**Framework for OHI+ Hawaii**

Background

The Ocean Health Index is the first integrated assessment framework that scientifically combines key biological, physical, economic, and social elements of the ocean’s health. Overall Index scores are a combination of ten components, or ‘goals’, of ocean health. These scores are calculated using the best available data and indicators at the scale of the assessment. Scores reflect how well coastal regions optimize their potential ocean benefits and services in a *sustainable way relative to a reference point* (target), on a scale of 0-100.

Methods for calculating the Ocean Health Index were developed at a global scale, combining dozens of data sets to produce annual Index scores for coastal nations and territories. As a result, for the first time, we are able to assess and compare global performance in managing our relationship with the Earth’s greatest resource—the Ocean. The global business community celebrated this accomplishment when the World Economic Forum recognized the Index as one of two innovative ocean solutions on June 8th, 2013.

Using the same framework, independent assessments (OHI+) allow for exploration of variables influencing ocean health at the smaller scales where policy and management decisions are made. Targets for goals are created using stakeholder input, higher resolution data, indicators, and priorities, which produce scores that better reflect local priorities. This enables communities, managers, policy makers, scientists to better and more holistically understand, track, and communicate the status of local marine ecosystems, and to design strategic management actions to improve overall ocean health.

Objectives

1. **Build a coalition for sustainable ocean management:** The process of defining management targets as reference points and weighting goals according to local priorities requires collaboration among coastal stakeholders, natural resource managers, scientific experts, and communities. We will embed the Hawai‘i OHI+ into the West Hawaii Integrated Ecological Assessment initiative, leveraging existing partnerships that NOAA and other stakeholders have developed in the region. Further, in developing the Index and enabling its uptake in policy spheres, we will work collaboratively with the Hawai‘i Green Growth (HGG) initiative, a multi-sector partnership of leaders from private and public entities that was formed in 2011 to develop Hawai‘i’s green economy (see Synergies section, below).
2. **Use objective scientific data to inform decision-making:** Data at a regional scale are often more precise and informative than global or national-scale data. For example, in an OHI assessment of the U.S. West Coast, the resulting scores were much more accurate than the broader score for the entire U.S., and therefore more helpful for informing policy in the region.
3. **Test management scenarios and assess trade-offs:**  Because the Index promotes optimal use of ocean resources in a sustainable way, increases in tourism are perceived as a positive. Thus, a scaled study can quantify how different management actions impact scores. For example, we can quantitatively assess the impact of hotel development on local economies, employment, and artisanal fishing opportunities. Likewise, the Ocean Health Index can contribute to determine the potential tradeoffs between improving the score of any one goal, including tourism and recreation, versus the impact on scores for other goals such as biodiversity, water quality, and coastal protection as a basis for decision-making. We can also use the Ocean Health Index to identify which pressures are negatively affecting the overall status of the ocean and of specific goals and which resilience measures are effective at counteracting the effect of those pressures.
4. **Monitor performance through time using a repeatable, user-friendly tool:** The Hawai‘i OHI+ assessment can be updated regularly as new data become available, allowing us to assess progress and development trends over time. As new information becomes available, decision-makers and stakeholders are able to implement adaptive management measures, making the most effective use of resources as the ocean and coastal zone continues to evolve.

Outcomes

Through are strategic plan we will build a scientifically robust index of ocean health for Hawaiʻi that is supported by local managers and communities, and integrated into ongoing policy initiatives to support sustainable ocean management. We will work within the OHI framework to make the index repeatable and allow for repeatable assessments of the index goals overtime allowing for progress toward Hawaiʻi’s vision for a healthy ocean and sustainable ocean management.

Process: Adapting the Ocean Health Index for Hawaii

The process of developing and adapting the OHI for Hawaiʻi is extremely important for creating a culturally, socially, and ecologically appropriate tool for measuring ocean health in Hawaiʻi. The Ocean Health Index is being adapted for Hawai’i with the support of a technical team of local experts, through surveys, workshops, integration with ongoing initiatives, and multisector advisory and working groups.

*Technical Team:* A technical team of experts for will be formed to support OHI goal development and will work revise goal models based on input from stakeholders collected through surveys, workshops, and support from the advisory board. The technical team will work to revise goals, and continue to support OHI development through data discovery, analysis, and use within the Ocean Health Index.

*Survey:* A survey for the Hawaii OHI will be sent to multiple agencies, private sectors, NGO’s, community and cultural representatives, and scientists and academics. The objectives of the survey is to get stakeholder input on the definition of ocean health, ranks of the benefits that they receive from the ocean, and begin defining OHI goals in a Hawai’i context. This survey will be used as a guide for the OHI framework and will support future discussions.

