

PROPOSAL FOR THE ILIO POINT
NATURAL AREA RESERVE

October 1, 2009

I EXECUTIVE SUMMARY

The northwestern tip of Molokai is proposed to become a Natural Area Reserve (NAR). Designation of the area as a NAR is meant to protect and help restore a coastal ecosystem that is part of a larger wilderness area. This area also contains significant geological features of lithified sand dunes, sea cliffs, and subfossil bird bones and land snails.

II INTRODUCTION (General)

Ilio Point has long been known for its significant biological and geological features. The coastal vegetation is particularly rich, with five native coastal natural communities comprised of 23 native plant species. The sand dunes are predicted to be able to support abundant seabird populations, if predators are controlled (Swenson, USFWS, 2008 and Duvall, DOFAW, 2009). Evidence of previous bird inhabitation, as well as observations of nesting attempts suggest that this could be a significant nesting ground. For example, habitat restoration in nearby Moomomi Preserve, managed by The Nature Conservancy, has encouraged nesting of wedge-tailed shearwaters (*Puffinus pacificus*) (TNC, 2005). The endangered Hawaiian monk seal (*Monachus schauinslandi*) also has been seen resting at Ilio Point.

The inclusion of this area into the NARS is meant to protect a coastal ecosystem. This type of ecosystem merits conservation and restoration effort because coastal areas have been severely modified by invasive species and human activity and development in Hawaii.

Last year the land surrounding Ilio point was leased from Molokai Ranch by the Molokai Land Trust. Additionally, the Enhancement Initiative of the Natural Area Reserves System Commission highlighted the importance of this coastal site, and discussions within the Division of Forestry and Wildlife, as well as with other partners involved in the area have suggested that this area merits further protection.

Priority threats to these resources are ungulates such as Axis deer (*Axis axis*), non-native plants, especially Kiawe (*Prosopis pallida*), and small predatory mammals. Complicating restoration attempts is the presence of unexploded ordnance and degrading buildings from past military use.

The area proposed is approximately 261 acres of unencumbered State land in the Conservation District, identified by TMK (2) 5-1-002;006.

III BACKGROUND AND HISTORY

Past Land Use and Conservation History

Evidence of human use of the long, windswept coastline of northwestern Molokai dates back to 1200 AD (Juvik, et. al. 1998). Fishing shrines (*koa*), *heiau*, burials, and basalt quarries are the main archeological sites found on the north and west coasts, including a *koa* found at the tip of

Ilio Point (Juvik, et. al., 1998).

Throughout human occupation, Ilio Point remained an important fishing area, but did not escape modification and development. The United States Navy acquired the Site in 1940 from a private landowner for use as an aerial bombing and strafing range. In December 1949, the U.S. Navy transferred ownership of the 261 acre parcel to the US Coast Guard for use as a Loran Station. At that time the entire site was superficially decontaminated of unexploded ordnance (UXO) and only the few acres of land surrounding the USCG building sites were completely cleared of UXO. The Loran station was closed in 1966, and then sold to the State of Hawaii (Dashiell, 1988). In 1966, a month-long de-dudding operation including a surface sweep and clearance of the area was undertaken. When the area was purchased by the State in 1968, an amendment of the deed placed the responsibility to decontaminate the property on the State, rather than the Federal government. In the late 1970s, State Legislators requested that Ilio Point be decontaminated to allow the area to become a park.

While the area was once again studied as a possible Marine Corps base in 1996, not much activity has since occurred in Ilio Point, besides repairs to a fence that is meant to keep people from accessing this contaminated area. Throughout the years, ungulates, especially Axis deer (*Axis axis*) have impacted the vegetation, and alien plants have invaded. However, biological surveys still attest that this area contains high levels of biodiversity, and also the potential for seabird habitat.

Present Land Use and Access/Cultural Recreational Uses

Currently, few dilapidated Coast Guard buildings remain, and a gated private 4WD road intersects the property from the east. Most visitors access this area from the south, following a coastal trail. As mentioned earlier, an ancient fishing shrine exists in Ilio Point, and this area is still important for fishers.

