection and Enforcement Bureau. If legislation for its development is passed into law, the bureau may include an enforcement training academy that offers basic to advanced skills training for DENR staff, as well as for national law enforcement agencies and LGUs. The EPEB would also feature an integrated environmental forensics laboratory for DENR that would cover wildlife and timber crimes, toxic substances and other related violations. Protect Wildlife has produced a compendium of its basic and advanced training course outlines so that DENR may apply them as part of a future enforcement academy.

The **wildlife identification training** taught knowledge and techniques in correctly identifying species that would be crucial in regulatory, licensing and enforcement duties of DENR and partner agencies.

At the **wildlife forensics study tour**, the Philippine delegation gained insights on organizational and functional requirements of a wildlife forensics laboratory from their visit at the USFWS laboratory.
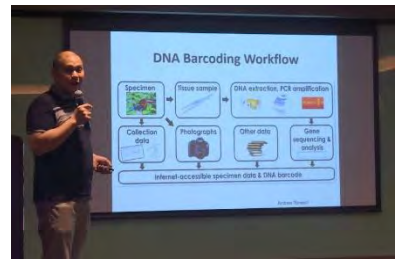
At the **Conference on Wildlife Forensics as a Tool to Combat Wildlife Trafficking**, DENR and experts shared local experiences of applying forensics in wildlife law enforcement.

Protect Wildlife trained 799 personnel from DENR, PCSDS and other national government agencies on basic enforcement skills, and 602 personnel on more specialized enforcement courses (Table 3).

Table 3. Number of Individuals Trained on Basic and Specialized Enforcement Training

NATIONAL AND SUB-REGIONAL AGENCIES	BASIC ENFORCEMENT TRAINING	ADVANCED ENFORCEMENT TRAINING
DENR Central Office	14	26
DENR field offices	237	490
DA-BFAR	106	31
PCSDS	38	33
Civilian law enforcement agencies	185	21
DOJ	219	1
TOTAL	**799**	**602**

To further strengthen networking and coordination, Protect Wildlife supported DENR efforts to bring together trainees and other officials to discuss challenges, best practices, and lessons learned on wildlife law enforcement. The activity supported wildlife law enforcement summits in 2016 and 2018, with the goal to highlight government CWT efforts. In these summits, partner law enforcement agencies presented their accomplishments in interdicting illegally traded or transported wildlife, the challenges they face, and new trends in wildlife trafficking.

In June 2018, Protect Wildlife hosted the forum Combating Wildlife Trafficking: Thinking Ahead, Acting Together, which presented emerging trends in illegal wildlife trade, with key presentations focusing on transboundary trafficking and impacts on border security and wildlife populations. Participants in the forum included DENR, PCSDS, PNP, National Bureau of Investigation, Philippine Coast Guard, Office of the Special Envoy on Transnational Crime, and Anti-Money Laundering Council, among others, together with civil society partners and funding agencies. At the end of the forum, law enforcement agencies and partners signed statements of support for the adoption of WildLEAP.

TRAINING FOR ON-SITE ENFORCEMENT

At the site level in Palawan, Zamboanga City, Sulu Archipelago, Region 12 and Region 3, Protect Wildlife conducted violations assessments and capacity assessments, reviewed local ordinances and policies, and led consultations with enforcement officials to determine existing capacities and capacity gaps and to establish priorities for assistance. These assessments were conducted prior to capacity-building activities in the sites. The assessments and development of training programs led to collaborative planning activities with DENR regional offices and PENROs, and with PCSDS in the case of Palawan.

Common findings across assessments showed low capabilities of LGU enforcers, lack of policy-based legislation to institutionalize support for law enforcement especially in protected areas, poor logistics and equipment, lack of trained patrol leaders, and poor intelligence assessment skills. Based on findings for each site, Protect Wildlife contextualized training interventions to local needs, with wildlife law enforcement as an anchor.

Training Frontline Enforcers in Sites

A common element of Protect Wildlife's support was basic-level skills development training for on-site enforcers. The activity facilitated this training for protected area enforcers, LGU staff and community members. Training designs included discussions on basic intelligence analysis for protected areas, and use of maps to contextualize apprehensions and improve deployments.

Training programs for site-based government agencies, LGU partners and community members were always done with lead agencies such as DENR and, in the case of Palawan, PCSDS. Resource speakers for specialized topics were provided by partners, such as DA-BFAR for fish examination, DENR for wildlife handling and timber scaling, and PNP Maritime Group or Philippine Coast Guard for vessel boarding procedures.

While training designs followed the basic framework of the DENR training manual, Protect Wildlife adjusted the content based on needs and existing capabilities of the trainees. For example, the activity engaged DENR trainees in Palawan and Puerto Princesa Subterranean River National Park rangers with simulated field exercises focused on role-playing to practice arrests, searches and seizures. Trainings also incorporated simulated court proceedings on filing search warrants and dealing with cross-examinations. Zamboanga City Water District forest guards assigned to Pasonanca Natural Park role-played cases on static checkpoints, while trainees in South Cotabato's Allah Valley conducted case filing and turning over of suspects at an actual police station. Community enforcers at Santa Cruz Islands and members of Zamboanga City Composite Fisheries Law Enforcement Team learned methods for detecting illegally caught fish. Local ordinances and zoning concepts of management plans were also incorporated in these trainings.

Protect Wildlife ensured that protected area managers and LGU personnel were active in organizing committees or served as resource persons for trainings. This was important in promoting long-term sustainability of the trainings and accountability of local staff for applying improved practices in execution of their daily responsibilities.

Timber scaling was one of the simulated enforcement exercises for rangers of Puerto Princesa Subterranean River National Park in Palawan.

A **simulated exercise** of filing a case and turning over "suspects" were done at an actual police station during an enforcement training in South Cotabato.

Identification of illegally caught fish was among the detection techniques learned by fisheries law enforcers from Zamboanga City LGU and community enforcers from Santa Cruz Islands.

Protect Wildlife supported 31 basic enforcement training sessions for wildlife enforcement officers, *Bantay Dagat* (sea patrols) and *Bantay Gubat* or *Bantay Kalikasan* (forest guards) across the four activity sites. These trainings led to the deputation of 211 LGU staff and certification of 632 community members.

Table 4. Total Number of Individuals Trained and Deputized or Certified as Enforcers: LGU Staff and Community Members

SITE	FOCAL AREAS	LGU STAFF TRAINED AND DEPUTIZED	COMMUNITY MEMBERS TRAINED AND CERTIFIED
Palawan	Mount Mantalingahan Protected Landscape and forestlands	46	49
	El Nido-Taytay Managed Resource Protected Area and forestlands	20	
	Puerto Princesa Subterranean River National Park	38	14
Zamboanga City and Sulu Archipelago	Zamboanga City forestlands and coastal areas	26	31
	Pasonanca Natural Park	NA	102
	Great and Little Santa Cruz Islands Protected Landscape and Seascape	NA	28
	Tawi-Tawi LGUs, including Turtle Islands	4	153
Region 12	Mount Matutum Protected Landscape and forestlands	25	10
	Allah Valley Protected Landscape	25	44
	Sarangani Bay Protected Seascape	26	167
Region 3	Aurora Memorial National Park	NA	18
	Mount Mingan	NA	11
TOTAL		211	632

Specialized Trainings and Development of Enforcement Networks and Protocols in Sites

Priority sites received more in-depth training and technical assistance for establishment of enforcement networks and protocols, especially in identified hotspot areas such as Zamboanga City, Panglima Sugala in Tawi-Tawi, Palawan and Sarangani. Additional trainings were also provided in selected sites focused on improving results of core operational aspects of wildlife and environmental law enforcement.

Zamboanga City

To facilitate law enforcement coordination, Protect Wildlife worked with enforcement partners in Zamboanga City to both train local officials and form them into inter-agency enforcement bodies. With the Office of the City Environment and Natural Resources, Protect Wildlife contributed to the formation of Zamboanga City Anti-Wildlife Trafficking Task Force and Composite Fisheries Law Enforcement Team.

- **Zamboanga City Anti-Wildlife Trafficking Task Force.** ZCAWTTF focuses on wildlife trafficking and monitors markets for wildlife species and by-products. Their largest operation

Bantay Dagat or community-based sea patrols in Panglima Sugala, Tawi-Tawi were trained on basic marine navigation, proper boarding protocols and rules of engagement when conducting apprehensions of fishing vessels out at sea.

involved the seizure of sacks of dried seahorses at the city port. Led by the city LGU, the task force has also responded to several rescues of distressed wildlife.

- **Composite Fisheries Law Enforcement Team.** CFLET conducts oversight and enforcement of the city's fisheries laws. Because of numerous ports in the city—which are used as entry points for traffickers—CFLET also has membership in ZCAWTTF. It applies its resources to guard ports and to police against encroachment of illegal fishers.

Protect Wildlife supported training for task force member agencies and helped craft protocols to guide their work. The activity provided an electronic crime reporting system covering forestry, wildlife and fisheries law enforcement that will be rolled out among their member agencies. The system has a spatial function that can help determine hotspots and assist in enforcement management.

Tawi-Tawi

Protect Wildlife worked closely with Panglima Sugala LGU on species protection, focusing on the Sulu hornbill and the Napoleon wrasse. The activity facilitated two trainings for the LGU in 2018—one for upland enforcers who protect the watershed and Sulu hornbill habitats, and the other for coastal and fisheries enforcers who protect municipal waters and spawning grounds of Napoleon wrasse. The activity facilitated a legal clinic for both enforcement teams to assess their performance and to review their enforcement challenges.

In 2019, Protect Wildlife expanded its engagement with other Tawi-Tawi LGUs and Turtle Islands Wildlife Sanctuary. The activity led training on fisheries law enforcement and illegal wildlife trade interdictions with a focus on marine turtles and marine turtle eggs. Key partners included Philippine Coast Guard, which provided resource persons and the use of their patrol boat for boarding exercises. For trainings in Tawi-Tawi, it was crucial to work with LGUs who identified enforcers for the trainings and subsequently deputized them. These trained enforcers are slated to become members of Tawi-Tawi Anti-Wildlife Trafficking Task Force.

Palawan

In Palawan, assessment scores of LGU enforcers showed limited capacity in executing criminal intelligence and investigation, law enforcement patrols and enforcement management. For PCSDS, DENR and Palawan LGUs, basic trainings were followed by legal coaching, assessments and support for protocol development. Protect Wildlife provided this support for a wide range of partners in Palawan, including PCSDS, DENR, LGUs and protected areas.

For protection and conservation areas of El Nido-Taytay, Mount Mantalingahan, Puerto Princesa Subterranean River National Park and Cleopatra's Needle, Protect Wildlife worked with Environmental Legal Assistance Center to provide policy-based support for law enforcement and to improve coordination mechanisms for these areas. While protocols were based on the Handbook on Law Enforcement for Protected Areas in the Philippines, these were all contextualized to realities faced by each protected area. Protocols delineate functions of different agencies working in protected areas, describe response processes based on specific needs, and provides a step-by-step process in conducting enforcement operations. Each protocol was developed with protected area management offices, and Puerto Princesa City Environment and Natural Resources Office in the case of Cleopatra's Needle. Developing the protocols was done in collaboration with DENR and PCSDS to ensure ownership and sustainability of the protocols. Supporting these protocols was the development of enforcement plans for protected areas based on their respective management plans.

Together with local enforcement partners, Protect Wildlife also led the following trainings based on needs and capacities of officials in each protection and conservation area.
- With Protect Wildlife technical assistance, Puerto Princesa City LGU led sessions on local ordinances applicable for Puerto Princesa Subterranean River National Park rangers. LGU officials also simulated mock hearings on search warrant applications and cross-examinations in courts. The training design included simulated boarding procedures, as well as simulated processing of seized evidence. To improve operational security, the activity also incorporated training on small-unit tactics and field exercises in response to increasing incidence of attacks against environmental law enforcers in Palawan. Discussions and exercises focused on teams maintaining formation, identifying routes and extricating themselves from dangerous situations.
- Additional trainings were also provided for enforcers in Puerto Princesa Subterranean River National Park, Cleopatra's Needle and El Nido LGU. To improve operational safety, lectures on basic intelligence techniques for validating reports were planned with PNP Maritime Group, as well as boarding procedures for fishing vessels operating in protected area waters. For Puerto Princesa Subterranean River National Park and Cleopatra's Needle, the training also included staff from Puerto Princesa City Environment and Natural Resources Office, as well as community officials. The trainees have already been deputized by the city LGU in the interim, with Puerto Princesa Subterranean River National Park rangers to be further deputized by DENR upon completion of all requirements.

For DENR partners in Palawan, Protect Wildlife developed basic-level trainings for local offices tasked to enforce laws in all forestlands and protected areas in the province. The training design was based on the DENR-BMB Training of Trainers but was contextualized to meet needs for alignment with Strategic

Environmental Plan for Palawan Act and for interfacing with PCSDS, the lead agency for enforcement of Wildlife Act and Chainsaw Act. Selected DENR Palawan staff also attended advanced courses on Wildlife Crime Scene Investigation, and Intelligence, Surveillance and Investigation.

For DENR Region 4B that has jurisdiction in Palawan, Protect Wildlife helped design a small-unit operational safety course for DENR forest guards, linking them with resource persons from PNP Maritime Group. Linked to this course, the activity also helped organize and provide a resource person for an online workshop on intelligence and surveillance for DENR Region 4B in October 2020.

Protect Wildlife took particular interest in PCSDS as lead implementer of Wildlife Act in Palawan and designated CITES Management Authority in the province, covering both terrestrial and aquatic wildlife. Palawan is a key wildlife poaching area, as well as a transshipment point for entry and exit of wildlife to other parts of the Philippines and to international markets. PCSDS accounts for more than 35 percent of DENR's reported enforcement efforts in terms of CWT operations. The activity's capacity-building support for PCSDS was widespread, with focus on development of skills, policies and systems.

After a basic level training in 2017 for both PCSDS and *Bantay Palawan* provincial task force, Protect Wildlife mentored trainees on enforcement management. The goal was to transform the agency's enforcement posture from reactive to a more proactive, intelligence-led policing. The activity applied case study exercises heavily through workshops and coaching sessions, where officials would review case studies that introduced information on wildlife traffickers and their networks. From details and leads presented in case studies, officials would then conduct exercises, applying skills they learned through advanced trainings. Teams would research the cases presented and use PCSDS datasets to build cases against high-value targets, rather than low-level violators, and demonstrate their ability to apply lessons from earlier trainings.

Protect Wildlife also led trainings to strengthen PCSDS officials' enforcement capabilities to track violations and transshipments of wildlife at sea. Field simulations provided

WILDLIFE ENFORCEMENT OFFICERS

Pursuant to the Philippines' Wildlife Act, which charges LGU jurisdictions to directly involve citizens in protection and conservation of the country's environment and natural resources, Protect Wildlife collaborated with DENR, PCSDS and other local partners to design and facilitate wildlife and environmental law enforcement trainings for would-be enforcers.

Protect Wildlife worked with partners to build the knowledge and skills of community and LGU trainees on law enforcement, as well as conservation principles. Through the training sessions, trainees learned basic concepts of ecology, wildlife and environmental laws, and local restrictions on land and resource uses within their jurisdictions.

Trainees developed core technical competencies for identifying and handling wildlife, scaling and measuring timber, conducting surveillance, and managing arrests and search and seizure operations. To ensure that their enforcement efforts bear fruit, trainees were also introduced to principles of courtroom practices on cases of environmental and wildlife laws, requirements for evidences to be admissible to court, and basics of criminal procedure. Lastly, trainees practiced skills needed for action planning and coordination with enforcement agencies and officials.

Once certified or deputized, all wildlife enforcement officers or WEOs are authorized to monitor and report on environmental and wildlife law violations, conduct surveillance, and arrest violators. WEOs from LGUs may also seize illegally collected, possessed and traded wildlife species, by-products and derivatives.

an opportunity to apply surveillance and intelligence skills that were developed during advanced training courses.

Sarangani

Protect Wildlife focused support to enforcers working in Sarangani Bay Protected Seascape to help address illegal transport of wildlife from Indonesia, Sabah and Papua New Guinea. The bay is also an important area for fisheries in the region.

Protect Wildlife engaged DENR, LGU enforcers and protected area staff through training and mentoring—better positioning them to practice conservation and wildlife protection in the site. The activity helped form multi-level enforcement groups based on the Handbook on Law Enforcement for Protected Areas in the Philippines, which is duly supported by an enforcement coordination protocol.

Trainings for Sarangani Bay enforcement officials were completed in close coordination with the protected area management office and LGU partners. Custom trainings addressed basic navigation, plotting at sea, fish examinations and other targeted sessions geared toward marine enforcement. Trained LGU personnel have been deputized by the management board or their respective mayors, and will provide expanded support for protecting the bay, pursuant to the protected area management plan.

SYSTEMS DEVELOPMENT

Through Protect Wildlife's training initiatives, the activity also sought to build networks and connectivity between enforcement units. Beyond connections of people, the activity saw value in connecting data gathered across enforcement units through a centralized enforcement database and reporting system. Information on wildlife law enforcement is not centralized, even within DENR. Under the status quo, regional offices are tasked with data collection and collation of enforcement reports for submission to DENR offices for operations, and then to DENR-BMB. This results in information gaps and delays.

Protect Wildlife sought to support development of electronic systems at national and sub-national levels—identified as among the key issues under WildLEAP and by the activity's partners—to improve wildlife law enforcement reporting, case monitoring, and care and handling of seized wildlife.

WildALERT: Engaging Site-Level Enforcers and the Public with Streamlined Species Identification and Reporting Tools

Penalties and the reglementary period for filing cases under the Wildlife Act are based on the conservation status of a particular species. This makes the precise identification of seized wildlife at the point of apprehension an issue of critical importance for enforcement officials. To help enforcement units ensure that they can identify species in a timely manner and allow for prosecution within the species' reglementary period, DENR issued species identification guidebooks for field staff.

To supplement training efforts and provide a more portable and user-friendly wildlife identification system, Protect Wildlife worked with DENR-BMB Wildlife Resources Division to develop a wildlife identification and wildlife crime reporting tool. Following design thinking workshops with digital app developers, DENR-BMB Wildlife Resources Division developed a framework for the WildALERT system

WildALERT functions as both a wildlife identification tool and a reporting tool to help DENR frontliners, enforcement agencies and other users respond and report information immediately about potential wildlife and environmental crimes.

and identified its core functionalities and interfaces. A developer was then engaged to build the system under the guidance of DENR-BMB. Each step of the development was validated with workshops to provide feedback for improving functionalities and to ensure that the system meets the needs and vision of DENR-BMB for WildALERT.

The WildALERT system was designed with two primary functions: wildlife identification and wildlife crime reporting. Built for the needs of local authorities who often operate in areas with poor phone and data connectivity, WildALERT was developed to work on low-end smartphones and to function even on offline mode, in which enforcers could store photos and enforcement reports until data services become available to allow for submission.

The development process for WildALERT involved staff from various bureaus and offices in DENR, including DENR-BMB, DENR-FMB, regional offices, and Philippine Operations Group on Ivory and Illegal Wildlife Trade. The whole system was turned over to DENR-BMB in December 2020. To ensure sustainability, Protect Wildlife led a training of trainers on how to use WildALERT, focusing on its technical system, user system and taxonomic database. With the necessary trainings completed, DENR plans to roll out WildALERT in phases for its regional offices, followed by other law enforcement agencies, and then finally to the general public.

BRAIN: A System for PCSDS Enforcement Planning and Coordination, Environmental Permit Management and Public Reporting

Part of Protect Wildlife's support to enforcement in Palawan included the development of Biodiversity Resources Access Information Network system, which addresses the regulatory functions of PCSDS as CITES management authority and its role as lead implementer of Wildlife Act and Chainsaw Act in the province.

The BRAIN system has three main stakeholders in Palawan—the general public, enforcement authorities and officers, and the regulated community such as permit-holders—with a user-centered module created for each. Building around the framework for USFWS Environmental Law Enforcement
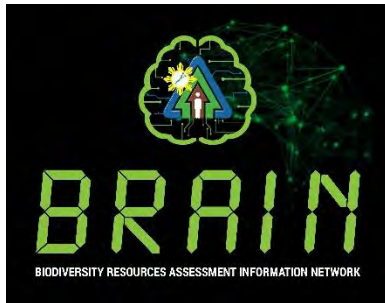
When asked about what BRAIN meant for her day-to-day work, **Rhoda Roque**, PCSDS District Management Officer for Calamianes, noted how the system simplified and sped up the permit management process. She emphasized how BRAIN brought PCSDS into compliance with laws related on improving the ease of doing business and adapting to COVID-19 restrictions as it reduces face-to-face contact.

Taking the process online meant that PCSDS personnel had to coach permit applicants before they could use the system with confidence. But once they mastered BRAIN, applicants found it easy to use.

With BRAIN available 24 hours a day and accessible even on mobile phones, this meant that PCSDS personnel are now able to respond promptly. The option for offline submission is also helpful, especially when staff are able to manually override the system for urgent permits when internet connection is slow.

Roque reported that the system increased her team's productivity by 90 percent, and whenever they encounter teething troubles in adapting to this innovation, they report these issues to PCSDS, with the expectation that the BRAIN system will further improve over time.

Management Information System, Protect Wildlife worked with PCSDS to develop and launch the following modules:

- **RESPONSE.** This is the hub for WEOs, wildlife trafficking monitoring units, and members of Palawan Environmental Enforcement Network (PALAWEEN) to coordinate, plan and execute enforcement actions, monitor permits, and develop and file administrative complaints.
- **Online permitting.** Designed for permit-holders, this module allows for online submission of permits, replacing a document-driven process. It is intended to expedite and streamline permit processing and approval, promote transparency and achieve the government's no-contact policy.
- **Public reporting.** This module is used by the general public to report on incidents of wildlife and environmental crimes. These reports will be received by PCSDS, which acts as the secretariat for recording, validation and transmittal to inter-agency response teams.

WILDBase and Support for Wildlife Rescue Centers: Transitioning from Paper-based to Digital Processes, Connecting Rescue Centers, and Improving Management of Rescued Wildlife

Protect Wildlife also trained its focus on helping DENR-BMB to address externalities of enforcement operations by strengthening the management and care of rescued wildlife. The National Wildlife Rescue and Research Center operated by the bureau serves as the main repository of wildlife seized in relation to criminal cases filed under the Wildlife Act. Staff of the center either rehabilitate rescued wildlife for release or—in the case of biosafety concerns, loss of natural instincts or permanent injuries—accommodate wildlife at the facility, serving as its permanent home.

Protect Wildlife delivered technical support to NWRRC to help them better monitor and track wildlife in its care, and in the care of its counterpart rescue centers across the Philippines; and to improve diagnostic and veterinary services provided to rescued wildlife.

WILDBase, a centralized online database for systematic recording and monitoring of rescued wildlife. will help DENR-established rescue centers transition from paper-based to digital systems.

As part of its support, Protect Wildlife helped develop WILDBase, a centralized online database for systematic recording and monitoring of rescued wildlife. Once rolled out completely in 2021, WILDBase will help DENR-established rescue centers transition from paper-based to digital systems. It will be used by 25 regional rescue centers across the country to efficiently manage their records of confiscated and rescued wildlife.

WILDBase is part of Protect Wildlife's assistance in boosting DENR enforcement efforts under WildLEAP. Specifically, WildLEAP called for the improvement of rescue centers at two levels: development of an electronic management information system to manage rescue center-held wildlife data, and improvement of capacities of rescue center officials for handling, managing and caring for rescued wildlife.

With WILDBase, DENR can efficiently track wildlife in their care, their status, medical records, inventory and information that can be used to trace how wildlife is disposed. WILDBase features a cloud-based system where centralized information is stored, making it convenient for rescue center staff and DENR executives to gather and use data for their operations, decision-making and policy reforms.

WILDBase also features a mobile app for daily use of wildlife keepers, specifically for offline data gathering, recording and documenting wildlife in their assigned rescue centers. Both features were developed through workshops and beta-testing participated by DENR personnel and staff and wildlife keepers of the NWRRC and Palawan Wildlife Rescue and Conservation Center.

Together with DENR personnel, select rescue center staff underwent a training of trainers to learn how to use WILDBase, create user accounts, define user access, and understand technical setup and management of the entire system. A pool of trainers will be created for the rollout and deployment of WILDBase in all DENR rescue centers by mid-2021. The activity also provided laptops to eight regional rescue centers that will use WILDBase.

LESSONS LEARNED ON SYSTEMS DEVELOPMENT

Protect Wildlife leaves behind three systems which are intended to help partners strengthen wildlife and environmental law enforcement, while also positioning them to manage externalities of enforcement operations, including oversight and care of rescued wildlife. In this section, the activity presents lessons learned from experiences in developing the WildALERT system on enforcement, and the WildBASE system on management of rescued wildlife.

Enabling Enforcement Officers to Identify Wildlife Species Online and in Real Time, Speeding Up Enforcement on the Ground through WildALERT

Reflecting on its experiences in developing WildALERT, Protect Wildlife noted the following key challenges and pitfalls avoided:

- Partners were geographically dispersed and working from different agencies, requiring extensive coordination and strong communication to bring all their ideas together.
- DENR required full ownership of the source code, which was readily agreed to by USAID, so that the system could be secured by the Philippine government.
- DENR also required that WildALERT should be able to interface with its Environmental Law Enforcement Management Information System for law enforcement in the future. WildALERT was developed as an open system with the possibility of an application programming interface, which would allow systems to connect and share information.
- While the activity supported development and initial cloud and data hosting, DENR has identified ongoing hosting budgets to be used whenever hosting services are up for renewal.

DENR staff who were involved in WildALERT development also shared their experiences on the process and outcomes. Among the group, there is a sense of excitement about the prospect of WildALERT's ability to help them in combating wildlife trafficking. They are ready to take full advantage of the system as soon as it is fully operational, and have trained to train other DENR staff in its use. Despite fieldwork being affected by COVID-19 travel restrictions, members of the group have been able to use WildALERT to identify species being illegally traded through social media based on posted photos. They have also identified a range of birds, spiders and reptiles seized at airports or in transit.

Learning from the design and development process. For Nilo Ramos of DENR-BMB, he appreciates how WildALERT is "user-friendly, very interactive, and confidential," and how it can be used to download and upload information and contact experts when needed. The group enjoyed being part of the development team and being able to compare existing systems to help select the best and most applicable features for WildALERT, although, as mentioned by Errol Fernandez, enforcement personnel from DENR Region 12, "WildALERT may not be quite perfect but it is better than others we have seen. The fact that it can be used offline means it can be used in the field while apprehending traffickers, and it can identify species there and then." For Darwin Tejerero, chief of Knowledge and Information Management Section in DENR-BMB, several features of WildALERT stand out. "The consultative approach to design enriched the final product, as it responds to demands of all prospective users, and has been tested by a wide range of users, whose feedback has been taken on board," he said.

Rolling out WildALERT. The sense of pride in helping develop WildALERT came with a desire to share. Ramoso said, "I want DENR offices in the regions to have access to this. I can see how it can be used to take snapshots of illegal wildlife trade being done on social media. Once we have WildALERT rolled out, we will be able to share these snapshots confidentially and immediately with colleagues in the regions."

How WildALERT can support enforcement. Tejerero added, "Once rolled out, WildALERT will help enforcers in other agencies, who do not have extensive knowledge of wildlife, to quickly identify species. If you can take a photo, you can immediately report it and identify it." Ramoso noted how old methods of identifying species could be cumbersome. "Once WildALERT is rolled out, law enforcers will just need to take photos and submit these confidentially, so these can be immediately identified and used for building a case," he said.

The need to enable public reporting. The group clearly saw that WildALERT's public reporting feature will enhance public participation in CWT. For Lopez, "it needs to be cascaded to communities, and we need to work out how to make sure we communicate clearly so that their reports are helpful." This will be helpful in avoiding instances where the public reporting feature can be misused to create false reports.

WILDBase System: Helping Rescue Centers Document Wildlife in Their Care

Protect Wildlife helped position wildlife rescue centers to better care for, rehabilitate and, whenever possible, safely release rescued wildlife. Aside from providing a wildlife ambulance and diagnostic equipment, the activity also supported the development of WILDBase to enable online recording and monitoring of wildlife in rescue centers.

"Our job is to catalog rescued wildlife and treat them so they can survive and be either returned to the wild or rehoused. Once with us, these wildlife become government property, too," said Dr. Glenn Maguad, director of DENR's National Wildlife Rescue and Research Center. "We spend many hours a day logging in the rescue center residents and their treatment using paper- and spreadsheet-based systems that were not adequate for the task, considering that we can receive up to 4,000 wildlife a day in our centers. This administrative work also distracted us from saving wildlife."

WILDBase has been field tested and will be made operational first in Manila and Palawan. The system allows users to generate daily count and veterinary reports using a mobile app, which also identifies locations of wildlife releases. Developing the system was slowed down due to the COVID-19 pandemic and limited human resources in DENR, which affected their daily operations and tracking of wildlife in rescue centers. This proves that WildBASE is a welcome innovation that can help rescue center staff automate reports based on routine data entry and updates. Protect Wildlife then provided training on the use of the system to rescue center staff and handed the source code over to DENR-BMB so that changes could be made for future upgrades.

"Now that WILDBase is functional, we only have to enter basic data once, and then updates are now simpler. It is now easier to retrieve information and track progress with each of our wildlife residents. We can call up records with a click, and also produce reports on survival rates and trends. Students who come to us for their research are now better able to access our data, which will help inform planning and resource management for the center. The system will also help us provide alerts about veterinary drug needs, for example," Dr. Maguad said.

He added, "WildBASE is still at an early stage and we are testing it before launching nationwide, so that we can also oversee what is happening in all rescue centers. We are extremely grateful for the support, and we commit to look after and maintain everything that came out of our work with Protect Wildlife."

Protect Wildlife takes note of the following lessons when developing systems with activity partners:
- Do not assume that the partner agency will eagerly adopt new ideas and innovations. Hence, it is important to plan, design and develop together, and document the whole process.
- Keep an eye on long-term goals, and think of the scale of interfaces with existing and future systems. Never make standalone systems.
- Expect the unexpected, including pandemics, which can affect coordination with partners.

Wildlife rescue and care at DENR received an upgrade through USAID's package of assistance: (from top to bottom) new x-ray and ultrasound equipment for veterinary diagnostics, new tools for wildlife handling and tagging, and a new ambulance solely dedicated for wildlife rescue and retrieval.

INVESTING IN IMPROVED WILDLIFE MANAGEMENT AND CARE

As a complement to WILDBase, Protect Wildlife also supported investments in modern resources and capacity building for delivery of emergency and diagnostic care for rescued wildlife. Protect Wildlife presented NWRCC officials with new ultrasound machine and x-ray machines, vastly increasing their ability to diagnose diseases, injuries and physical conditions of rescued wildlife. Presently, wildlife retrieved or rescued in Metro Manila, as well as trafficked exotic wildlife confiscated at airports and other ports of entry, are brought to NWRRC. The center is mandated to lead the care and rehabilitation of rescued wildlife, which often arrive in an agitated state due to their injuries or confinement. With these investments, the center no longer needs to outsource diagnostic services and can now promptly address immediate needs of their wildlife patients, assess their health and rehabilitate them for release.

Protect Wildlife also worked with NWRRC and DENR-BMB Wildlife Resources Division to conduct a webinar on Captive Wildlife Care and Management in November 2020, drawing nearly 200 staff, wildlife handlers and veterinarians from DENR's national and regional offices. Following priorities for increasing the competencies of rescue center personnel, resource persons focused primarily on the Wildlife Rescue Center Manual of Operations, covering protocols on healthcare records, laboratory examinations, and quarantine and protocol procedures and safety. Building from that base, the activity also helped facilitate discussions on principles of wildlife welfare and care; feeding; and management of birds, reptiles and mammals. The webinar also contributed to DENR priority interventions outlined in the Philippine government's anticipatory and forward planning actions for COVID-19 response. DENR targeted improved wildlife handling protocols for rescue centers to minimize the spread of zoonotic diseases in the future.

In addition to providing instruction and guidance on policies and protocols on wildlife handling, Protect Wildlife also invested in tools that rescue center staff require to carry out their duties prescribed in their manual of operations. Together with the training program, the activity handed over tools and equipment for wildlife handling, restraint and tagging to DENR-BMB. These include raptor gloves, armored

reptile gloves, snake hooks and tongs, blow guns and darts, restraint tubes, marine turtle tags, microchips and microchip readers, sexing probes, dosing needles, and other items to help rescue center staff execute their duties safely. DENR-BMB is in the process of distributing these tools and equipment to designated wildlife handlers in DENR regional offices and rescue centers across the country.

Lastly, Protect Wildlife completed its support for improved wildlife rescue and rehabilitation with a new wildlife ambulance for NWRRC. The specially designed vehicle has furnished cabinets for veterinary and wildlife handling equipment, collapsible veterinary examination table and seats, and a roof rack for transporting animal crates, ladders and other equipment for wildlife rescue—allowing for immediate application of emergency aid to distressed wildlife and safe transportation from retrieval sites.

SUMMARY OF IMPROVED ENFORCEMENT CAPACITIES

To summarize, Protect Wildlife strengthened wildlife and environmental law enforcement capacity through basic trainings to support deputation of site-based enforcers; advanced trainings for national agencies and enforcement networks; efforts to scale up training programs through training of trainers initiatives; and development of systems and tools to strengthen enforcement management across enforcement units.

Deputized LGU enforcers and certified community enforcers with enforcement protocols and operations plans are fully capacitated to arrest violators, gather evidences and file cases. Deputized LGU enforcers provide DENR, DA-BFAR and other enforcement management units with force multipliers to patrol protected areas, forestlands and coastal and marine areas. Enforcement protocols streamline response mechanisms and provide for accountability. Combine these with networks that connect units from municipal to provincial levels, these interventions will provide management units with multiple levels of assistance in key areas, from logistics to improved security.

Advanced enforcement training imparts new skills on national agency officials, positioning them to better address higher levels of threats. Training covered major parts of the enforcement continuum from detection to prosecution, improving chances of convictions. Advanced trainings provide enforcers with the skills they need to train their sights on larger networks and actors, going beyond lower-level violators and apprehending site-based consolidators and higher-level syndicates.

Master trainers gain skills and tools—modules and continuing education plans—to scale up enforcement training. Investments in trainings and training materials position DENR, DOJ and other agencies to deploy more advanced training and help broaden knowledge and skills at the site level for wildlife and environmental law enforcement. This will also provide sustainability within agencies as trainers can be deployed as needed to meet agency-specific targets without having to resort to obtaining support from funding agencies.

Systems and tools to support operations of DENR, PCSDS and networks, with modules for public reporting. The tools and systems will improve accountability of law enforcement with the public, as well as track deficiencies within an agency. The systems can help improve enforcement planning and deployment through built-in spatial tools. The systems will also make wildlife and environmental law enforcement data more accessible to researchers who can help improve policy outputs for law enforcement.
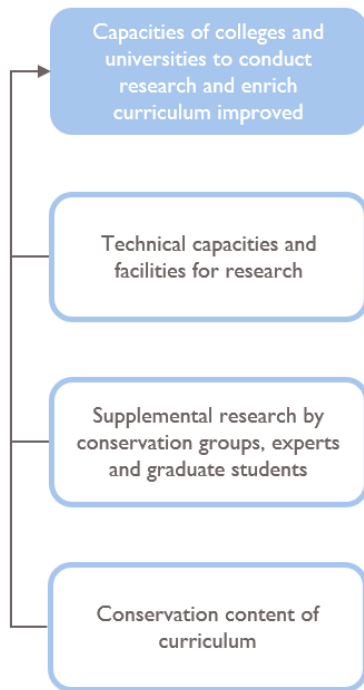
CAPACITIES OF COLLEGES AND UNIVERSITIES TO CONDUCT RESEARCH AND ENRICH CURRICULUM IMPROVED

Capacities of colleges and universities to conduct research and enrich curriculum improved

Technical capacities and facilities for research

Supplemental research by conservation groups, experts and graduate students

Conservation content of curriculum

Protect Wildlife sought to build the capacity of colleges and universities in sites to engage in research activities that are relevant to conservation and development issues within their landscape-seascape, while strengthening curriculum to ensure that future scientists, business people, policymakers and enforcers enter their careers better informed about the significance of wildlife and biodiversity, as well as the laws that govern them.

In this section, Protect Wildlife presents details on support to these two core initiatives—strengthened capacity for research and curriculum development—and closes with a summary of results of capacity-building efforts in target colleges and universities in activity sites.

ENHANCING AND FOCUSING RESEARCH TOWARD LOCAL CONSERVATION AND DEVELOPMENT CONCERNS

Most colleges and universities in Protect Wildlife sites have established relationships with protected areas, LGUs and government agencies and are represented in several protected area management boards: Western Philippines University and Palawan State University are represented in Mount Mantalingahan and Rasa Island management boards; Mindanao State University-General Santos City sits in Mount Matutum and Sarangani Bay management boards; and Zamboanga State College of Marine Sciences and Technology and Ateneo de Zamboanga University are members of Santa Cruz Islands management board. In Palawan, universities are key actors in the PCSDS Knowledge Platform that organizes an annual forum where member organizations share environment and natural resources research results.

Despite involvement and representation in local bodies, the research, development and extension agenda of most colleges and universities do not give significant attention to priority conservation concerns in their respective sites. Protect Wildlife's initial assessment indicates that research agendas are shaped by availability of faculty to do research,

specific research interests of faculty and potential funding opportunities. Colleges and universities have limited capacity to develop conservation-oriented proposals and source out resources, such as funding and experts, that will allow them to respond to the needs of conservation areas. Several colleges and universities also raised challenges with re-aligning research priorities or accommodating unprogrammed research proposals once the five-year research agenda of the school is approved.

Recognizing the challenges faced by these colleges and universities to carry out conservation research, Protect Wildlife adopted the following strategies to address their limitations:
- Engaging experts to fill gaps in technical capacities and provide training and mentoring to research teams;
- Directly funding research activities by facilitating onboarding of research personnel to contribute to field data collection, analysis, monitoring and laboratory work;
- Upgrading field instruments, laboratories and other facilities; and
- Supporting publication or dissemination of research results.

Under this approach, Protect Wildlife engaged four colleges and universities to lead major conservation-oriented research activities. Recognized that colleges and universities cannot provide for all conservation research needs in their respective sites, the activity sought out other organizations to lead studies on three important wildlife species: Philippine pangolin in Palawan, Philippine eagle in Zamboanga City and Sulu hornbill in Tawi-Tawi. With lead teams from partner organizations and conservation groups, Protect Wildlife incorporated engagement of colleges and universities into each research design.
- Katala Foundation and PCSDS engaged Palawan State University to lead the local knowledge component of the Philippine pangolin study.
- Philippine Eagle Foundation (PEF) held a learning activity for participants from Western Mindanao State University, Zamboanga State College of Marine Sciences and Technology, Ateneo de Zamboanga University and Universidad de Zamboanga, where they covered raptor identification; proper handling and reporting of raptors in distress; and field techniques on evaluating eagle nests, trapping and tagging eagles, and recording eagle behavior. PEF and Western Mindanao State University signed an agreement for continued collaboration on eagle research in Zamboanga City.
- Philippines Biodiversity Conservation Foundation (PhilBio) engaged Mindanao State University-Sulu through the Sulu hornbill study, sharing details on the study and findings for their use in any related conservation materials or research.

Protect Wildlife also supported graduate student-led conservation research being undertaken at universities across the Philippines. In screening more than 30 applications received in response to a call for proposals, priority was given to researches on threatened species and habitat rehabilitation. Development, field testing or application of methodologies and technologies that may be replicated in Protect Wildlife sites and other protection and conservation areas in the country was also heavily considered in research selection. The 15 students who were selected represented eight universities, while their research covered different ecosystems and a broad range of flora and fauna species.

The **sandfish sea ranching** study by Western Philippines University looked at how sea ranching culture technology can potentially provide livelihoods for fisherfolk in Narra, Palawan and help restock dwindling sandfish populations.

The **coastal resources assessment** in Eleven Islands by Zamboanga State College of Marine Sciences and Technology aimed to gather pertinent information to help identify potential sites for locally managed marine protected areas.

MAJOR CONSERVATION RESEARCH INITIATIVES WITH COLLEGES AND UNIVERSITIES

Pilot Sandfish Sea Ranching in Narra, Palawan with Western Philippines University

Development and Conservation Research Objectives
- Determine if sea ranching culture technology can benefit livelihoods of indigenous and fisherfolk communities in Narra municipality in Palawan, and can help reduce unsustainable and destructive fishing practices within Rasa Island
- Learn whether sea ranching can help restock dwindling populations of sandfish in their natural environment

Relevant University Capacity and Experience. The university's College of Fisheries and Aquatic Sciences has faculty who have done sandfish assessment in Narra. The university also maintains a hatchery for topshells and abalone. Its engagement in sandfish culture will expand their areas of expertise.

Capacity-Building Interventions by Protect Wildlife
- Expert technical support from University of the Philippines Marine Science Institute
- Exposure to laboratory production of sandfish juveniles
- Training on sea ranching for Narra LGU and PCSDS
- Funding support for research
- Field instruments and laboratory equipment and supplies

Coastal Resources Assessment of Eleven Islands for the Establishment of Marine Protected Areas with Zamboanga State College of Marine Sciences and Technology

Development and Conservation Research Objectives
- Generate comprehensive information on coastal resources of Eleven Islands in Zamboanga City to identify potential areas for locally managed marine protected areas
- Inform the city's coastal resources management plan for Eleven Islands—an upcoming ecotourism growth area

Relevant College Capacity and Experience. The college led small research activities in Eleven Islands prior to this first comprehensive coastal resources assessment in the site. The study provided opportunity for peer-to-peer learning and mentoring, and for the addition of Eleven Islands as a learning site.

Capacity-Building Interventions by Protect Wildlife
- Expert technical support
- Funding support for research
- Mentoring workshops for proposal preparation, data integration and report preparation
- Field instruments and laboratory equipment and supplies

Enhancing Seaweed Production and Quality in Tawi-Tawi Using Laboratory-Generated Cultivars with Mindanao State University-Tawi-Tawi College of Technology and Oceanography

Development and Conservation Research Objectives
- Replicate the micro-propagation technology developed by the university and restore its seaweed propagule collection
- Sustain the production of quality seaweeds planting materials for seaweed farmers in Tawi-Tawi

Relevant University Capacity and Experience. With government funding, the university initiated laboratory generation of seaweed seed stocks through micro-propagation, with promising results.

Capacity-Building Interventions by Protect Wildlife
- Expert technical support
- Funding support for research
- Provision of laboratory equipment and supplies
- Provision of land- and sea-based nursery facilities
- Documentation of micro-propagation protocols and development of seaweed farmer's guide

Inventory and Scientific Validation of Folklore-Claimed Medicinal Plants in Mount Matutum Protected Landscape with Mindanao State University-General Santos City

Development and Conservation Research Objectives
- Identify the taxonomy of medicinal plant species and their habitat in Mount Matutum
- Formulate recommendations for conservation of traditional medicinal materials and management of their sources

Relevant University Capacity and Experience. The university did research in other sites on the development of livelihoods focused on medicinal plants. The Mount Matutum study will be important for indigenous communities in the protected area. It can be a potential resource for eventual development of pharmaceuticals, nutraceuticals and cosmeceuticals. The university plans to host an herbarium for the region.

Capacity-Building Interventions by Protect Wildlife
- Expert technical support from Central Mindanao University
- Funding support for research
- Training of faculty and research team on specimen collection and preparation
- Provision of specimen processing supplies and compactors for an herbarium
- Publication of a medicinal plants compendium

The **study on seaweed cultivars** sought to replicate a micro-propagation technology and help sustain production of quality planting materials for Tawi-Tawi's seaweed farmers.

The **medicinal plants study** in Mount Matutum conducted by Mindanao State University-General Santos City surveyed samples of ethnobotanical plants used for traditional medicine by indigenous communities.

ENHANCING CAPACITY FOR CONSERVATION EDUCATION

While institutional barriers presented challenges for colleges and universities to collaborate with Protect Wildlife on research initiatives, faculty and administrators demonstrated significant interest and enthusiasm in partnerships on curriculum development. This is representative both of policy changes that demanded changes in education practice, and the activity's posture of adding value to partners' ongoing initiatives. Two major developments that generated demand for Protect Wildlife support were the following:

- **Commission on Higher Education (CHED) Memorandum Order 46, Series of 2012** that required schools to align their curricula and syllabi to outcomes-based education. This memorandum required a shift to a student-centered learning approach. It realigned how higher education was to be delivered—toward what students are supposed to know, learn and value, and toward a desired level of competence that students should achieve after completing a particular course.
- **National Environmental Awareness and Education Act of 2008** that mandates the Department of Education, CHED and other relevant agencies to integrate environmental education in school curricula at all levels.

Protect Wildlife seized the opportunity to support efforts to comply with these policies—infusing biodiversity conservation into their academic programs, and redesigning course syllabi and teaching materials to conform to outcomes-based or student-centered learning requirements. Following discussions with academic partners in Palawan, Zamboanga City and General Santos City, the activity determined that there was widespread interest to concentrate initial support on marine biology and environmental science programs, using these as models for other changes to curricula.

Protect Wildlife's approach to adding value as opportunities arise also led to the following curriculum development initiatives:

- **Development of draft curriculum for Bachelor of Science in Criminology in 2017 by CHED Technical Working Group on Policy Standards and Guidelines.** After reviewing the draft criminology curriculum, Protect Wildlife noted that it did not include environmental law as a required subject. In response, the activity liaised with the chair of the CHED technical working group on policy standards and guidelines and Professional Regulation Commission's board of examiners. The activity proposed that Environmental Law and Protection (ELP) be incorporated as a required subject in the criminology curriculum. The chair concurred with the suggestion and included ELP as part of Introduction to Cybercrime and Environmental Laws and Protection course. This represented a significant victory for the activity, institutionalizing environmental law as a part of CHED's core curriculum for all criminology students.
- **Pampanga State Agricultural University signaled interest in aligning its Bachelor of Science in Agroforestry program to forestry development challenges and opportunities within Region 3.** The university proposed for Protect Wildlife to strengthen its agroforestry syllabi with lessons on entrepreneurship. In response, Protect Wildlife provided technical assistance to strengthen the university's agroforestry program by integrating entrepreneurship concepts as a common thread throughout its curriculum. Through workshops and technical support to develop or enhance content, the activity helped the university to

strengthen seven syllabi with enhanced focused on entrepreneurship, bound by compliance with land use zoning and protected area and forestland policies in the region.

Protect Wildlife presents the following curriculum development initiatives supported by the activity, organized by degree program and site.

Table 5. Curriculum Development Initiatives by Protect Wildlife

PROGRAM	ACTIVITY SITE	COLLEGES AND UNIVERSITIES
Bachelor of Science in Marine Biology	• Palawan • Zamboanga City and Sulu Archipelago • Region 12	• Palawan State University • Western Philippines University • Zamboanga State College of Marine Sciences and Technology • Mindanao State University-General Santos City
Bachelor of Science in Environmental Science	• Palawan • Zamboanga City and Sulu Archipelago	• Palawan State University • Western Mindanao State University
Bachelor of Science in Criminology	• Palawan • Zamboanga City and Sulu Archipelago	• Holy Trinity University • Palawan State University • Western Philippines University • Universidad de Zamboanga • Western Mindanao State University • Tawi-Tawi Regional Agricultural College • Mahardika Institute of Tawi-Tawi
Bachelor of Science in Agroforestry	• Region 3	• Pampanga State Agricultural University

Protect Wildlife supported curriculum development initiatives through a range of modalities, including direct technical assistance and securing expert consultants to facilitate adjustments and preparation of teaching tools and materials, and by leveraging partnerships to promote wide-scale adoption of development initiatives.

Direct Technical Support to Colleges and Universities

For marine biology and environmental science curriculum development initiatives with Palawan State University, Western Philippines University, Zamboanga State College of Marine Sciences and Technology, Mindanao State University-General Santos City and Western Mindanao State University, Protect Wildlife engaged experts to facilitate adjustments to curricula and teaching methods. These experienced professors facilitated workshops and mentoring sessions to guide administrators and faculty through shifts to incorporate an outcomes-based education format in developing and testing localized teaching tools and materials infused with biodiversity conservation content. Although focused on marine biology and environmental sciences, officials and faculty of related programs, such as fisheries and aquaculture, also attended to gain skills that they could replicate in their own programs. Through these initiatives, Protect Wildlife engaged 167 faculty members across five colleges and universities. These efforts led to 30 refined and outcomes-based education-compliant syllabi, and 73 teaching tools and materials and laboratory exercises developed to better incorporate biodiversity conservation into lessons.

LESSONS LEARNED FROM CURRICULUM DEVELOPMENT INITIATIVES

Protect Wildlife's interventions in enhancing conservation curricula began with a focus on sciences, including marine biology and environmental science. Through a connection between a Protect Wildlife advisor and CHED, the activity was able to play a significant role in ongoing education reforms. CHED was in the process of revising criminology programs and was ready to add Environmental Law and Protection (ELP) into the curriculum when Protect Wildlife suggested it. The curriculum revision was also aligned to CHED guidelines for colleges and universities to use student-centered approaches. Changes were starting to happen slowly. Many schools needed help to adjust long-held teaching habits and established curricula. Protect Wildlife saw these reforms as an entry point.

Working with partners to carve a space in the curriculum for ELP. Generally, criminology courses did not include environmental law components. CHED had inserted ELP into existing criminology programs, making it a combined subject with cybercrime. Given that universities have the freedom to adjust courses they offer as long as minimum requirements are covered, Protect Wildlife worked with a group of five universities to advocate splitting this subject—carving out ELP as a stand-alone, three-credit subject. The activity was ready to support colleges and universities to develop the ELP syllabus and course content using a student-centered approach.

Using participatory approaches to co-design and roll out a syllabus. To ensure that the ELP syllabus would be adopted, replicated and scaled up, Protect Wildlife involved CHED, faculty and school officials in syllabus design workshops. Subsequent workshops to develop teaching tools and materials took place in multiple locations, often hosted by colleges and universities while Protect Wildlife funded the activities. Contributions of time, effort and travel came rolling in during the rollout, and speakers included those from DENR and PSCCJP. With the syllabus developed, several colleges and universities jumped at this solution and addressed their desire to expand teaching of ELP.

Finding influential champions who will help move things forward. Some of those who participated in these discussions were also PSCCJP members. They relayed information on developments back to their networks and helped build interest more widely. Key among this group was PSCCJP chair Attorney Winston Casio. Another important champion was Dean Venus Andoy of the College of Criminal Justice Education at Western Philippines University. Andoy was looking for ways to introduce environmental law into her courses, and her university became an early adopter and champion of ELP. She invited other universities to join ELP seminars and workshops on development of course materials. Andoy also offered orientations for students who would graduate before having the chance to study ELP. Her vision and leadership were important to the early stages of Protect Wildlife's work.

Building momentum for adoption and scaling up. It is still in the early days and students who will take the first ELP courses in their senior year are yet to graduate. Though one university has already pushed the ELP course earlier into the second year of studies and has shared its letter of adoption showing that the course is to go ahead. By the end of Protect Wildlife, the Professional Regulation Commission's criminology board was discussing the potential to include ELP in licensure examinations for criminology students beginning in 2022.

Based on the above, the following success factors in curriculum development initiatives emerged:
- Partners who champion the cause with energy and commitment—sharing knowledge, pushing the agenda broadly and in practical ways, and bringing people in;
- Senior technical staff with awareness of policy developments in government and able to identify and seize policy moments, such as curriculum reform and new approaches;
- Critical relationships between activity staff and key people in academe, government and legal professions;
- Potential for flexibility in program design, which enabled opportunities in delivering higher-level goals where local situations permit;
- Palawan as a starting point, where public awareness of environmental issues is relatively high and interest, therefore, is correspondingly high;
- Partnerships that can spread the word, support professionalization and lend weight; and
- The ability to provide shareware, so that curriculum and learning materials could be passed among universities and colleges offering criminology programs.

Notably, Palawan State University built on Protect Wildlife's curriculum development initiatives to offer a new subject on Palawan Studies that will highlight the province's natural resources, culture, tourism and heritage sites, as well as related natural resource management considerations.

With Pampanga State Agricultural University, Protect Wildlife engaged its forestry expert to review the university's agroforestry curriculum and to lead workshops for strengthening a seven-course syllabi. This includes topics that merge entrepreneurship with agroforestry production and management systems— providing learning opportunities for identifying enterprise innovations, focusing on value-added processing for agroforestry systems, scaling up industrial agroforestry systems along the value chain, integrating crops and livestock into agroforestry systems, and developing marketing schemes.

Lastly, the development of the ELP syllabi was guided by Protect Wildlife's technical experts on curriculum development and wildlife and environmental law enforcement.

Promoting New Curricula through Partnerships

Protect Wildlife engaged Philippine Society of Criminologists and Criminal Justice Professionals (PSCCJP) to raise awareness on CHED's new criminology program and promote adoption of the ELP syllabus as a stand-alone three-unit course or as part of a cybercrime or ELP unit. The activity supported a series of ELP rollout activities organized by PSCCJP, targeting deans and faculty from approximately 100 member schools from Manila and five regions, including activity sites. Through workshops, PSCCJP introduced the new syllabus and trained faculty and administrators on delivering ELP lectures and developing effective teaching tools and materials. In response to a proposal to incorporate environmental crime investigation into the syllabus, Protect Wildlife helped to integrate it into the subject, which was then renamed Environmental Law, Protection and Investigation.

Through these efforts, colleges and universities across the Philippines issued commitments to adopt the ELP syllabus, ensuring that criminology students will be better prepared to address wildlife and environmental crimes in their enforcement careers. Schools have also been further incentivized to adopt ELP, thanks to Professional Regulation Commission's decision to include ELP as a subject in the criminology board exam starting in 2020. The ELP syllabus' table of specifications is being considered by the commission's criminology board as basis for questions to be included in criminology licensure examinations beginning in November 2022.

ENHANCING CAPACITIES OF COLLEGES AND UNIVERSITIES

Protect Wildlife presents a summary of technical support delivered to each partner college and university for improved research and enriched curriculum that better address conservation issues.

Western Philippines University

Western Philippines University's pilot sandfish sea ranching study was focused on one of the most common and high-value sandfish or sea cucumber species found in coastal waters of Rasa Island and Narra municipality in Palawan. The study was designed to help determine

whether sea ranching culture technology for sandfish can benefit indigenous and fisherfolk communities in Narra, while also reducing unsustainable and destructive fishing practices. Researchers also hoped to learn whether sea ranching can help restock dwindling sandfish populations in their natural environment.

Participation of university researchers in the study exposed key faculty to sandfish ranching as a possible application for coastal livelihood development in Palawan. Protect Wildlife provided the opportunity for the university to gain new knowledge in sandfish culture, from site suitability assessments and initial consultations with stakeholders through facilitation of the research and the release of mature sandfish into the coastal ecosystem of Narra. Working with an aquaculture expert from University of the Philippines Marine Science Institute, the research team helped formulate science-based recommendations on sandfish ranching as a potential livelihood for coastal communities in Narra.

With this experience, the university has asserted itself as a resource for Narra and other LGUs in Palawan that may be interested in sandfish ranching. University faculty now have the knowledge, skills and experience to provide technical support or co-lead campaigns against unregulated harvesting of sandfish—a threatened species—below the minimum size of 320 grams. As a member of Rasa Island management board, the university can push for declaration of the area along the island where the spawning population of sandfish was released as a conservation zone. Lastly, information generated from the research will be useful in developing localized teaching tools and materials for the university's fisheries, aquatic biology and marine biology programs. Sandfish research aligns well with invertebrate zoology and marine invertebrates subjects under these programs.

Zamboanga State College of Marine Sciences and Technology

Through a March 2019 workshop with Zamboanga State College of Marine Sciences and Technology and the Zamboanga City government, Protect Wildlife's partners outlined a strategy to develop a coastal resources assessment design that will generate a comprehensive baseline data needed to establish a marine protected area and integrated coastal resource management plan for Eleven Islands.

The college spearheaded the participatory coastal resources assessment with technical and logistical support from Protect Wildlife. The study comprised three core research areas: biophysical characteristics of existing coastal and marine habitats; fisheries resources, practices and threats; and sociocultural and economic conditions. Through these data, Zamboanga City officials will be poised to help Eleven Islands stakeholders design policies and programs to promote sustainable ecotourism in the islands, while also supporting efforts to effectively manage the islands' resource base.

The study gave an opportunity for specialists from different units of the college to strengthen their skills in team organization, work planning and coordination of field activities. Mentoring provided by an expert in marine biology and fisheries introduced new skills for integrating research findings across study areas into a common set of recommendations for establishing marine protected areas by the Zamboanga City government. With complete sets of SCUBA gear; field instruments for coral reef, seagrass and mangrove surveys; and reference materials and field guides for species identification provided by Protect Wildlife, the college is in a better position to support research needs of Zamboanga City, as well as

Santa Cruz Islands, where the college is a member of the management board. Faculty are now able to use data and photo documentation completed in the research to develop their locally relevant instructional materials for courses on biology, fisheries and environmental sciences. The college now considers Eleven Islands as its new social laboratory for select academic programs.

Through the study, the Zamboanga City government now has access to data needed to inform their coastal and marine conservation and ecotourism planning work for Eleven Islands. The city has secured access to a comprehensive database of research findings, and created a technical working group to review and deploy these findings to inform policy and development decisions. Lastly, the city gained a partner for science, technology and innovation work in the region, making the college a member of its technical working group for Eleven Islands.

Mindanao State University-Tawi-Tawi College of Technology and Oceanography

The replication of technology for the production of seaweed cultivars in laboratory and controlled nursery conditions enabled the Mindanao State University-Tawi-Tawi College of Technology and Oceanography to establish protocols for each stage of seaweed micro-propagation and document the factors that will enhance success rates at every stage in the production of good quality seaweed planting materials. Documentation of costs for micro-propagation and establishment and operation of land-based and sea-based nurseries will enable the university to analyze viability of the technology in supporting seaweed farmers. The research provided the venue for mentoring from Protect Wildlife's seaweeds expert, who is also a retired professor and researcher from the university.

