AILINGINAE ATOLL CONSERVATION MANAGEMENT PLAN- DRAFT 2.0

1. PURPOSE AND SCOPE OF PLAN

This plan is prepared for the management, support, and operation of the Ailinginae Atoll Conservation Area initially established in 2002 and among the first uninhabited atolls now formally protected in the Pacific. Ailinginae is one of the few dozen pristine atolls on earth protected for centuries as a traditional pantry reserve. As a result of its undisturbed character, Ailinginae continues to support habitats and species that are otherwise vanishing from the earth. At present Ailinginae's continued protection is essential for the survival of many species and habitats and related natural and cultural values in the Marshall Islands. This plan covers the protection and compatible use of the atoll for ecotourism, research, cultural use, education and the support functions required to maintain and protect the atoll in perpetuity.

2. BACKGROUND AND HISTORY

For untold centuries the People of Rongelap Atoll, the traditional managers and owners of Ailinginae, protected the atoll from exploitation by outsiders and foreigners. However, western explorers, colonial powers, WWII, nuclear testing, globalization, climate change, and an emerging Asia economy hungry for fish and shellfish now threaten the remaining uninhabited atolls in Micronesia and Polynesia. Two centuries ago, westerners in wooden sailing ships and equipped with poor charts and navigation methods, avoided remote, uninhabited atolls with dangerous uncharted reefs for fear of being wrecked and stranded. However, today there are now thousands of modern motorized ships with GPS, preferentially exploiting remote uninhabited reefs because they are beyond the watchful eyes of inhabitants. In the past century global and local populations have increased substantially, leading to the depletion of many accessible species such as seabirds, sea turtles, giant clams, and coconut crabs.

Fortunately all of these species groups still thrive and their habitats remain undisturbed at Ailinginae due to the foresight and stewardship of past traditional leadership and present elected leadership. However, in the past few decades, foreign fishers are rapidly depleting sharks, groupers, pearl oysters, giant clams, and marine mammals primarily for Asian markets, and the demand for these "commodities" continues to spiral upward uncontrollably and without regard to the customs and laws of the afflicted Pacific nations. Recognizing the rapid globalization of the economy, associated global changes in climate, and associated decline in habitats and species, the People of Rongelap have decided to take a stand. Using this Management Plan as the vehicle, they will codify protection of Ailinginae; promote cultural use, education, and compatible and supportive research and tourism; and institute advanced surveillance and enforcement technology to protect the atoll. In addition, they will publicize the value of Ailinginae to the modern world and spread the word of the success of this management approach to compel others to do likewise in the Pacific region.

2.1. Regional Setting: location and access

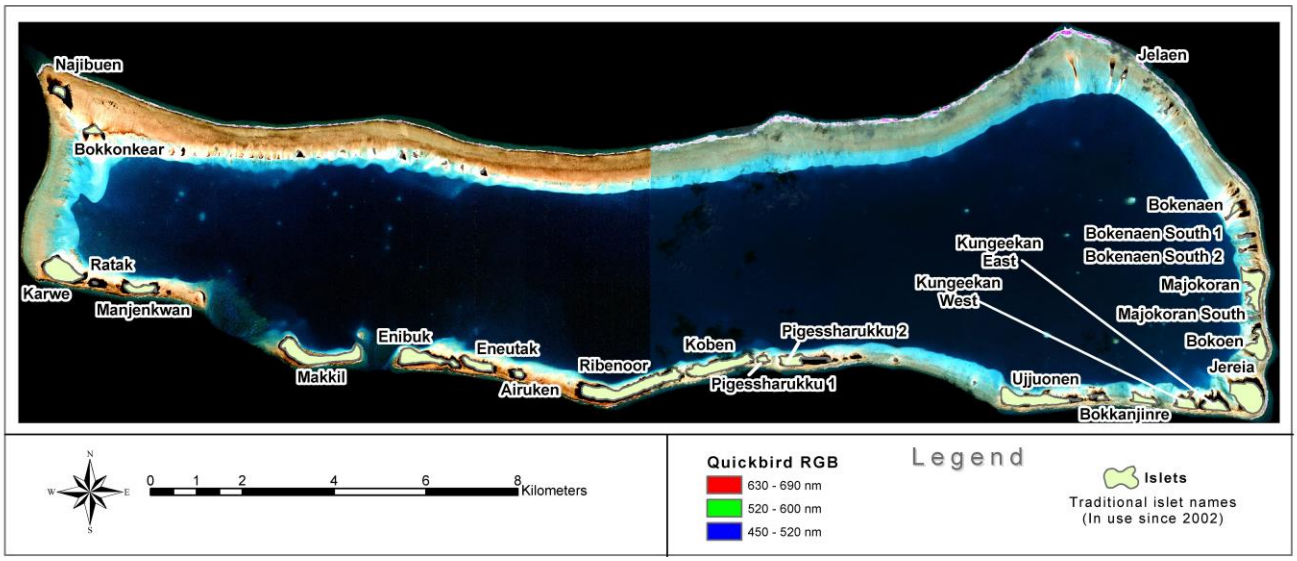
Ailinginae Atoll is located 9 nm SW of inhabited Rongelap Atoll in the arid northern Marshall Islands. The largest atoll in the RMI, Kwajalein, lays 90 nm south of Rongelap, and one of its northern islands, Mejatto, supports most of the People of Rongelap evacuated Rongelap in 1986 over health and safety concerns associated with the earlier US nuclear testing program at neighboring Bikini and Enewetak Atolls from1946-1958. At present Rongelap is being cleaned up and reconstructed to facilitate resettlement of the Rongelap people, and a workforce on Rongelap is implementing these efforts. Rongelap is reached by weekly commercial plane flights from Majuro Atoll and less regularly by ships. The recent construction of a new modern concrete dock and airfield on the southern part of the atoll has promoted greater communication, transportation and exchange among the Peoples of Rongelap now inhabiting several islands. Access to Ailinginae itself is closed to all without prior written permission, and the atoll is in a natural uninhabited state lacking any facilities including docks or airfields.

2.2. Resources: (facts pertinent to management, other data in appendix or separate document)

1.1.1. Physical

Ailinginae Atoll is a natural geological feature and among the 29 coral atolls in the Marshall Islands, 300 atolls in the Pacific, and 400 atolls in the world. The Marshall atolls are the largest and oldest in the Pacific and the world, and represent the largest biogenous structures on earth. Each atoll consists of the remains of millions of corals and other reef building animals and plants that settled, grew and died, beginning on the slopes of a sinking volcano more than 60 million years ago and continuing to this day. The crests of the ancient volcanoes now lay thousands of feet below sea level and capped by an ever-expanding reef formation, the top of which maintains proximity to present sea level. The entire formation is bending the deep ocean crust beneath it, resulting is gradual subsidence of the atoll, but allowing reefs to continue to grow upward to maintain the shallow reef and island system on contemporary atolls. The upper 60m of this formation is the living reef which continues to grow outward and upward in the presence of adequate sunlight required by most of the living reef builders, and maintaining the reef near sea level.

