Northwestern Hawaiian Islands

Summary
Students will become familiar with the Northwestern Hawaiian Islands (NWHI), and the many unique species that are found on these Island ecosystems using an interactive map. Students will also learn why, due to these Islands locations, they and the animals and plants found there need to be protected.

Objectives
- Students will engage with an interactive map online while taking notes.
- Students will complete a worksheet handout using the notes taken while working with the interactive map.
- Students will gain an in-depth understanding of 5 of the NWHI (Nihoa Island, French Frigate Shoals, Laysan Island, Midway Atoll, and Kure Atoll) along with their Hawaiian name meanings and some of the endemic species found on each of them.

Materials
Computer with Internet connection (audio enabled)
NWHI video
NWHI worksheet
NWHI pamphlet and Susan Middleton NWHI article

Making Connections
Students may recall hearing or seeing on the news that the NWHI were recently designated as a United States National Monument, the Northwestern Hawaiian Islands National Monument. They may also connect the NWHI with the ever-popular Hawaiian Monk Seal and the Hawaiian Green Sea Turtles.

Teacher Prep for Activity
Activity 1: NWHI Video, Islands in the Sea
Become familiar with the Islands of the Sea, NWHI video so you are able to point out some key items in video that will allow you to direct the attention of the students to Marine Debris, etc.

Activity 2: NWHI Interactive Map activity
Copy NWHI facts worksheet so that each student has a copy. Have enough cards for note-taking available so that each student or pair of students has 5 cards each.

Activity 3: NWHI pamphlet and article analysis
Have enough copies of NWHI pamphlet and Susan Middleton NWHI articles available for each student or pairs of students. Will also need enough article analysis handouts available.
**Background**

The Northwestern Hawaiian Islands (NWHI), an isolated chain of coral atolls, reefs and islands, offer a rare glimpse at one of the last intact marine ecosystem on earth. Stretching more than 1,000 miles northwest of the main Hawaiian Islands, the NWHI are home to a flourishing web of life including more than 7,000 species of algae, fishes, marine invertebrates, sea turtles and marine mammals.

Presently designated a Coral Reef Ecosystem Reserve and more recently a National Monument, the NWHI are the world’s second largest marine protected area. More than 14 million sea birds, including two species of globally endangered albatross, and over 90% of Hawaii’s green sea turtle population return to these unique islands each year to breed and nest. The highly endangered Hawaiian monk seal, estimated population of only 1300 individuals, wholly depends upon the health of this coral reef ecosystem for its survival. Additionally, the NWHI have been a culturally rich and important place to native Hawaiians for centuries.

However, even through isolation, resources in the NWHI face many threats including overfishing, climate change, marine debris, and invasive species.

NWHI Coral Reef Ecosystem Reserve protects the waters out to 50 nautical miles from the shoreline of the islands and atolls from Nihoa to Kure. The NWHI are also protected as a National Wildlife Refuge and State Marine Reserve. Several other designations are being proposed to provide for even stronger protection, such as a National Marine Sanctuary, Federal Marine Refuge, and World Heritage Site.

**Procedure**

**Activity 1: Islands of the Sea, The NWHI Video**

1. Have students watch video to become visually familiar with the NWHI and the many species found there.
2. You may want to point out key features within the video such as marine debris and other pollution items seen on the shore if the NWHI.

**Activity 2: Voyage to Kure Interactive Map**

1. From the Voyage to Kure website (http://www.pbs.org/kqed/oceanadventures/episodes/kure/diaries) have students navigate to the interactive map.
2. Have the students become familiar with each of the islands by clicking on the island name and taking notes on the cards provided.
3. With the notes that the students have taken have them complete the NWHI facts worksheet.

**Activity 3: NWHI Pamphlet and Susan Middleton NWHI article analysis**

1. Have students read the NWHI pamphlet and the Susan Middleton article.
2. Upon completion of pamphlet and article have student complete the article analysis handout.
Assessment
Worksheets completed
Note cards completed on NWHI

Resources
http://www.pbs.org/kqed/oceanadventures/episodes/kure/diaries
National Marine Sanctuaries, Northwestern Hawaiian Islands Coral Reef Ecosystems Reserve Pamphlet.
Archipelago, Portraits of the life in the World’s most remote Island Sanctuary article
Northwestern Hawaiian Islands Facts

Instructions: Study the interactive map of the Northwestern Hawaiian Islands (NWHI). Provide the appropriate island or atoll name for each of the following questions or statements.

1) Which of the NWHI is the nesting location for >90% of the threatened Hawaiian Green Sea Turtle? ________________

2) Mokupapapa (low reef island) is the Hawaiian name for this island. ________________

3) This island holds one of five naturally occurring lakes in all of the Hawaiian Islands, the only one to which occurs in the NWHI. ________________

4) What island of the NWHI is the largest volcanic island of the NWHI? ________________

5) This island contains > 80 Hawaiian cultural sites. ________________

6) Of the NWHI, this is the only island not part of the State of Hawaii. ________________

7) Which island of the NWHI is the world’s northernmost coral Atoll? ________________

8) What is the Hawaiian name and meaning of Kure Atoll? ________________

9) This island is home to 30 kinds of plants. ________________

10) What island has the greatest coral diversity in the NWHI? ________________

11) This island is home to the endemic Laysan Finch and Laysan Duck. ________________

12) Close to 2 million birds of 19 species nest on this atoll. ________________
13) Kauo (yolk of an egg) is the Hawaiian name for what island? 
____________________

14) What island is an important resting and pupping area for the endangered Hawaiian Monk Seal? ________________

15) This Island houses the largest Laysan Albatross Colony in the world. ________________

16) Which of the NWHI has the greatest representation of all bird species in the NWHI? ________________

17) This island was annexed by King Kamehameha in 1857 to be part of the Hawaiian Kingdom. ________________

18) Which island did the U.S. Navy turn over to the U.S. Fish and Wildlife Service? ________________

19) This island holds the largest subpopulation in the world of the endangered Hawaiian Monk Seal. ________________

20) “The loud din of birds,” Pihemanu is the Hawaiian name for this Atoll. ________________
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4) What island of the NWHI is the largest volcanic island of the NWHI? ___Nihoa Island____

5) This island contains > 80 Hawaiian cultural sites. ___Nihoa Island____

6) Of the NWHI, this is the only island not part of the State of Hawaii. ___Midway Atoll____

7) Which island of the NWHI is the world’s northernmost coral Atoll? ___Kure Atoll____

8) What is the Hawaiian name and meaning of Kure Atoll? ___KanemilohaʻI “Brother of Pele”____

9) This island is home to 30 kinds of plants. ___Laysan Island____

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INTRODUCTION

Aloha,

On behalf of the National Oceanic and Atmospheric Administration, U.S. Fish and Wildlife Service and the State of Hawai‘i — co-trustee management agencies of the newly established Northwestern Hawaiian Islands Marine National Monument (monument) — mahalo for taking the time to read our “citizen’s guide” to the Northwestern Hawaiian Islands Marine National Monument. As co-trustees, we take seriously our responsibility to safeguard the natural and cultural heritage of the Northwestern Hawaiian Islands.

On June 15, 2006, President Bush signed a proclamation establishing the Northwestern Hawaiian Islands Marine National Monument. His signature marks the beginning of a mammoth undertaking to strengthen existing conservation and implement new lasting protections to ensure that this remote wilderness continues to thrive for generations to come.

We hope this guide provides you with a glimpse of the incredible natural and cultural history of the region and an understanding of the newly established monument. The guide will take you on a brief but informative virtual tour of this vast area and introduce you to the amazing plants and animals that call these islands and reefs their home. We also hope you will become inspired to learn more about the Northwestern Hawaiian Islands and join with us as active caretakers of Hawaii’s oceans.

The islands, atolls, reefs, shoals, and wildlife of this incredible area offer Hawai‘i, the Hawaiian Islands and join with us as active caretakers of Hawaii’s oceans.

Mahalo for your support,

‘Aulani Wilhelm
William Robinson
National Oceanic and Atmospheric Administration
Barry Stieglitz
U.S. Fish and Wildlife Service
Peter Young
State of Hawai‘i, Department of Land and Natural Resources

Partnership Agencies

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A GLOBAL TREASURE

Beyond the main eight populated islands of Hawai‘i lie a string of tiny islands, atolls, shoals, and banks spanning 1,200 miles of the Pacific Ocean, the world’s largest body of water. Hundreds of miles northwest of Kaua‘i, places like Nihoa, Laysan, Pearl and Hermes, and Kure comprise the little known, rarely visited Northwestern Hawaiian Islands (NWHI). Seen from space, the area’s shallow waters appear as a string of turquoise jewels in an empty and dark blue vastness.

Thanks to their isolation, these 4,500 square miles of wild coral reefs are among the healthiest and most extensive in the world. This marine wilderness is home to the highly endangered Hawaiian monk seal, the world’s second most endangered seal, and uninhabited sandy islets provide the nesting grounds for 90 percent of Hawai‘i’s threatened green sea turtles. Though land areas are limited, over 14 million seabirds nest here and this is the only home for four endangered land birds.

The marine habitats of the NWHI contain features not found in the main Hawaiian Islands, such as coral atolls, and nurture thriving populations of many species once abundant in the main Hawaiian Islands, but rarely found today. Large predatory fish such as jacks, Hawaiian grouper, and sharks are nearly fifteen times as numerous in the shallow waters of NWHI compared to the heavily fished main Hawaiian Islands. Many sought after aquarium species, now rare in the main Hawaiian Islands, are much more common on these reefs as well.

Globally the NWHI are a natural and cultural treasure of outstanding scientific, conservation and aesthetic value. The steps we take in preserving these last undisturbed environments are gifts we give to our children’s children, and help in sustaining the ocean’s bounty that supports us today.

THE NORTHWESTERN HAWAIIAN ISLANDS

“These ancient volcanic remnants with their fringes of truly wild coral reefs remind us of our past—when coral reefs and sea life across the planet thrived—a time before humans became top predator in the ocean food chain.”