Protect Wildlife helped restore the seaweed cultivars bank of the university, which serves as the seaweed research and development center of Bangsamoro Autonomous Region in Muslim Mindanao. At the end of the research, the university had a total of 11,626 micro-propagules, cultured from high carageenan-yielding seaweed species in its laboratory. The improved laboratory and nursery facilities, trained staff and new protocols expands the university's capacity for seaweed research and laboratory propagation of propagules. It places the university in a better position to respond to farmers' needs for planting materials, especially when infestations hit seaweed farms. It also helps the university to generate more support from national and regional funding agencies and from LGUs dependent on the seaweed industry so they can sustain their service to seaweed farmers in Tawi-Tawi.

Palawan State University

Palawan State University's participation in the Philippine pangolin research in Palawan's Victoria-Anepahan mountain range strengthened its team's data gathering skills through surveys and focus group discussions, positioning them to support additional conservation-driven qualitative research initiatives in the future. The research also created interest for some faculty to pursue further studies on Philippine pangolins, which can serve as inputs to the development of site- or LGU-based pangolin conservation action plans.

Mindanao State University-General Santos City

Medicinal plant specimens collected through the Mount Matutum study conducted by Mindanao State University-General Santos City served as initial inputs to the university's herbarium. With modern compactor cabinets provided by Protect Wildlife and a research team trained on proper preparation of specimens, the herbarium now houses a collection of preserved plant specimens, with a special pool of ethnomedicinal plants from Mount Matutum. The collection will be expanded with specimen of ferns from another Protect Wildlife-supported graduate student research in the protected area.

The herbarium will be used by the university for laboratory classes, where students and faculty can study actual specimens of medicinal plants collected from the area, rather than relying on textbooks. University faculty and officials also plan to build upon the academic and research investments in the herbarium with programs to raise awareness on the importance of these plants to Mount Matutum and its indigenous communities. The university also envisions increased interest in further research on the plants' medicinal properties and preserving traditional uses.

The herbarium is one of six facilities that will be housed in the university's proposed biodiversity center, which will be supported by an approved ₱60 million (US$1.2 million) construction budget. As its facilities and specimen collection expand, the university will open the herbarium for use of other universities in the region. Copies of the published compendium on its Mount Matutum collection will be shared with the National Museum of Natural History and university-based museums.

Notre Dame of Dadiangas University

Protect Wildlife supported a student researcher on her doctorate study on the biodiversity of Burias community in Glan municipality along Sarangani Bay. The research assessed the biodiversity composition of coral reefs, seagrass beds and mangrove forest ecosystems in the site. The results were curated into a learning package—composed of a manual, brochure and online-based application—that will be used in the newly offered marine ecology subject under the Bachelor of Science in Biology program of Notre Dame of Dadiangas University.

Colleges and Universities that Adopted the ELP Syllabus

The objective of the ELP initiative is to position colleges and universities to produce criminology graduates who are better prepared to address wildlife and environmental crimes. Protect Wildlife's partners in the academe and other colleges and universities who attended the rollout workshops gained knowledge on the importance of environmental protection and the major laws that deal with various ecosystems, as well as cross-cutting laws, such as those requiring environmental impact assessments. Participants also practiced appropriate teaching and learning activities for students on detection and investigation of environmental crimes.
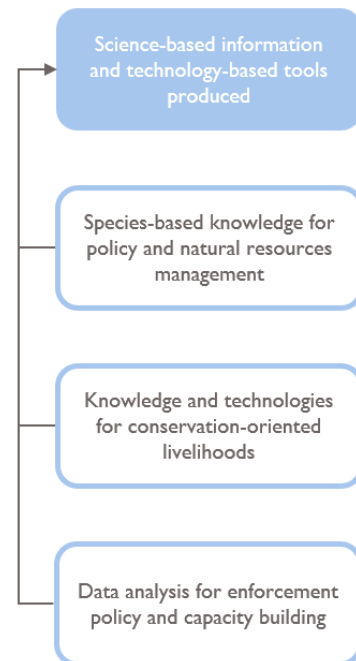
SCIENCE-BASED INFORMATION AND TECHNOLOGY-BASED TOOLS PRODUCED

Protect Wildlife-supported research activities collectively produced knowledge and tools with various applications for conservation and natural resource management work in the Philippines. The studies' findings and data will serve as valuable inputs into natural resource managers' work to strengthen conservation policies and resource management plans in alignment with the latest science, to design programs that address habitat destruction and poaching, and to strengthen enforcement initiatives. Select studies also reported on wildlife species that are still underreported in existing literature.

In this section, Protect Wildlife summarizes major new knowledge and tools produced under the activity's research efforts, and their relevance to the sites and other conservation areas in the Philippines. The activity also presents how the various research initiatives and their findings, data and outputs will contribute to conservation policies and programs, conservation-oriented livelihood initiatives, and wildlife and environmental law enforcement policies and initiatives.

NEW OR ENHANCED KNOWLEDGE ON SPECIES PRESENCE OR DIVERSITY AND HABITAT CHARACTERISTICS FOR USE IN CONSERVATION POLICIES AND PROGRAMS

Protect Wildlife supported major wildlife studies that generated data and findings on the presence, behavior, habitats, pressures and sources of threats on iconic species. Other supported studies produced new information on species distribution, and on methodologies and technology-based tools that can be applied to improve natural resource management and monitoring. Protect Wildlife presents these research findings and applications grouped by iconic species conservation, species distribution, and tools for improved natural resource management.

Science-based information and technology-based tools produced

Species-based knowledge for policy and natural resources management

Knowledge and technologies for conservation-oriented livelihoods

Data analysis for enforcement policy and capacity building

Philippine eagles were documented for the first time in Pasonanca Natural Park through research expeditions by Philippine Eagle Foundation and Zamboanga City partners.

Philippine pangolins in Victoria-Anepahan mountain range in Palawan were recorded through ground surveys and camera trapping conducted by Katala Foundation.

Sulu hornbills, perhaps the rarest hornbill in the world, were studied, as well as their dwindling forest habitats, through expeditions by PhilBio in Panglima Sugala in Tawi-Tawi.

Research Contributing to Conservation and Protection of Iconic Species

Information generated through the following studies on Philippine eagle, Philippine pangolin and Sulu hornbill are contributing to development of on-site species conservation.

Philippine eagle research in Pasonanca Natural Park, Zamboanga City. The Philippine eagle study confirmed the presence of a breeding pair and a nest in Zamboanga City's Pasonanca Natural Park—establishing as fact that the park is a nesting habitat, rather than simply a foraging site, for the critically endangered raptor. The presence of nesting behavior in the park's strict protection or core zone is evidence of effective management in the protected area. The nesting site, however, is close to the buffer zone boundary, so enforcement must be strengthened to control intrusion and forest degradation.

The nesting tree recorded during the study was a *Parashorea malaanonan.* This is only the second scientific record of a Philippine eagle using this particular dipterocarp. Although categorized under Least Concern in the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, the tree's protection within and outside of Pasonanca Natural Park is critical given its connection to the Philippine eagle, as underscored by this finding.

The discovery of the first active Philippine eagle nest in Zamboanga City is a milestone in research. This finding paved the way for the formal adoption of the Philippine eagle as the flagship species for both the protected area and the city. This study will be a useful reference for Region 3, particularly in Aurora Memorial National Park and Mount Mingan, which are also known habitats of Philippine eagles.

Philippine pangolin research in Victoria-Anepahan Mountain Range, Palawan. The 2018 IUCN Red List Assessment included a re-classification of the Philippine pangolin from Endangered to Critically Endangered and elevated this species from CITES Appendix II to Appendix I. This indicates a decreasing population due to apparent overexploitation and reduction in available natural habitats in its limited geographic range in Palawan. The pangolin research supported these conclusions.

Protect Wildlife's research initiative with Katala Foundation, PCSDS and Palawan State University established the presence of Philippine pangolins in research sites in Victoria-Anepahan mountain range but indicated a low population. The study also documented ongoing destruction of pangolin habitats and continued poaching of pangolins as part of illegal wildlife trade. The research has been used as an input into the 25-year Action Plan for the Conservation and Management of the Palawan Pangolin by PCSDS. Protect Wildlife also led a roadshow in LGUs and communities that hosted researchers during the study, so local officials and community stakeholders can apply the research findings to prepare local conservation actions. Other sites in Palawan which are known pangolin habitats can also use this study as reference to design their own research, conservation and enforcement actions.

Sulu hornbill research in Panglima Sugala, Tawi-Tawi. The research established the presence of breeding populations of Sulu hornbills and observed juvenile hornbills in Malum watershed in Panglima Sugala municipality in Tawi-Tawi. This is the first documentation of young Sulu hornbills in the province since 1985. Researchers at PhilBio shared findings with DENR and IUCN for use toward the latter's 2020 update to the Sulu hornbill entry in the Red List of Threatened Species. With the discovery of other threatened and endemic flora and fauna and new and undescribed records of birds, reptiles, amphibians and plants, Malum watershed has been eyed for establishment as a local conservation area. As an initial measure, Panglima Sugala LGU has enacted an ordinance declaring Sulu hornbill as its flagship species. The study points to the need for more biodiversity research in Tawi-Tawi.

Research on Species Distribution

Five Protect Wildlife-supported research studies generated new information on distribution of species that are or may be found within protection and conservation areas covered by the activity, as well as information on possible discovery of new species.

Pitvipers. This research conducted morphological and molecular analyses of voucher specimens of Philippine pitvipers in five major mountain ranges to uncover their cryptic diversity toward resolving the taxonomic classification of the species. Results suggested two possible taxonomic resolutions: to recognize *Trimeresurus flavomaculatus* and *Trimeresurus mcgregori* as single species; or to recognize cryptic species and separate them into three distinct species, which are *Trimeresurus mcgregori*, *Trimeresurus flavomaculatus* of Luzon and *Trimeresurus flavomaculatus* of Mindanao. Further studies in Mindanao are needed to make a conclusive taxonomic decision.

Rafflesia. This study conducted an analysis of the morphology, anatomy and molecular data of Rafflesia species in the Philippines to provide an accurate taxonomic classification and develop a DNA database that will inform conservation initiatives. The research validated that there are 15 species of Rafflesia in the country, of which ten are critically endangered, four are endangered and one is vulnerable. All Rafflesia species face a high risk of extinction. The information generated in this research will be useful in local conservation initiatives and could contribute to the global body of knowledge on Rafflesia. Aurora Memorial National Park is known to have one of the smallest species of Rafflesia.

Pitvipers in the Philippines were the focus of a taxonomic study to uncover their cryptic diversity and propose taxonomic classifications of local pitviper species.

Rafflesia species in the Philippines were the focus of a graduate study to provide accurate taxonomic classification and develop a DNA database for conservation efforts.
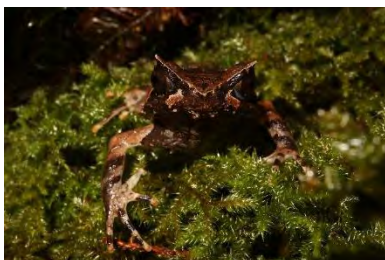
Amphibians and reptiles in Mount Busa were surveyed through a study on their herpetological diversity, which will be useful inputs for conservation management in the area.

Amphibians and reptiles in Mount Busa. This serves as the first study on herpetological diversity in Mount Busa in Sarangani, generating information that will be useful for managing the local conservation area. The study identified new distribution records for seven species and found ten to 20 species that are potentially new.

Ferns. This study documented 265 fern species in Mount Matutum, of which 28 are endemic to the country and 24 are threatened. Given its distribution in the protected area, ferns can be used as altitudinal markers for four zones in Mount Matutum. Results can be used to enrich the management plan of the protected area.

Medicinal plants. The study inventoried and validated with traditional healers the medicinal plants in Mount Matutum, as claimed by local folklore. Documentation and preservation of 101 species of medicinal plants are vital in preserving the culture and well-being of indigenous communities. Results can be used to enrich the management plan of Mount Matutum. The information will be shared with herbaria and museums for use of researchers.

Student Research into Tools for Improved Natural Resource Management

Four student researchers supported by Protect Wildlife identified methodologies and technology-based tools that can be applied to improve natural resource management and monitoring within and beyond activity sites.

Use of metallophytes for rehabilitating mining areas. This study, which was conducted in a mining site in Zambales province, resulted in identification of 174 native species of metallophytes, of which 23 are fast growing and four are nickel hyperaccumulators. Fast-growing species can be used for the immediate restoration of mined-out areas and open areas. These plants should be protected, and their growth and survival studied more deeply so they can be developed as sources of planting materials for ecological restoration in mining and abandoned mined areas. This study can be considered in national and local policies pertaining to the rehabilitation of mining sites.

Recreational value, sensitivity and disturbance assessment tools for caves and cave systems. The study of Capisaan cave system in Nueva Vizcaya province assessed the overall socioecological conditions of the cave system, its tourism value and its sensitivity to disturbances brought by tourism. The study used methodologies that are replicable in similar cave systems in the Philippines. Results can be useful for decision-making on investments in cave-based ecotourism and access fees.

Species monitoring using camera traps. Protect Wildlife and a student researcher used camera traps to verify presence and determine abundance, distribution, home range and habitat preference of Philippine pangolins and Philippine deer, respectively. Camera traps were also introduced for monitoring faunal biodiversity in three protected areas in Palawan. There is growing recognition of the cost-effectiveness of camera trapping in protected areas for species and critical habitat monitoring.

Use of drones in mangroves assessment. This study tested the use of an unmanned aerial vehicle equipped with camera and LiDAR, or light detection and ranging, in mangrove forest inventory. The data were analyzed by applying a marker-controlled watershed algorithm to discriminate a specific mangrove species from all mangroves present in the area of study. The whole set of remote sensing procedure with ground verification has potential for further development of a more efficient, less costly and more accurate forest inventory in the country. Further development of the use of this technology for forest inventory is of interest to DENR.

Knowledge and Technologies to Support Conservation-Oriented Livelihoods

The following studies supported by Protect Wildlife validated and field-tested technologies that will contribute to establishment of viable livelihoods in coastal communities.

Sandfish sea ranching. This study undertaken with Western Philippines University established the feasibility of sandfish sea ranching and restocking in Narra, Palawan, where there is a viable spawning population of sandfish that can be sourced as broodstock for the production of sandfish

Metallophytes, or plants that tolerate high levels of heavy metals, were studied for their potential to be used in ecological rehabilitation of mined-out areas.

Capisaan cave system in Nueva Vizcaya province was studied for its overall socioecological conditions, its tourism value and its sensitivity to disturbances brought by tourism.

Camera traps were used in Protect Wildlife-supported studies on the Philippine pangolin and Philippine deer, as well as in monitoring faunal diversity in protected areas in Palawan.

juveniles. Suitable sites were identified in Rasa Island and along the coast of Caguisan community for the three sandfish culture stages. Science-based guidance was provided to Narra LGU and Rasa Island management board for the sustainable development of a sandfish sea ranch and management of sandfish conservation areas. There may be other areas in Palawan, Sarangani and Tawi-Tawi where this technology can be applied.

Seaweed micro-propagation and cultivar banking. This research by Mindanao State University-Tawi-Tawi College of Technology and Oceanography further developed its micro-propagation technology for producing high-quality seaweed cultivars in a laboratory setting, with the aim of establishing a stock of propagules from which improved planting materials can be produced and distributed to seaweed farmers. The procedure, from collection of seaweed samples to laboratory production of micro-propagules and outplanting to nurseries, was documented and curated into a guide manual. The manual may be used by other universities or research institutions in Palawan and Zamboanga City that intend to establish similar facilities.

Coastal resources assessment for establishing marine protected areas. The comprehensive coastal resources assessment of Eleven Islands by Zamboanga State College of Marine Sciences and Technology generated data that can serve as a basis for identifying suitable community-managed marine protected areas within a larger ecotourism area. Establishing marine protected areas will protect coastal habitats, increase fish stocks and abundance and ensure food security for communities in Eleven Islands. Recommendations from the college have been submitted to the Zamboanga City government. The methodology used in Eleven Islands and arrangements where academic institutions are engaged to lead coastal resources assessments may also be adopted in other seascapes.

Knowledge and Analytical Tools to Inform Enforcement Policy Development and Capacity Building at Local and National Levels

Protect Wildlife initiated studies that produced findings and data that may be used by policymakers and government officials to strengthen on-site and off-site wildlife and environmental law enforcement.

Ranger and community perceptions. This study examined the views of 576 rangers from eight protected areas in the Philippines on job stress and job satisfaction; dangers and health-related factors of their occupation; organizational facilitation and professional development; deterrence and the criminal justice system; organizational relations, community relations and legitimacy; and procedural justice. Almost 2,100 community members from four protected areas were also interviewed on their perceptions toward the status of the environment, environmental laws, severity and certainty of current laws and punishments, protected area authorities, community involvement in local conservation efforts and informal guardianship, and protected area authority communication and information sharing. The results provide important inputs to enforcer recruitment and training plans particularly for the proposed Environmental Protection and Enforcement Bureau at DENR.

CAPTURED framework. This study applied the CAPTURED—Concealable, Available, Processable, Transferrable, Useable, Removable, Enjoyable, Desirable—framework in examining current trends and dynamics of illegal wildlife trade in the Philippines. This represents a new approach to examine wildlife products in the Philippines and the characteristics of their market—and serves as a framework for a

holistic assessment of the wildlife product trade—including the characteristics of the product that produce desirability and lend themselves to international trafficking. The results can help national and local policymakers and enforcers develop tailored enforcement approaches for wildlife by-products that are commonly traded illegally, as well as emerging wildlife by-products for illegal trade.

Analysis of wildlife seizures in the Philippines. This study examined available seizure data on illegal wildlife trade in the country and analyzed trends in wildlife trafficking, particularly in transboundary trade, increasing shift to online trade, and use of inter-island transport to transfer wildlife from poaching areas to end markets in the country's major urban centers, including Metro Manila. The study also looked into quantifying the volume of illegal wildlife trade in terms of numbers and types of wildlife species and by-products. The study recommended policies to improve CWT efforts, covering permitting, centralization of seizure databases and their parameters, and professionalization of wildlife and environmental law enforcement in DENR.

SUMMARY

Protect Wildlife supported the dissemination of research results by sponsoring researcher presentations in national and international fora and by organizing webinars. Support for research dissemination provided venues for colleges and universities to showcase their research capacity and to connect with potential partners and donors for future research. The initiative also stimulated interest of potential users of the research results.
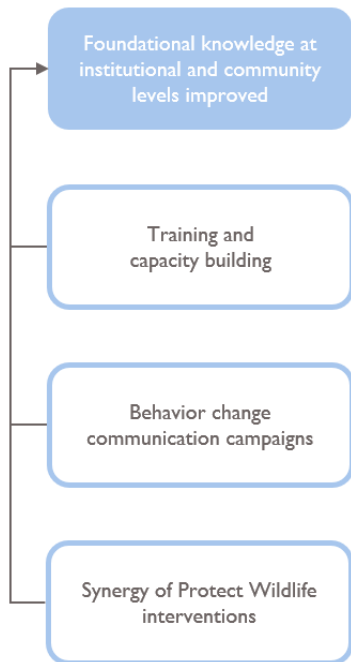
Protect Wildlife also coordinated with partners to execute a more targeted dissemination of research reports, briefs and publications so that use of these products will be optimized. Special presentations and discussions on enforcement studies have been organized with DENR-BMB, as well as a presentation on the use of drones in mangrove assessments with DENR-FMB. Agencies, such as protected area management offices, DENR regional offices, academe and LGUs, with direct interest in the studies will be provided copies of the research reports. The activity anticipates that these knowledge products and tools will be used by protected area managers and LGUs to generate new actions or improve ongoing conservation and development interventions.

FOUNDATIONAL KNOWLEDGE AT INSTITUTIONAL AND COMMUNITY LEVELS IMPROVED

In this section, Protect Wildlife presents background and outcomes from the activity's behavior change communication interventions organized by various vehicles leveraged—training, campaigns and BCC paired with technical activities—to improve foundational knowledge.

IMPROVING FOUNDATIONAL KNOWLEDGE THROUGH TRAINING

For Protect Wildlife, foundational knowledge comprises the collection of information, skills, awareness and familiarity about conservation and ecological concepts, environmental laws and regulations, allowed and prohibited land and resource uses and practices, and natural resource benefits, including ecosystem goods and services. This collection of knowledge—when combined with positive attitudes toward

Foundational knowledge at
institutional and community
levels improved

Training and
capacity building

Behavior change
communication campaigns

Synergy of Protect Wildlife
interventions

conservation and an enabling environment where barriers to adoption of new behaviors are removed—can potentially lead to demonstration of social behaviors that benefit both people and the environment.

The main strategy for improving foundational knowledge at the institutional level—and to some extent at the community level—in activity sites is through capacity-building activities, which have been mentioned in previous sections. Foundational knowledge of policies that govern land and resource uses is a necessary building block for protected area management units, LGUs and communities to understand why it is important to properly zone protected areas and forestlands using a participatory planning process. For those involved in enforcement, a deeper understanding of biodiversity-related laws that apply to species, conservation areas and wildlife and environmental crimes impact their ability to deliver effective enforcement actions and policies. Both resource managers and enforcers—from protected area managers to communities—should also be able to understand the relationship between conservation and ecosystem goods and services from which communities benefit. This foundational knowledge, gained through training and capacity building, will allow conservation actors to participate more meaningfully in managing protected areas and forestlands and in performing their respective roles.

Findings from Protect Wildlife's endline knowledge, attitudes and practices (KAP) survey indicate that the activity's capacity-building interventions for communities in southern Palawan have contributed to improvements in knowledge. For example, understanding how land use is zoned affects the way communities perceive and use land in a protected area. Endline KAP survey findings showed a significant difference from the baseline on the awareness of a production zone inside Mount Mantalingahan (Figure 14). Although causation cannot be determined based on these findings, correlations can be noted between Protect Wildlife interventions and changes in baseline and endline KAP survey data.

Through the four years between baseline and endline assessments, the data shows inhabitants surrounding Mount Mantalingahan have gained new knowledge about production

zones within the protected area. In the baseline, only tenured respondents were highly aware of production zones. In the endline, there is significantly increased awareness from non-tenured respondents. This increase in awareness could point to Protect Wildlife's interventions on protected area management and forest land use planning activities, where more than 1,500 community members underwent training on integrated conservation and development and around 50 individuals completed training on enforcement.

The awareness of areas designated for production activities or, conversely, areas for protection and conservation affects livelihood decisions made by communities living within protected areas and forestlands. This knowledge serves as a potential impetus to comply with allowed and prohibited land and resource practices for specific production zones. In relation to livelihood practices in protected areas, the endline KAP survey also showed an improvement of knowledge on sustainable farming—a possible contribution of agroforestry training delivered to around 1,700 upland farmers across all five LGUs in southern Palawan.

Figure 14. Awareness of Production Zone in Mount Mantalingahan Protected Landscape by Southern Palawan Respondents
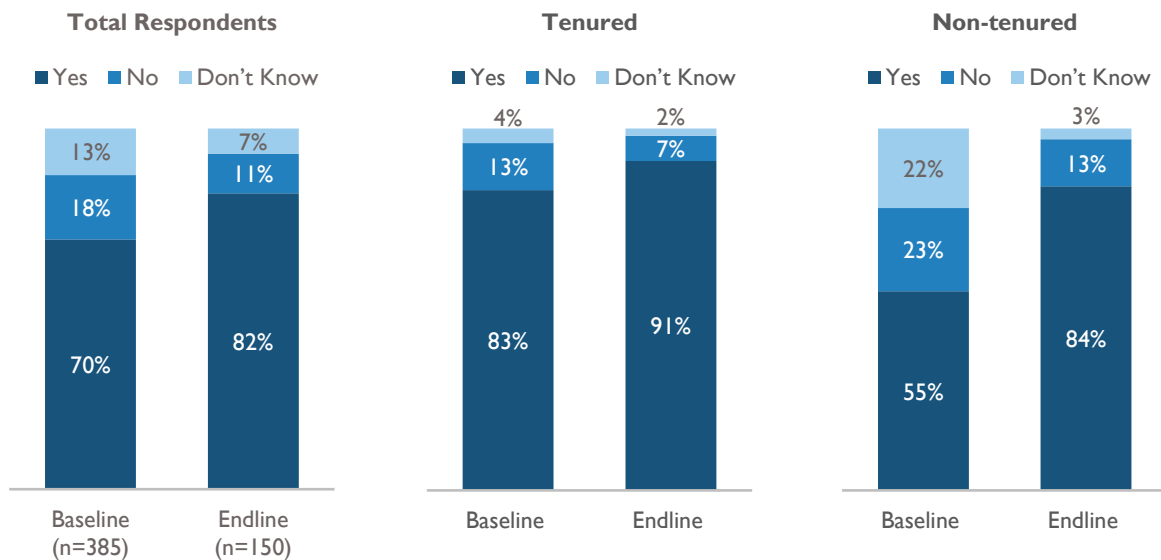
*KAP Survey Question: Are you aware that a part of the protected area can be used for farming, production, ecotourism, etc.?

IMPROVING FOUNDATIONAL KNOWLEDGE THROUGH CAMPAIGNS

For communities, foundational knowledge would be the collection of information on human behaviors that may threaten wildlife and the environment, skills on making their land more productive, and even experiences with how their livelihoods and socioeconomic wellbeing are related to conservation. Necessary to the latter is the understanding of ecosystem goods and services from protected areas and forestlands and how continued provision of these services is imperiled by man-made threats.

A strategy for improving this type of foundational knowledge is the use of less formal approaches, such as community mobilization activities. These include a demonstration on agroforestry techniques, community consultations, and campaigns designed to improve knowledge, inspire positive conservation attitudes, and prompt demonstration of desired behaviors that contribute to conservation outcomes in the site.

Protect Wildlife's BCC campaign initiatives supplement more formal interventions, have a wider reach, and provide more explicit prompts on desired behaviors. For instance, Protect Wildlife's first campaign in southern Palawan was developed to encourage participation of indigenous communities in forest land use planning initiatives that were being rolled out by the activity. Protect Wildlife also implemented campaigns directly before and after formal trainings on marine turtle conservation.

To develop these campaigns, Protect Wildlife built the capacity of staff from LGUs and NGOs on developing and implementing BCC campaigns. A campaign is just one of the interventions under the larger behavior change approach. Since 2017, 101 individuals have completed the ten-day Campaigning for Conservation (C4C) course rolled out by Protect Wildlife. Using a learning-by-doing methodology, trainees were taught behavior change theory, basic market research concepts and social marketing principles. At the end of the course, the trainees put all this new foundational knowledge together to launch site-specific campaigns that inspire change.

Protect Wildlife and its partners have designed and implemented 26 BCC campaigns; 15 of these were co-created with C4C trainees. The campaigns were primarily directed at communities living in and around protected areas, and designed to encourage participation in local conservation programs; promote desired behaviors introduced in trainings delivered by Protect Wildlife; and build knowledge about wildlife laws, conservation principles and benefits derived from ecosystems.

Campaign materials ranged from billboards that spanned entire protected areas to multimedia campaigns that included songs, puppet shows and interactive games. A best practice developed during the activity was rolling out campaigns to coincide with local celebrations, such as festivals of religious and cultural significance. This strategy helped widen reach—exposing larger groups of people to the campaign—and also allowed Protect Wildlife and its partners to connect conservation to feelings of pride, and to frame conservation as a community activity with public accountability at stake through the use of public pledges.

Of the 26 BCC campaigns, there are three that best exemplify innovation, replicability and opportunities for iteration by partners and future USAID activities. These campaigns are the Wild and Alive CWT campaign; Makmak, a flagship species campaign; and *Perya para sa* Konserbasyon, a campaign on coastal and marine conservation.

Wild and Alive: Campaign for Combating Wildlife Trafficking

Both DENR-BMB Wildlife Resources Division and PCSDS cited that there had been no solid campaign initiatives to reach local and foreign tourists with CWT messages. Both partners recognized that public awareness about wildlife trafficking should begin from airports and other transportation hubs. This aligns with findings of the 2018 USAID-funded study *In Plane Sight: Wildlife Trafficking in the Air Transport Sector*,

where the transportation sector is identified as the means of conveyance most often used by international wildlife traffickers. The study also stressed the importance of awareness-raising activities on restricted species and reporting channels for passengers and transportation staff to help stop wildlife trafficking.

From these inputs, Protect Wildlife and DENR-BMB collaborated to develop a CWT campaign called Wild and Alive that targeted tourists and travelers in the country, with transportation hubs as touchpoints of the campaign. DENR-BMB also carried the campaign as part of its CWT orientations in local airports and seaports, where the bureau aimed to strengthen the capacity of transportation personnel to identify and report wildlife crimes.

Wild and Alive's pilot activity had a media mix of in-flight magazine advertorials and on-the-ground airport billboards. The advertorials directly reached the campaign's target audience of local and international tourists who frequent Philippine destinations—many of which are situated in biodiversity-rich areas. With the rise of budget flights and the boom in local tourism, there was also a greater need to promote tourist behaviors that support conservation and CWT efforts.

From June to December 2018, three full-page advertorials were published in Cebu Pacific Air's in-flight magazine *Smile*, reaching nearly 2.5 million passengers worldwide in a span of six months. Protect Wildlife also helped launch the campaign's on-the-ground component at Manila's Ninoy Aquino International Airport terminals 1, 2 and 3, with 14 backlit Wild and Alive billboards in high-traffic areas. The campaign's call to action was to report incidences of wildlife trafficking to DENR-BMB's Facebook page. This resulted in exposing 1,079,793 domestic and international travelers to the campaign from December 2018 to April 2019. This campaign marked the first time a CWT campaign under DENR-BMB was displayed prominently in the country's biggest airport.

In the months that followed, Protect Wildlife and its partners began to explore how to optimize Wild and Alive and package it for replication in other airports and seaports. The first iteration of the campaign, *Idlas Ug Buhi*, was
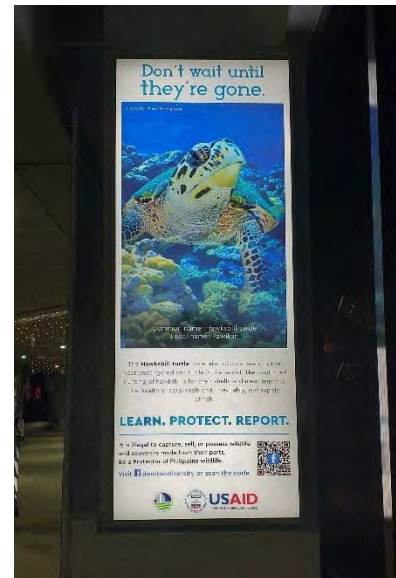
Wild and Alive campaign billboards at Ninoy Aquino International Airport terminals in Manila sought to elevate the issue of wildlife trafficking to every traveler's top of mind.

mounted in partnership with Zamboanga Sibugay PENRO in Siay municipality. Banners featuring commonly trafficked species were displayed at the local bus terminal. The next iteration was rolled out with PCSDS at Puerto Princesa International Airport in Palawan, where Protect Wildlife adjusted the campaign's visual elements and messaging to appeal to tourists, of which the province receives over 1.8 million annually. The Palawan iteration shifted from extinction and fear messaging to inspiring wonder, love and protection for the environment. Campaign materials and messages were also translated to Chinese and Korean to reach two of the largest tourist groups in Palawan. Data from Puerto Princesa City's tourism office showed that a partial count of tourist arrivals at the airport numbered 115,269 from January to February 2020—exposing this same number of people to Wild and Alive campaign in those months.

Protect Wildlife's plans to adjust and launch another airport-based campaign in Region 3 were impacted by the onset of COVID-19 restrictions in March 2020. Pivoting from its original plan, Protect Wildlife repurposed the Wild and Alive designs for use in an online campaign that targeted Facebook users. In partnership with DENR Region 3, the campaign featured 48 Facebook posts from June to September 2020, reaching more than 900,000 individuals. Wild and Alive was also launched in Zamboanga City, with outdoor signages displayed at the city's seaport.

Wild and Alive was designed to be highly iterative and replicable, allowing partners to build on basic campaign templates by customizing featured species, language and other components without compromising the call to action—reporting incidences of wildlife trafficking—and the key message that wildlife is better and more beneficial to people and the environment when it is wild and alive.

Makmak, the Blue-naped Parrot Mascot

C4C trainees in Brooke's Point municipality in Palawan drafted their conservation communication plan during their C4C course in 2017. Their campaign's desired conservation results focused on helping maintain forest areas in Mount Mantalingahan. Their communication plan also incorporated into its objectives the need to address population decline of threatened endemic species, such as pangolins, hill mynahs and blue-naped parrots.

To build awareness and attitudes that will contribute to achievement of these conservation objectives, the C4C graduates designed a mascot as an integral part of their communication activities and materials. They envisioned the mascot as their campaign's symbol of pride of place, as well as the means to encourage communities to participate in environmental conservation and wildlife protection. These aspirations were not far off from research findings related to flagship or mascot species. Conservation organization Rare has found mascots to be useful tools for making people receptive to new values and ideas by putting them at ease enough to listen to conservation messages. Mascots also help advance interpersonal communication, especially among children who can take the message home to their parents as part of a campaign's target audience. The study *The Role of Flagship Species in the Formation of*

Conservation Intentions[7] found that concern for a species and its habitat was significantly increased when people were exposed to materials related to that species. Environmental concern, in turn, can influence people's decisions on conservation behaviors.

With these inputs in mind, the C4C graduates selected the blue-naped parrot as their campaign mascot named Makmak. They felt that the colorful plumage of the parrot helped represent the rich biodiversity of Mount Mantalingahan. Locally known as *pikoy*, the blue-naped parrot is found in the forests of the protected area and is popular among residents. The campaigners believed that existing affinity with the *pikoy* would make it easier to elicit empathy and concern among communities in Brooke's Point. These attitudes were especially crucial as the blue-naped parrot is listed as a near-threatened species by IUCN due to hunting and habitat loss.

Donning the persona of a forest guard, Makmak represented traits of *makulay*, *makabayan* and *makakalikasan* (colorful, patriotic and nature-lover). The mascot's name also stood for its call to action: *Makialam! Makilahok!* (Be concerned! Participate!). Makmak was positioned primarily to influence knowledge, attitudes and interpersonal communication among communities in Brooke's Point. The mascot was also seen to influence the BCC component in the local government's FLUP.

Makmak was launched in March 2019 during the charter day of Brooke's Point. Campaign activities included parading around the municipal plaza, unveiling a Makmak billboard in front of the LGU office, hosting a puppet show, and conducting a learning session on the importance of protecting blue-naped parrots and other Palawan wildlife and their habitats. The C4C trainees also created an online presence for Makmak using a Facebook campaign page. The combined activities reached 46,280 individuals. Makmak's

Makmak, the blue-naped parrot mascot conceptualized by C4C graduates in Brooke's Point, Palawan, represents values of love for the environment, pride of place, and participation and involvement.

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[7] Smith, Amy & Sutton, Stephen. (2008). The Role of a Flagship Species in the Formation of Conservation Intentions. Human Dimensions of Wildlife. 13. 127-140. 10.1080/10871200701883408.

Perya para sa Konserbasyon
(Conservation Fair) treated revelers at Sarangani Bay Festival with fun games, including (from top to bottom) a plinko board, a wire buzzer and a tilt maze, which are designed to carry messages on coastal and marine conservation.

reach and influence continues to grow as Brooke's Point LGU integrates the mascot in their activities, such as environmental events, school visits and local festivals.

The Makmak campaign demonstrates the power of understanding BCC and social marketing principles. The C4C trainees developed a campaign that went beyond awareness-raising and designed into their plans attitudinal and interpersonal communication goals, which are determinants of successful actions. The C4C experience in Brooke's Point also helped Protect Wildlife understand that capacity building in BCC should be complemented with support from local partners and officials who understand the relationship between conservation and development.

Perya para sa Konserbasyon

Protect Wildlife's fourth and final run of the C4C course was held in Region 12 in 2018. With trainees from almost every LGU in Sarangani, as well as from DA-BFAR, protected area management office of Sarangani Bay and several local NGOs, this batch of C4C graduates joined forces to create a Sarangani-wide campaign called *Kayamanan, Kinabukasan, Ating Pangalagaan* (Our Wealth, Our Future. Let's Take Care of It). Instead of using traditional media, the C4C graduates co-created with Protect Wildlife an interactive campaign using games inspired by local *perya* or country fairs. These games include a large plinko board that helped explain effects of marine litter; wire buzzer games in the shape of iconic marine species in Sarangani—from whale sharks to dolphins—that served as a lesson in human-wildlife interaction; and a large tilt maze that taught players about human-induced threats to marine turtles and dugongs.

The suite of conservation-oriented games dubbed *Perya para sa Konserbasyon* (Conservation Fair) was launched during the 2019 Sarangani Bay Festival. The three-day festival is the province's largest annual beach party that emphasizes environmental conservation and sustainable tourism, attracting around 150,000 guests from all over the country.

While the games were designed for a younger demographic, these also attracted adult participants, helping promote conservation behaviors to a wider audience. Being a joint campaign among several C4C graduates in Sarangani, the

games made rounds in various LGUs, often being featured in municipal charter days and other local festivals. The games reached 70,000 individuals throughout the province.

Perya para sa Konserbasyon demonstrated campaign innovation by introducing interactive and positive experiences that helped target audiences better absorb and retain conservation knowledge, as compared to more traditional campaign and community mobilization activities.

IMPROVING KNOWLEDGE THROUGH SYNERGY OF PROTECT WILDLIFE INTERVENTIONS

BCC interventions were rarely delivered as stand-alone activities. Work under this Strategic Approach was heavily focused on supporting knowledge, behaviors and actions that would support Protect Wildlife's other technical activities.

In southern Palawan, where the full complement of trainings and campaigns were delivered, the endline KAP survey showed improvements in foundational knowledge required for these technical interventions to take hold and sustain beyond the life of the activity.

Knowledge of conservation concepts have improved between baseline and endline surveys. When posed with questions about lawfulness of selected forestland activities and practices, the respondents correctly identified the illegal activities. There is an indication of higher awareness on benefits of sustainable farming practices, negative effects of unchecked logging, and consequences of forest destruction on fisheries and marine habitats, with more than 60 percent of endline survey respondents citing the statements as correct from a baseline of less than 60 percent in 2017 (Table 6).

Table 6. Improvement in Knowledge of Conservation Concepts of Southern Palawan Respondents

CONSERVATION CONCEPTS	TOTAL RESPONDENTS		TENURED RESPONDENTS		NON-TENURED RESPONDENTS	
	2017 Baseline (n=385)	2021 Endline (n=150)	2017 Baseline	2021 Endline	2017 Baseline	2021 Endline
Use of inorganic fertilizers is not strictly harmful if applied properly with organic fertilizers.	✓	✓	✓	✓	✓	✓
Improper farming could be erosive, such as not practicing contour farming in steep slopes.	✓	✓	✓	✓	✓	✓
Multi-cropping is good for the soil.	✓	✓	✓	✓	✓	✓
Without forests that supply natural fertilizers, water and minerals, which make lowland soil rich, land productivity would suffer severely.	✓	✓	✓	✓	✓	✓
Land conversion, or cutting forest stands to open lands for agriculture, reduces quality of forest services.	✓	✓	✓	✓	✓	✓

CONSERVATION CONCEPTS	TOTAL RESPONDENTS		TENURED RESPONDENTS		NON-TENURED RESPONDENTS	
	2017 Baseline (n=385)	2021 Endline (n=150)	2017 Baseline	2021 Endline	2017 Baseline	2021 Endline
Fauna species are natural elements of forests, and they have special functions that help maintain quality of forest services. Hence, wildlife collection is not a good practice.	✓	✓	✓	✓	✓	✓
A destroyed forest directly impacts fisheries due to effects on fish and marine habitats.	✓	✓	✓	✓	✓	✓

✓ Less than 60% answered correctly   ✓ More than 60% answered correctly

*KAP Survey Question: Are the following statements correct or incorrect based on what you know?

Endline survey findings pointed to increase in awareness on laws and policies that address wildlife poaching, reforestation, charcoal making and mining, whereas baseline survey findings showed awareness that was limited only to illegal logging laws. The positive change was clear among tenured and non-tenured respondents, but also indicatively among those outside Mount Mantalingahan (Table 7).

Table 7. Awareness of Southern Palawan Respondents of Conservation Laws and Policies

ACTIVITIES IN PROTECTED AREA	TOTAL RESPONDENTS		TENURED		NON-TENURED		OUTSIDE OF PROTECTED AREA	
	2017 Baseline (n=385)	2021 Endline (n=150)	2017 Baseline	2021 Endline	2017 Baseline	2021 Endline	2017 Baseline	2021 Endline
Logging	64%	64%	66%	68% ↑	62%	60%	65%	64%
Wildlife poaching	17%	29% ↑	18%	28% ↑	16%	34% ↑	15%	20% ↑
Slash-and-burn farming	21%	13%	27%	16%	15%	13%	15%	4%
Reforestation	2%	13% ↑	2%	11% ↑	1%	15% ↑	5%	12% ↑
Charcoal making	6%	12% ↑	2%	16% ↑	9%	12% ↑	20%	4%
Mining	6%	10% ↑	8%	7%	5%	13% ↑	-	8%

*KAP Survey Question: Are you aware of specific laws or policies specific to the conservation of the protected area?

Alongside on-the-ground interventions by partner agencies and LGUs, Protect Wildlife supported five BCC campaigns in and around Mount Mantalingahan starting in 2017. Campaign messages focused on proper land and resource use, zoning, protection of watershed, protection of wildlife species, and ecosystem goods and services derived from Mount Mantalingahan. Thematic campaigns targeted all five municipalities surrounding the protected area, while the rest focused on Brooke's Point municipality.

During the endline survey, close to half of the target population had been reached by the collective campaigns for Mount Mantalingahan. Brooke's Point, as well as indications on Bataraza municipality, had the highest increase in campaign awareness in southern Palawan.

The endline survey showed high recall of campaign messages related to "taking care of natural resources" and "take care of mountains." These highly recalled messages can be seen in Protect Wildlife

campaigns. Data also showed that some campaigns have contributed to improved foundational knowledge. For example, data showed how Protect Wildlife campaigns have contributed to increasing awareness of environmental threats (Table 8) and awareness of conservation concepts (Table 9).

It is interesting to note that the Makmak campaign—one of the more popular campaigns—showed increased awareness of environmental threats, as well as the importance of forests—both of which were key messages of the campaign. Data showed that the other Protect Wildlife campaigns, if further amplified or continued by partners and other initiatives in the site, could potentially show significant traction in improving awareness and knowledge on human behaviors that act as conservation threats in Mount Mantalingahan. By doing so, audiences are ushered into a contemplation stage of change, where one is now aware of the need to change behaviors.

Table 8. Awareness of Southern Palawan Respondents of Environmental Threats to Mount Mantalingahan, by Campaign

THREATS TO PROTECTED AREA	KAGUBATAN AY KINABUKASAN		MAKMAK		SAMU'T-SARI		GAMARAN MO AY MAHALAGA		PES	
	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware
Depletion of natural resources for food supply	30%	42%	63%	32%	67%	39%	63%	39%	56%	40%
Pollution and toxins in the air, water and soil	52%	48%	58%	46%	78%	47%	63%	48%	78%	47%
Deforestation	57%	50%	63%	48%	78%	50%	63%	51%	89%	50%
Species extinction	48%	46%	55%	43%	67%	44%	67%	45%	67%	45%
Wildlife hunting and trading	48%	46%	50%	45%	67%	44%	63%	45%	67%	45%
Conversion of forestlands into illegal settlements	44%	37%	42%	36%	67%	35%	63%	36%	56%	36%
Diminishing water supply	57%	41%	58%	39%	78%	41%	75%	41%	78%	41%
Unsustainable use of natural resources	52%	40%	42%	41%	67%	39%	63%	40%	67%	39%
Natural disasters	39%	37%	53%	32%	78%	35%	75%	36%	67%	36%
Forest fires	44%	40%	53%	36%	78%	38%	75%	38%	67%	38%
Growing volume of domestic waste from illegal settlements	44%	30%	58%	23%	78%	29%	88%	28%	67%	30%

*KAP Survey Question: Do you think the following are environmental issues or threats inside the protected area?

Table 9. Awareness of Southern Palawan Respondents of Conservation Concepts, by Campaign

CONSERVATION CONCEPTS	KAGUBATAN AY KINABUKASAN		MAKMAK		SAMU'T-SARI		GAMARAN MO AY MAHALAGA		PES	
	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware
Use of inorganic fertilizers is not strictly harmful if applied properly with organic fertilizers.	52%	62%	71%	57%	78%	59%	88%	58%	67%	59%
Improper farming could be erosive, such as not practicing contour farming in steep slopes.	91%	74%	84%	73%	100%	74%	100%	75%	100%	74%
Multi-cropping is good for the soil.	87%	79%	79%	81%	78%	81%	88%	80%	89%	81%
Without forests that supply natural fertilizers, water and minerals, which make lowland soil rich, land productivity would suffer severely.	91%	87%	97%	84%	100%	86%	100%	86%	100%	86%
Land conversion, or cutting forest stands to open lands for agriculture, reduces quality of forest services.	91%	61%	74%	62%	89%	64%	88%	64%	100%	62%
Fauna species are natural elements of forests, and they have special functions that help maintain quality of forest services. Hence, wildlife collection is not a good practice.	91%	87%	92%	86%	89%	87%	100%	87%	100%	86%
A destroyed forest directly impacts fisheries due to effects on fish and marine habitats.	96%	86%	95%	85%	89%	87%	100%	87%	100%	87%

*KAP Survey Question: Are the following statements correct or incorrect based on what you know?

LEVEL 2:
APPLIED CONSERVATION AND ENFORCEMENT

Protect Wildlife presents activity interventions, outputs and outcomes linked to the following Theory of Change results:

- Inter-agency collaboration for landscape- and seascape-level policy, management and enforcement increased;
- National and local law enforcement improved;
- Investments in protected area management, support services and livelihoods increased; and
- Community, institutional and private sector attitudes toward conservation improved.

Activities to achieve these Level 2 results were designed to help partners apply the knowledge and skills gained through Protect Wildlife's capacity-building work profiled in Level 1 results, to develop policies and approaches to achieve threat reduction and human well-being outcomes, and to facilitate flow of financial and human resources to advance their implementation.

At the site level, management plan zoning regimes that are now in place provide the institutional framework needed to design and execute meaningful biodiversity conservation and enforcement investments. Alongside partnerships and site-based actions, emerging improvements in stakeholder attitudes and behavior will also contribute to improved conservation outcomes in activity sites.
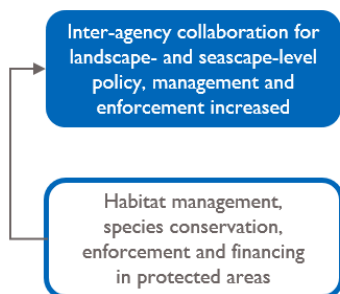
INTER-AGENCY COLLABORATION FOR LANDSCAPE- AND SEASCAPE-LEVEL POLICY, MANAGEMENT AND ENFORCEMENT INCREASED

Inter-agency collaboration is entrenched in Protect Wildlife's landscape-seascape planning approach. Through technical working groups—the main implementation arm for activity initiatives—various government agencies, LGUs, CSOs and NGOs, academe and local communities worked together in a participatory, consultative, inclusive and transparent planning process that used science and policy to inform decision-making. It was inevitable that stronger partnerships developed among agencies and sectors that are mandated to participate in governance of protected areas and forestlands.

Protect Wildlife's primary challenge in each protected area was not purely technical. It also centered on building each management board's capacity to effectively work with various stakeholders working within and around their area of responsibility. To make meaningful and sustainable changes to protected area management, the activity understood that management boards must have the capacity to coordinate actions across stakeholder groups, ensuring complementarity, rather than duplication, of actions; and to organize work toward a shared vision for integrated landscape-seascape management that takes both development and conservation imperatives into account.

For the management of forestlands, the challenge for Protect Wildlife was mobilizing different LGU units, including legislative councils, to invest in necessary technical, financial and policy measures to

Inter-agency collaboration for landscape- and seascape-level policy, management and enforcement increased

Habitat management, species conservation, enforcement and financing in protected areas

deliver on forest land use planning. The activity's strategy was to engage decision-makers from the protected area management board and LGUs throughout the planning process to promote joint development, management and ownership of their management plans. The activity sought to cultivate a sense of ownership through the following key actions during the management planning stage:

• **Creation of a multi-agency technical working group for plan preparation.** By assigning personnel to the technical working group, protected area management boards and LGUs were committing to support the process. Membership of the group included members of municipal or city council and the protected area management board. Participation of each member brought to the group a stronger understanding of policy and investment requirements needed to implement their protected area management plan or FLUP.

• **Formal approval of the zoning plan and management prescriptions proposed by the technical working group.** The zoning plan and management prescriptions were the result of policy review, spatial analysis, field validation and consultations undertaken by various stakeholders. Formal approval from the protected area management board signaled the technical working group to proceed with further planning activities. Consensus between the protected area management board and LGU on zoning promoted ownership of the zoning plan and served as a commitment to its enforcement.

• **Formal approval or legitimization of the protected area management plan and FLUP.** Management plans were packed with policy recommendations, providing the protected area management board and LGU a policy agenda to improve conservation and protection strategies and development programs. The plans also contained priority programs, with corresponding annual budget requirements, to guide resource allocation decisions. Embedded in the proposed budgets were measures to address funding gaps, such as partners' commitments, public and private sector investments, and payment for ecosystem services.

Even before protected area management plans were formally legitimized, some management boards took early actions toward plan implementation. These actions were based on

mandates derived from existing laws, such as NIPAS Act and other national policies, and were informed by the direction of ongoing zoning and planning activities. The chronology of policymaking by the management board in the past two to four years indicated progressive improvement in substance of its policies. Because management planning and zoning required involvement from board members, LGU officials and other partners, increased attention was given to defining roles and responsibilities in specific activities, unifying or harmonizing policies and programs, and establishing rules and structure to guide collaboration. Protect Wildlife also found that stakeholder groups were more willing to invest in management plan implementation since it was viewed as a shared responsibility.

Participation and support of LGUs in implementation of protected area management across activity sites were notable. Thanks to their active involvement in protected area zoning and resource management planning, LGUs, as management board members, embraced their environmental protection mandate and awakened to their roles as co-managers of conservation plan implementation.

In the following sections, Protect Wildlife presents examples of promoting inter-agency collaboration for policy, management and enforcement through case profiles for Pasonanca Natural Park, Sarangani Bay Protected Seascape and Mount Mantalingahan Protected Landscape. Within tables for each protected area, the activity outlines policies and resolutions put in place by management boards and LGUs to institutionalize enforcement, financing and conservation actions in their respective sites.

PASONANCA NATURAL PARK

In December 1999, DENR, Zamboanga City LGU, Zamboanga City Water District and the Pasonanca Natural Park protected area management board forged an agreement for joint protection, development and management of the protected area. The agreement instituted a collaborative management structure that committed the four parties to combine their individual resources and expertise to advance goals for Pasonanca Natural Park. Protect Wildlife worked with these partners to put forward several policies and interventions in anticipation of the approval of the protected area management plan, which was later secured in September 2020.

The following policies and interventions signaled how each stakeholder group will contribute to management and enforcement in Pasonanca Natural Park:

- **Conservation financing measures**, such as management board actions to increase entrance fee rates, introduce new charges for activities within the protected area, and establish a bank account for the Integrated Protected Area Fund (IPAF) for the accrual of revenues that will be applied toward protected area management.
- **Wildlife and environmental law enforcement initiatives**, such as a resolution to approve a new enforcement protocol that clarifies roles of stakeholder groups, and training ZCWD-hired forest guards and deputizing them as WEOs.
- **Zoning actions**, such as installing markers under a delineation and demarcation activity for strict protection and multiple-use zones.
- **Livelihood support**, such as DENR and Zamboanga City officials partnering to provide technical support for training on cacao production and agroforestry for communities in the protected area's buffer zone.

- **Species conservation actions**, such as passing a resolution declaring Philippine eagle and Zamboanga bulbul as flagship species of Pasonanca Natural Park.

Details on these policies and initiatives, as well as other interventions, are found in Table 10.

Table 10. Policies and Initiatives by Stakeholder Groups in Pasonanca Natural Park

STAKEHOLDERS	POLICY AND IMPLEMENTATION ACTIONS
Conservation Financing	
PAMB	A resolution updated entrance fees from ₱10 to ₱30 (US$0.20 to US$0.60) per visitor, and identified other fees and charges for users and visitors to the park. The protected area finally established its bank account for Integrated Protected Area Fund, where revenues generated by the park accrue. Though not yet substantial, higher revenues are now being generated and accounted for through these actions.
PAMB, ZCWD	A resolution supported the establishment of a PES scheme consistent with the existing agreement with ZCWD. In 2019, a resolution recognized the ZCWD budget allocation for protection, conservation, management and development of the protected area as a form of PES. ZCWD spends around ₱30 million (US$600,000) annually to implement watershed and environmental management programs and activities, including protection and enforcement in the park. ZCWD is the primary provider of human resource requirements for protection, conservation and management of the protected area. It is recognized as the major source of financing for protected area management.
Wildlife and Environmental Law Enforcement	
PAMB, DENR, ZCWD, Zamboanga City LGU	A resolution approved the protected area enforcement protocol. This clarified the roles of DENR, ZCWD and Zamboanga City LGU in park management and enforcement as set out in their 1999 memorandum of agreement. The enforcement protocol stipulated that ZCWD will lead in on-site enforcement, with DENR providing technical support and acting as complainant in cases filed against violators.
Protected area management office, DENR, ZCWD	ZCWD-hired forest guards were formally trained by DENR on wildlife and environmental law enforcement and then deputized as WEOs by DENR Region 9.
Zamboanga City LGU	Zamboanga City LGU created the Zamboanga City Anti-Wildlife Trafficking Task Force and later adopted the general enforcement and coordination protocol. The task force provides off-site enforcement support to the protected area.
PAMB	With approval of the management plan, the board also approved its manual of operations.
Zoning Enforcement	
PAMB, DENR, ZCWD, Zamboanga City LGU	A resolution approved the installation of standard monuments and markers as partial implementation of delineation and demarcation of strict protection and multiple-use zones in the protected area as proposed in the management plan. In July 2020, the management office launched the delineation survey and laying of boundary stakes with support from DENR, ZCWD and Protect Wildlife. It provided overall leadership until the activity was completed in December 2020. ZCWD provided field supervision to the hired workers.
Protected area management office, ZCWD	Park signage was installed to remind nearby communities of prohibited activities in the strict protection zone and to promote agroforestry in buffer zones. Signage was installed along marked boundaries, where the threat of encroachment is high.
Livelihood Support	
Protected area management office, DENR	DENR distributed 5,400 ready-to-plant vegetable and fruit tree seedlings and 1,500 *Acacia mangium* seedlings to Tolosa and Salaan people's organizations in the park's buffer zone as part of the government's livelihood assistance during the COVID-19 pandemic.
Protected area management office, DENR, Zamboanga City LGU	DENR and the Office of the City Agriculturist provided technical support to Protect Wildlife-supported trainings on cacao production and agroforestry for Tolosa and Salaan people's organizations in the park's buffer zone. Grant of tenure for these two organizations is under consideration.

STAKEHOLDERS	POLICY AND IMPLEMENTATION ACTIONS
Species Conservation	
Protected area management office, DENR, ZCWD, Zamboanga City LGU, academe	DENR, Zamboanga City LGU, ZCWD forest guards, and local colleges and universities participated in the training on raptor field research and management techniques. The training was organized by Philippine Eagle Foundation at the start of its Philippine eagle research in the park. ZCWD forest guards supported the research team in expeditions inside the park.
PAMB, Zamboanga City LGU	With the confirmation of the protected area as a habitat of Philippine eagles through the Protect Wildlife-funded research, the management board issued a resolution adopting the Philippine eagle and Zamboanga bulbul as flagship species of the park. Zamboanga City LGU echoed this by also declaring the two birds as flagship species of the city. The city ordinance allocated ₱1 million (US$20,000) annually for a conservation program to be led by DENR.
Other Support to Conservation	
Zamboanga City LGU	The Zamboanga City FLUP was completed and legitimized. As part of the FLUP, Zamboanga City LGU also developed and approved the management plans for Ayala and Manicahan watersheds, which are adjacent to the protected area.
DENR, Zamboanga City LGU	Zamboanga City LGU formulated and adopted its Biodiversity Conservation Management Plan, and later its Biodiversity Strategy and Action Plan. These plans have the park among the city's key biodiversity areas. These plans and policies take into consideration the critical needs of the park.
Zamboanga City LGU	Zamboanga City LGU formulated and adopted the Zamboanga City Environment Code.

SARANGANI BAY

In Sarangani Bay, initial actions by the protected area management board, LGUs and other partners focused on enforcement, conservation of marine turtles and other marine mammals, enactment of protocols, and efforts to ensure that conservation actors have clear roles and were properly trained to carry out their responsibilities. The protected area management plan was approved in December 2019.

The following policies and interventions signaled how each stakeholder group will contribute to management and enforcement in the protected seascape:

- **Wildlife and environmental law enforcement initiatives**, such as the collaboration of DENR, LGUs and the protected area management office to select, train and deputize 37 LGU-based WEOs and certify 134 community-based WEOs, who will support execution of enforcement measures outlined in the protected area management plan.
- **Species conservation actions**, including approval of local protocols for establishment and management of marine turtle hatcheries that conform to science and best practices for hatchery site selection, marine turtle nest protection, and data recording and reporting measures.
- **Zoning actions**, such as a marine protected area demarcation activity that included installation of buoys to demarcate legislated marine sanctuaries, and to install signage to raise awareness of marine protected area rules and restrictions.

Details on these policies and initiatives, as well as other interventions, are found in Table 11.