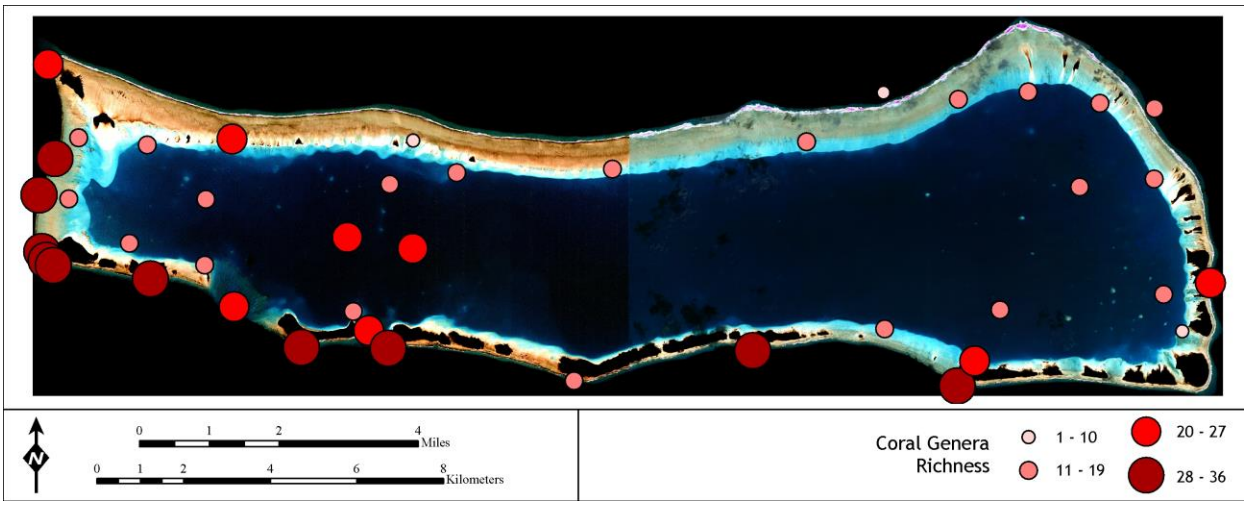
Ailinginae measures 27.5 km along an east-west axis and about 6 km along a north-south axis, giving the atoll an elongated rectangular shape. The atoll rises steeply from the sea floor with its volcanic base at 5 km below sea level at a distance less than 10 km from the emergent parts of the atoll. Most of the 25 islets are vegetated, achieve elevations between 2- 5 m, and rest on a near continuous perimeter reef crest whose top lies near sea level and which completely encircles the lagoon except at the two deep passes off the south side of the atoll. The lagoon has a maximum depth 60 m and supports two dozen reef pinnacles and patch reefs whose crests lie close to the sea surface. The two deep passes cut through the central southern perimeter reef on both sides of Enebuk Islet and serve as exchange routes for tidal and wave driven currents and the mixing of lagoon and ocean seawater. These passes are also the only safe access points for ships and boats entering the lagoon.



1.1.2. BIOLOGICAL

Alinginae supports the full complement of marine and terrestrial ecosystems and species typical of the biodiversity rich atolls of the western Pacific . Pelagic waters surrounding the atoll support large schools of skipjack and yellow-fin tunas and occasional dolphin-fish, wahoo, marlin, and sailfish. Ocean facing reefs are dominated by stony corals and crustose coralline algae that constitute the majority of the reef materials that are cemented together to form a rigid, wave resistant natural breakwater that protects the rest of the atoll. Reef fishes of hundreds of species patrol the outer reefs with large apex predators (especially groupers and sharks) especially common. Corals and other invertebrates also achieve high species richness on shallow ocean reefs. A resident pod of dolphins also inhabit offshore waters near the outer reef edge and was observed circling the atoll daily in 2002.. Two species of sea turtles were also commonly swimming both inside and outside the lagoon. Reef invertebrates on the outer reef include many echinoderms (sea stars, sea urchins, sea cucumbers, sea lilies), mollusks (clams, octopi, sea hares, nudibranchs, and snails), sponges, worms, and crustaceans (shrimps, lobsters and crabs). The reef crests are wide except near the two deep passes and provide the foundations for the 25 islets at the atolls. The islets support at least nine breeding species of seabirds and more than a dozen other migratory seabirds and shorebirds. Coconut crabs are abundant, and green sea turtles seasonally nest on several of the islets. Lagoon reefs including patch reefs and pinnacles supports some of the largest populations of the rarest giant clams reported in the Pacific. Schools of many fish species including bump-head parrotfish and napoleon wrasses are also commonly seen in both on lagoon and ocean facing reefs.

Spatial patterns of coral genera richness at Ailinginae Atoll



1.1.3. CULTURAL: ARCHAEOLOGICAL, HISTORICAL, SPIRITUAL

Ailinginae Atoll has never been permanently occupied throughout its cultural history, mainly because it was used as a pantry reserve for periodic harvesting and fishing with the People of Rongelap living close by on much larger Rongelap Atoll. However, there are legends and stories of many events that occurred on Alinginae as recently revealed by Isao Eknilang, the traditional manager (Alap) of Ailinginae Atoll, and other residents of Rongelap. The German presence in the Marshall Islands beginning in the late 19th century led to major increases in copra development as a commercial commodity, and groves of coconut trees were planted and harvested for decades mostly at Rongelap but also at Ailinginae until 1954 when the U.S. "Bravo" thermonuclear atmospheric test at nearby Bikini Atoll changed the course of history for the People of Rongelap.