A HISTORIC MOMENT:
Establishing a Marine National Monument

On June 15, 2006, President George W. Bush made conservation history when he signed Presidential Proclamation 8031 creating the largest fully protected marine conservation area on the planet in the Northwestern Hawaiian Islands. By applying the authority of the Antiquities Act, which gives the President discretion to declare objects or places of scientific or historic interest a national monument, he created the Northwestern Hawaiian Islands Marine National Monument.

“Our duty is to use the land and seas wisely, or sometimes not use them at all. Good stewardship of the environment is not just a personal responsibility, it is a public value,” said the President in his proclamation speech explaining why it was necessary to close off such a large area for the sake of conservation.

Support for the protection and preservation of the Northwestern Hawaiian Islands was overwhelming, with more than 52,000 public comments submitted during the 5 years of the proposed national marine sanctuary designation process, the majority in favor of strong protection. This public sentiment was part of what inspired the President to issue the Proclamation.

By creating a marine national monument President Bush immediately granted the waters of the Northwestern Hawaiian Islands our nation’s highest form of marine environmental protection. “The Northwestern Hawaiian Islands are a beautiful place,” he said, “and with the designation of the Northwestern Hawaiian Islands Marine National Monument, we are making a choice that will leave a precious legacy.”

Northwestern Hawaiian Islands Marine National Monument

~ President George W. Bush

The region is so vast that if laid atop the continental United States it would cover the approximate distance from Las Vegas, NV to Dallas, TX.


A Hawaiian monk seal, ‘ilioholoikauaua, Monachus schauinslandi sleeps the day away at Pearl and Hermes Atoll.  Photo: James Watt.

Overview of the Proclamation

The President’s proclamation creating the Northwestern Hawaiian Islands Marine National Monument has given nearly 140,000 square miles of land and ocean our nation’s highest form of marine environmental protection. It honors our commitment to be good stewards of America’s natural resources, shows what cooperative conservation can accomplish, and creates a new opportunity for ocean education and research for decades to come. The national monument will:

• Prohibit unauthorized access to the monument;
• Provide for carefully regulated educational and scientific activities;
• Preserve access for Native Hawaiian cultural activities;
• Enhance visitation in a special area around Midway Atoll;
• Phase out commercial fishing over a 5 year period; and
• Ban other types of resource extraction and dumping of waste.

Protection was effective immediately and includes requiring permits for access into the monument. Permits may be issued for activities related to research, education, conservation and management, Native Hawaiian practices, non-extractive special ocean uses, and recreation. Protections also include the prohibition of commercial and recreational harvest of precious coral, crustaceans and coral reef species in monument waters; the prohibition of oil, gas and mineral exploration and extraction anywhere in the monument; the prohibition of waste dumping; and the phase out of commercial fishing in monument waters over a 5-year period.

To put this area in context, this national monument is more than 100 times larger than Yosemite National Park, larger than 46 of our 50 states, and more than seven times larger than all our national marine sanctuaries combined. This is a big deal.”
~ President George W. Bush
RAINFORESTS OF THE SEA: THE IMPORTANCE OF CORAL REEFS

Often called the “rainforests” of the sea, coral reefs are vital to maintaining the biological diversity of our oceans. They are highly complex and productive ecosystems composed of countless millions of plants and animals dependent upon one another to survive. Building layer upon layer, coral reefs form an intricate tapestry with more species per unit area than any other marine environment. Though coral reefs compose only about 0.2 percent of the ocean’s floor, scientists have estimated that they shelter and support nearly one million species of fish, invertebrates, and algae, many yet to be discovered.

In addition to biological value, coral reefs provide resources and services worth billions of dollars to economies worldwide. In many coastal communities adjacent to coral reefs, people rely on the reef’s bounty for the majority of their food. Around the main Hawaiian Islands, coral reefs protect our shores from storms, and they shape our famous waves that inspired the sport of surfing, now exported worldwide. A 2002 study evaluated the value of coral reefs to Hawaii’s economy at $364 million each year, and some of Hawaii’s most famous ocean residents, the monk seal and green sea turtle, depend on coral reefs for their survival.

Far Beneath the Waves
The pitch-black abyss of the deep ocean harbors a strange world where deep-sea corals, odd invertebrates and bottom fish such as onaga and octocorals thrive. Hawaiian monk seals descend into the dark twilight, more than a thousand feet beneath the surface, to forage among huge branching formations of gold and bamboo beneath the surface, to forage among huge branching formations of gold and bamboo. These “lawnmowers of the reef” help keep reefs in balance, and are but one thread in an intricate web of life.

For all their biological richness and economic value, coral reefs are fragile environments that remain healthy only within a narrow window of ocean and climatic conditions. Seawater a few degrees hotter or colder than what corals are accustomed to can impact their survival, and they need clean, clear water in order to get the sunlight they need to produce food. Corals are also sensitive to physical disturbance, since only the thin outer layer of the coral structure is living tissue.

Within coral reefs, plants and animals compete for limited space and food, and a delicate balance has developed over time among species. This fragile balance can be easily disturbed if one or more species are removed or depleted, allowing another species to grow unchecked. In some cases, such as when algae eaters like manini, kumu, cowries, or sea urchins are removed, the algae, or limu, can grow so rapidly that it overgrows and smothers the corals. These “lawnmowers of the reef” help keep reefs in balance, and are but one thread in an intricate web of life.

Given the balancing act that coral reefs must maintain, and their fragile structure, they are very susceptible to disturbances such as overfishing, shoreline development, storms, and pollution. Coral reefs around the world are in serious decline and many are heavily compromised. This fact alone makes protection of the vast and healthy coral reefs of the Northwestern Hawaiian Islands (NWHI) all the more important.

The Importance of Coral Reefs
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Only In Hawai‘i: Endemic Species
The remote location of the NWHI, thousands of miles from any continent, ensures that naturally occurring arrival of new species is rare. The Hawaii ‘‘Biogeographical’’ of Land and Natural Resources estimates that before the arrival of humans, new species became established in Hawai‘i (since about 7,000 years). Those species that have made their way to Hawai‘i and survived have become increasingly adapted to their new environment. Approximately, 25 percent of all marine species in the NWHI are unique to the Hawaiian Archipelago, one of the highest rates of marine endemism in the world. In addition, at Pearl and Hermes, Midway and Kure atolls over half of the fish populations are composed of these unique species. This high percentage of unique species means that the NWHI is truly a one of a kind natural wonder.

Predator-Dominated Coral Reefs
Most reef systems around the world have seen a dramatic reduction of large predatory fish, and this is disturbing, since healthy populations of predator species are a good indicator of an ecosystem’s overall health. When predator populations are greatly reduced by fishing and other human activities, the normal structure of the reef community is disrupted.

More than half the weight (biomass) of all fish on NWHI coral reefs consists of large top-level predators like sharks and jacks. In contrast, only 3 percent of the fish biomass on main Hawaiian Islands reefs is composed of these predatory fish, several of which are highly prized food and game fishes. It is likely that this difference results from human impacts such as fishing and habitat loss from shoreline development. These activities, largely absent in the NWHI, make it one of the last places on Earth where scientists can study the ecology of a coral reef ecosystem without large-scale human disturbance.

Such studies provide new insights into how Hawaiian coral reef ecosystems function, and the impacts of removing large predators.

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The Northwestern Hawaiian Islands (NWHI) were decimated by introduced mammals (rabbits, in the case of Laysan), other islets and atolls have been relatively untouched by humans. As a result, robust seabird populations and healthy insect and plant communities can still be found, and in places that were heavily impacted, seabird and plant populations are now on the mend. Nihoa Island is one of the most biologically pristine islands in the Pacific, and probably most closely represents the original island appearance and native species found before humans arrived in the Hawaiian Islands.

Although some of the Northwestern Hawaiian Islands (NWHI) were decimated by introduced mammals (rabbits, in the case of Laysan), other islets and atolls have been relatively untouched by humans. As a result, robust seabird populations and healthy insect and plant communities can still be found, and in places that were heavily impacted, seabird and plant populations are now on the mend. Nihoa Island is one of the most biologically pristine islands in the Pacific, and probably most closely represents the original island appearance and native species found before humans arrived in the Hawaiian Islands. 

These islands provide breeding sites for all but three of Hawaii’s 22 species of seabirds such as the grey-backed tern, short-tailed albatross, and the red-tailed tropicbird. Millions of central Pacific seabirds congregate on these islands to breed. They nest in burrows and cliffs, on the ground, and in trees and shrubs. For some species, these tiny specks of land provide their only breeding site.

More than 99 percent of the world’s Laysan albatrosses and 98 percent of the world’s black-footed albatrosses return to the NWHI each year to reproduce. For species such as Bonin petrels and Tristram’s storm-petrels, these predator-free islands provide the last safe nesting places since islands in other parts of the Pacific are becoming infested with rats. For land birds, the islands have provided less secure habitat, but four of the seven original species still remain. Three endangered passerines (the Nihoa finch, Nihoa millerbird, and Laysan finch) and the world’s rarest duck — the Laysan duck — are found on these islands.

The plants of the NWHI are primarily coastal strand species of the Pacific that can tolerate high salt levels, periodic drought, and intense sun. Most have seeds capable of dispersing in seawater. Some plants evolved into new species, and six endemic plants are listed under the Endangered Species Act, including the endangered fan palm Pritchardia remotus found only on Nihoa. A similar palm went extinct during the rabbit plague on Laysan Island, and in recent years an alien grasshopper has attacked Nihoa’s palms.

The first entomologists (insect scientists) visited Laysan Island in 1893, and upon numerous subsequent visits, identified at least 75 native species, including 15 found only on Laysan. The arthropods and land snails are the least understood components of the terrestrial ecosystems, but studies continue to improve our knowledge. At least 35 species of endemic insects and spiders, and six species of endemic land snails have been identified at Nihoa Island. Unfortunately, positive discoveries are at times offset by negative ones — as many as 125 species of alien insects and spiders have also been found, and some of these, particularly ants, are extremely destructive. Considered “ecosystem busters,” introduced ants have the ability to displace native species, and even affect the survival of ground nesting seabirds.