Table 11. Policies and Initiatives by Stakeholder Groups in Sarangani Bay Protected Seascape

STAKEHOLDERS	POLICY AND IMPLEMENTATION ACTIONS
Wildlife and Environmental Law Enforcement	
PAMB, DENR, DA-BFAR, LGUs, NGOs, enforcement groups	A resolution created a multi-level, bay-wide law enforcement group to coordinate and harmonize actions of enforcement groups in the protected seascape. The group is composed of DENR, DA-BFAR, LGUs, NGOs, PNP Maritime Group, Philippine Coast Guard, Philippine Navy, Department of National Defense, and Integrated Fisheries and Aquatic Resources Management Council. Members of the group were engaged through workshops to craft an enforcement protocol that defines mandates and jurisdiction of member agencies, and sets operational guidelines for enforcement operations and administrative complaints. The enforcement protocol was completed in March 2020.
Protected area management office, DENR, DA-BFAR, LGUs, PNP Maritime Group	The seven LGUs along the bay identified staff and community members for training as WEOs or *Bantay Dagat*. The training led to the deputation of 37 LGU-based WEOs by DENR Region 12 and certification of 134 community-based WEOs or *Bantay Dagat* by the protected area superintendent. The training was done by the protected area management office, in collaboration with DENR, DA-BFAR and PNP Maritime Group.
PAMB	A resolution was proposed to approve and adopt the schedule of administrative fines applicable to reported violations within the bay. Violations include damage or destruction of mangroves, coral reefs and seagrass; illegal discharge or disposal of wastewater; illegal fishing and poaching or harming of wildlife resources; and destroying scenic and natural formations.
Species Conservation	
PAMB, DENR, LGUs	The management board approved local protocols for establishment and management of marine turtle hatcheries. Protocols covered site selection, hatchery construction and operations, including staff requirements, data recording and reporting. Prior to adoption by the management board, DENR followed these protocols when it established a marine turtle hatchery in Burias community in Glan municipality.
Protected area management office, DENR, LGUs, communities	Training on handling of marine turtle nests and hatchlings was held for the protected area management office, DENR, LGUs and community leaders. Protect Wildlife contributed information materials and supported local efforts to establish a system for reporting marine turtle nests, which was shared with coastal communities.
DENR, LGU, RD Foundation	With Protect Wildlife support, DENR, LGU and community officials and RD Foundation established a marine turtle learning center adjacent to the hatchery in Burias community in Glan for use in awareness-raising activities for local communities and youth. An assessment done in the protected seascape identified 16 nesting sites along the bay. These were highly concentrated on the municipalities of Glan, Malapatan and Alabel.
Protected area management office, LGUs	For the annual Sarangani Bay Week, the C4C team for the protected seascape organized a BCC campaign that featured games with conservations messages on marine turtles. Target audiences of the campaign were students and the youth.
PAMB, LGUs	A resolution recommended the adoption of flagship species by LGUs along the protected seascape. In response to this, Glan and Malapatan enacted ordinances adopting marine turtles as their flagship species. LGU ordinances outlined conservation measures and action plans for raising awareness on marine turtle protection and monitoring compliance. Malapatan allocated ₱500,000 (US$10,000) in initial funding and committed to an annual budget allocation thereafter for the implementation of an action plan. Alabel is inclined to adopt the same flagship species. Kiamba elected to adopt the green humphead parrotfish as its flagship species.
PAMB, DENR, LGUs, Philippine Coast Guard	A resolution created the Megafauna Response Team to coordinate protocols and responses to marine mammal strandings along the bay. These protocols are compliant to nationally accepted standards. Members of the team were from the protected area management office, DENR, DA-BFAR, provincial LGU, Philippine Coast Guard and private volunteers. Protect Wildlife hosted a training on basic protocols of marine mammal rescue and handling for stakeholders of the protected seascape.

STAKEHOLDERS	POLICY AND IMPLEMENTATION ACTIONS
	Zoning Enforcement
Protected area management office, LGUs	The protected area management office is leading efforts to demarcate boundaries of marine protected areas in the bay. Based on the management plan, there are 56 marine protected areas in the bay. Installation of buoys to demarcate legislated marine protected areas will contribute to efforts to enforce compliance. In turn, communities can reap the benefits of improved conservation. With Protect Wildlife support, this activity was piloted in marine protected areas in Kawas community in Alabel and Pangyan community in Glan. Signage will also be installed in seven marine protected areas.

MOUNT MANTALINGAHAN AND SURROUNDING FORESTLANDS

Protect Wildlife collaborated with stakeholders of Mount Mantalingahan Protected Landscape for nearly the entire life of the activity. Protect Wildlife was also able to quickly launch support activities by building on existing relationships at the site that were forged by partners at Conservation International, who have long been active in the area. Mount Mantalingahan and the five southern Palawan LGUs that surround it served as the activity's testing ground for many conservation and enforcement innovations that were later introduced in other sites. The protected area management plan was approved in December 2019, while FLUPs of the LGUs were approved between January 2019 and March 2020.

The following policies and interventions signaled how each stakeholder group will contribute to management and enforcement in the protected landscape:

- **Conservation financing measures**, such as PES and PES-like schemes put in place or strengthened by Brooke's Point and Rizal LGUs and Brooke's Point Rural Waterworks and Sanitation Association; and funding by the protected area management office, which collectively generated nearly ₱2.5 million (US$50,000) toward conservation and management of Mount Mantalingahan and connected forestlands.
- **Wildlife and environmental law enforcement initiatives**, such as the resolution that created a multi-level enforcement group with membership from communities to national government agencies, along with protocols for coordinated enforcement.
- **Species conservation actions**, such as a Quezon LGU ordinance issued in response to a provincial directive on adoption of flagship species. The Quezon declaration of the Philippine megapode as its flagship species carried with it a ₱300,000 (US$6,000) budget for conservation actions to be implemented under the guidance of an inter-agency team composed of partners from the LGU, PCSDS, DENR, PNP, local academe and other stakeholders.
- **Livelihood support**, including collaboration between the protected area management office and LGU to train upland farmers on agroforestry and conservation agriculture prior to distribution of high-value fruit tree seedlings, which Protect Wildlife envisions will help increase land cover of critical watershed areas while also serving as a livelihood source for upland communities.

Details on these policies and initiatives, as well as other interventions, are found in Table 12.

Table 12. Policies and Initiatives by Stakeholder Groups in Mount Mantalingahan Protected Landscape and Surrounding Forestlands

STAKEHOLDERS	POLICY AND IMPLEMENTATION ACTIONS
	Conservation Financing
Protected area management office, LGU	Brooke's Point LGU, which is managing a municipal water system, initiated a PES scheme for the protected landscape. The LGU generated revenue and has begun ploughback to protect river easements, establish watershed monitoring stations, and improve basic infrastructure and services for communities in its watersheds located in the protected area. Brooke's Point has expanded PES coverage to include all establishments operating in the LGU and created a municipal PES board to oversee the implementation of PES initiatives in the municipality.
Protected area management office, LGUs	Following the Brooke's Point model, Bataraza, Rizal and Sofronio Española LGUs have adopted similar PES schemes. Rizal and Sofronio Española have started collecting PES revenues, with Rizal initiating PES revenue reinvestment in its watershed. In both Brooke's Point and Rizal, a campaign was launched to inform its water users about PES and to instill pride on how their contributions help protect their watersheds.
PAMB	The management board approved the adoption of additional fees—being a sole conservation levy—to be collected from visitors to the protected area for tourism and other activities. The management board also adopted a resolution calling for an IPAF account to be opened, so revenues can be properly accounted for. The resolution remains with DENR Region 4B.
	Wildlife and Environmental Law Enforcement
PAMB, LGUs	A resolution created a multi-level enforcement group composed of national government agencies and LGUs. An enforcement operations protocol was developed based on the Handbook on Law Enforcement for Protected Areas in the Philippines. Under the protocol, deputized WEOs are assigned to enforce environmental laws within the LGU jurisdiction both inside and outside protected area boundaries. Community officials will act as first responders on-site. The management board approved the enforcement protocol through another resolution.
Protected area management office, DENR, LGUs	The five LGUs that surround the protected area have identified LGU personnel and community members to serve as WEOs for southern Palawan. A recent enforcement training and mentoring session resulted in the deputation of 46 LGU personnel and certification of 49 community members as WEOs. The training had resource persons from PCSDS, DA-BFAR and PNP Maritime Group.
Protected area management office, DENR, PCSDS	PCSDS deployed the BRAIN system's RESPONSE module and public reporting platform in southern Palawan.
	Species Conservation
Protected area management office, LGUs	The protected area management office adopted and sustained the *Kagubatan ay Kinabukasan* (The Forest is Our Future) BCC campaign and used the theme for their anniversary program. Protect Wildlife supported the installation of campaign billboards and production of other materials.
LGU	In compliance with a provincial directive on the adoption of flagship species, Quezon LGU declared the Philippine megapode as its flagship species. The LGU created an inter-agency team together with DENR, PCSDS, PNP, Department of Education, Palawan State University and Western Philippines University; and allocated ₱300,000 (US$6,000) for initial implementation of conservation activities. The team's five-year action plan for Philippine megapode conservation has been developed. Fourteen communities in Quezon committed to support the implementation of the plan.
LGU	Rizal adopted the Palawan hill mynah as its flagship species and allocated ₱300,000 (US$2,000) annually for a conservation program. Bataraza chose the Nicobar pigeon, while Brooke's Point is considering the blue-naped parrot. Brooke's Point has an existing BCC campaign using a blue-naped parrot mascot. Sofronio Española is considering the Palawan fruit bat.
Protected area management office, PCSDS	Camera traps were set up in the protected area to monitor the presence of wildlife. The protected landscape is part of Wildlife Insights Network established by PCSDS. A long-term monitoring program is envisioned under Wildlife Insights Network, with annual camera trap deployments and data collection to aid efforts to detect changes in presence of wildlife.

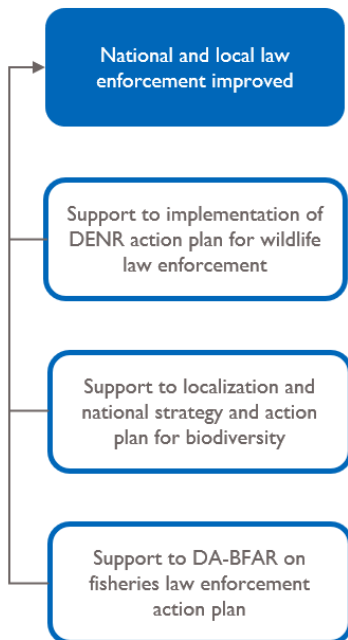| STAKEHOLDERS	POLICY AND IMPLEMENTATION ACTIONS
	Livelihood Support
Protected area management office, LGUs	The protected area management office and LGU units served as trainers on agroforestry and conservation agriculture to upland farmers taking part in Protect Wildlife's agroforestry initiative. The orientation focused on proper planting and maintenance of fruit tree seedlings, complemented by practical demonstrations on laying out contour lines for establishing natural vegetative strips and on handling seedlings. This initiative will provide additional income to farmers and help improve land cover in upland areas, including critical watersheds. The protected area management office and LGUs will continue to monitor and provide further technical advice to beneficiary farmers. As a result of agroforestry training, Quezon is shifting its reforestation program to agroforestry.
LGUs	LGUs, through their respective municipal agricultural offices, assisted in identifying people's organizations and demonstration farms for Protect Wildlife-supported activities in cassava and purple yam farming. LGU agricultural staff periodically monitored the people's organizations and supported them in training and other activities organized by Protect Wildlife. They have also established a network so they can coordinate services for the beneficiary organizations.

SUMMARY

In addition to policy development, management planning and coordination efforts supported over the life of the activity, Protect Wildlife contributed to pilot implementation initiatives in the three landscapes and seascapes. Support ranged from technical guidance, training and coaching, to making catalytic investments in pilot initiatives, such as purchasing materials for demarcation activities that local officials will install in protected areas.

Beyond support to these three landscapes and seascapes, Protect Wildlife also supported management and enforcement policies and initiatives in Mount Matutum Protected Landscape, Great and Little Santa Cruz Islands Protected Landscape and Seascape, Aurora Memorial National Park and other conservation areas, such as landscapes and seascapes in Tawi-Tawi. Protect Wildlife contributed to similar policy and implementation initiatives for these protection and conservation areas, which are accounted for in this report's Monitoring, Evaluation and Learning chapter.

NATIONAL AND LOCAL LAW ENFORCEMENT IMPROVED

The preceding section discusses actions taken by protected area management boards and partners, with activity support, to improve wildlife and environmental law enforcement at the local level. In this section, Protect Wildlife presents its work with partners to scale up field-tested enforcement initiatives and best practices by developing policies to promote and guide local implementers in executing them—cultivating new standards of enforcement practice. These initiatives, enforcement tools and resources, and reports on best practices establish a foundation for long-term development and strengthening of wildlife and environmental law enforcement in the Philippines.

Protect Wildlife developed these initiatives to help partners execute three national-level strategies and action plans: DENR's Wildlife Law Enforcement Action Plan and Philippine Biodiversity Strategy and Action Plan, and DA-BFAR's Fisheries Law Enforcement Action Plan. The approach aligned with the activity's emphasis on adding value to local-led initiatives, while also contributing to sustainability of these efforts. By anchoring its work on long-term strategies, Protect Wildlife was able to better design interventions, ensuring the activity contributed to national-level strategic outcomes.

National and local law enforcement improved

- Support to implementation of DENR action plan for wildlife law enforcement
- Support to localization and national strategy and action plan for biodiversity
- Support to DA-BFAR on fisheries law enforcement action plan

SUPPORTING WILDLEAP IMPLEMENTATION

After contributing to development of WildLEAP and the amended Wildlife Act during the activity's first years of implementation, Protect Wildlife was uniquely situated to tailor technical assistance to priority actions. Key interventions to address national-level concerns and strengthen enforcement over the long-term were focused on policy and systems development and capacity building.

Policy and Systems Development

The first of six WildLEAP strategies focus on strengthened policies and systems for wildlife law enforcement. Protect Wildlife's most significant contribution to these strategies was through development of the WildALERT system and support for crafting a national policy on flagship species.

WildALERT

To help field enforcers address challenges in species identification and adopt a citizen science approach by engaging the public in wildlife crime detection and reporting. Protect Wildlife supported DENR-BMB in developing the WildALERT system. A design thinking workshop was initially held to flesh out ideas and inputs from DENR and enforcement partners, feeding these into the development process for a new digital reporting tool. Subsequent workshops and consultations with partners helped fine tune what became WildALERT. The whole system, which comes with a mobile app and a web interface platform, facilitates the following core enforcement functions:

- **On-site species identification.** The WildALERT mobile app assists field enforcers and regulators in efficient identification of wildlife species and their conservation status—key elements in determining the prescriptive period in filing a wildlife crime case. For wildlife that is permitted for shipment through transit points, as for wildlife farms, the app can be used by local officials to determine whether the wildlife is properly registered as the correct species, and to confirm that it is not a look-alike species used for the purposes of wildlife laundering.
- **Real-time reporting and database management.** Reports can be documented in the field and then uploaded

online at the nearest DENR office. Data on apprehensions can now be tracked real time across various law enforcement agencies.

- **Public engagement.** By offering WildALERT to the public—a strategy to be implemented in the future—DENR can engage the citizens as partners on wildlife crime reporting.

Protect Wildlife collaborated with various DENR units—including DENR-BMB, DENR-FMB, DENR regional offices, and Philippine Operations Group on Ivory and Illegal Wildlife Trade—to develop WildALERT. DENR allocated ₱1 million (US$20,000) for WildALERT rollout in 2021. The activity also led a training of trainers on the use of WildALERT for DENR officials, who will cascade the training down to field enforcers throughout the Philippines. The tool will also be introduced to other law enforcement agencies and, finally, to the general public.

National Policy on Flagship Species

To build on ongoing calls for action—such as the Wildlife Act calling for LGUs to identify their iconic species for protection, and WildLEAP targeting the adoption of local flagship species as an area for support—Protect Wildlife collaborated with DENR-BMB to develop a clearer framework on selecting flagship species and building conservation plans around them. With the bureau, the activity reviewed existing guidelines and identified the following primary ways to strengthen flagship species initiatives:

- Incorporate the management indicator species system into the biodiversity monitoring system. If appropriately selected, management indicator species can serve as indicators for the health of the local ecosystem.
- Adopt guidelines for LGUs to not only select their flagship species but also to prepare conservation plans for their protection, as well as clearly defining key terms, such as flagship species and management indicator species, around their specific uses in biodiversity conservation.

Protect Wildlife's focus was on contributing to the ongoing effort to integrate the DENR-FMB Lawin system with the DENR-BMB biodiversity monitoring system for application in more than 244 conservation and protection sites across the country. The two bureaus presently use different monitoring systems, with unique data parameters that prevent data sharing between the systems. An integrated system will usher biodiversity concerns into forest management and give it sufficient attention in forestlands monitoring.

Protect Wildlife supported this initiative by providing technical support focused on the biodiversity monitoring system by programming it to use management indicator species of flora and fauna as the principal monitoring element. With activity support, the two bureaus took major steps in unifying the systems by incorporating the Spatial Monitoring and Reporting Tool from the Lawin system for use in the biodiversity monitoring system. Once completed by DENR-FMB, this will make monitoring of management indicator species and habitat conditions in different management zones and land classifications easier and efficient as real-time data can be entered into the system. The activity also supported joint efforts in drafting the DENR administrative order on integrating the two systems.

Protect Wildlife also supported DENR efforts to craft a memorandum order on the selection and conservation of candidate flagship species. Together, the activity and DENR refined the language on the

amendment to the memorandum order on Guidelines on the Selection and Conservation of Candidate Flagship Species. Protected area and LGU officials are now using the policy and guidelines to inform their selection of management indicator species and flagship species, and preparation of conservation plans to further their protection.

Capacity Building

Prior to the WildLEAP formal approval in 2020, Protect Wildlife held yearly planning sessions with DENR-BMB Wildlife Resources Division to tailor its activities to WildLEAP capacity-building priorities. Through this collaboration, the activity identified the need for specialized training sessions on wildlife identification and handling, specimen collection and preservation, cybercrime investigation, intelligence-led law enforcement, controlled delivery and communication planning. From these insights, the activity designed new trainings and strengthened others to address these priority areas.

Beyond trainings, Protect Wildlife also set its sights on the long-term priority of developing wildlife forensics knowledge, skills and technical resources. In partnership with PBC 3 and USFWS, the activity helped local partners conduct cross-agency assessment of the country's forensics capabilities. Conducted with NALECC-SCENR, the assessment provided a framework for building the country's environmental forensics program and identifying initial activities to build momentum for its adoption. The assessment's core recommendation was to develop a central forensics laboratory, with proposed management and technical functions linked to a network of existing laboratories from various agencies.

Protect Wildlife envisioned its capacity-building investments in advanced enforcement training and forensics will soon find a new home in the proposed Environmental Protection and Enforcement Bureau under the DENR. The activity was in a strong position to support DENR's work to develop its concept for EPEB, thanks to Protect Wildlife's enforcement training experience for officials across DENR bureaus and regional offices, and its studies on forensics and wildlife trafficking trends and practices. The activity saw the new bureau as a potential long-term home for its enforcement training modules and resources. To contribute to DENR's efforts and to help incorporate best practices and lessons learned from enforcement work into the proposed bureau's structure and functions, Protect Wildlife helped to craft content for the draft EPEB bill.

Along with the filing of House of Representatives and Senate bills on the EPEB and policy advocacy supported by Protect Wildlife, DENR increased the visibility of the call for restructuring—mobilizing support by citing linkages between illegal wildlife trade and habitat destruction to zoonotic diseases; threats to nature and water sources from wastewater, hospital and other hazardous wastes; and the general weak enforcement of other environmental laws. Specifically, the EPEB bill supports the following:

- Building capabilities of DENR enforcers through an academy that will teach basic and advanced enforcement skills—such as forensics, intelligence and surveillance, and criminalistics—which lends itself to professional career advancement in environmental law enforcement in DENR, completely overhauling the ad hoc nature of the present system;
- Empowering DENR to mainstream wildlife and environmental laws into traditional enforcement agencies, such as PNP and National Bureau of Investigation; and

- Directing DENR to mandate the establishment of the Philippines' first environmental law enforcement forensics laboratory to help solve environmental crimes involving wildlife, forests, protected areas, and pollution and toxic substances.

Applying content from its proof-of-concept advanced trainings, Protect Wildlife worked with DENR to draft training curriculum on crime scene investigation and intelligence, surveillance and investigation courses for incorporation in the envisioned EPEB. While these packages would be incorporated later—contributing to capacity building over the long term—the activity also produced a compendium of its basic and advanced training courses, with modules and reference materials, for immediate application by DENR-BMB Wildlife Resources Division and DENR Environmental Protection and Enforcement Task Force— ensuring that the tools will support capacity building over the short term as well.

SUPPORTING PBSAP LOCALIZATION

The Philippine Biodiversity Strategy and Action Plan, covering the period of 2015 to 2028, serves as the country's roadmap for conserving its biodiversity. It also functions as a pathway to mainstream Convention on Biological Diversity objectives into national development and sectoral planning frameworks and to establish targets linked to the Philippines' commitments to the convention. While the strategy and targets are established at the national level, it falls upon DENR regional officials and LGUs to set local targets and operationalize PBSAP for local implementation.

Protect Wildlife developed a draft framework and process guidelines for translating the PBSAP into local biodiversity strategy and action plans. Together with United Nations Development Programme's Biodiversity Finance Initiative project, the activity piloted implementation of the framework and guidelines in Zamboanga City and the provinces of Aurora, South Cotabato and Zamboanga Sibugay. Lessons learned and best practices identified through pilot localization exercises were used to inform development of the guidelines for rollout in other provinces.

LOCALIZING PBSAP IN ZAMBOANGA CITY

Zamboanga City was an ideal pilot site for PBSAP localization, considering the number of management plans that Protect Wildlife supported for the city's protected areas, forestlands, watersheds and mangrove forests. These management plans sit like nesting dolls within the city's biodiversity and strategy action plan, the umbrella repository for all biodiversity assets across all management plans.

The great value of a biodiversity strategy and action plan is that it serves as a central platform with a uniform definition of biodiversity assets, and pulls together biodiversity linkages from across the different management plans. It makes sense of these management plans and organizes them behind a central purpose of conserving local biodiversity and governing sustainable use of ecosystem goods and services.

The biodiversity strategy and action plan was designed as a tool for communicating and reporting, and as a platform for attracting investments from the private sector and bilateral and multilateral parties with biodiversity conservation and governance objectives.

In launching this initiative, Protect Wildlife supported several workshops. With officials from the city LGU, other government agencies, civil society, academe and communities, the technical working group for Zamboanga City completed the draft plan in January 2020. In March of the same year, the Zamboanga City Development Council passed Resolution No. 2020-003 adopting the Zamboanga City Biodiversity Strategy and Action Plan 2019-2028, formally endorsing it to the city legislative council for action.

Strengthening coordination across LGUs and stakeholders was one of the major areas of success in adapting PBSAP for local implementation. The integrated and participation-driven approach applied by Protect Wildlife and local partners replaced the traditional sectoral and fragmented style of establishing national strategies, with LGUs being afforded more active roles in preparing and implementing local biodiversity strategy and action plans. This governance approach brought a fresh mandate to LGUs, supported by national government agencies, in generating improved local support and investments for the conservation of local biodiversity assets. The draft guidelines were written to lead local conservation stakeholders through the process of developing strategies with matching indicators to measure progress in the implementation of conservation activities. Results from local biodiversity strategy and action plans would then be aggregated at the national level for analysis and reporting to the national government and Congress and to international bodies.

A draft administrative order with a user-friendly guide for preparing a provincial- or city-level biodiversity strategy and action plan has been prepared with DENR-BMB. Upon issuance of the administrative order, DENR will begin allocating funds for the preparation of local plans.

SUPPORTING DA-BFAR FISHERIES LAW ENFORCEMENT ACTION PLAN

The DA-BFAR action plan provides a five-year framework for the bureau to build their capacities in fisheries law enforcement, highlighting policy development, network building, resource mobilization, capacity building, public awareness, information management, and adjudication as priority intervention areas. Protect Wildlife assisted the bureau through design and facilitation of workshops and support for technical writing of a five-year enforcement operations plan that identified poaching and trafficking of aquatic species as key areas of concern. The activity highlights policy and capacity-building support to the bureau on these priority areas.

Policy Development

In recent years, the Philippines has experienced a documented increase of entries of foreign fishing vessels in the country's exclusive economic zone in West Philippine Sea. Not only does this significantly impact the country's fisheries sector, but there have also been instances when local fishing vessels were harassed or damaged by foreign fishing vessels. While these incidences occur in daytime, night fishing is also a particular concern due to the practice of using high-capacity lights in fishing operations, decimating pelagic fisheries in the area. Foreign fishing vessels are also known to target marine turtles, giant clams, sharks, corals and other threatened marine wildlife.

DA-BFAR has been constrained in exercising its authority as lead bureau for addressing marine wildlife poaching due to its reliance on a dated 20-year-old protocol that has not kept pace with trends in fisheries law enforcement. With Protect Wildlife support, the bureau conducted workshops and public consultations with partners from DENR, PNP, Philippine Coast Guard, Philippine Navy, commercial fishing organizations and other stakeholders to develop an enforcement protocol for addressing illegal operations of foreign fishing vessels in Philippine waters, and to align it with the amended Fisheries Code. The draft national anti-poaching protocol will govern the process of interdicting, apprehending, boarding and filing of appropriate administrative and criminal cases against any foreign fishing vessel found operating or fishing within Philippine waters, including exclusive economic zones.

Building the case for the new protocol, Protect Wildlife developed 13 heat maps showing intrusion of foreign fishing vessels in West Philippine Sea, which were presented by DA-BFAR during a high-level meeting with national government agencies and enforcement bodies in June 2020. The maps were generated using data from Visible Infrared Imaging Radiometer Suite (VIIRS), a technology developed by United States National Oceanic and Atmospheric Administration. VIIRS detects use of lights for night fishing and marks these coordinates. Spatial analysis of these light points can show when fishing pressure is heaviest in a given area. VIIRS is also useful for tracking fishing vessel intrusions into prohibited areas.

The heat maps clearly showed prevalence of foreign fishing vessels within the Philippines' exclusive economic zone. This data, along with high-profile cases of incursions, has helped secure overwhelming support to strengthen DA-BFAR's anti-poaching protocol and enforcement operations plan. The newly strengthened protocol provides for new coordination processes, with DA-BFAR as overall commander for multi-agency operations that address poaching. Rules of engagement and procedures will also be standardized across different law enforcement bodies under implementation of the new policy. A technical working group has endorsed the draft protocol to National Fisheries and Aquatic Resources Management Council as part of the formal adoption process.
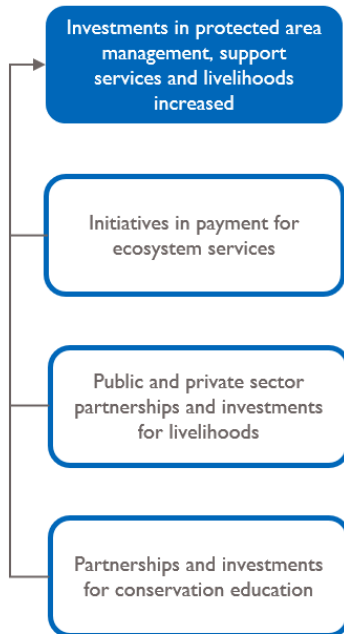
Capacity Building

With the development of the fisheries law enforcement plan, DA-BFAR institutionalized two significant improvements in enforcement practices: use of spatial tools like VIIRS in analyzing hotspots and planning enforcement responses, and adoption of an intelligence, surveillance and investigation course for fisheries law enforcement. Following DA-BFAR's participation in a course delivered by Protect Wildlife, the bureau adapted the design into their information gathering, surveillance and investigation course, which is now part of their training for managers and supervisors in their enforcement academy.

INVESTMENTS IN PROTECTED AREA MANAGEMENT, SUPPORT SERVICES AND LIVELIHOODS INCREASED

Protected area management and forest land use plans typically prescribe interventions to address resource management and protection, community engagement and development, ecotourism development, research and institutional development. The protected area management plans completed with Protect Wildlife support require five-year investments, ranging from ₱131.6 million (US$2.63 million) in Santa Cruz Islands to ₱266.5 million (US$5.33 million) in Sarangani Bay. If resource managers rely primarily on regular budget allocations from DENR to implement their plans, funding gaps could range from 56 percent in Mount Matutum to 80 percent in Sarangani Bay. Clearly, there is a need to review financing strategies for protected area management implementation and explore new and reliable sources of financing to address shortfalls.

Protect Wildlife contributed to efforts of protected area management boards and LGUs to identify sources of funding that could augment current budgets for the management of protection and conservation areas. Major financing strategies include payment for ecosystem services with reinvestment schemes; ring-fencing user fee accounts and developing financial management guidelines for their use, as done for Bud Bongao entrance fee collection; private sector investments; and contributions from

Investments in protected area management, support services and livelihoods increased

Initiatives in payment for ecosystem services

Public and private sector partnerships and investments for livelihoods

Partnerships and investments for conservation education

partners, such as Zamboanga City LGU's annual commitment of ₱1 million (US$20,000) for the Philippine eagle and Zamboanga bulbul conservation program.

In the following section, Protect Wildlife presents efforts to put in place these financing strategies—particularly PES and other PES-like schemes, and partnerships from private and public sectors.

PAYMENT FOR ECOSYSTEM SERVICES

Protect Wildlife explored the application of the PES concept as a way to augment traditional sources of revenues for protected area and forestland management. This approach to conservation brings together in a partnership the users and providers of ecosystem services, such as water. Users are made to appreciate the benefits of a well-managed ecosystem and are encouraged to compensate those who provide or safeguard these ecosystem services, or otherwise invest in upland conservation. These payments are in turn used to protect, preserve and conserve these natural resources which provide ecosystem services.

Protect Wildlife's PES efforts were heavily concentrated in two landscapes: Mount Mantalingahan Protected Landscape and surrounding forestlands in southern Palawan, and Mount Matutum Protected Landscape and surrounding forestlands in Region 12. The activity's initiative to introduce PES in its latter sites—such as in Mariveles and Bagac municipalities in Bataan province, Puerto Princesa Subterranean River National Park and other Palawan LGUs—were limited due to the onset of the COVID-19 pandemic.

Mount Mantalingahan

Mount Mantalingahan is a forested mountain range in southern Palawan providing ecosystem services, including water supply, fertile soil, flood control, carbon sequestration and non-timber forest products. The protected landscape's 33 watersheds are extremely valuable for lowland farmers and downstream domestic and industrial water users. All of the five LGUs surrounding Mount Mantalingahan operate water systems. Brooke's Point was fully operational in 2017, Rizal in 2016, Sofronio Española in 2019, and Bataraza and Quezon in 2020. Each water utility, except for Rizal, offers

municipality-wide coverage, while all have passed waterworks ordinances that provide for ₱1 (US$0.02) per cubic meter of water billed to consumers, which is earmarked for protection and management of their water sources. Brooke's Point's ordinance was in place when Protect Wildlife commenced its technical assistance in southern Palawan. The activity assisted Rizal, Bataraza and Sofronio Española in crafting their ordinance to ensure that PES provision would be included.

Brooke's Point served as a testing ground for Protect Wildlife's PES tools and approaches, and emerged with a model PES scheme for an LGU-managed water utility. The activity provided the LGU guidance in initiating fee collection and developing financial management guidelines for the waterworks enterprise—covering collection, budgeting, disbursement, asset management and reporting. The activity also assisted Brooke's Point in ring-fencing its waterworks and PES financial transactions from the general account of the LGU. This essential intervention enabled Brooke's Point to generate reliable financial information and reports showing the true performance of the water utility and its PES scheme. The activity led the LGU in preparation of waterworks business plans to establish guidelines and processes crafted to promote sustainable management of water services. After rolling out its strengthened system and generating PES revenues, the activity also provided significant support to LGU partners in developing a PES work and financial plan for the ploughback of revenues into watershed rehabilitation and basic services for watershed stewards in upland communities.

Encouraged by the PES revenues it was generating, Brooke's Point expanded PES beyond those connected to the LGU-managed water system to reach rural waterworks associations and other manufacturing, trading, services, tourism and quarrying operations that operate in Brooke's Point and rely on groundwater and other ecosystem services. The expanded coverage was approved in 2019 and took effect in 2020. A board was also created to oversee the implementation and utilization of PES.

Protect Wildlife's assistance to other LGUs followed the same approach, with Rizal launching revenue collection in January 2018 and Sofronio Española beginning in January 2019. Quezon began water system operations in the second quarter of 2020 while Bataraza began in the last quarter of 2020. PES mechanisms in all LGUs are in place—positioning these LGUs to immediately begin revenue collection and management for future ploughback activities.

Total PES revenues generated by three LGUs over the life of the activity amounted to nearly ₱3 million (US$60,000). Based on current water use, Protect Wildlife projects that the five LGUs' average annual PES collection will be approximately ₱4.6 million (US$92,000)—or a total of nearly ₱23 million (US$460,000) from 2021 to 2025 (Table 13).

The approved Mount Mantalingahan management plan includes a projection that execution of all activities under the plan would cost approximately ₱40 million (US$800,000) per year, or ₱200 million (US$4 million) over its five-year coverage period. Two of the management plan's core initiatives—resource management and protection, and community engagement and development programs—require an annual average investment of ₱10.5 million (US$210,000). Based on projections of PES revenue generation potential, Protect Wildlife noted that the five LGUs would be in a position to contribute nearly half of the required funding for the two core initiatives. Their significant contributions to Mount Mantalingahan management and protection through PES could be used by local officials as leverage to secure investments from other protected area stakeholders to close the remaining funding gap.

Table 13. Generated and Projected PES Revenues of LGUs in Mount Mantalingahan

LGU	TOTAL AMOUNT GENERATED as of December 2020 (₱)	AVERAGE ANNUAL PROJECTED PES (₱)	TOTAL PROJECTED PES 2021-2025 (₱)
Brooke's Point (since 2017)	2,156,082	1,700,000	8,500,000
Rizal (since 2018)	543,158	300,000	1,500,000
Sofronio Española (estimated, since 2019)	300,000	780,000	3,900,000
Bataraza		900,000	4,500,000
Quezon		900,000	4,500,000
TOTAL	**2,999,240**	**4,580,000**	**22,900,000**

PARTNER PERSPECTIVES ON PAYMENT FOR ECOSYSTEM SERVICES

"Protect Wildlife was our partner in operationalizing our payment for ecosystem services—first for water, and then later, as we expanded into commodities, including large-scale metal mining, palm oil, industrial and commercial sand and gravel extraction, water refilling and pumping stations, and services such as ecotourism sites, resorts and parks in Brooke's Point and its jurisdiction in Mount Mantalingahan," said Joie Piramide, municipal planning and development coordinator of Brooke's Point LGU.

Referring to PES revenues as environmental tax, Piramide saw ring-fencing of revenues from all ecosystem goods and services as key to ensuring that these are used exclusively to preserve natural resources. He credited Protect Wildlife for helping Brooke's Point see the value in calculating and setting a meaningful and reasonable price for ecosystem goods and services and for establishing ring-fencing of PES accounts. The technical assistance and financial management guidance from Protect Wildlife were critical to this, and Piramide emphasized the activity's partnership with the LGU and its participatory approach.

The PES system in Brooke's Point has already surpassed its target revenue collection, and has been expanded into multiple new areas, to the extent that original reinvestment plans will now be further loaded to utilize PES revenues. Aiming to improve livelihoods and well-being of indigenous communities in upland areas, the fund will be used to restore watersheds and install water systems. It will also be expanded to extend basic services to upland communities, such as building schools and hiring local teachers to benefit children. The fund will also provide for fruit tree saplings and planting materials for indigenous families, and will leverage additional support to provide solar panels for lighting and basic electricity needs in 2,500 households.

Piramide explained how the PES system is now institutionalized in Brooke's Point. He stands ready to convince other municipalities of how PES can be an innovative way to generate financing for conservation of natural resources—communicating how PES can enable resources for long-term planning while conserving those same resources and also supporting upland and indigenous communities. He is aware that ideas such as these can meet resistance and need to be clearly explained so that both costs and benefits are well understood. His key message as a PES champion is simple: "In the future, PES will help us in our daily lives."

Mount Matutum

Mount Matutum Protected Landscape is central to economic growth in Region 12 in south-central Mindanao. Its rich biological resources are valuable sources of food, fiber, medicine and raw materials, while its natural attractions provide recreational benefits. The protected area serves as headwater and catchment of five major rivers that supply 25 percent of the water requirements in the region. The livelihoods and survival of upland and lowland communities in the area are highly dependent on Mount Matutum's resources.

In 2018, Protect Wildlife introduced PES to Mount Matutum stakeholders to put in place a system that would help protect, rehabilitate and maintain ecosystem goods and services in the protected landscape. Initial orientation sessions led DENR, provincial government of South Cotabato, LGUs that encompass Mount Matutum, local businesses and enterprises, and other users of ecosystem services to agree to work together toward a strong PES policy framework that will conserve watersheds in the protected area.

The PES process introduced by Protect Wildlife adopted a landscape-based, voluntary PES approach. The landscape focus were watersheds, such as Silway-Klinan, that supply water to Polomolok municipality and General Santos City. The activity expanded on its Palawan approach by targeting a range of users of ecosystem goods and services rather than focusing exclusively on water services. Because there was no PES ordinance in place, the activity developed and pursued a voluntary PES scheme featuring price negotiations with users of ecosystem goods and services.

Protect Wildlife led Mount Matutum partners through the following steps in establishing a PES system:
- Assessment of the landscape, including boundaries of the five watersheds in Mount Matutum, its biodiversity and ecosystem goods and services it provides, users of ecosystem goods and services, restoration needs for each watershed, and governance system in place. In Silway-Klinan watershed, major users of ecosystem services were water service providers, resorts, an irrigation association, a pineapple plantation, vegetable producers, cut-flower enterprises, and fishpond operators. Few enterprises pay fees for the services they derive from the watershed.
- Quantification or valuation of ecosystem services by considering current and targeted land cover across each watershed management zones, and estimated cost to bring about changes from current to target land cover. This established the cost of water per cubic meter that can be used as minimum selling or transfer price that protected area or watershed managers can charge to users of ecosystem services. In Silway-Klinan watershed, this was estimated at ₱0.41 per cubic meter. Different prices apply to other watersheds: Buayan-Malungon watershed at ₱0.64 per cubic meter, Taplan watershed at ₱1.50 per cubic meter, and Kipalbig watershed at ₱1.20 per cubic meter.
- Assessment of financial capabilities of partner enterprises through a cost and revenue analysis to determine how PES affects their profitability. Protect Wildlife guided water utilities and other enterprises through a review and analysis of their financial records to establish their viability. These establishments must improve their operational efficiency or review their tariff or pricing structure to absorb PES without a negative impact on their viability as an enterprise.

- Negotiations among DENR, LGU, protected area management office and enterprises on the PES contribution of the enterprise. Under a voluntary PES scheme, enterprises offer contributions to watershed conservation relative to their computed selling or transfer price.
- Agreement on PES provisions and signing of PES agreements. The agreement establishes agreed price and arrangements for payment.
- Establishment of a system for revenue collection or fund allocation, and agreement on priority uses of revenues by resource managers.
- Reinvestment planning, fund utilization and monitoring.

Protect Wildlife documented this process, as well as PES lesson plans, tools and other resources, in a PES guidebook that will be provided to Mount Matutum stakeholders and other partners.

The PES process in Mount Matutum was at the negotiations stage when the COVID-19 pandemic hit. At that time, 66 enterprises, mostly composed of community water utilities in General Santos City, participated in negotiations to establish PES for watersheds in the protected landscape. Of these, 45 signified their commitment to contribute to PES, with 38 enterprises signing the agreement. Based on these voluntary commitments, PES would generate approximately ₱89.9 million (US$1.8 million) in ten years. Although this covers only two percent of total investment required to meet the targeted land cover for Mount Matutum watersheds—760 hectares within ten years—the PES revenue can be used to leverage other funding support to fill the gap.

Select PES partners—including water districts and agriculture plantations—preferred to negotiate a realignment of their annual allocation for conservation to target priority rehabilitation areas in watersheds in and around Mount Matutum. Water districts in Polomolok and General Santos City annually allocate ₱1 million (US$20,000) and ₱1.7 million (US$34,000), respectively, for watershed conservation. Dole Philippines allocates ₱5 million (US$100,000) annually from its corporate social responsibility fund for watershed conservation activities, while Lapanday Foods Corporation committed ₱185,000 (US$3,700) annually. DENR Region 12 and Mount Matutum protected area management office will move forward to develop a modified agreement structure for this type of PES scheme.

Since negotiations remained suspended, officials from South Cotabato provincial government and DENR Region 12 committed to revive the process started by Protect Wildlife once the COVID-19 pandemic abates and the pandemic-affected business climate improves. South Cotabato has prepared a draft PES ordinance that would, when passed, make PES mandatory—eliminating negotiations in the above process. To prepare DENR Region 12 and South Cotabato to advance the PES initiative, Protect Wildlife held a series of training of trainers for provincial and municipal LGU and DENR staff. The training will position them to continue the initiative in Mount Matutum and scale up PES schemes in other LGUs or protected areas in the region.

Summary

Although partners' PES efforts remain in early stages, with few actively generating revenue, Protect Wildlife laid the foundation for PES adoption and growth in Palawan, Region 12 and Bataan, and has trained and provided resources to local officials and DENR to scale up PES in other sites. In Palawan, the provincial PES policy by PCSDS enacted in October 2020 will accelerate adoption by LGUs, guided by

existing PES models from southern Palawan. The activity also supported Taytay and Narra LGUs in developing and implementing PES schemes for their respective waterworks systems. In Region 12, passage of the provincial PES policy for South Cotabato, expected in 2021, will create headwinds for launching new schemes across the province, given the groundwork completed under Protect Wildlife and stakeholders' stronger understanding of the concept.

The Region 12 experience—and even initial sessions in Bataan and Puerto Princesa Subterranean River National Park—indicated that users of ecosystem goods and services are open to participate in PES schemes and contribute funding for watershed management. In General Santos City, even small community waterworks associations, which generate limited revenue, committed to support PES. Protect Wildlife found that the following pre-conditions must be in place to generate this level of support:

- Concepts of ecosystem goods and services and how PES funds will be used and managed are made clear;
- Firm basis, such as valuation studies and management plans, for rates and reinvestment costs are explained; and
- Local officials commit to transparency and accountability in fund management.

As these partners continue their PES journeys, Protect Wildlife's PES guidebook will steer local efforts toward PES schemes that meet the pre-conditions above and help generate meaningful revenue toward improved watershed management.

PUBLIC AND PRIVATE SECTOR PARTNERSHIPS AND INVESTMENTS FOR LIVELIHOODS

To be consistent with zoning schemes being forged in forestlands and protection and conservation areas in activity sites, Protect Wildlife deliberately focused livelihood assistance to communities in production zones to encourage them to comply with zoning regulations and to adopt biodiversity-friendly practices. By enhancing the productivity of these zones, the activity posited that poverty-related threats— encroachment and illegal harvesting of wildlife resources—to forestlands and protection and conservation areas would be reduced. Realizing the need for sustainable access to financing and technical services that would extend beyond the life of the activity, Protect Wildlife was proactive in seeking out partnerships. The activity seized opportunities to collaborate with government agencies, civil society and private sector as they arose, channeling their contributions to support livelihood opportunities in the sites.

Protect Wildlife provides an overview of key partnerships in activity sites, and presents the activity's work through USAID's Women's Global Development and Prosperity Initiative, as well as a macro-level summary of public and private sector investment outcomes.

THRIVING WITH PARTNERSHIPS FOR SUSTAINABLE LIVELIHOODS

Across Protect Wildlife's livelihoods and W-GDP Initiative activities, the activity engaged public and private sector partners to help design, deliver and sustain interventions. Partners from public sector and civil society contributed their expertise through technical support; training design and facilitation; and design, operations and maintenance of processing equipment. Private sector partners contributed their technical expertise, networking and marketing support.

Public Sector Partners
- **Philippine Fiber Industry Development Authority (PhilFIDA)** provided technical assistance and training on abaca production through its Climate-Smart Farmers Field School, and supported procurement of improved stripping machines for abaca.
- **Philippine Center for Postharvest Development and Mechanization (PhilMech)** introduced postharvest and processing improvements for agricultural commodities, and supported procurement of tunnel solar dryers for coffee and turmeric, as well as training on equipment operation and maintenance.
- **Department of Science and Technology** provided technical support and shared designs for postharvest processing equipment, and supported procurement, production, management and maintenance of postharvest processing equipment for seaweed and other commodities.
- **Department of Trade and Industry** led trainings on business planning and basic bookkeeping for people's organizations in Zamboanga City and southern Palawan.

Donor-Funded Projects
- **World Bank's Philippine Rural Development Project and Department of Agriculture** supported technolog training for people's organizations in South Cotabato on abaca, cacao and coffee production, as well as training of para-technicians to expand service delivery in upland and indigenous communities.
- **United States Department of Agriculture's Philippine Coffee Advancement and Farm Enterprise (PhilCAFE) Project** supported the development of a coffee production manual integrating conservation-related farming practices, as well as a training of trainers with people's organizations on coffee production, postharvest and specialty coffee processing, and marketing assistance.

Private Sector and Civil Society Partners
- **Foundation for a Sustainable Society** supported access to credit for social enterprises, and training for Region 12 people's organizations on basic bookkeeping and financial management, together with Philippine Institute of Certified Public Accountants.
- **Lutheran World Relief** supported organizational development, training and farm establishment of southern Palawan people's organizations for rootcrop and vegetable production. It also contributed funding to ECLOF Philippines for a microcredit program for smallholder farmers in southern Palawan.
- **Conrado and Ladislawa Alcantara Foundation** supported training of Sarangani abaca farmers on imporved abaca production through the Climate-Smart Farmers Field School. It also supported a fisherfolk organization on their mangrove initiative.
- **RD Foundation** supported Sarangani Bay protected area management office and LGUs in a marine turtle conservation program and enforcement activities in the bay. The foundation worked with Protect Wildlife, Glan LGU and community officials to develop and manage a marine turtle learning center.
- **Coalition of Social Development Organizations in South Cotabato** supported member organizations in developing credit funding proposals, and led value chain studies for selected commodities in the province.
- **Sunlight Foods Corporation** provided on-site training and planting materials to people's organizations for purple yam production in southern Palawan. Through Protect Wildlife support, the company entered into a contract growing scheme with the people's organizations to buy their purple yam at a premium price.
- **JAS Agri-Ventures** supported Zamboanga City people's organizations in the buffer zone of Pasonanca Natural Park on cacao production and processing. The company gave access to people's organizations to their postharvest facilities and served as a market for the farmers' cacao harvest.

Key Partnerships for Livelihoods in Protect Wildlife Sites

Initial livelihood efforts in southern Palawan were supported by Lutheran World Relief, which invested ₱5 million (US$100,000) in a microcredit program and technical support that targeted community enterprises and small-scale farmers in the five municipalities in Mount Mantalingahan. Through its partnership with ECLOF Philippines, a microfinance institution operating in southern Palawan, loans were made available to agricultural and seaweed farmers. Working with LGUs, Lutheran World Relief and Protect Wildlife worked with five people's organizations to improve their cassava production through introduction of new varieties and proper cropping practices.

Protect Wildlife built on this initiative through a partnership with Sunlight Foods Corporation, a Manila-based food processing company that practices contract farming for purple yam, locally known as *ube*. Through the partnership, the activity provided target people's organizations in southern Palawan with opportunities to earn premium contract-growing prices with the company by applying conservation-oriented upland farming. The activity valued Sunlight Foods Corporation's technical and resource contributions at approximately ₱9.5 million (US$190,000), while outcomes and long-term value of the partnership to the farmers—in reliable income streams at consistent and fair prices, and sustainable agriculture skills with endless applications—were far more valuable. The company's technical support included soil testing to determine suitability of farming sites for purple yam cultivation, donation of initial planting materials, training on purple yam and sustainable upland farming, and consolidation and transportation support.

To sustain purple yam production in southern Palawan, Protect Wildlife and Sunlight Foods Corporation identified and built a relationship with a local consolidator—Institute for the Development of Educational and Ecological Alternatives (IDEAS)—which promotes sustainable livelihoods through agriculture and enterprise development. IDEAS executed a partnership agreement with Sunlight Foods Corporation, laying the legal groundwork for them to sustain and expand the purple yam initiative. Details on this partnership are presented on the Palawan site case study.

In Region 12, Foundation for a Sustainable Society began as a promising local partner of Protect Wildlife for community enterprise development. The foundation is a social investment organization providing financial services and grants to communities through sustainable social enterprises. Under the partnership, the foundation earmarked US$6.6 million for qualified social enterprises. With partner organizations, Protect Wildlife assisted people's organizations, including cooperatives and farmers' associations, prepare funding proposals for submission to the foundation.

Engaging Partners through W-GDP Initiative

In 2019, Protect Wildlife amplified its livelihoods support by participating in USAID's W-GDP Initiative in the Philippines. To achieve women empowerment and economic well-being objectives of the initiative while reinforcing Protect Wildlife's natural resources management objectives, the activity targeted indigenous, upland and fisherfolk organizations in multiple-use zones of protected areas and in production zones of forestlands with significant representation of women in their membership and operations, management and leadership roles.

AMPLIFYING LIVELIHOOD ASSISTANCE THROUGH THE W-GDP INITIATIVE

USAID's Women's Global Development and Prosperity Initiative is anchored on the following three pillars:

- **Women Prospering in the Workforce** to support workforce development and skills training;
- **Women Succeeding as Entrepreneurs**, which is centered on entrepreneurship and access to capital, markets and networks; and
- **Women Enabled in the Economy** to address factors that affect women's ability to reach their economic potential, including applicable laws, regulations, policies, practices and norms.

Protect Wildlife focused its efforts on the second pillar, targeting support to at least 20 enterprises with active women members and aiming to strengthen economic benefits derived from biodiversity conservation and sustainable management of natural resources for 1,000 women.

Protect Wildlife began W-GDP Initiative implementation with an assessment of 40 community-based and people's organizations using the People's Organizational and Enterprise Readiness Assessment tool. The tool, which was designed through a World Bank project, is used to assess organizations in the areas of organizational viability, legal personality, past project performance, membership size and scope, external interface or network relationships, financial competence, and organizational leadership. Through a rating scheme embedded in the tool, the activity gauged whether the organizations and, more specifically, their women leaders and members were of sufficient capacity to benefit from support under W-GDP Initiative. Of the 40 organizations, the activity identified 27 with sufficient capacity to absorb technical assistance and investments in improved processing capacity.

Beyond its direct technical support to people's organizations, Protect Wildlife leveraged partnerships with government agencies, donor-funded projects, civil society and industry leaders to help beneficiaries build lasting local networks. The partners contributed technical support and training design and facilitation, and also helped design and support operations and maintenance of processing equipment. Through these partnerships, the activity leveraged funding and technical services to support livelihoods of communities and people's organizations in protection and conservation areas.

Generating Value through Partnerships

Over the life of the activity, Protect Wildlife secured commitments valued at approximately US$7.5 million from public and private sector partners. Through signed partnership agreements and joint activity plans, parties outlined strategies; established roles and responsibilities; and issued technical, resource and financial commitments to support implementation toward target objectives.

Of the total leveraged for partners, Foundation for a Sustainable Society made the largest commitment: US$6.6 million earmarked for credit support to social enterprises. Organizational issues affected the foundation's delivery on its

commitment, however, limiting expected disbursement to approximately 30 percent of its original commitment[8].

Over the life of the activity, Protect Wildlife and partners assisted 26 people's organizations across the four sites (Figure 15). The activity customized technical assistance packages based on assessments of organizational development and enterprise management capacity and systems. Interventions included business planning and management training; strengthening market linkages and building enterprise networks; promoting access to credit; and supporting capital investments in technology, basic infrastructure and postharvest equipment. These investments were designed to strengthen people's organizations' enterprise management and systems, to link them into business networks, and to help them transition from production of raw commodities to processing or trading—applying technology to produce better-quality products, command higher prices and penetrate more markets.

While agreements were limited to the Protect Wildlife period, commitments from partners, most of which are based or operate in the sites, are expected to extend beyond the life of the activity.

Figure 15. People's Organizations and Livelihoods Assisted in Protect Wildlife Sites

26 people's organizations supported by Protect Wildlife

5 farmers' groups and indigenous community organizations in **Mount Mantalingahan** were supported in **rootcrop farming**

2 people's organizations in **Pasonanca Natural Park**'s buffer zone were supported in **cacao farming**

2 fisherfolk associations in **Quezon, Palawan** were supported in **seaweed farming and drying**

1 people's organization in **Zamboanga City's** central mangrove forests was supported in **seaweed farming and drying**

8 cooperatives and farmers' groups in **Mount Busa** were supported in **abaca farming and processing**

2 fisherfolk associations in **Sarangani Bay** were supported in managing their enterprise in **mangrove propagation** and **aquaculture**

5 cooperatives and farmers' groups in **Mount Matutum** were supported in **coffee and cacao farming and processing**

1 women's group in **Aurora Memorial National Park** was supported in **turmeric processing**

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[8] This is composed of commitments to date (approximately US$680,000), approval of approximately US$1 million in pending loan applications, and future loan awards beyond the life of the activity.

EMPOWERING WOMEN FOR SUSTAINABLE FARMING

Through Protect Wildlife and W-GDP Initiative, Bulalacao Community-based Wildlife and Environment Protection—a people's organization in Bataraza, Palawan—participated in organizational development and management training to help their members—most of whom are women—grow purple yams or *ube* and, at the same time, practice conservation-based agriculture. This was seen as a straightforward way to involve more women in farming.

Following a review of its strategic plan, vision and mission, the organization focused on three-year priority projects and revisited their organizational structure, leading to division of tasks and internal and external concerns between the president and vice president. Protect Wildlife helped the organization develop business plans and learn bookkeeping basics. The activity also linked the organization with the local office of Department of Trade and Industry to help them explore potential markets and build networks in the future.

Each member of the organization earned ₱1,248 (US$25) from a nine-month learning process in purple yam production in their demo farm, and their crop harvest in early 2021 was expected to be 10 percent higher than 2020. However, the organization chose to shift to other local crops, such as pineapples, which yielded a faster return of investment. Members noted that the support in organizational development provided by Protect Wildlife helped them make business plans for other crops, as well. Along with the activity's support in farming tools and planting materials, the assistance in training, monitoring and mentoring helped transform lives for members of the organization. Before, with only men bringing in 100 percent of household incomes, today, women members are contributing up to 80 percent.

The organization's president also attested that members are no longer involved in cutting trees and hunting wildlife, as their livelihoods are now more sustainable—indicating that the activity's conservation messages were well received.

"Our organization learned it could aim higher," said Timoteo Gulbin, president of the organization. Their next aim? "To build a one-stop shop for storing our produce, classifying by quality so the best can be sold while the rest can be processed. This can help reduce our waste and boost our incomes. This one-stop shop could also house our training activities."

MAKING MORE OUT OF ABACA FIBER

United Maligang Farmers Multi-Purpose Cooperative based in Kiamba, Sarangani is engaged in farming and processing abaca—a banana plant species prized for its fiber—and is the top producer of high-quality abaca fiber in the province. It has 280 members, more than half of whom are women.

When Protect Wildlife and W-GDP Initiative offered training opportunities to strengthen their organization, the cooperative's leadership encouraged staff and board members to join a series of trainings, where they learned bookkeeping, strategic planning, and defining roles and responsibilities of cooperative members. Ricardo Añora, manager of the cooperative, said the trainings helped them clarify their existing plans so they would be more straightforward to implement.

Protect Wildlife also supported enterprise development, teaching cooperative members to adopt quality assurance methods of sorting, classifying and processing abaca fiber, and to make different abaca products and handicrafts to boost their incomes. Quality abaca products can be sold in trade fairs in Region 12 and even during the COVID-19 pandemic, as noted by the cooperative's leadership. As a result, the cooperative was able to hire women from the community to make abaca products. Instead of working at a banana plantation several villages away, the women can now work in their communities with more flexibility.

"We also learned about wildlife conservation through Protect Wildlife, and we are planning to share the information among members who are spread out in the upland areas," said Rosefino Magon, vice chairperson of the cooperative. "We hope that USAID will continue to work with groups like us who work in forests and harvest abaca. We hope that with organizational support like this, we will be able to stop illegal logging in our area."

BREWING BETTER COFFEE AND BETTER LIVELIHOODS

Ava Marie Odal, general manager of Tupi Coffee Growers Association in South Cotabato, shared how women in their association "were smiling when they realized how their latest coffee harvest was worth much more, and I saw how the coffee beans looked and smelled much better." Odal explained that prior to working with Protect Wildlife and W-GDP Initiative, their coffee growers were picking cherries through strip-harvesting and then drying these out on pavements. They would bring in two 70-kilo sacks of beans, which the association would buy for ₱1,000 (US$20). Now that the coffee growers have learned to harvest selectively by choosing only red cherries and then drying these using raised beds, their harvest now fetches at double the usual price, thanks to better-quality beans.

"The women would use their incomes from coffee for their daily household expenses," Odal added, "but I advised them to put some money aside for materials for coffee processing, so that they could command even higher prices for better, drier coffee beans."

Marcos Gabat, president of the association, credited Protect Wildlife's enterprise training in coffee processing as the key to improvement in harvest quality among their coffee growers in Mount Matutum. Prior to the training, coffee harvesting was done usually by men, who rely on manual labor to gather and carry 60 to 70 kilos of cherries in a day. Now, women also participate in the process and are able to gather a lighter yield of 10 to 15 kilos of cherries in a day because of the selective method of harvesting. As growers became accustomed to these new farming approaches, they were able to produce better-quality coffee beans with more consistent flavor and higher value. Aside from helping growers minimize damage to coffee shrubs, the less-intensive harvesting method is also beneficial to wildlife as it allows cherries to stay longer on coffee shrubs for the benefit of birds and insects.