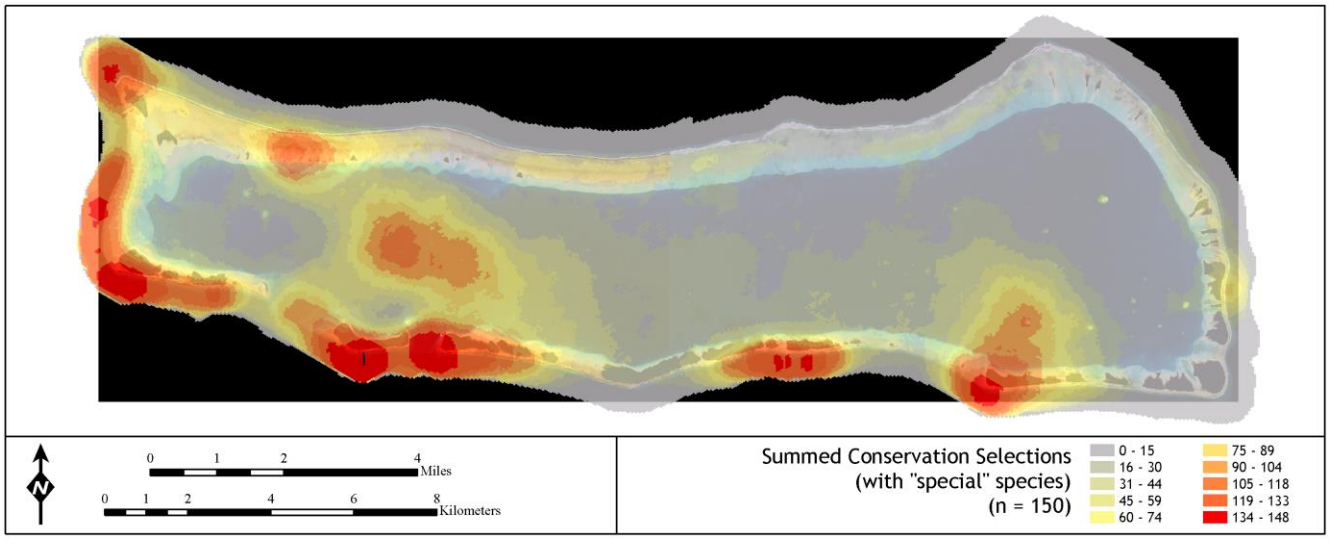
Unexpectedly the test rained nuclear fallout on Rongelap and several other inhabited atolls forcing the evacuation of the People a few weeks after the test. A few years later the U.S. judged that Rongelap Atoll was safe and returned the People to Rongelap. Over the next few decades, the Rongelap People watched with concern over the delays in the repatriation of the Bikini and Enewetak peoples to their home atolls due to nuclear contamination of soils, coconuts and ground waters. They witnessed increased incidents of radionuclide-related diseases throughout the inhabited northern Marshalls (Bikini, Enewetak, Utrik, and Rongelap). When they decided that they could no longer trust U.S. representations that their atoll was safe for habitation, the Rongelap People unilaterally evacuated Rongelap Atoll in 1986 over the objections of the U.S. and settled at islands at Kwajalein and Majuro atolls where most remain to this day. After being awarded funds from the U.S. Nuclear Claims Tribunal, the traditional and elected leadership of the Rongelap People decided to embark on a program of restoring Rongelap Atoll for the safe return of the People, and in 2002 have also decided to provide lasting protection for Ailinginae Atoll and promote compatible ecotourism to help sponsor the costs of protecting the atoll and protecting dozens of rapidly vanishing species and pristine marine habitats.

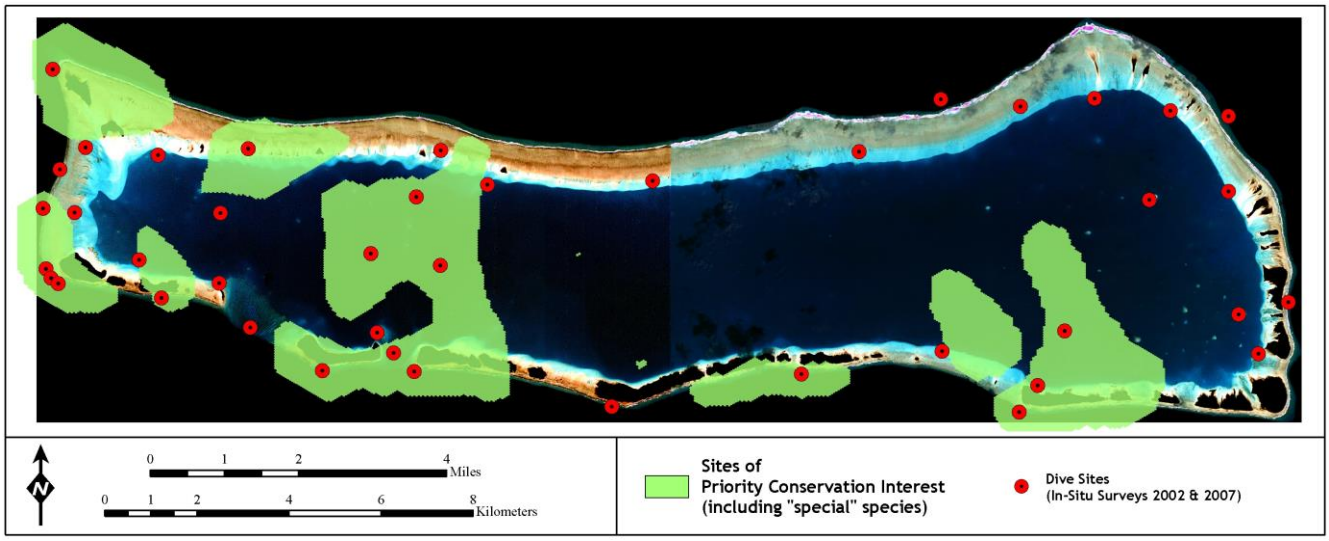
2.3. EXISTING AND POTENTIAL THREATS AND IMPLICATIONS FOR MANAGEMENT (IE ANALYSIS OF COMPATIBLE AND INCOMPATIBLE USES, SOLUTIONS)

In-situ biodiversity surveys were carried out at Ailinginae Atoll during 2002 and 2007 as a baseline assessment of the natural resources of the atoll. However on their own, neither in situ biodiversity inventories nor satellite-derived habitat maps provide the input necessary for properly identifying priority areas of biodiversity conservation for a certain location. This goal can, however, be accomplished with the integration of the two datasets using geostatistical algorithms such as MARXAN, a GIS-based algorithm that identifies potential area scenarios representing all benthic habitat types and marine biodiversity data available (Ball and Possingham, 2000). This is a useful approach to be pursued wherever detailed ecological data are to be extrapolated to large areas. The algorithm was developed in response to the increasing need of adopting more strategic objectives and systematic approaches to the design of marine reserves. Until recently, the designation of areas to be set aside for protection has been "ad hoc", driven by opportunity rather than by a systematic approach, making inefficient use of available resources (Leslie at al., 2003). In light of the expressed interest of Ailinginae's traditional leaders in promoting an eco-tourism facility on the atoll, one of the explicit goals of this project was to identify areas within Ailinginae Atoll that are of greatest biodiversity value, and therefore deserve maximum protection. These areas could also guide the zoning design of a future MPA, extending stricter regulations to certain areas while leaving other areas open for eco-tourism operations such as diving and snorkeling.