The Northwestern Hawaiian Islands (NWHI) not only possess incredible natural resources worthy of our best efforts at conservation, but these distant atolls are also the locations of historic shipwreck sites, heritage resources which capture our seafaring past in graphic detail. Since systematic survey began in 2002, our understanding of these sites continues to increase. Each wreck site is like a time capsule, allowing us to glimpse a part of seafaring history.

The wrecks of American and British whaling ships lost during the early decades of the 19th century depict the many hazards associated with seafaring. The debris trail of the American whaler Parker, lost in 1842 during a violent storm, depicts a ship washed entirely into the lagoon at Kure Atoll, equipment being swept off the decks as the vessel passed the reef crest. The wreck of the British whaler Pearl, lost at Pearl and Hermes Atoll in 1822, tells a different story. There, the ship fell apart where it grounded, the crew having wrecked in calamitous conditions on the uncharted atoll. Salvage was possible, and soon a schooner named Deliverance was constructed on the beach.

The steam machinery and armament of the USS Saginaw, lost in 1870, represents a slice of Civil War history in the Pacific. The remains of the side wheel navy steamer are scattered on top and underneath the reef crest. Historic objects, such as the cannon, steam engines, and paddlewheel shafts, are solidly embedded in the coralline substrate.

The capstans, anchors, masts, and rigging of the Dunnottar Castle, a 258-foot iron hulled sailing ship lost in 1856, portray the days of the great sailing ships like the Falls of Clyde (now part of the Hawai’i Maritime Center), the Balclutha, and the Star of India, a time when our maritime commerce was driven by steel masts and canvas and human hands. The wreck site is an inventory of our industrial wind-driven commerce long before our dependence on fossil fuels.

These and many other heritage sites in the NWHI are rare and protected resources which bear human testimony to unique Pacific seafaring experiences. More than 100 vessels and aircraft are known to have been lost in the NWHI. They are unique parts of an untouched museum of our maritime past, set amidst the beauty of the Northwestern Hawaiian Island’s natural environment.
Mokumanamana played a central role in Hawaiian ceremonial rites and practices a thousand years ago as it was directly in the deep dark ocean of Kane, the Hawaiian god of life and creation), played an integral role in Native Hawaiian culture as a wellspring of life and creation. Archaeological surveys conducted on the two islands have documented numerous archaeological sites and a range of cultural artifacts have been collected. Nihoa has 88 cultural sites, including ceremonial, residential and agricultural features. On Mokumanamana, there are 52 recorded cultural sites, including ceremonial and temporary habitation features. Recent ethnological studies highlight the continuity of Native Hawaiian traditional practices in the NWHI. Only a fraction of these have been recorded, much exists in the memories and life histories of kupuna (knowledgeable elders). The Northwestern Hawaiian Islands Marine National Monument will be initiating research projects to collect information from both historical and living resources in order to inform management decisions and enhance cultural access to the region.

Prior to the 1800s, the general population of Native Hawaiians knew little about the Northwestern Hawaiian Islands as few travel accounts exist. He instructs Captain Manuokawai to verify the existence of other lands in the northwest.  Paty travels to Nihoa, Necker, Gardner, Laysan, Lisianski, and living resources in order to inform the Hawaiian government is overthrown by the Provisional Government of Hawaii, claims King Kalakaua, through James Harbottle-Boyd, claims the “New Lands Resolution.” The archipelago, inclusive of the Northwestern Hawaiian Islands, are collectively ceded to the United States through a domestic resolution, called the “New Lands Resolution.”

**Timeline of Events**

1822 Queen Ka‘ahumanu travels to Nihoa Island and claims it under the protection of the Kamakameha Monarchy.

1865 Nihoa is reasserted as part of the existing territory of Hawai‘i by authority of Alexander Liholiho, Kamakameha IV.

1857 King Kamakameha IV voyages to Nihoa. He instructs Captain Patyn on the Manuokawai to verify the existence of other lands in the northeast. He travels to Nihoa, Necker, Gardner, Laysan, Lisianski, and Pearl and Hermes.

1885 The Island of Laysan and Lisianski are declared as new territory under the domains of the Kingdom.

1885 Princess Lydia Lilikalani and a scientific expedition visits Nihoa on the ship Avoll.

1887 King David Kalakaua, through Special Commissioner Colonel James Hartnett Boyd, claims possession of Kuai Atoll (Ocean Island).

1893 The Hawaiian government is overthrown by the Provisional Government of Hawaii, claims King Kalakaua, through James Harbottle-Boyd, claims the “New Lands Resolution.”

1898 The archipelago, inclusive of the Northwestern Hawaiian Islands, are collectively ceded to the United States through a domestic resolution, called the “New Lands Resolution.”

**Ke ala nui polohiwa a Kane**

The black shining road of Kane

Mokumanamana played a central role in Hawaiian ceremonial rites and practices a thousand years ago as it was directly in line (36° 34.5’ N) with the rising and setting of the equinoxal sun (23° 34.1’ N) on the path called the Tropic of Cancer. In Hawaiian, this path is called “ke ala polohiwa a Kane,” or “the black shining road of Kane.” Since the island sits on the northern limit of the path the sun makes throughout the year, it sits centrally on an axis between two spatial and cultural dimensions – pō (darkness, creation, and afterlife) and ao (light, existence). On the summer solstice (the longest day of the year) the sun will travel its slowest across the sky on this northern passage going direct over Mokumanamana: The strategic concentration of ceremonial sites on this island is a reminder of the important spiritual role it plays in Hawaiian culture in channeling the creation of new life and facilitating the return to source after death.

**Ka huakai ‘a Pele**

Migration of Pele

In Hawaiian mo‘olelo (stories, historical narratives, mythologies) there are many versions of the epic of Pele and He‘i‘aka. In one account by N. B. Emerson, Pele migrated from Kauai to Hawaii to escape conflict between her and her sister Nāmākakā‘ai, a deity of the sea. Their journey led them through the Northwestern Hawaiian Islands. In the Emerson version, Pele first stopped at the island of Nihoa and decided to leave Kaua‘i, her younger brother, behind. Pele’s journey continued down the island chain from spot to spot, until she found comfort in the pit of Halema‘uma‘u crater on the island of Hawaii. These travels of Pele and her family are recognized as the migration of gods to Hawai‘i and each version of the mo‘olelo gives important information about the cultural significance of these islands in the northwest.

‘O Nihoa ka ‘āina a mākou i pae mua aku ai

‘O ka hoʻoili i ka ihu o ka waʻa a nou i ke kai pōpolohua mea a Kanea (the black shining road of Kane) the Hawaiian god of life and creation), played an integral role in Native Hawaiian culture as a wellspring of life and creation. Archaeological surveys conducted on the two islands have documented numerous archaeological sites and a range of cultural artifacts have been collected. Nihoa has 88 cultural sites, including ceremonial, residential and agricultural features. On Mokumanamana, there are 52 recorded cultural sites, including dedicated to the repatriation of ancestral remains, returned sets of iwi (bones) to Nihoa and Mokumanamana. In 2003, the voyaging canoe Hōkūle‘a traveled to the NWHI so that a cultural protocol group could conduct ceremonies on Nihoa. In 2004, Hōkūle‘a sailed to Kure Atoll. In 2005, Hōkūle‘a’s returned with Hōkūlaka‘a’s to take the cultural protocol group to Mokumanamana for ceremonies on the summer solstice. The monument allows for the continuation of Native Hawaiian practices. The definition of Native Hawaiian practices, along with criteria developed to evaluate permit applications, was created with substantial input from the Native Hawaiian community, including recognized cultural experts and knowledgeable kupuna.

**Ka ho‘omau ‘ana i ka hana o ko po‘e kahiko**

The continuation of Hawaiian cultural practices

In recent years, different groups of Native Hawaiian cultural practitioners have voyaged to the NWHI to honor their ancestors and perpetuate traditional practices. In 1997, Hui Mālama a Nā Kūpuna o Hawai‘i Nei, a group dedicated to the repatriation of ancestral remains, returned sets of iwi (bones) to Nihoa and Mokumanamana. In 2003, the voyaging canoe Hōkūle‘a traveled to the NWHI so that a cultural protocol group could conduct ceremonies on Nihoa. In 2004, Hōkūle‘a sailed to Kure Atoll. In 2005, Hōkūle‘a’s returned with Hōkūlaka‘a’s to take the cultural protocol group to Mokumanamana for ceremonies on the summer solstice. The monument allows for the continuation of Native Hawaiian practices. The definition of Native Hawaiian practices, along with criteria developed to evaluate permit applications, was created with substantial input from the Native Hawaiian community, including recognized cultural experts and knowledgeable kupuna.

**The seas of Kanaloa string the lei of islands together**

He mo‘olelo kahiko mai ka po‘i mai

An ancient tradition tied to creation

Native Hawaiians, the first inhabitants of the Hawaiian Archipelago, have lived here for over a thousand years. Over time, they developed complex resource management systems and specialized skill sets to survive on these remote islands with limited resources. Native Hawaiians continue to maintain their strong cultural ties to the land and sea, understanding the importance of managing the islands and waters as inextricably connected to one another. In particular, the ocean, poetically referred to as ke kai pōpolohua mea a Kane (the deep dark ocean of Kane, the Hawaiian god of life and creation), played an integral role in Native Hawaiian culture as a wellspring of physical and spiritual sustenance in everyday life.

In Hawaiian traditions, the Northwestern Hawaiian Islands (NWHI) are considered a sacred place, a region of Kanaloa from which life springs and to which spirits return after death. Much of the information about the NWHI has been passed down in oral and written histories, genealogies, songs, dances, and archaeological resources. These sources enable Native Hawaiians to recount the travels of sea-faring ancestors between the NWHI and the main Hawaiian Islands.