Gabat also noted how Protect Wildlife's trainings and activities have brought their members closer and made them more engaged in the association. They now see how their coffee produce can move up the value chain by promoting their IndieCoffee beans as a quality local product grown by indigenous communities who receive fair price for their harvest. The association now plans to market and sell IndieCoffee beans to more buyers and partners who understand and value social enterprises. It also plans to access credit that will allow the association to buy in bulk from more coffee growers. In the long term, the association believes that it will create a positive impact in Mount Matutum as it continues to adapt a sustainable approach that allows both the environment and indigenous communities to flourish.

Women were instrumental in improving household incomes and promoting conservation-based farming among members of Bulalacao Community-based Wildlife and Environment Protection in Bataraza, Palawan.

Improved abaca fiber processing will help members of United Maligang Farmers Multi-Purpose Cooperative sustain their local enterprise, as well as promote conservation-based farming of abaca in upland areas of Sarangani province.

Coffee harvesting and processing by members of Tupi Coffee Growers Association were updated with more efficient and less intensive practices that leave positive impacts to both the environment and indigenous communities in Mount Matutum.

A School in a Bag kit contains student tablets, a teacher's tablet, a laptop, a solar panel system as power source for off-grid schools, and various learning materials, including conservation education content produced by Protect Wildlife.

PARTNERSHIPS AND INVESTMENTS FOR CONSERVATION EDUCATION

As blended and online learning became part of core adjustments to basic education in the Philippines during the COVID-19 pandemic, the need to develop content and strengthen access to educational materials in the country's remote and underserved communities has grown. Protect Wildlife's partnership with wireless communications and digital services provider Smart Communications—forged in early 2020 prior to the pandemic—to support the expansion of the latter's School in a Bag program could not have been timelier for partner communities in activity sites.

A corporate social responsibility initiative of Smart Communications, School in a Bag is designed for students in public schools located in remote communities. Under a matched-giving partnership, Protect Wildlife and Smart Communications each financed ten School in a Bag kits for distribution to elementary schools in activity sites. Each kit contains tablets, laptop, solar panel system for off-grid schools, and learning materials co-created by Smart Communications and Department of Education.

In addition to the existing educational content, Protect Wildlife also created new conservation education materials that Smart Communications integrated into School in a Bag's current offerings. The new materials were packaged into a toolbox of resources called *Kuwentong Kalikasan* (Stories from Nature) aimed for Grades 3 to 5 students. The materials will also be used by teachers to supplement their lessons in Science, Social Studies and Language with conservation content, as well as lessons for school-based environmental clubs. *Kuwentong Kalikasan* features twelve endemic and threatened species, including the Philippine eagle, Philippine pangolin and Sulu hornbill, among others. It also has picture books on selected species, coloring and activity sheets, and an animated video on the Sulu hornbill. Also included in the kit is a teacher's guide with suggested learning activities where the materials can be used.

Kuwentong Kalikasan was an opportunity for Protect Wildlife to disseminate a conservation education module, creating access to wildlife-related information and activities otherwise absent from standard curricula. Environmental education is considered an important aspect of conservation interventions that has been shown to increase knowledge and improve attitudes. Pro-conservation attitudes are formed in

childhood, and efforts targeted at schoolchildren offer potential knowledge transfer to their parents, who are primary actors of conservation behaviors.

Protect Wildlife rolled out the distribution of 20 School in a Bag kits in two elementary schools in Zamboanga City, three in Region 3, seven in Palawan and eight in Region 12. These schools are located within or near protection and conservation areas in activity sites. To date, 175 faculty members have been exposed to *Kuwentong Kalikasan*, and the activity expects to reach 427 students from the 20 recipient schools once regular classes resume.

COMMUNITY, INSTITUTIONAL AND PRIVATE SECTOR ATTITUDES TOWARD CONSERVATION IMPROVED

Attitudes are an expression of emotions, beliefs and values, and are a powerful influence over behaviors. While attitudes are enduring, with the right incentives and information, they can also be influenced and altered.

Protect Wildlife led a baseline KAP survey among respondents in southern Palawan to better understand local attitudes and behaviors—knowledge that could help inform BCC interventions in the site. Through the endline KAP survey assessment, the activity compared changes over time and identified correlations between technical interventions and changes in knowledge, attitudes and practices.

Tables in this section present findings from the endline survey assessment. Data represents percentage of those surveyed who responded affirmatively or negatively to a particular question. Figures shaded in blue indicate significant increases over baseline scores at a 95 percent confidence level. Protect Wildlife also cites both quantitative and qualitative evidence of change in attitudes.

Through analysis of endline survey data, Protect Wildlife noted an increase in interpersonal communication among respondents who were aware of activity-supported BCC campaigns in southern Palawan (Table 14), which reached more than 90,000 people. Interpersonal communication is

Community, institutional and private sector attitudes toward conservation improved

Exposure to BCC campaigns and activity implementation

Pride of Place and improved conservation practices
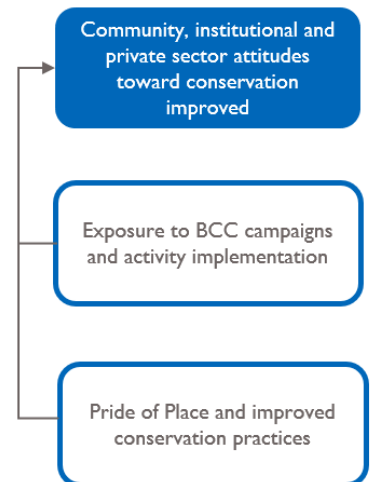
the sharing of information, ideas, feelings and values between a social group where acceptable behaviors are often discussed, established and shared. Because social groups and social norms influence attitudes and, inevitably, behavior, dialogue has the power to persuade, affirm or even discourage new behaviors and attitudes. It is also plausible that increase in interpersonal communication from baseline to endline influenced a stronger pride of place and feelings of responsibility and protectiveness for the health and welfare of the protected area. The activity noted significant improvements, particularly among non-tenured respondents and indicatively among those living outside the protected area, although not at a statistically significant level (Table 15).

Protect Wildlife explored whether a person's awareness of particular BCC campaigns had a relationship with changes in conservation attitudes over time. Based on endline data, the campaigns contributed to a significant improvement of attitudes among survey respondents. While the Makmak campaign showed the most significant contribution, other campaigns also indicated positive changes (Table 16).

Attitudes are also formed by direct experience and by observing other people. For example, people's experience with enforcement of wildlife laws can impact their attitude toward compliance, and their observation of how penalties are enforced can influence their own perception of risk. Community members involved in agroforestry can have their attitude shaped by whether they experience success in their initiative. Their experiences and observations will likely be shared with their social groups, further impacting attitudes of larger groups. Endline results indicated that significant segments of the population believe there are linkages between conservation and livelihoods (Figure 16). Protect Wildlife's activities on integrated conservation and development and agroforestry may have contributed to this result.

Outside of southern Palawan, there is qualitative evidence of how pride of place has translated into improved decision-making and practices by communities and institutional partners. The declaration of a flagship species is one strategy that builds pride of place and stronger feelings of stewardship among the community. In Zamboanga City, increase in local pride brought by the confirmation of a Philippine eagle nest inside Pasonanca Natural Park likely influenced city officials who enacted the ordinance adopting the Philippine eagle as the city's flagship species and allotting funds for eagle conservation and protection. Similar policy actions on flagship species conservation were also enacted by LGUs in other activity sites.

Protect Wildlife also noted increasing interest among activity partners in conservation initiatives, which signals improved attitudes of institutional and private sector partners toward conservation. In Region 12, PhilFIDA and the activity developed a module on community awareness and responsibility toward environmental conservation for Climate-Smart Farmers Field School on abaca production, while PhilCAFE also plans to include conservation-based farming practices in its coffee production handbook.

At the community level, Protect Wildlife also saw significant interest in conservation financing and sustainable livelihood activities. In General Santos City, community water utilities were among the first to show willingness to sign PES agreements after attending sessions with the activity. Although small, their future PES contributions indicate a strong conservation ethic. In Palawan, the activity observed agroforestry trainees' practice of contour farming or use of natural vegetative strips—an adoption of desired behavior promoted in agroforestry trainings. Also, all 26 people's organizations supported by the activity demonstrated their willingness to adopt conservation-based agricultural practices, including using organic soil enhancers for crops and avoiding chemical fertilizers in seaweed farming.

Table 14. Interpersonal Communication on Conservation Topics Among Southern Palawan Respondents, by Campaign

CONSERVATION TOPICS	KAGUBATAN AY KINABUKASAN		MAKMAK		SAMU'T-SARI		GAMARAN MO AY MAHALAGA		PES	
	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware
Importance of protecting the environment and wildlife	30%	10%	21%	10%	56%	11%	50%	12%	67%	10%
Benefits of proper farming practices, whether in lowland or upland areas	35%	11%	18%	13%	67%	11%	63%	11%	67%	11%
Benefits of biodiversity-friendly livelihoods, such as sustainable agriculture and ecotourism	22%	6%	16%	6%	56%	5%	38%	6%	56%	5%
Negative effects of exploitation or unsustainable use of natural resources to livelihoods	26%	6%	16%	6%	56%	6%	38%	7%	56%	6%
Threats brought by wildlife poaching, illegal logging and unsustainable farming to supply of water and food and other ecosystem goods and services	22%	5%	16%	5%	56%	4%	38%	6%	56%	4%

*KAP Survey Question: In the past three months, have you talked to anyone about the following topics?

Table 15. Attitudes of Southern Palawan Respondents Toward Conservation

GENERAL CONSERVATION ATTITUDES	TOTAL RESPONDENTS		TENURED		NON-TENURED		OUTSIDE OF PROTECTED AREA	
	2017 Baseline (n=385)	2021 Endline (n=150)	2017 Baseline	2021 Endline	2017 Baseline	2021 Endline	2017 Baseline	2021 Endline
It is important to protect the environment for the next generation.	59%	61% ↑	54%	61% ↑	62%	62%	80%	60%
It is important to protect the environment inside Mount Mantalingahan.	49%	57% ↑	44%	54% ↑	52%	59% ↑	60%	56%
Nature is fragile, so we need to protect it.	42%	35%	42%	28%	41%	34%	50%	52% ↑
People violating wildlife laws should be punished.	36%	38% ↑	35%	35%	37%	35%	35%	52% ↑
It is important to follow laws that protect the environment and wildlife.	30%	37% ↑	36%	35%	23%	38% ↑	35%	40% ↑
I will report illegal activities I see in Mount Mantalingahan.	30%	24%	32%	23%	29%	21%	20%	36% ↑
I am proud to be part of Mount Mantalingahan.	25%	34% ↑	33%	28%	18%	34% ↑	25%	48% ↑
I am proud to be designated to protect Mount Mantalingahan.	24%	35% ↑	31%	28%	17%	34% ↑	20%	52% ↑
I am responsible for protecting and ensuring the welfare of Mount Mantalingahan.	24%	35% ↑	30%	37% ↑	19%	31% ↑	15%	44% ↑
Wildlife is important to my livelihood.	26%	33% ↑	27%	32% ↑	22%	29% ↑	45%	48% ↑
The government is responsible for protecting the environment.	22%	22%	26%	14%	19%	28% ↑	10%	24% ↑
Human activities affect the environment.	21%	33% ↑	21%	26% ↑	20%	32% ↑	30%	48% ↑

*KAP Survey Question: Do you agree with the following statements?

Table 16. Attitudes of Southern Palawan Respondents Toward Conservation, by Campaign

CONSERVATION TOPICS	KAGUBATAN AY KINABUKASAN		MAKMAK		SAMU'T-SARI		GAMARAN MO AY MAHALAGA		PES	
	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware
It is important to protect the environment for the next generation.	61%	63%	74%	58%	78%	61%	50%	62%	89%	59%
It is important to protect the environment inside Mount Mantalingahan.	61%	57%	66%	54%	67%	56%	50%	57%	89%	53%
Human activities affect the environment.	30%	33%	50%	28%	56%	31%	38%	33%	67%	31%
Wildlife is important to my livelihood.	35%	34%	42%	31%	56%	32%	25%	34%	67%	33%
The government is responsible for protecting the environment.	17%	24%	21%	23%	33%	21%	38%	21%	33%	22%
Nature is fragile, so we need to protect it.	35%	35%	45%	32%	56%	34%	38%	35%	67%	33%
I am responsible for protecting and ensuring the welfare of Mount Mantalingahan.	35%	37%	50%	31%	56%	34%	38%	36%	56%	36%
It is important to follow laws that protect the environment.	30%	39%	47%	35%	56%	36%	38%	38%	56%	38%
People violating wildlife laws should be punished.	26%	40%	47%	35%	56%	36%	25%	38%	56%	37%
I will report illegal activities I see in Mount Mantalingahan.	30%	24%	37%	20%	45%	23%	25%	24%	56%	23%
I am proud to be part of Mount Mantalingahan.	35%	34%	45%	31%	56%	33%	38%	34%	56%	34%
I am proud to be designated to protect Mount Mantalingahan.	39%	34%	50%	30%	67%	33%	38%	35%	67%	34%

*KAP Survey Question: Do you agree with the following statements?

Figure 16. Attitudes of Southern Palawan Respondents to Relationship Between Conservation and Livelihoods

| | 75% | 67% | 81% | 76% | 31% | 33% | 29% | 28% | 25% | 28% | 24% | 24% |

I believe keeping wildlife free in the forest is beneficial to my livelihood.

I believe setting aside part of my land for conservation benefits my livelihood in the long run.

I believe practicing agroforestry benefits my livelihood.

■ 2021 Endline (n=150) ■ Tenured ■ Non-tenured ■ Outside Protected Area
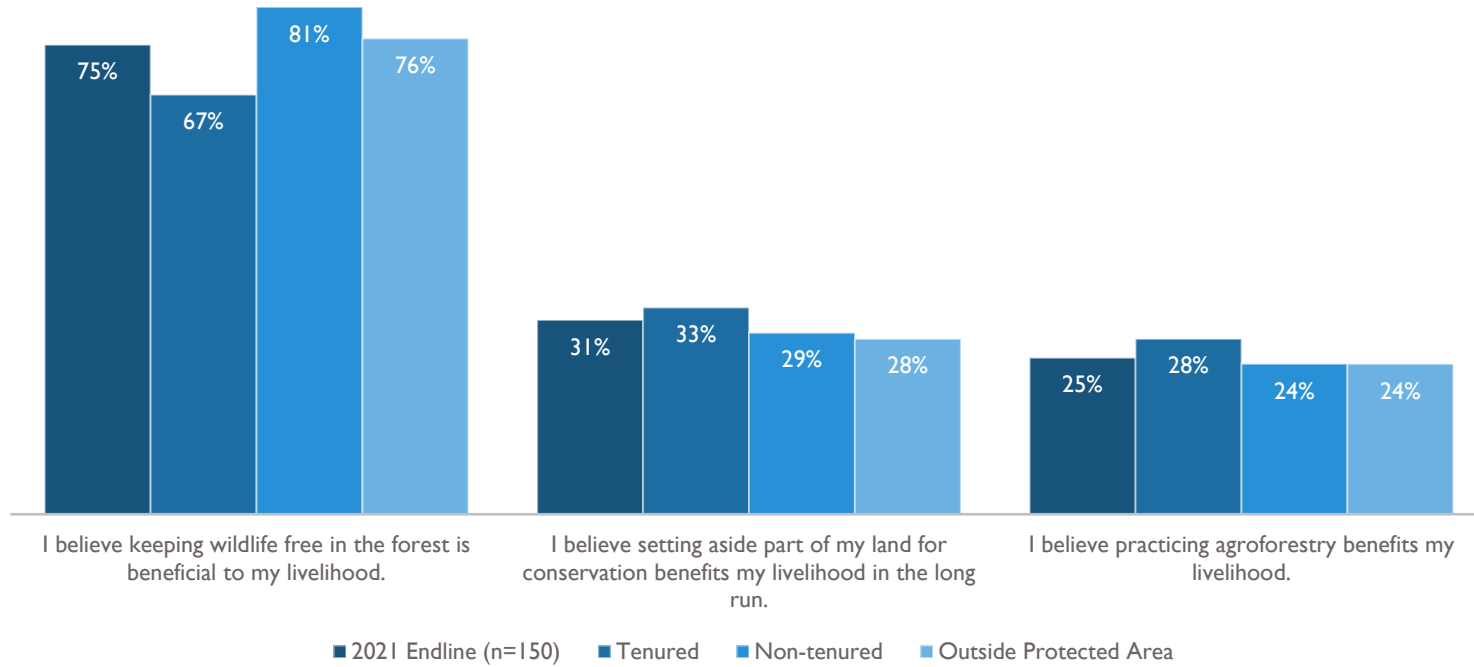
*KAP Survey Question: Which of the following statements are closer to your view?

LEVEL 3:
PATHWAYS TO CONSERVATION OUTCOMES

Having implemented capacity-building activities and delivered mentoring support for applied conservation and enforcement initiatives, Protect Wildlife aimed to set partners on a pathway to produce outcomes on improved management of biodiversity and natural assets and wildlife and environmental law enforcement. Level 3 results show initial indications that improvements in practices will be sustained beyond the life of the activity. By sustaining improved practices, partners will be in position to bring about the activity's desired final outcomes.

Protect Wildlife examined outcomes of partners' management of protected areas and their execution of wildlife and environmental law enforcement responsibilities. In the Theory of Change, two key results belong to this level: management of biodiversity and natural assets improved, and enforcement efforts and actions increased.

Protect Wildlife presents findings from two assessments to show how protected area managers and enforcement units are now in a stronger position to make substantive improvements to protected area management and enforcement practices. Improved capabilities of local officials are important pre-conditions and appropriate proxy indicators for success in building a foundation for the activity's target outcome results.

MANAGEMENT OF BIODIVERSITY AND NATURAL ASSETS IMPROVED

To examine the Protect Wildlife's success in setting partners on a path to strengthen management of biodiversity and natural assets, the activity applied findings from management effectiveness assessment of Pasonanca Natural Park, Mount Matutum, Allah Valley, Sarangani Bay, Mount Mantalingahan and Aurora Memorial National Park. Each of these sites underwent a management effectiveness assessment between 2013 and 2017. The activity used assessment findings as a baseline and compared these against a management effectiveness assessment administered in 2020. The activity also completed an assessment of Santa Cruz Islands, although a baseline is not available to make a comparison and indicate directional change.

MANAGEMENT EFFECTIVENESS TRACKING TOOL

Protect Wildlife executed assessments using the Management Effectiveness Tracking Tool (METT), a rapid assessment framework developed by the World Bank-World Wildlife Fund Alliance for Forest Conservation and Sustainable Use. METT is applied worldwide to measure the extent to which a protected area is achieving its conservation objectives. DENR-BMB adopted METT for management assessment of protected areas in the Philippines. METT assessments are tools for protected area managers to identify strengths and weaknesses of their management structure, infrastructure and programs, and monitor their performance over time. DENR-BMB envisions that managers will use

METT results as a scorecard to help strengthen their performance and to better conserve biodiversity, protect wildlife and promote sustainable livelihoods in their respective protected areas.

METT features six parameters or areas of evaluation—context, planning, input, process, output and outcome. Each parameter has a series of questions that collectively serve as indicators of management effectiveness for a protected area. The score is tabulated based on responses to the questions and used to produce a core METT rating. In addition to core scoring and rating, METT includes supplementary questions to elaborate on key themes from earlier questions. The combined score from core and supplementary questions constitutes the final METT rating, presented as both percentage score and equivalent qualitative rating from poor to excellent. The METT process also includes a threat assessment, where protected area officials identify which natural and man-made threats are present in the protected area and note the significance of the threats' impacts.

METT Findings

Protect Wildlife presents in Table 17 the final METT ratings for the seven protected areas assessed in 2020 and the number of threats that each protected area gave a high rating. The underlying assumption behind METT is that higher management effectiveness scores indicate that a protected area faces fewer threats or that threats are sufficiently addressed through local policy, management plans and funded programs. This relationship is difficult to establish, however, as shown in the table. Clearly, there are other factors and complexities that impact the threat assessment and would need to be accounted for to establish this with certainty. The word "highly threatened" itself is difficult to establish, especially if data on such threats are limited. There are threats that are obviously present but were not given ratings because of data deficiency.

In Table 18, Protect Wildlife presents 2020 results against findings from baseline METT assessments. As noted previously, only the 2020 findings for Santa Cruz Islands are presented. Scores for each parameter and question are presented in the table. Scores shaded in blue indicate areas where the activity provided direct technical assistance for the protected area.

Table 17. Final METT Results with Threat Assessment Results in Protect Wildlife Sites

PROTECTED AREAS	AREA (ha)	NUMBER OF HIGH THREATS	FINAL METT SCORE (%)	INDICATIVE QUALITATIVE RATING
Pasonanca Natural Park	12,102	4	74	Good
Great and Little Santa Cruz Islands Protected Landscape and Seascape	3,425	1	81	Excellent
Mount Matutum Protected Landscape	13,947	7	63	Good
Allah Valley Protected Landscape	67,845	29	69	Good
Sarangani Bay Protected Seascape	210,888	16	67	Good
Mount Mantalingahan Protected Landscape	120,457	6	67	Good
Aurora Memorial National Park	5,676	2	72	Good

Indicative Qualitative Rating: Excellent: 75% to 100%; Good: 51% to 74%; Fair: 26% to 50%; Poor: less than 26%

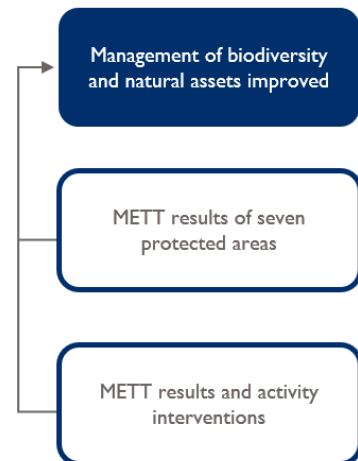# Table 18. Comparison of 2020 and Baseline METT Results in Protect Wildlife Sites

PARAMETERS	PASONANCA NATURAL PARK (%)		MOUNT MATUTUM (%)		ALLAH VALLEY (%)		SARANGANI BAY (%)		MOUNT MANTALINGAHAN (%)		AURORA MEMORIAL NATIONAL PARK (%)		SANTA CRUZ ISLANDS (%)
	2020	2013	2020	2017	2020	2017	2020	2017	2020	2014	2020	2013	2020
Context	**100**	67	**100**	67	**67**	67	**100**	67	**67**	67	**67**	67	**100**
Legal Status	100	67	100	67	67	67	100	67	67	67	67	67	100
Planning	**78**	39	**61**	67	**81**	78	**67**	78	**79**	78	**75**	50	**88**
Protected Area Regulation	80	33	67	67	64	67	67	67	67	67	75	67	100
Protected Area Objectives	73	33	63	67	61	67	71	67	82	67	67	0	76
Protected Area Design	78	33	63	100	72	100	60	100	85	100	72	33	73
Management Plan	76	67	59	67	94	67	73	67	81	67	67	67	96
Regular Work Plan	69	0	57	67	100	100	69	67	92	67	97	33	100
Planning for Adjacent Land and Water Use	93	67	57	33	92	67	58	100	69	100	69	0	84
Input	**59**	33	**49**	67	**63**	75	**66**	46	**58**	58	**67**	29	**73**
Law Enforcement	80	67	56	67	64	67	60	33	62	62	67	33	67
Resource Inventory	64	0	52	67	67	100	92	100	73	73	75	33	67
Staff Numbers	40	33	52	67	67	100	50	33	51	51	72	33	67
Staff Training	53	33	46	67	67	67	44	33	84	84	75	33	73
Current Budget	53	33	35	67	67	67	79	33	61	61	61	33	73
Security of Budget	40	33	56	33	83	67	81	33	56	56	67	33	71
Equipment	62	33	59	33	33	67	54	67	37	37	61	0	67
Fees	85	33	37	67	58	67	67	33	39	39	67	33	100
Process	**68**	33	**62**	64	**61**	81	**59**	44	**69**	44	**65**	31	**79**
Boundary Demarcation	76	33	56	67	42	67	38	33	68	33	31	33	73
Protection System	100	33	56	67	53	67	79	33	64	33	67	0	67
Research	69	0	57	100	72	100	38	67	47	67	89	33	69
Resource Management	67	33	54	67	67	67	69	33	73	33	78	33	67

PARAMETERS	PASONANCA NATURAL PARK (%)		MOUNT MATUTUM (%)		ALLAH VALLEY (%)		SARANGANI BAY (%)		MOUNT MANTALINGAHAN (%)		AURORA MEMORIAL NATIONAL PARK (%)		SANTA CRUZ ISLANDS (%)
	2020	2013	2020	2017	2020	2017	2020	2017	2020	2014	2020	2013	2020
Budget Management	51	33	70	67	92	67	81	33	76	33	69	33	67
Equipment Maintenance	38	33	65	67	33	67	54	33	77	33	69	0	67
Education and Awareness	64	33	67	67	61	67	56	67	69	67	75	0	71
State / Commercial Neighbors	56	67	61	33	67	100	60	33	76	33	25	67	0
Indigenous People	0	0	63	67	83	100	48	67	86	67	72	67	96
Local Communities	69	67	81	67	83	100	58	67	86	67	78	67	96
Monitoring and Evaluation	89	67	69	67	33	100	60	33	71	33	78	33	96
Commercial Tourism Operators	0	0	47	33	42	67	69	33	40	33	53	0	100
Output	**81**	**0**	**44**	**67**	**64**	**67**	**48**	**33**	**39**	**33**	**50**	**0**	**73**
Visitor Facility	81	0	44	67	64	67	48	33	39	33	50	0	73
Outcome	**74**	**67**	**66**	**67**	**83**	**83**	**59**	**67**	**66**	**50**	**71**	**33**	**83**
Economic Benefits	56	67	74	67	100	100	63	67	65	67	67	33	100
Condition of Values	100	33	57	67	67	67	56	67	66	67	75	33	67
Core	**69.4**	**38**	**59**	**63**	**67**	**78**	**63.4**	**53**	**67**	**53**	**68**	**31**	**80**
Additional	**4.3**	**-1**	**4**	**1**	**2**	**-6**	**3.2**	**2**	**2**	**2**	**4**	**-1**	**1**
Final Rating	**74**	**37**	**63**	**64**	**69**	**72**	**67**	**55**	**69**	**55**	**72**	**30**	**81**
Qualitative Rating	**Good**	Fair	**Good**	Good	**Good**	Good	**Good**	Good	**Good**	Good	**Good**	Fair	**Excellent**

Indicative Qualitative Rating: Excellent: 75% to 100%; Good: 51% to 74%; Fair: 26% to 50%; Poor: less than 26%

Summary

Except for Santa Cruz Islands, scores from each surveyed protected area indicated a Good rating. Both Pasonanca Natural Park and Aurora Memorial National Park advanced from Fair to Good rating in 2020. While overall percentage scores of Allah Valley and Mount Matutum were slightly lower than previous assessments, these remained within a Good rating. This performance level provided Protect Wildlife with confidence that activity-supported initiatives in these protected areas will be sustained.

Based on analysis of findings and comparisons against 2013 data, Protect Wildlife makes the following observations:

Protect Wildlife's targeted training and capacity-building support helped elevate overall management effectiveness in protected areas. The protected areas received various types and levels of assistance in management planning, wildlife and environmental law enforcement, systems development, policy development, BCC campaigns, conservation research, conservation financing and other interventions, which raised scores in pertinent parameters and, consequently, elevated overall scores.

The protected areas obtained higher scores in planning, a focal area for Protect Wildlife. The activity provided extensive support for management planning activities, which aligned with the increase in scores for most protected areas.

Select protected area and LGU actions that demonstrate improved management effectiveness can be linked to activity assistance in implementation and improved governance processes. Protected area and Protect Wildlife staff noted in the METT assessment that the activity's technical support was directly linked to improvements in management effectiveness between baseline and endline assessments, particularly as it related to zoning, management planning and protocols, enforcement and BCC parameters. Examples of activity assistance that directly impacted METT scores include the following:

Management of biodiversity and natural assets improved

METT results of seven protected areas

METT results and activity interventions

- **Policies that targeted critical aspects of protected area management.** These include policies that addressed financing, such as the establishment or changes to park fees and PES for reinvestment in watersheds; and formally adopted management zones and prescriptions, operations manuals and new schedules of administrative penalties.
- **Enforcement plans and protocols and creation of quick response teams.** Specific examples are enforcement protocols and systems adopted by several protected areas, Sarangani Bay megafauna response team, and Sarangani Bay law enforcement group.
- **Improved governance processes.** In Pasonanca Natural Park, the protected area superintendent shared that Protect Wildlife assistance improved the management board's decision-making processes. The superintendent also noted that cooperation between local stakeholders—particularly the tripartite group of DENR, Zamboanga City LGU and ZCWD that co-manage the protected area—improved because of the participatory nature of management planning exercises. An outcome of the improved governance process was the city government's designation of budget resources for Pasonanca Natural Park's management and rehabilitation in the city's local development investment program. Another example of cooperation and adaptive management was when DENR, as chair of the protected area management board, allocated funds for hiring forest protection officers to absorb the forest guards retrenched by the water district due to budgetary constraints.

Data indicated that Protect Wildlife may have contributed to the outcome parameter, specifically in economic benefits. Protect Wildlife posits that this is related to livelihoods assistance provided to beneficiary communities. It is also expected to contribute to the outcome parameter of condition of values as a result of all the various assistance provided.

For several of these elements, Mount Matutum, Allah Valley and Sarangani Bay scores fell but all retained their Good ratings. When asked about the decline, participants from Allah Valley and Mount Matutum attributed changes to the more rigid rating procedure used in 2020. This impression—regarding the quality and rigid application of the 2020 assessment—was shared by other sites that showed improved performance. The change in scoring—from consensus scoring used before 2018 to percentage scoring used in 2020—could also have contributed to observed decrease in select scores. The change to percentage scoring was driven by requirements outlined by DENR-BMB. Protect Wildlife noted, however, that the most important aspect of the analysis was the qualitative level of performance (by parameter, element and overall) rather than numerical scores.

ENFORCEMENT EFFORTS AND ACTIONS INCREASED

Protect Wildlife's Theory of Change posits that with improved capacity, wildlife and environmental law enforcers will execute more enforcement actions. In the discussion of this result, the activity presents findings of an endline capacity assessment of select enforcement units. Through the assessment, the activity explored whether these units supported by the activity with training, mentoring and other forms of technical assistance show strengthened capacity when compared to their baseline scores.

Using a guided self-assessment tool, enforcers rated themselves under core competencies of intelligence, surveillance and investigation; enforcement patrols; and enforcement management. These core
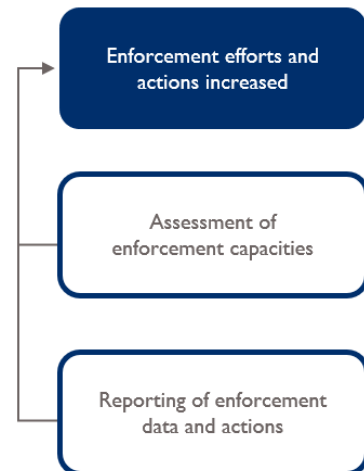
competencies were explored through 53 parameters crafted to measure the capacity of each enforcement unit at management and field patrol levels. Enforcers rated their units on a scale of 1 to 5, with five reflecting highest level of competency or capacity. Respondents were enforcement unit managers, supervisors and patrol staff.

Consolidated self-assessment results indicated improvements in enforcement capacity compared against findings from the baseline survey. Findings showed general improvement in capacity across different sites and enforcement units since Protect Wildlife commenced its activities in 2016 and 2017. Respondents highlighted improved skills in intelligence gathering and law enforcement management; better inter-agency coordination; clearer roles, standards and protocols; and practice of strategic operations planning as major sources of capacity improvements. Given these, the activity believes it contributed significantly to capacity enhancements, positioning partners to improve their enforcement efforts and to increase actions beyond the life of the activity.

The overall capacity scores given by enforcement units, however, gave weight also to other factors that affect on-site enforcement operations. It is noted that for a number of parameters, scores remained from low to medium and, in several cases, improvements from the baseline were modest.

Enforcement officials cited the need for additional technical and logistics support from their agencies to maximize impact of their new and enhanced enforcement knowledge, skills and tools. Additional support needs included additional enforcement staff; trainings on advanced enforcement skills, evidence handling and community relations; improved facilities, such as a forensics lab, operations centers and evidence storage areas; enforcement data management systems; incentive systems for enforcers and sources of intelligence information; higher budgets; and improved access to transportation and communication facilities and documentation equipment for carrying out enforcement duties.

Protect Wildlife presents overall scores generated across all four activity sites, followed by a focus on Palawan, where activity interventions in enforcement capacity and systems were most significant. Where data is available, the activity

Enforcement efforts and actions increased

Assessment of enforcement capacities

Reporting of enforcement data and actions

presents enforcement actions reported by units, which can indicate improved enforcement capacity. Time series data on enforcement is available for enforcement actions supported by DENR Palawan and PCSDS.

OVERALL SCORES ACROSS ACTIVITY SITES

Protect Wildlife led capacity assessments with 13 enforcement units and direct interviews with enforcement officials across activity sites. The activity rolled out self-assessments with seven units and 12 enforcers in Palawan, one unit and two enforcers in Region 12, two units and two enforcers in Region 3, and three units and three enforcers in Zamboanga City and Sulu Archipelago. Enforcement units were composed of officials from DENR and DA-BFAR regional and field offices, PCSDS, LGUs and protected area management offices.

Figure 17. Overall Capacity and Core Competencies Assessment Scores in Activity Sites
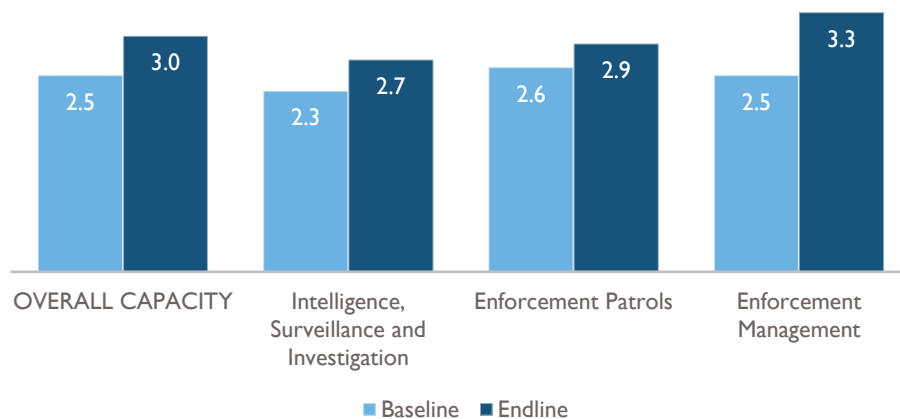
Assessment scores showed an increase in capacity, from a baseline of 2.5 (low-to-medium) to an endline of 3 (medium) (Figure 17). While increases were evident in all three competency areas, improvements were most notable in enforcement management, which showed a 30 percent increase in capacity, from a 2.5 to a 3.3 score. Other notable findings include the following:

- **Intelligence, surveillance and investigation capacities improved** from a score of 2.3 to 2.7. Case development and prosecution were areas that showed more significant increases—from baseline score of 2.6 to endline score of 3.3. Inter-agency collaboration was deemed a key factor in stronger intelligence work, interdictions and case filings. Chain of custody procedures were followed as called for by prescribed protocols. Respondents also noted that wildlife identification skills aided their job performance. Most significant increases (from low to medium) were reported by DENR Region 12, DA-BFAR Region 9 and ZCWD enforcement teams. Select agencies noted the following weaknesses, however: absence of a unit or group dedicated to intelligence and surveillance, unorganized informants and lack of compensation scheme, and absence of a laboratory to conduct forensic analysis.
- **Enforcement managers recorded improvements in field operations**, which was likely driven by trainings led by Protect Wildlife, as well as changes in management protocols, which

devolved more decision-making down to field levels. Respondents also rated themselves favorably regarding systems development and noted that standards and procedures were in place, while protocols were followed during enforcement operations. Among the agencies, PCSDS and DA-BFAR Region 9 and Region 3 provided the highest scores (medium to high) to this competency.

- **Capacity indicators related to enforcement patrols rose** from 2.6 to 2.9. Respondents indicated that patrol staff and field team leaders were provided the basic training needed to perform their roles and responsibilities. PCSDS, DA-BFAR Region 9 and DENR Region 12 registered biggest increases and the highest endline scores (medium to high) for this competency. The following areas for improvement were noted: provision of transportation, communication and documentation equipment and supplies, and higher salaries and incentives.

PALAWAN RESULTS

Consolidated enforcement capacity scores for DENR, PCSDS and LGU enforcers in Palawan increased from a baseline of 2.8 to an endline of 3.2. Consistent with baseline results, LGUs had the lowest overall endline score of 3 but manifested the highest increase in capacity from a baseline score of 2.4. DENR's score slightly increased from 3 to 3.2, while PCSDS had a negligible drop from 3.5 to 3.4.

In the following sections, Protect Wildlife presents analyses of overall scores for each Palawan enforcement unit and discusses notable findings within the three enforcement core competencies. Activity support for each enforcement unit can be found in the analysis of Level 1 results.

Palawan Council for Sustainable Development Staff

Figure 18. Overall Capacity and Core Competencies Assessment Scores of PCSDS
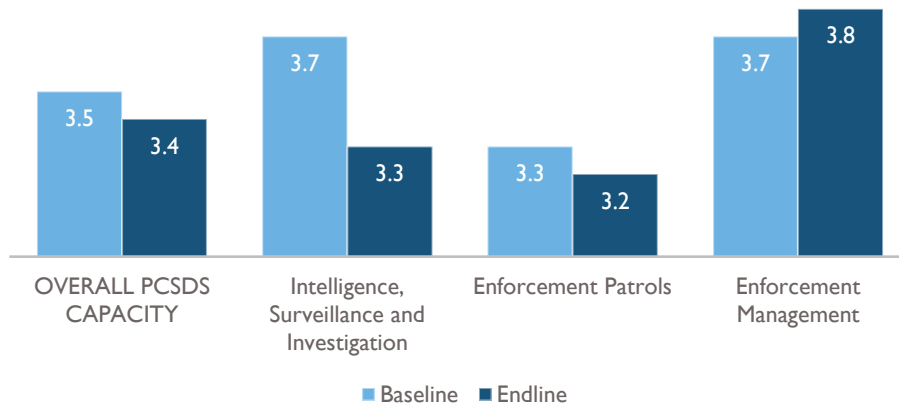
Intelligence, Surveillance and Investigation. Compared to DENR and LGU enforcement units, PCSDS enforcers rated their intelligence, surveillance and investigation capacity highly, with an average score of 3.3. Although the highest score for Palawan enforcers, it represents a decline from a baseline score of 3.7. The decline was heavily weighted by precipitous declines in the following self-assessment

areas: electronic information and specialist intelligence staff, and rewards and incentive system for enforcers.

- A fall from a baseline of 4.5 to an endline of 2.6 in capacity assessment on electronic information and specialist intelligence staffing. PCSDS employs information technology staff but they are not specifically assigned to intelligence. Although a system is now in place for organizing intelligence data, PCSDS has yet to build internal capacity for data analysis.
- A fall from a baseline of 3.3 to an endline of 1.7 on rewards and incentives for informants. Respondents noted that informant rewards were made on a case-by-case basis by individual officers with no dedicated agency budget. Government audit rules prohibit a financial reward system, and PCSDS has not developed an alternative approach to cultivate informants.

It can be noted that were no significant changes in these two assessment areas over the life of the activity, despite Protect Wildlife providing PCSDS with trainings on advanced enforcement skills and helping put in place digital systems for enforcement planning and operation. This technical support led to increased enforcement skills and better management systems, which were expected to increase capacity in PCSDS, even if not to a significant level. Reasons for the reduced scores would need to be further examined.

Enforcement Patrols. PCSDS respondents maintained their medium score for capacity on enforcement patrols. Scores in most areas were maintained, except for an increase from 3.17 to 4 for appropriate terms and conditions of service. Respondents noted that terms and conditions for their duties were clearly defined and better understood. This may be attributed to Protect Wildlife's trainings and mentoring, and assistance to put in place formal enforcement protocols for PCSDS.

The activity also noted the following lessons from enforcement patrol scores and suggestions on further strengthening patrol capacity:

- The score on support and incentives for patrol staff fell from 3.2 to 2.3, with respondents calling for a more formal structure for performance management, clearer guidelines for advancement and policies for recognizing achievements.
- Respondents called for capacity building on community organizing—a tool for building partnerships for enforcement monitoring and reporting.

Enforcement Management. Enforcement management scores remained relatively flat, increasing from 3.7 to 3.8. PCSDS respondents rated themselves highly at 4 for questions regarding standards and procedures—which were not included in the baseline assessment. Protect Wildlife provided extensive support to PCSDS through annual mentoring sessions to review the agency's enforcement operations and re-assess wildlife crime hotspots to inform operations planning. Respondents also increased their score from 3.5 to 4 on data collection and analysis, which can be attributed to BRAIN system development. They also called attention to the need for investments in infrastructure to facilitate monitoring in remote outputs. Mobility remains to be a challenge in Palawan since upland areas and coastal communities are often difficult to access.

DENR Palawan

Figure 19. Overall Capacity and Core Competencies Assessment Scores of DENR Palawan
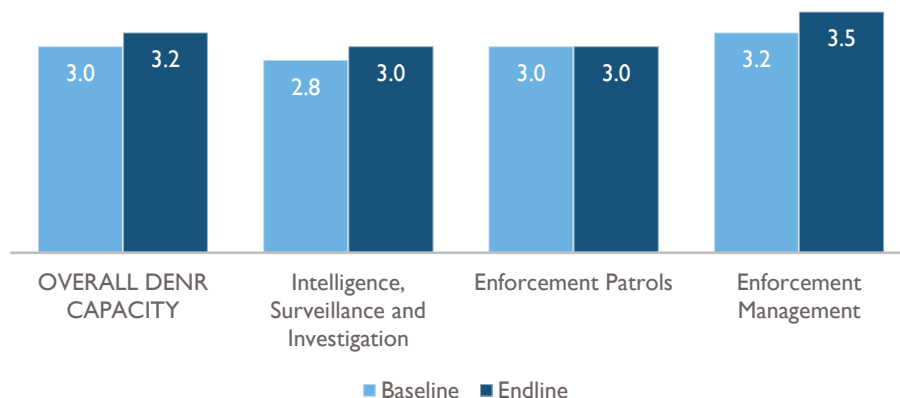
Intelligence, Surveillance and Investigation. Based on self-assessment of DENR enforcers, intelligence and investigation capacities retained a medium score, with a slight increase from 2.8 to 3 over the past five years. Protect Wildlife attibuted this to progress made in evidence handling and management. The activity's training and mentoring support were cited by DENR respondents, who also noted increase in awareness of proper engagement and detection of illegal activities, and in confiscation of trafficked wildlife species and by-products. Respondents also noted that improvements can be made in evidence handling and collection, however, to reduce percentage of cases dismissed due to technicalities.

Enforcement Patrols. Overall capacities of DENR patrol staff remained at medium level. Recruitment standards and procedures were being followed. Once hired, staff undergo basic training, and only those who meet minimum qualifications undergo follow-on refresher courses or mentoring by senior peers and supervisors.

Similar to PCSDS' score, DENR respondents' score on appropriate terms and conditions of service rose significantly. Respondents also called attention to poor infrastructure and limited equipment to aid in enforcement. With few vehicles dedicated to enforcement operations, DENR personnel must use their personal motorcycles to conduct monitoring and other enforcement actions. Respondents also called for more investment in cameras, geotagging equipment, laptops and drones to support patrol operations and documentation of evidence.

Unlike with PCSDS, the score for support and incentives provided to patrol staff improved moderately. Respondents noted that tasks required of enforcers were clearly indicated in terms of reference. When necessary, supervisors provided follow-up guidance and instructions. Respondents noted, however, that DENR could further motivate field teams by recognizing good performance and facilitating opportunities for promotion. They also signaled that satisfaction of basic needs has improved—giving an endline score of 3 from a baseline score of 2.5—indicating a level of contentment in their positions.

Enforcement Management. Enforcement management also experienced a slight increase in score from 3.2 to 3.5. Clarity and consistent standards and procedures were not rated in the baseline but secured a high score of 4.3 in the endline. DENR respondents noted that improvements were possible with increased investments in field-based infrastructure such as operations centers, and in systems for managing enforcement data and securing sensitive documents.

Palawan Local Government Units

Figure 20. Overall Capacity and Core Competencies Assessment Scores of Palawan LGUs
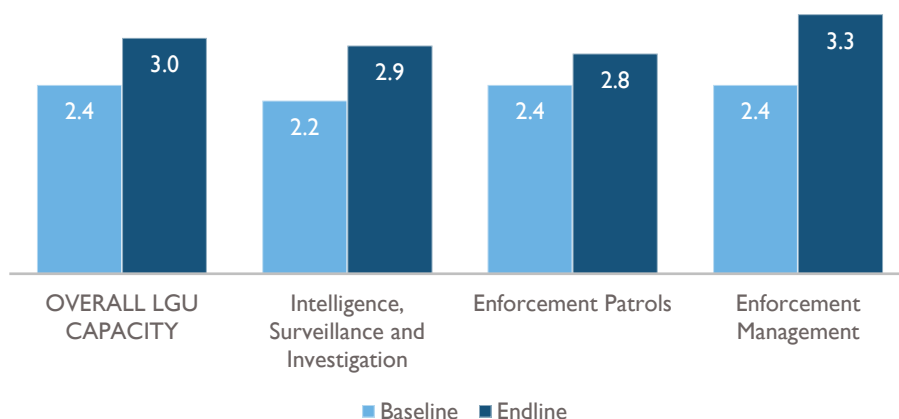
Intelligence, Surveillance and Investigation. Compared to PCSDS and DENR, LGU-based enforcers registered increase in scores across most areas under this core capacity. Most significant increases were in comprehensive intelligence gathering and efficient data management and analysis. Protect Wildlife noted areas for improvement on case build-up and prosecution, forensics capability and clear guidance on securing support and access to laboratories for processing evidence, investments for safekeeping evidence and improving documentation and inventory of confiscated items, and procurement of communication equipment and data to facilitate reporting and response to tips from concerned citizens and community officials.

Enforcement Patrols. Overall score on this core competency increased from 2.4 to 2.8, with slight increases under each parameter or question except for incentives for patrol staff. Despite LGU patrol staff receiving requisite enforcement training and being placed under clear management arrangements with qualified supervisors, they noted the lack of sufficient provisions for transportation and communication. Respondents also called attention to WEOs employed under a work-order status who earn below minimum wage, unlike those who were engaged under formal contracts. They also noted unrealized benefits due to failed investigations and follow-through on their tips. Although WEOs often report crimes and confiscate illegal materials and equipment, violators are rarely apprehended and prosecuted. Under their contracting arrangement, WEOs are entitled to a portion of any proceeds from wildlife or environmental law penalties imposed and collected from violators.

Enforcement Management. LGU scores increased for all parameters under the enforcement management core competency, while the aggregate score increased significantly from 2.4 to 3.3. The most significant increase was for clear and consistent standards and procedures, which jumped by more than one point. Respondents also rated themselves highly regarding supervisors' experience, decision-making authority and relations with patrol staff. Consistent with other units, LGU respondents noted that improvements could be made with increased focus on strategic planning for enforcement and management, data collection and analysis for enforcement monitoring and management, and investments in infrastructure, such as operations centers and logistics equipment for patrol staff.

ENFORCEMENT ACTIONS IN PALAWAN

Since 2017, Protect Wildlife has worked with partners to track enforcement data, positioning the activity to assess enforcement trends over time. Over the life of the activity, 1,301 documented enforcement actions were gathered from various enforcement agencies, which directly benefited from the activity's on-site and off-site enforcement capacity-building activities. Most of the actions captured by Protect Wildlife's monitoring were by enforcement units in Palawan (510 actions), Zamboanga City (208 actions) and DA-BFAR regional units (548 actions). The activity focused on these sites and agencies because of the better recording and reporting systems in place. Palawan and Zamboanga City were also the activity's target sites for interventions in enforcement data systems management. The remaining 35 enforcement actions were reported from Region 12 and other national law enforcement agencies.

Figure 21 presents detailed data on enforcement activities by different enforcement units in Palawan. The increment in number of enforcement actions per a six-month period varied over time but showed an overall upward trajectory from 2017 to 2020. The most precipitous drop in enforcement actions took place in 2020, when COVID-19 pandemic restrictions affected field activities. In addition to the year-on-year upward trajectory, enforcement units in Palawan completed the following notable actions:

- In July 2018, DENR Palawan seized 21 frozen pangolins and 16 marine turtles being transported on a truck in Puerto Princesa City. Coordination was subsequently done with PCSDS.
- In October 2018, DENR Palawan seized ten pangolins from a poacher. Coordination was subsequently done with PCSDS.
- In January 2020, PCSDS, DENR Palawan and *Bantay Palawan* provincial task force confiscated 20 pangolins worth ₱400,000 (US$8,000) from a wildlife trafficker in El Nido municipality.
- In March 2020, Philippine Coast Guard seized 165 pieces of giant clams in Roxas municipality.
- In September 2020, PCSDS and DENR Palawan, with assistance from Armed Forces of the Philippines, seized 1,154 kilos of pangolin scales, 263 kilos of marine turtle scutes, 105 kilos of dried seahorses and 40 kilos of dried pipefishes from a wildlife trafficker in Puerto Princesa City. The estimated value of the seizure was over ₱40 million (US$800,000).

Although Protect Wildlife was unable to analyze causation based on the data available, the activity views the general increase in self-assessment scores, alongside reported enforcement data, as positive indications of partner performance in wildlife and environmental law enforcement. With the required support, these trends can be sustained.

Figure 21. Enforcement Actions by Various Enforcement Units in Palawan

	2017 Jan-Jun	2017 Jul-Dec	2018 Jan-Jun	2018 Jul-Dec	2019 Jan-Jun	2019 Jul-Dec	2020 Jan-Jun	2020 Jul-Dec
DA-BFAR Region 4B				4	5	7		
Puerto Princesa Subterranean River National Park							41	10
PNP and partners				3	66	3		1
Mount Mantalingahan LGUs	6	7	8	2		1	8	7
PCSDS, Bantay Palawan and partners	25	40	37	24	15	12	32	12
DENR Palawan and partners			7	32	6	38	26	25
TOTAL	31	47	52	65	92	61	107	55
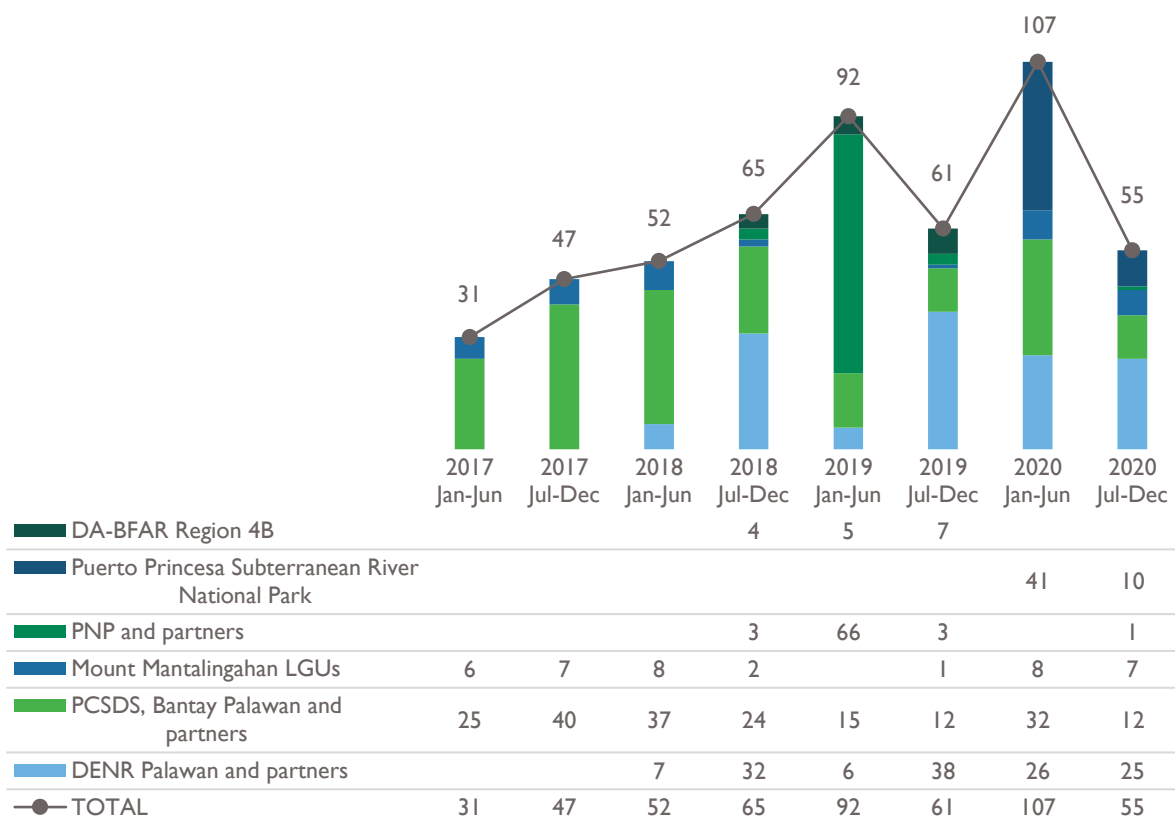
SUMMARY

Protect Wildlife closes this chapter of activity accomplishments with an analysis of whether partners are on track to meet the activity's habitat and wildlife threat reduction objective and achieve advancements in human well-being through a less encumbered flow of ecosystem goods and services.

Impacts of Protect Wildlife on threat reduction and on advancements in human well-being will take time to materialize and to study. It will depend largely on continued national agency support and an increasing flow of technical and financial resources to partners in the sites over the coming years. Although evidence is limited at this stage—as expected given the limited time for partners to apply new knowledge, skills and resources—initial analyses from METT, enforcement and KAP assessments indicate that the activity has had a positive impact, resulting in improved partner performance.

If properly harnessed and cultivated, Protect Wildlife's work to strengthen capacity in management and enforcement; generate increased support and coordination from partners in various sectors; and improve conservation attitudes of communities and institutions will set conservation, resource management and enforcement practitioners on a pathway to meet the activity's desired final outcomes.

In the next chapter, Protect Wildlife showcases case studies from each activity site that will give shape to accomplishments and illustrate how activities and results were applied and achieved in practice.

SITE CASE STUDIES

In this chapter, Protect Wildlife presents results captured in the Theory of Change to life, showcasing these through case studies from implementation in the activity's four sites. The case studies highlight the most impactful interventions, with focus on how the activity delivered technical assistance in an integrated, self-reinforcing method across each Strategic Approach in target landscapes, and how it advanced conservation and enforcement objectives through off-site activities at national and regional levels through policy support and enforcement training and systems.

Following narratives, Protect Wildlife closes each section with a summary of site-level activities completed in Year 5, in compliance with annual reporting requirements.

PALAWAN

Palawan is considered as one of the last frontiers for biodiversity conservation in the Philippines. It is the only province in the country with the Strategic Environmental Plan for Palawan Act that supports sustainable and conservation-oriented socioeconomic development. With a growing population, high poverty incidence and increasing activities in tourism and agricultural development, Palawan as an environmental hotspot has to contend with threats to its diverse habitats and species, including wildlife poaching and trafficking, illegal and unsustainable fishing, and encroachment in conservation areas.

Protect Wildlife's approach in Palawan focused on conservation and enforcement efforts that were consistent with the province's existing environmental policies and development trajectory. In this section, the activity presents highlights of its work with partners in Mount Mantalingahan Protected Landscape in southern Palawan; and off-site enforcement, policy and research initiatives with PCSDS.

MOUNT MANTALINGAHAN

Mount Mantalingahan Protected Landscape is an important mountain range that not only harbors diverse and endemic Palawan wildlife but also provides abundant ecosystem goods and services, including water supply and forest products, to communities dependent on the 120,457-hectare protected area.

As Protect Wildlife commenced its work in Palawan in 2016, the activity initiated a stakeholder needs assessment and joint planning session with DENR, PCSDS, LGUs and partners from the five municipalities surrounding Mount Mantalingahan. All parties established a core goal that would define the activity's assistance for the next five years—mobilizing local officials and communities to better preserve ecosystem goods and services provided by the protected area, and to strengthen protection of local biodiversity and wildlife. Given the wide-ranging nature of challenges in Mount Mantalingahan—poverty, which drives encroachment, illegal logging and wildlife poaching; limited awareness and irregular enforcement of regulatory policies on resource uses; and impacts of climate change—the partners agreed that the activity's integrated landscape approach was called for.

Mount Mantalingahan—with several iconic features along the mountain range such as Maruyog Peak—is an important protected area in southern Palawan, where both upland and lowland communities derive vital ecosystem goods and services, including water supply and forest products.

Under the landscape approach in Mount Mantalingahan, Protect Wildlife worked with local stakeholders to craft FLUPs for the five municipalities surrounding the protected area. Zones—established to protect headwaters and wildlife habitats and to accommodate economic activities—created a common understanding and lent themselves to organized planning and management.

Through assistance to protected area and LGU officials, Protect Wildlife helped place a combined 206,567 hectares of Mount Mantalingahan and forestlands outside the protected area under zones for protection and conservation and for production activities. Zoning regimes and related restrictions on land and resources uses were enshrined in management plans for the protected area and the five LGUs. Alongside its zoning work, the activity planned and executed a series of complementary technical activities designed to institutionalize zoning regimes and to incentivize compliance with restrictions on land and resource uses. Using zoning and management plans as guides, the activity delivered a range of technical assistance to support sustainable livelihood initiatives, enhance protection of wildlife habitats and strengthen enforcement of wildlife and environmental laws.