Given spatial data on species richness, marine habitats (from the analysis of remotely sensed imagery), and other relevant information, such as presence of rare/depleted species, the algorithm identifies a network of priority sites (often referred to as "Areas of Biodiversity Significance") that represent all conservation targets in a sensible spatial arrangement that minimizes both the area and the perimeter of the proposed priority areas for conservation. The objective of minimization, called the Minimum Representation Problem in mathematical terms (Kirkpatrick et al., 1983), stems from the concept that, while from a conservation perspective one might want to maximize the area to be protected, social and economic constrains often demand an efficient and more limited area to set aside for conservation (Possinghamn et al. 2000). This would be particularly true at Ailinginae Atoll in light of the proposed development of an eco-tourism business. A more compact, well connected system of sites to be set aside for conservation is usually preferable for both ecological and socio-political reasons, as it facilitates both the movement of organisms, and the enforcement and management of the conservation areas (Roberts et al., 2003; Roberts, 1997).

The scenarios presented below are the results of MARXAN analyses carried out using the biodiversity data collected at Ailinginae in 2002 and 2007, the benthic habitat mapping obtained from the analysis of satellite multispectral imagery, and the expressed inclusion of locations known to harbor "special" species (species that are rare, depleted, or threatened elsewhere in their range). These areas should be among the key targets at which to assess various threats.





1.1.4. TRADITIONAL USES, RIGHTS AND MANAGEMENT PRACTICES

No one lives on Ailinginae and here are no existing human uses at the atoll except for periodic reconnaissance and surveillance visits by residents on nearby Rongelap to check on its status.

1.1.5. COMMERCIAL

There are no commercial activities at either Rongelap or Ailinginae Atolls. The Republic of the Marshall Islands has treaty arrangements with countries in Asia to fish in the offshore waters of the nation. Although they are not allowed to fish close to any of the atolls, some of these fishers attempt to do so illegally, especially at reefs where there are few or no residents.

1.1.6. RECREATIONAL

Periodically small groups from Rongelap fish for subsistence, swim, camp and recreate at Enebuk Island adjacent to the two deep passes on the south side of the atoll.

1.1.7. RESEARCH AND EDUCATION

Although uninhabited, the local Rongelap government, University of Hawaii, University of California at Santa Cruz, and the U.S. Department of Interior have sponsored several scientific expeditions to Ailinginae between 2000 and 2007 to conduct baseline assessments of the status of the atoll's ecosystems and biodiversity as part of the planning to establish lasting protection for the atoll. To date surveys of oral history, vegetation, seabirds, shorebirds, other terrestrial animals, sea turtles, marine invertebrates, corals, marine algae, reef fish, pelagic fish, remote sensing, gap analyses, satellite imagery analysis, aerial photography, and change detection analyses have been accomplished. Additionally permanent vegetation plots and permanent coral reef transects were also established on 2002. A complete list of these studies is included in the references section. Several educational and training initiatives are being proposed as part of the management plan.

2.4. EXISTING LEGAL AND MANAGEMENT FRAMEWORK

Beginning in 2002, the Rongelap Local Government (RALGOV) has established several Ordinances that afford protection to Ailinginae including bans on commercial fishing, limits on recreational fishing, areas closed to fishing altogether, harvest of birds and coconut crabs, complete protection of rare and depleted species and controls on camping and bans on littering, plastics and other controls. These ordinances are being revised at this time and may be consolidated as part of a single comprehensive statute. The Nitijela (national congress) has also issued a proclamation in 2002 honoring Ailinginae as the first National Park of the Marshall Islands [note this last point was stated to me by John Fysh, former RALGOV manager in 2002, and needs verification from Abacca or James]

2.5. EXISTING AND POTENTIAL THREATS AND IMPLICATIONS FOR MANAGEMENT

Illegal trespass and harvesting

At present Ailinginae is a fully functional ecosystem requiring little if anything to maintain its status as healthy and sustainable. Although no one is allowed to visit the atoll without prior written permissions, foreign fish vessels have attempted to poach valued resources at Ailinginae in the past, and most likely will continue to do so in the future. In response, the plan will strive to discourage, prevent, and severely penalize those attempting illegal trespass and harvesting of resources through several strategies: a permitting process for entry, several different remote surveillance strategies, unpredictable patrol boat reconnaissance visits and agreements with other nations to prevent illegal access via 1) updating navigation charts showing Ailinginae as a closed protected area, 2) distribution of educational and jurisdictional packets to all present an future fishing vessels, 3) requirement that all such vessels will carry hull insurance to facilitate quick removal and cleanup of grounded vessels, 4) requirement that all vessels use vessel monitoring systems and have them always "on" while at sea, and 5) access to spy satellite images from the United States during active "incidents" to better document and collect evidence on ship involved in illegal trespass.

Alien and invasive species

Rats are present at Ailinginae and threaten the success of seabird breeding, shorebird resting and local terrestrial crab populations. Some alien plants and weeds are also established especially along pathways and camping areas. On some islands coconut trees are out-competing native vegetation, one of the values of Ailinginae that make it special. The local workforce at Rongelap has already established eradication of alien and invasive species on land as their top priority. Moreover the plan called for a strict quarantine program and hull inspection and cleaning requirement at Rongelap before any vessel is authorized to enter Ailinginae

Increased tourism and visitation

Increased frequency and access to Ailinginae by visitors will result in other threats: overuse of camping areas, picnic areas, snorkeling sites and dive sites, anchor damage and waste generation. Measures are already in place and proposed to address these issues include: use of a dive live-aboard vessel so that all divers and snorkelers remain on the boat at night; mooring buoys established and used by all vessels; zoning plan that prohibits visitor access to especially sensitive ecological areas; educational packets for all visitors on proper conduct; solid waste recycling, sorting, minimization and removal from Ailinginae; trail, dive, and snorkel guides accompanying all visitors; quarantine procedures; ecological monitoring at all visitor sites to track status of ecosystems; restoration and recovery measures; and other measures.

