NOAA FISHERIES

Pacific Islands Region

Main Hawaiian Islands Monk Seal Management Plan

December 2015

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NOAA Fisheries Pacific Islands Regional Office

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U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
National Marine Fisheries Service

Protected Resources Division
Pacific Islands Regional Office
National Marine Fisheries Service
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NOAA FISHERIES

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Foreword

"HOʻOKĀHI NO ʻOHANA, MAI UKA A I KE KAI,
MAI KĀHI PAE A KĀHI PAE"

We are all one family, from the uplands to the sea,
from one boundary to the next boundary[1]

by
Native Hawaiian Cultural Committee of the Hawaiian Monk Seal Recovery Team:
Kepā Maly, Craig Severance, Sabra Kauka, Walter Ritte, Julie Leialoha, and Dane Maxwell

In a traditional Hawaiian context, nature and culture are one and the same. There is no division between the two. The wealth and limitations of the land and ocean resources gave birth to and shaped the Hawaiian worldview. The *honua ola* (living environment) comprised of *ʻāina* (land), *wai* (water), *kai* (ocean), and *lewa* (sky) are the foundation of life and the source of the spiritual relationship between Hawaiians and their environs. Furthermore, Hawaiians believed that every aspect of the living environment and every *mea ola* (living creature) were the physical body-forms of the creative forces of nature, as well as the greater and lesser gods and goddesses. Living creatures were the embodiment of *akua* (gods), *ʻaumākua* (personal gods and guardians), ancestors, and elder siblings of the Hawaiian people.

Prior to the arrival of foreigners on Hawaiian shores, the health and well-being of the Hawaiian people were reflected in the health of nature around them. The respect and care for nature, in turn, meant that nature would care for and sustain the people. Hawaiians penned countless narratives from the 1830s to 1940s, documenting the cultural attachment that Hawaiians of old shared with their natural environment. Native historian S.M. Kamakau recorded one important event in ca. 1815 that spoke of the conservation ethic that Kamehameha I instructed his people to adhere to:

1 A proverb of the people from Kaʻū, Hawaiʻi – a reflection on the Hawaiian world-view that all things are connected (pers. comm. M. Kawena Pukui).

…Eia no hoi kekahi mea e maopopo ao ke aloha o Kamehameha, o kana olelo ana hoi i kona poe kanaka kalai laau, i ka i ana ae, "I kalai oukou i ka laau ea, mai oki oukou i ka laau opiopio, a mai noho a hoohina wale i na laau ala liilii." "Nawai aku auanei ia mau laau liilii, ua elemakule ae nei oe?" wahi a ka poe kalai laau ala. I mai la hoi o Kamehameha, "Ina no au e make, aia no ka'u keiki alii a me ka'u poe keiki, a na lakou aku no hoi paha." Pela no hoi oia i olelo aku ai i ka poe kapili manu oo, i ka poe kalai waa, haku ahuula, kalai ipu laau, a me ka poe lawaia.

O keia mau hana a pau a Kamehameha, he mau hana no ia e hoike ana i kona aloha i kana poe keiki a me na moopuna…

[*Nupepa Kuokoa, Sepatemaba 14, 1867:4, "Ka Moolelo o Kamehameha I" Helu 41*]

…Here is one way that the love of Kamehameha may be understood; it was in his words to this people who cut sandal wood trees. "When you cut the trees do not cut the young trees, and do not let them fall on the little sandal wood trees." Some the people who cut the sandal wood trees asked him, "For whom are the young trees, you are an old man now." Kamehameha I answered, "Even when I die there are my royal children and my people, they shall be for them." He said the same to his catchers of the ʻōʻō birds, the people who made canoes, the makers of feather capes, those who made wooden calabashes, and the fisher people.

All of these things done by Kamehameha were works that demonstrated his love for his children and descendants…

[Maly, translator]

ʻĪlioholokai[2] – In the Traditional Record

To better understand the cultural significance and context of the *ʻīlioholokai* (Hawaiian monk seal) in Hawaiian culture, the National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA Fisheries), Pacific Islands Regional Office engaged two parties in research programs to document traditional Hawaiian knowledge of the endangered seal. In an effort to shed light on the matter, Kittinger et al. in 2011 and Reeve et al. in 2013 reported on their reviews of Hawaiian and English language manuscripts, oral history interviews, and archaeological reports. While the two groups of researchers differed on various points regarding the cultural significance and occurrence of the Hawaiian monk seals in the main Hawaiian Islands, they agreed that well-established Hawaiian traditions document the depth of relationship that the people shared with all forms of nature, and that ancient life was governed by a code of conduct in respect for the *honua ola.*

At its meeting on March 3-4, 2015, NOAA Fisheries and members of the volunteer Monk Seal Recovery Team agreed that it was important to provide a cultural synthesis of the studies' findings and to integrate facets of traditional knowledge into the *Main Hawaiian Islands Monk Seal Management Plan*. Members of the volunteer team who are best acquainted with traditional Hawaiian knowledge and cultural practices and values shared that even if there is only limited documentation available on the *ʻīlioholokai*, there was no

2 Several traditional Hawaiian names have been used by Hawaiians to identify the Hawaiian monk seal. Among these are *ʻīlioholokai*, *ʻīliokai*, and *ʻīlioholoikauaua*. Here, Maly chose to cite *ʻīlioholokai*, because it was the name first heard during an early, informal interview with Niʻihau elder, John Makaneki "Papa nui" Kaohelauliʻi in 1975. Born around 1890, Papa Nui Kaohelauliʻi was also very clear in his statement that the ʻīlioholokai was not hunted as a food source by his people.

question as to whether or not there was cultural significance associated with all life forms in the traditional Hawaiian environment. The following narratives include overviews of the 2011 and 2013 studies, and provide some background on the premise of Hawaiian value of and care for the *honua ola*.

Kittinger et al. (2011)

John N. Kittinger, Trisann Māhealani Bambico, Trisha Kēhaulani Watson, and Edward W. Glazier partnered in the preparation of the study titled *Historical and Contemporary Significance of the Endangered Hawaiian Monk Seal in Native Hawaiian Culture* (2011). Through their research, Kittinger et al. used a variety of research efforts and different sources of cultural knowledge to describe a diverse range of historical and contemporary relationships between Hawaiian communities and the monk seal. Along with the discoveries they reported, the authors noted that "additional information may still be waiting to be discovered in extant Hawaiian literature and traditional knowledge forms. In addition to this, several respondents also noted that much of the information sought about monk seals was deliberately kept *hūnā*, or secret, in keeping with tradition and because such knowledge had been improperly used in the past."

Based on Kittinger et al.'s assessment of English-language archival sources, they made several important conclusions:

- Pre-human seal populations probably never exceeded 15,000 individuals.
- Prehistoric Polynesians likely opportunistically hunted Hawaiian monk seals.
- The activities of human hunters and harassment by mammals associated with humans (particularly dogs) likely rapidly diminished monk seal populations within the first century after Polynesian settlement (~AD 1250-1350), eventually locally extirpating them in the main Hawaiian Islands.

There are few records from the first decades after western contact, before westerners translated the Hawaiian language into a written form (AD 1778-1830). During this period, whaling, sealing and other trading vessels increasingly visited Hawaii, and the trade between the islands and foreigners increased. Hawaiians became involved in the seal trade as early as 1811, with Hawaiian monarchs enlisting their people as sailors on whaling and sealing vessels. Despite several detailed English-language accounts of the Hawaiian Islands in the early years post-European contact, no descriptions of seals were specifically recorded in the main Hawaiian Islands. For the early sealing reports, it remains difficult to disentangle which sealing cargoes were from outside of Hawaiian waters (e.g. Alaska, the Pacific Northwest, and the California coast) and which ones may have come from monk seal populations in Hawaiian waters. However, when Europeans ventured to the remote Northwestern Hawaiian Islands several decades later, they found Hawaiian monk seals, sparking dedicated sealing voyages. Sealing in the Northwestern Hawaiian Islands continued opportunistically, evidenced by reports from Hawaiian monarchs of seal killings in these islands. By the mid-19th century, Hawaiian monk seals were nearly extinct and remained extremely rare through the entire island chain into the early 20th century.

Kittinger et al. also examined Hawaiian-language newspapers looking for Hawaiian terms for monk seals and the roots of those names. Diverse terms found in Hawaiian-language dictionaries, archives, and newspapers that appeared to reference seals are:

- '*īlioholoikauaua or* '*īlioholo-ikauaua*: roughly translates to "dog running in the rough [seas]." This term was used most in Hawaiian-language newspapers dating to the mid to late 19th century, and appeared in reference to seals in Hawaiian translations of English works.
- *Hulu:* previously unknown term, defined as "seal, named for its valuable fur" (Pukui and

Elbert, 1971).

- *Sila* and *kila*: Hawaiian versions of the word 'seal;' probably date to the post-contact era.
- *ʻīliokai* or *ʻīlio o kai* (seadog): terms used in descriptions of sealing expeditions.
- Other terms for the monk seal:
    - *ʻioleholoikauaua*
    - *ʻīlioholoikauaua-a-Lono*
    - *ʻīlioheleikauaua*
    - *ʻīlioholoikekai*
    - *ʻīlioholokai*
    - *ʻaukai*
    - *holoikauaua*
- The term "*palaoa*" commonly references whales, but in a traditional chant, it may also apply to other marine mammals including monk seals.
- *Ohulu*: previously unknown term, defined as a seal hunter.

Hawaiian language newspapers also provide some evidence that monk seals were harvested and consumed as part of customary practice. For example, one writer writes in a story, "What are the things you think we eat here? Turtle liver, shark fin, and the broiled meat of the *ʻīlioholoikauaua*." Another writer suggests that monk seal furs were collected as part of customary tribute to the land managers (*Konohiki*), writing "and then, they lay down these things the *Konohiki* (land manager) requested: pig, dog, cloth, fiber, fur (*ʻo ka hulu*), fishing net, everything. These are the goods that we exhibited in ancient days."

Reeve et al. (2013)

The study prepared by Lora L. Nordtvedt Reeve, Rowland B. Reeve, and Paul L. Cleghorn is titled, "The Hawaiian Monk Seal in Traditional Hawaiian Culture" (2013). It focused on findings of the Kittinger et al. study (2011), engaged other subject matter specialists in looking at alternative interpretations of the data, and went on to discuss various aspects of the history of monk seals and their role in Hawaiian culture.

Based on archaeological evidence for the period from the arrival of the first Polynesian voyagers up until Western contact, the Hawaiian monk seal was apparently not abundant within the main Hawaiian Islands, and there was little direct contact between monk seal populations and human populations. The ethnohistorical evidence supported this conclusion:

- Traditional or early historic accounts of Hawaiian cultural practices do not mention consumption of seal meat, suggesting that it was not a significant component of the Hawaiian diet.
- There is no evidence in the traditional literature to suggest that seal meat was considered *kapu* (forbidden).
- Monk seal remains do not appear in the Hawaiian material culture as raw materials for tools or other objects, and no traditional artifacts or ornaments are known to have been made from seal bone, skin or teeth.
- Seal bone may have been used in fishhooks and other bone tools (as was dog, pig, whale, and even human bone), but if so, no such tools have been directly identified.
- There is an absence of images of monk seals in traditional Hawaiian petroglyphs. However, this cannot necessarily be taken as an indicator of their physical absence from the main Hawaiian Islands — while some animals (e.g. dogs or turtles) appear commonly in Hawaiian rock art, other domestic animals, such as pigs, appear only rarely, if at all. There are no

known petroglyph depictions of well-known animals in traditional Hawaiian society, such as dolphins or whales, and only one possible symbol representing a shark.

However, even with the relative lack of ethnohistorical representation, Reeve et al. concluded that if a local population of Hawaiian monk seals did not exist within the main Hawaiian Islands during the pre-contact period, it would be reasonable to expect that early Hawaiians would have known of monk seals. Based on archaeological evidence, early Polynesian voyagers explored (and settled) Nihoa and Mokumanamana (Necker) and would have encountered resident monk seals there. However, the visitation and occupation of the farther Northwestern Hawaiian Islands appears to have taken place relatively early in the Polynesian settlement of the Hawaiian Archipelago and not to have been very prolonged. Following this initial period, contact with monk seals may have been restricted to a relatively small number of fishermen visiting the fishing grounds of the Northwestern Hawaiian Islands from Kauaʻi and Niʻihau.

KA ʻĪLIOHOLOKAI, PEHEA LĀ KA HANA PONO? (THE MONK SEAL, WHAT IS THE RIGHT ACTION?)

Traditions of Hawaiian fisher-people are filled with countless examples of knowledge of, and interactions with, many forms of ocean life. They also share protocols to support a healthy relationship between *kānaka* (Hawaiians), nature and the deities embodied in the living environment. One rich description of Hawaiian fishing customs was published in the native language newspaper, *Ka Hae Hawaii*, in a letter submitted by W.E. Kealakaʻi (1861). The letter describes some of the Hawaiian practices, customs and beliefs employed by Hawaiians when engaged in fishing, and asking permission of the gods before engaging in the practice:

He Mooolelo no ka Lawaia ana

Ua akamai kekahi poe kanaka Hawaii i ka lawaia, no ia mea, ua kapa ia lakou, he poe lawaia. O ka makau kekahi mea e lawaia ai. O ka upena kekahi, a o ka hinai kekahi.

Penei ka lawaia ana me ka makau. E hilo mua ke kanaka lawaia i ke aho. Ke ano o ke aho e hilo ai, he aho kaa-kolu, ekolu maawe o ia aho, he olona. Ekolu kaau anana o kekahi aho, eha kaau anana ka loa o kekahi aho. Alaila, hana i ka makau, a lako ke kanaka i keia mau mea…

Pule aku la ua kanaka nei i ka pule lawaia. Penei ka pule ana i ka pule ia:

E ala e ka Ulua,
E ala e ke Kahala,
E ala e ka Ulaula,
E ala e ka hana nui
E ala, eia mai ka Hee,
He maunu palupalu,
He ono!
A i ai ia oe e ke Kahala,
Ai no moni,
Moni no a ka opu.
E Ku e—
Kuu akua i ka moana nei la — e,
A i ai ka ia i ka maunu a kaua,
Paa ae a paa i ka hoau,
ke aho a kaua,
Ea, e Ku kuu akua i ka moana nei la — e.
Amama oe e Ku a ka haliu.

Ko nuku i ka ia halapa i ka i-kuwai la—

E Ku— e, paa ia i paa ka ia a kaua!

W.E. Kealakai. Honolulu, Oahu
Ka Hae Hawaii, Mei 15, 1861

A Story of Fishing

Some of the people of Hawai‘i were very knowledgeable about fishing, and they were called fisher-people. The hook was one thing used in fishing. The net was another, and the basket trap, another.

This is how fishing was done with a hook. The cordage was first twined by the fisherman. The kind of cordage was a three-ply twine, a cord of three strands of olonā. The line might be 720 feet long, or perhaps 960 feet long. Then the hooks were made and the fisherman was supplied with these things…

The man then offered a fisherman's prayer. This is the prayer that is prayed:

Arise o *‘Ulua*,
Arise o *Kāhala*,
Arise o *‘Ula‘ula*,
Arise to the great task,
Arise, here is the *He‘e*,
A soft bait,
Delicious!
That you may eat o *Kāhala*,
Eat and swallow it,
Swallow it to your stomach.
O Kū—
My god here in the sea—,
Let the fish take the bait of ours,
Hold fast and secure in the currents,
the line of ours.
Say Kū, my god here in the sea—.
The prayer is spoken to you o Kū
who hears.
Your *nuku* line of hooks are the
gathering place of the fish—
Say Kū—hold fast, that the fish of
ours will be secured!

[Maly, translator]

Experts have suggested that the early ancestors of the Hawaiian people may have hunted the monk seals for food. Interestingly, if monk seals were harvested as a food source, there is no record of it in the extensive listing of fish and fishery resources recorded during the Māhele ‘Āina (1848-1855), or in the early proceedings of the Boundary Commission across the main Hawaiian Islands, which contains records spanning the period between 1855 to 1900[3].

3 Some 80,000 pages of land records (largely in Hawaiian) have been reviewed, which cover Hawai‘i to Ni‘ihau, and no reference was found that could be identified as pertaining to the monk seal.

Many of the customs and practices survived the passing of time, and elder *kamaʻāina* (those born in Hawaii) express the knowledge of their *kūpuna* (elders) through sayings and practices. A large collection of narratives may be found in a compilation prepared by Maly and Maly (2003), under the title of *"Ka Hana Lawaiʻa a me nā Koʻa o nā Kai ʻEwalu…"*

In regards to Hawaiian customs associated with the fishing and collection of marine resources, there is a theme consistent in oral history interviews with elder native Hawaiian fisher-people, which is also shared by other *kamaʻāina* who learned fishing in the "Hawaiian" way: The fishing and collection of marine resources requires caring for, and giving back, as a part of the taking. This manner of cultural subsistence may be summarized as *"Hānai a ʻai"* (To care for and eat from). In the Hawaiian cultural context, subsistence was the traditional way of life, reflected in the relationship shared between nature and the *kānaka* (people). Subsistence is multi-faceted, comprising intimate knowledge of the natural resources (from mountains to ocean depths), their spiritual attributes, and a responsibility to them, as well as a physical relationship (Oral history interview with elder *kamaʻāina* fishermen, conducted October 27, 2003 [Maly]).

In a subsequent interview with the fishermen, they shared: "When we are talking about subsistence *kuleana*, it's not just taking, it's giving back. It's feeding the fish and taking the fish. When we go up in the forest, we don't only go to take, we go to plant, we go there to be there. And when we go fish, we go back to the ocean and we take from the ocean. *ʻOia wale nō kuʻu manaʻo*" (Oral history interview with elder *kamaʻāina* fishermen and *ʻohana*, conducted November 17, 2003 [Maly]).

Too many people do not respect the ocean and land—they overharvest fish and other aquatic resources, with no thought of tomorrow or future generations. It was observed that taking more than one needs, only to freeze it for later, removes viable breeding stock from the fisheries, and as a result, leads to depletion of the resources (Summary of Findings, *"Ka Hana Lawaiʻa…"* Maly and Maly, December 20, 2004).

These examples of early traditional beliefs, practices and respect for all the *honua ola* lead one to question what difference it makes whether or not our short memories recall a time when *ʻīlioholokai* and other *mea ola* — extinct or extant — are remembered by us. Every form of native life gives life to native Hawaiian existence. In these times of radical change and loss, every loss of a unique Hawaiian life form is a loss to the Hawaiian people.

The apparent rareness of references to seals in Hawaiian traditions and historical accounts may be the product of significant changes brought on by the early history of western encounters with the *pae āina Hawaiʻi* (Hawaiian Archipelago). It also appears that there are some discrepancies pertaining to terminology, and possible misidentifications of what animal is being described in both studies cited above. A majority of the citations may contextually be credited to the period following western contact, and the period when economic profit superseded any traditional knowledge or value. This is particularly true in a number of the names referenced as describing monk seals — e.g. *ʻīlio hulu, hulu, ʻō hulu, sila, kila, mōnaka*. As the authors above observe, there is more research to be done in both Hawaiian and foreign language narratives, and significant work to be done in identification of faunal remains collected during archaeological site work across the islands. The current paucity of archeological evidence from pre-contact and contact period sites in the main Hawaiian Islands is not an indication that monk seals were not present, nor does it allow for interpretation of population sizes or trajectories.