Nā wahi kupuna ma nā mokupuni o Nihoa a o Mokumanamana

Cultural sites on Nihoa and Mokumanamana (Necker) Islands are listed on both the National and State Register of Historic Places for their cultural and historical significance. Archaeological surveys conducted on the two islands have documented numerous archaeological sites and a range of cultural artifacts have been collected. Nihoa has 88 cultural sites, including ceremonial, residential and agricultural features. On Mokumanamana, there are 52 recorded cultural sites, including dedicated to the repatriation of ancestral remains, returned sets of iwi (bones) to Nihoa and Mokumanamana. In 2003, the voyaging canoe Hōkūle‘a traveled to the NWHI so that a cultural protocol group could conduct ceremonies on Nihoa. In 2004, Hōkūle‘a sailed to Kure Atoll. In 2005, Hōkūle‘a’s returned with Hōkūlaka‘a’s to take the cultural protocol group to Mokumanamana for ceremonies on the summer solstice. The monument allows for the continuation of Native Hawaiian practices. The definition of Native Hawaiian practices, along with criteria developed to evaluate permit applications, was created with substantial input from the Native Hawaiian community, including recognized cultural experts and knowledgeable kupuna.
millions of years the Northwestern Hawaiian Islands (NWHI) remained in a pristine natural state, drifting northwestward at the Pacific Plate at about 3.2 inches per year, and slowly eroding back into the sea. Over time, new species arrived, mostly from the south, some adapted to the new surroundings while others went extinct. Early Polynesian voyagers, in their epic trans-Pacific voyages aboard large double-hulled sailing canoes, were the first humans to arrive in these Northwestern islands as early as 1000 A.D. Evidence of permanent living sites exists only for Nihao, with temporary settlement and cultural sites found on Molokanamana. Early Hawaiians lived on Nihao for an estimated 700 years, a small occupation mysteriously ceased before Captain Cook’s first landing in Hawai‘i in 1778.

The 18th and 19th centuries brought increased international trade and commerce within Hawaiian waters, which in turn expanded the exploitation of both the animal species and the terrestrial environments of the NWHI. Seabirds were harvested for their feathers by the hundreds of thousands. Albacore eggs were also collected, and the sand and coral rubble islands were mined for guano, which was processed into fertilizer. Entire island ecosystems were completely destroyed by over harvesting and the introduction of new species, such as rabbits to Laysan Island.

For centuries, the Northwestern Hawaiian Islands have been occupied and used by indigenous peoples. A History of the Region

The NMSP serves as the trustee for a system of 14 marine protected areas. The primary purpose of the NMSP is the protection of the living and non-living resources of these nationally significant areas. The NMSP works to enhance public awareness of our living and non-living resources and threatened/endangered species. The program is designed to fulfill its mission to protect and preserve America's ocean and natural World Heritage Site.

The NMSP manages the Northwestern Hawaiian Islands National Marine Sanctuary – Hawaiian Islands NWR, and Midway Atoll NWR. In recognition of its significant role in World War II, Midway Atoll NWR also is designated as the Battle of Midway National Memorial. The NMSP works to enhance public awareness of our living and non-living resources and threatened/endangered species. The program is designed to fulfill its mission to protect and preserve America’s ocean and natural World Heritage Site.

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Look Back A History of the Region

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Partnering to Protect: The Co-Trustees

Federal and state agencies have worked for many years to conserve and manage the natural and cultural resources of the Northwestern Hawaiian Islands (NWHI). Recent legislative actions to provide enhanced protections to the NWHI have helped to define and strengthen these roles, and this new relationship among the agencies was formalized between NWHI co-trustees – NOAA's National Ocean Service and National Marine Fisheries Service, U.S. Fish and Wildlife Service and the Hawai‘i State Department of Land and Natural Resources. These agencies are also named in the proclamation that created the monument as being jointly responsible for its co-management. The proclamation directs NOAA to develop expertise in the management of this protected marine area, and the Fish and Wildlife Service to apply their skills and experience to the wildlife refuge areas. The proclamation does not diminish or enlarge the jurisdiction of the State of Hawai‘i. Through coordination of the co-trustees, working together with interagency partners, Office of Hawaiian Affairs, U.S. Coast Guard, Department of Defense, and Environmental Protection Agency, seek to provide comprehensive protection that is as seamless and interconnected as the ecosystem itself.

Historic Protection

The NWHI Marine National Monument is but the most recent step taken in a century-long history of federal and state protections extended to preserve the NWHI’s ecological richness.

1909 – President Theodore Roosevelt establishes the Hawaiian Islands Reservation.

1903 – President Theodore Roosevelt places the Northwestern Hawaiian Islands Marine National Refuge and increases protection for wildlife.


1996 – President William J. Clinton transfers control of Midway Atoll under the Exclusive Economic Zone, giving the U.S. jurisdiction over the living and non-living resources from 3 to 200 nautical miles from all U.S. shorelines.

1999 – President Clinton signs the Executive Orders creating the NWHI Coral Reef Ecosystem Reserve and the NWHI Marine National Monument (monument) in consultation with the Fish and Wildlife Service.

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ENVIROMENTAL IMPACTS

Most of the threats to the ecosystems of the Northwestern Hawaiian Islands (NWHI) are posed by human activities. In the past, a number of scientific, military, and commercial activities have threatened the NWHI. Current uses are limited primarily to management activities by jurisdictional agencies, research, education, Native Hawaiian practices, a small scale commercial bottomfishing and pelagic trolling operation, as well as a small number of recreational trips and visits to historical sites at Midway Atoll. The threats associated with these activities originate both inside and outside the monument, making them more difficult to address. The monument is working to reduce threats through an ecosystem-based approach to management. This includes the development of an effective regulatory framework, education and outreach, preventative measures to minimize risk, and response and restoration to damaged or degraded natural resources.

VESSEL HAZARDS

Ships allow human access and make activities possible in the vast and remote NWHI. Vessels, however, can introduce specific hazards to the marine environment via physical impacts caused by groundings and fuel, chemical and oil spills. Biological impacts, including introduction of alien species through hull fouling or ballast water discharge, and interactions with protected marine species, are also a concern. The monument addresses threats from vessels of all types through prohibitions and permit conditions.

MARINE DEBRIS

Marine debris is a severe and chronic threat to NWHI wild-life and marine habitats. Ocean currents carry a wide array of marine debris, including derelict fishing nets and other gear, household plastics, hazardous materials, and shore-based debris. Currents concentrate the materials and deposit them on the reefs and beaches of the island chain. The debris hinders the recovery of the critically endangered Hawaiian monk seal and threatens sea turtles and other marine life through entanglement, drowning and suffocation hazards. Between 1982 and 2003 there were 238 documented monk seal entanglements in marine debris in the NWHI, though many more likely occurred. In addition, debris frequently entangles and kills corals, leads to the death of seabirds through entanglement in nets and accidental consumption of floating plastics, and poses a navigation hazard. A successful multi-agency effort has removed more than 360 tons of debris from NWHI reefs in the past 10 years. You can do your part by properly disposing of your trash and fishing gear, purchasing products with minimal packaging and recycling everything you can.

ALIEN AND INVASIVE SPECIES

Invasive species are causing significant ecological and economic impacts worldwide. An invasive species is defined as a non-native (or alien) species whose introduction causes or is likely to cause economic or environmental harm or harm to human health. It is nearly impossible to determine which alien species will become invasive and have harmful impacts on an ecosystem. Therefore, a precautionary approach treats all alien species as potentially invasive.

While few alien species are now established in the waters of the NWHI, global trends suggest that that the threat is high. Once established, invasive species can be extremely costly to control and would likely be impossible to eradicate from reefs. On land, several invasive species have already dramatically damaged ecosystems. Requirements to wear new, previously frozen clothes when visiting sensitive land areas, and treating diving equipment in a dilute bleach solution help to prevent new introductions.

SEA TEMPERATURE CHANGE

Temperature anomalies present another significant threat to the marine and terrestrial components of the monument. Elevated sea surface temperatures may be linked to coral bleaching events reported in the NWHI in recent years. These bleaching events place stress on corals, making them more susceptible to disease. Additionally, recent concerns have been raised regarding potential sea level changes in the NWHI and the resulting impacts on monk seal and sea turtle haul-out sites, as well as ground nesting sites of shorebirds. Further study will be required to determine the extent of such threats and the need for mitigation actions.

ILLEGAL ACTIVITIES

While the remote location of the NWHI has helped to protect them, it also provides a potential source of cover for those interested in exploiting the area illegally. Illegal access to the monument, discharge, dumping, and poaching are particular causes of concern. While the establishment of the monument provides an additional layer of protection to the area, enforcement remains challenging on a practical level due to the region’s size and remoteness. Historically, enforce- ment has relied on reports passed along by fishermen, researchers and agency personnel working in the area, as well as routine fly-overs and vessel patrols by the U.S. Coast Guard. In addition to the existing channels of information, the monument plans to use remote surveillance (satellites, radar, vessel monitoring systems) to directly inform on-the- water law enforcement officers of potential violations.

CUMULATIVE IMPACTS

One of the most significant threats to the NWHI is the potential for overuse. The cumulative impact of permitted activities could lead to habitat damage, wildlife habituation and other negative impacts. The monument co-trustees are developing a single integrated permitting process to allow tracking, monitoring and planning for all permitted activities within the monument. The goal is to evaluate the individual and cumulative impacts of all permitted activities, particularly the collection of organisms, and where possible reduce these impacts. Technologies such as spatial databases and mapping systems will be used to aid in this purpose.
MANAGING HUMAN ACTIVITIES: Permits and Access

Any and all human presence and activities could potentially cause unintended harm to the fragile ecosystems of the Northwestern Hawaiian Islands (NWHI), even when undertaken with care. The primary goals behind regulating access to the area are to: preserve the fragile marine and terrestrial habitats in their natural state, protect the unique historical and cultural resources of the region, limit any degradation of resources, and make it easier to distinguish legitimate activities from illegitimate, or illegal ones. While some activities are prohibited within the monument under any circumstances (see box text on following page), a variety of others may be allowed with an approved permit. Permits allow management agencies to regulate activities and to track where, when and how they are conducted so that cumulative impacts over time can be evaluated, and minimized.

Entering the monument is prohibited, unless the access and related activities are specifically allowed by permit, with certain exemptions including: uninterrupted passage, law enforcement activities, activities conducted by the armed forces including the U.S. Coast Guard, or activities necessary to respond to emergencies.