*Workshops:* Multiple workshops will be held to adapt the OHI global framework to meet the regional needs. Participants will be from multiple agencies, NGOs, communities, universities, and private organizations. The first workshop tool place in August, 2016. The objective of the workshop was to define a clear vision of ocean health for Hawaii and adapt the OHI goals to reflect Hawaiʻi’s assessment and management needs. The workshop will goals include:

* Define ocean health for Hawaiʻi: Stakeholder definitions of ocean health will be assessed with a pre-workshop survey and reviewed in the workshop to bring multiple stakeholder groups and participants to a clear vision and definition of ocean health for Hawaii.
* Build a coalition for sustainable ocean management: This project is bringing together management agencies, stakeholders, and organizations to support sustainable ocean management through a clear vision of ocean health and a united common goal of assessing and tracking ocean health in Hawaiʻi.
* Build conceptual framework: The OHI goals will be define and adapted to meet Hawaiʻi’s unique ecological, social, economic, and cultural aspects. The workshop focused on defining each goal as it related to Hawaiʻi, determining indicators, and identifying references for each goal. Experts for each goal were present at the workshop to discuss with stakeholders the ideal data and available data for each goal.

A workshop will be held in West Hawaiʻi in the near future to adapt the OHI Hawaii to incorporate West Hawaii specific data sets.

*Advisory Group:* The development and utilization of the Hawaiʻi Ocean Health Index will also be supported through an advisory board of key private, community, and government officials. The advisory board will be respected members of each sector and will likely include members of Hawaiian Airlines, the State Department of Land and Natural Resources, cultural and community advisors, government officials, and the National Oceanic and Atmospheric Administration. The role members of the advisory group are to represent the interests of their stakeholders for the development and use of the OHI. Advisors will serve as a two-way information exchange with their interest groups and constituencies.

*Synergies with Existing Regional and Statewide Ocean Sustainability Initiatives:* Conservation International is partnering with ongoing initiatives throughout Hawaiʻi to support incorporation of these initiatives into the OHI and form a coalition for ocean sustainability. The Hawai‘i Ocean Health Index will be fully embedded into the West Hawaii Integrated Ecosystem Assessment (IEA) initiative and also take advantage of other regional ocean sustainability initiatives in the West Hawaii region, including NOAA’s West Hawai‘i focus area for the Habitat Blueprint project, the West Hawai‘i Fishery Management Council, and participating communities in the E Alu Pū network facilitated by Kuaʻāina Ulu ʻAuamo (KUA). These partnerships allow us to reach multiple agencies and community groups throughout West Hawaii.

At the state level, the Hawai‘i Ocean Health Index will also inform metrics and a public dashboard developed by Hawai‘i Green Growth (HGG) to indicate progress toward the *Aloha+ Challenge* targets. The *Aloha+ Challenge* is a joint leadership commitment to sustainability for the State of Hawai‘i that was launched by Hawai‘i’s Governor, its four mayors, and the Office of Hawaiian Affairs in July 2014. The *Aloha+ Challenge* sets six statewide sustainability targets to be achieved by 2030 – in clean energy transformation, local food production, natural resource management, solid waste reduction (discarded resource recovery), smart growth, climate resilience, green job creation, and education. The purpose of these targets is to provide a shared framework to set priorities, take action, and track progress toward a more sustainable and resilient Hawai‘i. The will inform the development of a framework and metrics for the *Smart Sustainable Communities and Economies* target and will leverage key relationships with private sector leaders that are partners of CI Hawaii and HGG, increasing the reach and impact of this project.

Conceptual Framework

Ocean Health is defined as an ocean that can provide benefits and services for people now, but the importance of protecting and preserving ocean areas such as Papahānaumokuākea (Northwest Hawaiian Islands) as an intact ecologically functioning ecosystem free from human influences is also recognized as part of maintaining ocean health. Further health can be defined as a state of being that is pono (sustainable/respectful); where functions and processes can exist, perpetuate, and evolve, including the presence and role of humans.

Here we provide a working/adapting the Ocean Health Index for Hawaiʻi. Goal models and definitions are still being finalized and will change with further development of the index for Hawaiʻi.

*Scale*

The Hawaiʻi OHI+ will use the scientifically robust framework of the Ocean Health Index at the scale of the Hawaiian archipelago. We will focus our development of the Hawaii Ocean Health Index at two scales:

1. The West Hawaii region; and
2. Statewide, for coastal waters.

The West Hawaiʻi Regional assessment will be at the scale of West Hawaii. West Hawaii may be divided into two regions North and South West Hawaii depending on stakeholder and expert advice.