Regardless of what may be perceived as an absence of evidence of traditional knowledge pertaining to *ʻīlioholokai* in the surviving ethnographic base, it is evident from the majority of Hawaiian cultural knowledge that Hawaiians perceived all facets of nature as alive and being part of the *kinolau* (myriad body-forms) of the creative forces of nature. Everything has a place, and, in varying degrees, everything

is imbued with *mana* (divine power). As such, Hawaiians worshiped *mea ola* (life forms) from the ocean depths to the skies above, and called upon them for assistance and guidance.

We do not attempt here to answer many questions that specifically address the role of *ʻīliholokai* in traditional Hawaiian culture. Instead, we reinforce the traditional concept that all forms of the environment (animate and inanimate) were believed to be the body forms of the gods, goddesses, deities, and even ancestors of the *kānaka* Hawaii. As such, traditional custom and practice directs us on the right path—respect and care for a unique Hawaiian life form as something that connects all Hawaiians with their ancestors.

Many *mele pule* (prayer chants) and traditions recorded by Native Hawaiians shed light on the practice of respect for life and nature. There are also numerous traditions that describe—in painful detail — punishment of those who fail to respect and honor the living environment. Though knowledge of the *ʻīlioholokai* may be fragmented because of loss of language, access to traditional lands and collection sites, environmental stresses, and economic pressures, facets of the larger body of traditional beliefs and practices remain in use by some Hawaiians in the present day. One early *mele pule* offered as an expression of the respect *kānaka* shared with creatures of the sea was published in the native newspaper, *Nupepa Kuokoa*, in 1899. The unidentified author cited the mele pule in a discussion on ancient Hawaiian religion and the similarities it shared with Christianity. The published lines of the *mele* state:

• *O Kane, Kukapao,*	Hail Kāne, Kū-ka-pao,
• *Me Lono nui noho i ka wai,*	And great Lono dwelling in the waters,
• *Loaa ka lani, honua,*	The heavens and earth are obtained,
• *Hoeu, ku-kupu, inana,*	Animated, rising, moving about,
• *Ku iluna ka moku,*	Standing above the islands,
• *O ka moana nui a Kane,*	The vast ocean of Kāne
• *O ka moana i kai oo,*	The ocean and powerful sea
• *O ka moana i ka iʻa nui,*	Ocean of the great fish,
• *O ka iʻa iki,*	Of the little fish,
• *I ka mano, i ka niuhi,*	The sharks, and the great white sharks,
• *I ke kohola,*	The whales,
• *I ka iʻa nui hihimanu a Kane…*	The great sting ray fish of Kāne…
• [*Nupepa Kuokoa*, Okatoba 20, 1899:4]	[Maly, translator]

It is reasonable to suggest that the *ʻīlioholokai – ʻīlioholoikauaua*, as the "dog that swims in the sea – dog that swims in the rough sea" is an embodiment of the god *Kū*, who is also represented in the body form of an *ʻīlio* (dog). This *ʻīlio* form is not only the actual dog, but in *kinolau* (myriad body forms) from land to sea, and in the heavens. Respect and honor of *ʻīlioholokai* is a natural way of living for *kānaka*.

Nawai hoʻi ʻole ke akamai mamuli o ka hoʻoilna a nā kūpuna?
(Who could not help to be wise through the legacy of the ancestors?)

Management Plan

Vision

A healthy and thriving Hawaiian monk seal population in the main Hawaiian Islands, living in a productive and balanced coastal ecosystem and coexisting with the cultural and economic well-being of the people of Hawaii.

Purpose and Scope of Plan

Hawaiian monk seals (or *ʻīlioholoikauaua*) are one of the unique species that make Hawaii's ecosystem like nowhere else in the world. Monk seals range throughout Hawaii's coastlines from the uninhabited atolls of the Northwestern Hawaiian Islands to Waikiki Beach. In the main Hawaiian Islands, monk seals have become a focal point for marine conservation, but also for controversy. The proximity of an endangered wild animal to human development, commerce, recreation, and culture creates challenges to finding sustainable co-existence. Recognizing this challenge, the 2007 revised Recovery Plan (National Marine Fisheries Service) included a recommendation to develop a plan that addresses the full scope of monk seal management needs in the main Hawaiian Islands.

NOAA Fisheries has the primary responsibility of developing and implementing Hawaiian monk seal recovery, and will lead many of the strategies and activities that are identified in this plan. However, we also identify issues and actions that federal agency partners, such as NOAA's National Ocean Service (NOS) Office of National Marine Sanctuaries (ONMS), can use to fulfill their obligations under Section 7 of the ESA. This plan can also help potential cooperators and other partners, including the State of Hawaii, non-governmental organizations (NGOs), other organizations, and communities, understand how their actions can facilitate monk seal recovery. We expect to develop cooperating roles over time through formal and informal implementation plans, as entities communicate interest in assisting in the recovery of Hawaiian monk seals in the main Hawaiian Islands. The crux of recovery is strong partnerships and stakeholder-based management, in which Hawaiian communities play a vital role. Through the activities we outline in this plan, NOAA Fisheries seeks the help and participation of local communities in ensuring the people of Hawaii have a healthy and productive coastal ecosystem that supports their cultural and economic activities as well as the *ʻīlioholoikauaua*.

> *To have a living, breathing creature that can be found nowhere else on the planet but in Pae ʻaina, simplistic in its being, with the instinct to survive the ages, ʻīlioholoikauaua is an extension of what Hawaii is.*
>
> - Julie Leialoha
> (Member, Hawaiian Monk Seal RecoveryTeam)

Introduction and Background

An Endangered Species

The Hawaiian archipelago is the most isolated island chain in the world, nearly 2,400 miles (3,862 kilometers) from the nearest continent (Figure 1). When people first crossed the thousands of miles from the South Pacific islands and arrived in Hawaii, the remote islands were already inhabited by countless unique species that had also — incredibly — traversed the ocean to make their home there. The geographic distance and isolation of the Hawaiian Islands meant that many of those plants, birds, insects, and other creatures became special and distinct "endemic" species only found in Hawaii after adapting to living there over thousands or millions of years. Only two extant species of mammals made it onto Hawaii's shores to join the ranks of the islands' endemic species before humans arrived: the Hawaiian hoary bat (*Lasirus cinereus semotus*, or *ʻope'apeʻa*) and the Hawaiian monk seal (*Neomonachus schauinslandi*).

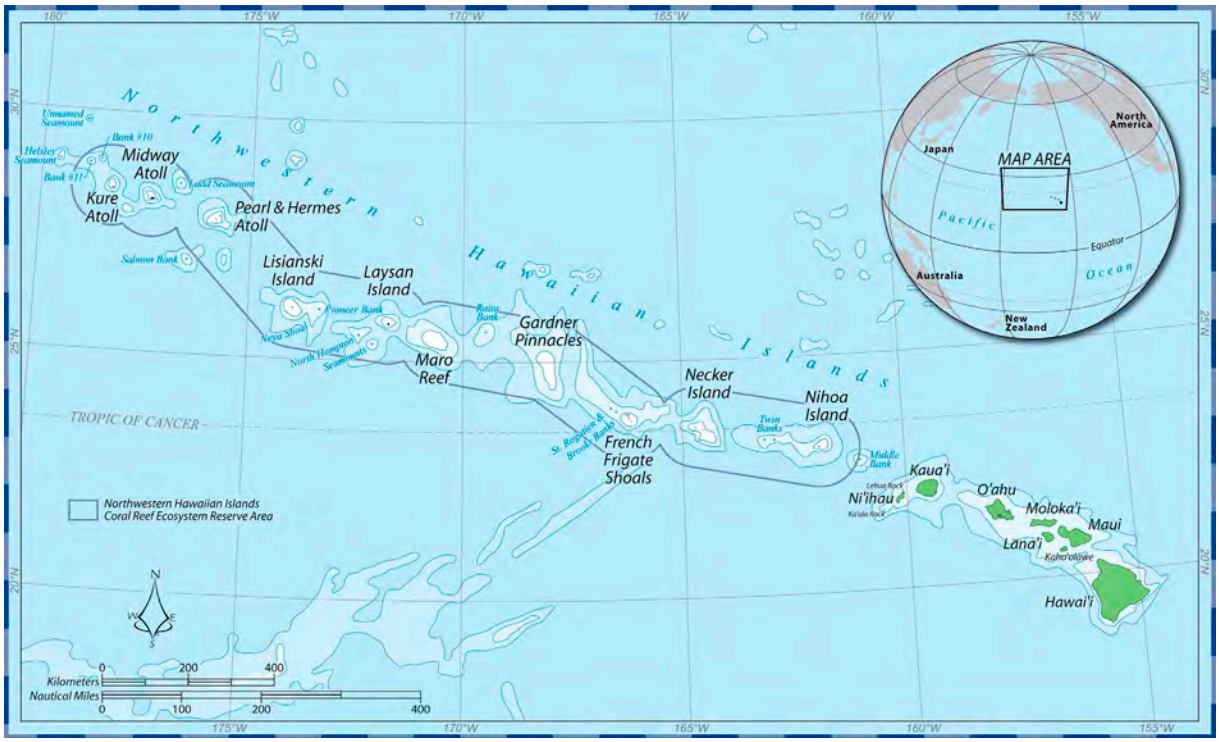

Figure 1. Map of the Hawaiian Islands Archipelago.

The first monk seals likely arrived in Hawaii between 14 million and 3 million years ago, when the Central American Seaway closed and separated them from their Caribbean cousins (Repenning et al. 1979). There are several traditional Hawaiian names that may refer to Hawaiian monk seals, including *ʻīlioholokai* or *ʻīlioholoikekai* ("dog running in the sea"), *ʻīlioholoikauaua* (dog running in the roughness [rough seas]"), *nā mea hulu* ("the furry ones"), and *sila* or *kila* (Hawaiian versions of the English word "seal") (Kittinger et al. 2012). Compared to other marine animals, such as sharks or turtles, the traditional Hawaiian cultural significance of monk seals appears to be inconsistent and geographically scattered (see Foreword). The most likely explanation is that any historical population of seals living in the main islands would have been relatively small and would have been quickly extirpated (made locally extinct) after the arrival of the first humans through hunting, disturbance by dogs, and other causes, similar to what happened with several species of endemic Hawaiian birds (Reeve et al. 2013). With such a rapid disappearance of the species, particularly a marine species whose remains would have degraded quickly in marine and shoreline

environments, the apparent lack of cultural references and archeological or physical evidence is not entirely surprising.

Between the arrival of Europeans to Hawaii in 1778 and the mid-1800s, Hawaiian monk seals were nearly hunted to extinction (Rauzon 2001). More recently, the population has been in a prolonged and steep population decline, more or less continuously since the 1950s. NOAA Fisheries and partners continue to study causes of this decline, but competition for food resources, ocean productivity cycles, and human-caused threats are among the contributing factors. Hawaiian monk seals were the first species to be listed as depleted under the Marine Mammal Protection Act (MMPA) on July 22, 1976 (41 FR 30120), and were listed as an endangered species under the federal Endangered Species Act (ESA) on November 23, 1976 (41 FR 51612). The International Union for Conservation of Nature (IUCN) classifies the Hawaiian monk seal as endangered and the Hawaiian monk seal is also protected under Hawaii State law HRS §195D-4.5).

Main Hawaiian Islands Monk Seal Population and Management

NOAA Fisheries estimates the current total population of Hawaiian monk seals at ~1,100 individuals (Carretta et al. 2014). The overall species decline is driven by poor juvenile survival in the Northwestern Hawaiian Islands' Papahanaumokuakea Marine National Monument, where the majority of the animals currently live, and where the population has been declining at an average of 2.8% per year over the last 10 years (NMFS 2015a). While people only rarely reported seeing monk seals in the main Hawaiian Islands over most of recorded history, there have been an increasing number of seal sightings and births in the main Hawaiian Islands since 1990. We estimate that there are approximately 200 monk seals currently living in the main Hawaiian Islands, and this population is growing at a rate of ~6.5% per year (Carretta et al. 2014, NMFS 2015b). The monk seal population in the main Hawaiian Islands has reached this current level primarily through intrinsic population growth (new births and survival of seals already living here), rather than immigration from the Northwestern Hawaiian Islands, though some natural movement of seals between the main islands and the Northwestern Hawaiian Islands does occur.

Since the late 2000s, approximately 20 monk seal pups have been born each year in the main Hawaiian Islands, with births occurring on each of the main islands (additional unknown numbers of pups are born every year on Niihau). This small but increasing population of seals in the main Hawaiian Islands is perhaps the most promising aspect for monk seal recovery, but the growing numbers of seals in

One way to open your eyes is to ask yourself, "What if I had never seen this before? What if I knew I would never see it again?

- Rachel Carson
(biologist/writer/ecologist, 1907-1964)

heavily populated areas is also creating a new set of recovery challenges, from increased risk of infectious diseases to interactions with fisheries.

This management plan describes a comprehensive set of strategies for NOAA Fisheries and its partners into the future to increase awareness, improve public safety and seal safety, increase partnerships and communication, and generally improve conservation efforts to support management of the naturally increasing monk seal population. Current efforts range from managing a marine mammal response network that addresses sick or injured seals, to education and outreach activities, to partnering with Hawaii's Department of Land and Natural Resources (DLNR) for more effective communication with fishermen (Lowry et al. 2011). Other ongoing efforts include engaging with the community to help improve communication and build understanding and support for Hawaiian monk seal recovery within local ocean-user communities. This management plan will build on previous work to help guide the main Hawaiian Islands to a future of co-existence between monk seals and humans.

Management Plan and Community-based Stewardship

NOAA Fisheries developed the *Main Hawaiian Islands Monk Seal Management Plan* as a guidance document, and as a way to communicate the strategic direction of the management and recovery program. The plan describes priorities, areas of need, and potential roles for our federal and state partner agencies, NGOs, communities, individual stakeholders, and those who may be interested in becoming involved in monk seal recovery efforts (potential partner list in Appendix A).

This management plan is the result of a participatory process that reflects ideas and input from experts, partners, stakeholders, and communities, including outcomes from workshops and other meetings held to discuss monk seal management issues (see *Planning Approach and Background Materials* for background and details on the planning process). Just as we emphasized community participation in the process of developing this plan, community participation in the implementation of this plan is critical to ensure the successful recovery of monk seals in the main Hawaiian Islands. As a result, this plan recognizes the importance of incorporating and perpetuating Hawaiian cultural traditions and practices, in particular as they apply to managing monk seals and related natural resources and human activities. Through this plan, NOAA Fisheries seeks to partner with coastal communities that have already established, or are in the process of establishing, community-based systems for natural resource management and human co-existence with wildlife.

Conservation Goals

Through the implementation of this plan, we intend to accomplish the following conservation goals:

- Stable or growing **wild main Hawaiian Islands monk seal population** of at least 500 seals (as required by the Hawaiian Monk Seal Recovery Plan [NMFS 2007])
- Sufficient **shoreline and marine habitat** in the main Hawaiian Islands to support resting, pupping, molting, foraging, and other natural behaviors of at least 500 monk seals

The goal of at least 500 seals in the main Hawaiian Islands is one of the conditions in the Hawaiian Monk Seal Recovery Plan (National Marine Fisheries Service 2007) to consider down-listing the monk seal species from endangered to threatened status under the ESA. Other biological criteria for down-listing include:

- Combined numbers exceed 2,900 total individuals in the Northwestern Hawaiian Islands

- At least 5 of the 6 main sub-populations in the Northwestern Hawaiian Islands are above 100 individuals *and the main Hawaiian Islands population is above 500*
- Survival of females in each sub-population in the Northwestern Hawaiian Islands and in the main Hawaiian Islands is high enough that, along with the birth rates in each sub-population, the calculated population growth rate for each sub-population is not negative

Threat-based recovery criteria include:

- Adequate management of human-seal interactions
- Management measures in place to minimize human disturbance of hauled-out seals
- Measures in place to manage fishery interactions that are demonstrably effective at reducing fishery-related mortality
- Measures in place to minimize the probability of disease introduction and plans to respond in the event of a disease outbreak

The Hawaiian monk seal population in the main Hawaiian Islands is currently increasing and moving on a trajectory toward 500 individuals. This plan will serve to support the trend, and will demonstrate progress toward addressing several of the threat-based recovery criteria listed in the Recovery Plan.

The people of Hawaii will also experience positive benefits from the successful management of Hawaiian monk seals and their marine and terrestrial habitats. In particular:

- Natural shorelines will lead to quality ocean access
- Safe wildlife viewing will promote opportunities for recreational ocean livelihoods and traditions through ecotourism
- Sustainable fisheries will foster better opportunities for fishery-based livelihoods and traditions
- Avoidance of overly close human-wildlife interactions will lead to improved public safety while viewing, engaging in recreational activities, and conducting other activities in proximity to monk seals

Management and Recovery Challenges

The *Recovery Plan for the Hawaiian Monk Seal* (2007) identifies and lists the overall threats to the species. However, to develop a comprehensive plan for management of seals in the main Hawaiian Islands, we separately identified and analyzed the primary management and recovery challenges for this portion of the population. Through discussions with NOAA Fisheries biologists, agency partners, workshop and focus group participants, community organizations, non-profit groups, educators, Native Hawaiian focus group participants, and the Hawaiian Monk Seal Recovery Team, we identified the following priority

management and recovery challenges:

1. Infectious disease
2. Human-seal interactions
3. Habitat threats
4. Human dimensions

What follows is a description of each of these challenges with the corresponding management strategies to address that challenge. We designed strategies, described in detail later in this document, to address more than one challenge at a time.

Infectious Disease

Infectious diseases pose a serious threat to monk seals in the main Hawaiian Islands. Exposure to infectious diseases occurs through many routes, including contact with domestic pets, feral animals, other marine mammals, insects, wastewater runoff, or contaminated stream water. While disease is not currently causing widespread mortality, an infectious disease outbreak could be catastrophic to the small monk seal population in the main Hawaiian Islands. The disease of highest concern is morbillivirus, which includes several strains that could affect monk seals: phocine distemper virus (carried by seals), cetacean morbilliviruses (carried by whales and dolphins), and canine distemper virus (carried by dogs). Distemper has caused die-offs of tens of thousands of seals and sea lions elsewhere in the world (Kennedy et al. 2000). While phocine distemper virus has not yet been documented in Hawaii, closely related viruses have been observed in stranded cetaceans in Hawaiian waters (West et al. 2013) and have the potential to be transmitted across susceptible species, including to Hawaiian monk seals (Mazzariol et al. 2013). Unexpected events also have the potential to introduce disease into the monk seal population. For instance, a young northern fur seal (*Callorhinus ursinus*) showed up on an Oahu beach in 2012, far outside its natural range of the west coast of North America. While Northern fur seals often carry distemper, that animal luckily tested negative and was brought back to California for rehabilitation and release.

Monk seals and domestic dogs routinely come into close contact (including occasional physical contact) on beaches around Hawaii, providing a pathway for introduction of distemper into the susceptible monk seal population. For instance, a dog killed a 2-week-old monk seal pup on Kauai in July 2014. Dogs have also bitten and injured five other seals (the seal pup's mother and two other mom-pup pairs), but there were no witnesses, so little else is known about the incidents or the health status of the dogs involved. Veterinarians routinely recommend vaccinations for domestic dogs against canine distemper virus. A preliminary survey of Hawaii veterinarians revealed that while there was one reported case of distemper in dogs (among 12 survey respondents), there is a relatively high amount of parvovirus seen in Hawaii (HMSRP, unpub. data). Given that vaccinations against distemper and parvovirus are typically combined in one inoculation, this suggests that Hawaii has poor vaccine compliance and a susceptible canine population. While distemper is uncommon among dogs in Hawaii, a single case could spread rapidly in the dog population — and potentially to monk seals.