Global climate change

Recent evidence suggests that pristine coral reef ecosystems are better equipped to respond positively to global climate change impacts compared to other reefs stressed or near human settlements (Sandin et al. 2008). However, this may not be the case for the land areas on atolls where upward growth of coral reefs lags behind that of sea level rises. If the latter is the case, there may be the need to protect important terrestrial habitat for seabirds, sea turtles, shorebirds, and sensitive vegetation to seawater inundation. Coral reef themselves should continue to grow upward during sea level rise and be inhibited by heavier wave action. Likewise droughts and wet seasons are most likely to affect land habitats at Ailiginae. Ailinginae has already shown resilience to past tropical storms as evidenced by the substantial recovery of vegetation between aerial photos taken in 1978 and satellite imagery taken in 2002. Although much of the possible effects of climate change are still largely speculative, including ocean acidification, the best course of action will be to rigorously maintain regular monitoring of all sensitive and vulnerable habits at permanent sites over time. This approach may likely be the best early warning system that would lead to specific strategies to recover, restore, transplant, fortify or otherwise protect species and habitats from future climate impacts.

3. THE PLAN

3.1. GOALS AND OBJECTIVES

3.1.1. GOAL

To protect and conserve the natural beauty, healthy biodiversity and heritage of Ailinginae Atoll for our people, for future generations and for all people of the world.

BIOLOGICAL AND ECOLOGICAL OBJECTIVES:

- Maintain the biodiversity of Ailinginae Atoll including the health of the entire ecosystem, habitats, diversity and key species
- Afford special protection and opportunities for recovery and restoration of globally imperiled species and their critical habitats
- Protect the biodiversity of Ailinginae from key threats of illegal fishing, overharvesting, invasive species, climate change, disease, and pollution.
- Study, monitor, understand, and communicate information on the ecosystem of Ailinginae as one of the healthiest coral reefs still remaining in the world.

3.1.2. SOCIO-ECONOMIC AND CULTURAL OBJECTIVES:

- Allow the people of Rongelap, the Marshall Islands, and from around the world to know about, visit, and enjoy the beauty of the wilderness of Ailinginae
- Use traditional conservation practices to revive and strengthen our knowledge of natural and cultural heritage
- To promote the natural and cultural heritage of the Marshall Islands throughout the World
- Inventory and safeguard archaeological, historical and other cultural values and sites.

3.2. MANAGEMENT STRATEGIES

3.2.1. TOURISM

A tourism program will be established that allows people from Rongelap, Marshall Islands and from around the world to experience the beauty of Ailinginae in a respectful manner, with no negative impact on the environment

- Tourism will be boat-based, with visitors flying to Rongelap Atoll and traveling to Ailinginae for 2 or 3 days on a live-aboard vessel. Camping will be allowed only, on Enebuk Island, the island most frequently inhabited in the past and that still exhibits some historical modification of the environment. However, all camping will be managed to be "no-trace" left behind
- Yachts may form a substantial part of the tourism that is expected at Ailinginae. Yachts must apply to RALGOV in Majuro for a permit to visit. At the time of application yachters will be given a copy of the rules and regulations in a Visitors Information Pack and asked to sign a release stating that they understand and will abide by the rules

- A system of surface and subsurface mooring buoys will be installed near the southern passes and at selected lagoon and ocean sites at Ailinginae in a careful manner to avoid impact to reefs and prevent anchor damage from visiting vessels

- Visiting yachts and the live-aboard vessel will be required to tie up at specific mooring buoys designated in the permit, and all anchoring and waste discharge at the atoll will be prohibited

3.2.2. CONTROLLED ACCESS TO THE SITE

- Access to Ailinginae will be restricted to authorized recreational and tourism visitors and scientific survey teams via a permit system. All vessels and people wishing to enter Ailinginae MUST first obtain prior written permission through the permitting procedure

- All commercial fishing vessels are prohibited from entering within 5 miles of any reef or island at Ailinginae Atoll

3.2.3. MANAGEMENT BASED ON MONITORING AND SURVEILLANCE

Ecological Monitoring

- routine ecological monitoring shall be accomplished at all sites and habitats supporting high biodiversity, imperiled species, and threats from disease, predation, excessive fishing, alien species, and invasive species

- Reef, lagoon, beach and vegetation habitats critical for the survival of many species will also be monitored at permanently marked sites

- Although Ailinginae currently has a low level of invasive species (including insects, rats, alien weeds, ironwood trees and coconut trees), the true extent of this is not known, and survey and monitoring of invasive species are to be conducted alongside other ecological monitoring and assessment efforts

Eradication

- When inspections or monitoring surveys detect problems from invasive and alien species, every reasonable attempt should be made to control and, if possible, eradicate the pest.

- Currently rats are a threat to the large populations of ground-nesting birds, and weeds and introduced coconut and ironwood (Causurina) trees are a potential threat to native forests on some islets that serve as habitat for both ground and tree-nesting seabirds and coconut crabs

Previous surveys reveal that as many as 7 different seabird species can be nesting at an individual island in May 2002 and a total of 23 species of nesting seabirds were reported at Ailinginae (Flint 2002). Thousands of seabirds may be seen breeding at Ailinginae in spring and summer months, including the red-tailed tropic bird, brown noddy, black noddy, great frigate bird, white tern, sooty tern and the brown booby. Invasive species such as rats and larger reptiles are clearly threats to this extraordinary population of nesting birds. .

There are several reasons why Ailinginae should be the first priority for an invasive land mammal eradication program in the Marshall Islands:

- High biodiversity conservation value for seabirds, shorebirds and sea turtles
- Relatively unaffected by numerous other invasive species
- Low traffic and strict quarantine will prevent re-invasion the area after eradication
- High leverage potential and visibility as a flagship conservation area in the Marshalls, thus serving as a demonstration project for rat eradication elsewhere in the Marshall Islands, Micronesia, and for atolls in general
- Relatively small land area at Ailinginae makes it easy to assess rats and lay baits in limited time
- Very strong commitment to conservation from the community, landowners and local government; and
- Workers are available from neighboring Rongelap, thus reducing the cost and logistical difficulties of carrying the eradication,

Quarantine

- Access to land must follow strict quarantine procedures to prevent the introduction of invasive plants, animals and insects
- Boats, people, clothing, tents, and supplies entering Ailinginae must follow strict quarantine procedures
- these may include prior inspections at Rongelap to insure all vessel hulls are clean and lack fouling organisms before departure to Ailinginae
- Moreover, visitors may be required to use new clothing and tents frozen for 24 hrs that remain properly packed prior to arrival at Ailinginae