In 2008, Molokai Land Trust leased the surrounding property, which extends to the south and west. The land trust is now undergoing a management planning process. West of the land trust's area is Moomomi, a preserve owned and managed by The Nature Conservancy.

Ilio Point, or Kalaeokailio, has an ancient legend of a red dog associated with it, which explains its name (Ne, et. al., 1992). This area also contains plants and animals that Hawaiians traditionally collect for practical, medicinal, decorative, and spiritual uses (Gutmanis, 1979). Some of these plants and animals are considered sacred to certain gods or because they are associated with cultural practices (Kanahele, 1986). For instance, the Pau o Hiiaka (*Jacquemontia ovalifolia*) is associated with a legend about goddesses Hiiaka and her sister Pele. Pili grass (*Heteropogon contortus*) was widely used by Hawaiians for thatch and house construction, and Ilima papa (*Sida fallax*) is popular for making lei. Preservation of these species is essential to the continuation of traditional Hawaiian cultural practices.

Previous Studies

Ilio Point has been studied for its archeological, paleontological, geological, and biological resources. Botanical findings have been recorded by the Hawaii Natural Heritage Database, as well as by the National Tropical Botanical Garden. Additionally, a recent botanical survey has found 21 coastal plant species at Ilio Point, one of which was referred to as an undescribed taxon of *Chenopodium* which is only known from a few individuals from two sites (Warshauer, et. al., 2008).

IV JUSTIFICATION (Specifics)

Scientific Value

Ilio Point is one of the most species-rich coastal ecosystems, with over 70% of arid native species present (Warshauer, et. al. 2008).

Additionally, the area has had enormous scientific value because it contains avian and land snail subfossils. A survey in 1971 by Joan Aidem resulted in the discovery of two new genera and species of flightless birds in the dunes of Ilio Point (Kay, 1995). This was a major breakthrough in avian paleontology in Hawaii.

Ilio Point represents the NW rift zone of West Moloka'i Volcano, which formed during the Pliocene and Pleistocene (Stearns and Macdonald, 1947; Sherrod, et. al., 2007). The youngest lavas at Ilio Point are part of the Pleistocene postshield-stage sequence erupted from Kahenawai. Younger and older beach and dune deposits from the Holocene extend eastward from the area, past a buried shield-stage cinder cone at Kealapupuakiha, and partially covering shield lava at Puu Kaeo. An adze quarry near Puu Kaeo (Sinton and Sinoto, 1997) is mainly situated in a late-shield lava flow that partially drapes around the slightly older Kaeo cone and lava (Sinton, unpublished). Unlike Kaena and Moomoni, Ilio point is surrounded by sea cliffs.

The seabirds that have been recorded nesting or flying off the coast suggest the potential for a thriving nesting ground, if predation was controlled (Duvall, 2009). Additionally, the area is visited by endangered Hawaiian monk seals (*Monachus schauinslandi*). As coastal ecosystems throughout Hawaii lose species and extent from stressors such as alien species, development and other human use, and other indirect threats, an example of an ecosystem of this quality and richness is increasingly rare and merits protection (Warshauer, et. al, 2008).

Representativeness

Hawaii Revised Statutes Chapter 195 established the NARS "to preserve in perpetuity specific land and water areas which support communities, as relatively unmodified as possible, of the natural flora and fauna, as well as geological sites, of Hawaii." While there are other coastal Natural Area Reserves, none contain the same set of species. For instance, Kaena Point NAR, which has a "very dry" moisture level, does not contain 11 of the 23 species that are found at the "arid" Ilio Point (Warshauer, et. al., 2008). Appendix 1 lists these plant species, and distinguishes which are not found at Kaena.

This area could be excellent seabird and seal habitat.