Protozoal parasite exposure (e.g., *Toxoplasma gondii* and *Sarcocystis* spp.) has caused the death of at least seven Hawaiian monk seals (HMSRP, unpub. data, Honnold et al. 2005, Yantis et al. 2003) and the prevalence of exposure among the wild population is under continued investigation. While not yet present in Hawaii, the mosquito-transmitted West Nile virus was implicated in the death of a captive Hawaiian monk seal exposed on the United States mainland. Avian influenza is not yet present in Hawaii, but introduction of this virus would also pose a potential risk to Hawaiian monk seals (as well as to poultry, native birds, and humans). The population impacts of disease from other animal- or human-sourced pathogens, such as leptospirosis and brucellosis, are presently considered to be low, but remain under investigation and may

pose an increasing threat as human and seal populations increasingly come into close contact. At a population level, we are also concerned about the secondary and cumulative impacts of subclinical or chronic disease on foraging ability, reproduction, susceptibility to predation and overall fitness, but these effects are often difficult to separate and quantify.

Infectious and inflammatory causes are some of the more frequent causes of seal death in the main Hawaiian Islands, but are not currently widespread or limiting population growth. An infectious disease outbreak has not yet occurred, though it could have potentially catastrophic effects on the small monk seal population.

Strategies to address this challenge include outreach with the public to reduce the exposure risk to monk seals from domestic animals, effective monitoring and surveillance to assure early detection of an animal exposed to or showing signs of a disease of concern, and advance preparedness planning and capacity for response in the event of disease exposure. These strategies and associated actions and outcomes are described in detail in the section titled "Management Strategies:"

- HEALTH: Reduce infectious disease risk and disease-related mortality (see page 14)
- RESPONSE: Prevent and effectively respond to seals of concern (see page 25)
- EDUCATION: Increase outreach and education (see page 34)
- CAPACITY: Build program capacity (includes coordination and partnerships to support control of invasive species and climate change planning and response) (see page 39)

Human-seal Interactions

Monk seals and humans come into close proximity with each other on Hawaii's beaches and near-shore waters. Hawaiian monk seals come out of the water (or "haul-out") to rest, molt, and pup on Hawaii's shorelines and beaches as a necessary part of their natural behavior. In many cases, people and seals peacefully co-exist, but sometimes potentially harmful interactions occur between people and seals. People may seek a close observation or interaction with a seal, and some seals learn to seek out people for social interaction or food. Other times, people provoke seals through harassing behaviors, or may even injure or kill a seal.

Habituation: Many seals in the main islands are "habituated" to people who are also on beaches where seals rest and pup, meaning that the seals tolerate varying levels of human presence because they must be able to rest on beaches and coastlines in order to survive. Often, people and seals can successfully share beaches without conflict. However,

"You have to mālama this ʻāina. Because it takes care of you. And it is the same with the ocean and the koʻa iʻa. Take care of them because they take care of you."

- Saying spoken by Kūpuna between 1890 to ~2004, rooted in the traditional wisdom of the poʻe kahiko (people of old)

the close activity of people can also disturb resting seals, and an abruptly awakened seal may become aggressive. While the seal may not be injured through such an encounter, continual low-level disturbance can have cumulative effects on monk seal resting, as well as contribute to a seal becoming more and more habituated to humans.

Conditioning and Safety: If a monk seal is not only habituated to proximity with humans, but starts getting a reward of food or social interaction when it comes into close contact with humans, then it may become "conditioned." Conditioned seals will actively seek places where people fish or swim, in the hopes of obtaining food or social interactions. Conditioning leads to learned behaviors in seals that pose potential dangers for both monk seals and humans. If a seal has learned to seek out humans for food or for social interaction, their large size can pose a threat to human safety, even by a seal just wanting to "play." Seals conditioned to seek out human interaction may also be at a higher risk of exposure to disease and injury from domestic animals, and hooking and/or entanglement in fishing gear. In addition, the behavior of a conditioned seal may exacerbate negative attitudes toward seals from people who fear for their safety or become frustrated and angry when seals steal their bait and catch.

In some situations, NOAA Fisheries has moved conditioned monk seals away from the main Hawaiian Islands to the uninhabited Northwestern Hawaiian Islands, or even into captivity. Neither option is a good one for the seal population: in captivity, a seal is no longer a functioning part of the species, and translocation poses additional risks to the individual seal. So far, NOAA Fisheries placed one seal from the main Hawaiian Islands into captivity due to behavioral conditioning and other health problems that jeopardized both human safety and the safety of the seal. At least two seals have been moved to the Northwestern Hawaiian Islands — and thus removed from the breeding pool in the main Hawaiian Islands — due to behavioral conditioning leading to threats to their welfare and that of ocean users as described above.

Fisheries Interactions and Entanglement: Fisheries interactions range from superficial hookings of animals in the mouth or body, to serious injuries or even death from swallowed or embedded hooks, to drowning while entangled in nets. Monk seals also contend with entanglement in marine debris, which can include abandoned, discarded, and derelict fishing gear. Even non-fishing-related marine debris can be an entanglement hazard: NOAA Fisheries and partners rescued two monk seals entangled in packing straps in recent years. These entanglements can also lead to injury and death. Beyond the immediate physical impacts, experiences with monk seals as a part of normal fishing activities also influence people's attitudes and perceptions, potentially resulting in animosity and resentment toward seals that could drive someone to intentionally injure or kill a seal. Monk seals do depredate bait and catch, but due to challenges with logistics, legality, and lack of information, effective seal deterrents currently do not exist for widespread use by the public.

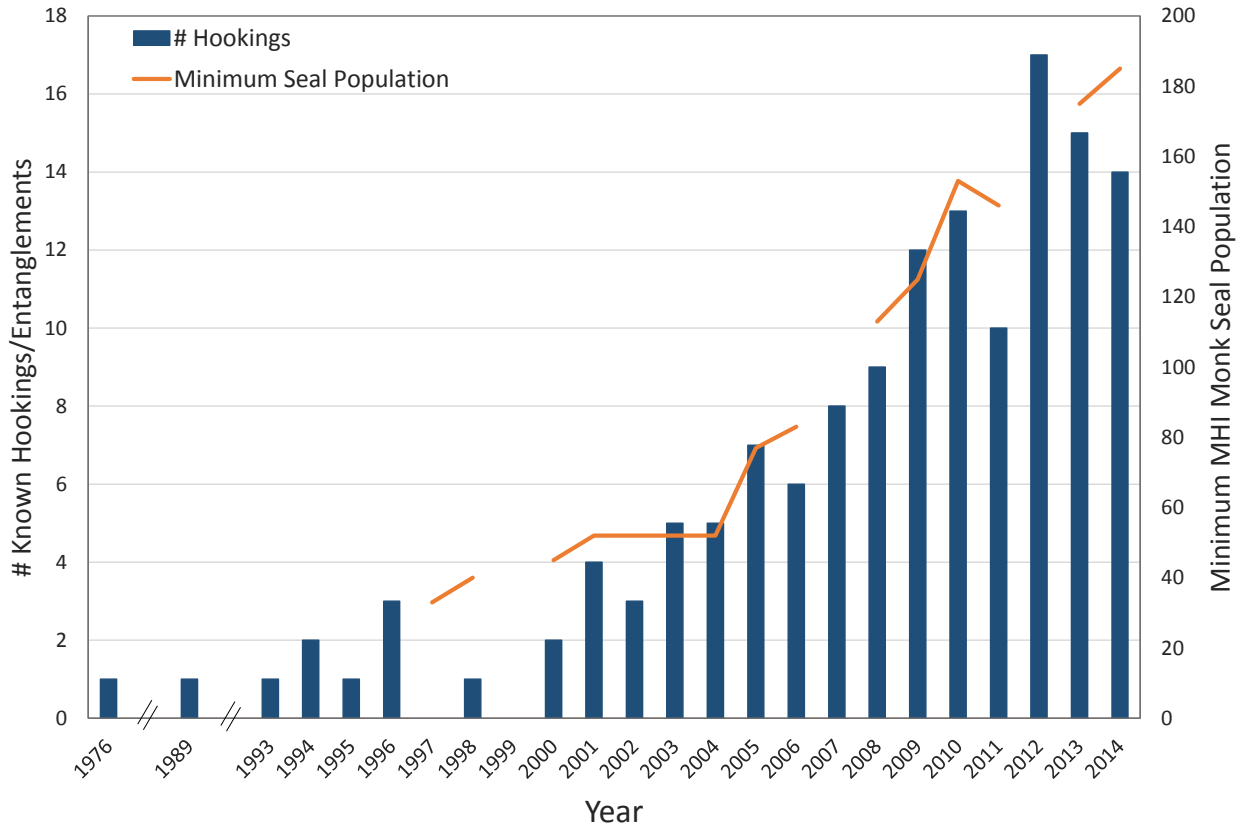

Figure 2. History of known Hawaiian monk seal hookings and entanglements from 1976 to 2014 (blue bars), and the monk seal minimum population size over the same period (orange line) (PIFSC unpublished data).

Records collected in the main Hawaiian Islands show at least 140 seal hooking and entanglement incidents from 1976 to 2014 (Figure 2). The number of annual hookings and entanglements has increased more or less proportionally to the increase in the main Hawaiian Islands monk seal population, though the relationship is complicated by a simultaneous increase in the human population (and number of people fishing), as well as increased awareness leading to greater reporting of seals observed with hooks or entanglement.

Injury and Killings: Intentionally killing or injuring seals is the most extreme type of human-seal interaction. Although killing seals is against federal and state law, at least four monk seals were shot in recent years, and three others died from traumatic head injuries, in which human violence was the most likely cause. These actions may be influenced by negative attitudes toward the U.S. government, misconceptions that monk seals are invasive species or responsible for depleted fish stocks and degradation of sea floor habitat, and more general community or personal feelings of disrespect and disenfranchisement by the government.

Strategies to address this challenge include working in partnership with fishing communities to develop best practices and technologies to prevent and minimize the likelihood of interactions with monk seals, engaging with the public and fishing communities to improve reporting of hooked or entangled seals, and developing effective planning preparedness and capacity for response in the event of a hooked or entangled seal. Additional strategies should work in concert to reduce the amount of human-seal interactions and disturbance of resting seals. A multi-pronged approach is necessary to achieve this, including building

capacity (including law enforcement), engaging communities and building local relationships to broaden knowledge and desire to participate in the protection of wild seals, developing prevention and effective responses to seals that are starting to develop undesirable behaviors, and increasing outreach and education threaded through all of the other strategies. These strategies and associated actions and outcomes are described in detail in the section titled "Management Strategies:"

- FISHERY PARTNERSHIPS: Reduce harmful monk seal-fishery interactions through engagement, outreach, and prevention (see page 19)
- RESPONSE: Prevent and effectively respond to seals of concern (see page 25)
- ENGAGEMENT: Engage communities and build local relationships (see page 31)
- EDUCATION: Increase outreach and education (see page 34)
- CAPACITY: Build program capacity (including law enforcement) (see page 39)

Habitat Threats

Several human-related factors pose a threat to monk seal habitat in the main Hawaiian Islands, including climate change, invasive species, coastal development, impairment to water quality, and modification of the seafloor.

The exact impacts of climate change on monk seals in the main Hawaiian Islands are unclear, but several effects are likely. Sea level rise can erode shoreline habitat the seals need for resting, pupping, rearing, nursing, and molting. In the marine habitat, ocean acidification and seawater warming can cause coral reef die-offs, which could disrupt the overall marine ecosystem around Hawaii and degrade monk seal foraging habitat.

Invasive species, especially invasive algae and fish, could affect Hawaiian monk seals. Possible impacts of invasive species include preying on native species that monk seals eat, out-competing native species for food or other resources, preventing native species from reproducing, killing their young, changing the food web dynamics in an ecosystem, and carrying or spreading disease.

Impaired water quality is one of the major effects people in coastal areas have on the ecosystem. Activities such as agriculture (fertilizers and pesticides), construction, manufacturing, sewage, gasoline combustion (driving), inadequate management of non-native ungulates, and littering can produce excess nutrients, sediments, toxic chemicals, and marine debris that pollute marine waters and degrade the habitats where monk seals reside. Even pet and farm waste allowed into the marine environment can carry pathogens and contaminants from terrestrial to marine habitats. In Hawaii, land-based activities are the primary source of polluted runoff or non-point sources of pollution. The potential consequences of non-point source pollution include increased risk of disease, algae blooms, fish kills, destroyed aquatic habitats, and turbid waters.

Coastal development may negatively affect the coastal habitats Hawaiian monk seals depend on by decreasing and degrading available shoreline habitat needed for resting, pupping, rearing, nursing, and molting. Less shoreline habitat, along with increased human presence in coastal areas, also increases the chances of human-seal interactions and seal disturbances. As inland development expands, upstream erosion increases, reducing buffer zones and leading to increased flushing of terrestrial pathogens and land-based pollutants to the coastal environment.

Activities that modify the seafloor may have a direct and long-lasting adverse effect on the marine habitats that Hawaiian monk seals depend on for foraging. These activities include dredging, ocean aquaculture, offshore energy projects (wind farms, wave energy buoys, and ocean thermal energy conversion projects), marine industrial construction and repair, seabed mining, and installing inter- and intra-island cables. Depending on the method and location of implementation of the activities, they could potentially degrade the quality of marine habitats for monk seals.

Strategies to address this challenge include engagement and education to empower and include communities and the public in the stewardship of their environment, as well as coordination and partnership with other agencies and organizations to improve knowledge and consideration of monk seal habitat needs in their decisions. We can also help minimize the effects of negative habitat alterations by working through partnerships and coordination with organizations that work under other laws and regulatory mechanisms, such as permits and authorizations issued under the Clean Water Act and the ESA, and planning and programs such as those executed by the State Coastal Zone Management Planning Office. These strategies and associated actions and outcomes are described in detail in the section titled "Management Strategies:"

- ENGAGEMENT: Engage communities and build local relationships (see page 31)
- EDUCATION: Increase outreach and education (see page 34)
- CAPACITY: Build program capacity through coordination and partnerships, support sustainable fishery management, sustainable coastal development, control of non-native and invasive species, climate change planning and response (see page 39)

Human Dimensions

We define "human dimensions" as the management capacity, communication and community engagement, and public knowledge and attitudes that influence every aspect of monk seal recovery.

Management capacity is the ability or capability of management agencies to care for the animals themselves through rescue, response, and other interventions, as well as the ability to adequately fund programs, partner with organizations and communities, and productively communicate and coordinate with other government agencies and staff. Program capacity and funding are necessary within the NOAA Fisheries recovery program, as well as other partners, to maximize skills and resources. For instance, sufficient resources are necessary to successfully engage communities and partner programs, consistently enforce existing conservation and environmental laws, address disease-causing pathogens, and identify and respond to seals of concern.

Communication and community engagement between and within the public, government, and non-governmental conservation community are very important. Quality engagement and communication are crucial to how the public's knowledge and attitudes about monk seals develop, and how successful NOAA Fisheries and its partners are in regulatory, funding, partnering, and coordination roles. It is important

for the government to build positive relationships with the public, Native Hawaiian and other local communities, fishing communities, and private businesses and landowners. Lack of community outreach programs, poor communication strategies, and inadequate community input (actual and perceived) into federal regulations and policies can hurt or prevent these relationships. Relationships between Hawaiian monk seal volunteers and members of the public or local communities are also important due to the one-on-one nature of the interaction. In many cases, a volunteer may be the only source of information that the public or local community has; therefore, it is immensely important that the information is correct and conveyed properly, with an appropriately respectful and inclusive attitude.

Public knowledge and attitudes about Hawaiian monk seals greatly influence support for or opposition toward monk seal conservation, as well as choices made by people when they directly encounter wild monk seals. Many factors influence knowledge and attitudes, including depleted local fisheries (exacerbating feelings of competition with seals), the seals' connection to Hawaiian culture, history and relationships between government agencies and communities, and people's scientific and environmental awareness. As discussed in the "Human-seal Interactions" section, in the most extreme form, negative public knowledge and attitudes may lead to intentional acts of harm toward monk seals.

Human dimensions of monk seal recovery are both a challenge and an opportunity. A lack of capacity or engagement, or poor public knowledge and attitudes, hampers successful monk seal management and recovery. However, adequate management capacity, good engagement of and relationships with communities, and effective outreach and education all serve as a foundational set of strategies to meet other seal management challenges, like disease response or reducing fishery impacts.

Strategies to address this challenge entail building positive management capacity, engagement, and outreach and education to support a functioning and innovative monk seal management and recovery program. These strategies and associated actions and outcomes are described in detail in the section titled "Management Strategies:"

- FISHERY PARTNERSHIPS: Reduce harmful monk seal-fishery interactions through engagement, outreach, and prevention (see page 19)
- ENGAGEMENT: Engage communities and build local relationships (see page 31)
- EDUCATION: Increase outreach and education (see page 34)
- CAPACITY: Build program capacity (see page 39)

Management Strategies

Management challenges facing monk seals in the main Hawaiian Islands are complex, so it is necessary to have multiple strategies working together to successfully address each challenge. As shown in Table 1, we designed the management strategies presented in this plan to address more than one management challenge simultaneously by aiming not only at the surface issues, but also at the foundation and source of the challenges.

		CHALLENGES			
		Infectious Disease	Human-seal Interactions	Habitat Threats	Human Dimensions
STRATEGIES	Capacity	x	x	x	x
	Education	x	x	x	x
	Engagement		x	x	x
	Response	x	x		
	Fishery Partnerships		x		x
	Health	x			

Table 1. Depiction of the relationship between the management challenges and the strategies necessary to address each challenge.

For each strategy, we present objectives and major activities necessary to achieve each objective. For each activity, we identify outcomes that we expect will result from successful implementation of the activities. Indicators are also listed for each objective. These indicators specify (mostly) quantitative results that will help measure and track implementation success over time and progress toward achieving outcomes. The indicators listed are a demonstrable subset of those we will use to track plan implementation, and are not an exhaustive list.

Throughout the strategies, there are roles for both NOAA Fisheries and partner organizations. We expect the nature and manner in which each activity is implemented may need to be adjusted from island to island to be as responsive as possible to the specific needs and resources within each island community and ecosystem. We expect our partners will be essential in helping identify and make these location- and community-specific adjustments in plan implementation. Appendix A contains a list of organizations that presently have a role in monk seal recovery, as well as those that are potential partners. The strategies presented in this plan will help guide partner organizations in identifying needed actions that they would like to support or lead for successful monk seal management and recovery.

While this plan is based on information gathered over many years of successful research and information gathering across the Hawaiian archipelago, we know that we will need new science and information to successfully accomplish many of the activities and outcomes in this plan. While NOAA Pacific Islands Fisheries Science Center would likely be the lead on investigating some information needs, we also envision participation from other qualified partners dedicated to science or research related to monk seal management and recovery. Additional research topics are well beyond the scope of NOAA Fisheries, so we hope that other partners may ultimately seek to address them.

NOAA intends to implement the strategies outlined in this plan over the next five years. However, as a "living document," NOAA expects that this document will be continue to be modified as necessary and appropriate, and will serve as the main guide for recovery and conservation in the main Hawaiian Island as long as the species is listed. Many of the activities described here are large-scale and require extensive resources. While some level of implementation will be possible under current levels of funding and resource availability, full implementation will require additional support and partnerships.