The Hawaii Statewide assessment will focus on the Main Hawaiian Islands and will be at the Island scale. Regions will be Hawaii, Maui, Molokai, Lanai, Oahu, and Kauai. The island scale is used to designate districts of Hawaii, which are used in policy and management for the State of Hawaii.

To produce the spatial boundaries of these reporting units we use the Hawaii USA Exclusive Economic Zones (EEZ). A nearshore spatial scale computed as the offshore 3nm boundary for Hawaii islands to be used in some goals. The OHI focus is on the entire EEZ, which is divided into each of the six reporting sub-regions. However, some goals are assessed on the nearshore (3 nm scale).

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| **Goal** | **Sub-Goal** | **Primary Scale of Goal** |
| Food Provision | Fisheries | EEZ & nearshore |
| Mariculture | Nearshore |
| Artisanal Fishing Opportunities |  | Nearshore |
| Natural Products |  | EEZ (if deep sea corals are used) |
| Coastal Protection |  | Nearshore |
| Coastal Livelihoods and Economies | Livelihoods | EEZ |
| Economies | EEZ |
| Tourism |  | nearshore |
| Recreation |  | nearshore |
| Sense of Place |  | nearshore |
| Clean Waters |  | nearshore |
| Biodiversity | Species | EEZ |
| Habitats | EEZ |

*Goal Specific Models*

The global Ocean Health Index developed 10 goals that encompass ocean health: Food Provision, Natural Products, Clean Water, Coastal Protection, Carbon Storage, Biodiversity, Tourism & Recreation, Livelihoods & Economies, Artisanal Fishing Opportunities, and Sense of Place. These goals for the OHI were adapted from the global framework and the ten goals for the Hawaiʻi OHI are Food Provision, Natural Products, Clean Water, Coastal Protection, Biodiversity, Tourism, Recreation, Livelihoods & Economies, Artisanal Fishing Opportunities, and *wahi pana* or *wahi noho like o ka po'e* (community). Tourism & Recreation was divided into two separate goal models: Tourism and Recreation. Tourism is defined as balanced economic growth through tourism with management and preservation of natural resources and Hawaiian culture. Recreation is defined as the benefit of the ocean to provide opportunities for residents to enjoy coastal areas through recreation. Sense of place is going to be renamed and defined as the participation and connection of people to places and to each other through community networks. This goal illustrates the benefits of the ocean to supporting communities, but also the reciprocity, people giving back as environmental stewards. Lastly, the Carbon Storage goal is tabled for now as not being a priority and lacking the necessary information such as extend of seagrasses and carbon storage capacity. Additionally mangroves are present in Hawaiʻi but are invasive and there is not a consensus on whether to include mangroves for this goal.

*Wahi pana (sacred places) or wahi noho like o ka po'e (community) (Formally Sense of Place):* Cultural values are expressed in the development of this goal and several of the other goals and we recognize local and culture values as important to all aspects of ocean health. A working group that includes the Office of Hawaiian Affairs, cultural advisors, and community members are assisting in the definition and development of this goal for Hawai’i. This goal stresses the importance of past, present, and future for the connection of people to places (āina) and relationships or networks of people with each other. Together these define community. Suggested metrics for this goal are the connection of the past, present, and future through knowledge of and representation of Hawaiian place names (ex. ahupuaa boundary signs), network of communities (# of members), acres of community managed areas and/or number of community stewardship programs, and place-based educational opportunities. Hawaiian place names represent knowledge of the past and Hawaiian place names tell a story of the place, what the place was known for or used for. This cultural history is important for present day stewardship and cultural practices and education of local environmental stewardship and culture is necessary for keeping the connection of people to place into the future. Defining shared values and building economic opportunities and support for community programs is a recommended indicator under the Smart Sustainable Communities target under Hawaii Green Growth Aloha+ Challenge.

*Tourism:* Is defined as developed economic opportunities without compromising the integrity of the Hawaiian culture and natural resources. In other words the balanced economic growth through tourism with management and preservation of natural resources and Hawaiian culture. The philosophy of this goal is to build a recognized responsibility of the roles of hosts (private industries), visitors, and residents to ensure respect and preservation of Hawaiian culture and the natural environment. Responsibilities and include education of hosts (employees/staff) and tourists on environmental and cultural conduct. Sanctioned and protect ocean resources attract visitors while supporting providing cultural and environmental integrity and therefore indicators of sustainable tourism are the percentage of marine managed areas. One of the indicators is the percent of education opportunities for tourists through educational signs at popular beach parks and videos in hotels and on airplanes. Increased support of the local economy through buying from local businesses is encouraged and average tourist spending will be used as a proxy for local spending. Additionally visitor fees (such as park fees or taxes) are recommended to support the management of marine protected areas.