

# 2011 Chief of Naval Operations Environmental Awards, Natural Resource Conservation – Small Installation Pacific Missile Range Facility

## INTRODUCTION

**Mission:** The Pacific Missile Range Facility (PMRF) is the world's leading multi-dimensional integrated test and training range, capable of simultaneously supporting surface, subsurface, air and space operations. PMRF's mission is to enhance readiness of U.S. and Allied forces by conducting safe and effective test and training events in an operationally realistic environment.

**Location and Acreage:** Located within the Hawaiian Archipelago on the picturesque and sandy western shores of the island of Kauai, PMRF Barking Sands occupies a 7.5 mile long by 0.5 mile wide strip of coastal land separated from its remote mountain sites on the ridges inland of the base by a plain now in agriculture. The working area of the base is the expanse of the sapphire Pacific Ocean to the north, south and west with varying water depths from 20 to 2,500 fathoms, underwater instrumentation covering 1,100 square miles for an underwater training range and missile defense testing, and a temporary operating area of over two million square miles. On Kauai, PMRF occupies over 2,454 acres (993.5 hectares) in five separate areas: the coastal Barking Sands; the upland areas of Makaha Ridge, Kamokala Ridge and Kokee sites at approximately 1,500 foot elevation; and a rented facility for small boats at Port Allen. PMRF oversees and coordinates training events from unit level to multi-national exercises, while simultaneously conducting or supporting research, development, testing and evaluation of U.S. Navy, other Department of Defense and other Federal agency programs and platforms.

Each of the PMRF facilities has unique features due to its location. Barking Sands contains five principal vegetation types including both native and introduced species, with smaller landscaped project sites interspersed throughout. At the tip of the upland Makaha Ridge, the 245 acre Navy facility



contains landscaped portions, shrub, native forest and woodlands, and overlooks Barking Sands, the PMRF underwater training ranges and beyond. The upland Kokee sites are comprised of 16 acres and are located within the native forest habitat on a series of landscaped sites. Kamokala Ridge's magazine area of 89 acres consists of shrub, forest and ruderal vegetation.

*Barking Sands* is located on Kauai's Mana Plain and historically associated with an extensive wetland separated from the coastal beach by high sand dunes. Barking Sands abuts a 7,000 acre agricultural zone to the inland side, providing habitat in a complex of ditches for several water birds listed as endangered or threatened pursuant to the Endangered Species Act (ESA). These birds also frequent drainage ditches that pass through Barking Sands, while the coastal zone provides protected beaches and littoral areas where the threatened green turtle can bask and nest and the endangered Hawaiian monk seal can haul-out to rest. Fisheries and marine resources are recovering in secured areas to a point that is expected to reach pre-human harvesting populations of both flora and fauna –

a relatively unique, yet accessible location within the main Hawaiian Islands for future research.

The Makaha Ridge facility is at an elevation of approximately 1,500 feet above the Pacific Ocean, at the outermost point on the Ridge, and has been home to feral goats and the endangered state bird, the Hawaiian goose, locally known as the nene. The native terrestrial ecosystem is a lowland dry and mesic forest, woodland, and shrubland.

The Kokee sites are situated in the native forest area of Kokee State Park, at an elevation of approximately 3,200 feet above sea level. The native terrestrial ecosystem is also a lowland dry and mesic forest, woodland, and shrubland. Four of five sites within the Kokee complex are landscaped and contain Navy assets used in tracking radar, telemetry, communications and command and control. NASA occupies the fifth site.

The Kamokala Ridge magazine area is the location used for storage of ordnance utilized in training and testing programs. During WWII several caves were excavated at the end of the Ridge for explosives storage, and more recently a large magazine was constructed in front of the caves for storage of large rocket motors that cannot access the narrow

configuration of the caves. The location is relatively arid and dominated by non-native plants and woody scrub, although it too is ecologically classified as a lowland dry and mesic forest, woodland, and shrubland.

Kaula Islet, southwest of the Island of Niihau, is a volcanic cone remnant of approximately 108 acres, of which the Navy uses approximately 10 acres for inert air-to-surface weapons delivery on the southern tip of the Islet. Its use is scheduled and controlled by the Fleet Air Control and Surveillance Facility (FACSFAC) on the island of Oahu. Kaula is home to a variety of nesting seabirds; routine ship-based surveys of these populations are performed.

The Mauna Kapu Facility is a 2-acre communications and radar site located on Oahu within the Honouliuli Forest Reserve. It is a mixture of lowland dry and mesic forest, woodland, and shrubland with no known threatened and endangered species.

**Civilian and Military Population:** Sixty military, 152 government civilian, 518 Operations & Maintenance contractor personnel, and 182 contractors representing over 25 companies provide assistance to specific functional groups for specific program support. The staff is concentrated at Barking Sands.

## BACKGROUND

The PMRF Revised Integrated Natural Resources Management Plan was signed by the PMRF Commanding Officer on 18 November 2010 and by Commander Navy Region Hawaii on 16 December 2010. The revision was completed over several years, with multiple communications and meetings with a working group of stakeholders that included the U.S. Fish and Wildlife Service (USFWS), National Oceanographic and Atmospheric Administration (NOAA) Fisheries Service, State of Hawaii Department of Land and Natural Resources (DLNR), Hawaii State Department of Business and Economic Development and Tourism (DBEDT), the Coastal Zone Management Act (CZMA) Program Office, and County of Kauai representatives.