Strategy: **HEALTH** (HEA)

Reduce disease-related mortality

It is a strong possibility that a large disease outbreak will erupt among monk seals because of various risk factors, including infectious disease exposure from domestic and feral animals, other more far-ranging marine mammals, wastewater runoff, and contaminated streams. To successfully reduce disease-related mortality and prevent an infectious disease outbreak, we need to have an evaluation and reduction of exposure risk and disease transmission , early disease detection in the monk seal population (or in potential vector species populations)(Figure 3). Advanced preparation and implementation of strategies to treat affected animals and prevent disease spread are also needed. In all of these steps, it is extremely important to collaborate and communicate with other organizations.

Evaluating exposure risks and, as warranted, subsequently reducing transmission vectors is the first step in developing a strategy to address disease-related mortality. Prevention of disease exposure can include prevention of disease-causing pathogens from entering Hawaii's waters through animals and plants; this would require collaboration with state partners in animal health and quarantine. The public can play an important role by controlling animals and animal waste. Members of the public can also keep their dogs up-to-date on their vaccinations and keep dogs on leashes on the beach near monk seals to reduce the likelihood of disease transmission. Members of the public can also support feral animal control (including feral cats, rats, mongoose, pigs, sheep, goats, and game mammals such as deer and mouflon) and keep their own pet cats indoors to reduce the number of animals acting as vectors for diseases that already exist in Hawaii.

The next step is to make sure surveillance is strong enough to detect any incidents of exposure in the monk seal population or in other species' populations that may pose a risk to monk seals. Early detection is especially important for diseases that do not currently exist in Hawaii, but could pose a significant risk to monk seals. Improved communication and new partnerships with other organizations monitoring different types of wild and domestic animals will help improve our detection ability. Finally, NOAA Fisheries and partners need to prepare for rapid responses to prevent exposure throughout the monk seal population. Together, early detection of exposure,

E mālama pono i ka honua ola,
na ka honua ole i mālama iā 'oe.

Care for the living environment righteously, and the living environment will care for you.

- Saying spoken by Kūpuna between 1890 to ~2004, rooted in the traditional wisdom of the *poʻe kahiko* (people of old)

preventing transmission, and rapid response and treatment will slow disease spread in the monk seal population in the event that an instance does occur.

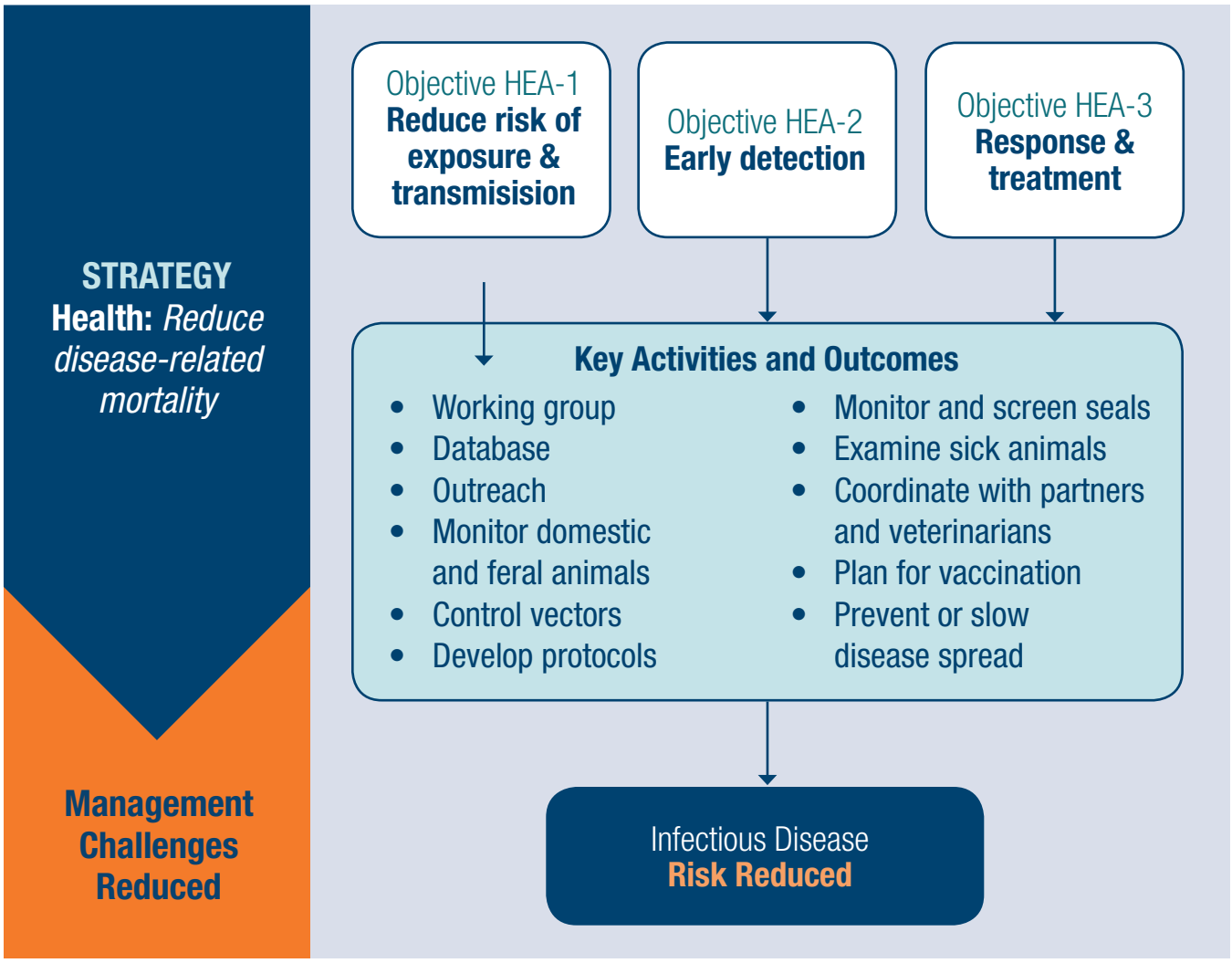

Figure 3. Diagram showing how the HEALTH strategy addresses the infectious disease management and recovery challenge. Three objectives (HEA-1, HEA-2, and HEA-3; white boxes) and associated key activities and outcomes (light teal green box) work together to reduce the risk of infectious disease (dark blue box).

Objective HEA-1:

Prevent: Evaluate and reduce risk of exposure and transmission of disease to monk seals

Activities	Outcomes
Create a formal contact/working group to address monk seal disease and reduction of feral animals.	Recovery program benefits from most up-to-date information on wildlife disease.
Create a framework to improve data-sharing between partners about the prevalence of pathogens found in monk seals in the main Hawaiian Islands (e.g., database, periodic reports, etc.).	Data on disease prevalence and incidents shared between organizations and used to inform managers and management actions across multiple wildlife species.
Conduct outreach and education about the risks of disease to seals from people, pets, and feral animals, and from seals to people, pets, and feral animals.	Fewer interactions between monk seals and humans/pets as a result of a public informed about disease risks to/from monk seals and disease-prevention practices.
Provide information on monk seals and disease vectors to schools and partner organizations to incorporate into curricula.	Next generation educated regarding the public's role in avoiding disease outbreaks in monk seals (and other wildlife).
Support efforts to monitor domestic and feral animals for disease.	Focused management activities as a result of better understanding of the existence, presence, and movement of pathogens through the environment and vector species.
Implement quarantine, vector control, and education programs (Recovery Plan Action 4.1.1).	Reduced risk of exposure of exotic diseases to the Hawaiian Archipelago.
Support stronger laws and regulations concerning invasive species management.	Lowered risk of new diseases entering Hawaii via invasive species and spreading to monk seals.
Support efforts to reduce the numbers of feral animal species (cats, rats, mongoose, pigs, sheep, goats, and game mammals such as deer and mouflon) in Hawaii.	Fewer vectors that could spread disease to monk seals and other native wildlife.

Indicators

- Formal contact/working group established by 2017.
- Data-sharing framework established by 2019 (# users participating).
- Fewer monk seal-human and monk seal-domestic animal interactions (# interactions recorded).
- Incorporate curriculum module about monk seals and disease into school marine sciences courses by 2018 (# classrooms using module, # of students with knowledge about monk seal diseases).
- Provide information on monk seals and disease vectors to at least 5 organizations that provide school classroom education by 2017 (# organizations informed and incorporating information).
- Monitor feral cat colonies for *Toxoplasma gondii*, within 5 years (# of feral cat colonies monitored).

Objective HEA-2:

Early Detection: Detect early incidences of disease in monk seal population

Activities	Outcomes
Maintain current disease monitoring and screening programs (Recovery Plan Action 4.3).	Timely detection of and response to disease incidence in monk seals.
Develop protocols for opportunistic sampling during other routine handling and research activities (Recovery Plan Action 4.1.3).	
Examine sick animals to determine the cause(s) of disease and treat appropriately (Recovery Plan Action 4.1.4).	Diseases treated before they have the ability to spread through the monk seal population.
Identify relevant state, federal, and other partners and programs with disease monitoring capacity and response (Such as Department of Agriculture, Health and Human Services, DLNR, USGS, local humane societies and shelters, state vets, State Health Board, Hawaii Veterinary Medical Association, local disease researchers, local universities).	Improved coordination, communication, and improved likelihood that the Monk Seal Recovery Program would learn about the early detection of a disease of concern in Hawaii.

Indicators

- Results from marine mammal strandings in Hawaii for diseases of concern provided to HMS program (% reports provided).
- Screen at least 5% of MHI monk seal population for disease annually (% monk seals screened annually).
- Contact veterinarians on each island about HMS disease concerns that should be reported to NOAA partners by the end of 2015 (# veterinarians contacted).

A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land. Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity.

- Aldo Leopold (author/ecologist/conservationist, 1887-1948), *A Sand County Almanac*

Objective HEA-3:

Response and Treatment: Be prepared with strategies to treat affected animals and prevent disease spread

<table>
<tr><th>Activities</th><th>Outcomes</th></tr>
<tr><td>Evaluate the use of vaccines in monk seals for high-risk diseases (Recovery Plan Action 4.1.6).</td><td rowspan="2">Rapid and effective response to a disease outbreak, preventing further spread.</td></tr>
<tr><td>Develop an emergency response plan for outbreaks of known high-risk diseases among monk seals (Recovery Plan Action 4.1.5).</td></tr>
<tr><td>Coordinate with and provide training to veterinarians, local humane societies, and partners on neighbor islands.</td><td>Increased disease surveillance and response capacity on neighbor islands.</td></tr>
<tr><th colspan="2">Indicators</th></tr>
<tr><td colspan="2">• Test and develop strategies for vaccination against appropriate pathogens with population-level risks for morbidity and mortality (e.g., West Nile and morbillivirus) by the end of 2019 (# vaccines tested and approved).
• Emergency response plan created by 2017 and delivered to relevant stakeholders (# stakeholders that receive the plan).
• Complete and release vaccination plans for monk seals by 2015 and update annually (plan completed and updates released).</td></tr>
</table>

Reduce Disease Risk – Scientific Support & Research Needs:

- Research on terrestrial sourced pathogens, such as *Toxoplasma gondii*, to better understand routes of exposure and risk management (or prevention through vaccination) — especially the prevalence and transmission of *T. gondii* in feral cat colonies, comparison of genotypes found in monk seals and in feral cat colonies, and the relative virulence of different genotypes of this pathogen in seals.
- Support investigations of current programs for monitoring pathogens in streams and in animals (feral and livestock). (Recovery Plan Action 4.1.1).
- Determine the severity of effects of various diseases on monk seals (from lethal to other sub-lethal population impacts, e.g., reduced birth or weaning weights, reduced reproductive success).
- Determine the efficacy of vaccines and the permanence of their effects, as well as side effects.
- Follow treatment strategies in a manner that generates valid scientific data for evaluation of treatment efficacy and refine strategies when necessary and possible.
- Monitor for disease in the Northwestern Hawaiian Islands to assess risk of transmission in both directions.
- Develop and communicate way to identify symptoms of highest disease concerns in the main Hawaiian Islands to train partners and volunteers in detecting potential seals of health concern. (Also an information need for the *Response* strategy.)

Strategy: FISHERY PARTNERSHIPS (FSH)

Reduce harmful monk seal-fishery interactions through partnerships, outreach, and prevention

It is in the interest of both fishermen and the Hawaiian Monk Seal Recovery Program to work together to develop solutions that will decrease the number of interactions between monk seals and fisheries. Interactions (hooking/entanglement and depredation of bait/catch) can result in lost gear or catch for fishermen, while behavioral conditioning and death or injury are concerns for seals. For many people, fishing is more than a hobby or livelihood. It is their identity, which links them to their culture and is an expression of who they are rather than only what they do for a living. As a result, to ask someone to change how or where they fish is not necessarily a simple request, and some may consider such a request as a challenge to their identity and culture. To foster sustainable collaboration and work toward common goals, NOAA Fisheries and its partners must build on current relationships and efforts to improve and increase trust and cooperative relationships.

NOAA Fisheries uses a 24-hour hotline (888-256-9840, reports may be made anonymously) to receive observations of hooked or entangled seals, as well as reports of interactions (e.g., depredation) or seal encounters and sightings. When a person reports an observation of a hooked or distressed seal to the 24-hour hotline, NOAA Fisheries and its partners can quickly engage a team of biologists and veterinarians to assist the seal, minimizing its chance for mortality or serious injury. Through reports of interactions from fishermen, NOAA Fisheries and partners may be able to use behavioral modification tools to deter a seal from repeated interactions with fishermen, and by doing so (if successful) may reduce frustration and impact on fisherman.

An important aspect of this strategy involves increasing the information flow of reported interactions by fishermen. Fishermen have already successfully used the hotline on a few occasions to report instances of seals taking bait and catch, particularly from spear-fishermen, and at least two fishermen self-reported to the hotline that they had accidentally hooked a seal. Both reports prompted responses that likely saved the seal's life, and the fishermen were praised for their proactive efforts to help minimize effects of the fisheries on protected species.

However, a significant factor in building more trust and encouraging more reports is assurance that neither NOAA Fisheries nor the state will prosecute accidental interactions, but will take action as appropriate to respond to help the seal or address problem seal behavior, and add the record of the incident to our ongoing assessment of the impact of fisheries on monk seals (and vice versa). Incidental take permits under Section 10 of the ESA are one mechanism for covering non-federal entities from the prohibitions against taking threatened and endangered species while carrying out otherwise legal activities, while minimizing and mitigating

Hānai a ʻai

Care for and eat from

(Spoken in the context of the custom of fishermen – you don't just take, you let the fisheries rest, and feed the fish, then you have fish to eat.)

- Saying spoken by *Kūpuna* between 1890 to ~2004, rooted in the traditional wisdom of the *poʻe kahiko* (people of old)

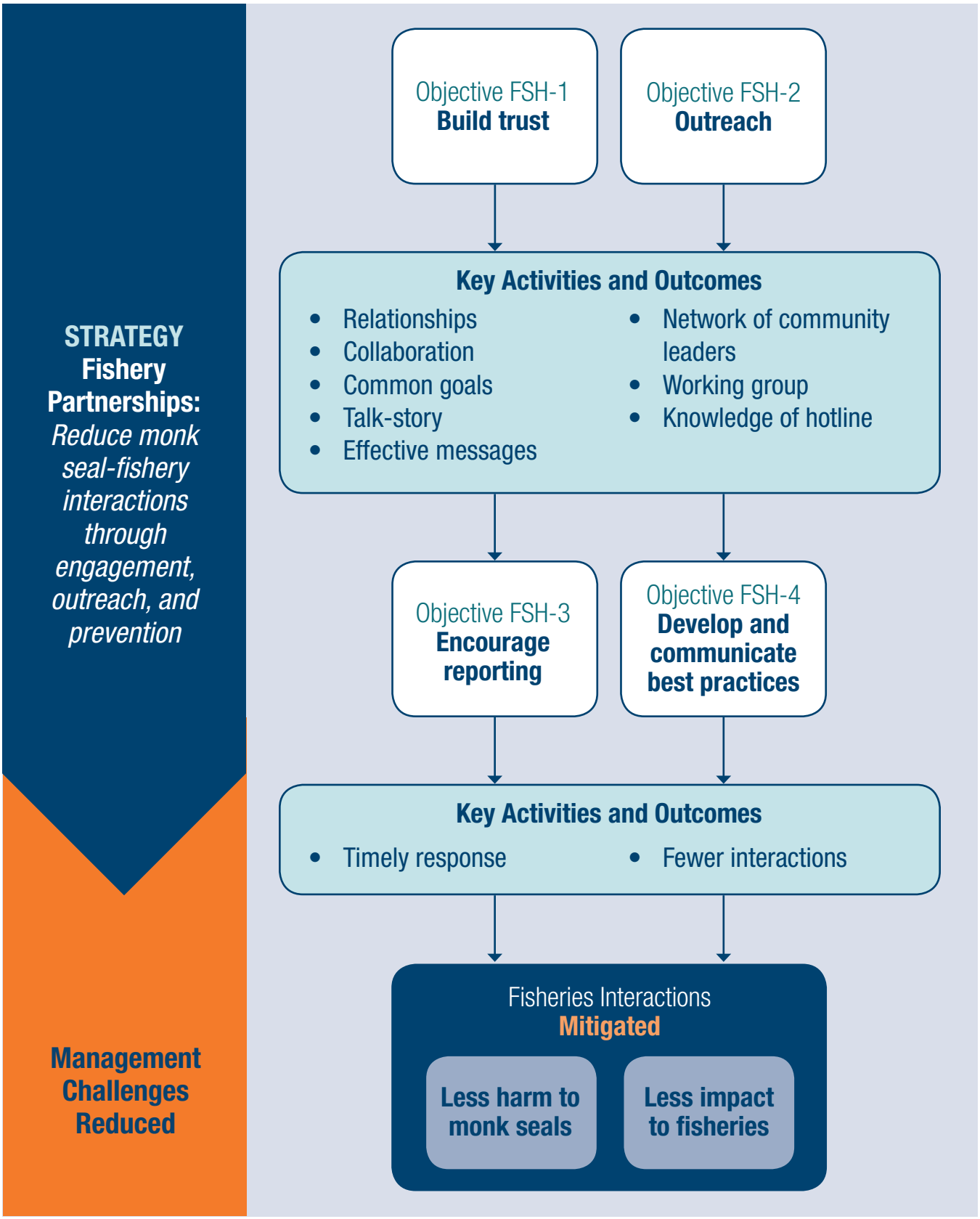

Figure 4. Diagram showing how the FISHERY PARTNERSHIPS strategy addresses the fisheries interactions management and recovery challenge. Four objectives (FSH-1, FSH-2, FSH-3, and FSH-4; white boxes) and associated key activities and outcomes (light teal green boxes) work together to mitigate fisheries interactions (dark blue box).

the adverse effects of their action on the listed species. We plan to use multiple metrics to avoid bias in the interpretation of the number of people reporting interactions or hookings. For instance, one could interpret increased reports of interactions alone to mean an increase in the total number of interactions or hookings actually occurring; however, the greater numbers of reports could instead be due to increased awareness and willingness to report.

Building on existing relationships, engaging further with fishermen, improving fishing gear and technology, and potentially collaboratively adjusting certain fishing methods are expected to result in fewer seals interacting with fishing gear, and less severe interactions when they do occur. One of the biggest challenges to implementing this strategy is that data and information on monk seal-fishery interactions are currently very limited, and past attempts to gain more information on a state-wide level have been met with distrust and unwillingness to share detailed experiences about interactions with fishing gear (including reporting from state and federal commercial fisheries). For this strategy to succeed, significant partnerships and progress are necessary to build trust with government agencies, and with individual fishermen and fishing organizations — this will lead to a more meaningful information exchange between fishermen and NOAA Fisheries and its partners.