MANAGEMENT ZONING: BUILDING BLOCKS OF FOREST LAND USE PLANS

Formulation of the protected area management plan and FLUPs began with creation of technical working groups who led and sustained these efforts. Protect Wildlife led these groups and local communities through a comprehensive process, including setting of vision and strategies, training on integrated conservation and development, collection and field validation of data, projection of zoning and land uses, and establishment of management prescriptions. Throughout this process, technical working groups and community partners laid the foundation for management plans, which were drafted and presented to DENR and local authorities for review, adoption and implementation.

Protect Wildlife worked with local counterparts to lay the groundwork for plotting a zoning regime that would form the basis of management plans—executing a validation of current land uses in forestland communities. Through the process, the activity and technical working groups engaged communities

through mapping exercises, spatial analyses and dialogues. Mapping proved to be a powerful tool to visualize their current situation, analyze land use-related issues, define appropriate zones and prescribe allowed and prohibited activities in each zone.

Protect Wildlife found several areas across municipal forestlands where actual land uses differed from what policies prescribed, causing much of the degradation in Mount Mantalingahan and adjoining forestlands. Also, 6,319 hectares of forestlands in Brooke's Point municipality and 50,100 hectares of forestlands in Rizal municipality lacked clear zones and management plans. When the activity, technical working groups and community stakeholders embarked on forest land use planning, the first order of business was to adopt appropriate management zoning based on relevant policies. These policies include the Environmentally Critical Areas Network (ECAN) of PCSD, NIPAS Act, Forestry Code, Local Government Code, Indigenous People's Rights Act, and other environmental and natural resources policies. Zoning of forestlands also had to be harmonized with protected area zones adopted by the Mount Mantalingahan management board in 2018.

Through management zoning, stakeholders plot out land use designations that delineate forestlands into protection and conservation areas and production areas. Production areas were further divided into subzones, such as agriculture, tourism, settlements and special uses. Each zone and subzone had corresponding evidence-based land and resource use prescriptions—the rules for how an area of land may be legally used. Zoning decisions were derived from spatial analyses but also considered socioeconomic and political realities in the area.

Zoning decisions and land and resource use prescriptions were enshrined within FLUPs, which were endorsed by their respective municipal development councils and legislative bodies. Overall, the FLUPs and Mount Mantalingahan management plan will serve as primary management tools for establishing responsibilities and accountabilities in managing and regulating land and resource uses in public lands. These tools will also promote sound forest resource management by ensuring that production activities are in balance with the

Incorporating experiential learning under Strategic Approach 3 on improved biodiversity conservation competencies, Protect Wildlife trained local communities and LGU officials on integrated conservation and development.

Following theory and technical discussions, training participants applied management planning skills through land use validation and mapping exercises within their own lands. Protect Wildlife facilitated these trainings as part of managing planning and zoning work with LGU and community partners in Mount Mantalingahan.

Protect Wildlife trained 2,111 community members and 51 LGU officials from Mount Mantalingahan municipalities. These trainees—who played key roles in crafting the protected area management plan and FLUPs—can be considered local ambassadors for conservation and development in and around Mount Mantalingahan, raising awareness within their communities while helping to ensure compliance.

Agroforestry activities by Protect Wildlife in southern Palawan sought to provide incentives to communities who comply with approved zonings by promoting productive activities in multiple-use zones in Mount Mantalingahan and production zones in municipal forestlands.

goals of forest protection and biodiversity conservation. These planning initiatives also facilitated integration of protected area management and forest land use plans with the required comprehensive land use plans of LGUs. This completes the uplands-lowlands integration of land use plans, eliminating redundancies and conflicts between individual plans and creating a clear roadmap for planning.

INCREASING PRODUCTIVITY IN MOUNT MANTALINGAHAN AND ADJOINING FORESTLANDS

Within approximately 82,000 hectares of combined multiple-use zones in Mount Mantalingahan and production zones in municipal forestlands, Protect Wildlife worked with private sector and community partners to attract investments in forest restoration and soil and water conservation through assisted natural regeneration, agroforestry development and sustainable agriculture practices. Approximately 17,000 households in these zones were engaged in subsistence and small-scale farming. Crops commonly grown are upland rice, banana, rootcrops and coconuts. It is not uncommon to find farmers who continue to practice *kaingin* or traditional slash-and-burn farming, a recognized indigenous practice.

There is significant potential to make these areas more productive and provide upland households with alternative approaches to farming that promise reliable income, while also incentivizing compliance with land use plans. Protect Wildlife strove to help Mount Mantalingahan partner communities invest in production zones through a range of interventions, including agroforestry and conservation-oriented agriculture.

Promoting Agroforestry and Investing in Improved Livelihoods and Forest Cover

With a vision to increase forest cover in Mount Mantalingahan and surrounding forestlands while also making a long-term investment in high-value tropical fruit trees, Protect Wildlife led an agroforestry initiative from 2019 to 2020 following the planting season. Operating within existing protected area and LGU zoning regimes, the activity worked with indigenous communities in upland areas and migrant households in lowland areas with claims in public lands who committed to plant and nurture the seedlings.

Prior to the distribution of vegetable seeds and fruit tree seedlings, Protect Wildlife led an orientation on agroforestry principles and techniques and organic vegetables cultivation, followed by hands-on training on site preparation and seedling planting and maintenance. The activity engaged nearly 600 farmers in planting 40,000 durian seedlings across approximately 400 hectares, and more than 50,000 rambutan and 24,000 lanzones seedlings across approximately 800 hectares of Mount Mantalingahan multiple-use zones and forestland production zones. Selection of seedlings was based on suitability of soils and climate in planting areas; high market value and demand for durian, rambutan and lanzones; and seedling characteristics, which were adapted to mixed-cropping systems and could be easily integrated into existing coconut farms or upland farming systems.

In receiving seedlings and training, farmer partners committed to follow agroforestry principles and to limit planting to their designated plots in production or multiple-use zones. Protect Wildlife conducted regular monitoring to ensure that farmers followed proper site preparation and planting procedures, such as laying contour lines for establishment of natural vegetative strips.

Reaping Rewards of Hard Labor in Purple Yam Demonstration Farms

While the agroforestry initiative will wait years to bear fruit, Protect Wildlife's partnership with Sunlight Foods Corporation and Mount Mantalingahan LGUs to cultivate *ube* or purple yam was already generating returns for farmers. Through the partnership, Protect Wildlife provided target farmers' groups with opportunities to earn premium contract-growing prices with Sunlight Foods Corporation by applying conservation-oriented farming methods.

After toiling for ten months in their demonstration farms, members of the five farmers' groups harvested 6,430 kilos of purple yam in January 2020. Each farm harvested an average of 1,300 kilos of purple yam, 80 percent of which were of size and quality for sale and processing. As part of the partnership agreement with the farmers' groups, Sunlight Foods Corporation committed to purchase their purple yam at ₱15 (US$0.30) per kilo rather than ₱10 (US$ 0.20) per kilo, or at 150 percent of the prevailing market price. Total

Purple yam farmers in communities surrounding Mount Mantalingahan were supported in every step of the way under the collaboration of Protect Wildlife, Sunlight Foods Corporation and other local partners in southern Palawan—from (top to bottom) propagation of planting materials and successful harvests of their purple yam, to provision of farm tools from the W-GDP Initiative.

A high-value rootcrop, *ube* or purple yam grown by assisted farmers' groups in southern Palawan are cultivated following conservation-friendly farming practices. Their harvest is consolidated by local NGO IDEAS and then shipped to Sunlight Foods Corporation, who ensured sustainability of the purple yam enterprise by entering a contract-growing agreement with the farmers' groups.

sales of purple yam at ₱96,457.50 (US$1,900) was distributed to the farmers commensurate to the level of effort they contributed to the demonstration farms.

As a learning experience, results of the first harvest provided an initial demonstration that conservation-oriented livelihoods are not only possible but can also be profitable. With continuing technical guidance, the farmers' groups are expected to improve their farming practices to get better yields in subsequent cropping seasons.

For the second cycle of planting that started in March 2020, Sunlight Foods Corporation provided planting materials and expanded their orientation on purple yam propagation to include three more farmers' groups from identified expansion sites. Through W-GDP Initiative, the activity also invested in farm tools to help farmers efficiently complete tasks in their communal farms. While the support is primarily focused on the eight farmers' groups, 20 farmers from Brooke's Point also cultivated purple yam in their individual farms.

To sustain purple yam production in southern Palawan, Protect Wildlife assisted Sunlight Foods Corporation identify and build a relationship with IDEAS, a local NGO that promotes sustainable livelihoods through agriculture and enterprise development. IDEAS fully executed a partnership agreement with Sunlight Foods Corporation in June 2020, where it will serve as consolidator and link the farmers' groups with the company through a range of approaches, including the following:

- Monitoring purple yam farms and farmer's groups covered by the contract-growing scheme, ensuring compliance to rules, quality and technical standards, and requirements prescribed in the sustainable agriculture code adhered to by the buyer;
- Consolidating purple yam as per scheduled harvests, while executing proper handling, grading, packing and tagging to ensure traceability; and
- Facilitating shipment and record retention for harvest data, traceability records and receipts, while also tracking transport costs from farm gate to consolidation point for reimbursement by Sunlight Foods Corporation.

LESSONS FROM PURPLE YAM HARVEST: MOVING FORWARD WITH SUNLIGHT FOODS CORPORATION, IDEAS AND LOCAL GOVERNMENT UNITS

Through its partnership-building efforts, Protect Wildlife helped build a strong base for purple yam production among assisted farmers' groups in southern Palawan. Sunlight Foods Corporation, as a reliable and committed buyer that offers guaranteed fair farm gate prices, frees farmers from market uncertainties. As it transitioned its technical support to Sunlight Foods Corporation and IDEAS, the activity has passed on a number of lessons to influence sustainability of the purple yam enterprise and further enhance partnerships. Primary challenges experienced by the farmers' groups and their own feedback on the production process center on three core areas: pest control, conservation and resilience, and economic and profit motives.

Although the demonstration farms experienced relatively low mortality in purple yam cultivation, farmers did experience losses due to infestation from white grubs, skunks digging for the grubs, and stray cattle entering the farms and trampling on crops. To prevent skunks and stray cattle, Protect Wildlife recommended that the farmers' groups and IDEAS consider investment in fencing. White grub infestations may be mitigated through application of traditional farming practices.

Farmers also cited challenges in precipitation, with heavy rains inundating farm plots in Sofronio Española municipality and drought affecting farmers in Bataraza municipality. Shifts in seasonality and extreme weather events driven by climate change cannot be altogether mitigated, but farmers can incorporate measures to increase agricultural resilience. Protect Wildlife's demonstration farms and training on conservation-oriented agriculture and links between productivity and ecosystem goods and services were important building blocks for farmers' groups. These were insufficient, however, to ensure their long-term practice. The activity recommended that Sunlight Foods Corporation, IDEAS and LGUs provide outreach services featuring the following:
- Refresher and advanced training on conservation-oriented agriculture practices,
- Support for adaptation measures during droughts or flooding,
- Monitoring for compliance with zoning rules and management prescriptions in Mount Mantalingahan and adjacent forestlands, and
- BCC campaigns to motivate adoption of conservation practices.

Lastly, Protect Wildlife experienced some loss of farmers in its second season of purple yam cultivation, driven primarily by economic considerations. Primary reasons for farmers' departure from demonstration farm partnerships were their desire to establish their own farms, and to focus on more immediate income-generation activities, considering the length of time for purple yam to grow compared to faster-maturing agricultural commodities.

Protect Wildlife encouraged Sunlight Foods Corporation and IDEAS to present the demonstration farms as learning sites, where farmers can learn proper conservation-oriented farming practices and build partnerships with Sunlight Foods Corporation and IDEAS. Training at demonstration farms should be viewed as investments for farmers, providing them with skills to launch their own household plots. Sunlight Foods Corporation and IDEAS could also encourage farmers' groups to engage in household-level cultivation using mixed-cropping systems of short-term and long-term crops for those who complete training in demonstration farms. This approach would harness farmers' profit motive while also increasing farmers' resilience. It would be important to pair this approach with monitoring and extension services to ensure that conservation-oriented farming practices are being applied and that farmers comply with zoning regimes.

Sunlight Foods Corporation, IDEAS and partner communities will also benefit from support from Brooke's Point municipality in 2021. Inspired by environmental and economic benefits of the purple yam initiative, the mayor of Brooke's Point committed to assist Sunlight Foods Corporation in scaling up purple yam production with technical and logistical support from the municipal agriculture office. In response to farmers' requests, the mayor committed to invest in a water system in Saraza community to help local farmers meet water demands for purple yam production. Incidentally, the water system is part of the approved three-year work and financial plan for PES reinvestment, which Protect Wildlife supported. The system will be developed in Macagua watershed within the year and can potentially provide water supply for both farming and domestic uses in Saraza community.

PAYMENT FOR ECOSYSTEM SERVICES

Payment for ecosystem services is an innovative approach to implementing conservation activities while also ensuring financing mechanisms to sustain these efforts.

There are several principles related to PES, including the users-pay principle, wherein users or beneficiaries of nature's provisions pay directly or indirectly to secure the flow of ecosystem goods and services and compensate stewards who protect the natural resource base. The general idea is that whoever supplies, preserves or maintains an ecosystem service should be paid for doing so.

In Protect Wildlife's PES initiatives in Mount Mantalingahan, water consumers directly pay for watershed management or recompense upstream communities for their service in protecting sources of water and ensuring its continuous supply. The payment can be in various forms—such as livelihood support, infrastructure or any community development activities—that must be agreed upon among partners in PES activities.

In January and February 2021, IDEAS reported that they consolidated 10,000 kilos of purple yam for shipment to Sunlight Foods Corporation—nearly double the output from 2020. While a small part of the increase was driven by the addition of new farmers' groups, it also reflects the farmers' applications of lessons from the first cycle and changes that allowed for those who trained on demonstration farms to cultivate purple yam in their household plots.

SECURING FUNDING FOR WATERSHED CONSERVATION THROUGH PAYMENT FOR ECOSYSTEM SERVICES

Purple yam farmers join the many agribusinesses, semi-subsistence farmers, industrial firms, local enterprises and more than 172,000 residents from 33 communities surrounding Mount Mantalingahan that rely heavily on its ecosystem goods and services—such as water supply, irrigation, food, medicine, fertile soil and recreation. The protected area and its surrounding forestlands provide the resources that southern Palawan municipalities need to deliver water services to their communities for household use, as well as to farms and plantations for crop irrigation.

Protect Wildlife worked with partners in Brooke's Point LGU to develop their fledgling payment for ecosystem services scheme. The activity provides additional context and more background on interventions to help Brooke's Point partners generate funding to support their watershed management efforts and protect their water resources.

The LGU-managed waterworks in Brooke's Point relies on water sources from three watersheds, which have a combined discharge capacity of 10,200 cubic meters every day and can serve up to 13,800 households. Prior to engaging Protect Wildlife, the LGU issued an ordinance establishing guidelines for services of their waterworks system, which covers approximately 20 percent of households in Brooke's Point. The ordinance also includes prescribed rates and service fees, and a special levy of ₱1 (US$0.02) per cubic meter of water billed to consumers, which is specifically allotted for watershed protection. The activity built on this momentum, offering to assist the LGU to implement a PES scheme and to establish policy guardrails to ensure that environmental fee collections would be used for their intended purpose.

Establishing a Foundation for PES Management and Implementation

Spurred by Protect Wildlife's support, a PES technical working group was formed to develop policies and procedures for collection of environmental fees, and to establish and manage a PES fund in accordance with Brooke's Point LGU's integrated watershed management plans. The technical working group included officials from LGU offices in accounting, planning and development, and environment and natural resources, as well as representatives from indigenous communities and waterworks groups.

Protect Wildlife collaborated with the technical working group on the following measures between to establish a foundation for PES:

- **Cost and revenue analysis and cost-based resource valuation.** Financial records were reviewed to understand costs and returns of existing waterworks in Brooke's Point. Protect Wildlife helped the technical working group estimate the cost per cubic meter of water delivered to users, including costs for protecting, developing, restoring and managing watersheds. The study was designed to inform the LGU of a more technically sound and financially feasible PES rate that they can consider charging to water consumers.
- **Development of financial management guidelines.** The technical working group outlined processes, procedures and methodologies to be followed to generate accurate, up-to-date and relevant financial information on the PES fund, from revenue generation to resource allocation and utilization. The guidelines were approved in 2018 by the Brooke's Point mayor and the municipal legislative council.
- **Ring-fencing PES revenues.** In accordance with the above guidelines, Protect Wildlife led a ring-fencing intervention to separate the PES account from the general waterworks account. Ring-fencing involves separation of waterworks activities, financial accounts and financial statements from the rest of LGU funds. This helps ensure that funds collected through the special levy are accounted for in a separate subsidiary ledger and used solely for PES purposes. The LGU is now able to produce a report on the PES fund on a regular basis.

To gather broader, multi-sectoral support for PES, Protect Wildlife also engaged with Brooke's Point watershed management council throughout the process. The activity presented to the council the financial analysis and resource valuation study, as well as the PES financial management guidelines for endorsement to the municipal legislative council.

Concurrent with these efforts, the Brooke's Point LGU reached out to both waterworks customers who benefit from the water supply, and upstream communities that could be provided with incentives to help protect and rehabilitate watersheds. With Protect Wildlife support, the LGU strove to connect with these two audience segments with a BCC campaign on PES, which was an offshoot of a larger thematic campaign for Mount Mantalingahan called *Kagubatan ay Kinabukasan* (The Forest is Our Future).

To deepen engagement with watershed stewards in the uplands, Protect Wildlife supported consultations with indigenous communities within the Tigaplan watershed. The activity also led a training on agroforestry, followed by a planning exercise, for the establishment of agroforestry farms and a common river protection plan. Through the assistance, upstream communities indicated that construction and repair of local water systems—to address limited water supply for their homes and

A BCC campaign on PES used a more targeted approach to reach audiences directly through campaign flyers attached to water bills issued by the LGU-managed waterworks. This direct marketing campaign reached 4,151 water users in Brooke's Point.

crops—was a priority need, along with basic community infrastructure investments, such as footbridges and sanitary toilets.

Collecting PES Revenues and Ploughing It Back to Protect Watersheds and Uplift Communities

Over the life of the activity, Brooke's Point LGU generated nearly USS$32,000 from PES. To facilitate ploughback of revenues to support watershed rehabilitation and protection, Protect Wildlife assisted the LGU in preparing a work and financial plan for 2019 to 2021 for the three watersheds in Brooke's Point. The three-year plan was reviewed by the watershed management council and endorsed to the municipal legislative council, who approved the plan for implementation in July 2019.

The work and financial plan outlined how collected and projected PES revenues—supplemented by the LGU and other fund sources—would be distributed toward priority activities. These activities include implementation of easement regulations along riverbanks, including relocation of households; provision of sanitary toilets in upstream communities to prevent open defecation that can contaminate water resources; construction of basic infrastructure, such as local water systems and footbridges; nursery operations and agroforestry activities; medical, dental and social services; and watershed management monitoring and protection. The three-year plan had a total requirement of ₱4.79 million (US$95,800). PES revenues amounting to approximately ₱2 million (US$40,000) was allocated to nursery operations and procurement of seedlings.

In 2019, Brooke's Point LGU began rolling out PES activities under the first year of the work and financial plan. These include the purchase of a five-hectare residential lot for relocation of affected households within river easements in Macagua watershed; construction of five local water systems—one in Macagua watershed and four in Tigaplan watershed; repair of a hanging bridge in Tigaplan watershed; and design of watershed monitoring stations in Macagua and Tigaplan watersheds. For these initial projects, the LGU allocated around ₱3 million (US$60,000).

Although Brooke's Point LGU's focus remained on implementation of the PES work and financial plan in upstream areas, officials also reassessed their PES scheme with an eye toward optimizing policies and

operationalize the users-pay principle. In December 2019, the LGU approved a revised revenue code, which includes an expansion of the PES scheme and imposition of fees targeted to mining and related extractive industries, natural parks and ecotourism sites, and other water providers and users. The revenue code specifically indicates that PES collections shall be treated as a special account within the general municipal fund and shall be used solely for conservation and development of watersheds, forests and ancestral domains.

The watershed management council also conducted reviews of its work and financial plan and made updates based on planning exercises and initial implementation experience. Based on this review, the council updated investment requirements for 2020 and 2021, increasing the budget to ₱6.977 million (US$139,540). Projected PES revenues, including revenue to be raised under the revised revenue code, constituted 70 percent—approximately ₱4.88 million (US$97,600)—of the total amount required to implement the plan. Brooke's Point LGU, with contributions from community LGUs, will finance the remaining 30 percent needed to complete implementation of the plan. The council will continue to monitor and review the implementation of the work and financial plan and identify priority activities for the remaining years.

In February 2020, a PES board was created in Brooke's Point to oversee implementation of PES initiatives in the municipality. The board is comprised of members of the technical working group, with new members from other LGU offices, community associations, DENR, PCSDS, NCIP and civil society organizations. Under current arrangements, implementation of the work and financial plan is lodged under the municipal planning and development office.

Promoting a Model of Success on PES

Other LGUs in southern Palawan followed Protect Wildlife's success with Brooke's Point, enacted ordinances that provide for PES and developed their own PES schemes.
- Rizal LGU began reporting PES collections in January 2018 and generated approximately US$8,700 from water users through September 2020. The LGU completed and approved its ring-fencing guidelines, business plan and work and financial plan for PES reinvestment in Malambunga watershed. Moving forward, the waterworks management aims to intensify collection efforts, improve its financial management system by fully implementing management guidelines, and provide incentives to stewards of water sources through reinvestments in their communities. Priority activities in Malambunga watershed include establishment of a nursery for enrichment planting, agroforestry and support to livelihoods of local communities.
- Sofronio Española LGU, with Protect Wildlife support, completed draft financial management guidelines for its ring-fenced water utility account and is slated to finalize its business plan in 2021.
- The LGU water utility in Bataraza, while not yet fully operational, has collaborated with Protect Wildlife to prepare a draft business plan and ring-fence its water utility accounts. These will serve as their reference once their water system becomes fully operational.
- Narra LGU drafted financial management guidelines for their waterworks operations and PES revenues.

STRENGTHENING ON-SITE WILDLIFE AND ENVIRONMENTAL LAW ENFORCEMENT

With a focus on training local enforcers to curtail wildlife and environmental crimes in and around Mount Mantalingahan, and an aim to improve connectivity across units, Protect Wildlife led a wide range of enforcement activities in southern Palawan. The activity outlines support on enforcement training and mentoring and policymaking and networking provided to partners in Mount Mantalingahan and its surrounding LGUs.

Building Enforcement Capacities

Capacity building for LGU enforcement units that work in and around Mount Mantalingahan began with basic-level trainings that covered wildlife and environmental laws; conduct of arrests, searches and seizures; basic timber measurement; wildlife identification and handling; and court procedures, among others. Protect Wildlife followed this with a range of training and mentoring interventions across the life of the activity, including formal trainings that led to the deputation of LGU and community WEOs, and mentoring activities that include annual enforcement reviews and planning.

After being selected by LGU officials, community and LGU enforcement trainees completes trainings not only on enforcement but also on conservation principles to emphasize the need to preserve the integrity of ecosystems in all situations, even in enforcement operations. Trainees learned basic concepts of ecology and wildlife and environmental laws and local restrictions that govern their use in and around Mount Mantalingahan.

Over the course of intensive four-day trainings, trainees delved into rules and restrictions outlined in Philippine national laws, such as Forestry Code, Chainsaw Act, Wildlife Act and ENIPAS Act, among others. They developed core technical competencies for wildlife identification and handling, timber scaling and measurements, surveillance techniques, and conduct of arrests and search and seizure operations. To ensure that surveillance, arrest and evidence collection bears fruit, trainees were introduced to core principles of courtroom practices on wildlife and environmental cases, requirements for evidence to be admissible to court, and basics of criminal procedure. Lastly, trainees practiced skills needed for action planning and coordinating their enforcement work with partner enforcement agencies and officials.

Over the life of the activity, 49 community members and 46 LGU officials from southern Palawan completed training requirements and secured certification and deputation as WEOs. All southern Palawan WEOs are authorized to monitor, detect and report violations of wildlife, forestry and fishery laws, rules and regulations; to arrest violators in the absence of relevant authorities; and to assist in surveillance and monitoring of related activities and filing of complaints with appropriate officials designated by law. LGU-based WEOs may also seize illegally collected, possessed and traded wildlife species, parts, by-products and derivatives.

Mentoring Trainees for Continuous Skills-Building

Protect Wildlife practiced continuous engagement with enforcement officials in southern Palawan, coordinating with individual enforcers who sought guidance on execution of their duties, while also leading annual reviews and coaching sessions. Through annual legal coaching sessions and workshops, the activity led LGU-based WEOs in self-reflection exercises to review and dissect case studies, assess accomplishments, analyze challenges and prepare annual work plans.

With community WEOs, Protect Wildlife used participatory mapping techniques to mark locations of illegal operations and enforcement sites. The activity used inputs from their hand-drawn maps to produce enforcement maps in GIS and, in later sessions, used these with community WEOs to plot out their enforcement work.

Trained Enforcement Units Produced Results

Capacity-building activities contributed to strengthened enforcement by providing enforcement officials and WEOs with opportunities to increase their knowledge and skills on enforcement procedures, analysis, technologies and intelligence systems. With stronger knowledge and skills, trained enforcement personnel were able to better deter, detect and disrupt wildlife and environmental crimes, improve quality and quantity or use of crime scene evidence, and increase frequency of arrests and prosecutions. While LGU enforcers were tasked to protect portions of Mount Mantalingahan within their municipalities, they were also assigned to enforce wildlife and environmental laws in forestlands outside of the protected area. Brooke's Point and Sofronio Española LGU enforcers were also designated to enforce fisheries laws in their municipal waters, providing for a landscape-seascape approach in their enforcement jurisdictions.

Over the life of the activity, enforcement capacity-building activities for LGUs and communities in southern Palawan have contributed to 205 confiscations, seizures and arrests within Mount Mantalingahan, municipal forestlands and other areas. Annual enforcement actions reflect a year-on-year increase, except for a drop from 2020 to 2021 due to reduction in enforcement operations during the COVID-19 pandemic, as well as re-assignment of staff to help with enforcing quarantine restrictions.

Confiscations, seizures and arrests refer to confiscations and seizures of illegally harvested and traded wildlife species, parts, by-products and derivatives; and arrests of violators of Forestry Code, Fisheries Code, Wildlife Act, Chainsaw Act and other national laws and local ordinances related to protection and conservation of wildlife and habitats. Confiscations, seizures and arrests occurred on-site in communities where species and habitats are located, or off-site in transit and trading points.

WEOs trained by Protect Wildlife contributed to important enforcement accomplishments in southern Palawan. In 2017, LGU and community WEOs uncovered a large illegal logging operation adjacent to Mount Mantalingahan, where a mining company had cut thousands of trees, including century-old hardwood species. LGU enforcers received reports of the illegal activities and notified the mayor, who in turn coordinated with DENR and PCSDS to file cases against the mining company. Community enforcers also reported to PCSDS cases of poached wild birds. Based on information provided by trained WEOs, about 150 adult and fledgling mynahs and parrots were seized in two operations

targeting local consolidators operating in Mount Mantalingahan. Their work resulted in charges being filed. This showed integration of information-sharing process between community WEOs and government agencies in the area.

Developing Enforcement Policies

With the WEOs and local officials in southern Palawan LGUs and DENR offices, Protect Wildlife also helped strengthen wildlife and environmental law enforcement efforts through public policy initiatives. The activity worked with partners to draft and advocate passage of a range of policy instruments to create or strengthen deterrents and penalties for wildlife and environmental crimes.

Foremost of these efforts, in November 2018, the Mount Mantalingahan management board issued a resolution—co-developed with Protect Wildlife—that established a resource protection and law enforcement committee and imbued it with enforcement authorization for all relevant wildlife and environmental laws in the protected area. The committee is responsible for coordinating across enforcement agencies that operate in and around Mount Mantalingahan, recommending enforcement action plans and protocols to the management board for approval, mobilizing resources required for enforcement operations, and exercising oversight over enforcement actions in the protected area.

The resolution also formally established enforcement teams at protected area, LGU and community levels, outlining their powers, functions and operational protocols. Led by the protected area superintendent with membership from DENR, PCSDS, PNP and community enforcers, the enforcement teams serve as primary wildlife and environmental law enforcers within their jurisdictions, conducting operations related to violations within and directly impacting Mount Mantalingahan. These teams are empowered to conduct the full cycle of enforcement through apprehensions and seizures—with focus on ensuring compliance with Mount Mantalingahan management plan and zonal restrictions.

Creation of multi-level enforcement teams, as well as adoption of an enforcement protocol by the Mount Mantalingahan management board, drew enforcement groups together under complementary mandates, coordinating their activities to achieve their shared vision set by the management board. While coordination and data sharing across the protected area is essential, ground-level teams must also have the flexibility to develop targeted approaches tied to unique characteristics and nature of the protected area and forestlands. Under the multi-level structure, the Mount Mantalingahan management office consolidates all data and uses its birds-eye view to identify hotspots and adjust overarching strategies accordingly. The coordination protocol also lays out specific roles of various agencies, covering processes from day-to-day apprehensions and conduct of raids to filing of cases. All information gathered in a given timeframe can then be utilized by the management board to adjust the enforcement plan for Mount Mantalingahan or draft necessary policies to improve on-site protection efforts.

SUPPORT TO PCSDS

As the mandated government agency for executing Strategic Environmental Plan for Palawan Act, Palawan Council for Sustainable Development and its staffing office PCSDS—which coordinates and implements programs and services for the council—were natural core partners for Protect Wildlife. Noting the activity's five Strategic Approaches closely paralleled its mission and intervention areas,

PCSDS quickly agreed on a set of priorities that would guide the activity through its five-year implementation period in the province. Following a presentation of the activity's Theory of Change, technical approach and targets, PCSDS and Protect Wildlife agreed on a set of focal areas, including the following:

- Forest land use planning initiatives, with focus on protected area buffer zone communities, to harmonize zoning and better protect wildlife and habitats;
- Wide-scale adoption of PES to enhance sustainable financing flows for conservation management in municipalities across Palawan;
- Conduct of priority research initiatives that respond to practical concerns and needs in the province;
- Support for wildlife and environmental law enforcement, ranging from development of policies, production of tools and improved systems, to training and deputation of WEOs; and
- Development of a communications strategy and campaigns to address conservation awareness and knowledge gaps.

In the following sections, Protect Wildlife highlights its support to PCSDS in each of the priority areas.

LEADING LOCAL GOVERNMENT UNITS TOWARD IMPROVED CONSERVATION AS AN ENABLING BODY

Right after Protect Wildlife's launch in 2016, the activity began its outreach to partners in Palawan—most importantly with PCSDS and stakeholders in Mount Mantalingahan. During initial consultations in southern Palawan, the Mount Mantalingahan management board, LGUs of the five municipalities and local civil society organizations committed to update the protected area management plan and formulate FLUPs for its buffer zone areas.

Recognizing their role as an enabler and conservation leader in the province, PCSDS committed to provide Protect Wildlife with resources and technical support needed to advance management planning under the jurisdiction of LGUs. In this capacity, PCSDS provided the activity with geospatial datasets needed to perform mapping and zoning work with communities and LGU officials. As a collaborator, PCSDS joined interdisciplinary technical working groups that led planning activities, with the activity providing technical guidance. The technical working groups and stakeholder communities exercised a comprehensive planning process, with their outputs serving as basis for allocation of LGU funding to help DENR govern and manage the whole landscape. The approved protected area management plan and updated FLUPs of the five municipalities provide the clarity that the government needs to manage the landscape, that communities need to understand rules and restrictions, and that enterprises need to plan their investments.

PCSDS also performed an enabling and leadership function by collaborating with Protect Wildlife to draft, approve and promote a range of policy initiatives that inspired related measures in municipalities across Palawan, most prominently on flagship species and PES.

Promoting Conservation through Designation of Flagship Species

In 2017, Protect Wildlife provided policy support in drafting and securing adoption of a PCSD resolution on guidelines for selection and management of flagship species by Palawan LGUs. The guidelines were built from sections of Wildlife Act that call for LGUs to initiate conservation measures for endemic species and to promote them as emblems of conservation.

In 2018, PCSDS, with Protect Wildlife support, led a series of workshops with LGU officials to present the guidelines and help them craft local ordinances for the selection of flagship species. PCSDS advocated for the LGUs to develop conservation and protection action plans for their flagship species and their habitats; and to incorporate more extensive language on the designation of restrictions and prohibited activities, corresponding penalties and creation of special accounts to fund conservation actions. Through these workshops and mentoring support, four southern Palawan municipalities have declared their respective flagship species: Balabac's Philippine mousedeer, Bataraza's Nicobar pigeon, Quezon's Philippine megapode and Rizal's Palawan hill mynah.

Promoting PES through Provincial Policy and Guidelines

In October 2020, PCSD approved a resolution establishing guidelines in the implementation of a PES scheme in Palawan. The policy shall apply to all public and private users and consumers of ecosystem goods and services from Palawan's ECAN zones in terrestrial, coastal and marine, and indigenous areas. The policy established guidelines on planning and execution of PES schemes and applied lessons from the Protect Wildlife's successful PES activities in southern Palawan.

PCSDS will move forward to create a PES technical working group that will promote adoption of the policy across Palawan, with initial focus on priority sites, such as Puerto Princesa Subterranean River National Park and El Nido and Roxas municipalities. Execution of PES initiatives under the

Flagship species in southern Palawan municipalities include (from top to bottom) Philippine mouse-deer in Balabac, Nicobar pigeon in Bataraza, Philippine megapode in Quezon and Palawan hill mynah in Rizal. Guidelines on selection and management of flagship species were developed by PCSDS with support from Protect Wildlife.

policy will be informed by Protect Wildlife's PES implementation manual containing the activity's lesson plans, tools and lessons learned.

Promoting Devolution of Fisheries and Coastal and Marine Resources Management through a Range of Policies

While protected area and forestland planners and managers have applied ECAN-compliant zoning rules in terrestrial areas across Palawan, application in coastal and marine ecosystems has lagged. Working with PCSDS, Protect Wildlife helped craft a template ordinance for the implementation of ECAN zoning in coastal and marine habitats governed at the LGU level. Through its rollout, PCSDS will be in position to work with LGU officials to approve the ordinance and design and implement coastal and marine areas management initiatives. Linked to this work, the activity helped PCSDS to develop a template ordinance for designated closed seasons for fisheries that will allow for recovery of fish populations and prevent overfishing.

Lastly, Protect Wildlife worked with PCSDS to produce a draft template to guide selection and oversight of *Bantay Dagat* who will enforce LGU zoning and fisheries management rules in coastal municipalities. Through the document, PCSDS established minimum qualifications for *Bantay Dagat*, ensuring that LGUs apply the same criteria in selecting fisheries law enforcers.

GENERATING DATA THROUGH WILDLIFE RESEARCH TO INFORM CONSERVATION AND ENFORCEMENT WORK

As lead agency for conservation and enforcement across Palawan, it is incumbent on PCSDS to serve as storing house for data on endemic species, including species richness and geospatial data on habitats and hotspot areas. It is also in a position to establish strategies for enforcement and conservation of threatened species. To help PCSDS better fulfill this role, Protect Wildlife supported the agency's efforts to improve their knowledge base and generate data through initiatives that will inform conservation and enforcement management. Two key research initiatives were a study on the Philippine pangolin and a pilot study on camera trap data processing and analysis.

Surveying Presence and Habitats of Philippine Pangolins

Pangolins or scaly anteaters are considered the most trafficked mammals in the world, with around one million pangolins from Africa and Asia poached in the past decade and 20 tons of pangolins and their parts trafficked internationally each year, based on estimates by conservation NGO Traffic. The Philippines' own pangolin species—found only in Palawan and with the smallest geographic range among all eight pangolin species—has also fallen victim to rampant poaching and trafficking due to lucrative demand for their meat and scales. Pangolin meat is often consumed as an exotic fare, while the scales have long been part of traditional Asian medicine as treatment for various ailments, despite lack of scientific evidence to support its use.

Very few studies have been made on Philippine pangolins, leaving very little baseline data to help inform conservation and enforcement strategies. PCSDS sought to fill this gap by collaborating with Protect Wildlife, Katala Foundation's Palawan Pangolin Conservation Program, and Palawan State University on a

Philippine pangolins can only be found in Palawan and is the only pangolin species that is endemic to a single country. Very little is known of this particular species, which prompted Protect Wildlife and PCSDS to invest in research that can be useful for conservation measures and actions to protect the remaining populations of Philippine pangolins.

major field study on Philippine pangolins. The year-long study to survey the presence and habitats of Philippine pangolins covered 510,502 hectares of Victoria-Anepahan mountain range. The research consortium selected this key biodiversity area in south-central Palawan to complement existing pangolin studies conducted in northern Palawan by Katala Foundation and in Mount Mantalingahan by a PCSDS officer. Within Victoria-Anepahan, the consortium completed a three-pronged research initiative through gathering local knowledge via key informant interviews and focus group discussions, and assessing the presence and habitats of Philippine pangolins through ground surveys and camera traps.

Local Knowledge Survey. Because areas within or near pangolin habitats are mostly inhabited by indigenous communities and, increasingly, lowland migrants, the local knowledge survey involved interviews and focus groups discussions with 352 indigenous leaders, farmers and hunters from communities in Narra, Aborlan and Quezon municipalities and Puerto Princesa City. Survey respondents confirmed that in their respective areas, Philippine pangolins are poached for food, traditional healing practices and additional income. Pangolin scales command up to ₱10,000 (US$200) per kilo in the black market, while pangolin meat ranges from ₱150 to ₱250 (US$3 to US$5) per kilo. Although upland communities are aware that hunting pangolins is prohibited, respondents indicated that hunting persists as long as there is demand from outside buyers. Some respondents shared that poachers and traffickers are unlikely to be apprehended because enforcers are not visible in their area.

Ground Surveys and Camera Trapping. Field research components of the study involved 12 ground survey expeditions and five camera trapping expeditions to assess presence and habitats of Philippine pangolins in Victoria-Anepahan. With each ground survey covering 200 hectares of forests and each camera trap plot installed with more than 30 cameras—with one camera set up for every 100 hectares—the study was able to survey a total area of 19,000 hectares or 6.4 percent of the forested area in the mountain range.

Pangolins were found in half of the ground survey expeditions, and were documented in all five camera trap plots, with the highest pangolin count recorded in three sites in Narra. The ground survey team

encountered a total of 17 pangolins, which were observed and immediately released back in the wild after taking their photos and recording their physical measurements.

Both expedition teams made observations of pangolin habitats where they conducted ground surveys and camera trapping. After analyzing their field data, they noted the high number of existing and potential pangolin dens in sites with higher average percentage of grass cover and an abundance of ant or termite aggregations—a primary food source for pangolins. The number of observed pangolins was also significantly higher in sites with more potential pangolin dens and was also positively correlated with the number of available food sources, such as ants and termites.

The expedition teams also noted that pangolin and wildlife poaching remains an issue in most of the study sites. Human activities that reduce forest cover, including logging and slash-and-burn farming, were recorded in nearly all study sites. There was indication of better habitat management on the eastern side of Victoria-Anepahan, where the ground survey team observed higher concentrations of grass cover and ant and termite aggregations.

Using Research Findings to Inform Priority Actions for Pangolin Conservation

In February 2020, Protect Wildlife supported PCSDS to convene the Subcommittee on Philippine Pangolin Conservation and Management and provide a venue for sharing the results of the study in Victoria-Anepahan, as well as findings from other pangolin studies conducted by subcommittee members in other areas in Palawan. Using the research findings as inputs for updating the Philippine Pangolin Conservation Roadmap, the subcommittee identified the following key actions to address observed threats in study sites across the province and current trends in pangolin poaching and trafficking:

- Declare the Philippine pangolin as Palawan's provincial flagship species;
- Forge inter-LGU agreement to manage Victoria-Anepahan as a conservation area;
- Enhance WEO training to develop skills in detecting concealment methods for pangolin scales;

The Philippine pangolin study by the research consortium of PCSDS, Protect Wildlife, Katala Foundation and Palawan State University used a combination of methods to record the presence of pangolins in Victoria-Anepahan mountain range, examine their forest habitats and identify threats to their survival. These methods involved (from top to bottom) gathering local knowledge from communities about the Philippine pangolin, conducting a ground survey to record and measure pangolins in the wild and study their natural habitats, and installing camera traps in forests to take photos of pangolins and other Palawan wildlife.

Wildlife Insights, an innovative digital platform, can help protected area staff in quickly identifying and analyzing thousands of camera trap images used for monitoring wildlife populations and generating useful wildlife data to inform conservation actions.

- Streamline pangolin rescue and confiscation protocols; and
- Train local dogs for detecting illegal pangolin trade at transportation hubs.

Protect Wildlife also laid the foundation for PCSDS to promote science-based policymaking and BCC efforts linked to the study results. Through a roadshow in Victoria-Anepahan communities who participated in the study, the activity presented research findings and recommendations specific to their respective areas. Community officials readily expressed their intent to pursue local actions that will contribute to pangolin conservation. These commitments included issuing resolutions to protect forests and watersheds, working closely with authorities to boost wildlife law enforcement, allowing more wildlife studies to be conducted in their area, and using study findings as inputs to managing indigenous ancestral domains.

At the roadshow, Protect Wildlife also provided local officials with BCC campaign materials on pangolin conservation, which they immediately mounted in their communities. The activity endorsed the same campaign materials to PCSDS to be used for their continuous engagement and advocacy with communities.

Research Provides Insights into Palawan Wildlife Populations for Strengthening Protected Area Management

Building from experiences in using camera traps for the Philippine pangolin study, PCSDS worked with Protect Wildlife and Conservation International to pilot the new Wildlife Insights monitoring platform that uses camera trapping and artificial intelligence to study management effectiveness of protected areas. Wildlife Insights helps conservationists share wildlife data and better manage wildlife populations through standardized and repeated camera trap deployments and advanced analytics.

Through the pilot activity, PCSDS and protected area staff worked with Protect Wildlife to set up camera traps for set periods of time, retrieve them and upload images to Wildlife Insights online platform. Camera traps were set up in El Nido-Taytay Managed Resource Protected Area, Mount Mantalingahan Protected Landscape and Puerto Princesa Subterranean River National Park from December 2019 and August 2020.

PCSDS and protected area staff helped seed data into Wildlife Insights by tagging all camera trap images. Once adequately seeded, the platform applies machine learning to automatically identify species, dramatically reducing time spent on manually reviewing and tagging hundreds of camera trap images. Collectively, they recorded more than 23,000 images, around one-third of which documented Palawan wildlife. Most commonly recorded species were Philippine long-tailed macaques, Philippine tree squirrels, Philippine porcupines and Asian palm civets. Threatened endemic species were also documented, including Philippine pangolins and Palawan peacock-pheasants.

Data captured during the Wildlife Insights pilot activity will serve as baseline that PCSDS and protected area officials can apply during data collection exercises. This encouraged protected area staff to complete their data collection on an annual basis. Once uploaded, data can be analyzed through a customized Palawan dashboard on Wildlife Insights, which boasts a range of functions to facilitate analysis of species richness and species abundance over time. Changes over time can be tracked at the protected area-level or at various locations within the protected area. Through spatial analysis, users can assess changes in population characteristics between different camera trap plots, so protected area officials can pinpoint areas that may be experiencing degradation, poaching or other threats that could trigger changes in wildlife populations.

Now properly seeded with data, Wildlife Insights can be continuously used by protected area staff, with only minimal additional investments on setting up, retrieving and maintaining camera traps.

BOLSTERING COORDINATION AND SYSTEMS FOR WILDLIFE AND ENVIRONMENTAL LAW ENFORCEMENT

Protect Wildlife and PCSDS invested in coordination mechanisms and new systems as part of the activity's approach to strengthen CWT efforts in Palawan. The activity supported efforts on standardizing enforcement training tools, developing new systems for reporting and management, and facilitating coalition-building among enforcement units in the province. These strategies took shape through support for the creation of Palawan Environmental Enforcement Network or PALAWEEN and development of the BRAIN system.

Helping PCSDS Build an Enforcement Network for Palawan

PALAWEEN is comprised of protected area law enforcement teams, LGU quick response teams—such as *Bantay Dagat* operating in municipal waters and marine protected areas and *Bantay Gubat* operating in forestlands—wildlife trafficking monitoring units operating in airports and seaports, and community-based enforcement teams.

Protect Wildlife supported PCSDS in developing its five-year wildlife and environmental law enforcement plan, which proposed a province-wide enforcement network that would be key to execution of the plan's action points. PALAWEEN was proposed to link units across Palawan for planning and enforcement, while also connecting them to units in other transshipment points in the Philippines and Southeast Asia. These external connections would enable Palawan enforcement officials to ensure that traffickers and traders escaping with wildlife species and by-products would be apprehended before they reach their end-markets.
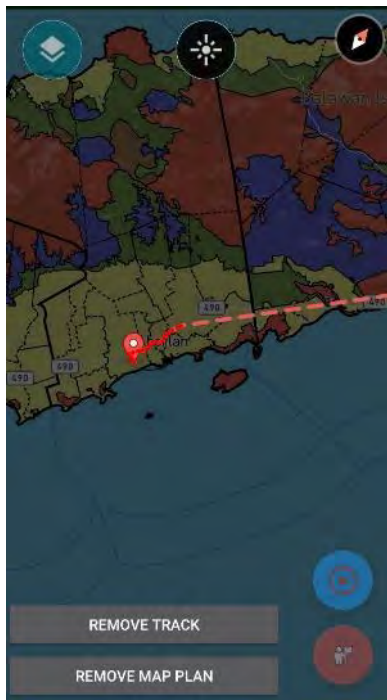
RESPONSE has mapping tools to help wildlife and environmental law enforcers in Palawan plan, manage and track enforcement activities over a secure network.

The first phase of creating PALAWEEN was to link PCSDS and LGU enforcement units in a multi-level framework that covered communities up to the provincial level. Through the network, community WEOs can conduct on-site monitoring and crime scene investigation of both terrestrial and seaborne poaching and trafficking, and share intelligence with LGU and provincial authorities who can build cases and take enforcement actions.

To advance this goal, Protect Wildlife supported PCSDS in drafting a resolution for the creation of PALAWEEN and developing enforcement protocols for key protected areas that provided initial basis for expansion of the network across Palawan. PALAWEEN is expected to be launched in 2021.

Developing the BRAIN System for Regulation, Enforcement and Public Reporting

The Biodiversity Resources Access Information Network or BRAIN system was co-developed by Protect Wildlife and PCSDS as a digital solution to innovate enforcement coordination and management and to promote efficiency in the agency's regulatory processes. The system has three modules meant for enforcement officers and partner agencies, permit-holders and the general public.

RESPONSE. Rapid Enforcement Support, Planning, Operation and Network System Enhancement or RESPONSE module is a hub for WEOs, wildlife trafficking monitoring units and PALAWEEN member agencies to efficiently coordinate, plan and execute enforcement actions. The module helps enforcers plan and track operation movements; coordinate with other users; and document, store and share enforcement and regulatory information to partners. It is encrypted to secure important data and electronic permits and limit access to authorized users.

A useful feature of RESPONSE are its mapping tools for analyzing crime incidences; sharing real-time information with partners; and plotting enforcement routes, target locations and entry and exit points. The ability of the module to share geographic information in real time through a secured network is critical to success of enforcement operations as it notifies nearest enforcement units to take

Online permitting became the only means for PCSDS personnel to accept various permit applications during the COVID-19 pandemic and continue providing their services. In May 2020 alone, they were able to issue 60 permits despite restrictions on movement in Palawan.

immediate action. Teams on the ground are able to submit photos and other documentary evidences to build cases more quickly, as compared in the past when time and distance often delayed filing of cases. Particularly in Palawan where there are several overlapping management zones, generating precise and useful maps using RESPONSE—rather than wait for GIS specialists to prepare maps—contributes to timely and efficient filing of cases against violators.

In a 2020 operation, Palawan enforcers used RESPONSE to conduct surveillance of suspected illegal logging activities in a major watershed. Enforcers analyzed maps in the module and plotted their operation, where they identified a clear approach vector into the watershed that bypassed known trails. This resulted in a major win for the operation, with enforcers seizing chainsaws from violators.

Online Permitting. The permitting module allows PCSDS clients to submit various permits—such as wildlife collector's permit, wildlife special use permit and local transport permit—and track their applications online. Processing time was reduced from three days to six hours for single-use permits, and from seven days to two days for multi-year permits. Online permitting promotes transparency and accountability and limits face-to-face transactions, which means less opportunities for graft and corruption. Permit applicants can check on the status of their applications and make inquiries online.

The permitting module was launched at the right time when agencies like PCSDS had to resort to online contactless transactions due to the COVID-19 pandemic. Online permitting then became the only means for PCSDS to accept permit applications and continue providing their services. In May 2020 alone—during a hard lockdown imposed nationwide—PCSDS was able to issue 60 permits despite restrictions on movement in Palawan.

The module also hosts a case management and electronic administrative case filing system. This practical innovation pools enforcement data from various BRAIN system user groups and jurisdictions into a central database, and then organizes and redeploys the data to other modules. With this system, filing administrative complaints and tracking their progress are done digitally. It also offers centralized data sources and improved information sharing and data preservation. This helps address improper evidence handling and documentation, which leads to dismissal of cases against violators.

Palawan Biodiversity Resource Center—envisioned as an innovative learning space for conservation—features a main diorama depicting iconic and endemic Palawan wildlife.

Public Reporting. Rounding out the BRAIN system is a public reporting module that applies crowdsourcing principles as a way for citizens to anonymously report illegal activities, as well as grievances on the performance of PCSDS personnel and partners. It is one way to diversify sources of information and enforcement leads and complement traditional intelligence-gathering techniques. Citizens can use online public reporting to submit reports and upload photos that will be used to confirm cases and to make decisions in rescues and operations. The module also has a short message service feature for receiving reports via text messages. PCSDS has already mobilized teams to validate received reports, and plans to expand access to online public reporting by adapting it on popular social media tools, such as Facebook Messenger.

PCSDS committed to sustaining the gains of the BRAIN system by procuring a dedicated server and equipment and including costs for maintenance, development and web hosting into their annual budget.

AMPLIFYING CONSERVATION AND ENFORCEMENT INITIATIVES THROUGH PALAWAN BIODIVERSITY RESOURCE CENTER

Aside from supporting PCSDS in strategic communications and BCC campaign initiatives, Protect Wildlife also worked with the agency to create an educational venue for promoting conservation and enforcement milestones in the province through the Palawan Biodiversity Resource Center.

Through exercise of its enforcement duties over the years, PCSDS has recovered thousands of wildlife samples, parts and by-products—such as shells, corals, marine turtles and pangolins—which were used as evidences in criminal proceedings and then finally stored in a warehouse facility. Seeing an opportunity to repurpose this inventory into exhibit items for an educational museum, PCSDS worked with Protect Wildlife to conceptualize the Palawan Biodiversity Resource Center as an innovative learning space that can generate support from students, locals and visitors on conservation and enforcement efforts.

After PCSDS initiated organizing its inventory and refurbishing one of its facilities for the museum, Protect Wildlife provided support in outfitting the facility with basic museum installations. To help enrich the agency's vision for Palawan Biodiversity Resource Center, the activity hosted a learning tour

of museums in Manila in July 2019. The learning tour gave PCSDS officials and personnel with expert perspectives and inputs on museum curation and programming to help keep exhibits and learning experiences at Palawan Biodiversity Resource Center relevant, engaging and interesting to visitors.

Following the learning tour, PCSDS conceptualized the museum's main diorama exhibit, which Protect Wildlife helped produce, including life-size models of Palawan wildlife set in a landscape-seascape backdrop. PCSDS completed all of its exhibits for Palawan Biodiversity Resource Center in March 2021 in time for a virtual launch held on World Wildlife Day. It expects to open the museum to the public once travel restrictions in Palawan are completely lifted after the COVID-19 pandemic.

YEAR 5 ACTIVITY SNAPSHOT IN PALAWAN

In lieu of an annual report for its truncated Year 5, Protect Wildlife presents a summary of activities completed in Palawan between July 2020 and March 2021.

Table 19. Protect Wildlife Year 5 Activities in Palawan

FOCAL AREAS	SA	ACTIVITIES	DATES
Mount Mantalingahan and adjoining forestlands	SA 1	Endline KAP survey in Mount Mantalingahan communities	December 2020-February 2021
	SA 2	**Agroforestry**	
		Household-level orientation on conservation-based agroforestry in Bataraza, Rizal and Quezon	July 6-August 11, 2020
		Distribution of lanzones seedlings to trained farmers in Sofronio Española, Bataraza and Brooke's Point	July 21-24, 2020
		Purple Yam Production	
		Signing of agreement between Sunlight Foods Corporation and IDEAS for consolidation of purple yam harvests	July 2020
		Distribution of farm tools to 94 purple yam farmers	July 9-10, 2020
		Consolidation of 14,000-kilo purple yam harvest by IDEAS	January 2021
		W-GDP Initiative	
		Strategic management planning workshop for fisherfolk associations in Quezon, and bookkeeping and business planning trainings for ten people's organizations in southern Palawan	September-November 2020
		Turn-over of seaweed dryers for fisherfolk associations in Quezon	October 2020
		Turn-over of cassava grating machine to farmers' group in Bataraza	February 2021
	SA 3	Technical meeting on Rizal FLUP at DENR CENRO Quezon	August 18, 2020
		METT workshop with protected area partners	October 5-9, 2020
		Virtual workshops to refine CLUP-FLUP of Bataraza LGU	November 13 and 25, 2020
	SA 5	Presentation on draft bill and enforcement protocol to executive committee of Mount Mantalingahan	July 7, 2020
		Technical working group review of draft bill, enforcement plan and protocol of Mount Mantalingahan	August 19, 2020
		Presentation of draft protected area bill and Protect Wildlife milestones to Mount Mantalingahan management board	September 24, 2020
	Cross-cutting	Refinement and finalization of Philippine megapode conservation action plan of Quezon LGU	November 4, 2020

FOCAL AREAS	SA	ACTIVITIES	DATES
Cleopatra's Needle	SA 3	Formal turn-over of Cleopatra's Needle Critical Habitat Management Plan to Puerto Princesa City LGU	December 16, 2020
Puerto Princesa Subterranean River National Park	SA 3	Presentation of results of identification of management indicator species	December 4, 2020
El Nido-Taytay	SA 3	Approval of El Nido-Taytay Managed Resource Protected Area Management Plan by protected area management board	November 10, 2020
Palawan-wide	SA 1	Roadshow on Philippine pangolin research findings, and distribution of pangolin conservation campaign materials	December 2020
		Distribution of School in a Bag kits in seven partner schools in Brooke's Point, Rizal and Puerto Princesa City	February 2021
		Installation of signages and information materials in Palawan Wildlife Rescue and Conservation Center in Puerto Princesa City	February 2021
	SA 2	Facilitation of passage of PCSD Resolution 20-749 establishing the guidelines for implementation of PES schemes in Palawan	October 29, 2020
	SA 3	Retrieval of camera traps in Mount Mantalingahan, and tagging of images and identification of species for upload to Wildlife Insights	July-August 2020
		Meeting of data managers of Palawan Wildlife Insights network	November 24, 2020
		Training on drone image processing and analysis for DENR and protected area staff in Palawan and Region 4B	October 2020
	Cross-Cutting	Launch of Palawan Biodiversity Resource Center with PCSDS	March 3, 2021

ZAMBOANGA CITY

Zamboanga City is the third largest city in the Philippines by area and serves as the regional center of Zamboanga Peninsula or Region 9. More known as a cultural and socioeconomic hub of western Mindanao—including Sulu Archipelago—the city also boasts of a variety of natural ecosystems harboring diverse fauna and flora. The city's forests are important habitats for old-growth trees and native bird species. Inland and coastal wetlands, including mangrove forests, are a sanctuary for migratory birds. Its coastal waters are vital to the city's key industries in fisheries and fish processing. As an important maritime city in the region and its proximity to backdoor access in and out of the country, Zamboanga City's enforcement challenges include curtailing trafficking and transshipment of wildlife, as well as addressing threats brought by destructive and unsustainable fishing.

The following sections highlight Protect Wildlife's work in conserving biodiversity and bolstering enforcement in Zamboanga City. The activity supported the city LGU, DENR and local partners in crafting management plans for the city's protected areas, forestlands, watersheds and mangrove forests. These plans served as roadmaps for the activity and its partners to jumpstart initiatives for conservation and development, including proper zoning, wildlife research, sustainable tourism and community livelihoods. To boost both on-site and off-site enforcement, aside from capacity building, protocols and policies, the activity also focused on reinforcing coordination among various enforcement agencies present in the city.

Pasonanca Natural Park and its conservation and protection are closely intertwined not only with the health of its watershed and biodiversity, but also with water security and sustainable urban development of Zamboanga City.

PASONANCA NATURAL PARK

Located ten kilometers from the city's downtown area, Pasonanca Natural Park is a mostly contiguous block of old and secondary growth dipterocarp forests. Recently included in the ENIPAS Act, the 17,414-hectare protected area, including its buffer zones, is a rich terrestrial habitat, particularly for birds. It is home to the Zamboanga bulbul, a songbird endemic only to the region, and was recently validated—through activity-supported research—to be an important habitat for critically endangered Philippine eagles. The protected area is also the city's largest and principal watershed, supplying water mostly for domestic use, as well as for agriculture and aquaculture. Zamboanga City Water District sources 70 percent of its water supply from Pasonanca Natural Park.

The landscape is closely intertwined with local biodiversity and the city's sustainability that it was too important to be left to unclear management directions when its protected area management plan expired in 2015. Protect Wildlife came at the right time to help develop a new management plan that guided stakeholders in implementing conservation and enforcement activities in Pasonanca Natural Park. The activity also engaged partners in initiatives on Philippine eagle research inside the protected area, and on conservation-oriented livelihoods in buffer zone communities.