3.2.4. REGULATIONS AND RULES ON PERMITTED AND PROHIBITED ACTIVITIES

Fishing and Harvesting

- No commercial fishing vessel is allowed to fish within 12 nautical miles of Ailinginae Atoll
- Fishing within 5 nautical miles of Ailinginae Atoll is allowed ONLY for immediate consumption on-site for visitors to Ailinginae Atoll via prior written permission
- Strict regulations apply on the harvest of particular species as described below:
- Total ban on the collection of:

Live shells/ mollusks;
Napoleon wrasse;
Bump-head parrot fish;
Giant clams;
Turtles and turtle eggs;
Coconut crabs;
Pearl oysters;
Groupers;
Sharks;
Any fish or creature for the aquarium trade
Live corals;
Birds;
Sponges;
Marine mammals;
Native vegetation (except coconuts and fronds);
Live rock or dead coral;
Beach sand;
Any organism for bioprospecting: and
Females lobsters with eggs and undersized juvenile lobsters

Allowed fishing methods are restricted to the following, and only for local consumption:

- hook and line, throw-net (only on sandy areas, not near coral), and offshore trolling well beyond the reef for pelagic fish (tunas, wahoo, mahimahi, bonito, etc.)

- Traditional fishing methods may be used as part of a tourism operation, with permission from the Ailinginae Conservation Management Board.

- Exceptions can be made for approved scientists who wish to take samples for species identification or for DNA work. Permission must be granted from the Ailinginae Conservation Management Board. Each scientist will sign a statement that no samples are to be taken for bio-prospecting or for commercial research and development

- locally collected fish and shellfish are not allowed to be transported off Ailinginae

Diving and Snorkeling

- The entire reef is open to non-consumptive uses including snorkeling and diving

- Snorkelers and divers must take care not to damage coral by touching it or breaking it, or to cause the distress of any animals, and are not allowed to remove or collect anything

- A dive-master must accompany and lead all sport divers based upon a pre-approved and discussed dive plan

- All sport divers must use clean or new dive gear, carry certification cards and DAN insurance, and be physically fit to dive based upon a current medical examination by a physician

Camping

Camping is allowed only on Enebuk Islet, and must be in accordance with Quarantine Procedures. Other rules may apply to camping.

Collection of Artifacts

No glass balls, cultural artifacts or any other collectibles are to be taken from Ailinginae.

3.2.5. BOUNDARIES OF CONSERVATION AREA.

The boundaries of the Ailinginae Conservation Area extend 5 nautical miles out from the territorial baseline (seaward edge of shallow reef crests and islands).

3.3. SCIENTIFIC STUDY

Ailinginae is one of few fully-protected pristine atolls and coral reef systems in the world, and scientific study and monitoring of Ailinginae Atoll will allow increased understanding of the ecosystem and processes of Ailinginae, and also for atolls and other coral reef ecosystems. The impacts of climate change on other on pristine atolls may not result in serious impacts based upon the results of a recent study in the northern Line Islands (Sandin et al. 2008) and it would be worthwhile to determine whether similar results would apply at Ailinginae and other remote coral reef systems in the Marshalls, in the absence of pollution and over-harvesting of resources. A scientific program should be managed in a way that that benefits the people of the Marshall Islands. Partnerships with scientific research organizations including the College of the Marshall Islands are to be sought and established to enable long-term monitoring of the condition and biodiversity of the site.

Monitoring is both a research and management responsibility, focused on sustaining ecosystem values and benefiting Marshallese residents though education, training, participation in species recovery, habitat restoration, and protection of imperiled species.

3.4. EDUCATION AND AWARENESS

Education and awareness about Ailinginae is to be designed for four key target audiences:

- Peoples of the Marshall Islands and Rongelap
- foreign visitors and tourists to Ailinginae and the Marshall Islands
- other people around world, and
- foreign and domestic commercial fishers and others engaged in commercial maritime activities in the territorial seas and EEZ of the Marshall Islands

People of Rongelap and the Marshall Islands

- Environment and Heritage Youth Theatre Project
- Carry out education and awareness programs within the Marshall Islands
- Field trips to Ailinginae for deserving young students in the Marshall Islands

Visitors and Tourists to the Marshall Islands and Ailinginae

Special information pack for all visitors to Ailinginae and videos on airlines servicing the Marshall Islands

People from Around the World

- Establish a website
- Ensure the results of scientific studies are disseminated and communicated to the people of the Marshall Islands and worldwide

Commercial fishers and other commercial operators in the Marshall Islands

- Packets shall to distributed to all fishers and other commercial maritime users in the RMI
- These will include regulations, rules, and maps emphasizing the protection of Ailinginae and include description of severe penalties for unauthorized entry, landing poaching, harvesting, or fishing within the boundaries of the Ailinginae closed areas [also translated in Chinese, Japanese, and Korean]
- These packets shall also be mentioned in future treaties and the rules complied with by individuals and commercial firms of foreign nations requesting permission to exploit marine resources in the RMI.

3.5. SURVEILLANCE AND ENFORCEMENT

Remote surveillance

VMS (Vessel Monitoring System)

- The RMI is establishing an electronic VMS to track the location of any authorized domestic and foreign commercial vessel in the RMI at all times (24 hours a day and 7 days a week). The national government RMI will train and establish permanent staff to operate the system from the capital atoll (Majuro).
- RALGOV may sponsor development of a satellite tracking office at Rongelap should the range of the central tracking system at Majuro not extend far enough north to Rongelap and Ailinginae; or should the headquarters' system fail to meet minimal standards and expectations; or should the headquarters tracking system malfunction.
- At a minimum, all commercial vessels in the RMI will not allowed to leave port unless the VMS transmitter is "on" and properly operating.
- Moreover, if their VMS transmitter malfunctions, the vessel(s) will be required to return to port and remain there until the vessel's VMS transmitter is repaired and operating.
- RALGOV will be in close communication with MIMRA during development and operation phases of the VMS to insure the system will achieve and maintain the agreed-upon expectations.
- RALGOV shall also maintain regular contact with MIMRA to take appropriate action when the National system is not tracking ships.

Radar

The feasibility radar tracking of vessels at sea is presently being investigated for Rongelap and Ailinginae. A successful system has already in place at Helen Reef (SW Palau) during the past several years and was developed with the assistance of the Community Conservation Network (CCN) to track numerous unauthorized vessels out to a distance of 15 nm, that frequently attempt to poach resources at Helen Reef.

At present CCN and partner Micronesians have agreed to assess the feasibility of such a system to protect Ailinginae from poachers. This system would most likely would be installed on the SW coast of Rongelap Atoll to track vessel traffic off the eastern, northern, and possibly the southern, and far western approaches of Ailinginae, the latter depending on the range (if it will extend to the far western rim of Ailinginae and ability of the system to track vessels behind islands (especially those with heavy vegetation along the southern coast). The operation of the system would also be integrated with other surveillance assets including VMS, video, and acoustic systems as described here.