Objective FSH-1:

Build Trust: Build trust and relationships with fishing communities and leaders to foster sustainable collaboration and cooperation and work toward common goals

Activities	Outcomes
Engage in two-way communication and open-ended "talk-story" sessions.	Opportunities to listen to the concerns of fishermen; building trust and cooperative relationships.
Convene monk seal-fisheries working group including NOAA Fisheries and DLNR staff, as well as experts and leaders in the fishing communities.	Improved relationships and communication between Monk Seal Recovery Program staff and fishing communities; informed monk seal fisheries-related efforts (e.g., education and outreach messaging, information/data gathering projects).
Identify and establish a network of fishing community leaders across the islands, including working with existing fishing groups such as casting clubs, Roi Roundup organizers, the Western Pacific Fishery Management Council, Hawaii Fishermen's Alliance for Conservation and Tradition, and other groups.	More effective communication and improved relationships; island leaders serve as liaisons between NOAA Fisheries and fishing communities as relationships develop.
Support marine habitat restoration and protection projects that would also benefit monk seals, including partnerships with community management efforts that promote sustainable fishing, habitat restoration and protection, and conservation of protected species.	Improved ecosystem health, to the benefit of monk seals and stakeholders.

Indicators

- Hold at least one "talk story" session focused on fishing issues on each island annually (# meetings held).
- Create working group of NOAA Fisheries and DLNR fisheries liaison staff and hold at least three meetings per year (# meetings of group).
- Network of fishing community leaders established (# of individuals in network).
- Restoration and protection projects supported (# of projects receiving support).

Objective FSH-2:

Outreach: Disseminate positive and accurate information within fishing communities to promote behavior that will help both monk seals and fishermen (Recovery Plan Action 13.5)

Activities	Outcomes
Produce and disseminate video using Crittercam footage with narrator who is well-known and respected in the fishing community.	Fishing communities receive accurate information about monk seal prey and foraging habits.
Support community outreach and education about the harm of illegal fishing and promoting responsible fishing practices.	Reduced ecosystem harm from illegal fishing, reduced strain on nearshore resources, and thus, reduced feelings of competition with monk seals.
Include outreach materials on responsible fishing around Hawaiian monk seals, as well as other existing fishing regulations and information, with new or renewal commercial licenses and vessel registrations.	Best fishing practices implemented and increased use of barbless hooks as a result of broader information distribution about how to avoid and report interactions with monk seals.
Place articles and ads in fishing, boating and ocean user-focused publications and other Hawaii marine-centric magazines.	
Continue to attend recreational fishing tournaments and proactively contact potential new events (number of tournaments varies per year, per island).	
Have a booth and give presentations (as appropriate) at fishing events, such as the Western Pacific Fishery Management Council Hawaii-based Council meetings and Fishers' Forums.	
Meet with tackle shop owners/managers on each island, provide outreach materials (coordinating with existing PIFSC and DLNR engagement efforts).	

Indicators

- Crittercam video released by DATE (# of screenings? # of organizations video sent to?).
- Within 5 years, at least 60% of fishermen in ulua tournaments use barbless hooks (% of fishermen using barbless hooks).
- Fishermen use best practices and gear that helps reduce interactions or minimize injury (# fishermen implementing best practices).
- At least one article or ad placed in marine-centric magazine annually (# of articles or ads).
- At least one non-commercial fishing tournament attended annually (# of tournaments attended).
- At least one booth/presentation at fishing events annually (# of booths/presentations).
- At least one tackle shop on each island displaying outreach materials (# of shops).

Objective FSH-3:

Reporting: Encourage and facilitate reporting of fishery interactions with monk seals to improve response for enhanced seal welfare and reduced impacts on fisheries

Activities	Outcomes
Clarify NOAA Fisheries enforcement policy on implications for reporting accidental monk seal-fishery interactions.	Increased likelihood of fishermen reporting interactions as a result of reduced concerns of being penalized for unintentional interactions;
NOAA Fisheries or DLNR staff participate in as many recreational and commercial fishermen meetings/events as possible.	Improved relationships; increased visibility and trust; increased likelihood of receiving reports of interactions and information sharing (both to and from NOAA Fisheries).
Increase knowledge about reporting hotline (for example: create tide-table calendars with phone hotline and other useful monk seal information).	Rapid reporting of interactions to improve response – both improving seal health and potential for mitigating impact on fisheries.
Investigate simplification of the hotline (e.g., 1 phone number with menu options to reach each island and for emergencies).	
Create smart phone app for strandings, entanglements, and enforcement.	

Indicators

- The number of reports of observed interactions decreases within 5 years (# reports of observed interactions, corrected for efforts to improve voluntary reporting).
- Self-reported monk seal fishing interactions (as a percentage of the total reports) increase within 5 years (# of self-reported monk seal fishing interactions).
- Create data collection and sharing framework between DLNR and NOAA Fisheries for monk seal interactions within 3 years (data collection and sharing framework created, # reports received).

The love of wilderness is more than a hunger for what is always beyond reach; it is also an expression of loyalty to the earth, the earth which bore us and sustains us

- Edward Abbey (author/environmentalist, 1927-1989, *Desert Solitaire*

Objective FSH-4:

Best Practices: Develop and communicate best practices to prevent and avoid monk seal-fishery interactions

Activities	Outcomes
Engage and collaborate with fishermen across various sectors to develop voluntary gear/fishing practices and an outreach program (may be similar to Dolphin SMART) (Recovery Plan Action 6.1.2).	Fewer and/or less harmful interactions between monk seals and fisheries (while minimizing impacts on fish catch and methods).
Identify and mitigate interactions with marine aquaculture (Recovery Plan Action 6.1.3).	
Coordinate with DLNR's ESA Section 6 program.	Improved relationships with fishermen and with DLNR; identified areas of common interest; information on best practices and mitigation developed and disseminated.
Support efforts to use existing best practices, including the Barbless Circle Hook Program.	Fewer interactions and minimized injury of monk seals when interactions do occur.
Create voluntary fishing gear disposal ethic in fishermen through education and coordination with existing marine debris programs (Federal, State, and NGO) (Recovery Plan Action 2.3.2).	Reduced entanglement of monk seals in fishing gear or debris.

Indicators

- Hold coordination meetings with DLNR at least bi-annually to discuss monk seal and fishery issues (# meetings held).
- Within 5 years, fishermen working with NOAA Fisheries to develop monk seal bycatch/take/depredation reduction devices, deterrents, strategies, or practices (# devices, strategies, or practices developed; # fishermen using).
- Fishing-related monk seal interactions and hookings/entanglements decrease in the next 5 years (# of fishing interactions; # of entanglements).

Fishery Partnerships – Scientific Support & Research Needs:

- Identify the level of direct and indirect interaction between commercial and recreational fisheries, including incorporating anecdotal information (Recovery Plan Actions 1.5, 6.1.1).
- Use diet analysis, foraging studies, nutritional status, and ecosystem monitoring to evaluate possible competition with fisheries (Recovery Plan Actions 1.1, 6.2.2).
- Research bycatch and depredation reduction, and deterrent techniques, methods, and technology to mitigate interactions (Recovery Plan Action 6.1.2).
- Conduct large-scale studies investigating the structure and demographics of Hawaii's complex and heterogeneous fishing communities to help target partnership, outreach/communications, and research efforts.
- Support DLNR efforts to quantify catch and number of fishers participating in recreational and commercial fisheries to help NOAA Fisheries assess prey overlap with Hawaiian monk seals and work to reduce interactions.
- Investigate whether interactions have specific characteristics (especially in the shore-casting fishery) that can help fishermen better assess whether or not they have hooked a monk seal and should provide a report (when they may not be able to see what took their gear).

Strategy: **RESPONSE** (RES)

Prevent and effectively respond to seals of concern

The NOAA Fisheries Hawaiian Monk Seal Recovery Program and partners already have a modest toolbox of options for intervening with monk seals of concern (both behavioral and health concerns), and are continually working to develop new tools to be prepared for different types of situations. In order to apply those tools to individual seals of concern, the program needs to receive timely reports, and then mount an effective response (Figure 5). Well-trained employees and partners, as well as available care facilities, are key foundations to successful response and management of seal situations.

Response can involve capturing seals and rendering medical care in the field or in a veterinary care/rehabilitation facility, but may also include determining that the best course of action is not to intervene. When effective prevention is paired with response to sick, injured, entangled, or stranded monk seals and appropriate treatment, that will increase seal health, and reduce the possibility of disease transmission from monk seals to humans. These responses are also opportunities for overall population health monitoring, as well as other research activities.

Mālama ke kai, ola ʻoe

Care for the ocean, you have life

- Saying spoken by *Kūpuna* between 1890 to ~2004, rooted in the traditional wisdom of the *poʻe kahiko* (people of old)

In addition to fishery interactions and disease considerations, monk seals occasionally become habituated or conditioned to approach people or domesticated animals for food or social interactions. These interactions can be dangerous for all participants. Historically, NOAA Fisheries typically intervened by first attempting to displace habituated or conditioned seals away from high-risk areas, and then, if the behavior persisted, by translocating the seal to locations where there are more seals and fewer human interactions. NOAA Fisheries is authorized to apply various behavioral management techniques or, in extreme situations, translocate monk seals within the main Hawaiian Islands, within the Northwestern Hawaiian Islands, or from the main Hawaiian Islands to the Northwestern Islands. As each situation entails a unique set of circumstances and complications, a variety of methods may be necessary to resolve each situation, including outreach and social marketing to affect human behavior (see EDUCATION strategy), or a suite of methods generally referred to as behavioral conditioning or behavior modification. The first step is always attempting to remove the positive feedback the seal receives from people and encourage the seal to resume normal, wild behaviors. The eventual application of seal behavioral modification techniques is usually limited, so outreach, education, and changes in people's behaviors are critical to avoid habituated and conditioned animals and keep seals wild. Behavioral modification techniques may include aversive conditioning, where NOAA Fisheries biologists expose seals behaving in an undesirable or dangerous fashion to unpleasant (but not harmful) experiences in order to discourage unwanted behavior, such as taking bait or catch from a fisherman. However, even the best behavior modification techniques will not be successful if people continue to reinforce undesirable seal behaviors. New effective tools and strategies will help to address new and developing seal (and human) behaviors in the main islands.

With effective outreach and the application of behavioral management techniques, we expect fewer habituated and conditioned monk seals, and fewer seals seeking out active fishing gear and other interactions with people. As a result, NOAA Fisheries expects fewer public safety conflicts between seals and humans, and fewer cases where it is necessary to translocate a seal away from the main Hawaiian Islands population. But ultimately, a variety of techniques are necessary to reduce the risk of nuisance seals, decrease conflicts between seals and public safety, and successfully recover monk seals in the main Hawaiian Islands.

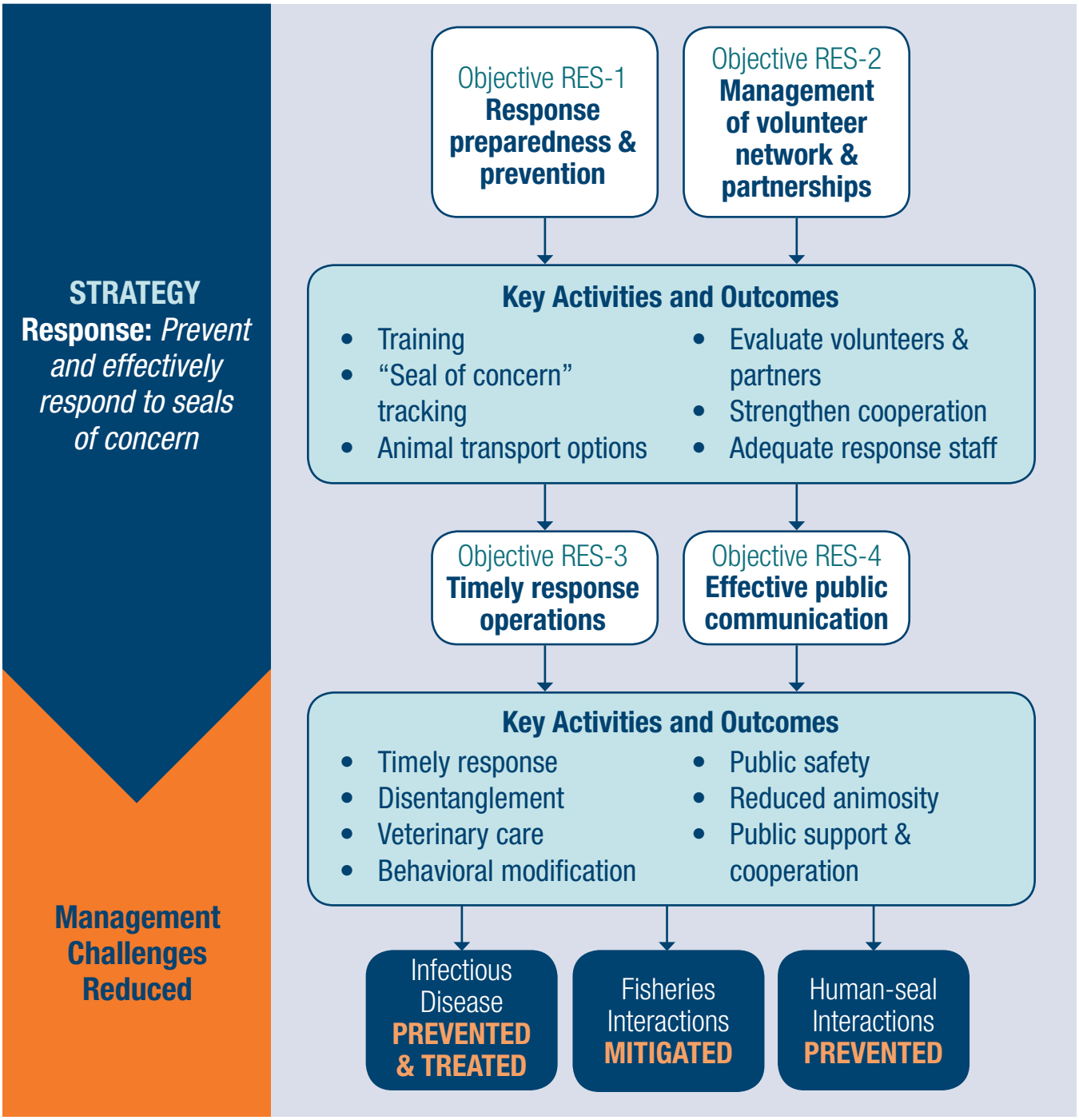

Figure 5. Diagram showing how the RESPONSE strategy addresses the infectious disease, fisheries interactions, and human-seal interactions management and recovery challenges. Four objectives (RES-1, RES-2, RES-3, and RES-4; white boxes) and associated key activities and outcomes (light teal green boxes) work together to prevent and treat infectious disease, mitigate fisheries interactions, and prevent human-seal interactions (dark blue boxes).

Objective RES-1:

Response Preparedness: Develop and maintain appropriate and proactive response preparedness and prevention

Activities	Outcomes
Remove debris from beaches (Recovery Plan Action 2.2.1.2).	Reduced entanglement (and injury) of monk seals in fishing gear or debris.
Train NOAA Fisheries and partners to respond to seals in the event of oil or other hazardous materials spills (i.e., HAZWOPR training) (Recovery Plan Action 10.2.2).	Rapid and effective response to minimize injury and impacts to monk seals.
Train partners for emergency response to sick, injured, or stranded monk seals (Recovery Plan Action 2.1).	
Develop and maintain appropriate response and contingency plans, files, techniques, and training, including how agencies work together during emergency events (Recovery Plan Actions 5.4.4, 10.2.5, 10.2.7, 10.2.8).	Improved efficiency and communication between agencies during responses and other emergencies.
Create "seal of concern" files for seals or areas with at least three reported interactions and response plans (and database with animals involved).	Increased ability of managers to detect and respond to potential seals of concern (either health- or behavior-related).
Work with NOAA Fisheries headquarters to develop marine mammal deterrent guidelines.	Increased number of tools available for behavioral modification of seals potentially developing concerning behaviors.
Maintain and strengthen relationship with the USCG to facilitate animal transport options.	Increased options in case there is a need to move sick/injured seals for veterinary treatment, or "problem seals" to reduce options for human interaction.

Indicators

- Less debris posing an entanglement risk (# of entanglements).
- Training in emergency response techniques completed by appropriate staff and partners (% and total # of staff trained).
- Marine mammal deterrent guidelines developed and disseminated (# fishermen provided with new guidelines).
- Deterrent tools developed and tested (# tools available/used by fishermen).
- USCG involved in animal transport efforts (# of transports performed by USCG annually).

Objective RES-2:

Volunteer Network: Expand and improve management of Hawaiian monk seal volunteer response network (Recovery Plan Action 8.1)

Activities	Outcomes
Continue to document and assess a variety of active and passive procedures for protecting seals that haul out on beaches (Recovery Plan Action 8.4).	Effective procedures used to reduce disturbance of seals on beaches while minimizing undesired impacts and promoting a culture of co-existence amongst beachgoers.
Develop improved and updated Volunteer Education Guides and materials, tools, and training modules.	Well-trained volunteers have the resources they need to interact with the public in a positive and productive way to educate and promote a culture of co-existence.
Evaluate/review those people and organizations who are empowered to help manage monk seals (e.g., volunteers, communities with monk seal stewardship plans, etc.).	Improved consistency of messaging and conduct; fewer conflicts and confrontations; improved relationships between volunteers and communities.
Strengthen cooperative efforts with agencies and organizations responsible for managing beach areas in the main Hawaiian Islands to manage monk seal haul-outs efficiently (Recovery Plan Action 5.4.1).	Volunteers and NOAA Fisheries staff are not needed to directly respond to every monk seal haul-out; reduced disturbance of monk seals and improved public safety.
Broaden the participation of individuals and organizations involved in the volunteer network, and empower response networks within each community, of residents or others who have ties to communities and are part of a well-managed stewardship initiative (e.g., Makai Watch, E Alu Pu).	Increased participation by communities in monk seal recovery; reduced antagonism and division between communities and volunteers.
Reduce inadvertent disturbance of monk seals by having adequate island coordinators and staff and volunteer groups (Recovery Plan Action 8.1).	Outreach campaigns reach a wider audience; reduced human-seal interactions.

Indicators

- Within 5 years, reduce the program of signage and roping-off of seals to only areas of high traffic or high tourist visitation (# or % of beach areas inhabited by seals that are signed and roped off).
- Train volunteers to use the least signs/ropes/space necessary by 2016 (# of volunteers trained to use the least amount of signs/ropes/space).
- Within 5 years, increase participation of volunteers in response network to reflect Hawaii's social and cultural diversity, including native Hawaiians (% of Hawaiian and other local volunteers).
- Increased positive community interaction with volunteers (# of community members interacting with volunteers).
- Reduced human-seal interactions (# of reported interactions).