Natural Communities and their Status

Natural communities include: 1) Mixed native grasses and shrubs near shore, 2) Akiaki (*Sporobolus virginicus*) grassland, 3) Ilima (*Sida fallax*) shrubland on rock outcroppings, 4) Nama (*Nama sandwicensis*) herbland on sandy substrates, and 5) Akulikuli (*Sesuvium portulacastrum*) herbland near shore. The status of Ilio's natural communities is described as "One of the finest arid vegetation examples in Hawaii; ca 70% of Arid spp. present; prostrate *Chenopodium* of a different taxon; needs protection; extensive" (Warshauer, et. al, 2008).

Wildlife biologist Fern Duvall notes that while area "has more species of nesting seabirds (nest attempts) than Moomomi currently has...Predation by numerous cats, mongooses, and rats (dogs?) is severe" (Duvall, 2009).

Kiawe (*Prosopis pallida*) forest persists with alien shrubs and grasses, and the buildings and jeep roads contain mixed alien shrubs and grasses.

Rarity

Appendix 1 lists rare plant species that have been recorded by various botanical surveys. Additionally, Appendix 2 lists seabirds that have been seen nesting, roosting, or near shore, as well as the endangered Hawaiian monk seal (*Monachus schauinslandi*) and the threatened Green sea turtle (*Chelonia mydas*).

As discussed in the "Scientific Value" section, a coastal community of this quality is itself rare in Hawaii.

Biological/Ecological Design

The boundaries of the proposed Reserve encompass most of the remaining coastal ecosystem on the northwest point (Ecoregional Planning Team, 2006). Unfortunately, little contiguous lowland ecosystem remains, as it has been thoroughly invaded by alien species, as well as been utilized as cattle pastures to the south.

The NARS Commission has indicated that it would be beneficial for Reserves to be adjacent to areas currently managed for conservation so that management activities could be leveraged. The proposed Reserve is surrounded by land owned by the Molokai Land Trust, a potential partner in the conservation efforts for the entire region. Additionally, TNC's Moomomi Preserve can provide lessons for the management of coastal ecosystems.

Location and Size

The proposed Ilio Point Natural Area Reserve is 261 acres, identified by TMK (2) 5-1-002;006. Figure 1 contains a map of the area, which includes the location of the 4WD road and surrounding land parcels and their ownership.

Threats (Human/Biological)

High priority threats to the ecosystem of Ilio Point include Axis deer (*Axis axis*) and goats (*Capra hircus*), invasive plant species, and predators of seabirds. Alien tree species, especially Kiawe (*Prosopis padilla*), have invaded Ilio point. Additionally, *Verbesina encelioides*, Australian saltbush (*Atriplex semibaccata*) and *Lantana camara* also are found throughout the area. Bermuda grass (*Cynodon dactylon*) is present in grassland patches near the jeep road.

Ungulates in coastal ecosystems are also an “important threat, one that frequently opens the door for, or tips the balance to, alien plants” (Warshauer, et. al., 2008, p. 27). Axis deer, in particular, are present in large numbers at Ilio (Duvall, 2009).

Finally, the presence of predators such as rats (*Rattus* spp.), dogs (*Canis familiaris*), cats (*Felis catus*), mice (*Mus musculus*), and mongoose (*Herpestes javanicus*) not only kill seabirds, but also harass monk seals. Observations from Hawaii and around the world have shown that rats will eat seabird eggs and chicks, and even attack adult birds. Rodents also consume native seeds and plants. Predators also act as carriers of leptospirosis, morbilli virus (distemper), and toxoplasmosis. The recently published Recovery Plan for the Hawaiian Monk Seal identifies the transfer of these diseases as one of the threats to monk seal survival. Another applicable threat listed in the recovery plan is human disturbance from fishing interactions or on popular beaches. Alien ants also threaten coastal arthropods, and have the potential to spread ant-pollinated invasive species (Warshauer, et. al, 2008).

A special threat to managers and visitors is the potential existence of dangerous unexploded ordnance.

Present Level of Protection

Ilio Point is unencumbered State land in the Conservation District, under the jurisdiction of the Department of Land and Natural Resources.