CRAFTING A NEW PLAN AND BUILDING ON GAINS IN MANAGEMENT AND ENFORCEMENT

Bringing its integrated landscape approach, Protect Wildlife commenced its work in April 2017 with DENR, Zamboanga City LGU, ZCWD, the protected area management board and other partners to constitute a technical working group who will craft of a new management plan for Pasonanca Natural Park. The activity enriched the group's planning process with workshops on policy-consistent protected area management; situational analyses based on zoning, land and resource uses, and socioeconomic conditions; BCC campaigns to support improved knowledge, attitudes and behaviors for conservation; and financial planning, which includes analysis of funding sources for protected area operations and

investments. Working through the plan, the group was able to identify and present for approval their thematic management strategies and proposed zoning and subzoning for the protected area.

In 2019, the technical working group completed and presented Pasonanca Natural Park's management and development plan for 2019 to 2022, which the management board and DENR Region 9 approved. Upon review and recommendation by DENR-BMB, the implementation and investment program of the five-year plan was extended until 2028 to update it as a ten-year plan.

With an approved management plan in place, Protect Wildlife transitioned its support toward working with partners to implement initial activities in the plan, as well as enhancing the protected area's manual of operations. In particular, the activity focused on building on gains that partners already made in allocating funding and building capacities for improved and sustained on-site enforcement in the protected area.

Fostering Sustainable Financing for Protected Area Enforcement and Investments

Aside from government funding through DENR, ZCWD also provides major contribution to the management of Pasonanca Natural Park. To ensure the integrity of the watershed where it gets its water supply, ZCWD provides financial and human resources requirements, including forest guards, for safeguarding the protected area, particularly its strict protection zone.

Upon completion of Protect Wildlife's cost and revenue analysis of ZCWD operations, the activity noted that the water district's annual investments for protection and conservation of Pasonanca Natural Park were similar to a PES scheme. This was recognized by the protected area management board through a resolution issued in 2019—a significant action for institutionalizing a mechanism to ensure continuous funding for the protected area and budget allocation for ZCWD forest guards.

To further intensify sustainable financing for Pasonanca Natural Park, Protect Wildlife reviewed potential revenues that can be generated from users of ecosystem goods and services from the protected area—helping reduce heavy dependence on DENR and ZCWD for funding. To help create more PES revenues, the technical working group proposed to upgrade its tourism and visitor fees, which was approved by the management board in June 2018. The activity also guided the protected area management office in establishing an IPAF bank account into which revenues accrue. Through these actions, higher revenues are now generated, and accurate periodic financial reports are submitted to the management board. With these efforts, protected area partners hope to secure investments for establishing facilities inside Pasonanca Natural Park to support ecotourism, research, training and biodiversity monitoring activities, as one of the priorities laid out in the management plan.

Strengthening On-site Enforcement through Capacity and Policy Development

With a ratio of one forest guard for every 65 hectares, Pasonanca Natural Park has one of the ideal manpower setups for on-site protected area enforcement and patrolling in the entire country. While forest guards act as effective deterrence to open access inside the protected area, incidences of illegal tree cutting, bird poaching, charcoal making and encroachment persist, particularly in buffer zones. ZCWD forest guards also indicated their need for capacity building when they gave themselves a low

Forest guards hired by Zamboanga City Water District patrol and protect the watershed of Pasonanca Natural Park. Protect Wildlife trained more than 100 ZCWD forest guards on improved enforcement skills and practices, with most of them now deputized as wildlife enforcement officers.

rating on technical skills on their self-assessment of enforcement competencies conducted by Protect Wildlife. Protected area partners also noted the need for an operations manual that could help clarify standard operating procedures for the management team, as well as functions of on-site enforcers and various committees.

Taking note of these needs, Protect Wildlife helped Pasonanca Natural Park partners jumpstart initiatives for improving on-site enforcement even before the new protected area management plan was formally approved. The activity facilitated enforcement coaching and operational planning for ZCWD forest guards and key officials in September 2018. ZCWD adopted an operational protocol for its forest guards to guide management and implementation of an on-site enforcement system. It provides a blueprint for coordination, collaboration and rules for apprehensions, reporting, and case documentation and filing.

In January 2019, Protect Wildlife helped partners draft an enforcement plan, protocols and manual of operations, which were adopted by the protected area management board. Clear enforcement protocols were created to address environmental violations in Pasonanca Natural Park and to help enforcers and agencies in filing appropriate administrative and criminal cases for these offenses. By defining coordination structures and mechanisms, the protocols clarified the roles of DENR, Zamboanga City LGU and ZCWD in protected area management and enforcement as set out in their agreement— wherein ZCWD takes point in on-site law enforcement while DENR provides technical support and serves as complainant in cases filed against violators.

In addition to these policies, the management board deliberated and approved two resolutions related to improved enforcement: creating joint mobile checkpoints in the protected area, and requiring forest guards to report their programs and activities during management board meetings.

To address the need for enhanced enforcement skills, Protect Wildlife and DENR trained 107 ZCWD forest guards on wildlife and environmental law enforcement to help them better patrol Pasonanca Natural Park. Trainees learned basic forestry and wildlife laws; protocols on arrests, searches and

seizures; and other technical aspects of enforcement. The 96 forest guards who qualified under DENR standards were deputized as official WEOs.

As part of maintaining their deputation status, the WEOs received follow-up orientation on applicable environment and natural resources laws. They were also trained on mapping current threats, violations, and status of land and resource uses to provide Protected area managers with an updated overview of issues in Pasonanca Natural Park.

INVESTING IN COMPLIANCE TO PROTECTED AREA ZONING

With fast-rising urbanization in Zamboanga City—one of the economic growth centers in the region—expanding needs for settlements, livelihoods and natural resources were factors to be looked out for in applying comprehensive management approaches and setting up a strong enforcement mechanism in Pasonanca Natural Park.

To this, Protect Wildlife pushed for initiatives with partners to ensure that communities around the protected area were aware of and complied with zoning regulations, and were fully supported and engaged in productive economic activities in appropriate zones.

Ensuring Protection through Delineation and Demarcation of Zones

Partners in Pasonanca Natural Park pursued delineation and demarcation of strict protection and multiple-use zones in the protected area, as prioritized in the management plan. Protect Wildlife supported this initiative by helping identify priority areas based on the level of threats to forest habitats and biodiversity. Communities in the buffer zones were also identified as priority areas, noting their role in complying with protected area zoning and reducing intrusion into strict protection zones or expansion beyond allowed zones.

In June 2020, the delineation and demarcation team comprised of DENR, Zamboanga City LGU, ZCWD and protected area management office commenced their reconnaissance activity, including orientations and consultations with local communities. Protect Wildlife contributed to this with a training on using handheld GPS devices, marking and tagging demarcation sites, and placing boundary markers. The activity also provided additional materials and hired laborers to support the team in their delineation survey, followed by laying of physical markers on identified corners. The pilot delineation and demarcation work was completed in December 2020.

With this pilot exercise, partners at Pasonanca Natural Park had a clear roadmap for complete delineation and demarcation of the protected area. Through this demonstration, Protect Wildlife helped develop the process compliant with DENR policies and framework, which include execution of site surveys, GPS readings and laying of boundary stakes, and planning installation of demarcation monuments—concrete or vegetative markers or signs—that use suitable materials.

To complete its support for this activity, Protect Wildlife also produced informative billboards installed in buffer zone communities to teach them about prohibited activities in strict protection zones and encourage agroforestry activities in buffer and multiple-use zones.

Cacao farming and processing were seen by Protect Wildlife and partners in Pasonanca Natural Park as an avenue for promoting conservation-oriented livelihoods for buffer zone communities in the protected area.

Promoting Agroforestry in Buffer Zone Communities

To follow through with engaging local communities to comply with zoning in Pasonanca Natural Park, Protect Wildlife assisted two people's organizations to scale up their existing agroforestry efforts focused on cacao farming and processing in the buffer zone. In August 2020, the activity hosted a training for members of Tolosa and Salaan buffer zone associations, where they learned agroforestry practices to help them manage and expand their cacao plantations established through the National Greening Program of DENR. Around 500 hectares were planted to cacao, but the association members lacked training maintenance and on pest and disease control. A large part of the plantation required rehabilitation.

The training also focused on postharvest processing and value-added product development. Participants gained knowledge and skills needed to properly dry and process high-quality cacao beans that will meet market standards. These could contribute to diversifying income streams for association members and providing them incentives to better manage their cacao plantations and to reduce dependence on forest resources.

Protect Wildlife tapped private sector partner JAS Agri-Ventures—which leads the cacao industry cluster in Zamboanga region—for the training and farm demonstration. The enterprise also initiated discussions with the two associations regarding marketing agreements for their cacao harvests.

The activity also supported a subsequent training on conservation-based agroforestry led by Zamboanga City LGU, DENR and a local microfinancing NGO. Through application of agroforestry methods, the two associations could further diversify their cacao farms to include coffee. The city LGU committed to include the associations as recipients of coffee seedlings under its program for high-value agricultural crops.

To help legitimize the occupancy of association members in Pasonanca Natural Park's buffer zone, DENR Region 9 will be working on support to grant them tenure rights in the forestlands where they are located.

First photo of an adult Philippine eagle inside Pasonanca Natural Park documented by the expedition team.

The Philippine eagle pair displaying their talons as part of courtship behavior.

A nesting tree is a good indicator that Philippine eagles are thriving in Pasonanca Natural Park.

The expedition team looks for eagle activities in the forest from high above a tree platform.

ENGAGING PROTECTED AREA PARTNERS IN EAGLE RESEARCH

While evidence of Philippine eagles had been observed prior to Protect Wildlife implementation, a nest had yet to be found inside the park. As a result, the population status of Philippine eagles in Pasonanca Natural Park is one of the least understood wild sub-populations in the region.

In September 2019, about 40 research partners from Zamboanga City LGU, DENR, ZCWD and local universities participated in a Philippine Eagle Foundation and Protect Wildlife training on raptor research and management techniques, with focus on Philippine eagles. The workshop forms part of the activity-funded research by PEF that sought to accelerate eagle research and conservation efforts and improve ecological data for Philippine eagles inside the protected area.

In October 2019, in partnership with Protect Wildlife, officials from PEF, DENR, ZCWD and protected area management office completed 96 hours of observations, attempting to identify Philippine eagles within the protected area's interior forest. The team reported a breakthrough first eagle detection on October 23, 2019—when members observed an adult Philippine eagle emerging from the tree line of Katala ridge in Pasonanca Natural Park. The eagle was observed to be carrying a large-bodied prey—a known behavior among nesting raptors. The expedition team reported that the eagle was most likely delivering food to an already-incubating female mate.

The expedition team reported a second and third sighting of the same eagle on October 24 and 25, respectively. The following day, and again on November 27, PEF representatives confirmed sightings of a female Philippine eagle in the protected area. The eagle's nest, home to an estimated 30-day old eaglet, was found on December 5, 2019.

Things took an unfortunate turn when the expedition team returned in January 2020 and saw that the nest was empty. When the team climbed onto the nest, they found feathers, small bones and skin patches of the eaglet, with no sign of its

parents. The team collected the remains of the young eagle and sent these to the University of the Philippines for DNA and genetic tests.

The team spotted the eagle parents numerous times in two more expeditions in February and March 2020. Both eagles showed courtship behaviors, such as exchanging vocals, soaring together, and displaying their talons, with the male even attempting to mate with the female in a few occasions. These are positive signs that the eagle pair can still re-nest and lay a new egg.

The expedition provided the first documentation of an adult, free-living, and apparently breeding wild Philippine eagle within the Pasonanca Natural Park. This scientific breakthrough shows that the forests of the protected area can serve as an important nesting site of Philippine eagles.

As a result of this breakthrough, the management board issued a resolution in August 2020 adopting the Philippine eagle, as well the Zamboanga bulbul, as flagship species for the protected area. Zamboanga City LGU echoed this by also declaring the two birds as the flagship species of the city in February 2021. The city ordinance allocates ₱1 million (US$20,000) for a conservation program that will be led by DENR. Discussions among the city LGU, PEF and the protected area management office have started for a follow-on eagle expedition.

SANTA CRUZ ISLANDS

Off the coast of Zamboanga City, the Great and Little Santa Cruz Islands Protected Landscape and Seascape is well-known weekend destination for locals, drawn by the pinkish hue of its beach—the remnants of millions of crushed red pipe organ coral mixed with the white sand.

The islands are also known for their ecological, socioeconomic and cultural significance. The biodiverse mangroves, coral reefs and mudflats in the islands are home to rich terrestrial and marine life, including sea turtles, stingless jellyfish, flying foxes and migratory birds, which are crucial for fisheries and livelihoods in the area. The islands also host sacred grounds and burial sites that are culturally important for indigenous groups residing in the islands.

Recognizing the value of these islands, the national government declared Santa Cruz Islands as a protected landscape and seascape and as a national park—both of which require a holistic plan to conserve and protect the islands' natural heritage. Thus, the 3,318.26 hectares of protected lands and waters in Santa Cruz Islands and the biodiversity within it are currently managed by the Zamboanga City government through an agreement with DENR.

CRAFTING AND IMPLEMENTING A NEW MANAGEMENT PLAN

With Santa Cruz Islands' management plan expiring, Protect Wildlife came at an opportune time to promote a participatory process to craft a new five-year management and development plan. The 2019-2023 plan is envisioned as a road map for achieving the collective vision of Santa Cruz stakeholders: "An island ecosystem that is responsibly and sustainably managed, developed and protected, under the leadership of the LGU in partnership with stakeholders, for the conservation and preservation of the biological and physical diversities of the environment and for social and economic benefits."

Santa Cruz Islands in Zamboanga City—both an ecotourism destination and a protected area—is a model site for promoting balance between sustainable tourism and biodiversity conservation.

With the designated technical working group—and its membership of protected area management board, Zamboanga City LGU, DENR, civil society and university officials—Protect Wildlife facilitated a series of management planning workshops to map and finalize a policy-designated zoning scheme and craft rules on land and resource use. In September 2017, the management board approved the proposed zoning and management prescriptions, which called for the following:

- Little Santa Cruz Island and its surrounding waters to be designated as strict protection zone, with special use subzones for its sandbar, lighthouse, military detachment, and the biodiversity monitoring and learning center;
- Great Santa Cruz Island and its surrounding waters to be classified as multiple-use zones, with subzones for recreation, community settlements, and sustainable land and water use zones in mangrove areas and beach forests; and
- The former buffer zone to be designated as a marine production zone.

The decision was followed by a series of planning workshops to formulate management strategies and flesh out a five-year work and financial plan for implementation of all management, enforcement and community engagement activities.

To help the technical working group gather information to inform their planning, while also piloting initial activities in support of the plan, Protect Wildlife facilitated the following activities between the approval of the zoning regime and ultimate passage of the full management plan:

- Mapping of ecotourism sites, such as snorkeling and diving spots, eco-trekking trails and lagoon tour routes, as well as of strategic locations for installation of buoys.
- Training and deputation of 28 community members in Santa Cruz as park rangers to serve as force multipliers for improved enforcement of environmental laws against illegal, unreported and unregulated fishing; poaching of terrestrial and marine wildlife; and destruction of mangrove forests in the islands.
- Enhancement inter-agency coordination and cooperation protocols for enforcing environment and biodiversity-related laws.

- Launch of the Protect Our Paradise campaign to promote positive behaviors for tourists visiting the protected area. Campaign signages were installed in June 2018 in Paseo del Mar served to remind tourists headed to Santa Cruz Islands to be aware of and comply with the rules and regulations of the protected area.

Implementing the Management Plan with Partners

In July 2018, Protect Wildlife and the technical working group presented the key features of the plan to the management board. The board committed to issuing budget allocations through 2022 for implementation of the management plan. Budget allocations will be based on the financial analysis and investment program in the plan.

In February 2019, the protected area management board approved the new management and development plan for Santa Cruz, which was later presented to the Zamboanga City mayor in March 2019. The city government immediately expressed its commitment to support and sustain the implementation of the plan. The city local finance committee was instructed to ensure a separate annual budget for management and conservation activities in Santa Cruz Islands, and funding for priority activities. Zamboanga City council also committed to establish a protected area fund and implement the upgraded tourist fees—from ₱20 (US$0.40) per visitor to ₱100 (US$2 per visitor—to help ensure continuous funding for the proper implementation of sustainable ecotourism programs and environmental conservation initiatives in the next five years.

The city council later approved the management and development plan in June 2019 as the roadmap for conserving and managing the protected area over the next five years. The plan was then submitted to DENR Region 9, the final step in the formal approval process, for review. The teams expect the endorsement of the plan from DENR-BMB in the coming months.

In late 2019, Protect Wildlife collaborated with Santa Cruz Islands officials to commence implementation of the protected landscape management plan, with development of plans for the demarcation of critical coastal zones, execution of a carrying capacity study for ecotourism, and organization of youth camps.

Demarcating Critical Coastal Zones

Following the approval of the management and development plan, the Santa Cruz Islands management board approved the installation of buoys through a resolution passed in December 2019. The purpose of demarcation with buoys is to protect shallow reef areas from intrusion and destruction by tourists and motorboats, and to designate boat mooring areas. The management board envisions that demarcation is an essential first step toward clarifying the new zoning regime and facilitating enforcement of land and water use and management prescriptions.

The protected area management office, with Protect Wildlife support, proceeded to plan for demarcation of seascape zones. The activity facilitated completion and USAID approval of an environmental screening report and completed procurement of materials for the construction of the concrete sinkers and installation of the buoys. Core members of technical working group—including the protected area management office, Zamboanga City LGU, DENR and Zamboanga State College of

Marine Sciences and Technology—led the installation of buoys with activity support. In February 2021, the activity formally handed over to partners the remaining 28 sinkers required for the installation, 23 primary floating buoys, 23 secondary floating buoys, 10 mooring buoys and steel cables, as well as two rafts which will be used to transport sinkers and buoys to installation points.

Core technical working group members have started the installation of the marker and mooring buoys in designated sites, observing proper installation protocols so that disturbance to marine habitats are minimized. In developing the installation plan, Protect Wildlife prepared the environmental impact mitigation and monitoring plan to govern the installation and to strictly limit any adverse effects on the ecosystem of the protected area. In a risk assessment exercise prior to installation, the activity and its local partners identified entry of poachers, pilferage of buoys and adverse weather events as major factors that may result in the displacement or loss of the buoys. To mitigate this risk, the city LGU committed to conducting monitoring through regular patrols and to maintaining open communication and awareness-raising activities with nearby fishing communities. The information dissemination will focus on the importance of the buoys in the management of the protected area; and the benefits to coastal communities through marine conservation and ecotourism outcomes. In case of damage or loss, repair or replacement of buoys shall be undertaken by the city LGU.

GENERATING DATA FOR EFFECTIVE ECOTOURISM MANAGEMENT

Protect Wildlife also facilitated a study on Santa Cruz Islands carrying capacity to generate data that will be useful for crafting tourism policies and procedures linked to the management plan. Through the study, Protect Wildlife surveyed tourism operations in the islands, conducted interviews with the protected area management office staff, Zamboanga City LGU officials, tour operators and select local residents. The team also completed an exit survey of departing tourists to assess tourist level of awareness and attitudes toward Santa Cruz Islands as a protected area.

Following data collection, the team applied Buillon's carrying capacity mathematical model. The model examines physiological, economic and socio-cultural variables to measure carrying capacity at three levels—basic carrying capacity, potential carrying capacity, and real carrying capacity—which roughly correspond to the number of visitors a site can accommodate, the number of visitors a site can accommodate comfortably, and the number of visitors a site can accommodate sustainably. Initial findings of the study revealed that the basic and potential carrying capacities are 3,334 and 4,000 visitors per day, respectively. The third level, the real carrying capacity, showed that the beach area of Santa Cruz Islands could only absorb 321 visitors and the number may need to be reduced to 160 during the nesting season of marine turtles. These initial findings on carrying capacity were presented to the protected area management board in December 2019. The current limit to visitors to Santa Cruz Islands is 500 per day.

The estimated carrying capacity of the islands is part of the Santa Cruz Islands destination management plan that was prepared with technical assistance from Protect Wildlife. The plan sets out nine priority action areas for Santa Cruz Islands, foremost of which is environmental management and conservation. Related to this are visitor management to minimize social and environmental impact and congestion from visitors and traffic generated by tourism; community involvement in the planning and development of tourism in the islands, and development and promotion of specific tourism products that enable

BCC campaign events supported by Protect Wildlife in Santa Cruz Islands promoted proper practices and behaviors for tourists visiting the islands, as well as appreciation of the rich wildlife in the protected area.

discovery and understanding of the islands' special qualities thus enriching visitor experience. The plan was submitted to the protected area management office in November 2020.

PROMOTING POSITIVE BEHAVIORS FOR ECOTOURISM AND CONSERVATION

Protect Wildlife supported the protected area management office in hosting *Fiesta na Islas de Santa Cruz* in October 2019. The activity ran conservation-oriented games at the event to raise tourists' awareness of marine turtle conservation challenges, and the role of organ pipe corals in contributing to the unique hue of the island's pink beaches. The activity also designed new signage and billboards focused on increasing knowledge among tourists of Santa Cruz Islands' status as a protected area and its rich biodiversity; of protected area rules and regulations related to advance bookings and prohibitions on single use plastics and sand and shell collections; and of the important role of mangroves in acting as a buffer to extreme sea level events.

SUPPORT TO ZAMBOANGA CITY LGU

Given Zamboanga City's rich but threatened resource base, the city mayor officially partnered with Protect Wildlife for biodiversity conservation initiatives in other ecologically important sites outside of its two protected areas. Through a memorandum of agreement, both parties agreed to pursue capacity development interventions in selected conservation areas within the city. Since then, Zamboanga City, in collaboration with the activity and DENR, crafted comprehensive development plans, as well as complementary sectoral and inter-sectoral plans for priority conservation areas.

ZAMBOANGA CITY'S FORESTLANDS

Zamboanga City's natural forest covered 31,057.42 hectares, a decrease of 828.16 hectares from the 2003 data on natural forest cover. The city has struggled in recent years with water shortages linked to drought—a problem that is exacerbated by the decreasing forest cover in the city's watershed. With guidance from Protect Wildlife, the technical working group—led by Office of the City Environment and Natural Resources (OCENR) and with members from DENR, ZCWD, Department of Tourism and civil

society organizations—mapped and zoned 65 communities with a total area of 159,391 hectares to feed into the city's forest land use plan to help conserve remaining biodiversity and promote the flow of ecosystem services.

The technical working group called for all remaining natural forests (closed, open canopy, mangroves) to be placed under protection and conservation through boundary demarcation and implementation of law enforcement programs; and for degraded protection and conservation areas to be restored through assisted natural regeneration, agroforestry and reforestation using appropriate species. Lastly, they sought for production areas to be enriched through issuance of appropriate tenurial instruments to tenured occupants of forestlands.

Zamboanga City FLUP called for the achievement of the following five desired outcomes within its 2019-2027 period of implementation:

- Protection of closed, open and mangrove natural forests through participatory mapping, boundary delineation, enrichment planting, and community-based forest protection.
- Protection of tenured areas and ancestral domain by employing productive uses and strategies on tree plantation, agroforestry, and establishment of sustainable source of fuelwood.
- Protection of untenured but occupied forestlands or claimed ancestral domain through an intensive information, education and communication campaign, inventory of forest occupants, and continued patrol and monitoring works.
- Restoration of non-NIPAS areas through capacity building, applied training and support programs on sustainable upland agriculture, forest farm improvement, and non-timber forest product development.
- Develop and improve infrastructure necessary for the physical and socioeconomic development in forestlands.

In 2019, Protect Wildlife assisted OCENR in completing the nine-year Zamboanga City FLUP, which was endorsed by the city development council to the city legislative council for approval and for integration into the city's comprehensive land use plan.

AYALA AND MANICAHAN WATERSHEDS

Parallel to the finalization of Zamboanga City FLUP was the completion of management plans for Ayala and Manicahan watersheds. These management plans will be the basis for a co-management agreement between DENR and the city LGU and the issuance of community tenure instruments in the forestlands as part of the implementation of the FLUP.

Ayala and Manicahan watersheds were prioritized for management as potential sources of water for the increasing population and expanding industrial development in Zamboanga City. Major areas in the forestlands of these watersheds are also devoted to productive agriculture with opportunities as a major food production area, especially for high-value crop production and conservation-friendly agriculture.

In 2016, Zamboanga City LGU requested assistance from Protect Wildlife to update and revise the draft watershed management plans for Ayala and Manicahan. The plans were prepared with the participation of all stakeholders and follows the ridge-to-reef concept and landscape approach. For administrative

Central mangrove forests in Zamboanga City are key source of protection and livelihoods for coastal communities—serving as a buffer against storm surges and a spawning area for coastal fisheries.

purpose, it is divided into two areas. One is the co-management area that covers the public lands. The other is the service area, which are alienable and disposable lands that are predominantly privately owned and covered by a CLUP implemented by the city LGU.

Significant quantitative data in the revised plan were derived from thematic maps generated during formulation of the FLUP. Updating of qualitative information was based on consultations and participatory planning activities. Participants were on-site stakeholders, DENR, OCENR, ZCWD, city planning and development office, partner academic institutions, environmental NGOs and Department of Agriculture's Convergence Initiative.

Strategies for the service area are not binding, since implementation is at the discretion of the respective communities and private landowners; those proposed for the co-managed areas (forestlands), however, are backed by a work and financial plan to be implemented by the watershed management council. Strategies for this portion of the watershed were influenced by prescriptions in the FLUP which segregates protection and conservation zones from areas suited for production. The watershed management plans are under review by DENR Region 9.

CENTRAL MANGROVE FORESTS

Located at the tip of the Zamboanga peninsula, the mangrove forest covers nearly 2,700 hectares, which represents approximately half of the city's total mangrove area. A key source of protection and livelihoods for coastal communities, the mangrove forest serves as a storm surge buffer and a spawning area for coastal fisheries. Improved conservation and management of the central mangrove forest—the only remaining major pocket of contiguous mangroves in Zamboanga City—is essential for the preservation of ecosystem services that the city and its coastal communities, in particular, depend upon.

In June 2018, the city mayor issued an executive order creating a technical working group to assess, evaluate and formulate a management plan for the central mangrove forests. Like with the Ayala and Manicahan watershed management plans, central mangrove forests conservation efforts began in April 2018, with city-wide stakeholder consultations in coastal communities. The activity helped the technical

PROTECT WILDLIFE FINAL REPORT

Mampang Seaweed Planters Association was assisted in enhancing their seaweed farming and drying enterprise under the W-GDP Initiative. The association received a floating solar dryer to promote a more efficient method for seaweed harvesting and drying and improve the quality of their dried seaweeds.

working group to incorporate findings from the consultations and validation exercises into a framework plan. The draft framework plan called for the rehabilitation and protection of the mangroves with awareness raising and livelihood activities for coastal communities, such as establishment of an aquaculture production area, wherein communities would sustainably and competitively produce aquaculture products such as crabs, tiger prawns and seaweeds.

This work was followed in March 2020 with issuance of a city development council resolution adopting and endorsing to the city legislative council the 2020-2030 Framework Plan for the Central Mangrove Forests of Zamboanga City. Once approved, the city LGU will implement the measures outlined in the plan, including an initiative to reforest 20 to 30 hectares of central mangrove forests, which would provide more area for fish spawning, thereby benefiting local livelihoods.

Enriching Livelihoods in Central Mangrove Forests

With support from Department of Science and Technology, Protect Wildlife engaged Mampang Seaweed Planters Association to assist it improve its seaweed livelihood linked to central mangrove forests. The department provided Protect Wildlife with design documents for a customized floating seaweed dryer, which it is now promoting to coastal communities across the Philippines.

Seaweed farming has been a lucrative supplemental livelihood for the association. Seaweed contains carrageenan, a gelling agent used in many food, pharmaceutical and cosmetic products. The seaweed drying facilities were designed with a greenhouse cover and UV-treated sheets to protect seaweeds from airborne contaminants and facilitate drying during rainy days. The floating dryers, which can hold up to one ton of fresh seaweed, are also mobile and allow fisherfolk to tow their harvest near their homes rather than haul them over a long distance from their seaweed farms. The dried seaweeds are easily packed from the dryer and readied for transport to buyers.

With the support to its livelihood, the association will be incentivized to contribute even more to the protection of

the mangroves from habitat degradation brought by expanding human settlements and extracting mangroves for fuelwood. The association was actively involved in the preparation of the mangrove management framework plan. The organization works with OCENR in mangrove restoration activities. Eleven association members participated in a three-day basic training on community-based environmental law enforcement for coastal community volunteers and were deputized as WEOs.

To help the organization improve its enterprise operations, Protect Wildlife also delivered training on strategic management and operations and maintenance for their floating dryer. The activity also partnered with the local Department of Trade and Industry to deliver a business planning training and support the association in developing a three-year enterprise plan that includes activities for conserving mangrove forests in their coastal community. The association adopted operation and maintenance guidelines for the dryer which include procedures on charging fees to those who will rent the floating dryers, which the association is applying toward the maintenance and general upkeep of their drying facility.

ELEVEN ISLANDS

Zamboanga City's new CLUP classifies *Once Islas* or Eleven Islands as an ecotourism growth area. This group of islands, northeast of the city, is among the city's major sources of sardines and other high value marine products, such as shellfish, crustaceans, fin fishes, sea cucumber and seaweeds. These islands are found to have abundant coastal and marine resources such as corals, reef fishes, seagrass beds, mangroves and associated species. The islands have land areas that range from 2 to 71 hectares, and though not all islands are inhabited, most are within the fishing grounds of local fishermen who frequent them.

Aside from its rich fisheries resources, Eleven Islands is known for its raw, natural beauty with majestic rock formations, mangrove forests, coral gardens, pristine waters and white, powdery sand beaches. Its reef-fringed islands are considered ideal for diving, snorkeling and other water recreation sports. Because of these and the diverse culture and traditions of its inhabitants, the city government decided
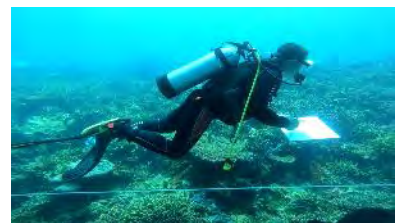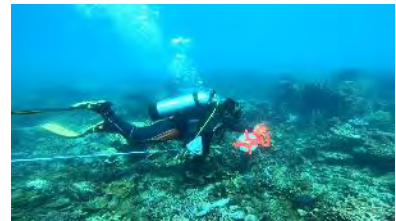
Various underwater surveys were conducted by Zamboanga State College of Marine Sciences and Technology for their coastal resources assessment study in Eleven Islands.

to harness the potentials of Eleven Islands and offer it as a new product for eco-cultural tourism. However, stakeholders and communities raised a concern that opening the islands for tourism would further degrade their natural resources. Some fishing communities were also experiencing a decline in fish catch. The town leaders wanted to initiate measures to educate local residents and guard their area against the threat of illegal fishing from fishers of other communities.

In response to these concerns, Zamboanga State College of Marine Sciences and Technology proposed and requested support from Protect Wildlife for an assessment of the coastal resources of Eleven Islands for the purpose of establishing locally managed marine protected areas in the area. The college and Zamboanga City LGU regarded this as a pioneering effort as no marine protected areas have yet been established in the city. Before Zamboanga City could promote Eleven Islands as an ecotourism destination, baseline assessments on the status of fishery resources and the coastal habitats in these islands, management and conservation systems of critical coastal resources, and the potential impacts of ecotourism on these resources should be established.

Supported by Protect Wildlife, the college assessed biophysical characteristics, fisheries resources and sociocultural and economic aspects of Eleven Islands. The assessment covered the physical features and quality of coastal and marine habitats (coral reef, seagrass, mangroves) and marine waters; surface circulation (current flow) and bathymetry (water depth, bottom topography, slope and contour) of the sea floor within Eleven Islands, status of fisheries (capture and aquaculture) and other resource uses, practices and threats; sociocultural profile and economic activities of the people living in the coastal areas, including their indigenous knowledge system and practices; and environmental awareness of coastal and island residents, their perceptions on the establishment of marine protected areas in their locality, and governance concerns.

Protect Wildlife gave technical assistance in producing the technical reports on each of the studies and sub-studies that are described in the succeeding sections; and will give recommendations for marine protected area establishment and recommendations for the coastal resources management plan of Eleven Islands. The research team will identify and recommend areas that would be suitable for the establishment of marine protected areas and other conservation areas that would enhance the ecotourism value of the islands and improve fisheries in the area.

CITY-WIDE ENFORCEMENT: CAPACITY BUILDING AND SYSTEMS DEVELOPMENT TO CURB ENVIRONMENTAL CRIMES

Protect Wildlife also supported Zamboanga City in helping curb illegal wildlife trafficking of marine species. In cooperation with DENR and Zamboanga City Anti-Wildlife Trafficking Task Force, the teams developed enforcement protocols and manuals of operations which now facilitates enforcement training for their protected areas.

In 2016, Protect Wildlife organized a participatory assessment workshop of wildlife law violations in Zamboanga City. The assessment was a joint activity of DENR and OCENR—the lead of ZCAWTTF—and was attended by 50 participants coming from various enforcement agencies. It covered the six watersheds of Zamboanga City. The results revealed Zamboanga City as a transshipment hub for

Composite Fisheries Law Enforcement Team led by Zamboanga City LGU conducts regular inspections in the city's fish markets.

endangered wildlife such as birds from Palawan and Malaysia. Key violations include harvesting of sea turtle eggs from nesting sites, illegal logging, poaching, encroachment in watersheds, and land conversions in mangrove areas. A guided survey conducted during the workshop also revealed that ZCAWTTF members had poor enforcement skills, thus needed assistance and capacity building to develop enforcement systems, from patrolling to the filing of cases with the prosecutor. After the teams conducted a field validation of the violations assessment, it was confirmed that there was indeed transport of illegally cut timber from critical watersheds, heavy charcoal making, illegal gold mining activities and the encroachment and illegal occupation in the buffer zones of Pasonanca Natural Park and within Manicahan watershed. These workshop outcomes served as the basis for future seminars and workshops conducted by Protect Wildlife to upgrade the skills and knowledge of ZCAWTTF members.

With OCENR and Office of the City Agriculturist, Protect Wildlife helped build the capacity of ZCAWTTF and provided technical support for Composite Fisheries Law Enforcement Team. The two groups are comprised of various national law enforcement agencies assigned to operate in Zamboanga City, including DENR, DA-BFAR, PNP Maritime Group, Philippine Coast Guard and National Bureau of Investigation, among others.

As one of Protect Wildlife's core initiatives to strengthen collaboration and joint operations planning between these various enforcement groups, the activity invested in new computers and printing and photography equipment to be used for building up the groups' enforcement database. The activity also led a workshop for 28 city LGU and DENR staff to identify data needs and design data flows and data presentation for the respective OCENR and Office of the City Agriculturist applications. The activity also led practical exercises on data entry. With these tools and Protect Wildlife's technical support, the operation centers of ZCAWTTF and CFLET are positioned to better maintain their database for recording, retrieving and analyzing data on apprehensions, seizures and other information related to enforcing environmental laws and regulations in Zamboanga City. The enhanced database systems will also aid the agencies' transition from paper-based to electronic processes, providing for easier filing, documentation, and monitoring and updating of cases.

Supplementing the celebration with skills-building, Protect Wildlife also hosted an online training for OCENR and Office of the City Agriculturist personnel to help them use spatial data for terrestrial and marine applications; develop heat maps for the improved deployment of enforcers and operational planning; and use of Visible Infrared Imaging Radiometer Suite for monitoring illegal, unreported and unregulated fishing and mapping hotspots. Going forward, VIIRS will be an important tool for enforcement data analysis, allocation of enforcement monitoring resources to hotspots, and for assessing intrusions of commercial fishing in the city's waters.

In October 2020, Protect Wildlife conducted an online training for OCENR and Office of the City Agriculturist on the use of *zambocityenfo.com.ph*—the city's new official environmental law enforcement management information system. The system was developed by the activity as part of its support to OCENR and Office of the City Agriculturist to help them lead ZCAWTTF and CFLET, respectively.

Following several months of development work with partners in Zamboanga City, Protect Wildlife helped to finalize the information system, which enforcers will use in 2021 to file reports on wildlife and fisheries violations. The system will aid official efforts to track the status of environmental cases, transitioning enforcement agencies from old paper-based systems to a digital platform that can be accessed across departments both from the office and in the field. The mobile application module of the system is deployable on Android phones and tablets, while the desktop module will provide spatial information that can be used for enforcement planning. The system, together with electronic copies of the user and technical manuals, as well as the source code, was formally transmitted to the OCENR and the Office of the City Agriculturist in December 2020. Included in the transmittal is a draft policy on adopting the system as the official reporting tool for the members of ZCAWTTF and CFLET. The system will be rolled out once the policy is issued.

YEAR 5 ACTIVITY SNAPSHOT IN ZAMBOANGA CITY AND SULU ARCHIPELAGO

In lieu of an annual report for its truncated Year 5, Protect Wildlife presents a summary of activities completed in Zamboanga City and Sulu Archipelago between July 2020 and March 2021.

Table 20. Protect Wildlife Year 5 Activities in Zamboanga City and Sulu Archipelago

FOCAL AREAS	SA	ACTIVITIES	DATES
		Delineation and Demarcation	
Pasonanca Natural Park	SA 3	Pilot delineation survey to identify sites for installation of markers	July-December 2020
		Approval of PAMB resolution declaring Philippine eagle as flagship species	August 19, 2020
		METT workshop with DENR, ZCWD, PAMB, protected area management office and enforcers	September 14-16, 2020
		Presentation and approval of enhanced ten-year management and development plan and protected area manual of operations	September 30, 2020
Santa Cruz Islands	SA 3	METT workshop with DENR, Zamboanga City LGU, PAMB, protected area management office and enforcers	September 17-19, 2020

FOCAL AREAS	SA	ACTIVITIES	DATES
		Fabrication and turn-over of remaining sinkers and rafts to be used for demarcation activity	December 2020-February 2021
Zamboanga City	SA 3	**Management Planning**	
		Turn-over of management plans of Ayala and Manicahan watersheds and central mangrove forests, Zamboanga City Biodiversity Strategy and Action Plan, Zamboanga City Environment Code, and equipment for ZCAWTTF and CFLET	September 4, 2020
		Approval of management plans of Ayala and Manicahan watersheds and central mangrove forests, and Zamboanga City Biodiversity Strategy and Action Plan by Zamboanga City legislative council	September 16, 2020
	SA 4	**Eleven Islands Coastal Resources Assessment**	
		Workshop by Zamboanga State College of Marine Sciences and Technology and Protect Wildlife to review, consolidate and analyze data generated from coastal resources assessment in Eleven Islands	September 11-12, 2020
		Presentation by Zamboanga State College of Marine Sciences and Technology to Zamboanga City LGU on results of coastal resources assessment in Eleven Islands	September 18, 2020
	SA 5	**Enforcement Systems Development**	
		Training for Zamboanga City LGU on use of *zambocityenfo.com.ph*	October 23, 2020
		Endorsement of enforcement system, together with user and technical manuals and source code, to Zamboanga City LGU, as well as draft policy for adoption of enforcement system as official reporting tool for ZCAWTTF and CFLET	December 7, 2020
Tawi-Tawi	SA 4	Presentation by PhilBio on findings of flora and herpetofauna survey in Malum watershed	July 30, 2020
	SA 5	Meeting with LGU officials to discuss and agree on signing an inter-agency covenant for wildlife and environmental law enforcement and creation of task force for Turtle Islands Wildlife Sanctuary	August 7, 2020
	SA 3	Presentation and endorsement of Malum Watershed Management and Development Plan 2020-2028 to Panglima Sugala municipal development council.	September 10, 2020
Region 9	SA 3	Technical working group workshop for refining matrix for Zamboanga Sibugay Biodiversity Strategy and Action Plan	July 22 and 24, 2020
	SA 5	Meeting with Zamboanga Sibugay PENRO, provincial LGU and technical working group on completion of draft Zamboanga Sibugay Provincial Environment Code	August 5 and 14, 2020
	SA 3	Training series on drone image processing and analysis for Region 9 and Tawi-Tawi	August-September 2020

REGION 12

Region 12 is composed of provinces in south-central Mindanao—including Protect Wildlife sites of Sarangani and South Cotabato provinces—and General Santos City as the regional center. Long known for its productive agriculture and agro-industries and rich fisheries and aquaculture, the region recognizes the immense value of ecosystem services goods and services—from water supply and fertile soils from its landscapes, to abundant fishing grounds from its seascapes—to sustain drivers of its

Mount Matutum is not only an iconic natural landmark in Region 12—it is also a protected area that provides water supply, fertile soils, forest resources and other ecosystem goods and services that benefit agricultural livelihoods and industries in the area.

economic growth. Local stakeholders are faced with the challenge of ensuring that their important natural resource base is safeguarded from threats of encroachment, illegal settlements, forest degradation and destructive fishing practices, among others. The region's vast coastal areas are also of interest to DENR's CWT efforts since these were identified as entry points for trafficking of exotic birds and other wildlife form neighboring countries.

The following sections present Protect Wildlife's conservation and enforcement work with partners in Region 12, focusing on two protected areas included in ENIPAS Act: Mount Matutum Protected Landscape and Sarangani Bay Protected Seascape. Similar with other sites, the activity assisted partners in crafting their protected area management plans, as well as rolling out initial activities in zoning, enforcement, conservation financing, sustainable livelihoods, university research and species protection.

MOUNT MATUTUM

Mount Matutum is an imposing inactive volcano covered with dense forests that support a range of important plant and animal species. Agricultural development has transformed municipalities around Mount Matutum into vegetable and fruit baskets, ensuring food security for the region. Along mountain slopes and adjoining valleys, vast plantations of high-value crops such as pineapple, corn, banana, vegetables and ornamental plants form a mantle over the fertile volcanic soil of this productive landscape. In 1995, it was proclaimed as a 13,947-hectare protected area encompassing 14 communities in municipalities of Tupi, Tampakan and Polomolok in South Cotabato and Malungon in Sarangani.

Considered a biodiversity powerhouse, Mount Matutum is an Important Bird Area due to the presence of globally threatened species and a restricted range of bird species. Recent surveys also revealed a high degree of species endemism in the area. It is also a valuable watershed, serving as catchment and headwater of the five major rivers that drain into Sarangani Bay and Liguasan Marsh, both also biodiversity rich and socioeconomically important. The most protected and well-preserved part of Mount Matutum is home to indigenous communities, who hold Mount Matutum as key to their people's survival and preservation of their unique culture and tradition.

While accelerating agro-industrial development, commercialization and urbanization make Mount Matutum municipalities among the most economically progressive in Region 12, there is growing concern among conservationists and development planners about sustainability. Loss of forest cover, should it continue, would have tremendous negative biophysical, socioeconomic and cultural consequences.

UPDATING THE ZONING AND MANAGEMENT PLAN

In 2018, Protect Wildlife began working with DENR Region 12 on management zoning to update the management plan for Mount Matutum. Demographic and economic changes in Mount Matutum and its surrounding areas demanded a review and stakeholders' endorsements of the zones. These have to be made consistent with the remaining biodiversity assets in the protected area, policies on land and resource uses in each zone and subzone, and the new zoning guidelines set out in ENIPAS Act. This endeavor was a critical component of the activity's efforts to help partners update the protected area management plan.

Together with partners, Protect Wildlife helped determine and adopt unified zones that are harmonized with land and resource use policies, and included subzone recommendations based on consensus among stakeholders. The management zones serve as the basis to determine conservation strategies and plan for investments and financing, enforcement activities and BCC campaigns. Through FLUP assistance, LGUs also started to harmonize their land and resource uses in their forestlands surrounding Mount Matutum with the zoning of the protected area

Protect Wildlife facilitated these activities in partnership with the Mount Matutum technical working group. The group was composed of representatives from the protected area management office, municipal and provincial LGUs, national government agencies, NGOs, academe and the private sector; as well as with the DENR Region 12 technical working group composed of DENR officials from the regional office, CENROs and PENROs, among others.

Protect Wildlife facilitated the management zoning in Mount Matutum through a participatory approach, engaging four municipalities and 14 communities in orientation, GIS mapping and zoning workshops, and field validations of land and resource uses. The activity engaged 256 individuals from communities in and near the protected landscape, together with partners from DENR, LGUs and technical working groups. The series of training and mentoring workshops enabled the stakeholders to take part in every step of the planning process and deepen their understanding of biodiversity conservation and how principles are applied.

Initial zoning activities were focused on Mount Matutum, followed with zoning activities in forestlands of the four municipalities. These were carried out with DENR, LGUs and community leaders through the FLUP process. Since the FLUP is done at the LGU level with DENR participation, it broadened participation from LGUs from different sectors, such as those from planning and development, agriculture, environment and natural resources, disaster risk reduction and management, and the legislative council.

Through the protected area management planning and FLUP processes, Protect Wildlife contributed to local partners' efforts to delineate 6,228 hectares of Mount Matutum under strict protection zones and 7,719 hectares into multiple use zones. Multiple-use subzones included areas for settlements, ecotourism, recreation, agriculture, agro-forestry and livelihoods. Collectively, the activity helped place 13,947 hectares of Mount Matutum under improved management. In areas around the protected area, the activity supported partner LGUs' work in establishing four FLUPs that place an additional 121,180 hectares of forestlands under effective management.

The Mount Matutum technical working group presented the final zoning plan to the protected area and was approved by the management board in December 2019. These management zones and corresponding land and resource uses provide the roadmap needed to address the threats facing Mount Matutum, such as increasing encroachment, loss of natural habitats and biodiversity due to improper land uses, deforestation, expansion of plantations into policy-designated strict protection zones, land conflicts, non-secure tenure of indigenous communities, illegal mining, and even treasure hunting. Zoning regimes were designed to sustain the key ecosystem goods and services that Mount Matutum provides, such as water, unique natural and cultural attractions for recreation, and landscapes for ecotourism, fertile soil, and habitats of diverse flora and fauna.

The technical working group moved forward to formulate the ten-year management plan to serve as a roadmap toward achieving their vision for Mount Matutum: "A biodiverse and resilient Mount Matutum Protected Landscape with vibrant ecosystems providing ecological and socio-cultural-economic benefits effectively managed across all generations of committed men and women in Region 12." The management plan set short-term goals that are envisioned to lead to the achievement of the protected area's vision. These goals cover biodiversity conservation and protection, improving forest cover, strengthened wildlife and environmental law enforcement, enhanced climate change adaptation and disaster risk reduction, and development of financing mechanisms.

The true success of these efforts, however, will depend on promoting compliance with the plan. Across all sites, Protect Wildlife helps to introduce activities designed to incentivize compliance, such as livelihood activities; to finance implementation, including PES arrangements; and to disincentive non-compliance, through stronger enforcement.

INTENSIFYING FINANCING INITIATIVES

Protection of Mount Matutum and surrounding forestlands, is heavily dependent on budget allocations from LGUs and the national government, particularly the DENR (budget allocations for the protected area management office and expanded National Greening Program); grants and technical support from development projects; and funding from the private sector as part of their corporate social responsibility. Generated revenues only come from the collection of fees from trekkers to the protected area, which from 2015 to 2019 only produced ₱93,810 (US$1,876). DENR and LGU budget allotments for conservation and resource management are insufficient to meet annual cost demands.

To help diversify the sources of protected area management financing and reduce dependence on annual budget allocation, Protect Wildlife supported management board and LGU efforts to identify sustainable financing opportunities that will provide a more predictable flow of resources. Assistance includes

Coffee farmers in Mount Matutum were supported by Protect Wildlife, W-GDP Initiative and partners from public and private sectors to adopt sustainable farming practices and enhance postharvest processing.

support for two core conservation finance activities: payment for ecosystem services to help finance protected area management, conservation and restoration of forestlands; and increasing access to finance for livelihood opportunities to incentivize cultivation of conservation-friendly enterprises and compliance with zoning regimes. Approval and adoption of FLUPs and the protected area management plan are also expected to increase DENR and LGU budget support for Mount Matutum and nearby forestlands. The plans will also be used to leverage private sector investments, especially for improving land productivities in production forestlands and ecotourism activities in identified unique natural and cultural attractions.

A March 2019 management board resolution on the establishment of PES schemes for ecosystem goods and services users provided the impetus for Protect Wildlife and DENR Region 12 to collaborate on a PES assessment and provide technical support to launch new schemes.

Protect Wildlife has also developed, piloted and scaled up a PES training package composed of seven modules that guide stakeholders through the PES process—from orientation, resource valuation, cost and revenue analysis, PES rate negotiation, financial management, ring fencing and reinvestment to monitoring and evaluation. The determination of PES rates follows two tracks of analysis: cost-based valuation of ecosystem goods and services for use by LGUs and DENR; and cost and revenue analysis for enterprises using ecosystem services such as water utilities, commercial farms and resorts.

Of the more than 60 enterprises that completed orientation on PES, 51 are currently participating in the modular training on establishing PES. To date, 10 water utilities completed their cost and revenue analysis. Technical working group members from DENR and LGUs completed the cost-based resource valuation of four watersheds in Mount Matutum and its surrounding areas.

PROMOTING SUSTAINABLE LIVELIHOODS

To incentivize compliance with land use plans and promote sustainable and conservation-friendly livelihoods, Protect Wildlife explored opportunities to launch innovative financing programs that can cater to marginalized sectors in Mount Matutum, particularly for coffee-farming communities.

Medicinal plants in Mount Matutum used by indigenous communities for their traditional healing practices were the focus of an ethnobotanical study by Mindanao State University-General Santos City.

From training and participation in study tours in coffee processing centers with Philippine Center for Postharvest Development and Mechanization in early 2020, members of three coffee farmers' associations gained valuable exposure to best practices in postharvest handling and processing of Robusta coffee. They learned to operate postharvest equipment, such as pulpers, hullers and solar dryers. In coordination with PhilMech and leadership of the three associations, Protect Wildlife launched procurement for postharvest equipment to upgrade the groups' processing capacity. In October 2020, the activity delivered and provided hands-on operations and maintenance training on coffee depulpers, dryers, dehullers, grinders, roasting machines and moisture meters for each association. These investments will position these groups to improve the quality of their dried coffee beans and roasted ground beans, generating greater financial returns for their membership.

To complement these investments, Protect Wildlife, in partnership with USDA Philippine Coffee Advancement and Farm Enterprise Project, delivered training of trainers exercises on coffee production, farm management, and integrated pest management; and on coffee harvesting, postharvest handling and processing.

STUDYING MEDICINAL PLANTS IN MOUNT MATUTUM

Protect Wildlife laid the groundwork for research activities that will support the Mount Matutum biodiversity conservation agenda. The activity launched the research partnership with Mindanao State University-General Santos City for the Inventory and Scientific Validation of Folklore-Claimed Medicinal Plants in Mount Matutum.

Residents of upland communities in Mount Matutum continue to use traditional medicines from forest plants for their ailments and diseases. These medicinal plants have not, however, been fully identified or studied, with their use or application going largely undocumented. Moreover, no specimens have been formally collected and deposited in a plant herbarium. The research study identified, mapped and documented plant species used by indigenous communities in Mount Matutum for healthcare purposes. The university also started an herbarium collection of these medicinal plants. Researchers from the university and other academic institutions may independently build from this foundation to further

Sarangani Bay supports both ecological and economic roles in the region—hosting an important harbor and port area, enriching fisheries and aquaculture, and providing a haven for coastal and marine fauna, such as dugongs, dolphins and marine turtles.

explore medicinal plant properties and research their efficacy as potential sources of raw materials for the eventual development of pharmaceuticals, nutraceuticals and cosmeceuticals. The main data collection methods that the research team used are focus group discussions, key informant interviews and specimen collection. The activity gathered participants from community councils, local indigenous peoples and non-indigenous healers, community health teams, and other members of indigenous people communities. For specimen collection, the research team was given an orientation and a field demonstration on specimen collection and preparation by the team's taxonomist. The team covered five communities located within Mount Matutum for collection of medicinal plants.

Lastly, the team completed the collection and documentation of 101 specimens for the study, which the team presented to the local stakeholders for validation. The collected specimens are now preserved at the newly established university herbarium.

SARANGANI BAY

On the southern end of Region 12 opening up to Celebes Sea is Sarangani Bay Protected Seascape. With an area of 211,478 hectares, the bay covers six coastal municipalities of Sarangani—Maitum, Kiamba, Maasim, Alabel, Malapatan and Glan—and General Santos City. The protected area is home to diverse marine fauna, such as whale sharks, dugong, marine turtles and dolphins. It has rich habitats—sandy beaches, rocky shorelines, inshore flats, seagrass beds, coral reefs, estuaries and mangroves—making up 24 marine protected areas in its vicinity, particularly focused on protecting and conserving seagrass bed, coral reef and mangroves. The protected area hosts 1,551 hectares of coral reefs, 702 hectares of seagrass areas and 326 hectares of mangroves. Ten out of 16 naturally-occurring seagrass species in the Philippines are found in the protected area.

Fishing is the major source of livelihood in the area, where open water remains to be the most important fishing grounds followed by coral reefs and seagrass areas. The General Santos Fish Port Complex caters to both small-scale and commercial fishers and records the second largest number of daily landings in the country.

The biggest threats to Sarangani Bay as identified by stakeholders remain to be the illegal, unreported, unregulated, and unsustainable fishing resulting in the decline of fishery resources, the clearing of mangroves for fishponds, poor solid waste management, sewage water pollution, informal coastal settlements, and harvesting and consumption of turtle eggs.

UPDATING THE ZONING AND MANAGEMENT PLAN

Through management zoning exercises facilitated by Protect Wildlife, the activity helped local LGUs and protected area officials to set aside 3,383 hectares of the bay for protection, conservation and rehabilitation—more than four times the size of its previous strict-protection zone. The remaining areas are governed under multiple use zones, including subzones for fishing (3,657 hectares) and navigation (7,843 hectares).

Protect Wildlife's work positioned Sarangani Bay protected area officials to turn these concerns into an actionable plan that defines clear roles and responsibilities, establishes targets and monitoring activities, and lays out a financial assessment and annual financing targets to enable implementation. The protected area management plan was presented and approved by the protected area management board during the last quarter of 2019 and was formally accepted by DENR Region 12 in March 2020 in a ceremonial turnover ceremony to celebrate the 24th anniversary of the bay's declaration as protected seascape.

The management plan encapsulates the vision, goals and outcomes, as well as the actions needed for their attainment, within the first five-year period from 2020 to 2024. With Protect Wildlife technical support, the plan was developed by a technical working group especially created and convened for the purpose. The plan was crafted to secure three critical and equally important objectives: the health of Sarangani Bay, indicated by a well-conserved biodiversity and robust environment; the sustainable production of ecosystem goods and services that support the local economy; and the well-being of community members.

Further, Protect Wildlife and the technical working group aimed to learn from the previous decades' management plan, completing a post-mortem assessment to highlight challenges and proactively counter stumbling blocks related to management and monitoring, enforcement and sustainability of funding. The planning process introduced by the activity and the technical working group covered nine management focuses with partners developing corresponding activities within agreed zoning plans that feature clear timelines, sources of funding, implementation strategies, roles of responsibilities of all stakeholders/member and an established monitoring system.

IDENTIFYING FLAGSHIP SPECIES

Through workshops, Protect Wildlife assisted LGUs' efforts to draft their respective Species Conservation Ordinances and prepare Conservation Action Plans for their selected flagship species. Activity partners ordained the following flagship species for their respective jurisdictions: dugong for the whole Sarangani Bay, *Thalassodendron ciliatum* seagrass for Glan, marine turtles for Malapatan and Alabel, whale shark for General Santos City, humphead wrasse for Maasim, green humphead parrotfish for Kiamba, and Philippine eagle for Maitum.
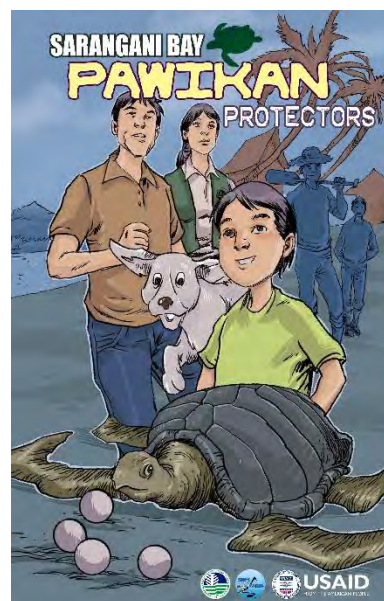
PROTECTING MARINE TURTLES IN SARANGANI BAY

Through management zoning exercises under the Sarangani Bay initiative, Protect Wildlife and local partners identified 16 turtle nesting sites which were highly concentrated on the east side of the Bay in the coastal communities of Glan, Malapatan, and Alabel. Nesting sites were also found in Maasim, Kiamba and Maitum coastal municipalities.

Following the identification of the nesting sites, the activity completed an assessment of local practices in handling marine turtles and identified a number of significant issues including community perceptions on the importance of turtle conservation, observations of degraded nesting habitats; prevalence of poaching; low hatching success; and limited capacity for management and enforcement.

In October 2019, Protect Wildlife designed and facilitated a training course on the handling of marine turtles and protection of nesting sites, which kicked-off of the activity's marine turtle conservation program for Sarangani Bay. The course focused on marine turtle handling protocols and standards, after which the facilitators recommended that the management board develop a marine turtle conservation management plan that is aligned with the national Marine Turtle Conservation Action plan, which addresses partnerships, capacity building, policy development, behavioral change, and research and monitoring. The activity also developed a set of local protocols for the establishment and management of marine turtle hatcheries. Protocols covered site selection, construction of the hatchery, and operations which included staff requirements, data recording and reporting.

To complete its support in marine turtle conservation activities, Protect Wildlife contributed to the production of a comic book to promote marine turtle conservation among the youth, and contributions toward the establishment of a marine turtle learning center in Burias community. The *Pawikan Protectors* (Marine Turtle Protectors) comic book uses art and storytelling to impart important lessons on how coastal residents should respond when they see marine turtles nesting in Sarangani Bay. The activity, together with DENR Region 12 and the Sarangani Bay protected area

Pawikan Protectors hopes to inspire future generations living in Sarangani Bay to continue protecting marine turtles that are nesting in their coastal communities.