Objective RES-3:

Response Operations: Promptly respond to monk seals of concern and render appropriate care or behavioral modification response when appropriate

Activities	Outcomes
Remove hooks from seals (Recovery Plan Action 6.1.5).	Reduced and minimized injury and mortality of seals due to hookings and entanglement.
Continue programs that facilitate the disentanglement of animals (Recovery Plan Action 2.1).	
Stay current with developments in the field of response and consider new methods for use in monk seal response (e.g., in-water capture techniques).	Use of newest techniques to increase effectiveness and safety.
Appropriately implement behavioral modification techniques.	Prevented or discouraged problematic seal behaviors that put the seal or humans at risk.
Work with currently permitted veterinary care and rehabilitation facilities.	Increased capacity and skills for responding to seal emergencies and caring for animals.

Indicators

- Respond to sick, injured, or stranded seals in feasible locations and render appropriate treatment (# and % seals responded to, compared to # reported, # serious injuries or mortalities averted).
- Increased response capacity (# new trained response staff, # of response-capable veterinarians).

The love for all living creatures is the most noble attribute of man.

- Charles Darwin (naturalist/geologist, 1809-1882)

Objective RES-4:

Public Communication: Effectively communicate with the public about seals of concern (also see Objective EDU-3)

Activities	Outcomes
Increase knowledge about the reporting hotline (including outreach messages, as well as through products that will help remind ocean users such as printing on beach and boating items, and encouraging people to add numbers to mobile phones).	Rapid reporting of interactions to improve response – both improving seal health and reducing instances of conditioned and habituated seals.
Create method for communication with the public to combat misinformation.	Increased transparency and trust in recovery program; increased understanding of the purpose and need for response interventions; improved information coming to the program.
Effectively use media interest to publicize rescue efforts to engage the public and invest them in monk seal recovery.	
Disseminate messages that viewing and living with wild animals enriches our lives, but is best done safely by respecting that monk seals are wild animals and may be unpredictable in their behavior, potentially posing a safety risk under certain conditions.	Fewer seals become habituated or conditioned as people exhibit desirable behavior, also improving their own safety.

Indicators

- Send out information (through newsletter, listserv, etc.) about monk seal recovery efforts at least twice per year by 2016 (# of communications distributed).
- Facilitate at least five media stories per year about monk seal response activities (# of stories per year).
- Fewer incidents of necessary interventions with habituated or conditioned seals (# of interventions, # of "problem" seals).

Response – Scientific Support & Research Needs:

- Develop effective monk seal behavioral modification techniques, potentially including aversive and other behavioral deterrents, displacement techniques, translocation techniques, etc.
- Develop and communicate way to identify symptoms of highest disease concerns in the main Hawaiian Islands to train partners and volunteers in detecting potential seals of health concern. (Also an information need for the Health strategy.)
- Continue to investigate predictive factors leading to animals that become conditioned seals, posing a safety risk to themselves and others.

Strategy: **ENGAGEMENT** (ENG)

Engage communities and build productive relationships

As discussed throughout this document, managing seals in the main Hawaiian Islands requires awareness of the social and cultural context of the islands and their cultures. To create a sustainable management program supported by partners and stakeholders, NOAA Fisheries must involve its partners and stakeholders early and build lasting trust and engagement in a variety of public sectors (Figure 6). This strategy recognizes that the process of community engagement and trust building is slow. But engagement and exchange of up-to-date information about monk seals creates better relationships between communities and the government. NOAA Fisheries staff can personally engage local communities and stakeholders one-on-one and listen to their concerns as the agency implements management strategies or actions.

NOAA Fisheries recognizes that Hawaii is composed of multiple communities essential to monk seal conservation. Communities must feel empowered to share in the conservation and recovery of monk seals, and the sharing of shorelines and beaches by people and monk seals. Communities can also be involved in their own outreach and education efforts, including teaching about the dangers of marine debris, responsible fishing practices, and adverse interactions with monk seals. By including more of Hawaii's diverse social and cultural groups in place-based stewardship and monk seal recovery (including the volunteer response network), we expect to enhance connections with local communities. This strategy intends to: support non-violent means of resolving conflicts with (or about) monk seals, increase understanding of monk seals' impact on the ecosystem so seals are seen less as a competitor for targeted fish species, and positively affect the way people behave around seals in the wild to reduce conflicts and adverse interactions between people and seals.

Hoʻokāhi No ʻOhana, Mai Uka a i ke Kai, Mai Kahi Pae a Kahi Pae

We are all one family, from the uplands to the sea, from one boundary to the next boundary

- Saying spoken by *Kūpuna* between 1890 to ~2004, rooted in the traditional wisdom of the *poʻe kahiko* (people of old)

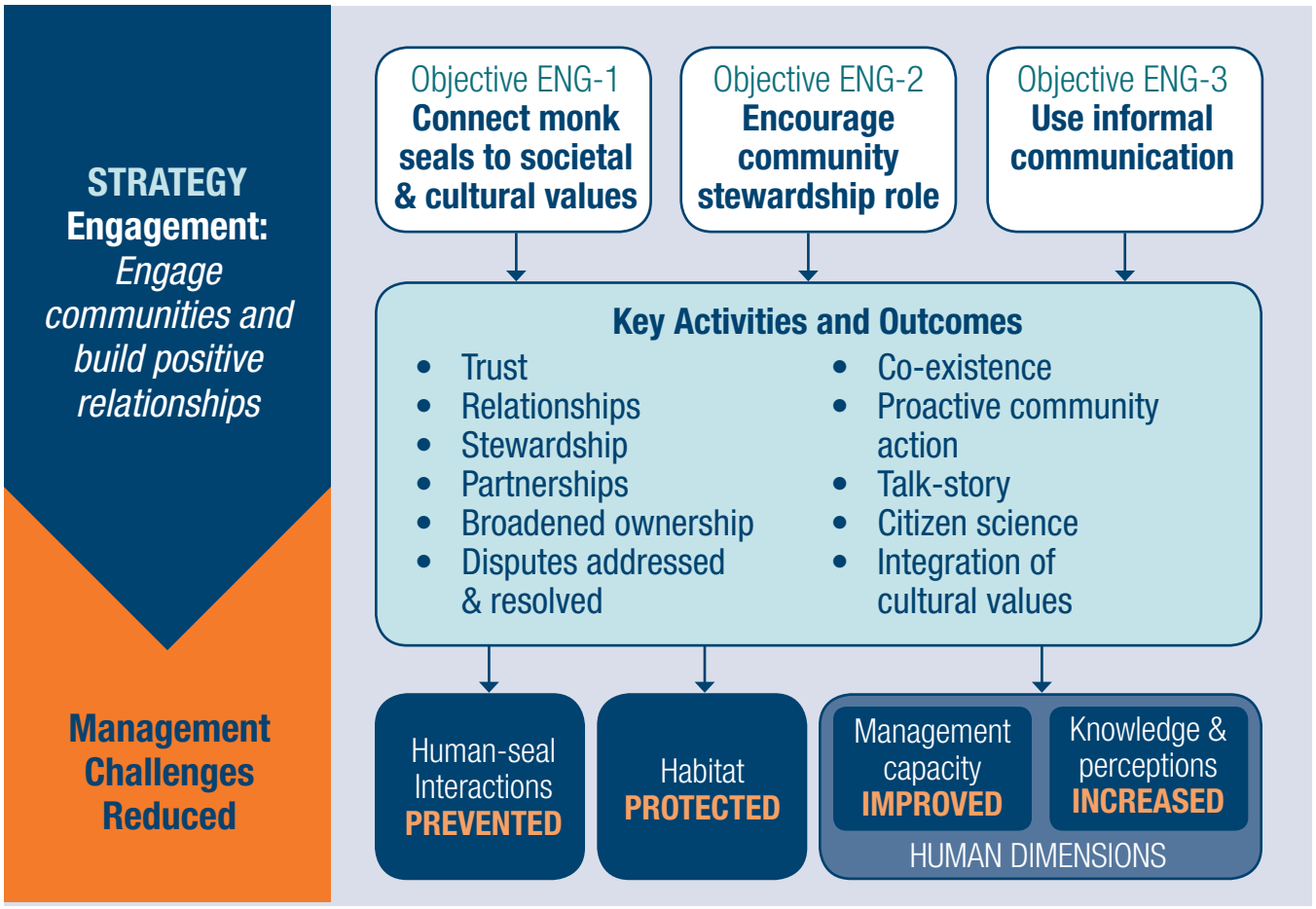

Figure 6. Diagram showing how the ENGAGEMENT strategy addresses the human-seal interactions, habitat threats, and human dimensions management and recovery challenges. Three objectives (ENG-1, ENG-2, and ENG-3; white boxes) and associated key activities and outcomes (light teal green box) work together to prevent human-seal interactions, protect habitat, improve management capacity, and increase knowledge and perceptions (dark blue boxes).

Objective ENG-1:

Values: Connect monk seals to important societal and cultural values to promote conservation values and a culture of co-existence

Activities	Outcomes
Integrate traditional Hawaiian knowledge and values into educational materials.	Monk seals connected to societal and cultural values; information provided to supporters to help spread positive information.
Engage Hawaiian cultural and community leaders to create testimonials and make public statements.	Increased support for monk seal conservation; creation of social norms to work toward monk seal recovery.

Indicators

- Educational materials and statements with Hawaiian knowledge included (# of materials and statements).

Objective ENG-2:

Community Role: Encourage communities to take a proactive stewardship role in monk seal recovery to broaden ownership and build trusted community-based framework for addressing issues and disputes about monk seal conservation

Activities	Outcomes
Support development of community-based monk seal stewardship plans, and work with interested communities on existing stewardship plans to incorporate monk seals into their plans (Recovery Plan Action 5.4.1).	Increased participation by communities in monk seal recovery; broadened ownership and investment in monk seal recovery; reduced antagonism and division between communities and the recovery program.
Partner with existing community-based natural resource and habitat management initiatives, especially Hawaiian initiatives, such as the Aha Moku initiative, and Hawaiian fish pond projects.	
Establish and facilitate a Hawaiian cultural subcommittee (or working group) within the Hawaiian Monk Seal Recovery Team to provide guidance on all aspects of community engagement and plan implementation (Recovery Plan Action 14.5).	Hawaiian cultural practices and concerns addressed via effective and thoughtful community engagement efforts.
Cooperate with communities and other organizations on broader (i.e., not directly monk seal-related) activities that support broader missions of monk seal recovery and habitat/ecosystem protection.	Demonstrated care for broader issues; improved trust and cooperation between the recovery program and communities.
Create citizen science program, including sighting/ reporting portal or app and educate citizens on use.	Broadened ownership and inclusion in collaborative research program; improved data quality and reporting of monk seal emergencies.

Indicators

- Within 5 years, initiate partnership effort with at least one established, self-organized community on each island where there are interactions among people and seals (# of partnerships, # of communities with stewardship plans).
- Within 3 years, establish at least one well-known local point-of-contact on each island to whom most local community members feel comfortable reporting (# of local connections/contact people).
- Develop conflict management and cultural awareness trainings for staff and volunteers by 2017 (# of trainings created).
- Train 100% of recovery program staff and volunteers in Hawaiian cultural awareness by 2018 (# of staff and volunteers trained).
- Disputes addressed instead of intentional killing of monk seals (# of seals killed).

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land ... It implies respect for his fellow-members, and also respect for the community as such.

- Aldo Leopold (author/ecologist/conservationist, 1887-1948), *A Sand County Almanac*

Objective ENG-3:

Informal Communication: Increase use of informal communication to build trust and increase dialogue about monk seal conservation

Activities	Outcomes
Conduct education and outreach on monk seal natural history and coexistence (monk seal facts, prey consumption/foraging, myths and misperceptions).	Misconceptions addressed and positive information provided to supporters to help spread accurate information; community concerns addressed.
Engage in two-way communication and open-ended "talk-story" sessions in communities where invited.	Increased trust and relationships; more forums for discussion of community concerns and ability for NOAA Fisheries staff to hear about issues; improved framework for positively resolving conflict.
Use local volunteers to conduct one-on-one education.	Increased participation by communities in monk seal recovery; reduced antagonism and division between volunteers and communities.

Indicators

- Hold at least two informal face-to-face meetings with interested individuals or groups on each island per year (# of face-to-face meetings).
- Local volunteers engaged in one-on-one education efforts (# of volunteers engaged).

Engagement – Scientific Support & Research Needs:

- Research monk seal foraging, natural history, cultural history, etc. to answer community questions (include communities and school groups in research, if possible).
- Research additional Hawaiian cultural connections to monk seals, including attempting to identify unclassified archeological midden material for monk seal remains and conducting further interviews with community leaders and elders from Niihau and elsewhere.

Strategy: EDUCATION (EDU)

Increase effective outreach and education

Building on existing outreach efforts, the outreach and education strategy addresses several challenges facing monk seals in the main Hawaiian Islands. NOAA Fisheries expects that the more that Hawaii residents and tourists have accurate information about monk seals, the better they will: support monk seal recovery by reducing the spread of misinformation; reduce aggression and violence toward monk seals, and support co-existence with seals on the beach and in the water; control off-leash dogs near seals; and promote safer fishing practices around seals. An effective outreach and education strategy should be tailored to the different islands to empower

community members and support the strategy to increase community engagement in monk seal recovery Figure 7). Changing attitudes and increasing knowledge is not a one-time endeavor or a "one-size-fits-all" approach for Hawaii's diverse communities. Successful outreach and education activities all require imparting the belief that individual actions make a difference, and getting to this point will take a concerted effort by a variety of partners and stakeholders. When residents and visitors are aware of monk seal issues, know the rules and guidelines, and choose to behave in a way that allows seals to remain wild, NOAA Fisheries expects fewer negative interactions and public safety issues, and fewer seals becoming conditioned to humans (and becoming at risk of other negative interactions with fisheries and domestic animals).

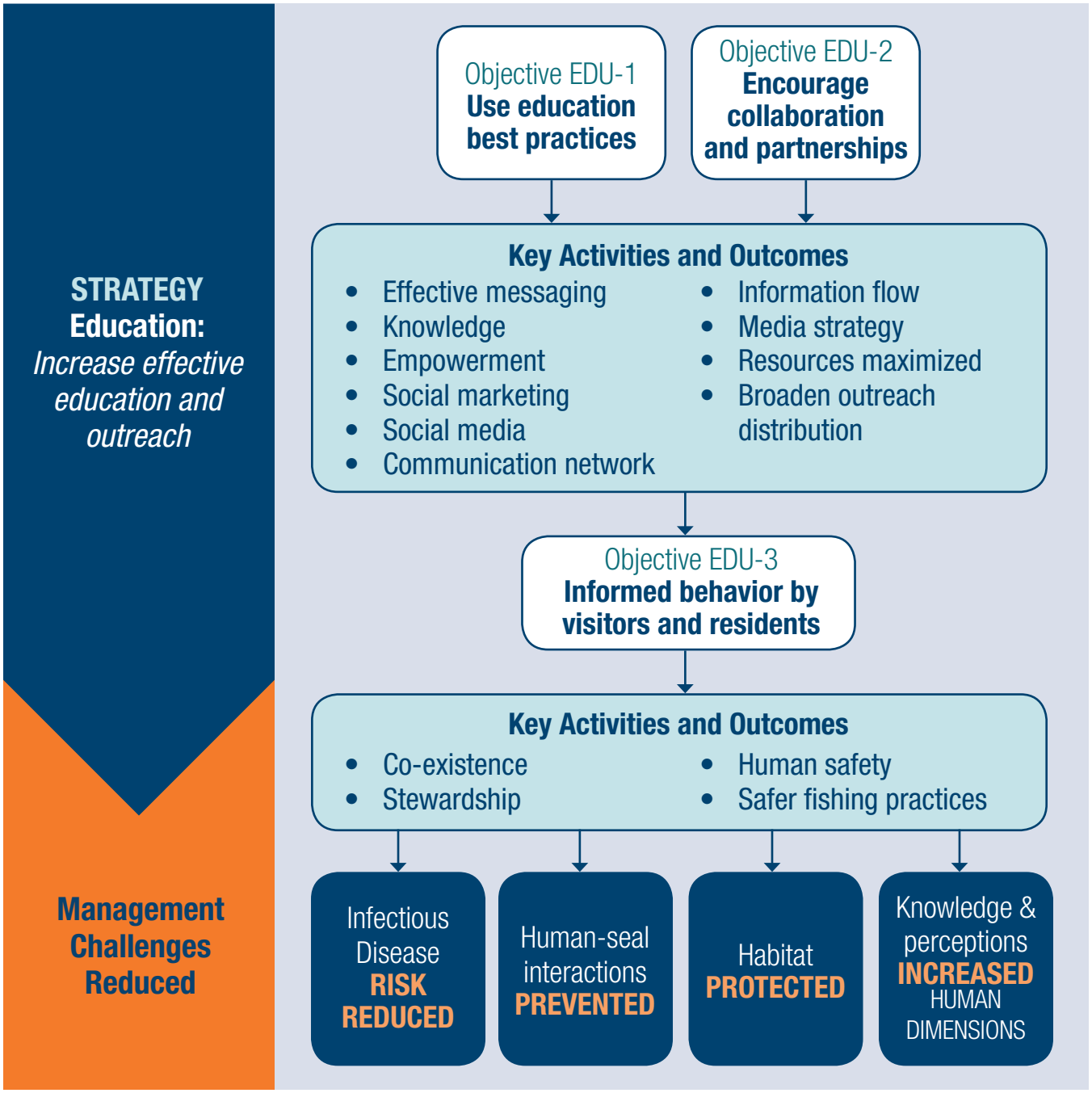

Figure 7. Diagram showing how the EDUCATION strategy addresses the infectious disease, human-seal interactions, habitat threats, and human dimensions management and recovery challenges. Three objectives (EDU-1, EDU-2, and EDU-3; white boxes) and associated key activities and outcomes (light teal green boxes) work together to reduce the risk of infectious disease, prevent human-seal interactions, protect habitat, and increase knowledge and perceptions (dark blue boxes).

Objective EDU-1:

Best Practices: Use best practices and educational principles in outreach and education efforts

Activities	Outcomes
Treat education as a step-by-step process rather than singular projects.	Public motivated to behave safely and respectfully around monk seals and marine wildlife as a result of effective outreach that reaches and resonates with target audiences.
Emphasize common ground and values that are beneficial for communities and monk seal conservation.	
Effectively use social media to disseminate information.	
Support youth-focused educational programs to raise monk seal awareness and ocean science literacy, including include venues, activities, games, and outreach focused on youth outside school environment (such as after-school programs, educational and cultural fairs, etc.).	Outreach campaign using messages and techniques to influence sustainable and widespread behavior change; social norms created to foster culture of coexistence and reduce harmful human-seal interactions.
Implement large-scale social marketing campaign to disseminate priority messages and foster behavior change in people (Recovery Plan Actions 13.3, 14.2).	
Include long-term media and public relations strategies for conveying monk seal messages to the public (e.g., recurring columns in local newspapers, regular monk seal segment on morning radio or televisions shows) (Recovery Plan Action 13.3).	
Use a performance monitoring and evaluation system (Recovery Plan Action 13.4).	Effectiveness of outreach measured, summarized, and reported; program modified accordingly to enhance effectiveness.
Establish and facilitate an education and outreach subcommittee (or working group) within the Hawaiian Monk Seal Recovery Team to provide guidance for outreach and education activities (Recovery Plan Action 14.5).	Effective, thoughtful, and inclusive outreach efforts.
Inventory and curate existing monk seal educational resources across partner organizations (e.g., fact sheets, activities, coloring books, multiple 4th grade curricula, etc.).	Better accessibility and efficiency of resource sharing (and less repetition of efforts) between organizations doing monk seal outreach; improved messaging consistency.