Gated roads prevent unrestricted vehicular access. No known on-the-ground restoration efforts are occurring at Ilio Point, but the area is surveyed occasionally to monitor plants and wildlife.

Long-term Ecological Viability

The viability of the coastal vegetation is primarily threatened by increasing invasion of Kiawe (*Prosopis pallida*), as well as by browsing from Axis deer (*Axis axis*). Without control of these priority threats, the ecosystem will continue to degrade.

Indirect threats such as species attrition and the lack of lowland native ecosystem connectivity are degrading Ilio Point’s natural communities. Species attrition is most likely to occur in smaller areas, such as offshore islands, where “There is not enough regional flow of propagules of many species to repopulate the islets from periodic losses” (Warshauer, et. al., 2008, p. 33). However, “these natural limitations could be offset through augmentation by out-planting species formerly known from that site” (Warshauer, et. al., 2008, p. 33).

“The widespread damage to coastal vegetation and the rarity of so many species indicates the urgency for supplying sufficient targeted management to preserve species and to restore community composition, structure, and function. The coastal vegetation’s adaptation to natural disturbance, as evident from the harsh environment it occupies, coupled with its regenerative capability, may have helped these communities survive thus far. This suggests a good potential for preservation of the biota of these regions if effective and strategic management actions are

effected soon” (Warshauer, R. et. al., 2008). With the removal of invasive plants, especially Kiawe on dune ecosystems, native plants often will recolonize dunes naturally, as shown in Kaena Point NAR and Moomomi Preserve (TNC, 2005, Liesemeyer, personal communication, 2009).

Repeated nesting attempts suggest that with predator control, this area could become a viable seabird nesting site. Currently, however, there are no barriers from the influx of predators.

Environmental Consequences of No Action/Urgency

Designating this important core section of coastal vegetation and potential seabird habitat a NAR would enhance the ability of the Division of Forestry and Wildlife to participate and contribute to conservation and restoration actions across the entire coastline.

As this area has already experienced the local extirpation of native species and contains species that are in danger of extinction, it is projected that no management action would result in additional loss. Most pressing is the undescribed taxon of *Chenopodium*, which is only known from small populations at Ilio Point as well as from Puu Ka Pele, to the west. Additionally, the endangered Ihiihilauakea (*Marsilea vilosa*) also could be re-established at Ilio Point, in the seasonal wetlands. Including this area in the Natural Area Reserves System would not ensure the preservation of any of the species, but increased conservation management activity would be beneficial to these species and the whole native ecosystem.

Further, the NARS Enhancement Initiative has created the capacity to dedicate areas to the Natural Area Reserves System or other conservation land designations at this time. Recent meetings with the Subcommittee of Enhancement and DOFAW staff have indicated an interest and current input into this process. Additionally, the purchase of the surrounding area by the Molokai Land Trust provides a time-sensitive opportunity for input into conservation planning for the entire region, and has renewed conversations and interest about the future of Ilio Point. If a Reserve is an appropriate designation for this area, this momentum should not be lost.

V. MANAGEMENT NEEDS

Threats Requiring Management

Control of invasive species is the highest management priority.

Fencing and other ungulate control methods may be appropriate to prevent browsing of the coastal vegetation.

Excluding deer and goats could also be accomplished by installing predator-proof fences, which would serve to remove rats, mice, cats, dogs, and mongoose. However, predator proof fences are a new technology that has not been tested yet in Hawaii, though there are plans to install one at Kaena Point NAR. Other methods to control small predatory mammals include trapping, baiting, and poisoning.

Removing invasive plant species is another high-priority management action. Kiawe removal has shown promising results in Moomomi Preserve, and may provide an example of the type of results that could be obtained at Ilio Point (TNC, 2005).

Rare plants may need to be outplanted to enhance limited populations. Planting Naupaka (*Scaevola chamissoniana*) may help enhance nesting habitat for seabirds (Garnett, 2008, pers. communication).

Monitoring the status of the threats to the area, as well as native vegetation and wildlife, will be necessary to assess the success of management activities.