The marine turtle learning center in Burias community was envisioned as a conducive venue for educational and advocacy activities on marine turtle conservation for schoolchildren, local residents and visitors to DENR's marine turtle hatchery in Glan, Sarangani.

office, launched the comic book to educate coastal communities on how to report sightings of marine turtles and their nests to wildlife authorities. Copies were shared to the LGUs, aiming for wide distribution across nesting site communities.

Protect Wildlife also strove to promote education on marine turtle conservation and behavior change through contributions to a physical infrastructure project in partnership with RD Foundation, building from a 2019 partnership agreement to support marine turtle protection and conservation in Sarangani Bay. Through initial awareness-raising activities on marine turtle conservation and trainings on response to marine mammal strandings and wildlife laws and policies, the partners found that understanding of the important role communities would need to play to protect turtle nesting sites would require increased involvement by the community leaders. In partnership with those community leaders, Protect Wildlife and RD Foundation embarked on the challenge to establish a marine turtle learning center.

A true exercise in partnership, Glan LGU designed the learning center and conducted oversight of its construction led by the Burias community council and members using construction materials procured by Protect Wildlife. The council and RD Foundation will contribute to oversight of the completed learning center and collaborate on management of the learning programs.

Designed after a small beach cottage, the 24-square meter learning facility was built 60 meters from the shoreline and adjacent to DENR's marine turtle hatchery. Completed and handed over to partners in December 2020, the learning center offers a venue for conducting educational and advocacy activities on marine turtle conservation for schoolchildren, community leaders, residents of Burias and neighboring communities, and visitors of the marine turtle hatchery. Discussions in the learning center will help strengthen knowledge and understanding about the importance of marine turtles in the community and the role of the hatchery, and positively influence people's attitudes and behavior toward marine turtle conservation. The learning center may also be used for educational activities on coastal resource conservation led by the LGU and Sarangani Bay protected area management office.

Mock rescue of marine mammals in a mass stranding scenario was one of the exercises at the marine mammal rescue training for personnel of DENR Region 12 and Sarangani Bay protected area management office.

BUILDING SKILLS FOR MARINE MAMMAL RESCUE

Protect Wildlife also supported the initial implementation of a marine mammal rescue training in partnership with DENR-BMB, DENR Region 12 and the protected area management office. Through its regular monitoring activities, Environmental Conservation and Protection Center in Sarangani has documented the presence of spinner dolphins, Fraser's dolphins, short-finned pilot whales, Risso's dolphins, dwarf sperm whales and pygmy sperm whales in Sarangani Bay—approximately a third of all known marine mammal species in Philippine waters. The center has also documented several marine mammal stranding incidents on the bay's beaches, including killer whales, an unidentified beaked whale and dugong.

In 2004, Sarangani Wildlife Protection and Rescue Team Network was established to respond to wildlife rescues, including marine mammal stranding incidents in Sarangani Bay. Since 2009, however, the network has grown inactive, leaving only a skeleton force to address stranding incidents over the past decade. Through the development of the management plan, the technical working group identified the need to improve on their rescue response and conservation initiatives for marine mammals, and sought Protect Wildlife's support to launch the effort.

DEVELOPING PROTOCOLS FOR ENFORCING WILDLIFE AND ENVIRONMENTAL LAWS

In support of the initial implementation of the updated Sarangani Bay management plan, Protect Wildlife launched work with the management board to develop enforcement protocols for strengthening protection and law enforcement capacity, one of the plan's nine management focal areas. Under these protocols, the management board created the Sarangani Bay Law Enforcement Group, a multi-stakeholder group under the board's Law Enforcement Committee. The enforcement group coordinates and harmonizes the actions of enforcement groups at all levels in Sarangani Bay. With structure and membership clarified during the process, the activity assisted the management board in formulating the system through a series of participatory writeshops, where Protect Wildlife helped partners craft its enforcement protocol handbook for Sarangani Bay. This will provide guidance on enforcement

operations and coordination between agencies, and also serves as a resource on relevant laws and forms.

The new enforcement protocol was formally presented at an enforcement summit in March 2020 attended by Sarangani Bay LGUs. The summit took place during Sarangani Bay Day festivities—the first celebration of the Bay since it was declared a protected area in 1996. In addition to unveiling the protocol, Protect Wildlife helped to raise awareness and secure the support from member agencies and LGUs—who formalized their support via signature on a covenant of support at the conclusion of the summit.

SUPPORTING PILOT DEMARCATION OF MARINE PROTECTED AREAS

The Sarangani Bay management plan also called for officials to initiate protected area zoning enshrined in the plan through the installation of buoys to demarcate legislated marine sanctuaries. The protected area office and Protect Wildlife agreed to pilot the demarcation and installation of marker buoys in two marine protected areas: Kawas Marine Sanctuary in Alabel and Pangyan Marine Sanctuary in Glan. The goal of the demarcation activity is to better protect the marine habitats from intrusion from fishing or other marine activities within the sanctuary, and prevent the destruction of coral reefs due to passing motorboats. The markers will aid in the enforcement of the boundaries of the sanctuary.

Sarangani Bay authorities worked with community partners in Kawas and Pangyan to install fabricated sinkers and buoys and marine protected area signs designed and procured by Protect Wildlife. In accordance with the approved management plan, the Sarangani Bay management office will also craft legislation for at least 18 newly proposed marine protected areas in the bay, following management zoning regimes outlined in the plan.

SUPPORTING A COASTAL ENTERPRISE

Sapu Masla Fish Cage Operators Association operates within Sapu Masla cove in Malapatan municipality, a multiple-use zone in Sarangani Bay. While the association began as an all-male fish cage operators group and mangrove seedling supplier, it now leads a federation of all coastal organizations within Sapu Masla, including a women-led youth association that is active in coastal cleanup activities and mangrove nursery operation.

In August 2020, Protect Wildlife supported a series of workshops on strategic planning, business planning, basic bookkeeping and leadership training for the association. The activity was co-funded by DENR-BMB, which also supports the association under its biodiversity-friendly enterprises program in Sarangani. Through these activities, Protect Wildlife integrated gender-related topics and proposed the participation of women, broadening the membership policy of the association to include women.

YEAR 5 ACTIVITY SNAPSHOT IN REGION 12

In lieu of an annual report for its truncated Year 5, Protect Wildlife presents a summary of activities completed in Region 12 between July 2020 and March 2021.

Table 21. Protect Wildlife Year 5 Activities in Region 12

FOCAL AREAS	SA	ACTIVITIES	DATES
Sarangani Bay	SA 1	Production and distribution of *Pawikan Protectors* comics to protected area partners and communities	December 2020
	SA 2	Strategic planning, business planning and basic record-keeping workshops for two people's organizations in Sarangani Bay	August-October 2020
	SA 3	METT workshop with PAMB and protected area management office	November 24-25, 2020
		Fabrication of sinkers and buoys for pilot demarcation activity with LGU partners in Kawas and Pangyan marine sanctuaries	December 2020-February 2021
	SA 5	Workshops on development of criteria and schedule of fines, focusing on infractions regarding mangroves, corals and pollution	July 16-August 6, 2020
		Enforcement training, followed by deputation of 37 LGU WEOs and certification of 134 community WEOs or *Bantay Dagat*	October-December 2020
	Cross-cutting	Launch of marine turtle learning center in Burias community in Glan	December 2020
Mount Matutum	SA 1	Series of *Perya para sa Konserbasyon* activities implemented by protected area management office and partner LGUs	August 14 and October 21, 2020
		Screening of Cinema22m, an online film festival on protected area conservation by Mount Matutum partners	July 13-September 27, 2020
	SA 3	METT workshop with PAMB and protected area management office	November 12-13, 2020
Allah Valley		**W-GDP Initiative**	
	SA 2	Strategic planning workshops for two people's organizations in Lake Sebu municipality in South Cotabato	September 7-10, 2020
		Turn-over of abaca spindle stripping machine to abaca weavers association in Lake Sebu, including training on machine operation and maintenance	November 2020
	SA 3	Technical working group discussion on recommended management zoning in preparation for PAMB presentation	September 10, 2020
		METT workshop with PAMB and protected area management office	November 19-20, 2020
Mount Busa		**W-GDP Initiative and Livelihoods**	
	SA 2	Training on abaca stripping machine operation and maintenance for abaca farmers' groups in Maasim municipality, Sarangani	July 14-16, 2020
		Tenth session of Climate-Smart Farmers Field School for abaca farmers' groups in Sarangani	July 10-August 28, 2020
	SA 3	Approval of updated Mount Busa Sarangani Complex Management Plan 2021-2025 by provincial council	December 22, 2020
South Cotabato		**PES**	
	SA 2	Training of trainers on PES Module 1 for DENR Region 12 and LGUs of South Cotabato	August 3, 5 and 7, 2020
		Meeting of South Cotabato PES technical team on proposed province-wide PES ordinance	August 4, 2020
		Training of trainers on PES Module 2—focusing on tools and techniques for setting up PES mechanisms— for DENR Region 12 and LGUs of South Cotabato	September 1-3, 2020
		Training of trainers on PES Module 3 for DENR Region 12 and LGUs of South Cotabato	November 10-12, 2020

FOCAL AREAS	SA	ACTIVITIES	DATES
		Follow-through PES workshops to finalize reinvestment plan and performance monitoring plan	November 26-27, 2020
		W-GDP Initiative	
		Training on basic bookkeeping and financial management for six people's organizations under W-GDP Initiative	August 31-September 2, 2020
		Trainings on coffee production, farm management and agroforestry practices, and turn-over of equipment for postharvest processing to four coffee farmers' groups	November 2020
	SA 3	Meeting to discuss remaining data requirements for completion of South Cotabato Biodiversity Strategy and Action Plan	September 9, 2020
		FLUP	
		FLUP coaching and mentoring for Banga, Tantangan, Surallah and Tupi LGUs on drafting of FLUPs and integration of community inputs from Integrated Conservation and Development trainings	October 6-9, 2020
		FLUP coaching and mentoring for Koronadal City LGU on drafting of FLUP documents and preparation of maps	November 6, 2020
		FLUP coaching and mentoring for Banga, Norala, Surallah and T'boli LGUs, including review and assessment of FLUP documents and maps	November 10-13, 2020
		Review of FLUP documents with Polomolok and Tupi LGUs	November 19-20, 2020
		FLUP coaching and mentoring for Surallah LGU on drafting of FLUP documents and preparation of maps	November 26-27, 2020
		Meeting with South Cotabato provincial LGU on action plans for remaining FLUP activities and finalization of eight FLUPs	December 11, 2020
Region 12	SA 5	Training on environment and natural resources laws for DENR Region 12, including topics on ENIPAS Act and designation and deputation of WEOs	August 18-19, 2020
		Facilitated passage of policies for flagship species in Glan (*Thalassodendron ciliatum* seagrass), Kiamba (green humphead parrotfish) and Polomolok (Asian palm civet), as well as for migratory raptor protection in Glan	July-September 2020

REGION 3

Despite its distinction as an agricultural center and built-up area for Metro Manila's northward urban expansion, Region 3 or Central Luzon is also a site for important landscapes and seascapes that are home to diverse wildlife. The Sierra Madre—the Philippine's longest mountain range—pass through the region's eastern portion in the provinces of Aurora and Nueva Ecija. In the western portion, Bataan province, sitting at the edge of Manila Bay, has nesting sites for marine turtles, as well as important watersheds and forestlands. The region was also identified as an activity site by DENR-BMB due to continuing incidences of wildlife trafficking and illegal and destructive activities in forest areas.

Protect Wildlife launched Region 3 as a site late in the activity's Year 3, leaving little more than one year for implementation. The range of opportunities in Region 3 was further constrained due to the onset of the COVID-19 pandemic and the work and travel restrictions that followed in mid-March 2020 and

Aurora Memorial National Park straddles the boundary of Aurora and Nueva Ecija provinces and is one of the remaining bastions of intact forests and iconic wildlife in Sierra Madre.

remained in place through the closeout of the activity. Despite this, the activity's technical approach was strongly pronounced in Region 3 in promoting integration of policies, land use systems and jurisdictional plans; and helping achieve conservation results by adding value to partners' current initiatives

In the following sections, Protect Wildlife presents its work in Region 3, focusing on efforts toward integrated conservation and development in Aurora Memorial National Park (AMNP), with support for management planning, sustainable livelihoods and on-site wildlife and environmental law enforcement; and adding value to existing initiatives and opportunities in the region, such as marine turtle conservation, PES development and BCC campaigns.

AURORA MEMORIAL NATIONAL PARK

The 6,516.93-hectare Aurora Memorial National Park located in the Sierra Madre mountain range straddles the boundary of Aurora and Nueva Ecija. The protected area is home to the highly endangered birds, such as Philippine eagle, green racquet-tail and Philippine hawk-eagle. It is also an important water catchment, providing irrigation to lowland agricultural farms and meeting freshwater requirements of more than 2,000 residents of upland and lowland communities in its three host municipalities and adjoining areas.

Working in partnership with the protected area technical working group and management office, Protect Wildlife co-led an intensive management planning and zoning program that culminated in a November 2019 resolution adopting a completed ten-year management plan. The activity then worked closely with the management board to develop and begin implementation of its manual of operations and to pilot initial sustainable livelihood and enforcement initiatives that are outlined in the plan.

Protect Wildlife provides details on the management planning process, followed by highlights from the activity's support for sustainable livelihood development and wildlife and environmental law enforcement in the protected area.

Management zones were reviewed by protected area managers and stakeholders in Aurora Memorial National Park, and then later refined to create strict protection zones and multiple-use zones as part of enhanced management planning for the protected area.

MANAGEMENT PLANNING FOR THE PROTECTED AREA

Aurora Memorial National Park contains one of the last remaining contiguous blocks of rainforest in Sierra Madre. Approximately 75 percent of its total land area is covered with forests, nearly half of which (2,740 hectares) is old-growth. Cultivated areas cover 110 hectares while built-up and settlement areas comprise 26 hectares or less than one percent of the total land area.

Protect Wildlife first assisted local officials in plotting Aurora Memorial National Park's existing zoning regime, which divided the protected area into protection and multiple-use zones, and identifying the laws, policies and regulations that govern land and resource use in the protected area. Following this effort to illustrate zoning boundaries as defined in policy, the activity engaged an inclusive group of stakeholders from local communities, DENR, LGUs and the private sector to better understand how land and resources are actually used in practice. From May to July 2019, the activity facilitated focus group discussions on current policies and practices and led efforts to map actual land use across the protected area. The activity overlaid the existing management zones with the actual land use practiced by local communities and the private sector. This imagery was used to cultivate challenging discussions on conservation imperatives versus community and private sector needs for sustainable livelihoods and life-giving resources like water.

Through this process, Protect Wildlife helped the technical working group refine the management zones—creating 5,288 hectares of strict protection zones and 1,228 hectares of multiple-use zones. The zones were plotted to preserve land and resources needed to support livelihoods and social services, while securing commitments from stakeholders for strict protection of areas that are critical for preserving biodiversity and ecosystem services and for protecting the habitats of local wildlife.

The technical working group also incorporated the true costs of natural resource management, into their management plan, establishing a strategy to finance enforcement in strict protection zones, and to monitor production zones to ensure that land and resources are being used sustainably and in compliance with zoning rules.

Review and Finalization of the Management Plan

Following the presentation of the zoning regime and resource and land use prescriptions, the technical working group gathered representatives from DENR Region 3, protected area management office and Nueva Ecija and Aurora PENROs to develop the ten-year management plan. The plan, which reflects stakeholder input, outlines a strategy and core activities for the management and enforcement of the new zoning regime and land and resource governance.

The plan calls for the protected area management board to achieve its vision by working toward nine five-year goals and corresponding tactics to protect and conserve existing biodiversity, forestlands and other priority wildlife habitats through a range of approaches, including the following:

- BCC campaigns and sustainable livelihoods support to raise awareness and incentivize compliance;
- Enforcement measures and improved management tactics to monitor and arrest degradation and outright crime; and
- Sustainable financing schemes and climate and disaster risk management interventions to strengthen resilience of the protected area and its stakeholders.

With the majority management board members in attendance, the protected area management plan was presented for review and approved, and then submitted to DENR Region 3 in December 2019.

Kickstarting Implementation of the Management Plan

With the plan in place, the protected area management board and personnel launched implementation of initial activities, focusing first on the manual of operations. Protect Wildlife supported efforts to develop its manual of operations, the framework and guidelines for executing conservation objectives. The manual, drafted in accordance with DENR-BMB guidelines, sets forth the minimum standards for management operations and conduct of business. It describes, among others, the management board's guiding principles, organizational structure, functional relationship with DENR, operating system and financial administration. The manual was adopted by the management board in October 2019.

Using the manual as a guide, the management board began implementation of a range of protected area management interventions. For example, DENR has conducted periodic biodiversity monitoring in designated areas within the park using the biodiversity monitoring system to record data on natural biological resources and their utilization. Threats commonly encountered include timber poaching, slash-and-burn farming, illegal occupancy and gathering of orchids. Monitoring is conducted quarterly, with local officials employing four approaches: focus group discussions, field diary, photo documentation and transect walks. Protected area officials have also established permanent monitoring stations in selected sites. The focus is in data collection and analysis to identify trends in biodiversity and apply findings to guide actions in protected area management.

To help ensure that the protected area management office begins to generate new sources of financing for natural resource management, Protect Wildlife helped draft a policy on protected area management and operations rates, entrance fees and charges for facilities use, recreational and ecotourism activities, commercial documentation, and development. Protect Wildlife referred to a range of national- and

GENDER ROLES IN NATURAL RESOURCE MANAGEMENT AND NATURE-BASED LIVELIHOODS

It is a common understanding in the practice of natural resource management that women and men often have different interactions with nature—and bring unique perspectives to the management planning process. Protect Wildlife found this to be particularly true in Aurora Memorial National Park, where the activity learned of gender-defined roles in nature-based livelihoods and land and resource use.

Prior to initial management planning work, Protect Wildlife organized a focus group discussion on gender roles in natural resource management and nature-based livelihoods. Discussions revealed that local communities produce their staple food in small farm plots, with women assigned to rootcrop and vegetable cultivation and men assigned to rice farming. There is high dependence on collection of non-timber forest products—often extending to strict protection zones of the protected area—to supplement household incomes. While men gather rattan, women and children gather tiger grass for broom-making and native vines for sale to traders.

The technical working group, with Protect Wildlife support, mobilized behind these findings to recommend that gendered livelihood activities should be represented in the protected area management plan's zoning regime, land and resource use prescriptions, and community engagement and development programs.

In late 2020, Protect Wildlife helped to bring these findings to life by engaging members of Salabusob Integrated Livelihood Association of Women under the W-GDP Initiative.

protected area-level orders and planning documents to establish fee values, including DENR policies on rates and fees for entrance and use of protected area resources and on rules on special uses within protected areas; and the 2016 Aurora Memorial National Park Ecotourism Business Plan and Protected Area Management Plan.

Income derived from fees will be deposited to the park's integrated protected area fund, 25 percent of which will be remitted to IPAF while the remaining 75 percent will be retained in the protected area to finance local initiatives. The management board projects that within the first five years of management plan implementation, the fees will generate up to ₱60 million (US$1.2 million) in revenue. This would cover approximately 25 percent of the management plan implementation costs for the period.

With support for building the structure and base for execution of the plan underway, Protect Wildlife turned its efforts toward piloting core activities outlined in the management plan: sustainable livelihood initiatives and wildlife and environmental law enforcement.

W-GDP INITIATIVE IN THE PROTECTED AREA

Protect Wildlife, with the protected area management office, adopted a strategy to improve access to secure sustainable livelihood opportunities to legitimate occupants of the protected area as a way to incentivize environmental compliance and communities' commitment to conservation.

Also, to achieve the objectives of women's empowerment and economic well-being under the W-GDP Initiative while reinforcing Protect Wildlife's natural resources management objectives, the activity targeted Salabusob Integrated Livelihood Association of Women, who are engaged in turmeric farming and processing. By bringing together support from the protected area management office and other livelihood partners, the activity was able to scale up the group's turmeric enterprise by building their organizational and business planning capacity, providing investments in improved postharvest processing, and revitalizing their market linkages.

WOMEN'S GROUP IN AURORA MEMORIAL NATIONAL PARK REINVIGORATES THEIR TURMERIC ENTERPRISE

Salabusob Integrated Livelihood Association of Women from Bongabon municipality in Nueva Ecija province was informally organized in 2008 by a faith-based organization, who trained its 40 all-woman membership on turmeric production and processing. The organization also linked the women's group with Tropical Palm Herb, a Manila-based herbal supplement manufacturer.

For the initial six years of their operations, group members managed a communal-run turmeric farm, but then transitioned to household-based planting due to land tenure issues. While members continuously supplied fresh turmeric and dried chips to Tropical Palm Herb, they relied heavily on their benefactor organization for marketing and transportation. When the assistance stopped, marketing and transportation grew more challenging. With members struggling to organize collective transportation to the buyer in Manila, more and more of their raw turmeric went unprocessed and unsold.

Despite their buyer's consistent demand for dried turmeric, the women's group struggled to capitalize due to outdated and inefficient processing equipment, limited business management capacity, and logistics challenges with distribution of their product. The members would spend long hours manually slicing turmeric using kitchen knives prior to the drying process. Even if the group was able to manually slice a large volume, its members relied on a turmeric dryer that simply could not process the amount of product that its supplier demands. The group's improvised dryer was fashioned with trays and plastic sheets and can only accommodate up to 10 kilos of turmeric at a time that takes five days to dry, constraining the women from expanding their production and processing.

An equally great constraint on the group's capacity is its lack of organizational backbone—clear policies and procedures—financial management systems and tools, and business and organizational management training that its leaders need to oversee and sustain its turmeric enterprise. Discouraged by their benefactor's departure and the enterprise's increasing challenges, many became inactive and pursued other livelihood opportunities in the intervening years.

After completing an organizational assessment of the women's group in early 2020 and identifying it as a beneficiary under the W-GDP Initiative, Protect Wildlife designed a targeted technical assistance package focused on three core areas: to build the enterprise's organizational and business planning capacity, to make catalytic investments in postharvest processing, and to revitalize its market linkages.

Salabusob Integrated Livelihood Association of Women harvests their turmeric, which will be processed into dried form before being transported to their buyer in Manila. Even with a high market demand for turmeric products, the women's group struggled to capitalize on this opportunity due to outdated and inefficient processing equipment, limited business management capacity, and logistics challenges in distribution.

Prior to delivering technical support, Protect Wildlife led meetings with the organization to discuss conservation issues and sustainable agriculture concepts. The activity also executed a turmeric market assessment to gain a clearer understanding of the value chain, and to identify the specific technical investments that will produce the greatest returns for the group.

Methodical, Conservation-Oriented "Reboot" Renews Interest in Group Membership

As part of its learning sessions, DENR, with Protect Wildlife support, led an orientation on the Aurora Memorial National Park management plan, and the linkages between its protection and conservation and the ecosystem services that businesses, farmers and the general population depends on. Members of the women's group committed to sustainable practices, such as rotational planting, intercropping with fruit trees, and using organic fertilizers to reduce contamination of their groundwater sources.

After analyzing the zoning regime and guidelines on permitted and restricted land and resource uses in the protected area, the members determined that their current turmeric plantation fell within the park's multiple-use zone, clearing the way for the women to sustain their current planting operations. They also opened discussions with the DENR to launch their pursuit of land tenure for their plantation in the multiple-use zone.

The group's core membership also gathered for a session on Protect Wildlife's turmeric market assessment. There, the activity presented findings regarding the prospective buyers' existing market demand for turmeric products (raw, chips, powder); and the comparative profitability of raw turmeric tuber and turmeric chips production, including an analysis of return on investment for turmeric production and processing.

After gaining an understanding of the landscape and the potential return on investment for various turmeric products, the group discussed which turmeric product and enterprise they felt best placed to pursue. The group then analyzed its resources, existing membership and capacity—critically assessing their available plantation area, their capacity to manage it, and the volume of raw turmeric they could realistically produce. The group agreed to expand their plantation to a minimum of one hectare to address challenges with the volume of their production, and to strengthen their existing turmeric chip processing operation.

The activity served as a turning point for the organization. The more methodical approach to assess the market and the establishment of a technical support plan both set a clear pathway for the organization to move forward and served as a draw for the group's inactive members. The group's roster grew to 17, including new, young women recruits who saw the potential of the turmeric enterprise.

Filling in Capacity Gaps with Targeted Training Initiatives

After establishing a direction for its technical assistance program under the W-GDP Initiative, Protect Wildlife mobilized partners from local DENR offices to lead a training on business planning and bookkeeping for the group's turmeric processing enterprise. Beyond the hands-on financial management and accounting lessons, the trainers worked with SILAW to develop strategies to monitor market demand, production and sales on behalf of its members.

DENR helped participants to craft written rules and standards on turmeric production and processing and to establish clear protocols on consolidation of product from its members. The participants worked with their own financial data to develop a system to manage their finances, and to compute standard pricing and income projections for their dried turmeric chips and other secondary products. Lastly, the group looked to the future, identifying prospective buyers to pursue if they are able to meet their increased production goals.

Protect Wildlife placed equal weight on the tangible benefits of the training—written policies and improved accounting procedures—and its more intangible outcomes, the relationship that the women's group cultivated with its trainers. Through training with public and private sector partners across activity sites, Protect Wildlife aims to build enduring partnerships between beneficiary groups and local resource providers.

Following these trainings, members of the group worked with Protect Wildlife to craft their group's vision, mission, goals and strategies. They also prepared a basic organizational structure with committees on agroforestry, education and promotion, and membership systems and services. These outputs were organized into a three-year organizational plan that addresses development activities, such as maintaining agroforestry practices and recruiting more women members.

Making Catalytic Investments in Postharvest Processing

In parallel to organizational and enterprise development trainings and workshops, members of the group, with Protect Wildlife support, opened discussions with the Philippine Center for Postharvest Development and Mechanization in regards to postharvest processing. As presented earlier, two of the group's core weaknesses were their reliance on hand-slicing and an improvised turmeric dryer. Recognizing these crippling inefficiencies, PhilMech examined existing technologies for turmeric drying, and conducted a site visit to SILAW where they conceptualized the design for a more efficient drying facility. Protect Wildlife also conducted additional research to identify other relevant processing tools.

After finalizing specifications, Protect Wildlife applied W-GDP Initiative resources to open procurement for a suite of postharvest processing technologies to improve efficiency, boost volume, and produce a higher quality product under more sanitary conditions. In late 2020, the activity oversaw the delivery of mechanized slicers and food-grade kitchen tools to replace the time-intensive process of hand slicing with more efficient and sanitary tools; and the delivery and installation of a solar tunnel dryer. The solar tunnel dryer can load up to 150 kilos of sliced turmeric every two days of drying time with 6 percent moisture content, which their buyer requires. This makes the drying process more efficient and replaces the outdated method of using plastic matting with a cover, which could only dry 10 kilos of turmeric in three days.

After the delivery and installation, PhilMech delivered an operations and maintenance training, and with Protect Wildlife, developr a manual to guide the group's maintenance activity going forward. PhilMech also committed to maintain its linkage with the group to provide continuing assistance to the group

In mid-December 2020, the group and its 23 members began their turmeric harvest and have been able to produce up to 300 kilos of dried semi-processed chips despite rainy weather in Aurora Memorial National Park. They will consolidate all the dried turmeric chips for delivery to their Manila-based buyer, who reserved orders for their product. In addition to turmeric, the women's group will utilize the solar tunnel dryer to process other herbs and dried fruits, such as soursop leaves, banana, lemongrass, squash and ginger.

"We are excited for our coming harvest. Tropical Palm Herb has already ordered our dried turmeric chips. We are confident that we can deliver their required volume of 200 kilos every month."

Erlie de Guzman, president of Salabusob Integrated Livelihood Association of Women

STRENGTHENING ON-SITE WILDLIFE AND ENVIRONMENTAL LAW ENFORCEMENT

With a new management plan in place that reflects consensus between community leaders, LGU and DENR officials regarding zoning and establishes clear rules and restrictions regarding land and resource use, it was an opportune time for the protected area management board to revisit its approach to wildlife and environmental law enforcement. To reduce the threats from illegal activities and harmful practices—with focus on strict protection zones that contain the highest prevalence of biodiversity assets— Protect Wildlife, in coordination with the protected area management office, completed work in late 2020 to establish an enforcement committee for the management board, restock its roster of trained enforcement personnel and to establish protocols that would guide the committee and enforcement personnel in carrying out their duties.

Protect Wildlife launched enforcement support by co-developing the structure and functions of the enforcement committee and the protocols that it would be responsible for overseeing. Among its duties, this oversight and management body performs the following functions:

- Recommend measures to address threats, issues and concerns related, but not limited to resource use conflicts;
- Monitor and report to the community on the enforcement and compliance with agreed upon rules and regulations to protect species or habitat;
- Formulate coordinating mechanisms and arrangements with local communities to prevent illegal activities, in dealing with violators, seizures or confiscation and preservation of evidence, in case of violators;
- Recommend the deputation of volunteers for protection and enforcement and coordinate their training and subsequent deployment; and
- Monitor and review reports of compliance of deputized environment and natural resources officers, volunteers and stakeholders with the protected area protection plan.

The enforcement protocol serves as the playbook for the committee, with guidelines on implementation of enforcement actions and on-the-job conduct. The protocol identifies coordination mechanisms between offices and officials, hot spot areas, and patrol sectors. The overarching intent is to provide uniform guidelines for management board and other implementation partners on the various steps involved in enforcement for various cases. It also includes provisions on surveillance, arrest, search, seizure and detention and preservation and handling of evidence, with the end view of minimizing errors and administrative lapses. The protocol was anchored on the framework of the Handbook on Law Enforcement for Protected Areas in the Philippines.

WEO Training and Deputation

With an oversight body and core protocols established, Protect Wildlife launched efforts late in 2020 to train LGU staff, community officials and selected indigenous community representatives on wildlife and environmental law enforcement, and to support their deputation by DENR as WEOs or by their LGUs as forest guards.

With DENR Region 3, Protect Wildlife trained 18 community enforcers from Maria Aurora municipality in Aurora; 13 municipal and community officials and representatives from Bongabon municipality in Nueva Ecija; and 7 municipal and community officials and representatives from Laur municipality in Nueva Ecija. All 38 individuals completed the training. To date, 18 community members from Maria Aurora, six from Bongabon and five from Laur have been certified by the protected area office as having undergone WEO training. As COVID-19 related restricts ease, the management board will be in a position to increasingly coordinate surveillance activities with these community enforcers and help to arrest wildlife and environmental crime in the protected area.

ADDING VALUE TO CONSERVATION INITIATIVES IN REGION 3

Outside of the focal site of Aurora Memorial National Park, Protect Wildlife strove to maximize the impact of its assistance by seeking out ongoing activities where the activity had the resources and expertise to add value. The activity highlights these efforts in PES programming and marine turtle conservation in Bataan province, and BCC support for a region-wide online CWT campaign.

ADVANCING PRIOR USAID INITIATIVES ON PES IN BATAAN

Through local consultations and discussions with USAID prior to establishment of its site, Protect Wildlife found one key opportunity in Bataan where the activity could leverage its model PES initiatives and in-house experts to revive a stalled initiative. Under the Biodiversity and Watersheds Improved for Stronger Economy and Ecosystem Resilience activity—which ran from 2012 to 2018—USAID initiated a PES activity in Mariveles municipality in Bataan but was unable to fully negotiate and execute the scheme prior to their closeout.

Between 2019 and 2020, Protect Wildlife worked with DENR-FMB to deliver a series of workshops and consultations on payment for ecosystem services for LGUs, DENR and private sector officials in Region 3. Targeting utilities and businesses that rely on the ecosystem services provided by Bataan Natural Park and the Mariveles watershed, more than 40 training participants from Mariveles and Bagac LGUs opted into the activity's PES trainings. The activity followed this initial orientation and lecture on ecosystem goods and services with a training on cost-based valuation and cost and revenue analysis. Through these sessions, participants review financial records to better understand the costs and returns of existing waterworks and business enterprises and complete exercises to calculate the cost for protecting, developing, restoring and managing watersheds.

A third and final module was planned for March 2020, but later cancelled due to the onset of the COVID-19 pandemic. Although partners originally expressed reluctance to further pursue PES due to the economic hardship of local enterprises, officials from the region invited Protect Wildlife to reschedule and deliver a virtual final session in December 2020. The activity attracted representatives from Bagac and Mariveles LGUs, DENR-FMB, DENR Region 3 and DENR Bataan who wished to see the PES work, now spanning two USAID activities, through to completion.

The final PES module focused on the use of spatial assessments, cost-based resource valuation, and cost-revenue analysis as the basis for negotiating PES rates with utilities and enterprises. Through the session, Protect Wildlife also addressed PES agreements and implementation guidelines, preparation of a

ploughback operational plan, and monitoring and evaluation of PES arrangements and ploughback activities. Lastly, the activity also included the review of draft PES ordinances of Mariveles and Bagac LGUs.

Based on the financial analysis and planning activities completed during the training, participants calculated that Bagac LGU could generate more than ₱7.5 million (US$150,000) over a ten-year period through a PES scheme. Mariveles LGU estimated that it could generate more than ₱45 million (US$900,000) from local water users over a ten-year period. Officials from both municipalities then proceeded to identify a mix of restoration interventions to be funded from these earnings that would position both LGUs to attain the envisioned land cover for its priority watersheds.

To advance the PES initiatives following the closure of Protect Wildlife, partners made a series of commitments to build on USAID's technical support. Bagac LGU participants committed to share a refined PES ordinance with their municipal council for its consideration. Mariveles LGU participants signaled their intent to endorse launch of a PES system targeting water users to LGU leadership. Lastly, DENR pledged to continue delivering assistance to Mariveles and Bagac LGU officials to fully establish their respective PES schemes.

BUILDING ON COMMUNITY INITIATIVES TO STRENGTHEN MARINE TURTLE CONSERVATION IN BATAAN

Bataan's 188-kilometer coastline is rich in marine natural resources and is home to threatened olive ridley turtles, green sea turtles and hawksbill turtles. Olive ridley turtles regularly nest in Bataan beaches during the July to April nesting season. Based on tagging and DENR field reports, nests are primarily found in the municipalities of Morong and Bagac, with fewer noted nests in Pilar, Mariveles and Abucay.

In response to the Supreme Court Mandamus of December 2018 regarding Manila Bay—Mariveles took initiative to mobilize its community to implement marine turtle conservation activities and to complete a more comprehensive assessment on the turtle nesting beach, near the entrance to Manila Bay. Building from the assessment, the LGU established three satellite hatcheries in communities with high incidence of recorded marine turtle nests: Mountain View, Cabcaben and Townsite.

In consultation with DENR Region 3 and Mariveles LGU, Protect Wildlife mobilized an assessment team to Mariveles in July 2020. The assessment goals were to analyze the marine turtle nesting sites and community-managed hatcheries in Cabcaben and Townsite and determine if the interventions practiced by the local DENR, LGU, communities and local volunteers were in accordance with practices prescribed in DENR's Philippine Aquatic Wildlife Rescue Response Series. DENR Region 3 and Mariveles LGU also requested that the activity lead a training on marine turtle conservation for officials involved in hatchery management. The activity designed the training program to help establish proper practices and protocols regarding marine wildlife handling and hatchery management.

Assessment Structure and Recommendations

Protect Wildlife's assessment focused on four parameters: management bodies, policy related to marine turtle protection, training and awareness, and marine turtle conservation practices. The assessment

team held focus group discussions with community members, with emphasis on the use and management of hatcheries, tagging of nesters, handling of eggs and releasing of hatchlings.

The report included limited findings based primarily on hatchery management and handling of marine turtles. Protect Wildlife found that a lack of knowledge and misinformation about marine turtles and hatchery management practices have contributed to local actions that are not consistent with the DENR manual. The activity issued the following recommendations for LGU partners to build on their current activities:

- Complete a training on hatchery management and marine turtle biology and management, to be followed by mentoring.
- Develop a reporting system with required data collection guidelines to ensure that the right information can be collected and applied to improve conservation decision-making in the LGU.
- Draft and pass a local ordinance to adopt DENR protocols and make investments in the development and distribution of clear guidelines on hatchery management; programs to manage threats such as solid waste, light pollution and degradation of nesting beaches; and train initiatives for wardens and local volunteers on proper protocols.

To build on momentum from the assessment, Protect Wildlife designed and delivered a marine turtle technical training for local stakeholders in August 2020. The objectives of the training were to equip participants with principles and procedures on marine turtle conservation, demonstrate proper procedures in marine turtle research and nesting beach and hatchery management as prescribed by the marine turtle rescue response manual, and discuss local issues and concerns that affect marine turtle conservation in Mariveles.

Through the training, Protect Wildlife reached 32 participants from five communities, Mariveles LGU and DENR local offices. The activity and DENR co-facilitated the training on site, while two resource speakers presented the assigned topics via video feed from outside the region. The lecture-based elements were balanced by a practical

Proper handling of marine turtle eggs was one of the practical skills taught at the marine turtle conservation training hosted by Protect Wildlife for partners in DENR, Mariveles LGU and coastal communities in Bataan.

Wild and Alive had to pivot from an originally planned airport campaign in Region 3 to a Facebook campaign in partnership with DENR Region 3. Where tourists were the primary audience prior to the pandemic, the online Wild and Alive campaign cast a wider net to target stay-at-home audiences to impart to them messages and content on biodiversity conservation and combating wildlife trafficking.

exercise, where the trainers demonstrated in person proper egg handling and transfer, release of hatchlings and rescue of marine turtles trapped in nets.

Actions Moving Forward

Protect Wildlife concluded its support by leading a presentation on the assessment results to Mariveles LGU and DENR in September 2020. The presentation addressed results of the marine turtle site assessment and recommended protocols for hatchery management and nesting beaches, and stranding. To complete its support, the activity issued written recommendations for new local protocols for the Mariveles LGU and DENR. Among its recommendations, the activity called on its LGU partners to incorporate marine turtle conservation actions into the local conservation program, which is currently under development. In addition to recommendations contained in the activity's preliminary assessment report, Protect Wildlife called on its partners to establish protected areas or sanctuaries for turtles and to sustain its capacity building work on marine turtle monitoring, handling and reporting.

PIVOTING BCC INITIATIVES TO MAXIMIZE IMPACT DURING THE COVID-19 PANDEMIC

Over the life of the activity, Protect Wildlife's primary approach to BCC was hyper-localized to issues at the site level, often leveraging crowds to maximize reach of messaging. Led by local community members and officials, campaigns were targeted to important conservation issues and enforcement rules and restrictions at nearby focal sites and informed by the local culture and context, so the messages resonate with target audiences. The activity also built experience leading national-level campaigns that

targeted trafficking and transshipment at major points of entry and exit to the Philippines, including international airports.

An instance of unfortunate timing, Protect Wildlife was in the midst of preparing BCC campaigns to support its ongoing Region 3 initiatives when the COVID-19 pandemic emerged in the Philippines. Rather than cancel or indefinitely postpone ongoing investments, the activity creatively repurposed its work in response to the pandemic.

Seeking to build on the success of the Wild and Alive campaign in Ninoy Aquino International Airport in Manila, Protect Wildlife developed campaign materials and was preparing a procurement for launch in Clark International Airport in Region 3. With more than 2.5 million arrivals in 2018, as well as an identified gateway for trafficked species, the airport was an ideal CWT campaign location to target both tourists and traffickers. Given the restrictions on travel and transportation due to COVID-19, and with the tourism industry halting operations, however, the activity had to pivot its transportation and tourism-centric campaign to one that could reach people who were sheltering at home.

With these considerations, Protect Wildlife helped to adapt Wild and Alive into social media campaigns in partnership with the public affairs office of DENR Region 3. Where tourists were the primary audience prior to the pandemic, the online Wild and Alive campaign cast a wider net to target stay-at-home audiences. Messages and content was crafted to encourage learning about biodiversity and to generate support for protection of wildlife from illegal trade. Campaign developers also incorporate a call-to-action—inviting readers to make online pledges and to influence their personal network by sharing Wild and Alive content. The campaign—featuring 48 Facebook posts from June to September 2020—reached more than 900,000 individuals.

YEAR 5 ACTIVITY SNAPSHOT IN REGION 3

In lieu of an annual report for its truncated Year 5, Protect Wildlife presents a summary of activities completed in Region 3 between July 2020 and March 2021.

Table 22. Protect Wildlife Year 5 Activities in Region 3

FOCAL AREAS	SA	ACTIVITIES	DATES
		W-GDP Initiative	
Aurora Memorial National Park	SA 2	Site visit of PhilMech in Nueva Ecija to assess proposed location of solar tunnel dryer for turmeric enterprise	July 21, 2020
		Turn-over of solar tunnel dryer, mechanized slicing machines and food-grade kitchen tools to women's organization in Nueva Ecija	December 2020
	SA 3	METT workshop with PAMB and protected area management office	September 2020
Mount Mingan	SA 3	Signing of memorandum of understanding between DENR Nueva Ecija and Bongabon LGU for establishment of critical habitats for Philippine eagle	August 25, 2020
		Signing of memorandum of understanding between DENR Nueva Ecija and Laur LGU for establishment of critical habitats for Philippine eagle	September 3, 2020

FOCAL AREAS	SA	ACTIVITIES	DATES
Aurora	SA 3	Meeting with DENR-BMB to discuss revised matrices for completion of revised Aurora Biodiversity Strategy and Action Plan	July 30, 2020
		Meeting with DENR-BMB, DENR Region 3, DENR Aurora and Biodiversity Finance Initiative for presentation of final matrix of targets for Aurora Biodiversity Strategy and Action Plan, followed by workshop on finalization of costings for plan implementation	August 17 and 20, 2020
		Presentation of Aurora Bamboo Industry Development Roadmap to Aurora Bamboo Development Council, which moved for adoption of the plan	September 9, 2020
Bataan	SA 3	Meeting with DENR-FMB, DENR Region 3 and DENR Bataan to present results of stakeholders' workshop and assessment of National Greening Program sites in Morong and Bagac	August 4, 2020
	SA 2	Review of draft PES ordinance of Bagac LGU	August 2020
Region 3	SA 3	Series of online training sessions on drone image processing and analysis	August-September 2020
	SA 4	Seminar for Pampanga State Agricultural University officials and faculty members on enhancement of Bachelor of Science in Agroforestry curriculum	August 14, 2020
	SA 1	Turn-over of Wild and Alive Facebook campaign template to DENR Region 3	September 2020

LESSONS LEARNED

In this chapter, Protect Wildlife presents an analysis of lessons learned and recommendations from implementation of the five-year activity. Although experiences described below may be unique to the activity, the lessons derived from them can be useful to future programs and projects working toward similar goals. Many activity interventions described here have already been integrated into the working lives of government and other partners and have been institutionalized through regulations, plans and budgets in the four activity sites, providing insights as to how to promote integrated conservation and development in practice.

This chapter is based on a review of lessons learned conducted with inputs from Protect Wildlife through a series of workshops in January and February 2021. After extracting key themes, the activity identified seven core lessons learned and best practice areas, which were then corroborated and enhanced through interviews with activity partners, staff and beneficiaries:
1. Establishing a foundation for activity implementation through land use planning and zoning;
2. Developing systems for strengthened wildlife and environmental law enforcement;
3. Seizing partnership opportunities in higher education reform to promote biodiversity conservation research and education;
4. Generating revenues to plough back into conservation through PES;
5. Translating idea into reality through Theory of Change;
6. Adapting to challenges in implementation during the COVID-19 pandemic; and
7. Integrating W-GDP Initiative into Protect Wildlife.

The first four lessons learned are integrated in the Activity Accomplishments and Site Case Studies chapters. These include the following:
- **Establishing a foundation for activity implementation through land use planning and zoning.** Working with DENR and LGUs to develop mandated plans, including protected area management plans and FLUPs was impactful—addressing an urgent partner need while also establishing a foundation from which Protect Wildlife could plan and execute cross-cutting activities.
- **Developing systems for strengthened wildlife and environmental law enforcement**. Co-designing and developing digital systems for adoption by law enforcement agencies based on their expressed needs boosted their efficiency and meant that the systems are likely to sustain. These investments also positioned partner to share data across jurisdictions, and better engage the public in enforcement efforts.
- **Seizing partnership opportunities in higher education reform.** Opportunism and flexibility also feature in the development of the Environmental Law and Protection course syllabus to meet the needs of colleges and universities reforming their criminology programs. Working with champions was also key to building interest and enabling the rollout of the ELP syllabus, set to continue well beyond the life of the activity.
- **Generating revenues to plough back into conservation through PES.** The PES scheme now being applied in Brooke's Point in southern Palawan can be held up as an example for other

LGUs. This method of charging for water provision, ring-fencing revenues and reinvesting in watershed conservation has been tried and tested and can be adapted and adopted elsewhere. The Brooke's Point PES has already been expanded to cover a range of goods and services.

Protect Wildlife presents the remaining three lessons learned, which are cross-cutting in nature and had wider, more general applications. These are presented with positive and constructive lessons from implementation and recommendations for partners and fellow conservation practitioners.

TRANSLATING IDEAS INTO REALITY THROUGH THEORY OF CHANGE

At activity startup, Protect Wildlife worked with USAID's Office of Forestry and Biodiversity Measuring Impact activity to refine the initial Theory of Change. Through the workshop, USAID helped defined the activity, identifying direct threats to habitats and species and geographic scope of interventions. The activity team worked together to prepare Strategic Approach-specific Theories of Change, and then integrated them into an overall Theory of Change (page 34). This was intended to establish how the wide-ranging activity could help align conservation policy with on-the-ground wildlife management actions and enforcement; and help partners in sites to reduce threats to biodiversity, address wildlife trafficking and other environmental crimes, and maintain the flow of ecosystem goods and services.

The Theory of Change needed to make logical connections between results to make sure that the combined efforts would be sufficient to deliver a meaningful and sustainable overall impact. The process of developing the Theory of Change was demanding, requiring the activity team to think things through together, to make assumptions, and to understand and define causes and effects and how activities connect. For example: If WEOS are trained, the assumption is that they will monitor habitats more often. This, combined with awareness-raising activities, will reduce incidents of poaching. If something changes or does not work as expected, this must be recognized and adjusted as a response so activity goals can be reached.

The resulting Theory of Change brought this combined thinking onto one overall results chain (Figure 10 on page 35) that used graphics and directional arrows to illustrate complex linkages between activities, outputs, intermediate results, threat reduction and human well-being objectives. The results chain diagram divided the activity into five Strategic Approaches, each with their own results chains focusing on different technical aspects of biodiversity conservation, ranging from raising public awareness, improving local livelihoods, increasing private sector contributions to conservation, developing the capacity of national and local governments and universities to improve conservation planning and management, and enforcing wildlife and environmental laws.

The next challenge was to put this thinking into practice in multiple sites across the Philippines. Protect Wildlife found that applying the Theory of Change had a number of positive impacts on the way the activity team worked.

The thinking process and resulting Theory of Change was shared by all and gave the activity team a sense of purpose. Developing the Theory of Change together gave Protect Wildlife the chance to understand the activity's high-level goals and how activities on the ground combine,

connect and align to contribute to them. It was a significant effort to bring the whole activity team onto one page, pushing them to see beyond their respective technical fields and appreciate how other approaches need to reinforce and connect with them. Being part of the thinking process was also empowering for the activity team as it enabled them to propose thoughtful activities, or recommended adjustments to approaches, rather than simply following a work plan.

The activity team saw the development of the Theory of Change as a useful exercise. Once the activity team fully understood it, the Theory of Change helped integrate activities in the sites, with the team internalizing results chains and keeping them in mind in their work. In addition, the annual "pause and reflect" reviews helped ensure that the activity was on track and that assumptions for achieving results continued to be true—enabling learning throughout the life of the activity as intended in the monitoring, evaluation and learning plan.

Having the Theory of Change eased work planning and allowed flexibility, supporting opportunism. Overall work planning became easier once the Theory of Change was in place, adding flexibility and allowing the activity team to focus on intermediate results and address opportunities and threats as they emerged. Protect Wildlife was well placed to seize unforeseen opportunities for progress within the original scope throughout the life of the activity. Many of these are described in this chapter.

Holistic thinking and focus on cause and effect in the Theory of Change also aligned well with Protect Wildlife's landscape-seascape approach. CWT initiatives are often species-centric, but given the country context, the activity proposed a holistic approach, working at landscape-seascape scale with equal focus on protecting wildlife habitats and promoting the flow of ecosystem goods and services. Completing the Theory of Change added strength to this broader approach. Although CWT requires emphasis on law enforcement, a broader landscape-seascape approach empowered the activity to see beyond wildlife crime threats to diagnose root causes—following where the if-then questions took them to define relationships between activities, threats and results. It encouraged the activity to focus on BCC, livelihood and capacity building challenges that were critical to address the core issue of wildlife crimes.

Partners saw how Protect Wildlife was applying Theory of Change and wanted to learn more. Partners exposed to Theory of Change thinking appreciated that it provided a good way of framing the work, to the extent that PCSDS asked for support to develop their own Theory of Change and results chain.

CHALLENGES TO WORKING WITH THEORY OF CHANGE

Strategic versus regional approaches. Setting the Theory of Change along the lines of Strategic Approaches helped formulate the direction of the work of Manila-based specialists, and each Strategic Approach had fixed annual targets to accomplish. In the absence of a regional Theory of Change, however, regional teams had to refer to all five Strategic Approach results chains to identify which results were applicable to their work. This would have been more straightforward with regional results chains.

"Using Strategic Approach results chains led to a supply-driven modality and assumed that the Manila-based activity team would lead. If we could do it again, the sites should lead rather than just coordinate and do logistics. We should support and acknowledge site staff skills and structure activities regionally, adjusting staffing levels and authorities accordingly," said Ernesto Guiang, former Chief of Party of Protect Wildlife.

Reflecting on resourcing across multiple sites, the activity team concluded that concentrating technical specialists in Manila—particularly in the final year of the activity—may not have been the most effective approach, especially when COVID-19 restrictions prevented frequent travel.

Pandemic-driven changes made clear that regional teams had untapped technical competence and capacity to lead implementation with support from technical specialists.

An alternative approach would have mobilized specialists to sites to spread their knowledge and create impact more widely, working alongside regional teams with local knowledge, networks and social capital needed to build momentum quickly.

An example of this was in Palawan, where Protect Wildlife was building on the work of a previous project and had a longstanding team in place. Existing networks and strong partnerships with DENR and PCSDS meant that the project had a head start: trusting relationships were already in place, and all that was needed was additional technical inputs from specialists.

Fixed deliverables and targets limited flexibility. Strict limitations of the activity's contract with USAID meant that adjustments to the Theory of Change could not be reflected in changes to activity deliverables and targets. The destination remained unchanged; however, the route could change slightly along the way. While promoting accountability and predictability, this also reduced the potential for the activity to be more opportunistic. Ultimately, the original Theory of Change held, and minor tweaks were made through the years to reflect changes and refine definitions.

RECOMMENDATIONS

• To reach a shared sense of purpose, the whole team needs to contribute to and appreciate the whole Theory of Change. This includes building a shared understanding of both technical and operational perspectives, as well as critical understanding of program design and purpose. Knowledgeable and patient external facilitators are likely to be needed to support this to help everyone get on the same page.

• For future activities in multiple sites, it may be useful to do a Theory of Change for each site, which local teams can use to assess their progress and results, and for work and resource planning. These Theories of Change could be integrated across Strategic Approaches, helping to map and sequence site activities and allowing teams the flexibility to take advantage of opportunities that they identify in line with the Theory of Change.

• For future activities using the landscape-seascape approach, Theory of Change thinking reinforces these holistic approaches.

• Increasing flexibility of deliverables and targets (increasing, decreasing, adding, removing, reprogramming) perhaps within an agreed and predicted range might increase the chances of activities achieving sustainable results by being able to pursue unforeseen opportunities and also close activities that are not working as well as expected.

• Ensuring that new staff fully understand the Theory of Change as soon as possible after joining is also critically important. They need to see the whole as well as their part so they can apply it on a day-to-day basis, and ensuring that

from the outset, monitoring and evaluation staff have appropriate research skills.

- Given the interest shown by Protect Wildlife's partners, future activities could consider offering Theory of Change training and capacity development support to key partners as part of their technical assistance.

ADAPTING TO CHALLENGES IN IMPLEMENTATION DURING THE COVID-19 PANDEMIC

Travel restrictions and limitations on gatherings intended to reduce the spread of COVID-19 required a re-think of Protect Wildlife activities starting in March 2020 and continuing until the end of the activity. Following quarantine rules and health protocols as they were developed, the activity had to respond flexibly to enable work and to reach its targets. Offices were closed between March 16 and May 31, 2020 and staff switched to full-time telework, with phased re-opening starting from June 2020. Looking back on this at a time when new variants of the virus continue to spread, even as vaccination programs are starting across the world and communities are still in forms of lockdown, there are lessons learned from delivering activities which may hold even after the pandemic ends and daily life returns to normal.

Creative approaches and strategies were needed to respond to pandemic restrictions. While Protect Wildlife quickly adapted to meeting online and working remotely, it also developed strategies for activities to be as impactful as possible in changed circumstances. Instead of relying on Manila-based specialists who could no longer travel to sites, the activity shifted emphasis to leveraging local resources and qualified local partners. Despite travel restrictions, the activity was able to deliver training and other services to target partners through site teams and by harnessing partnerships with national agencies, LGUs, civil society organizations and the private sector.

Where government agencies also had programs in Protect Wildlife sites, the activity sought their support for several people's organizations. Where Manila-based specialists had previously trained DENR local officers and selected LGUs, these partners were able to support activity site teams to deliver training in the absence of specialists, who gave them specific training of trainer briefings

Several local partners, including government and non-government, were tapped to provide various training and technical assistance to the 26 people's organizations under the W-GDP Initiative. Topics covered included production technologies, use of improved postharvest and processing technologies, simple bookkeeping, organizational development and business planning. In Palawan, the team identified an official at Department of Trade and Industry who was willing to serve as resource person for organizational development and business planning. In Region 12, activity partner Foundation for a Sustainable Society mobilized the Mindanao chapter of Philippine Institute of Certified Public Accountants to deliver bookkeeping training in the site.

Since most training activities and workshops would typically involve more than 20 or 30 participants, splitting activities up locally to avoid constraints on large gatherings became a standard solution. When face-to-face training was required for more hands-on subjects such as agroforestry, Protect Wildlife was able to maintain health protocols and keep meetings below the maximum gathering of 10 to 15 participants, depending on venue size and social distancing compliance.

Protect Wildlife recalibrated its activities in response to restrictions. In Palawan, Protect Wildlife had to refrain from holding an agroforestry training course for 50 farmers in community centers as had been done the year before, meeting over a day and a half with training by the activity's Mindanao-based agroforestry specialist. When it became clear that face-to-face meetings of this kind were out of the question due to the pandemic, the site team had to reconfigure their approach. Instead of bringing 50 people together in a venue, the site team delivered trainings for groups of 10 to 15 people and held trainings in the target group's communities. Increasing the number of events was going to take too long, so the training courses were reduced to one day. The Mindanao-based specialist could not travel to provide inputs, so the local team, who had already participated the previous year, had to step up. Fortunately, they were familiar with the approach and were able to work with the specialist to simplify the content and switch the materials from a slides-based presentation to printed flipcharts to take into account the lack of power in remote communities. The site team had the chance to do a practice run to make sure they could deliver to standard, with online support from the agroforestry specialist.

In Region 12, Protect Wildlife was about to start a major BCC campaign for Mount Matutum to reach the youth with concepts of conservation and wildlife protection. The campaign was to be held in shopping malls and would include film shows. When it became clear that the pandemic was an issue, the site team did a risk assessment with advisors in Manila to work out how to respond to the fluid situation on the ground. Based on this, the site team changed the strategy for the whole activity. A group of C4C graduates helped the site team shift activities online and to limited face-to-face community campaigns, with a Facebook promotional campaign and online film shows which took place over a longer period than had been planned originally.

Enforcement training for LGU WEOs in Sarangani Bay also had to move from meeting venues in General Santos City to the municipalities. The protected area management board worked with Protect Wildlife to change plans for two five-day courses for 35 to 40 participants to nine two-and-a-half-day courses for 15 to 25 participants, following health protocols.

A packed schedule of Integrated Conservation and Development training courses for LGU partners in South Cotabato planned for 58 communities in 2020, and a stream of 78 community-based activities would in the best of times pose an organizational challenge. Facing the pandemic and also time constraints, Protect Wildlife turned to its government partners and came up with a new way of working together. Activities in one community would be completed before moving to the next: a one in, one out approach, and local coordination had to move into a higher gear to manage this.

The pandemic triggered unexpected positive consequences. The agroforestry training previously mentioned was improved by the changes. With the new approach to content and training delivery and the adjustment of group size, plus the shift to local sites, the site team found that farmers were more quickly able to absorb the new learning. The farmers had more interaction with trainers as a result of the smaller groups and benefited from learning in their own locations rather than in a demonstration-only environment.

The site team found that as a result of the changes, some of the training activities became more local and also richer, as they were broadened to include other agencies. This was true for example of the training for farmers in Palawan. In Region 12. the changes promoted deeper engagement on the issues

and triggered connections between officers who would not normally interact, such as DENR, DA-BFAR and PNP Maritime Group. Locally held trainings also promoted more opportunity to instill a pride of place and links to the community, to the extent that following the training in Glan, Sarangani within three days, the local community had reported an incident of mangrove cutting to DENR. The need to respond to such an unusual situation tended to have a positive impact on local relationships, building trust and mutual support.

When limited gatherings for government meetings were authorized at site level, Protect Wildlife conducted hybrid workshops to help craft the schedule of fines for violating rules and regulations in Sarangani Bay. With the participants gathered in a hotel in General Santos City, the Manila-based team facilitated the workshops remotely via web conferencing. Participants responded to guiding questions shown on video and completed the workshop documents online, reviewing the drafts and then presenting them through online and face-to-face plenaries during succeeding workshop days. This process led to final drafts for workshop participants to submit to the protected area management board. This intense collaboration promoted trust based on strong working and personal relationships between the Manila-based team with site staff and partners.