Indicators

- Disseminate positive and effective messages using appropriate channels and tools (# of messages disseminated, # of partners disseminating information, # of additional partners over previous year).

ʻAʻohe pua ka ʻike i ka hālau hoʻokahi.
All knowledge is not learned in just one school.

- Olelo Noʻeau No. 203

Objective EDU-2:

Collaboration and Partnerships: Encourage collaboration and coordination to improve partnerships, increase information flow and transparency, and broaden the distribution of monk seal outreach

Activities	Outcomes
Build communication network with local NGOs and others.	Information shared to target diversity of audiences via current and improved outreach materials.
Create forum (e.g., online message board, working group) to share knowledge about what groups on each island are doing on behalf of monk seal could be among all groups on that island.	Improved coordination, transparency, and economies of scale.
Partner with other outreach organizations and community-based education initiatives to maximize resources.	
Work with and provide information, materials, and briefings to partners (e.g., Western Pacific Fishery Management Council, the NOAA Sanctuary and Monument programs, etc.).	Staff and partners provided with information and supported in their outreach; outreach materials collaboratively developed.
Improve information flow back to public, stakeholders, and partners.	Increased transparency and trust in the recovery program; improved coordination.
When possible, equip existing community-based initiatives with material, training, and support directly from NOAA Fisheries.	Increased consistency of messaging; messages shared with broader diversity of audiences.
Tie monk seals into already existing programs with broader focus (e.g., responsible fishing practices, ocean safety, habitat restoration).	Messages about monk seals disseminated to broader audiences; improved efficiency and reach of outreach efforts.
Coordinate messaging about monk seals with those about other endangered species, marine mammals, and protected species issues.	Less confusion in the public about protected species issues and different programs.
Support an integrated education and outreach program by NOAA Fisheries (in close collaboration with other government agencies and NGO partners) (Recovery Plan Action 14.2).	Human disturbance and other adverse impacts minimized; increased support for conservation activities.

Indicators

- Create system for effective communications with NGO partners by the end of 2015 (communication system created).
- Materials and briefings provided to partners (# of partners receiving briefings/materials).
- Community-based initiatives equipped with materials and training (# of initiatives receiving materials/training).

Objective EDU-3:

Informed Behavior: Create educated visitor and resident populations who are informed and take action to minimize interactions with monk seals to support recovery (also see Objective RES-4)

Activities	Outcomes
Create public mailing list and send out periodic updates on recovery program via e-newsletter.	Information shared to target diversity of audiences via current and improved outreach materials.
Target specific resident and tourism sectors and events for outreach and education (e.g., Work with HTA and mainland NGOs to create a public awareness campaign) (Recovery Plan Action 13.5).	Increased efficiency of outreach program; human disturbance and other adverse impacts minimized.
Increase awareness of priority monk seal issues with local media ads.	
Develop a recognition program for commercial entities engaged in monk seal recovery (targeting dive shops, tour operators, fishing gear shops, boat supply stores, etc.).	Increased effectiveness of messages reaching target audiences; increased buy-in and participation in monk seal conservation.
Create month-long campaign on monk seals and endangered species and tie into other organizations' themes (e.g., monk seal month at Hanauma Bay, World Oceans Month, etc.).	
Create a fact sheet with top monk seal questions and answers.	

Indicators

- Send out information (through newsletter, listserv, etc.) about monk seal recovery efforts at least twice per year by the end of 2015 (# of communications distributed).
- Monk seal recovery recognition program developed by 2018 (program developed).
- Monk seal social marketing and awareness campaign launched by 2017 (campaign launched).
- Monk seal fact sheet completed by 2016 (fact sheet completed).

Education – Scientific Support & Research Needs:

- Social science studies assessing public perceptions/attitudes about monk seal conservation.
- Investigations into how to best use social media to disseminate messages and affect perceptions and behavior.
- Identification of target audiences and barriers to desired behavior around monk seals.

At the same time that we are earnest to explore and learn all things, we require that all things be mysterious and unexplorable, that land and sea be indefinitely wild, unsurveyed, and unfathomed by us because unfathomable. We can never have enough of nature.

- Henry David Thoreau (poet/naturalist, 1817-1862, *Walden: Or, Life in the Woods*

Strategy: **CAPACITY** (CAP)

Build program capacity

Hawaiian monk seal conservation and recovery depend on the ability of federal and state management agencies to effectively regulate and adequately fund programs; partner with appropriate organizations and communities; and productively communicate and coordinate with government agencies and officials, NGOs, and communities (Figure 8). Thus, this strategy supports reducing and minimizing every threat to monk seals in the main Hawaiian Islands and the major underlying factors that contribute to those threats.

First, NOAA Fisheries needs to create an effective process of collaboration and engagement with agencies and NGOs, elected officials, and communities. Some of the more important activities to improve and increase management capabilities center on law enforcement, volunteer management, and information flow. Increased communication and engagement should lead to improved attitudes, greater support and advocacy for the program by partners, increased knowledge of issues and compliance with laws and guidelines, and an overall greater commitment to monk seal recovery.

NOAA Fisheries does not have direct management jurisdiction over terrestrial activities such as coastal development (e.g., residential, industry, and farming). However, the agency can work more closely with partners such as the state Office of Planning and Coastal Zone Management Programs to reduce the impact of terrestrial activities on the health of Hawaiian monk seals and their marine habitat.

A healthy near-shore ecosystem benefits both people and monk seals. Misperceptions may drive some of the ill-intentioned adverse interactions between people and monk seals, such as people blaming monk seals for the state's depleted fish stocks and degraded sea floor habitat. By supporting change in the real drivers that are responsible for the depleted state of Hawaii's fisheries, the perceived level of competition between monk seals and fisheries should decrease, potentially changing the negative attitudes and feelings that people may have about monk seals. If people are satisfied with the state of the near-shore fisheries, then they should have less of a perception of competition with monk seals and feelings that the ecosystem is stressed. Effective implementation of this strategy is likely to affect the successful implementation of other strategies.

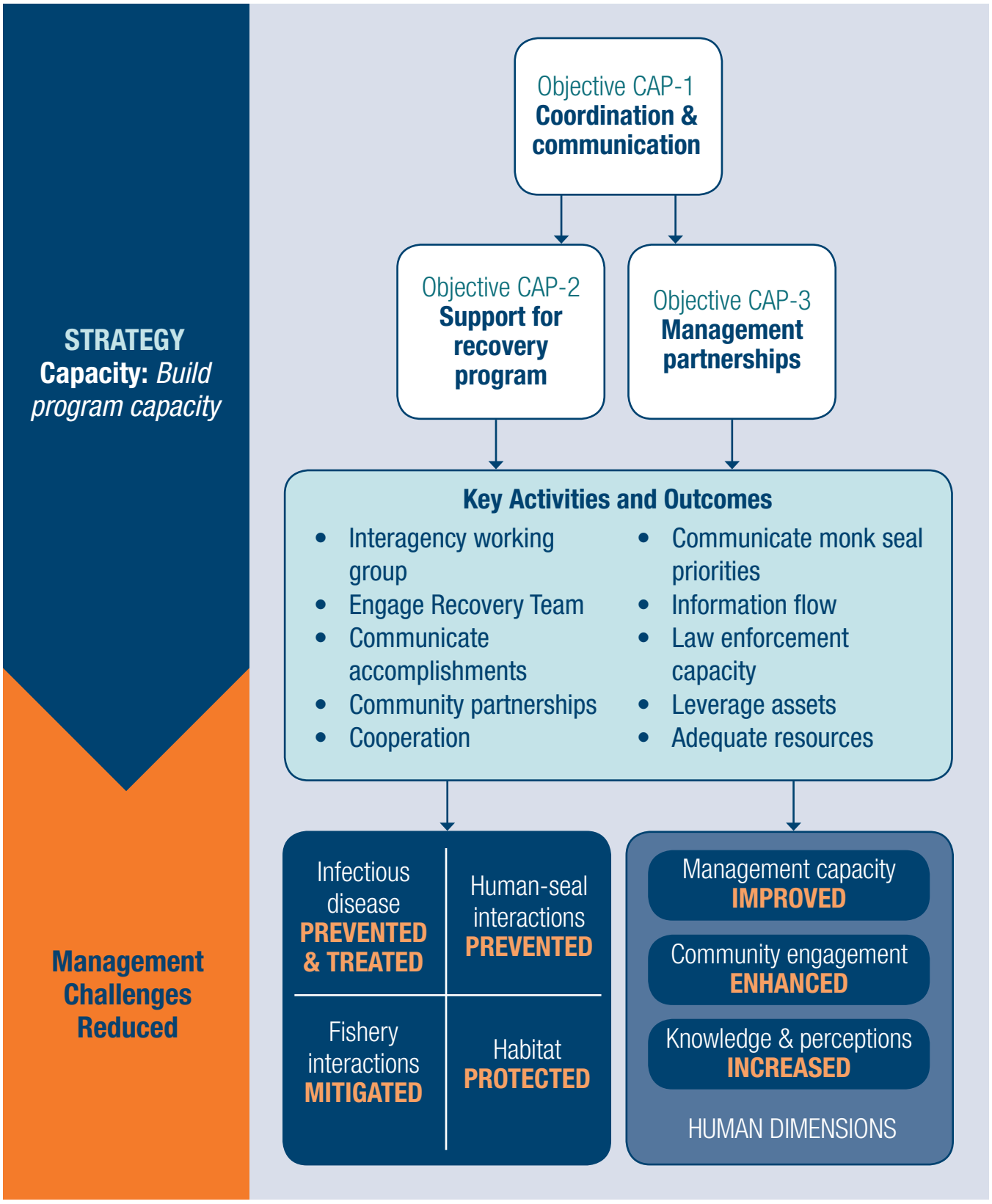

Figure 8. Diagram showing how the CAPACITY strategy addresses the infectious disease, fishery interactions, human-seal interactions, habitat threats, and human dimensions management and recovery challenges. Three objectives (CAP-1, CAP-2, and CAP-3; white boxes) and associated key activities and outcomes (light teal green box) work together to prevent and treat infectious disease, mitigate fisheries interactions, prevent human-seal interactions, protect habitat, and improve management capacity, enhance community engagement, and increase knowledge and perceptions (dark blue boxes).

Objective CAP-1

Coordination and Communication: Productively coordinate and communicate with partners and stakeholders

Activities	Outcomes
Create interagency monk seal working group, which holds regular quarterly or bi-annual meetings.	Improve communication, coordination, and efficiency of recovery activities.
Engage Hawaiian Monk Seal Recovery Team (Recovery Plan Action 14.5).	External advice received; increased effectiveness of recovery implementation and coordination.
Work with local and non-monk seal NGOs, increase community involvement, leverage other volunteer groups, and coordinate with community-based management groups such as Makai Watch (Recovery Plan Action 5.4.1).	Multiple organizations leveraged to increase the scope of monk seal recovery activities; increased participation in monk seal conservation; improved trust and cooperation between organizations.
Improve communication and engagement between NGOs and other federal and state government agencies and organizations on near-shore ecosystem-based management issues.	Improved management and increased coordination on issues that affect monk seal habitat.
Support increased law enforcement capacity and effort (e.g., support increased funding and coordination between Office of Law Enforcement (OLE) and other departments, and conduct regular briefings/meetings) (Recovery Plan Action 8.6).	Reduced illegal activities and harassment of monk seals; reduced stress on nearshore marine resources (and thus reduced competition between fishermen and monk seals).
Build partnerships with and train volunteers from other organizations.	Improved efficiency and broadened reach of conservation messages and activities.

Indicators

- Create interagency monk seal working group by 2016 and hold regular (quarterly or bi-annual meetings) within 2 years (# meetings of working group, # of action items generated)
- Create partnerships with at least one new organization or partner each year (# of new partnerships).
- Incidents of monk seal harassment reduced (# of incidents reported).

Maikaʻi ka hana a ka lima, ʻono no ka ʻai a ka waha.
When the hands do good work, the mouth has good food to eat.

- Saying spoken by *Kūpuna* between 1890 to ~2004, rooted in the traditional wisdom of the *poʻe kahiko* (people of old)

Objective CAP-2

Support: Build support for the recovery program and adequate budgetary, staffing, and partnership resources to effectively implement other strategies

Activities	Outcomes
Encourage the state to increase their role in monk seal recovery and management (e.g., DLNR, DBEDT, Office of Hawaiian Affairs, CZM, Department of Health, etc.).	Greater resources directed to monk seal recovery and management needs; improved coordination.
Improve communication with elected officials (federal, state, and local) about accomplishments and needs.	Increased understanding of monk seal management needs; increased support for the monk seal recovery program.
Increase communication to public and other partners about program accomplishments and needs.	
Improve outreach on federal recovery and management processes, (e.g., funding process, recovery planning, etc.).	Increased understanding by partners and the public of what is needed to save monk seals; action taken by concerned citizens and partners to support the recovery program.
Adapt and increase staffing needs and leverage partner resources (Recovery Plan Action 14.3).	Seal management challenges in the main Hawaiian Islands addressed.

Indicators

- Communicate accomplishments and needs to federal, state, and local elected officials at least once per year (# communications with elected officials, # requests for updates, incorporation of monk seal information into policy language).
- Prepare annual accomplishments report for recovery program activities and accomplishments (report released).

When one tugs at a single thing in nature, he finds it attached to the rest of the world."

- John Muir (author/naturalist, 1838-1914)

Objective CAP-3

Partnerships: Improve management partnerships with organizations and regulatory agencies to protect monk seals and their habitat

Activities	Outcomes
Engage state, county, and business officials (Recovery Plan Action 5.4.2).	Minimized loss of monk seal habitat due to development.
Coordinate with federal agencies on ESA Section 7(a)(1) and 7(a)(2) responsibilities.	Current monk seal needs and priorities included in actions agencies fund, authorize, and carry out; partner agency authorities used to further monk seal conservation.
Continue to improve intergovernmental (federal, state, and local) communication and coordination.	Improved coordination; fewer negative impacts of federal actions.
Conduct outreach with action agencies to ensure that they understand monk seal critical habitat and its requirements.	
Provide materials to stakeholders and partners that clearly state the needs of monk seals (and other species) and best practices for monk seal-friendly coastal development processes.	Improved protection of monk seal shoreline habitat.
Work with responsible agencies to promote measures to allow natural "retreat" of shorelines where possible, and "managed retreat" of some shorelines where necessary.	Increased likelihood that beach shorelines are preserved during sea level rise to maintain important monk seal habitat.
Coordinate with federal and state managers regarding ungulate management and runoff issues.	Reduced sediment and contaminants entering nearshore marine habitat.
Coordinate with regulatory partners to minimize land-born pollutants and contaminants entering the marine environment.	
Support outreach and education to the agricultural community and coastal developers on general conservation, and specifically monk seal conservation and habitat needs.	Enhanced consideration of monk seal impacts in decisions made by businesses and communities near Hawaii's coastlines; less impact to monk seals and monk seal habitat from human activities.
Support outreach and education to communities on ecosystem services and conservation, specifically monk seal conservation and habitat needs.	
Establish Hawaiian monk seals as an important climate change indicator (i.e., sentinel species).	Increased public awareness of the tangible effects of climate change; increased public will to take action to reduce climate change.

Indicators
• Hold at least one coordination meeting per year with state Office of Planning Coastal Zone Management Program, Pacific Islands Climate Change Cooperative, state invasive species programs (# of meetings held, # of action items).

Capacity – Scientific Support & Research Needs:

- Identify coastal areas vulnerable to sea level rise.
- Vulnerability analysis of monk seal habitat in the main (and Northwestern) Hawaiian Islands.

Implementation: Monitoring, Work Plans, and Adaptive Management

This management plan serves to provide general guidance for monk seal recovery, and can support the development of more specific plans as desired by local governments and communities. We expect that some entities will want to articulate their own strategies, objectives, and activities for monk seal management in the main Hawaiian Islands, and as a result may create step-down plans for monk seal management and conservation.

Monitoring Progress

When implementing monk seal management in the main Hawaiian Islands, it will be important to measure progress by establishing monitoring methods — accurate, reliable, cost-effective, feasible, and appropriate monitoring methods should help ensure that we collect valuable and useable data. A good monitoring plan will identify indicators for each objective, describe how indicators are measured, develop good methods for measuring progress, and adequately communicate that progress.

Priorities and Annual Work Plans

Monitoring plans may include short-term or annual work plans. An annual work plan may address:

What are the specific tasks required to achieve your result?
When do tasks begin, and is there a specific sequence to carrying out the tasks?
Where will the tasks be undertaken?
How much money and how many resources are needed to complete the tasks?
Who is responsible and accountable for completing the tasks?

NOAA Fisheries intends to develop work plans that will refer to this strategic plan, and identify annual priority activities and objectives for each year (template in Appendix B). The work plans will also detail the staff or partner leads, necessary resources for successful implementation of the activity, and specific metrics for success.

Adaptive Management

We will use an adaptive management approach to assess success as we monitor our progress, and we will change course when necessary. Our work plans will clearly reflect monitoring activities, which means we must sometimes revisit and adjust our core assumptions to optimize our activities. It is also important to stay informed about recent research, new knowledge, and innovations that can help update our approaches and improve our effectiveness and responsiveness. Collecting and analyzing data as part of routine monitoring activities will allow monk seal managers, partners, and stakeholders to determine the effectiveness of activities and the necessary adjustments to reach our goals and objectives more efficiently and effectively.

Priorities and Annual Work Plan for FY16

The management plan describes the necessary activities to reach the objectives and conservation goals for monk seals in the main Hawaiian Islands. The plan contains roles for NOAA Fisheries and other agencies and organizations. To be successful, monk seal management and recovery must be collaborative, and emphasize and rely upon partnerships. NOAA Fisheries priorities for the next fiscal year (FY 2016: October 1, 2015-September 30, 2016) are outlined below. Solid bullet points (•) indicate activities that are feasible based on current funding levels (relative to FY 2015), staffing, and capacity. Open bullet points (○) denote partially implemented activities, limited by current resources and capacity. NOAA Fisheries will create an annual work plan to detail the implementation of these priority activities. Appendix B contains a template for the annual work plan.

HEALTH: *Reduce disease-related mortality*	**Objective HEA-1:** **Prevent:** *Evaluate and reduce risk of exposure and transmission of disease to monk seals*
	○ Create a formal contact/working group to address monk seal disease and reduction of feral animals.
	Objective HEA-2: **Early detection:** *Detect early incidences of disease in monk seal population*
	• Maintain current disease monitoring and screening programs. • Develop protocols for opportunistic sampling during other routine handling and research activities to improve early detection of diseases. • Examine sick animals to determine the cause(s) of disease and treat appropriately.
	Objective HEA-3: **Response and treatment:** *Be prepared with strategies to treat affected animals and prevent disease spread*
	• Evaluate the use of vaccines for monk seals to high-risk diseases. • Develop an emergency response plan for outbreaks of known high-risk diseases among monk seals.