Administrative (size, boundaries, access: roads & trails, maps more specific than in introduction, TMKs)

The proposed Ilio Point Natural Area Reserve is 261 acres, identified by TMK 2-5-100-206, It is Section 5 (a) lands of the Hawaii Admission Act: Non ceded. The ocean and surrounding land leased by the Molokai Land Trust comprise the boundaries of the proposed NAR. Figure 1 contains a map of the area.

VI. PUBLIC SUPPORT

Agencies, Organizations, and Individuals Contacted

DLNR - Division of Forestry and Wildlife
Natural Area Reserves System Commission
DLNR – Land Division, Maui Branch
Molokai Land Trust
The Nature Conservancy of Hawaii

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Experts Consulted:

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Haase, Butch. 2009. Molokai Land Trust. Personal Communication.

Appendix 1 Plant Species Recorded from Ilio Point

Scientific Name	Common Name	Federal Status	Notes
<i>Boerhavia acutifolia</i>	Alena		Not known from Kaena Pt NAR.
<i>Boerhavia repens</i>	Alena		
<i>Chamaesyce degeneri</i>	Akoko		
<i>Chenopodium</i> undescribed taxon	Aweoweo		Not known from Kaena Pt NAR.
<i>Cuscuta sandwichinna</i>	Kaunaoa		
<i>Fimbristylis cymosa</i>	Mauu akiaki		
<i>Heliotropium aromalum</i>	Hinahina		
<i>Helotropium curassavicum</i>	Kipukai		Not known from Kaena Pt NAR.
<i>Heteropogon contortus</i>	Pili		Not known from Kaena Pt NAR.
<i>Jacquemontia ovalifolia</i>	Pau o Hiiaka		
<i>Lycium sandwicense</i>	Ohelo kai		
<i>Melanthera integrifolia</i>	Nehe		
<i>Nama sandwicensis</i>	Hinahina kahakai		Not known from Kaena Pt NAR.
<i>Panicum fauriei</i> var. <i>fauriei</i>			Not known from Kaena Pt NAR.
<i>Portulaca lutea</i>	Ihi		
<i>Pseudographalium sandwicensium molokaiense</i>	Enaena		Not known from Kaena Pt NAR.

<i>Schiedea globosa</i>	Naupaka kahakai		Not known from Kaena Pt NAR.
<i>Sesuvium portulacastrum</i>	Akulikuli		Not known from Kaena Pt NAR.
<i>Sporobolus virginicus</i>	Akiaki		
<i>Waltheria indica</i>	Uhaloa		
<i>Sida fallax</i>	Ilima		
<i>Centaurium sebaeoides</i>	Awiji	E	Not known from Kaena Pt NAR (Source: B. Garnett, pers. communication, 2008)
<i>Marsilea vilosa</i>	Iihihilauakea	E	Not known from Kaena Pt NAR. Last observed at Ilio in 1970, but still present nearby Ilio.
<i>Chamaesyce skottsbergii</i> var. <i>skottsbergii</i>	Akoko	E	Last observed 1913 (Source: Hawaii Natural Heritage Database, 2004).
<i>Solanum nelsonii</i>	Popolo	C	Not known from Kaena Point NAR. (Source: Butch Haase)

Federal Status E = Endangered, C = Candidate for Listing, SOC = Species of concern

Unless otherwise noted, species information from Warshauer, et. al., 2008.