RECOMMENDATIONS

Implementers may further explore the cost efficiency of offering training in local centers rather than bringing participants into meeting facilities in cities. Although a series of trainings for smaller groups in their respective sites may produce positive impacts in increased focus and closer interaction with trainers, activities may face cost and resource efficiency constraints in applying this modality over a multi-year program.

- Strengthen local capabilities and expertise through training of trainers and mentoring to lessen dependence on Manila-based specialists for training and technical assistance, and where possible, decentralize technical specialists to reinforce their role in transferring knowledge. This could include

The need to respond flexibly to sudden restrictions unleashed the Protect Wildlife's capacity to deliver and to think laterally to achieve objectives, even as teams were under time pressure in the last six months of the activity. It also had a positive effect on morale. Having pushed through challenging times together, site teams realized that they gained self-confidence in their ability to deliver, manage and provide technical support, and felt that they had proven their capabilities. The value of their local connections and social capital was reinforced, and they reported a sense of personal achievement and fulfilment.

The downside of the sudden change in delivery was that site staff had to travel to all local sites to avoid bringing larger groups together. They found themselves unable to take time off for a period of six months, from June to November 2020, so there was a human cost in terms of exhaustion. However, this was largely due to unfortunate timing: the activity was in its final stages and there was no way to extend the time to allow for breaks.

The fact that technical specialists in Manila could not fly in and had to provide remote technical assistance to site teams led to a gradual shift in emphasis to sites in terms of resources. Site teams then led all activities locally and also facilitated them, working out how to deliver in a safe way, either online or, as time went on, through small local activities, complying with protocols and, where possible, hiring local consultants with relevant technical skills to support and facilitate local activities.

offering project management, leadership and Theory of Change training to site-based staff so that they can take the lead without waiting for support.

- Be more flexible about training delivery. Allowing for mixed approaches, designing materials that can be used online and face-to-face, with slides, flipcharts and handouts, will allow wider participation, greater interaction and greater learning impact.
- Consider the need for high speed internet and ensure site teams have portable modems for all activities outside the office.
- Consider providing skilled facilitators for all online and face-to-face meetings to maximize learning outcomes and agreed follow-up actions. Also, develop staff capabilities to deliver and facilitate both online and face-to-face training and meetings, including use of technology and strategies for managing groups.
- Build flexibility into budgeting and procurement to allow for immediate responses and changes to activities, to enable ramping up of those activities that become a higher priority and switch resources away from those that can no longer be implemented as planned.

INTEGRATING W-GDP INITIATIVE INTO PROTECT WILDLIFE

Protect Wildlife became involved in W-GDP Initiative starting in Year 4, focusing on its second pillar targeting people's organizations in activity sites that are dependent on natural resources and other ecosystem goods and services from forestlands and protected areas.

It quickly became apparent that W-GDP Initiative was aligned with Protect Wildlife's work on livelihoods in the activity sites. The activity was already working with a number of people's organizations and saw an opportunity with W-GDP Initiative to deliver a positive impact for women, their livelihoods and their communities, while also contributing to biodiversity conservation and wildlife protection.

Practical and meaningful support to build on what is already there. Interventions focused on reinforcing existing organizations and enterprises. Starting with 40 organizational assessments, Protect Wildlife selected 26 people's organizations that were most closely linked to the activity's objectives for natural resources management, and with capacity to absorb technical assistance and investments in improved processing capacity. The activity focused on ways to empower women entrepreneurs and improve their livelihoods, while at the same time increasing awareness of biodiversity conservation to ultimately better protect it.

Each of the 26 people's organizations were then offered practical assistance where it was needed to improve strategic planning, bookkeeping and business planning. Technical inputs included training, mentoring and catalytic investments in equipment that would help increase efficiency and quality and thus household incomes, based on what would work locally and met their demands. Examples of these catalytic investments include floating solar seaweed dryers in Palawan and Zamboanga City for fisherfolk communities, and a solar tunnel dryer for turmeric farmers in Aurora Memorial National Park.

The fact that W-GDP Initiative came in only in the activity's Year 4 was serendipitous in the following ways:

- Protected area management plans and FLUPs had already been developed or were in the final stages, and zones had been clarified in each area. This meant that production and multiple-use zones were already delineated by the time W-GDP Initiative started. Protect Wildlife used the approved zoning and management prescriptions to show the communities the strict protection zones where their production activities should not encroach, and practices that were allowed—such as agroforestry—and prohibited, such as use of chemical fertilizers or planting invasive species. This also helped communities to navigate the newly prescribed land and resource uses rules. The activity focused its support on people's organizations with established abaca, coffee, cacao and turmeric farms.
- The knock-on effect was that Protect Wildlife's training on conservation made sense to partners due to their locations in protected areas and forestlands. By limiting assistance to those in production areas, they were therefore incentivized to stay within the zone.
- Protect Wildlife had already established relationships with public sector and civil society organizations who were actively supporting conservation-oriented enterprises in activity sites. Combining forces with these partners enabled the introduction of conservation agriculture in abaca plantations; investments in postharvest processing equipment for abaca, coffee, turmeric and seaweed; and capacity building for sound financial and organizational management.

Livelihood activities under W-GDP Initiative complemented and reinforced Protect Wildlife's activities and biodiversity conservation objectives. Efforts to integrate conservation practices into livelihoods and microenterprises made sense and were very meaningful to activity partners, as long as the intervention met a need and presented an opportunity that they could embrace.

In terms of contributions to the activity's objectives, W-GDP Initiative enabled increased participation of women and improvements to their livelihoods, giving them new skills and access to tangible assets, such as equipment to improve their products. At the same time, it helped raised their awareness on conservation. In Quezon, Palawan, women fisherfolk now spearhead replanting of mangroves, knowing that this will support their fishing livelihoods. They consider this their counterpart contribution to the assistance that was provided to them. In Zamboanga City, several people's organization members were formally trained and certified as *Bantay Dagat* under the activity.

Support to environment-friendly enterprises translated to better livelihoods and improved gender equality. Women who previously lacked livelihood opportunities found that they could generate significant incomes from community enterprises. Protect Wildlife's strategy of strengthening and working through established organizations and cooperatives, involving women in the value chain, often for the first time, and tailoring support to their specific needs and capabilities led to rapid economic benefits. Examples of this include training in the use of technology and provision of postharvest and processing equipment and market linkages for abaca fiber, specialty coffee, dried seaweed and dried turmeric.

As a result of Protect Wildlife's focus on women's entrepreneurship and its support to improving technologies and tools, the work of women became more efficient. Time spent peeling, slicing and drying turmeric has been significantly reduced. Drying seaweed became easier and better-quality dried seaweeds are produced, which can sell for higher prices. Coffee beans can now be harvested, dried and

PARTNER PERSPECTIVES ON W-GDP INITIATIVE

In late 2020, Cherish Fisherfolk Association in Quezon, Palawan welcomed a communal floating solar dryer provided through the W-GDP Initiative to help them improve postharvest processing of their seaweed harvest. The drying facility will make hauling and drying of seaweeds more convenient for fisherfolk and lessen the seaweeds' exposure to sand, dirt and other contaminants.

Mardy Montano, head of the fisherfolk association, confirmed that training helped them to prepare their organizational plan and business plan, record finances, and build a stronger organization. She saw that women can earn their own income through the seaweed enterprise, whereas before, they were dependent on men's income from fishing. Now, the association can sell dried seaweed at ₱60 (US$1.2) per kilo, nearly a third higher than they used to earn. The increased income also now comes more quickly. With the seaweed dryer, 2,000 kilos can be dried in three days, whereas before, this would have taken two weeks. Not only has the price per kilo increased but the capacity to produce dried seaweeds has increased dramatically.

Montano noted that they value the support they received and saw how it has improved their livelihoods.

"We also learned to value, protect and conserve our natural resources, particularly those from the sea," she added. "We are now restoring our mangroves because they enable us to catch seafood to eat and to sell. We will continue to protect and expand our mangrove area because they are the breeding ground of various marine life. Mangroves also protect our land from coastal erosion."

sold for higher prices now that women have the tools and techniques to do this effectively. These productivity gains in turn free women to spend more time with family or engage in other economic or social activities outside the house.

None of the W-GDP Initiative interventions focused solely on women, however. Men participated in all activities and were part of discussions which redefined women's roles. In the case of Bulalacao Community-based Wildlife and Environment Protection in Bataraza, Palawan, the organizational review led the male president to split his work with his female vice-president in a different way to empower her. Also in Palawan, consultation with male indigenous leaders led to indigenous women's voices being heard in meetings where they had not before. Communities learned that the activity intended to assist the community as a whole, and the activity learned that involving men in activities targeting women is likely to be beneficial to all.

Protect Wildlife was able to link people's organizations to strategic partners who could help them improve and sell their products. The activity linked industry actors and buyers willing to support the people's organizations in improving their farming practices and facilitated access to improved postharvest and production technologies. Examples of these partnerships include Sunlight Foods Corporation providing farmers in southern Palawan with opportunities to earn premium contract-growing prices by applying conservation-oriented upland farming methods to produce purple yams. The activity also connected people's organizations to institutions and programs with an interest in providing other kinds of support, including training design and facilitation and design, and operation and maintenance of processing equipment.

A short timeline and the impact of COVID-19 presented challenges that could be overcome. With the short timeline for W-GDP Initiative, Protect Wildlife pushed hard to get the program off the ground and land it safely before final reporting had to start. Restrictions due to COVID-19 hampered the activity's ability to travel to sites and to bring groups together for training. From a planned 30 participants per training, the maximum became 15. This

limited reach, however, may well have been better for the participants themselves as they had more attention from the trainers.

RECOMMENDATIONS

The approach used by Protect Wildlife to incorporate women's entrepreneurship into biodiversity conservation could be used as a model for future similar activities aiming to support livelihoods of those living in or near conservation areas and to promote women's empowerment as part of that.

The lessons learned here underscore the importance of intentionality. The team had a very clear process that made sure the activity retained focus on conservation, supported activities where there was an existing market, and promoted sustainability. Elements of this approach show that even though the activity developed rapidly, the course it took was deliberate and based on existing traction. Its impacts were greater as a result.

Key elements of this approach include the following:
- Anchoring the activity on protected area management plans and FLUPs and the zones identified by them, and targeting activities in multiple-use and production zones.
- If the activity is assisting with the development of such plans, it can also work in parallel to build relationships with people's organizations in focus areas and ensure they are consulted on plans as they develop. Where women do not have a voice, the activity can consider consulting them as a separate group to ensure that their needs and preferences are prioritized.
- Identification of people's organizations based on their existing activities and communities within buffer or productive zones, and the use of organizational assessments to identify needs and absorptive capacity.
- Engaging government and civil society partners who are active in the area both to leverage their expertise and to foster relationships between them and the people's organizations, sowing seeds for sustained support and collaboration after the activity closes.
- Building in conservation messages from the outset and seeking ways to reinforce these in a way that resonates with participants and speaks to their daily lives.
- Completing a value chain analysis with leaders and community members, including women and men, moving to business planning based on existing value chains and best fit enterprises. Once selected, focus on livelihoods and opportunities for enterprises based on existing situations, interests of women in particular, activities that are environment-friendly, and where there is market potential for the products.
- Finding ways to add value by integrating conservation into people's organization or enterprise practices, and identifying ways to improve processing so enterprises add value to raw products and can earn additional income through those improvements rather than through overextraction.
- Considering small catalytic investments in relevant technology that can be used effectively by women, increase productivity and incomes while also promoting conservation.
- Linking people's organizations to strategic partners from public and private sectors and civil society to promote learning, mutual advantages and sustainability.

MONITORING, EVALUATION AND LEARNING

Although they represent two independent monitoring structures, the Theory of Change and Protect Wildlife contractual targets are synergistic, featuring parallel themes and compatible targets. In the previous chapters, the activity presented an analysis of Theory of Change results and illustrated how activities were applied in practice in each site. In this chapter, the activity shares results from the contract monitoring, evaluation and learning plan.

Protect Wildlife presents a narrative summary of Year 5 accomplishments against deliverable targets for each Strategic Approach and USAID Economic Growth output and outcome indicator. Narrative sections are followed by two tables—for Strategic Approach deliverables and for USAID output and outcome indicators, which break down progress against Year 5 and life-of-project targets.

PROGRESS AGAINST TARGETS

Although LOP targets for Protect Wildlife were originally based on an assumed 60-month implementation period, the activity met or exceeded all 15 contract deliverable targets and 10 of 11 USAID Economic Growth output and outcome targets in only 57 months of implementation, despite challenges presented by the COVID-19 pandemic during the final 12 months of the activity.

CONTRACT DELIVERABLE TARGETS

Strategic Approach 1: Behavior Change Communication

Protect Wildlife exceeded all targets—for people trained, campaigns implemented, and people reached—under Strategic Approach 1. This year, the activity met the LOP target for BCC campaigns, completing the 24th and 25th site-level campaigns for the protection of Philippine pangolins in Palawan and for *Kuwentong Kalikasan* campaign across activity sites, respectively.

Philippine Pangolin Study Roadshow Campaign in Palawan

Protect Wildlife launched a campaign for the protection of Philippine pangolins and their forest habitats through a roadshow presentation in 12 communities that participated in the Philippine pangolin study. The roadshow presented and distributed copies of the abridged results of the study; flipcharts in Filipino that feature clear, concise and highly visual presentation of study findings; and campaign materials, including posters and collaterals, designed to improve knowledge, attitudes and behaviors promoting the protection of pangolins. Through the campaign, the activity helped deliver study results and recommendations on pangolin conservation to an audience of 1,567 individuals.

The informative flipcharts allow for communities to gain better understanding of how conditions in their area and their particular behaviors contribute to the presence or absence of pangolins. Large-format

tarpaulin posters, designed to be placed in public gathering areas, carry messages and behavior reminders that leveraged pride of place, a call to protect ancestral heritage, and positive actions instead of sanctions. Additional collaterals, such as stickers, bags and bag tags, were also distributed to popularize and promote love and wonder for pangolins and nature. These educational and campaign materials were designed to create opportunities for dialogue among community members to share information and emotions and explore values and attitudes. These dialogues can help persuade and affirm desired behaviors in communities and set the tone for socially acceptable or unacceptable behaviors for conservation.

Design files for the materials were turned over to the outreach and education team of PCSDS, who will reproduce and build upon the materials to be used for continuous engagement with communities and for a larger campaign for protection and conservation of Philippine pangolins.

School in a Bag Initiative Featuring *Kuwentong Kalikasan*

Protect Wildlife also launched *Kuwentong Kalikasan* (Stories from Nature) campaign using Smart Communications' School in a Bag—a long-standing corporate social responsibility initiative designed for students in primary and secondary public schools in hard-to-reach communities. Under a partnership for matched giving, the activity and Smart Communications each financed distribution of ten School in a Bag kits allocated for remote schools in activity sites. Each kit includes student tablets, teacher's tablet, laptop, DVD player, internet dongle, and solar panel system as power source for off-grid schools.

Protect Wildlife built upon Smart Communication's standard School in a Bag educational materials to incorporate *Kuwentong Kalikasan*. The campaign is an environmental and wildlife education toolkit that provides users of School in a Bag with access to conservation-related information and activities that are otherwise absent from standard curricula. *Kuwentong Kalikasan* includes a teacher's guide and printed materials that feature twelve endangered species, including the Philippine eagle, Philippine pangolin and Sulu hornbill, among others.

Protect Wildlife distributed 20 School in a Bag kits and led orientation on their use, reaching 159 teachers. The activity projects that the campaign will reach approximately 4,700 students from seven schools in Palawan, eight in Region 12, two in Zamboanga City and three in Region 3 once regular classes resume after the COVID-19 pandemic.

Strategic Approach 2: Conservation Financing

Protect Wildlife exceeded all LOP indicators for Strategic Approach 2—on PES revenue generated, PES initiatives supported and public-private investments—prior to the activity year but continued to advanced conservation finance activities through to activity completion.

In Year 5, Protect Wildlife continued to coordinate with PES partners, recording US$13,907 in new revenue driven by LGU-run water systems from Palawan but also featuring fees from Bud Bongao Forest Park in Tawi-Tawi. Following a cost and revenue analysis in September 2018, the Bud Bongao management council and Bongao LGU adopted new financial management guidelines for collection and utilization of environmental user fees that were crafted with activity support. User fees range from ₱5

to ₱20 (US$0.10 to US$0.40) for locals and ₱100 (US$2) for foreign visitors, and are managed under a ring-fenced account, ensuring greater accountability and transparency in reporting and disbursing revenues. Fees are collected upon entry to the forest park and used to fund park management activities.

Outside of its support for PES, Protect Wildlife continued to leverage investments for the following activities, securing US125,668 in public-private investments in Year 5.

- Smart Communications formalized its commitment to provide ten School in a Bag kits as counterpart resources, including the cost of 100 tablets. Smart Communications' commitment is equivalent to an investment of US$38,168 (₱1.85 million).
- PCSDS committed ₱3.9 million (US$81,250) to establish the Palawan Biodiversity Resource Center. The valuation was based on PCSDS' contributions to the building renovation and procurement of equipment, cabinets and other supplies.
- The Mind Museum committed ₱300,000 (US$6,250) toward the development of Connected to the Wild exhibit. Their contributions were comprised of in-kind donations of multimedia content, structural designs and other materials to be used for the exhibit. Due to impacts of the COVID-19 pandemic and restrictions on museum activities, The Mind Museum and Protect Wildlife were unable to complete construction and launch the exhibit within the life of the activity. Investments in the exhibit remain viable, however, as the USAID Sustainable Interventions for Biodiversity, Oceans and Landscapes activity committed to support the exhibit with The Mind Museum once COVID-19 restrictions are lifted.

Strategic Approach 3: Conservation and Governance

Between March and June 2020, Protect Wildlife paused majority of its training initiatives in order to redesign them for compliance with LGU and health and safety requirements related to the COVID-19 pandemic. In Year 5, the activity launched revised curricula and delivered extensive integrated conservation and development training in Region 12 and wildlife and environmental law enforcement training sessions in Palawan and Region 12.

Protect Wildlife's revised approach to integrated conservation and development trainings featured on-site delivery in target communities, which allowed for the activity to ensure social distancing and minimum health standards, while also providing a more intimate setting that lent itself to more focused training and support. Under this approach, the activity trained 892 community members from Region 12, and an additional 24 farmer-beneficiaries from southern Palawan, as part of the activity's agroforestry initiative.

Protect Wildlife also facilitated activities that led to the eclipsing its WEO training and deputation targets. Nearly 350 training graduates, along with select community members trained in prior quarters in Zamboanga City and Region 3, were either deputized or certified as WEOs in Year 5. The majority of 140 newly deputized LGU WEOs and 215 community WEOs were trained in the second quarter (October to December 2020) but select deputations were for trainees from prior years. Their deputation orders were delayed to Year 5 due to the COVID-19 pandemic and work and travel restrictions that impacted government partners.

Strategic Approach 4: Conservation Research and Curriculum Development

Protect Wildlife met its LOP targets for research initiatives and conservation curriculum development in Year 4, but extended support for the following additional opportunities to advance conservation and enforcement knowledge and training in Year 5.

- Protect Wildlife supported the CAPTURED study that focused on understanding factors that influence the trading of priority wildlife species using the Concealable, Available, Processable, Transferable, Useable, Removable, Desirable framework. Study results may help national and local policymakers and enforcers to develop tailored enforcement approaches for wildlife species and by-products that are commonly traded illegally and emerging species and by-products for illegal trade.
- Five additional schools confirmed their adoption of the environmental law and protection syllabus following a June 2020 CHED Region 11 memorandum to all colleges and universities offering a Bachelor of Science in Criminology program. Davao Region-based schools participated in the workshop by Philippine Society of Criminologist and Criminal Justice Professionals on the ELP syllabus and development of teaching tools and materials that the activity team helped to develop.

Strategic Approach 5: Wildlife and Environmental Law Enforcement

Protect Wildlife eclipsed its LOP targets for new or revised laws and regulations for wildlife and environmental law enforcement in Year 5. The activity met its target for government staff trained in CWT in Year 3.

In Year 5, Protect Wildlife supported the development of 12 policies or regulations, bringing to 60 the total supported over the life of the activity. Of those supported in Year 5, five were related to the declaration of flagship species and introduction of conservation plans for their protection, and five were linked to enforcement protocols or declaration of penalties for environmental law violations. The remaining two were issued by Zamboanga City LGU: a draft executive order for the adoption of *zambocityenfo.com.ph* as the city's official environmental law enforcement database, and an ordinance on establishing a local conservation area in the central mangrove forests.

Thanks in part to these trainings, and guided by activity-supported protocols and policies, LGUs and communities trained by Protect Wildlife contributed to 1,301 confiscations, seizures and arrests in activity sites and transshipment points over the life of the activity—exceeding the target of 1,000. In Year 5, the activity reported 601 confiscations, seizures and fines levied from enforcement units trained by the activity at national and site levels. The following presents highlights from Year 5 confiscations and violations reports from national- and site-level units.

- **Palawan.** Of the 236 reports on confiscations, seizures or fines levied in Palawan, 59 percent were related to illegal logging, 31 percent to illegal fishing and 10 percent to wildlife trafficking. Notably, wildlife trafficking cases included a September 2019 arrest and seizure of a perpetrator with 301 pounds of dried sea horses and 2,551.5 pounds of pangolin scales. Another case led by DENR in January 2020 involved the confiscation of 20 live pangolins from a trafficker in El Nido.

- **Zamboanga City and Sulu Archipelago.** In Year 5, all 54 apprehensions in Zamboanga City were related to illegal fishing and were filed by CFLET. Enforcement actions resulted in fines of up to ₱3,000 (US$60) and the release of boats.
- **Region 12.** In Region 12, 22 of 27 cases involved illegal logging. One apprehension by Polomolok LGU in July 2020 involved slash-and-burn farming and confiscation of a Philippine tarsier, which was later returned to its natural habitat.
- **DA-BFAR.** Reports on illegal fishing from DA-BFAR enforcement units came from its regional field offices. Of the 290 reports, nearly 41 percent were issued from DA-BFAR Region 6. Fines were up to ₱945,000 (US$18,900).

ECONOMIC GROWTH INDICATOR OUTCOME TARGETS

EG 10.2-2: Number of hectares of biologically significant areas under improved natural resource management as a result of USG assistance

Over the life of the activity, Protect Wildlife supported activities that improved the management of 749,342 hectares of biologically significant areas—exceeding the LOP target of 500,000 hectares by 150 percent. The activity's technical support for production and implementation for the following management planning initiatives contributed to progress against this target.

Table 23. Hectares of Biologically Significant Areas Under Improved Management

MANAGEMENT PLANS	APPROVAL RESOLUTION	AREA (ha)
Mount Mantalingahan Protected Landscape (2021-2030)	PAMB Resolution No. 2019-09 (December 16, 2019)	120,457
Cleopatra's Needle Critical Habitat (2021-2025)	Management Committee Resolution (August 20, 2020)	41,304
El Nido-Taytay Managed Resource Protected Area (2020-2029)	PAMB Resolution No. 2020-26 (November 10, 2020)	89,135
Rasa Island Wildlife Sanctuary	PAMB resolution issued in 2019	2,349
Pasonanca Natural Park (2019-2028)	PAMB Resolution No. 2020-20 (September 30, 2020)	12,102
Great and Little Santa Cruz Islands Protected Landscape and Seascape (2019-2023)	PAMB Resolution No. 2019-1 (February 20, 2019)	3,425
Mount Matutum Protected Landscape (2020-2029)	PAMB Resolution No. 2019-18 (December 6, 2019)	13,947
Sarangani Bay Protected Seascape (2020-2024)	PAMB Resolution No. 2019-74 (December 12, 2019)	210,883
Aurora Memorial National Park (2020-2029)	PAMB Resolution No. 2019-12 (November 28, 2019)	5,676
Bud Bongao Forest Park (2019-2023)	Legislative Council Resolution No. 2020-06 (February 21, 2020)	193
Protected Area and Local Conservation Area Management Plans Subtotal		**499,471**
Quezon, Palawan (2019-2028)	Legislative Council Resolution No. 2019-34 (March 19, 2019)	40,421
Sofronio Española, Palawan (2019-2027)	Legislative Council Resolution No. 2019-03 (January 7, 2019)	24,421
Rizal, Palawan (2019-2027)	Legislative Council Resolution No. 2020-039 (March 16, 2020)	45,689

MANAGEMENT PLANS	APPROVAL RESOLUTION	AREA (ha)
Brooke's Point, Palawan (2019-2028)	Legislative Council Resolution No. 2019-43 (February 22, 2019)	6,095
Bataraza, Palawan	(For incorporation into CLUP)	23,558
El Nido, Palawan	(For incorporation into CLUP)	17,710
Zamboanga City (2020-2028)	City Council Resolution No. 1011 (July 28, 2020)	79,550
Ayala Watershed, Zamboanga City (2020-2028)	City Council Resolution No. 1385-2020 (October 6, 2020)	1,972*
Manicahan Watershed, Zamboanga City (2020-2028)	City Council Resolution No. 1386-2020 (October 6, 2020)	4,466*
Isabela City, Basilan (2021-2029)	City Council Resolution No. 20-6143 (October 7, 2020)	11,769
Malum Watershed, Panglima Sugala, Tawi-Tawi (2020-2029)	Executive Order No. 2020-11 (September 30, 2020)	658
Forest Land Use and Watershed Management Plans Subtotal		**249,871**
TOTAL		**749,342**

EG 10.2-3: Number of people with improved economic benefits derived from sustainable natural resource management and/or biodiversity conservation as a result of USG assistance

Reporting for this indicator is based on the number of individuals and their household members who directly benefit from Protect Wildlife livelihood initiatives, such as those delivered under W-GDP Initiative; earn additional income as a result of their certification or deputation as WEOs; and who implement economic activities, primarily in the agriculture sector, that rely on ecosystem goods and services that are better secured, thanks to the activity's management planning and PES activities.

Under these terms, Protect Wildlife reported on 37,570 people with improved economic benefits, thanks to activity-supported activities in Year 5—missing the LOP target by fewer than 5,000 people (95,805 out of 100,000 individuals). Year 5 results are presented in Table 24.

Table 24. Number of People with Improved Economic Benefits

SITE	SOURCE OF BENEFITS	ACTIVITIES	BENEFICIARIES	
			DIRECT	HOUSEHOLD
Palawan	Sustainable livelihood initiatives	Agroforestry trainees received fruit tree seedlings and farm tools.	1,217	6,085
		Various interventions were implemented toward improving management and resource conservation in Mount Mantalingahan, which provide critical inputs to upland livelihoods.	1,501	7,505
		Three people's organizations completed livelihood trainings and strategic and business skills development through W-GDP Initiative,	70	350
Region 12	Capacity-building support delivered under W-GDP Initiative	Five people's organizations were trained on bookkeeping, financial management and business planning. Four of the people's organizations received	802	4,010

| SITE | SOURCE OF BENEFITS | ACTIVITIES | BENEFICIARIES | |
			DIRECT	HOUSEHOLD
		technical assistance on abaca production, while one received technical assistance on fish cage operation.		
	Irrigation systems	Irrigation facilities supporting 138 hectares of farmlands draw water from Mount Matutum, which is now better protected and managed thanks to activity-supported management planning, PES and conservation and development activities.	68	340
	Sustainable livelihood initiatives	Skills training and organizational development learning sessions were delivered to four people's organizations engaged in coffee production and one people's organization engaged in fish cage operation.	2,291	11,455
		United Maligang Farmers Multipurpose Cooperative used new skills and resources to consolidate abaca products generated by three people's organizations in Sarangani. Economic benefits were derived by these organizations as a result of marketing support provided by the cooperative. These organizations also participated in trainings on abaca production.	143	715
		Tupi Coffee Growers Association engaged five people's organizations in South Cotabato for supply of coffee beans. The expanded market boosted the people's organizations' economic opportunities. Association members also benefited from learning interventions led by activity partners.	265	1,325
	Improved resource management	Fisheries-dependent households in two communities in Sarangani Bay benefited from demarcation and better protection of marine sanctuaries in their area.	732	3,660
	WEO honoraria	Trained and newly certified WEOs now receive honoraria as *Bantay Dagat* in Sarangani Bay.	245	1,225
Zamboanga City	Capacity-building support delivered under W-GDP Initiative	Training, mentoring and technical assistance on cacao production management and processing and conservation-based agroforestry system and production for two buffer zone associations in Pasonanca Natural Park. The associations were linked to a major buyer and processor of cacao in the region.	165	825
Region 3	Capacity-building support delivered under W-GDP Initiative	Salabusob Integrated Livelihood Association of Women received learning sessions on turmeric production and trainings on organizational and entrepreneurial development, business planning and bookkeeping. The association also received a solar tunnel dryer and tools and equipment for turmeric processing.	15	75

Protect Wildlife fell just short of meeting the LOP target for this indicator due primarily to the COVID-19 pandemic and related restrictions on work and travel. Based on internal records, the activity was on pace to exceed the target by nearly 14,000 individuals prior to the onset of the pandemic. As a result, the activity was not able to see the following support come to fruition:

- Technical assistance for a DENR policy on almaciga tapping, which would have benefited 870 almaciga tappers and their families in Palawan (estimated 4,350 with improved economic benefits);
- Marine conservation activities linked to demarcation and BCC initiatives in Sarangani Bay, which was projected to benefit 2,543 fisherfolk (estimated 12,715 with improved economic benefits); and
- W-GDP Initiative trainings and investments for a women's group in Tawi-Tawi and its 170 members (estimated 850 with improved economic benefits).

EG 10.2-3 (W-GDP Initiative): Number of women and their households with improved economic benefits derived from sustainable natural resource management and/or biodiversity conservation as a result of USG assistance

Protect Wildlife achieved its LOP target in Year 5—extending technical assistance to 1,492 additional women that positioned them to generate new or additional economic benefits for themselves and their households. The activity nearly doubled its target, providing technical assistance that positioned 1,992 women to secure new or improved economic benefits.

Table 25. W-GDP Initiative Beneficiaries in Year 5

| SITE | PEOPLE'S ORGANIZATIONS | BENEFICIARIES | |
		DIRECT	HOUSEHOLD
Region 12	Upper Valley Rural Improvement Club	40	200
	Cooperative of Women for Health and Development	214	1,070
	Lake Sebu Indigenous Women Weavers Association	250	1,250
	Sapu Masla Fish Cage Operators Association	31	155
	Moto Ladal Farmers Association	5	25
	Upper Lumabat Small Farmers Producers Multipurpose Cooperative	15	75
	Tibud sa Katibawasan Multipurpose Cooperative	480	2,400
	Kawas Boundary Fishermen and Farmers Association	15	75
	Landan People's Multipurpose Cooperative	232	1,160
Region 12 Subtotal		**1282**	**6,410**
Zamboanga City	Salaan Buffer Zone Association	36	180
	Tolosa Buffer Zone Association	39	195
Zamboanga City Subtotal		**75**	**375**
Region 3	Salabusob Integrated Livelihood Association of Women	15	75
Region 3 Subtotal		**15**	**75**

EG 10.2-6: Number of people that apply improved conservation law enforcement practices as a result of USG assistance

Protect Wildlife eclipsed its LOP target for this indicator in Year 5, with confirmation of 950 additional individuals applying improved wildlife and environmental law practices, thanks in part to activity assistance. The activity conducted validation interviews to confirm 188 trainees from five DENR and DA-BFAR enforcement units and two LGUs in South Cotabato who gained knowledge and skills through participation in enforcement trainings and subsequent mentoring are applying those lessons on the job; 662 members of DENR and LGU task forces and field-level units who remain in enforcement

positions are applying knowledge and skills gained from activity interventions and also sharing them with colleagues; and 100 new *Bantay Dagat* are applying skills and knowledge generated through trainings.

Over the life of the activity, Protect Wildlife assistance led to 1,946 people applying improved conservation law enforcement practices, exceeding the LOP target by more than 700 people.

EG 10.3-4: Amount of investment mobilized (in US$) for sustainable landscapes, natural resource management and biodiversity conservation as supported by USG assistance

In Year 5, Protect Wildlife continued to generate investments in conservation over and above the LOP target of US$5 million—leveraging an additional US$125,668 through partnerships with Smart Communications for the School in a Bag matched giving initiative, The Mind Museum for development of Connected to the Wild exhibit, and PCSDS for the establishment of Palawan Biodiversity Resource Center. Over the life of the activity, Protect Wildlife leveraged US$8,508,814 in commitments from partners for conservation activities.

EG 10.3-6: Greenhouse gas emissions estimated in metric tons of CO_2 equivalent reduced, sequestered or avoided through sustainable landscape activities supported by USG assistance

Over the life of the activity, Protect Wildlife interventions contributed to improved management of 750,315 hectares of biologically significant protected areas, conservation areas and forestlands (see EG.10.2-2)—which is estimated to result in 1,250,257 metric tons of greenhouse gas emissions reduced, sequestered or avoided, exceeding the LOP target by 178 percent.

ECONOMIC GROWTH INDICATOR OUTPUT TARGETS

EG 10.2-4: Number of people trained in sustainable natural resources management and/or biodiversity conservation as a result of USG assistance

Protect Wildlife achieved its LOP target in June 2020 but continued to conduct activities under this indicator through Year 5. The activity contributed to training interventions for 2,150 individuals. In addition to those already reported under SA 3 for integrated conservation and development and WEO trainings and under SA 5 for national government enforcement training, the activity also supported training on conservation-based agroforestry for 781 community members from southern Palawan, and on marine turtle conservation for 35 national and local government officials from Region 3.

Over the life of the activity, Protect Wildlife supported training for 7,011 people, exceeding the LOP target of 4,500 by 156 percent.

EG 10.2-5: Number of laws, policies or regulations that address biodiversity conservation and/or other environmental themes officially proposed, adopted or implemented as a result of USG assistance

Protect Wildlife achieved its LOP target in March 2020 but continued to advance activities for this indicator, supporting 14 policy initiatives in Year 5. In addition to 12 reported under Strategic Approach 5, the activity also supported the following:

- Resolution by Pasonanca Natural Park management board adopting Philippine eagle and Zamboanga bulbul as flagship species for the protected area; and
- Ordinance by Glan, Sarangani indicating prohibitions and penalties on killing, hunting and possessing migratory birds and their parts, and dedicating September and October for the celebration of Raptor Festival.

Over the life of the activity, Protect Wildlife supported efforts to propose, adopt or implement 80 laws, policies or regulations that address biodiversity conservation and other environmental themes, exceeding the LOP target by 30.

EG 4.2-4 (W-GDP Initiative): Number of person-days of USG-funded training provided to support microenterprise development

Protect Wildlife achieved its LOP target in Year 5 (December 2020)—rendering an additional 2,276 instructional days through the following trainings and workshops:

- Abaca thread processing, abaca stripping machine operation, and formulation of operation and maintenance manual;
- Strategic planning, business planning and skills training for four people's organizations;
- Learning session on turmeric production for women's group in Aurora Memorial National Park;
- Training of trainers on cacao production management and processing, and training on conservation-based agroforestry system, production and management for Pasonanca Natural Park buffer zone associations;
- Training on business plan development and simple bookkeeping;
- Training of trainers on coffee production and farm management for coffee farmers' groups; and
- Climate-Smart Farmers Field School for three farmers' groups engaged in abaca production.

Over the life of the activity, Protect Wildlife provided 3,071.5 days of training, exceeding the LOP target of 3,000.

EG 4.2-5 (W-GDP Initiative): Number of person-days of USG-funded technical assistance provided to support microenterprise development

Protect Wildlife achieved its LOP target in Year 5 (December 2020), with 2,504.75 days of mentoring and coaching, including the following:

- Consultation with people's organizations in Maria Aurora municipality, Aurora for conservation-oriented agriculture and agroforestry;
- PhilMech's site assessment of three coffee farmers' groups in Region 12;
- Orientation and training on conservation-oriented agriculture and agroforestry to people's organizations in Palawan; and
- Strategic and management planning and business planning workshops for eight people's organizations across activity sites.

Protect Wildlife exceeded its LOP target of 2,500 days of technical assistance by four days.

EG 5.3 (W-GDP Initiative): Number of microenterprises supported by USG assistance

In Year 5, Protect Wildlife initiated support to additional four people's organizations under W-GDP Initiative: Upper Lumabat Small Farmers Producers Multipurpose Cooperative, Tibud sa Katibawasan Multipurpose Cooperative, Kawas Boundary Fishermen and Farmers Association, and Landan People's Multipurpose Cooperative.

Over the life of the activity, Protect Wildlife supported 26 people's organizations under the W-GDP Initiative, exceeding the LOP target by six.

Tables 26 and 27 provide a more comprehensive presentation of accomplishments per contract deliverable and outcome and output targets, respectively. Achievements for W-GDP Initiative activities are also included in Table 27.

Table 26. Contract Deliverables: Year 5 and Life-of-Project Accomplishments (as of March 31, 2021)

INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
	LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
STRATEGIC APPROACH 1							
1.1 People trained to lead behavior change campaigns	100	-	-	-	101 Male: 45 Female: 56	LOP target achieved	LOP target was achieved in November 2018.
1.2 Behavior change campaigns implemented	25	2	-	2	26 (25 site-level; 1 national)	LOP target achieved	Protect Wildlife achieved LOP target in Year 5, completing its 24th and 25th site-level campaigns: • The activity launched a campaign for the protection of Philippine pangolins through a roadshow presentation in south-central Palawan. Campaign design materials were endorsed to PCSDS for succeeding campaign activities. • Across sites, the activity launched *Kuwentong Kalikasan* in partnership with Smart Communications. Through this effort, the activity distributed 20 School in a Bag kits featuring *Kuwentong Kalikasan* materials to recipient schools in all activity sites.
1.3 People reached by behavior change campaigns	300,000	-	1,726 (site-level)	706,182 (site-level)	1,181,013[10] (site-level) 3,576,103 (national)	LOP target achieved	Protect Wildlife achieved LOP target in June 2020 but has continued to make progress against targets through ongoing activities. In Year 5, the activity reached 706,182 people through site-based campaigns, including the following:

[9] Represents the remaining number required to meet Protect Wildlife's contractual LOP target.
[10] Adjusted to reflect the validated number of people reached by BCC campaigns.

	INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
								• 159 teachers who are initial users of *Kuwentong Kalikasan* materials • 1,567 individuals reached by Philippine pangolin conservation campaign roadshow and campaign materials • 704,440 individuals reached by Wild and Alive Facebook campaign in Region 3
	STRATEGIC APPROACH 2							
2.1	Revenue generated from the sale of ecosystem services in target sites	US$500,000	-	-	US$13,907	US$626,862[11]	LOP target achieved	Protect Wildlife achieved LOP target in Year 4. In the first two quarters of Year 5, the activity reported the following: • US$12,067.15 in PES generated from LGU-run water utilities in Palawan, including Taytay with US$925 (₱44,861), Rizal with US$2,652.80 (₱12,8110) and Brooke's Point with US$8,489.35 (₱409,975) • Revenues generated from user fees at Bud Bongao Forest Park: US$1,839.88 (₱88,480)
2.2	Payment for ecosystem services or tourism initiatives supported in target sites	100	-	-	-	147	LOP target achieved	Protect Wildlife achieved LOP target in December 2019. No new PES schemes were added in Year 5 but the activity continued to support partners to advance progress on their prior PES commitments.

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[11] As part of Protect Wildlife's data quality analysis in preparation for closeout, the activity adjusted LOP figures based on PES revenue generation records from partners. The activity also removed US$509.25 in PES revenue from the IPAF of Pasonanca Natural Park that was reported previously; revenue was reported for the 2014-2018 period and the amount attributable to the activity could not be established.

	INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
2.3	Private-public investments in Protect Wildlife anti-poaching and trafficking efforts	US$5 million	-	-	US$125,668	US$7,580,089	LOP target achieved	Protect Wildlife achieved LOP target in September 2018 but continued to implement activities to leverage investments. In Year 5, the activity generated US$125,668 in public-private investments, including the following: • Smart Communications' commitment to provide 10 School in a Bag kits, including the cost of 100 tablets, which amounted to an investment of US$38,168 (₱1.85 million). • The Mind Museum's commitment of ₱300,000 (US$6,250) toward the development of Connected to the Wild exhibit, comprised of in-kind donations of multimedia content, structural designs and other materials for the exhibit. • PCSDS' commitment of ₱3.9 million (US$81,250) for the Palawan Biodiversity Resource Center, based on contributions to building renovation and procurement of equipment, cabinets and other supplies.
				STRATEGIC APPROACH 3					
3.1	LGU staff trained in participatory planning for integrated conservation and development	200	-	-	-	215[12] Male: 141 Female: 74	LOP target achieved	Protect Wildlife achieved LOP target in September 2020. There were no additional trainings under this indicator in Year 5.

[12] The reported ITD was adjusted to account for unreported LGU staff who met the criteria for qualifying under this indicator. This was a result of the comprehensive review of supporting documentation and validation of LGU staff participation in all training activities conducted in the sites.

	INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
3.2	Community members trained in planning and implementation of integrated conservation and development	2,500	1,002	-	916 Male: 579 Female: 337	3,864[13] Male: 2,516 Female: 1,348	LOP target achieved	Protect Wildlife achieved LOP target in June 2020 but continued to advance progress in Year 5. The activity reported 916 new trainees on integrated conservation and development, including the following: • 24 farmer-beneficiaries in southern Palawan trained on conservation-oriented agriculture, agroforestry, and integrated conservation and development; and also engaged in land use and zoning validation • 577 community members in nine municipalities in South Cotabato trained on integrated conservation and development • 336 community members from three municipalities in Sarangani trained on integrated conservation and development and engaged in field validation, contributing to the Mount Busa Local Conservation Area Management Plan
3.3	LGU staff trained, certified and formally deputized as WEOs by government agencies	200	120	-	140 Male: 112 Female: 28	211[14] Male: 174 Female: 37	LOP target achieved	Protect Wildlife achieved LOP target in December 2020, reporting on 140 newly deputized LGU WEOs, as follows: • 20 LGU staff in El Nido, Palawan • 7 LGU staff in Quezon, Palawan

[13] ITD was adjusted to include unreported participants in the conservation-based agroforestry training in Palawan.

[14] ITD was adjusted following review of supporting documentation. Ten deputized LGU WEOs, who were unable to complete required trainings, were deducted from the tally, while one WEO who was deputized together with community members was added.

	INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
								• 38 staff from Puerto Princesa Subterranean River National Park and Puerto Princesa City LGU, Palawan • 48 staff from South Cotabato LGUs • 27 staff from Sarangani LGUs
3.4	Community members trained and certified as WEOs by government agencies	500	133	-	215 Male: 194 Female: 21	630[15] Male: 595 Female: 37	LOP target achieved	Protect Wildlife achieved LOP target in December 2020. In Year 5, the activity helped train the following 215 community members who were certified as WEOs: • 21 community members certified as WEOs for Zamboanga City's central mangrove forests • 31 individuals certified as environmental law enforcers in Puerto Princesa City (14 for Puerto Princesa Subterranean River National Park and 5 for Cleopatra's Needle) and Bataraza (9) and Rizal (3) municipalities in Palawan • 29 community members from Maria Aurora (18), Bongabon (6) and Laur (5) municipalities were certified as WEOs for Aurora Memorial National Park and Mount Mingan in Region 3 • 134 community members from six municipalities in Sarangani were certified as WEOs for Sarangani Bay

[15] Recomputed based on validation of certified community WEOs. Corrections include adding of unreported certified enforcers from Zamboanga City (24), Region 12 (4) and Palawan (22).

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	INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
STRATEGIC APPROACH 4								
4.1	University-supported research initiatives implemented in target sites	25	-	-	1	27	LOP target achieved	Protect Wildlife achieved LOP target in Year 4 but continued to advance activities under this indicator into Year 5. The activity reported on one final research initiative: a study on wildlife trafficking using the Concealable, Available, Processable, Transferrable, Useable, Removable, Enjoyable, Desirable or CAPTURED framework. The study focused on gaining a better understanding of factors that influence illegal trade of priority wildlife species in activity sites.
4.2	Universities developing conservation curricula with support from Protect Wildlife	10	-	-	5	19	LOP target achieved	Protect Wildlife achieved LOP target in Year 4 but continued to advance activities under this indicator into Year 5. The activity reported the following five additional schools confirming their adoption of the ELP syllabus following a June 2020 CHED Region 11 memorandum to all colleges and universities offering a Bachelor of Science in Criminology program: • University of Mindanao Digos College in Digos City, Davao del Sur • Southern Philippines Agri-Business and Marine and Aquatic School of Technology in Malinta, Davao Occidental • Holy Cross of Davao College in Davao City • Rizal Memorial Colleges in Davao City • Jose Maria College in Davao City These colleges participated in the workshop by Philippine Society of Criminologist and Criminal Justice Professionals on the ELP syllabus and development of teaching tools and materials.

INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
	LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
STRATEGIC APPROACH 5							
5.1 Government staff trained in combating wildlife and environmental crime	1,000	-	-	44 Male: 31 Female: 13	1,116[16] Male: 31 Female: 13	LOP target achieved	Protect Wildlife achieved LOP target in December 2018 but continued to implement activities under this indicator. In Year 5, the activity reported 44 new government trainees from DENR Region 4B who completed an online training on basic intelligence and surveillance techniques.
5.2 New or revised laws and regulations adopted to combat wildlife crimes	50	2	-	12	60	LOP target achieved	Protect Wildlife eclipsed its LOP target in Year 5. The following policies were approved during the year: • Ordinance establishing a local conservation area in the central mangrove forests of Zamboanga City has passed first reading by the city council • Ordinance declaring Sulu hornbill as flagship species of Panglima Sugala municipality in Tawi-Tawi, and providing for hornbill protection and conservation • Ordinance declaring green sea turtle as flagship species of Turtle Islands municipality in Tawi-Tawi • Ordinance declaring Asian palm civet as flagship species of Polomolok municipality in South Cotabato

[16] Adjusted based on the validation of national government agency staff trained.

INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
	LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
							• Ordinance declaring Philippine eagle and Zamboanga bulbul as flagship species of Zamboanga City • Ordinance declaring green humphead parrotfish as flagship species of Kiamba municipality in Sarangani • Protected Area Management Board Resolution No. 2020-048, Series of 2020, approving and adopting proposed schedule of administrative fines applicable to reported violations in Sarangani Bay Protected Seascape • Protected Area Management Board Resolution No. 2020-06 endorsing and approving the Mount Mantalingahan Protected Landscape Enforcement Protocol • Puerto Princesa Subterranean River National Park Enforcement Protocol and Plan • El Nido-Taytay Managed Resource Protected Area Enforcement Protocol and Plan • Cleopatra's Needle Critical Habitat Enforcement Protocol and Plan • Zamboanga City Executive Order No. BC-624-2021 adopting *zambocityenfo.com.ph* as the official environmental law enforcement database management system for Zamboanga City LGU

	INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)[9]	Year 5, Quarter 3	Year 5	Inception to Date		
5.3	Confiscations, seizures and arrests resulting from capacity building provided by Protect Wildlife	1,000	184	-	601	1,301[17]	LOP target achieved	Protect Wildlife eclipsed its LOP target in Year 5. Data collected by enforcement units supported by the activity are presented as follows: • DENR Region 12 (including CENROs and Mount Matutum): 14 actions • DA-BFAR: 290 actions • PCSDS: 50 actions • Zamboanga City CFLET: 54 actions • Polomolok LGU: 12 actions • Alabel LGU: 1 action • Puerto Princesa Subterranean River National Park: 51 actions • Brooke's Point LGU: 8 actions • Sofronio Española LGU: 7 actions • DENR CENRO Brooke's Point: 38 actions • DENR CENRO Quezon: 4 actions • DENR CENRO Puerto Princesa City: 10 actions • Palawan 2nd Special Operations Unit: 62 actions

[17] ATD and ITD were adjusted based on validated data on seizures and apprehensions reported by trained enforcement teams.

Table 27. Economic Growth Outcomes and Outputs: Year 5 and Life-of-Project Accomplishments (as of March 31, 2021)

INDICATORS		TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
OUTCOME INDICATORS								
EG 10.2-2	Number of hectares of biologically significant areas under improved natural resource management as a result of USG assistance	500,000	-	-	-	749,342	LOP target achieved	Over the life of the activity, Protect Wildlife provided assistance that contributed to improved natural resource management of 749,342 hectares of biologically significant areas.
EG 10.2-3	Number of people with improved economic benefits derived from sustainable natural resource management and/or biodiversity conservation as a result of USG assistance	100,000	41,915	1,225	37,570	95,805[18]	On track for LOP target	Protect Wildlife supported training of 245 Sarangani Bay community members who were certified as WEOs and now earn honoraria, creating economic benefits for them and their household (1,225 total). This brings the number of people who earned new or additional economic benefits in Year 5 to 37,570.
EG 10.2-3 (W-GDP Initiative)	Number of women and their households with improved economic benefits derived from sustainable natural resource management and/or biodiversity conservation as a result of USG assistance	1,000	-	-	1,493 women (7,465 household members)	1,992[19] women (9,960 household members)	LOP target achieved	Protect Wildlife achieved LOP target in December 2020. In Year 5, activity support to 1,492 women from people's organizations in Region 12, Zamboanga City and Region 3 helped generate new or additional economic benefits for them and their household (7,460 total).

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[18] Adjusted ITD to correct mathematical error in Quarterly Progress Report 12.
[19] ITD was adjusted to reflect current active members in assisted people's organizations.

INDICATORS		TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
EG 10.2-6	Number of people that apply improved conservation law enforcement practices as a result of USG assistance	1,200	180	-	950	1,946[20]	LOP target achieved	Protect Wildlife achieved LOP target in December 2020—reporting on 950 active enforcement officials who are applying improved enforcement practices, thanks to activity interventions. The activity conducted validation exercises in the first two quarters of Year 5 reporting on the following: • 188 staff from five DENR and DA-BFAR enforcement units and two LGUs in South Cotabato are applying knowledge and skills gained from enforcement trainings and subsequent mentoring • 662 members of DENR and LGU task forces and field-level units are applying knowledge and skills gained from enforcement trainings and sharing them with colleagues • 100 new *Bantay Dagat* are applying knowledge and skills gained from enforcement trainings

[20] ITD was adjusted based on validation with records on annual reports for Years 1 to 3.

	INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
		LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
EG 10.3-4	Amount of investment mobilized (in US$) for sustainable landscapes, natural resource management and biodiversity conservation as supported by USG assistance	US$5 million	-	-	US$125,668	$8,508,814	LOP target achieved	Protect Wildlife achieved LOP target in December 2018. In Year 5, the activity continued to generate investments in conservation, leveraging US$125,668 through partnerships with the following: • Smart Communications' commitment to provide 10 School in a Bag kits, including the cost of 100 tablets, which amounted to an investment of US$38,168 (₱1.85 million). • The Mind Museum's commitment of ₱300,000 (US$6,250) toward the development of Connected to the Wild exhibit, comprised of in-kind donations of multimedia content, structural designs and other materials for the exhibit. • PCSDS' commitment of ₱3.9 million (US$81,250) for the Palawan Biodiversity Resource Center, based on contributions to building renovation and procurement of equipment, cabinets and other supplies.
EG 10.3-6	Greenhouse gas emissions, estimated in metric tons of CO_2 equivalent reduced, sequestered or avoided through sustainable landscape activities supported by USG assistance	703,930	-	-	-	1,250,257	LOP target achieved	Through June 2020, Protect Wildlife estimates that interventions for improved management of conservation areas will lead to 1,250,257 metric tons of greenhouse gas emissions avoided (see EG 10.2-2). This will rise to more than 1.9 million metric tons of avoided GHG emissions by June 2021.

INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
	LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
OUTPUT INDICATORS							
EG 10.2-4	Number of people trained in sustainable natural resources management and/or biodiversity conservation as a result of USG assistance	4,500	-	-	2,150	7,011[21]	LOP Target Achieved	Protect Wildlife achieved LOP target in June 2020 but continued to conduct activities under this indicator through Year 5. The activity contributed to training interventions for 2,150 individuals through the following: • Integrated conservation and development trainees from Region 12 (913 individuals) • Conservation-based agroforestry trainees from southern Palawan (781 community members) • National and local government officials from Region 3 who completed marine turtle conservation training activities (35 officials) • Community members and national and local government staff who participated in WEO training in Region 3 (74 individuals) • Basic intelligence and surveillance techniques trainees from DENR 4B (44 staff) • Training of trainers sessions on WildALERT (96 staff)

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[21] ITD was adjusted following review of attendance records of previous trainings.

INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
	LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
							• Enforcement trainings in Palawan (44 individuals) and Region 12 (163 individuals)
EG 10.2-5	Number of laws, policies, or regulations that address biodiversity conservation and/or other environmental themes officially proposed, adopted or implemented as a result of USG assistance	50	-		14	80	LOP target achieved	Protect Wildlife achieved LOP target in March 2020 but continued to advance activities against this indicator in Year 5.

The activity supported the following 14 policy initiatives:
• Six ordinances and resolutions declaring the following flagship species: Sulu hornbill for Panglima Sugala, Tawi-Tawi; green sea turtle for Turtle Islands, Tawi-Tawi; Asian palm civet for Polomolok, South Cotabato; Philippine eagle and Zamboanga bulbul both for Pasonanca Natural Park and Zamboanga City; and green humphead parrotfish for Kiamba, Sarangani
• Ordinance establishing a local conservation area in the central mangrove forests of Zamboanga City
• Ordinance by Glan LGU in Sarangani indicating prohibitions and penalties on killing, hunting and possessing migratory birds and their parts, and dedicating September and October for the celebration of Raptor Festival
• Protected Area Management Board Resolution No. 2020-048, Series of 2020, approving and adopting proposed schedule of administrative fines applicable to reported violations in Sarangani Bay Protected Seascape |

| INDICATORS | TARGETS | | ACCOMPLISHMENTS | | | RATING FOR YEAR 5 | NARRATIVE PROGRESS |
	LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
							• Protected Area Management Board Resolution No. 2020-06 endorsing and approving the Mount Mantalingahan Protected Landscape Enforcement Protocol • Puerto Princesa Subterranean River National Park Enforcement Protocol and Plan • Two enforcement protocols and plans for El Nido-Taytay Managed Resource Protected Area and Cleopatra's Needle Critical Habitat • Executive Order No. BC-6240-2021 for the adoption of zambocityenfo.com.ph as the official environmental law enforcement database management system for Zamboanga City LGU
EG 4.2-4 (W-GDP Initiative)	Number of person-days of USG-funded training provided to support microenterprise development	3,000	-	-	2,276	3,071.5	LOP target achieved	Protect Wildlife achieved LOP target in Year December 2020. In Year 5, the activity rendered 2,276 instructional days through the following trainings and workshops: • Abaca thread processing, abaca stripping machine operation, and formulation of operation and maintenance manual • Strategic planning, business planning and skills training for four people's organizations • Learning session on turmeric production for women's group in Aurora Memorial National Park • Training of trainers on cacao production management and

| INDICATORS | TARGETS | | ACCOMPLISHMENTS | | | RATING FOR YEAR 5 | NARRATIVE PROGRESS |
	LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
							processing, and training on conservation-based agroforestry system, production and management for Pasonanca Natural Park buffer zone associations • Training on business plan development and simple bookkeeping • Training of trainers on coffee production and farm management for coffee farmers' groups • Climate-Smart Farmers Field School for three farmers' groups engaged in abaca production.
EG 4.2-5 (W-GDP Initiative)	Number of person days of USG-funded technical assistance provided to support microenterprise development	2,500	-	-	2,504.75	2,504.75	LOP target achieved	Protect Wildlife achieved LOP target in December 2020 with 2,504.75 days by mentoring and coaching sessions, including the following: • Consultation with people's organizations in Maria Aurora municipality in Aurora for conservation-oriented agriculture and agroforestry; • PhilMech's site assessment of three coffee farmers' groups in Region 12; • Orientation and training on conservation-oriented agriculture and agroforestry to people's organizations in Palawan • Strategic and management planning and business planning workshops for eight people's organizations across activity sites.
EG 5.3 (W-GDP Initiative)	Number of microenterprises supported by USG assistance	20	-	-	4	26	LOP target achieved	Protect Wildlife achieved LOP target in September 2020).

INDICATORS	TARGETS		ACCOMPLISHMENTS			RATING FOR YEAR 5	NARRATIVE PROGRESS
	LOP	Year 5 (Adjusted)	Year 5, Quarter 3	Year 5	Inception to Date		
							In Year 5, the activity initiated support under the W-GDP Initiative to the following people's organizations: • Upper Lumabat Small Farmers Producers Multipurpose Cooperative • Tibud sa Katibawasan Multipurpose Cooperative • Kawas Boundary Fishermen and Farmers Association • Landan People's Multipurpose Cooperative

FINANCE REPORT

Table 28. Summary of Expenditures (US$) through March 31, 2020 and Projected Expenditures through June 2021

STRATEGIC APPROACHES	CONTRACT BUDGET	TOTAL EXPENDITURE Year 1 to Year 4	YEAR 5 EXPENDITURE TO DATE			COSTS INCURRED TO DATE (through March 31, 2021)	PROJECTIONS Year 5 Quarter 4
			Year 5 Quarter 1	Year 5 Quarter 2	Year 5 Quarter 3		
Strategic Approach 1: Behavior Change Communication	4,949,661	3,919,306	301,006	367,467	273,592	4,861,371	50,536
Strategic Approach 2: Conservation Financing and Livelihoods	4,949,661	3,919,306	301,006	367,467	273,592	4,861,371	50,536
Strategic Approach 3: Conservation and Governance	4,049,722	3,206,705	246,278	300,655	223,848	3,977,485	41,348
Strategic Approach 4: Conservation Research and Curriculum Development	3,374,769	2,672,254	205,231	250,546	186,540	3,314,571	34,456
Strategic Approach 5: Wildlife and Environmental Law Enforcement	5,174,645	4,097,457	314,688	384,170	286,028	5,082,343	52,833
TOTAL	**22,498,457**	**17,815,028**	**1,368,210**	**1,670,305**	**1,243,599**	**22,097,141**	**229,709**