Vessels may pass through the monument without interruption provided that they notify the monument prior to entering and after leaving the monument. Phone numbers and an email address are provided for this purpose. To notify the monument of passage call: toll-free in the U.S.: (866)478-NWHI (6944), or outside the U.S., via satellite phone, or on O‘ahu: (808)395-NWHI (6944), or send an email to nwhi.notifications@noaa.gov. Please provide your position, vessel identification, contact information of owner and operator, USCG documentation, state license or registration number, home port, intended and actual route through the monument, categories of hazardous cargo, length of vessel, and propulsion type.

Prohibitions do not repeal (or “white out”) any State of Hawai‘i or Fish and Wildlife Service regulations. Additional restrictions apply to National Wildlife Refuges, the State NWHI Marine Refuge and Kure Atoll State Wildlife Sanctuary.

CO-TRUSTEE COORDINATION:

Authority over activities in the NWHI is shared by co-trustee agencies: NOAA’s National Marine Sanctuary Program (NMSP) and National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (FWS) and the State of Hawai‘i (State) – each agency having distinct yet often overlapping management responsibilities.

Jurisdictional Authorities

The area subject to this coordinated management comprises NWHI lands (all islands, atolls, reefs, shoals, banks, and seamounts from 50 miles east of Nihoa Island in the southeast to beyond Kure Atoll in the northwest) and waters 50 miles on either side of a line drawn through those lands. The marine waters and submerged lands of the NWHI encompass an area extending approximately 1,200 miles long and include
the marine waters designated as the monument, State of Hawai‘i’s waters and submerged lands, Kure Atoll State Wildlife Sanctuary, Hawaii Islands National Wildlife Refuge, Midway Atoll National Wildlife Refuge, and the Battle of Midway National Memorial.

Permits issued by the monument incorporate specific conditions on locations, terms of conduct, reporting, and use of best management practices to minimize threats to the ecosystem. Permitting and enforcement are becoming increasingly integrated and coordinated among jurisdictional agencies, allowing for greater capacity, efficiency and effectiveness over time. Development of a fully integrated permit and tracking system, permit reporting criteria, understanding patterns of use, and interagency enforcement efforts are a few of the many integral aspects of the coordinated permitting process.

BIOLoGICAL PROTOCOLS

Endemic (found nowhere else) plant and animal species are especially vulnerable to the introduction of competing or consuming species, thus biological protocols have been established to minimize the risk of spreading invasive species (a few of these protocols are highlighted on the next page).

Cultural Protocols

The NWHI are culturally significant to Native Hawaiians. The State of Hawai‘i’s Native Hawaiian Advisory Group, consisting of cultural practitioners and other members of the Native Hawaiian community is currently working with monument staff to develop cultural protocols which will be implemented as part of the pre-access training given to all permittees entering the monument.

Types of Monument Permits

Permitting Procedures and Criteria

The co-trustees may issue a permit if they find that the activity falls into one of the six categories listed in the paragraphs below. In addition to these activities, the proclamation allows that a limited amount of commercial bottomfishing and associated pelagic trolling may continue for 5 years. This activity will continue to be regulated by NMFS through commercial bottomfishing permits. Proclamation 8031 provides more detail on these criteria, or “findings,” that guide the evaluation of permit applications, as well as commercial fishing restrictions. The full text of the proclamation can be found at: www.hawaiireef.noaa.gov/about/

PERMIT TYPES

Research

Permits will be considered for research projects designed to enhance understanding of the monument or improve resource management decision making. Priority will be given to research proposals that help meet the management needs of the monument and its co-trustee agencies. Some of the types of activities that will be conducted under a research permit include but are not limited to monitoring, mapping, habitat characterization, and submerged archaeological research.

Education

Education permits will be considered for activities that further the educational value of the monument, enhance the understanding of the NWHI ecosystems, improve resource management decision making, promote Native Hawaiian knowledge and values, and aid in enforcement and compliance efforts. These permits will be considered for activities that have clear educational or public outreach benefits, and that promote, “bringing the place to the people rather than the people to the place.” Some examples of potentially eligible projects are educator at sea programs on NOAA ships, video and photograph documentation, as well as distance learning projects.

Conservation and Management

Management permits will be considered for activities required for the general management of monument resources or users. This may include activities associated with resource management, marine debris removal. Management permits will also be issued to the appropriate entities for response, restoration and long-term monitoring activities. Management permits provide a mechanism to respond to non-emergency events in the monument that may not have been anticipated, such as coral bleaching episodes and invasive species surveys.

Native Hawaiian Practices

Proclamation 8031 defines a Native Hawaiian Practice as, “Cultural activities conducted for the purposes of perpetuating traditional knowledge, caring for and protecting the environment, and strengthening cultural and spiritual connections to the Northwestern Hawaiian Islands that have demonstrable benefits to the Native Hawaiian community. This may include, but is not limited to, the non-commercial use of monument resources for direct personal consumption while in the monument.”

Permits will be considered for Native Hawaiian cultural practices. Kūpuna (knowledgeable elders) and other cultural practitioners and experts may be consulted on applications. Permit conditions and protocols will continue to be developed through consultation with the Native Hawaiian community.

Special Ocean Use

Proclamation 8031 defines Special Ocean Use as, “An activity or use of the monument that is engaged in to generate revenue or profits for one or more of the persons associated with the activity or use, and does not destroy, cause the loss of, or injure monument resources. This includes ocean-based eco-tourism and other activities such as educational and research activities that are engaged in to generate revenue, but does not include commercial fishing for bottomfish or pelagic species conducted pursuant to a valid permit issued by NOAA.” Additionally, permits issued for activities under the Special Ocean Use category must directly benefit the conservation and management of the monument. Special Ocean Use activities being permitted for the first time will be restricted in duration and size and permitted as a special ocean use pilot project. Special Ocean Use permits must not involve the use of a commercial passenger vessel.

Recreation

Permits will be considered for recreational activities that do not involve fee-service transactions (noncommercial) and occur only within the Midway Atoll Management Area. Proclamation 8031 defines Recreational Activity as, “An activity conducted for personal enjoyment that does not result in the extraction of monument resources and that does not involve a fee-service transaction. This includes, but is not limited to, wildlife viewing, SCUBA diving, snorkeling, and boating.”

Frozen Clothes

The dry land areas of the NWHI have been isolated from each other for millions of years, and they have developed unique plant and animal communities. Although the main Hawaiian Islands have been overrun by non-natives, islands such as Nihoa preserve the last remaining examples of intact Hawaiian coastal plant communities. For this very reason it is necessary for visitors to wear new clothes that have been previously frozen for 48 hours, stored in sealed bags and worn only, until just prior to landing. The freezing kills invasive hitchhikers, and may identify plant seeds. Such precautionary measures help to maintain these fragile habitats, and prevent introduction of new species by human transport. Visitors to sensitive land areas in the NWHI must plan accordingly to have separate sets of frozen gear for each area they visit.

Bleaching Scuba Gear

When diving or snorkeling, we can unwittingly pick up pieces of algae and other living matter on our gear. Some species of algae can stay alive for days, or even weeks out of the water unless thoroughly dried, and can be transported from one area to another. Certain species that generally quickly become aggressive invaders, and can displace native algae. In the main Hawaiian Islands some coral reefs have been smothered by invasive algae, and species that grow so fast they become very difficult to remove. Scaling dive gear in a dilute bleach solution (about 1/4 cup bleach/gallon water) between dives locations can help prevent transporting invasive algae, coral disease pathogens and other critters to areas where they are not currently found. In the NWHI divers should soak their dive gear for 24 hours in fresh water prior to entering the NWHI and treat their dive equipment down with bleach solutions. Visual inspectors of gear for algaf fragments are also required.

Clean Your Hull of Hitchhikers

Most mariners know that if you leave your boat in the water for a whilealgae, barnacles and other living matter will grow on it. When boating around home this is not an issue, except to slow your boat down, but when traveling to new areas, especially sensitive areas like the NWHI, it can become a real problem. Your boat may be transporting hitchhikers that detach or fall off in the new area and start reproducing, possibly displacing native species. Hull inspection and cleaning before entering sensitive or new areas helps to prevent unknowingly spreading plants or animals to areas where they may cause harm. Permitted vessels must inspect their hulls and clean them, if necessary, prior to entering the monument.

20 Northwestern Hawaiian Islands National Monument

PROHIBITED ACTIVITIES

• Exploiting, developing, or producing oil, gas, or minerals within the monument;
• Using or attempting to use poisons, electrical charges, or explosives in the collection or harvest of a monument resource;
• Introducing, or otherwise releasing an introduced species from within or into the monument;
• Anchoring or having a vessel anchored on any living coral with an anchor, anchor chain, or anchor rope.

A rapid ecological assessment team at Gardner Pinnacles. Photo James Watt.

Bleaching Scuba Gear

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“To manage the monument, the Secretary of Commerce, in consultation with the Secretary of the Interior and the State of Hawai‘i, shall modify, as appropriate, the plan developed by NOAA’s National Marine Sanctuary Program through the public sanctuary designation process, and will provide for public review of that plan.”

— President George W. Bush

MANAGING A GLOBAL TREASURE

How do you effectively manage an area as vast and remote as the Northwestern Hawaiian Islands (NWHI), while integrating numerous other planning documents required under federal and state laws that have been or are being developed for the area? This enormous challenge was contemplated by NOAA, Fish and Wildlife Service (FWS), the State of Hawai‘i (State), the NWHI Coral Reef Ecosystem Reserve Advisory Council, and many others in designing a plan to protect the living, cultural and historical resources of the region as a public trust.

The public played a vital role in shaping the management plan for a proposed national marine sanctuary in the NWHI, through an extensive public process that formally began with public scoping meetings in 2002. Through this process, key resource management issues were identified and a vision, mission, management principles, goals and objectives were developed. These steps provided the basis for comprehensive management planning for the monument and were developed further through public involvement in more than 100 meetings and working group sessions, including 22 formal public hearings in Hawai‘i and Washington DC. The vast majority of more than 52,000 public comments submitted during the sanctuary designation process called for strong, lasting protection for the region.