Appendix 2 Wildlife Observed at Ilio Point

Scientific Name	Common Name	Notes
<i>Anous minutus</i>	Noio, Hawaiian Black Noddy	Obs. nesting attempts
<i>Phaethon rubricauda</i>	Koae ula, Red-tailed Tropic bird	Obs. nesting attempts
<i>Bulweria bulwerii</i>	Ou, Bulwer's Petrel	Obs. nesting attempts
<i>Phoebastria immutabilis</i>	Laysan Albatross	Obs. flying offshore
<i>Puffinus pacificus</i>	Uau kani, Wedge tailed Shearwater	
<i>Sula leucogaster</i>	A, Brown Booby	Obs. flying offshore
<i>Sula sula</i>	A, Red-footed Booby	Obs. flying offshore
<i>Fregata minor</i>	Iwa, Great Frigatebird	Obs. roosting
<i>Monachus schauinslandi</i>	Ilioholoikauaua, Hawaiian Monk Seal	Obs. resting at point, swimming offshore, Endangered
<i>Chelonia mydas</i>	Honu, Green Sea Turtle	Obs. swimming offshore, Threatened

(Source: Duvall, 2009)

Figure 1.

Ilio Point



0 185 370 740 Meters

Map Created 3.16.09
Forestry and Wildlife
(808) 587-4170

Legend




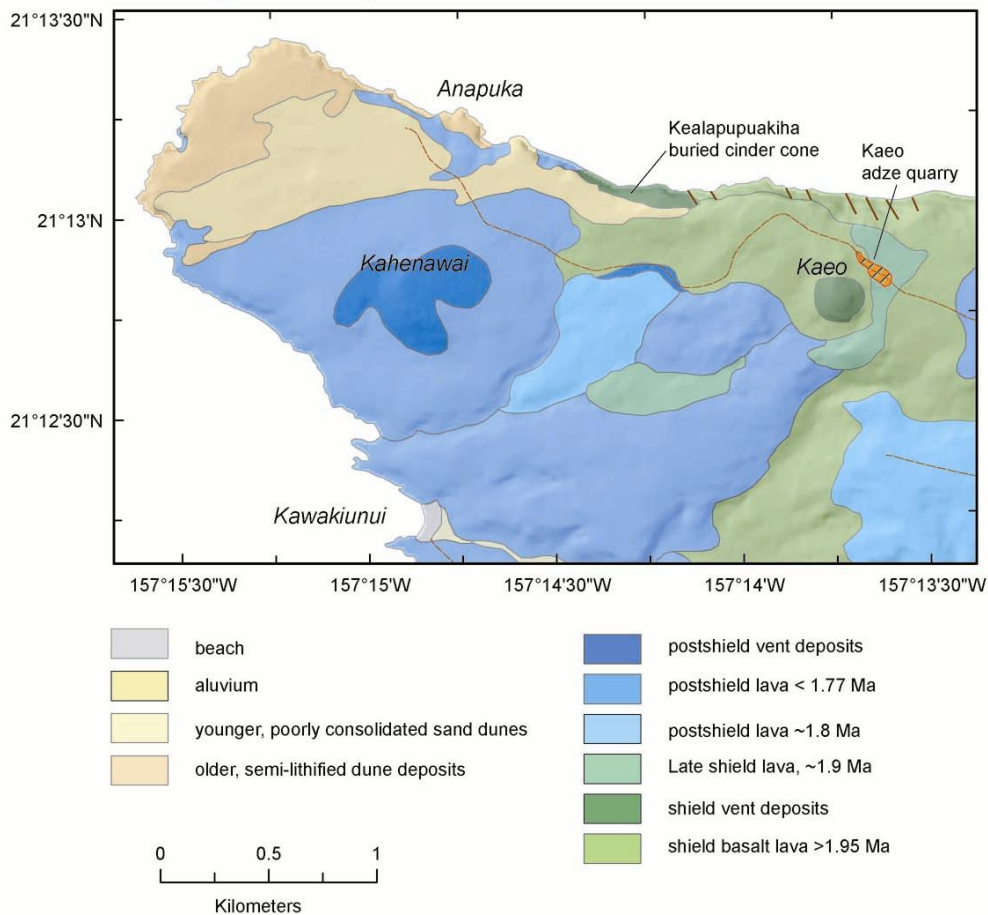
-  Proposed NAR
-  Molokai parcels
-  4WD roads

Figure 2.

Geological Map of Northwest Molokai



Geological Map by John Sinton, 2009. University of Hawaii, Unpublished.