# Natural Capital Project

## Valuing Nature's Benefits to Society

Founded in 2006, the Natural Capital Project is an innovative partnership between Stanford University, The Nature Conservancy, the World Wildlife Fund and the University of Minnesota aimed at aligning economic forces with conservation.

### THE PROBLEM

People are making conservation and development decisions separately, and therefore are not incorporating environmental benefits into those decisions. Without properly acknowledging these benefits, we risk losing them. By focusing conservation on the protection of ecosystem services – the goods and services people get from nature- we can protect investments in property, infrastructure, and the environment while promoting human well-being.

### FINDING SOLUTIONS

The Natural Capital Project (NatCap) has developed a set of science-based approaches and software tools that estimate the value of biodiversity and services provided by nature in a spatially-explicit manner. Accounting for these ecosystem services can clarify the tradeoffs between alternative development scenarios and help people make more informed decisions on how to use their lands and waters.

We have applied these approaches and tools with partners in more than 20 significant projects worldwide—from the designation of ecosystem function conservation areas in China, to coastal protection in the Gulf of Mexico, to marine spatial planning in Canada. Our innovative approaches and tools have led us to become the industry leader when it comes to natural capital valuation and ecosystem service provision.

## Our Mission

The Natural Capital Project aims to integrate ecosystem services approaches into all major resource decisions that affect Earth's natural resources. Our ultimate objective is to improve the state of biodiversity and human well-being by motivating greater and more cost-effective investments in both.

## *What are ecosystem services?*

If properly managed, ecosystems yield a flow of services that are vital to humanity, including the production of goods such as food and timber, life support processes such as providing clean and ample water, protection from storms and flooding, recreational opportunities such as beautiful places to visit, and the preservation of genetic diversity. Despite their importance, ecosystem services are poorly understood, scarcely monitored, and, in many cases, undergoing rapid degradation and depletion. The Natural Capital Project uses science-based approaches and tools to account for spatial changes in these ecosystem services and their relationship to human well-being.

# Our Vision for the Future

The vision of the Natural Capital Project is a world in which people, governments, and corporations recognize the values of natural capital – embodied in Earth's lands, waters and biodiversity – in supporting human well-being, and routinely incorporate these values into decision-making. We are advancing three strategies to achieve this vision:

1. Creating innovative and practical tools to model, map, and value ecosystem services;
2. Testing and implementing our tools and approach to ecosystem service valuation in major policy decision-contexts in various sites and sectors around the globe; and
3. Working with governments, corporations, and multilateral organizations to mainstream our approach.

# How We Work

## Incorporating Ecosystem Services Into Decisions

Ecosystem service information can make – and has made – a difference in diverse decision contexts around the world. NatCap's ecosystem service approaches and tools have been used to inform decisions in diverse contexts worldwide. These contexts include:

- MARINE & TERRESTRIAL SPATIAL PLANNING
- PAYMENT FOR ECOSYSTEM SERVICES
- CLIMATE ADAPTATION
- PERMITTING AND MITIGATION
- HABITAT RESTORATION
- CORPORATE RISK MANAGEMENT

We have found that by incorporating information on ecosystem service tradeoffs into decisions can inform planning processes, mediate stakeholder differences, help establish new policy and finance mechanisms, and improve the likihood of ecosystem service delivery to more people.

## Merging Science and Conservation

The Natural Capital Project combines leading environmental science research at Stanford University and the University of Minnesota, with the global reach of science and conservation projects at The Nature Conservancy and the World Wildlife Fund. To create new tools and apply our approach at a number of demonstration sites around the world, we've gathered a team of scientists, economists, policy experts, GIS analysts, and software engineers to work with the Natural Capital Project at our four partner institutions.

In addition to working with our partners, we collaborate with governments, corporations, universities, scientists, multi-lateral institutions, and other non-profit organizations to integrate ecosystem services approaches into major natural resource decisions.

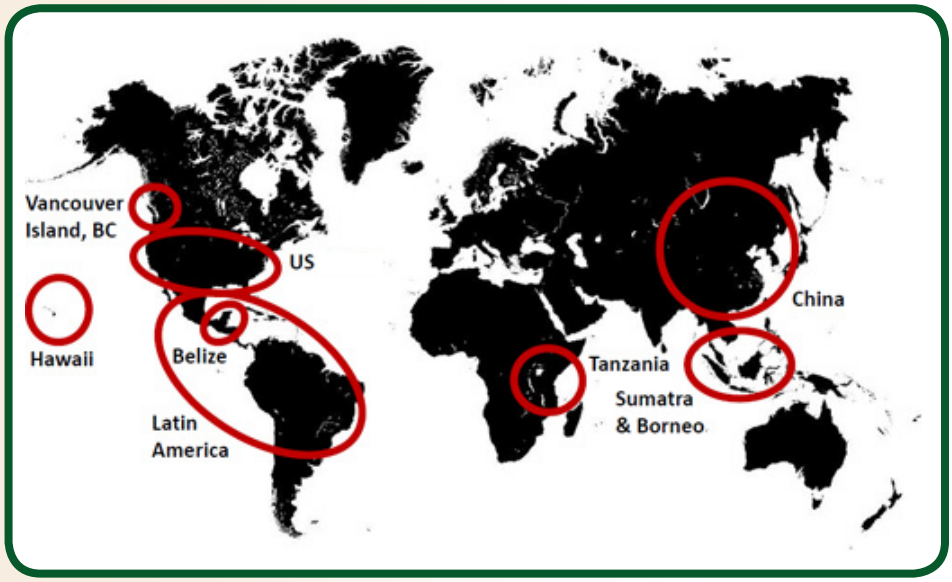
Stanford Woods Institute for the Environment