Acoustic surveillance using hydrophones

Acoustic surveillance is being evaluated using hydrophones (underwater sound receivers anchored at the bottom of both passes to either side of Enebuk Island at Ailinginae to "listen"

for engine noises of unauthorized vessels attempting to enter the lagoon from either of the two deep passes. The hydrophones would be wired to radio transmitter on a tower powered by solar voltaic panels that would send the sound signals via RF (radio frequency, short wave) transmission to a receiver (radio) on Rongelap Atoll.

- The receiver would be "on" at all times and generate background noise in the surveillance-enforcement office. Once trained to recognize engine noises, the staff could then verify the presence of an unauthorized vessel by first hearing the signals, and then checking VMS, radar or video sensors, and as appropriate, launch the patrol boat to investigate vessel intrusion at Ailinginae.

- This system would be the first application of using acoustic surveillance for any protected area or atoll. However, it is feasible because RF communication has been reliably used for nearly a century, the system is fairly simple, and power requirements to operate the system would be low.

Dr. Whitlow Au of the University of Hawai'i is presently developing a plan and proposal for a Rongelap-Ailinginae acoustic surveillance system.

Video (webcam) surveillance

Remotely operated video camera recorders (camcorders) are widely used for security and surveillance, and has been successfully used by NOAA and the USFWS on an atoll (French Frigate Shoals) for monitoring sea turtle nesting and tiger shark predation at one island (East I.) monitored from another island more than 10 nm away (Tern I.). This system allowed panning and focusing of the camcorder, recording digital footage, and transmitting it to Tern Island via satellite relay. Hence, the term "webcam" is used to characterize this technology.

- At Ailinginae two webcam towers would be built on Enebuk with each facing one or the other deep pass and equipped with a camcorder and power supply.

- The surveillance staff would remotely operate the webcam from Rongelap on an as needed basis for periodic testing, random surveillance; and response to unauthorized vessels detected by the other remote surveillance systems.

A feasibility and cost proposal for webcam surveillance is being pursued by early April 2008, based upon contacts and advice provided by the National Marine Fisheries Service in March 2008 and other possible advice to be provided by the U.S. Fish and Wildlife Service, and the National Geographic Society Critter Cam program.

Physical Surveillance

- Any suspicious vessel that is picked up on remote surveillance sensors, will lead to reporting the presence of the suspicious vessel to the national enforcement agency, and launching the Rongelap patrol vessel, to investigate, and collect evidence on the incident.

- Random (unpredictable) weekly / twice weekly travel around Ailinginae is preferred so that potential trespassers cannot predict when surveillance patrols are scheduled.

- The patrol vessel needs to be large and fast enough to chase down any other commercial vessel in the RMI. Otherwise, potential trespassers will risk taking future chances to trespass, knowing the patrol vessel cannot catch them.

- Enforcement staff must be armed but only for the purpose of protecting themselves from aggressive vessels and violators.

- The staff must be trained to get backup assistance from the national patrol boat, collect and documenting forensic evidence during incidents via video camcorders, acoustic recorders, digital cameras, fingerprinting, ID checks and other means.

Preventive measures (to discourage poaching and trespassing)

Country to country consultations and agreements via consulates or ambassadors are needed to strengthen cooperation between the RMI and other nations with commercial or strategic interests in the Marshall Islands, as follows:

- United States of America (USA) Ambassador and U.S. Army at Kwajalein Atoll to obtain "spy" satellite images of suspected unauthorized fishing vessels that have entered Ailinginae's waters, for purposes of verification and documentation during specific incidents of possible trespass,

- USA, Peoples Republic of China, Taiwan, Hong Kong, South Korea, Japan, Australia and U.K. requesting the all nations agree to modify their nautical charts to show the waters around Ailinginae as a protected area closed to entry,

- Peoples Republic of China, Taiwan, Hong Kong, South Korea, and Japan requesting that all their commercial ships including fishing vessels agree to VMS surveillance by the RMI , abide by rules and regulations regarding Ailinginae, and will agree to penalties against their ships that knowingly trespass in the closed waters, reefs, lagoon and islands at AIlinginae and will be subject to severe penalties including forfeiture of vessels, confiscation of banned goods, and deportation of associated ships crews and fishers at the home countries expense,

- All foreign nations with their ships operating in the waters of the Marshall Islands shall required all their ships to carry sufficient hull insurance to cover the cost of spill containment, salvaging fuel, and removal of grounded ships in a timely manner from any reef or atoll in the RMI, and compensation for clean up and restoration resulting from injuries from a foreign ship grounding, spilling fuel, colliding with another ship, or in distress at sea due to foul weather and seas. It is understood that severe penalties will be levied against any nation whose distressed ships that failed to have had to the necessary insurance.

Enforcement Procedures

RALGov police officers will be trained as Ailinginae Conservation Officers and sent on rotation from Mejatto for a 6 week assignment to Rongelap. A surveillance station will be placed on Rongelap with remote surveillance equipment, receivers, and tranmitters.

When an unauthorized vessel is detected within the vicinity of Ailinginae through the remote surveillance mechanisms, the Officers will:

- Notify the national surveillance and enforcement agency
- Contact the vessel by radio and get identification
- Check vessel identification on VMS system (if any), and
- Verify and document details on the unauthorized vessel from remote surveillance assets.

In the event of the vessel not being identified:

- the Rongelap patrol vessel will be launched to conduct physical surveillance
- National level back-up support will be requested
- Local level enforcement (Rongelap Surveillance and Enforcement Office) collects evidence and reports- radio, radar, VMS, video, and photographic evidence
- Local level enforcement does not board any vessels, and
- Local level enforcement sends incident report to Sea Patrol/ MIMRA about the vessel

3.6. OTHER DEVELOPMENT

No development will be allowed at Ailinginae, aside from the boat-based tourism development. No buildings will be constructed or any form of industry or other activity aside from low-impact eco-tourism, mooring buoys, and scientific study, and sheds and power supply for remote surveillance technology at Ailinginae Atoll.