With so much invested in development of the draft management plan for the proposed NWHI national marine sanctuary, and with many issues addressed within it being very similar to those facing the monument, the Proclamation states that this will be the basis for a monument management plan. Specifically, it states that to manage the monument, NOAA, in consultation with FWS and the State, “shall modify, as appropriate, the plan developed by NOAA’s National Marine Sanctuary Program through the public sanctuary designation process, and will provide for public review of that plan.”

The draft plan represents cutting-edge thinking in management of marine areas. It addresses a wide range of issues, from marine pollution to human uses and protected species, and provides a comparative baseline for future actions. The draft plan also describes an ecosystem-based approach to management, one that emphasizes interconnectivity and protection of ecosystem structure, function, and key processes, and seeks to minimize harm from human activities.

Key elements of the ecosystem based management framework for the monument include: (1) statutory authority of the Antiquities Act and other authorities; (2) a statement of overall management principles and direction; (3) mechanisms to promote and enhance collaboration with agency partners and other stakeholders; (4) regulations and zoning; (5) action plans with strategies designed to address management needs; (6) integration of ecosystem science and traditional knowledge; and (7) an adaptive management process. Together these elements provide a comprehensive approach to management uniquely tailored to the needs of NWHI ecosystems.

Action plans to address priority management needs are the heart of the management plan. There are 5 priority management needs and over 20 action plans designed to 1) understand and interpret the monument, 2) reduce threats to the ecosystem, 3) manage human activities, 4) coordinate conservation and management activities, and 5) achieve effective operations. The action plans describe the specific activities the management agencies will undertake to achieve the goals and objectives, as well as the desired outcomes of each action plan. The Evaluation Action Plan is devoted exclusively to performance evaluation and describes a process that will help managers determine if management actions are achieving the desired outcomes, addressing priority management needs, and meeting goals and objectives. The outcomes of evaluation processes can then be used to improve programs, and prioritize activities, and inform constituents.

WHAT’S HAPPENING NOW

In order to implement the key provisions of the proclamation, and to protect the ecosystem immediately, the monument initiated a “rolling implementation” strategy for the management plan, moving forward a number of activities from the draft action plans, subject to available resources.

Implementation of key activities will occur simultaneously with action plan revisions, adapting to the expanded and collaborative management structure of the monument. Examples of action plan strategies and activities that can be immediately implemented to reduce threats to the ecosystem include:

- Implementing a vessel notification and vessel monitoring systems
- Developing a united permitting program
- Coordinating a multi-agency enforcement team
- Conducting conservation, Native Hawaiian and maritime heritage research
- Continuing vessel hull inspection and cleaning
- Assessing vessel threats
- Developing and implementing a 5 year marine debris removal/prevention plan

In order to provide a comprehensive planning document for the monument, the action plans must be revised to reflect the statutory status of the monument, the inclusion of all agency jurisdictions and terrestrial issues. Agencies, experts and stakeholder input will be solicited through focused meetings to prepare the changes. The revised management plan for the monument will then be made available for public review. A final complete plan will be issued thereafter.
What is out there and how can we conserve it?

In the late 20th century, research efforts became more focused on conservation of our natural world. This paradigm shift stemmed from recognition that advances in technology and growing human population have dramatically increased pressures upon our oceans. Our oceans are still poorly understood compared to terrestrial environments. In this new era of natural resource management, research using advanced technologies will help to increase our understanding of the marine realm. This information will allow management agencies to most effectively protect these habitats, their organisms and the natural processes that connect them.

Movement of Big Predators

Top predators such as sharks, seals, and grizzlies play an important role in marine ecosystems. By feeding on other organisms, they help to keep the effects of the entire ecosystem in balance.

Science-based management requires an understanding of the movement patterns of top predators. Researchers track sharks and other big fish to learn about movement patterns in the Hawaiian Archipelago. These tags can relay information on the shark’s position to underwater listening stations or to satellites orbiting hundreds of miles above the Earth.

So far, research has shown that the animals are wide-ranging within the atolls and at least two species move between atolls, crossing the open ocean. One tagged tiger shark traveled from French Frigate Shoals to Kona - 700 miles away. Another traveled from French Frigate Shoals to Midway. Clear patterns of movement have also begun to emerge. Ulua (giant trevally) display regular daylight movements as well as seasonal movement patterns based on the phases of the moon.

Great Frigatebirds

Great frigatebirds, or ‘iwa, are emblematic of the splendor and fragility of the Northwestern Hawaiian Islands. Recent research has uncovered some surprising things about frigatebirds breeding at French Frigate Shoals. Frigatebirds are very long lived, with some individuals at least 44 years old, and genetic markers suggest that others are even older. Their reproduction is unique, requiring hard work by both parents for an entire year to raise a single offspring to independence. Biological research at the Northwestern Hawaiian Islands, including the use of satellite tags and satellite tracking technologies, will help that their iridescent feathers and the red balloon-like throat pouch, while a much smaller number of females fly in circles around the breeding colony, comparing the attributes of their enthusiastic suitors.

When not at the breeding colony, frigatebirds fly long distances over the ocean. With 6-foot wingspans but a weight of only 3 pounds, they use their glider-like bodies to soar high in the air to resources and热量. Satellite tags and satellite tracking technologies will help to increase our understanding of the habitat needs of these wide-ranging birds.

A Seal’s-Eye View—Monk Seals and CRITTERCAM

Hawaiian monk seals are on the brink of extinction. Only about 1,300 Hawaiian monk seals survive today — most of them making their home in the Northwestern Hawaiian Islands. Researchers hope that by using National Geographic’s CRITTERCAM, a video camera glued to the seals’ backs, they can find out what is hindering their survival.

As the seals swim around, the cameras allow researchers to see what habitats are used as foraging areas. Some surprising footage, such as those of adult male monk seals courting rockly bottoms, flipping over large, flat rocks in search of food. This showed scientists that the seals were not feeding in the atolls as previously believed, but many miles out to sea and at depths greater than 200 feet.

The cameras have also given insight into seal pups’ fishing techniques. This could be valuable information, since in recent years many seal pups have starved to death. With only 2 out of 10 pups surviving to their second birthday, juvenile mortality is a significant threat to species survival. Innovative tools, like CRITTERCAM, are essential to collecting the information we need to help these remarkable animals survive.

The discovery of the Downward Plunge, and the evidence that it is the life-saving escape response of the monk seal from oceanic predators, is one of the most exciting discoveries in the history of the species. This finding was made possible with the use of CRITTERCAM technology.
The new national monument creates a new opportunity for ocean education and research for decades to come. Successful ocean stewardship depends on informed policy makers and an informed public.

— President George W. Bush

In 2001, the NWHI co-trustees, Bishop Museum, the Polynesian Voyaging Society and a host of other community and government agencies joined forces to launch the Navigating Change educational partnership. Inspired by the vision of the late Pinky Thompson and his son Nainoa, the partnership built an educational program that extends Hōkūleʻa’s journeys to the NWHI into schools statewide. These classroom voyages of discovery challenge students to change their values, attitudes and behaviors, and encourage them to get actively involved in community efforts to rebuild and restore the marine and terrestrial environments where they live.

The Hawai’i Maritime Center, next to Aloha Tower, also hosts an interactive Navigating Change exhibit where visitors can role-play being a scientist exploring the NWHI on a research cruise.

To learn more about Navigating Change curriculum or upcoming teacher workshops, visit: www.navigatingchange.org

WHAT YOU CAN DO

• Learn more about the NWHI and your oceans, and how to protect them.
• Join our listserv to receive e-updates.
• Arrange a talk in your community.
• Volunteer.
• Attend our public meetings.
• Encourage others to get informed and involved.

GET INVOLVED

Whether you are just now learning about the Northwestern Hawaiian Islands, or have been actively involved with this place for years, we ask for your continued support in caring for this unique and vast ocean region.

The complete revised management plan for the monument will be made available for public review. The management plan is the document that will set the resource management framework for the monument into the future.

The public review period will provide an opportunity to offer your input on how best to conserve and manage the monument for generations to come.

We welcome your manaʻo, your thoughts on how you think the area should be managed, and hope you will take the time to get involved. The important thing to remember is that this is your ocean treasure, and for those who live in Hawai’i, your backyard.

For more information about the Northwestern Hawaiian Islands Marine National Monument please visit our website at: http://hawaiireef.noaa.gov or contact the monument office at: 808-397-2660.


P intrudcutor, Hōkūleʻa— Nainoa Thompson, Navigator, Hōkūleʻa

Navigating Change – President George W. Bush

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THE NORTHWESTERN HAWAIIAN ISLANDS are 140,000 square miles of ocean wilderness in our own backyard. Safe haven for fish, honu, monk seals, seabirds, corals and limu. With strong ties to Native Hawaiian culture and practices.

In becoming a marine national monument, this special ocean region has been accorded the nation’s highest form of marine environmental protection. Come to the public meeting and learn more about it.

A major part of Hawai‘i is now a national monument. Come find out more.

Public Information Meetings 6-8 pm

SEPTEMBER
Sept. 25: Moloka‘i - Kulana ‘Ōiwi Halau
Sept. 27: Maui - Maui Arts and Cultural Center
Sept. 28: Lāna‘i - Lāna‘i Library

OCTOBER
Oct. 2: Wai‘anae - Wai‘anae District Park
Oct. 3: Honolulu - Japanese Cultural Center
Oct. 4: Kane‘ohe - He‘eia Kea State Park
Oct. 5: Kaua‘i - Aloha Beach Resort, Kapa‘a
Oct. 10: Kona - King Kamehameha Kona Beach Hotel
Oct. 11: Hilo - Mokupāpapa: Discovery Center
Article Analysis Instructions (15 points Total)

Read the entire article before doing the analysis. I know when you don't read the article because your analysis makes no sense at all so READ FIRST!

PURPOSE: (3)
• Tell me why the author wrote this article?
• Find a sentence in the article that shows where you got your answer from. This is how you should write the sentence in the analysis:
  I know this because in the article it states "WRITE THE ENTIRE SENTENCE IN THE QUOTES",
• Then explain how the sentence you found backs up or is evidence of your answer,

POINT OF VIEW (3)
• What is the author's point of view? What is the author's side? What does the author think or want? » Find a sentence in the article that shows where you got your answer from. This is how you should write the sentence in the analysis:
  I know this because in the article it states "WRITE THE ENTIRE SENTENCE IN THE QUOTES",
• Then explain how the sentence you found backs up or is evidence of your answer.