WWF

The Nature Conservancy

Institute on the Environment
University of Minnesota
Driven to Discover℠

# Where We Work




NatCap is working in projects around the world to scientifically test and improve our tools and approach and to demonstrate how they can be used to incorporate ecosystem services into natural resource decisions. Highlights from our projects include:

## DESGNING ECOSYSTEM SERVICE CONSERVATION AREAS IN CHINA

China's national leaders recognize that rapid development has contributed to devastating floods, severe water shortages, and desertification. To address this issue, China is pioneering efforts to create a national system of ecosystem service conservation areas (EFCAs), which set aside 24% of their country for ecosystem service protection. NatCap's ecosystem service models are being used in conjunction with biodiversity assessments to identify EFCAs, and have so far been used in in Baoxing County in Sichuan Province, Hainan Island, and the upper Yangtze River basin.

## RESTORING NATURAL COASTAL PROTECTION IN THE GULF OF MEXICO

Recent disasters in the Gulf of Mexico have lent new urgency to restoring the strong, resilient natural communities that for centuries have protected people and wildlife from storms and provided the backbone of the regional economy. NatCap is working with our partners at TNC to site and design oyster reef restoration projects on the Gulf Coast. Together, we built an innovative model and decision-support tool that allows coastal planners to evaluate how restored oyster reefs can best protect shorelines from coastal hazards while simultaneously stimulating the fisheries economy. TNC and others are using this tool to help identify restoration needs and opportunities on the Gulf Coast.

## MARINE SPATIAL PLANNING ON THE WEST COAST OF VANCOUVER ISLAND

Vancouver Island's shoreline is home to thousands of species, and to local communities that rely on their natural resources for their food and livelihood. Yet, in recent years signs of stress have appeared: salmon populations have declined dramatically and various stakeholder groups have disagreed over the future of development. West Coast Aquatic, a co-management body for aquatic resources, is using InVEST to create marine spatial plans for Barkley and Clayoquot Sounds. InVEST estimates of trade-offs among aquaculture, wave energy generation, fisheries, and coastal protection are providing a platform for stakeholder discussions trade-offs to create plans that are agreed upon by local and provincial governments, First Nations, communities, and private entities.

# Ecosystem Service Tools

## InVEST Models

- Aesthetic Quality
- Agricultural Production
- Biodiversity
- Carbon Storage & Sequestration
- Coastal Protection
- Coastal Vulnerability
- Crop Pollination
- Habitat Risk Assessment
- Managed Timber Production
- Marine Fish Aquaculture
- Marine Water Quality
- Overlap Analysis
- Hydropower Production
- Water Purification
- Erosion Control
- Recreation
- Offshore Wind Energy
- Wave Energy

### Soon to be released:

- Flood Mitigation
- Foraged Products
- Carbon Storage & Sequestration (marine)
- Shellfish Aquaculture
- Uncertainty
- Monthly Water Yield Model
- Scenario Generator Tool

## InVEST

### Integrated Valuation of Environmental Services and Tradeoffs

Integrated Valuation of Environmental Services and Tradeoffs (InVEST) is a free and open-source software suite developed by the Natural Capital Project to inform and improve natural resource management and investment decisions. Used in conjunction with Geographic Information System (GIS) software, InVEST helps users quantify, map, and value the goods and services from nature that contribute to sustaining and fulfilling human life. Spatially-explicit InVEST model outputs describe natural resources in terms of their biophysical supply, the service they provide to humans, or their projected socioeconomic value. InVEST enables decision-makers to assess the tradeoffs associated with alternative choices and to identify areas where investment in natural capital

InVEST
integrated valuation of environmental services and tradeoffs

A DECISION-MAKING TOOL FOR MAPPING AND VALUING ECOSYSTEM SERVICES

## RIOS

### Resource Investment Optimization System

RIOS is a software tool that provides a standardized approach to water fund design and investment prioritization in contexts throughout the world. RIOS draws on underlying InVEST models and uses biophysical, social, and economic data to help users identify the best investment locations on a landscape to maximize the ecological return on investment, within the bounds of what is socially and politically feasible.

RIOS

A TOOL FOR OPTIMIZING INVESTMENTS IN WATER AND OTHER ENVIRONMENTAL SERVICES

## Download Our Tools:

naturalcapitalproject.org/download.html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natural capital PROJECT

A joint venture among:
Institute on the Environment
University of Minnesota Driven to Discover℠
WWF
The Nature Conservancy Protecting nature. Preserving life.℠
Stanford Woods Institute for the Environment