3.7. PARTNERSHIPS

Development of partnerships for financing and technical assistance and strategies are needed to assist with:

- Remote surveillance and enforcement
- Invasive Species Management
- Conservation Officer Training
- Tourism management
- Education and awareness, promotion
- Training on ecological monitoring, analysis and reporting

3.8. ROLES AND RESPONSIBILITIES

Ailinginae Conservation Management Board

The Ailinginae Conservation Management Board is established under the auspice of the Rongelap Local Government and consists of the:

- Mayor for Rongelap
- Senator for Rongelap
- Alap Isao Eknilang
- City Manager
- Rongelap Tourism Development Officer
- Rongelap Surveillance and Enforcement Officer

The role of the Management Board is to:

- Carry out management planning
- Make decisions concerning rules and regulations
- Ensure the effective implementation of the Ailinginae Conservation Management Plan.

Rongelap Atoll Local Government (RALGOV)

The Rongelap Local Government Office in Majuro will be responsible for:

- Security and backup for all official files
- Printing and mailing of packets, educational materials, navigation charts
- Dispersing funds, hiring, and awarding contracts
- Giving periodic status reports to the National Government and media, and
- Executing memoranda of agreements and understanding to promote cooperation with other institutions, agencies and non-government organizations

Landowners- Iroij and Alap

- Participate in annual meetings and status reports on the state of the Ailinginae Conservation Area
- approval or concurrence in major changes in the management or funding support

Conservation Project Manager

- Based in Majuro with regular visits to Rongelap and Ailinginae to work with conservation officers there
- Work with stakeholders and local, national and international level to implement the Ailinginae Conservation Management Plan

- Develop partnerships, funding sources for implementation of the Conservation Management Plan

- Day to day management of the conservation area and of conservation officers- develop work plans, ensure staff carry out the activities stated in their job descriptions and work plans

- Conduct regular education and awareness, community consultations

- Identify training and capacity-building needs for staff and ensure staff receive this training

- Provide reports to meet the requirements of donors and grant contracts

- Monitor the implementation of the plan and adapt the management of the site as appropriate

Conservation Officers Staff levels and requirements:

- 9 RAL Gov police based on Mejatto
- Trained in marine conservation
- Seconded to work on Rongelap in pairs for 6 week stints
- Responsible for operating and routine maintenance of remote surveillance assets
- Physical Surveillance
- Reporting suspicious vessels
- Accompanying tourists as conservation guides and wardens, except during an incident

3.9. ADMINISTRATION

3.9.1. STAFFING

3.9.2. TRAINING

3.9.3. FACILITIES AND EQUIPMENT

Office located on Rongelap Atoll

Surveillance equipment

- Speedboat/Patrol boat
- Hydrophone and acoustic surveillance system
- Radar surveillance system
- Webcam surveillance system
- Dock, ramp, winch and boat house for servicing and repair of patrol boat and live aboard vessel
- Radio, monitor screens, cameras, camcorders, acoustic recorders

- Office located in RALGOV building in Majuro

3.9.4. BUDGET AND BUSINESS PLAN, FINANCE SOURCES

Objective: To raise funds to implement this management plan.
Required funding: see 5 year operational budget

Sources of funding

- Budget allocation from RALGov operational budget
- Revenue from penalties/ infractions
- Revenue from tourism
- Grant development through ACS or through RALGov or other partners
- Establishment of Ailinginae Conservation Society (ACS)
- Establishment of Trust Fund for operational funding-
- Development of national and international partnerships for financing and technical assistance

3.10. MONITORING AND EVALUATION OF PLAN EFFECTIVENESS

4. ACTION PLAN

	Timeframe	Responsibility	Resources Required
TOURISM			
Tourism plan developed for Ailinginae			
Visitors Information Pack developed			
CONTROLLED ACCESS TO THE SITE			
Develop permitting procedure for entry to Ailinginae			
ECOLOGICAL MONITORING PROGRAM			
Establish cooperative agreements with COM, UH, USFWS, NOAA, AIMS, UOG, USP and other tropical science institutions			
Purchase of dive, transect, markers, and other equipment and inflatable skiffs			
Training, initial installation of permanent markers, and initial surveys			
Publication of findings in US Coral Reef Task Force State of the Reefs, and Global Coral Reef Monitoring reports			
Annual meetings with conservation officer to plan restoration, recovery, and controls to protect critical species and habitata			

INVASIVE SPECIES MANAGEMENT			
Establish monitoring program for invasive species			
Carry out rat eradication program			
Develop quarantine procedures for Marine and terrestrial contact			
Selective cutting of coconut trees except at picnic and camping island (Enebuk)			
REGULATIONS AND RULES DETERMINING ALLOWABLE ACTIVITIES			
Issue regulations and rules as local government ordinances			
Prepare information sheets on rules and regulations for visitors in English and Marshallese			
Carry out education and awareness on these rules on Majuro, Rongelap and Mejatto			
SPECIAL SCIENTIFIC STUDIES			
Seek relationships with scientific institutions for ongoing monitoring and special programs and needs			
EDUCATION AND AWARENESS			
Environment and Heritage Youth Theatre Project			
Carry out education and awareness programs within the Marshall Islands			
Special information pack for all visitors to Ailinginae			
Establish a website			
Textbooks, pamphlets, video, and field trips for deserving RMI students			
SURVEILLANCE AND ENFORCEMENT			
Develop detailed surveillance and enforcement procedures			
Train RALGov police officers as Conservation Officers			
Develop partnership with remote surveillance experts and research institutions			
Acquire and install equipment			
Carry out surveillance and enforcement			
PARTNERSHIPS Develop partnerships for financing and			

technical assistance- strategies to assist with:			
Remote surveillance and enforcement			
Ecological monitoring program			
Invasive Species Management			
Conservation Officer Training			
Tourism management			
Education and awareness, promotion			
Cultural resources survey and protection			

BUDGET

[to be developed]

ANNEXES

QUARANTINE PROCEDURES

MARINE INVASIVES

Cleaning boat hull, empty bilge water before entering Ailinginae protected area at Rongelap, Kwajalein or Majuro)

LAND INVASIVES

No deliberate taking of plants or seeds
Fumigation of boat regularly for insects
Freeze clean change of clothes
Ensure shows have no seeds or dirt on them

PERMITTING PROCEDURE

Applications for entry to Ailinginae can be made by:
Yachts: direct application to RALGov on email or in person on Majuro. Fill in Application Form, receive Visitor Information Pack, [Application Form should include rules and regulations and ensure that applicant understands the rules and regulations- signature]
Need to ensure a quick and efficient permitting procedure.
Tourists: must go through local government tourism. In case of a tourist boat, must take Ailinginae Conservation Officer on boat with them.
Permits required for:

Entry to site on yacht- fill in application form- need to understand regulations and

Scientific research on site- fill in application form

Information package must be given to

JOB DESCRIPTIONS