ASSUMPTIONS (2)
» Tell me what you think about the article. DO NOT say "I agree with the author" I will not accept it!
• EXPLAIN your thoughts on the article.

CONCLUSION (3)
• Tell me what solutions the article has come up with. Even if the solutions are not in effect yet, tell me what the suggestions are.
• Find a sentence in the article that shows where you got your answer from. This is how you should write the sentence in the analysis:
  I know this because in the article it states "WRITE THE ENTIRE SENTENCE IN THE QUOTES",
• Then explain how the sentence you found backs up or is evidence of your answer,

IMPLICATIONS & CONSEQUENCES (2)
» Tell me what you think about the solutions in the article. Do you think they are good or bad and WHY?
• Tell me what solutions you can come up with for this problem-

CONCEPTS: (2)
• List the words you do not know in this article.
• Make sure you list a few.
The Last Best Place: Terrestrial Environments

Although some of the Northwestern Hawaiian Islands (NWHI) were decimated by introduced mammals (rabbits, in the case of Laysan), other islets and atolls have been relatively untouched by humans. As a result, robust seabird populations and healthy insect and plant communities can still be found, and in places that were heavily impacted, seabird and plant populations are now on the mend. Nihoa Island is one of the most biologically pristine islands in the Pacific, and probably most closely represents the original island appearance and native species found before humans arrived in the Hawaiian Islands.

The plants of the NWHI are primarily coastal strand species of the Pacific that can tolerate high salt levels, periodic drought, and intense sun. Most have seeds capable of dispersing in seawater. Some plants evolved into new species, and six endemic plants are listed under the Endangered Species Act, including the endangered fan palm *Pritchardia remota* found only on Nihoa. A similar palm went extinct during the rabbit plague on Laysan Island, and in recent years an alien grasshopper has attacked Nihoa’s palms.

The first entomologists (insect scientists) visited Laysan Island in 1893, and upon numerous subsequent visits, identified at least 75 native species, including 15 found only on Laysan. The arthropods and land snails are the least understood components of the terrestrial ecosystems, but studies continue to improve our knowledge. At least 35 species of endemic insects and spiders, and six species of endemic land snails have been identified at Nihoa Island. Unfortunately, positive discoveries are at times offset by negative ones – as many as 125 species of alien insects and spiders have also been found, and some of these, particularly ants, are extremely destructive. Considered "ecosystem busters," introduced ants have the ability to displace native species, and even affect the survival of ground nesting seabirds.

More than 99 percent of the world’s Laysan albatrosses and 98 percent of the world’s black-footed albatrosses return to the NWHI each year to reproduce. For species such as Bonin petrels and Tristram’s storm-petrels, these tiny specks of land provide their only breeding site.

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The Northwestern Hawaiian Islands (NWHI) not only possess incredible natural resources worthy of our best efforts at conservation, but these distant atolls are also the locations of historic shipwreck sites, heritage resources which capture our seafaring past in graphic detail. Since systematic survey began in 2002, our understanding of these sites continues to increase. Each wreck site is like a time capsule, allowing us to glimpse a part of seafaring history.

The wrecks of American and British whaling ships lost during the early decades of the 19th century depict the many hazards associated with seafaring. The debris trail of the American whaler *Parker*, lost in 1842 during a violent storm, depicts a ship washed entirely into the lagoon at Kure Atoll, equipment being swept off the decks as the vessel passed the reef crest. The wreck of the British whaler *Pearl*, lost at Pearl and Hermes Atoll in 1822, tells a different story. There, the ship fell apart where she grounded, the crew having wrecked in calm conditions on the uncharted atoll. Salvage was possible, and soon a schooner named *Deliverance* was constructed on the beach.

The steam machinery and armament of the USS *Saginaw*, lost in 1870, represents a slice of Civil War history in the Pacific. The remains of the side wheel navy steamer are scattered on top and underneath the reef crest. However objects, such as the cannon, steampipes, and paddlewheel shafts, are solidly embedded in the coraline substrate.

The capstans, anchors, masts, and rigging of the Dunnottar Castle, a 238-foot iron hulled sailing ship lost in 1856, portray the days of the great sailing ships like the Falls of Clyde (now part of the Hawai‘i Maritime Center), the Balclutha, and the Star of India. A time when our maritime commerce was driven by steel masts and canvas and human hands. The wreck site is an inventory of our industrial wind-driven commerce long before our dependence on fossil fuels.

These and many other heritage sites in the NWHI are rare and protected resources which bear human testimony to unique Pacific seafaring experiences. More than 100 vessels and aircraft are known to have been lost in the NWHI. They are unique parts of an untouched museum of our maritime past, set amidst the beauty of the Northwestern Hawaiian Island’s natural environment.
Most of the threats to the ecosystems of the Northwestern Hawaiian Islands (NWHI) are posed by human activities. In the past, a number of scientific, military, and commercial activities have threatened the NWHI. Current uses are limited primarily to management activities by jurisdictional agencies, research, education, Native Hawaiian practices, a small scale commercial bottomfishing and pelagic trolling operation, as well as a small number of recreational trips and visits to historical sites at Midway Atoll. The threats associated with these activities originate both inside and outside the monument, making them more difficult to address. The monument is working to reduce threats through an ecosystem-based approach to management. This includes the development of an effective regulatory framework, education and outreach, preventative measures to minimize risk, and response and restoration to damaged or degraded natural resources.

**VESSEL HAZARDS**

Ships allow human access and make activities possible in the vast and remote NWHI. Vessels, however, can introduce specific hazards to the marine environment via physical impacts caused by groundings and fuel, chemical and oil spills. Biological impacts, including introduction of alien species through hull fouling or ballast water discharge, and interactions with protected marine species, are also a concern. The monument addresses threats from vessels of all types through prohibitions and permit conditions.

**MARINE DEBRIS**

Marine debris is a severe and chronic threat to NWHI wildlife and marine habitats. Ocean currents carry a wide array of marine debris, including derelict fishing nets and other gear, household plastics, hazardous materials, and shore-based debris. Currents concentrate the materials and deposit them on the reefs and beaches of the island chain. The debris hinders the recovery of the critically endangered Hawaiian monk seal and threatens sea turtles and other marine life through entanglement, drowning and suffocation hazards. Between 1982 and 2003 there were 238 documented monk seal entanglements in marine debris in the NWHI, though many more likely occurred. In addition, debris frequently entangles and kills corals, leads to the death of seabirds through entanglement in nets and accidental consumption of floating plastics, and poses a navigation hazard. A successful multi-agency effort has removed more than 560 tons of debris from NWHI reefs in the past 10 years. You can do your part to properly disposing of your trash and fishing gear, purchasing products with minimal packaging and recycling everything you can.

**ENVIRONMENTAL IMPACTS**

Invasive species are causing significant ecological and economic impacts worldwide. An invasive species is defined as a non-native (or alien) species whose introduction causes or is likely to cause economic or environmental harm to humans. It is nearly impossible to determine which alien species will become invasive and have harmful impacts on an ecosystem. Therefore, a precautionary approach treats all alien species as potentially invasive.

While few alien species are now established in the waters of the NWHI, global trends suggest that the threat is high. Once established, invasive species can be extremely costly to control and would likely be impossible to eradicate from reefs. On land, several invasive species have already dramatically damaged ecosystems. Requirements to wear new, previously frozen clothes when visiting sensitive land areas, and treating diving equipment in a dilute bleach solution help to prevent new introductions.

**SAE TEMPERATURE CHANGE**

Temperature anomalies present another significant threat to the marine and terrestrial components of the monument. Elevated sea surface temperatures may be linked to coral bleaching events reported in the NWHI in recent years. These bleaching events place stress on corals, making them more susceptible to disease. Additionally, recent concerns have been raised regarding potential sea level changes in the NWHI and the resulting impacts on monk seal and sea turtle haul-out sites, as well as ground nesting sites of shorebirds. Further study will be required to determine the extent of such threats and the need for mitigation actions.

**CUMULATIVE IMPACTS**

One of the most significant threats to the NWHI is the potential for overuse. The cumulative impact of permitted activities could lead to habitat damage, wildlife habituation, and other negative impacts. The monument co-trustees are developing a single integrated permitting process to allow tracking, monitoring and planning for all permitted activities within the monument. The goal is to evaluate the individual and cumulative impacts of all permitted activities, particularly the collection of organisms, and where possible reduce these impacts. Technologies such as spatial databases and mapping systems will be used to aid in this purpose.
MANAGING HUMAN ACTIVITIES: Permits and Access

Any and all human presence and activities could potentially cause unintended harm to the fragile ecosystems of the Northwestern Hawaiian Islands (NWHI), even when undertaken with care. The primary goals behind regulating access to the area are to: preserve the fragile marine and terrestrial habitats in their natural state, protect the unique historical and cultural resources of the region, limit any degradation of resources, and make it easier to distinguish legitimate activities from illegitimate, or illegal ones. While some activities are prohibited within the monument under any circumstances (see box text on following page), a variety of others may be allowed with an approved permit. Permits allow management agencies to regulate activities and to track where, when and how they are conducted so that cumulative impacts over time can be evaluated, and minimized.

Entering the monument is prohibited, unless the access and related activities are specifically allowed by permit, with certain exemptions including: uninterrupted passage, law enforcement activities, activities conducted by the armed forces including the U.S. Coast Guard, or activities necessary to respond to emergencies.

Vessels may pass through the monument without interruption provided that they notify the monument prior to entering and after leaving the monument. Phone numbers and an email address are provided for this purpose. To notify the monument of passage call: toll-free in the U.S.: (866)478-NWHI (6944), or outside the U.S., via satellite phone, or on O‘ahu: (808)395-NWHI (6944), or send an email to nwhinotifications@noaa.gov. Please provide your position, vessel identification, contact information of owner and operator, USCG documentation, state license or registration number, home port, intended and actual route through the monument, categories of hazardous cargo, length of vessel, and propulsion type.