FISHERY PARTNERSHIPS: *Reduce monk seal-fishery impacts through engagement, outreach, and prevention*	**Objective FSH-1:** **Build Trust:** *Build trust and relationships with fishing communities and leaders to foster sustainable collaboration and cooperation and to work toward common goals*
	• Engage in two-way communication and open-ended "talk-story" sessions.
	Objective FSH-2: **Outreach:** *Disseminate positive and accurate information within fishing communities to promote behavior that will help*
	• Continue to attend recreational fishing tournaments and proactively contact potential new events. ○ Have a booth and give presentations (as appropriate) at fishing events, such as tournaments, and the Western Pacific Regional Fisheries Council Hawaii-based Council meetings and Fishers' Forums.
	Objective FSH-3: **Reporting:** *Encourage and facilitate reporting of fishery interactions with monk seals to improve response for seal welfare and for minimization of impacts on fisheries*
	• Clarify NOAA Fisheries enforcement policy on implications for reporting accidental monk seal-fishery interactions. ○ NOAA Fisheries or DLNR staff attends as many recreational and commercial fishermen meeting events as possible
	Objective FSH-4: **Best Practices:** *Develop and communicate best practices to prevent and avoid monk seal-fishery interactions*
	• Identify and mitigate potential interactions with marine aquaculture. • Coordinate with DLNR's ESA Section 6 program

RESPONSE:
Prevent and effectively respond to seals of concern

Objective RES-1:
Response Preparedness: *Develop and maintain appropriate and proactive response preparedness and prevention*

- Train NOAA Fisheries and partners to respond to seals in the event of oil or other hazardous materials spills (i.e., Hazardous Waste Operations and Emergency Response training).
- Develop and maintain appropriate response plans, files, and techniques and training.
- Create "seal of concern" files for seals or areas with at least three reported interactions and response plans (and database with animals involved).
- Work with NOAA Fisheries headquarters to develop marine mammal deterrent guidelines.
- Maintain and strengthen relationship with the USCG to facilitate animal transport options.

Objective RES-2:
Volunteer Network: *Expand and improve management of Hawaiian monk seal volunteer response network*

- Continue to document and assess a variety of active and passive procedures for protecting seals that haul out on beaches.
- Evaluate/review those people and organizations who are empowered to help manage monk seals (e.g., volunteers, communities with monk seal stewardship plans, etc.).
- Strengthen cooperative efforts with agencies and organizations responsible for managing beach areas in the main Hawaiian Islands to manage monk seal haul-outs effectively, avoiding disturbance and maintaining public safety.

Objective RES-3:
Response Operations: *Promptly respond to monk seals of concern and render appropriate care or behavioral modification response when appropriate*

- Reduce and minimize injury and mortality by removing hooks from seals.
- Continue programs that facilitate the disentanglement of animals.
- Stay current with developments in the field of response and consider new methods for use in monk seal response (e.g., in-water capture techniques).
- Appropriately implement behavioral modification techniques.
- Work with currently permitted veterinary care and rehabilitation facilities to increase capacity and skills.

continued on next page

REPSONSE: *Prevent and effectively respond to seals of concern (continued)*	**Objective RES-4:** **Public Communication:** *Effectively communicate with the public about seals of concern* ○ Create method for communication with the public to combat misinformation. ○ Disseminate messages that viewing and living with wild animals enriches our lives, but is best done safely, by respecting that monk seals are wild animals and may be unpredictable in their behavior, potentially posing a safety risk under certain conditions.
ENGAGEMENT: *Engage communities and build productive relationships*	**Objective ENG-2:** **Community Role:** *Encourage communities take a proactive stewardship role in monk seal recovery to broaden ownership and build trusted community-based framework for addressing issues and disputes about monk seal conservation* ○ Partner with existing community-based natural resource and habitat management initiatives, especially Hawaiian initiatives, such as the Aha Moku initiative, and Hawaiian fish pond projects. • Establish and facilitate a Hawaiian cultural subcommittee (or working group) within the Hawaiian Monk Seal Recovery Team to provide guidance on all aspects of community engagement and plan implementation. ○ Create citizen science program, including sighting/reporting portal or app. **Objective ENG-3:** **Informal Communication:** *Increase use of informal communication to build trust and increase dialogue about monk seal conservation* ○ Conduct education and outreach on monk seal natural history and coexistence (monk seal facts, prey consumption/foraging, myths and misperceptions). ○ Engage in two-way communication and open-ended “talk-story” sessions in communities where invited. ○ Use local volunteers to conduct one-on-one education.

EDUCATION: *Increase effective outreach and education*	**Objective EDU-1:** **Best Practices:** *Use best practices and educational principles in outreach and education efforts*
	○ Treat education as a step-by-step process rather than singular projects. ○ Emphasize common ground and values that are beneficial for communities and for monk seal conservation.
	Objective EDU-2: **Collaboration and Partnerships:** *Encourage collaboration and coordination to improve partnerships, increase information flow and transparency, and broaden the distribution of monk seal outreach*
	• Build communication network with local NGOs and others to share information. • Work with and provide information, materials, and briefings to partners to inform their staff, increase collaboration, and include in their own outreach. ○ Improve information flow back to public, stakeholders, and partners. ○ Partner with other outreach organizations to maximize resources. ○ Tie monk seals into already existing programs with broader focus (e.g., responsible fishing practices, ocean safety). ○ Coordinate messaging about monk seals with those about other endangered species, marine mammals, and protected species issues to avoid confusion in the public.
	Objective EDU-3: **Informed Behavior:** *Visitors and residents are informed and take action to minimize interactions with monk seals to support their recovery*
	• Create public mailing list and send out periodic updates on recovery program via e-newsletter. • Create a fact sheet with top monk seal questions and answers.

CAPACITY: *Build program capacity*	**Objective CAP-1:** **Communication and Coordination:** *Productive coordination and communication with partners and stakeholders*
	○ Create interagency monk seal working group, which holds regular quarterly or bi-annual meetings. ○ Engage Hawaiian Monk Seal Recovery Team to gather external advice on recovery implementation and coordination. ○ Work with local and non-monk seal NGOs, increase community involvement, leverage other volunteer groups, and coordinate with community-based management groups such as Makai Watch. ○ Improve communication and engagement between NGOs and other federal and state government agencies and organizations on near-shore ecosystem-based management issues. ○ Support increased law enforcement capacity and effort (e.g., support increased funding and support coordination between OLE and other departments, and conduct regular briefings/meetings). ○ Build partnerships with and train volunteers from other organizations
	Objective CAP-2: **Support:** *Build support for the recovery program and adequate budgetary, staffing, and partnership resources to effectively implement other strategies*
	• Encourage increased role in monk seal recovery and management for the State of Hawaii. • Improve communication with elected officials (federal, state, and local) about accomplishments and needs. ○ Increase communication to public and other partners about program accomplishments and needs.
	Objective CAP-3: **Partnerships:** *Improve management partnerships with organizations and regulatory agencies to protect monk seals and their habitat*
	• Coordinate with federal agencies on ESA Section 7(a)(1) and 7(a)(2) responsibilities.

References

Carretta, J. V., E. Oleson, D. W. Weller, A. R. Lang, K. A. Forney, J. Baker, Brad H., K. Martien, M. M. Muto, M. S. Lowry, J. Barlow, D. Lynch, L. Carswell, R. L. Brownell, Jr., D. K. Mattila, and M. C. Hill. 2014. U.S. Pacific marine mammal stock assessments: 2013. NOAA Technical Memorandum NMFS-SWFSC-(DRAFT), Southwest Fisheries Science Center: San Diego, California. https://swfsc.noaa.gov/uploadedFiles/Divisions/PRD/Programs/Coastal_Marine_Mammal/Draft 2013 Pacific SARs reduced filesize.pdf

Honnold, S. P., R. Braun, D. P. Scott, C. Sreekumar, and J. P. Dubey. 2005. Toxoplasmosis in a Hawaiian Monk Seal (*Monachus schauinslandi*). The Journal of Parasitology, 91(3), pp. 695-697.

Kennedy, S., T. Kuiken, P.D., Jepson, R. Deaville, M. Forsyth, T. Barrett, M.W. van de Bildt, A.D., Osterhaus, T. Eybatov, C. Duck, A. Kydyrmanov, I. Mitrofanov., and S. Wilson. 2000. Mass die-off of Caspian seals caused by canine distemper virus. Emerging Infectious Diseases, 6(6), pp. 637-639.

Kittinger, J.N., T.M. Bambico, T.K. Watson, and E.W. Glazier. 2011. Historic and Contemporary Significance of the Endangered Hawaiian Monk Seal in Native Hawaiian Culture. Impact Assessment, Inc.: Honolulu, HI. Appendix J *in* National Marine Fisheries Service Final Programmatic Environmental Impact Statement for Hawaiian Monk Seal Research and Recovery Actions. National Marine Fisheries Service: Honolulu, HI, 46 pp.

Kittinger, J.N., T.M. Bambico, T.K. Watson, and E.W. Glazier. 2012. Sociocultural significance of the endangered Hawaiian monk seal and the human dimensions of conservation planning. Endangered Species Research 17, pp. 139-156.

Lowry, L.F., D.W. Laist, W.G. Gilmartin, and G.A. Antonelis. 2011. Recovery of the Hawaiian monk seal (*Monachus schauinslandi*): A review of conservation efforts, 1972-2010, and thoughts for the future. Aquatic Mammals 37(3), pp. 397-419.

Maly, Kepā and Onaona Maly. 2003. *Ka Hana Lawaiʻa a me Nā Koʻa o Nā Kai ʻEwalu*, A History of Fishing Practices and Marine Fisheries of the Hawaiian Islands. Compiled from Native Hawaiian Traditions. Volume 1: Archival Research, compiled from Native Hawaiian traditions, historical accounts, government communications, kamaʻāina testimony and ethnography. Volume 2: Oral history interviews, compiled from oral history interviews with *kūpuna* and *kamaʻāina*. Prepared by Kumu Pono Associates for The Nature Conservancy.

Mazzariol, S., S. Peletto, A. Mondin, C. Centelleghe, G. Di Guardo, C.E. Di Francesco, C. Casalone, and P.L. Acutis. 2013. Dolphin morbillivirus infection in a captive harbor seal (*Phoca vitulina*). Journal of Clinical Microbiology, 51(2), pp. 708-711.

National Marine Fisheries Service (NMFS). 2015a. Population summary for NWHI monk seals in 2014. Internal Report IR-15-002, Issued 12 January 2015. National Marine Fisheries Service: Honolulu, HI, 29 pp.

2015b. 2014 MHI Hawaiian Monk Seal Population Summary. Internal Report IR-15-003, Issued 12 January 2015. National Marine Fisheries Service: Honolulu, HI, 29 pp.

2007. Recovery Plan for the Hawaiian Monk Seal (Monachus schauinslandi). Second Revision. National Marine Fisheries Service: Silver Spring, MD, 165 pp.

Pūkui, M.K., and S.H. Elbert. 1971. Hawaiian Dictionary. Honolulu: The University of Hawaii Press.

Rauzon, M. 2001. Isles of Refuge: Wildlife and history of the Northwestern Hawaiian Islands. University of Hawaii Press: Honolulu, HI.

Reeve, L.L.N., R.B. Reeve, and P.L. Cleghorn. 2013. The Hawaiian monk seal in traditional Hawaiian Culture. Appendix B *in* Appendix K of the National Marine Fisheries Service Final Programmatic Environmental Impact Statement for Hawaiian Monk Seal Research and Recovery Actions. National Marine Fisheries Service: Honolulu, HI, 46 pp.

Repenning, C.A., C.E., Ray, and D. Grigorescu. 1979. Pinniped biogeography. *In* Gray, J. and A. J. Boucet (Eds), Historical Biogeography, Plate Tectonics and the Changing Environment. Oregon State University Press: Corvallis, OR, pp. 357-69.

West, K. L., S. Sanchez, D. Rotstein, K. M. Robertson, S. Dennison, G. Levine, N. Davis, D. Schofield, C. W. Potter, and B. JENSEN. 2013. A Longman's beaked whale (*Indopacetus pacificus*) strands in Maui, Hawaii, with first case of morbillivirus in the central Pacific. Marine Mammal Science, 29(4): 767-776, DOI: 10.1111/j.1748-7692.2012.00616.x

Yantis, D., R. Moeller, R. Braun, C. H. Gardiner, A. Aguirre, and J. P. Dubey. 2003. Hepatitis Associated with a Sarcocystis canis–like Protozoan in a Hawaiian Monk Seal (*Monachus schauinslandi*). The Journal of Parasitology, 89(6), pp. 1258-1260.

Appendix A. Partner and potential partner organizations for monk seal recovery

(Not an exhaustive list)

Federal

Department of Commerce

- National Oceanic and Atmospheric Administration (NOAA)
    - National Marine Fisheries Service (NMFS or NOAA Fisheries)
        - Office of Protected Resources (OPR)
        - Pacific Islands Regional Office (PIRO)
            - Protected Resources Division (PRD)
                - Hawaiian Monk Seal Recovery Program
                - Marine Mammal Health and Stranding Response Program
            - Sustainable Fisheries Division (SFD)
            - Habitat Conservation Division (HCD)
        - Pacific Islands Fisheries Science Center (PIFSC)
            - Protected Species Division (PSD)
                - Hawaiian Monk Seal Research Program (HMSRP)
            - Coral Reef Ecosystem Division (CRED)
                - Marine Debris Removal Program
            - Barbless Circle Hook Program
        - Western Pacific Fishery Management Council
        - Office of Law Enforcement (OLE)
    - National Ocean Service (NOS)
        - Office of National Marine Sanctuaries (ONMS)
            - Papahanaumokuakea Marine National Monument (PMNM)
            - Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS)
        - Office of the General Counsel (GC)
            - Pacific Islands Section (GCPI)
            - Enforcement Section (GCEL)
    - National Institute of Standards and Technology (NIST)

Department of Interior

- U.S. Fish & Wildlife Service (USFWS)
    - Pacific Islands Fish & Wildlife Office (Ecological Services)
    - Pacific Islands Refuges/Monument Division
- National Park Service (NPS)
    - Kalaupapa National Historical Park (Molokai)
- U.S. Geologic Survey (USGS)
    - Biological Resources Division

Department of Defense

- Army Corps of Engineers (USACE)
- U.S. Navy (USN)
    - Naval Facilities Engineering Command Hawaii (NAVFAC Hawaii)
        - Joint Base Pearl Harbor-Hickam (JBPHH)
        - Pacific Missile Range Facility (PMRF, Kauai)
    - Naval Facilities Engineering Command Pacific (NAVFAC Pacific)
    - Pacific Fleet (PACFLT)

- U.S. Marine Corps (USMC)
    - Marine Corps Base Hawaii (MCBH)

Department of Homeland Security
- U.S. Coast Guard (USCG)
    - District 14

Department of Agriculture (USDA)
- Wildlife Services

State of Hawaii
Department of Land and Natural Resources (DLNR)
- Department of Conservation and Resources Enforcement (DOCARE)
    - Makai Watch Program
- Department of Aquatic Resources (DAR)
- Department of Forestry and Wildlife (DOFAW)
    - Natural Area Reserves Program (NARS)
- Kahoolawe Island Reserve Commission (KIRC)
- Aha Kiole Advisory Committee and Aha Moku Council

Department of Business, Economic Development and Tourism (DBEDT)
- Office of Planning
    - Coastal Zone Management Program (CZM Program)
- Hawaii Tourism Authority (HTA)

Department of Health (DOH)
- Environmental Health Administration

Department of Education (DOE)

Department of Agriculture (DOA)

Office of Hawaiian Affairs (OHA)

University of Hawaii System
- University of Hawaii at Hilo (UHH)
- University of Hawaii at Manoa
- UH-NOAA SeaGrant Program
    - Hanauma Bay

State Legislature and Elected Officials

Local Government
- Mayors
- County Councils
- Ocean Safety
- Police

Other Potential Partner Organizations (including private, and non-governmental organizations [NGOs])
Examples of current and potential partner organizations are listed here, with their primary areas of interest and specialty (while some organizations may do multiple additional activities, the primary focus is identified here). This is NOT an exhaustive list, but examples of the types of organizations the Hawaiian Monk Seal Recovery Program could partner with to achieve the objectives in this management plan.

			PRIMARY AREAS OF INTEREST/SPECIALTY				
Name (alphabetical)	Location/ Operations	Monk Seal-Specific?	Outreach & Education	Advocacy	Haul-out and/or Emergency Response	Captive Care & Animal Husbandry	Habitat Management, Restoration, & Protection
Aha Moku Council and Representatives	Statewide		X	X			X
American Bird Conservancy	National		X	X			X
B.E.A.C.H.	Statewide		X				X
Center for Biological Diversity	National			X			
Conservation Council for Hawaii	Statewide		X	X			
Coral Reef Alliance	Statewide		X				X
COSEE Island Earth (Center for Ocean Sciences Education Excellence)	Statewide		X				
EarthTrust	National		X	X			
Fishing and Boating Clubs and Organizations (e.g., Hilo Casting Club, Hawaii Fishing and Boating Association, Roi Roundup)	Statewide		X	X			X
Hanalei Watershed Hui	Kauai		X	X			X
Hawaii Fishermen's Alliance for Conservation and Tradition (HFACT)							
Hawaii Pacific University	Oahu/ Statewide		X		X		
Hawaii Wildlife Center	Statewide		X		X		

			PRIMARY AREAS OF INTEREST/SPECIALTY				
Name (alphabetical)	Location/ Operations	Monk Seal-Specific?	Outreach & Education	Advocacy	Haul-out and/or Emergency Response	Captive Care & Animal Husbandry	Habitat Management, Restoration, & Protection
Hawaii Wildlife Fund	Maui/Hawaii Island		X	X			
Hubbs Sea World San Antonio	Mainland		X			X	
Humane Society of the U.S.	Statewide/ National		X	X			
KAHEA	Statewide		X	X			
Kauai Monk Seal Watch Program	Kauai/ Molokai	X	X				
Kua‘aina Ulu ‘Auamo (KUA) and E Ala Pu Coalition	Statewide		X				X
Ke Kaiaulu O Anahola	Kauai		X				
Kohala Center	Hawaii Island		X		X		
Malama Learning Center	Oahu		X				
Marine Conservation Institute	Mainland		X	X			
Maui Ocean Center	Maui		X				
Minnesota Zoo	Minnesota/ Mainland		X			X	
Molokai Community Service Council	Molokai		X				
Monk Seal Foundation	Oahu/ Molokai/ Statewide	X	X	X	X		
Na Kama Kai	Oahu		X				
National Wildlife Federation	National		X	X			
North Shore Education Alliance	Oahu		X				
Ocean Conservancy	National		X	X			

			PRIMARY AREAS OF INTEREST/SPECIALTY				
Name (alphabetical)	Location/ Operations	Monk Seal-Specific?	Outreach & Education	Advocacy	Haul-out and/or Emergency Response	Captive Care & Animal Husbandry	Habitat Management, Restoration, & Protection
Pacific Islands Fisheries Group	Statewide		X	X			
Pulama Lanai	Lanai		X				X
Sea Life Park	Oahu		X			X	
Sierra Club	National		X	X			
Surfrider Foundation	Statewide/ National		X	X			X
Sustainable Coastlines	National		X	X			X
The Marine Mammal Center	Hawaii Island/ Mainland		X			X	
The Nature Conservancy	Statewide/ National			X			X
University of California at Santa Cruz - Long Marine Lab	California		X			X	
Waikiki Aquarium	Oahu		X			X	

*If an organization is interested in discussing potential partnership opportunities, or interested in being listed as a partner in future versions of the management plan, please contact the recovery program at monkseal@noaa.gov.

Appendix B. Example template of annual operational work plan

ANNUAL Work PLAN

Goal _____

Strategy _____

Key Action Objectives	Action Steps	Person(s) Responsible	Timeline	Resources Needed	Deliverable / Metric

U.S. Secretary of Commerce
Penny Pritzker

Administrator of National Oceanic and Atmospheric Administration and Undersecretary of Commerce
Dr. Kathryn Sullivan

Assistant Administrator for Fisheries
Eileen Sobeck

December 2015

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