Prohibitions do not repeal (or “white out”) any State of Hawai‘i or Fish and Wildlife Service regulations. Additional restrictions apply to National Wildlife Refuges, the State NWHI Marine Refuge and Kure Atoll State Wildlife Sanctuary.

CO-TRUSTEE COORDINATION:

Authority over activities in the NWHI is shared by co-trustee agencies: NOAA’s National Marine Sanctuary Program (NMSP) and National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (FWS) and the State of Hawai‘i (State) – each agency having distinct yet often overlapping management responsibilities.

Jurisdictional Authorities

The area subject to this coordinated management comprises NWHI lands (all islands, atolls, reefs, shoals, banks, and seamounts from 50 miles east of Nihoa Island in the southeast to beyond Kure Atoll in the northwest) and waters 50 miles on either side of a line drawn through those lands. The marine waters and submerged lands of the NWHI encompass an area extending approximately 1,200 miles long and include

\[780x782]Northwestern Hawaiian Islands Marine National Monument\]

\[780x782]Research diver at Nihoa Island. Photo: James Watt.\]

\[780x782]Northwestern Hawaiian Islands Marine National Monument\]
the marine waters designated as the monument, State of Hawai ‘ i’s waters and submerged lands, Kure Atoll State Wildlife Sanctuary, Hawaiian Islands National Wildlife Refuge, Midway Atoll National Wildlife Refuge, and the Battle of Midway National Memorial.

Permits issued by the monument incorporate specific conditions on locations, terms of conduct, reporting, and use of best management practices to minimize threats to the ecosystem. Permitting and enforcement are becoming increasingly integrated and coordinated among jurisdictional agencies, allowing for greater capacity, effectiveness and efficiency over time. Development of a fully integrated permit and tracking system, permit reporting criteria, understanding patterns of use, and interagency enforcement efforts are a few of the many integral aspects of the coordinated permitting process.

BIological PROTOCOLs

Endemic (found nowhere else) plant and animal species are especially vulnerable to the introduction of competing or consuming species, thus biological protocols have been established to minimize the risk of spreading invasive species (a few of these protocols are highlighted on the next page).

CuLtuRAL PROTOCOLS

The NWHI are culturally significant to Native Hawaiians. The State of Hawai ‘ i’s Native Hawaiian Advisory Group, consisting of cultural practitioners and other members of the Native Hawaiian community is currently working with monument staff to develop cultural protocols which will be implemented as part of the pre-access training given to all permittees entering the monument.

tYpes of monument PERmits

Permitting Procedures and Criteria

The co-trustees may issue a permit if they find that the activity falls into one of the six categories listed in the paragraphs below. In addition to these activities, the proclamation allows that a limited amount of commercial bottomfishing and associated pelagic trolling may continue for 5 years. This activity will continue to be regulated by NMFS through commercial bottomfishing permits. Proclamation 8031 provides more detail on these criteria, or “findings,” that guide the evaluation of permit applications, as well as commercial fishing restrictions. The full text of the proclamation can be found at: www.hawaiireef.noaa.gov/management/

PERMIT TYPES

Research

Permits will be considered for research projects designed to enhance understanding of the monument or improve resource management decision-making. Priority will be given to research proposals that help meet the management needs of the monument and its co-trustee agencies. Some of the types of activities that will be conducted under a research permit include but are not limited to monitoring, mapping, habitat characterization, and submerged archaeological research.

Education

Education permits will be considered for activities that further the educational value of the monument, enhance the understanding of the NWHI ecosystems, improve resource management decision making, promote Native Hawaiian knowledge and values, and aid in enforcement and compliance efforts. These permits will be considered for activities that have clear educational or public outreach benefits, and that promote, “bringing the place to the people rather than the people to the place.” Some examples of potentially eligible projects are educator at sea programs on NOAA ships, video and photography documentation, as well as distance learning projects.

Conservation and Management

Management permits will be considered for activities required for the general management of monument resources or users. This may include activities associated with resource management, such as marine debris removal. Management permits will also be issued to the appropriate entities for response, restoration and long-term monitoring activities. Management permits provide a mechanism to respond to non-emergency events in the monument that may not have been anticipated, such as coral bleaching episodes and invasive species surveys.

Native Hawaiian Practices

Proclamation 8031 defines a Native Hawaiian Practice as, “Cultural activities conducted for the purposes of perpetuating traditional knowledge, caring for and protecting the environment, and strengthening cultural and spiritual connections to the Northwestern Hawaiian Islands that have demonstrable benefits to the Native Hawaiian community. This may include, but is not limited to, the non-commercial use of monument resources for direct personal consumption while in the monument.”

Permits will be considered for Native Hawaiian cultural practices. Kūpuna (knowledgeable elders) and other cultural practitioners and experts may be consulted on permits. Permit conditions and protocols will continue to be developed through consultation with the Native Hawaiian community.

Special Ocean Use

Proclamation 8031 defines Special Ocean Use as, “An activity or use of the monument that is engaged in to generate revenue or profits for one or more of the persons associated with the activity or use, and does not destroy, cause the loss of, or injure monument resources. This includes ocean-based eco-tourism and other activities such as educational and research activities that are engaged in to generate revenue, but does not include commercial fishing for bottomfish or pelagic species conducted pursuant to a valid permit issued by NOAA.”

Additionally, permits issued for activities under the Special Ocean Use category must directly benefit the conservation and management of the monument. Special Ocean Use activities being permitted for the first time will be restricted in duration and permitted as a special ocean use pilot project. Special Ocean Use permits must not involve the use of a commercial passenger vessel.

Recreation

Permits will be considered for recreational activities that do not involve fee-for-service transactions (noncommercial) and occur only within the Midway Aтол Special Management Area. Proclamation 8031 defines Recreational Activity as, “An activity conducted for personal enjoyment that does not result in the extraction of monument resources and that does not involve a fee-for-service transaction. This includes, but is not limited to, wildlife viewing, SCUBA diving, snorkeling, and boating.”

Frozen Clothes

The key land areas of the NWHI have been isolated from each other for millions of years, and they have developed unique plant and animal communities. Although the main Hawaiian Islands have been overrun by nonnatives, islands such as Niihau preserve the last remaining examples of intact Hawaiian coastal plant communities. For this very reason it is necessary for visitors to wear new clothes that have been previously frozen for 48 hours, stored in sealed bags and worn only just prior to landing. The freezing kills invasive hitchhikers, and may seed plant traits. Such precautionary measures help to maintain these fragile habitats, and prevent introduction of new species by human transport. Visitors to sensitive land areas in the NWHI must plan accordingly to have separate sets of frozen gear for each area they visit.

Bleaching Scuba Gear

When diving or snorkeling, you can unknowingly pick up pieces of algae and other living matter on your gear. Some species of algae can stay alive for days, or even weeks out of the water unless thoroughly dried, and can be transported from one area to another. Certain species that generally are quick to become aggressive invaders, and can displace native algae. In the main Hawaiian Islands some coral reefs have been smothered by invasive algae, and species that grow so fast they become very difficult to remove. Soaking dive gear in a dilute bleach solution (about 1/8 cup bleach/gallon water) between dive locations can help prevent transporting invasive algae, coral disease pathogens and other critters to areas where they are not currently found. In the NWHI divers must soak their dive gear for 24 hours in fresh water prior to entering the NWHI and treat their dive equipment between dive locations with the bleach solution. Visual inspectors of gear for algal fragments are also required.

Clean Your Hull of Hitchhikers

You must clean your boat or anything you transport from one area to another on it. When boating around home this is not an issue, except to slow your boat down, but when traveling to new areas, especially sensitive areas like the NWHI, this can be a real problem. Your boat may be transporting hitchhikers that detach or fall off in the new area and start reproducing, possibly displacing native species. Hull inspection and cleaning before entering sensitive or new areas helps to prevent unknowingly spreading plants or animals to areas where they may cause harm. Permitted vessels must inspect their hulls and clean them, if necessary, prior to entering the monument.

PROHIBITED ACTIVITIES

• Exploiting, for developing, or producing oil, gas, or minerals within the monument;
• Introducing or attempting to use poisons, electrical charges, or chemicals in the production or bogging of a monument resource;
• Introducing or otherwise releasing an introduced species within or onto the monument;
• Anchoring or anchoring a vessel anchored on any living coral with an anchor, anchor chain, or anchor rope.

Effective May 17, 1996.
Northwestern Hawaiian Islands Quiz
Complete the quiz answering each question to the best of your ability. You should be able to answer all the questions with the knowledge that you gained during your NWHI interactive lesson.

1) This island is home to the endemic Laysan Finch and Laysan Duck.

2) What island of the NWHI is the largest volcanic island of the NWHI?

3) This NWHI is the Northernmost in the chain of NWHI

4) List the names (either English or Hawaiian) of 5 NWHI

5) List the names of 3 animals that can be found in the NWHI that utilize the islands
Northwestern Hawaiian Islands Quiz 11 points total
Complete the quiz answering each question to the best of your ability. You should be able to answer all the questions with the knowledge that you gained during your NWHI interactive lesson.

1) This island is home to the endemic Laysan Finch and Laysan Duck. (1)
   Laysan Island

2) What island of the NWHI is the largest volcanic island of the NWHI? (1)
   Nihoa Island

3) This NWHI is the Northernmost in the chain of NWHI. (1)
   Kure Atoll

4) List the names (either English or Hawaiian) of 5 NWHI. (5)
   Nihoa Island, Gardner Pinnacles (Puhahonu), Lisianski Island (Papa’apohoa), Necker Island (Mokumanamana), Maro Reef (Ko’anako’a), Pearl & Hermes Atoll (Holoikauaua), French Frigate Shoals (Kanemiloha’i), Laysan Island (Kauo), Midway Atoll (Pihemanu), Kure Atoll (Mokupapapa)

5) List the names of 3 animals that can be found in the NWHI that utilize the islands. (3)
   Hawaiian Monk Seal, Hawaiian Green Sea Turtle, Laysan Albatross, Laysan Duck, as well as several more are all acceptable answers.