The PMRF INRMP adopts a team approach for the daily management of the Natural Resources Program. Support and guidance is provided by field-experienced wildlife biologists from Naval Facilities Engineering Command Hawaii (NAVFAC HI) and NAVFAC Pacific on Oahu. The Command leadership remains fully engaged and are supported by two Range Complex Sustainment Support contractors, U.S. Department of Agriculture Animal and Plant Health Inspection Service Wildlife Services (USDA APHIS WS) field technicians, responsible for implementation of the Bird Aircraft Strike Hazard (BASH) Program and predator control, and base Physical Security team who provide first-responder and field monitoring.

As an example of this coordination, the INRMP team has recognized goat eradication at the Makaha Ridge facility as a priority, both to allow native plant re-vegetation of the severely eroded topography that supports Navy radar and telemetry assets and reduce disturbance to the nesting nene. Studies related to feral goat damage, alternative control and restoration have been completed. The contracting process to install fencing, prior to goat removal and restoration, has been initiated. Fortunately, the two endangered plant species (*Wilkesia hobbdi* and *Spermolepis hawaiiensis*) identified at the Ridge are

on the sides of the ridge and not accessible to the goat foraging that has virtually destroyed all the native plants on the site.

The Natural Resources Program has been exemplary, in spite of acknowledged vacancies of qualified staffing, during the award period. PMRF continues to be recognized for innovation and outreach in the true spirit and context of Executive Order (EO) 13352 (26 August 2004) "Facilitation of Cooperative Conservation."

## PROGRAM SUMMARY

The single most outstanding feature of the PMRF Natural Resources Program during the achievement period is the continued building on the foundation on which the program has operated for the past seven years - "cooperative conservation." As implemented at PMRF, outreach efforts within and outside the Navy properties have been crucial to program development and execution. This approach engaged other departments within the facility including the Public Affairs Office, Public Works Office, and Physical Security Department, with full support and cooperation of the Command – both at PMRF and CNRH. Outside the gate, PMRF developed working relationships with the DLNR, NOAA and USFWS, Non-Governmental Organizations (NGOs) including The Nature Conservancy and the National Tropical Botanical Gardens, and a native language charter school for children from neighboring Niihau.

By developing relationships over a longer period of time, the level of trust increases. This is particularly true of the culture in the Hawaiian Islands, as the turnover of "mainlanders" who spend only a few years, or less, on the Islands makes relationship-building difficult. In the context of a two-year award period, it is safe to state that continuous relationship building upon past programs and through the years has resulted in increased refinement to both projects and program performance.

This has also been true internally at PMRF; it has been established over time that conservation of

and respect for cultural and natural resources are compatible with mission success and physical security. Education and awareness training combined with the spirit of cooperation and recognition of the responsibilities of respective players has resulted in a program that continuously performs with excellence. While funding shortfalls impact all of the Services, leveraging resources outside the "Natural Resources Program" provided stewardship opportunities otherwise unavailable.

The primary purpose of the INRMP is to provide a framework, where natural resources are managed in accordance with the Sikes Act Improvement Act of 1997 and subsequent revisions that mandate "no net loss in the capability of military installation lands to support the military missions of the installation." This is accomplished through maintaining a repository of factual data on natural resources, guidance on compliance related to natural resources required by various regulations and regulators, and management goals and actions required and resources required to provide the flexibility necessary to maintain "no net loss capability".

Objectives included in the 2010 INRMP update identify programs to be continued and new areas of focus – PMRF performed with excellence in both categories. Examples demonstrating program successes during the award period are presented in the following section.



*More than 50 Sailors and PMRF personnel pick up trash on June 24 in celebration of World Oceans Day.*

## ACCOMPLISHMENTS

*The Laysan Albatross (LAAL) Surrogate Parenting Program - "Thinking Outside the Shell:"* Proving the axiom "necessity is the mother of invention," a funding shortfall for the BASH Program, just as the nesting season for the Laysan Albatross (*Phoebastria immutabilis*) was underway at Barking Sands in 2004, required innovation and cooperation to avoid a situation that could undo 18 years of LAAL management. This very large migratory seabird, infamous on Midway Island, had discovered the Barking Sands active runway and the environs as ideal nesting habitat. The USFWS Depredation Permit allowed for immediate egg destruction to prevent chick development that would eventually lead to imprinting on Barking Sands – increasing the threat to pilots, birds, and aircraft. It did not allow for destruction of hatching eggs – which is exactly the situation faced when funding was finally secured.

In late January 2005, PMRF, USDA APHIS WS, and the Wildlife Biologist at the Kilauea Point National Wildlife Refuge (KPNWR) "hatched" a contingency plan. The KPNWR's Biologist would determine how many egg and chicks hatching, or already hatched at PMRF could be placed with surrogate parents on the Refuge *without* a viable egg, and USDA APHIS WS would deliver that number of chicks/eggs from PMRF



*PMRF further refined and expanded its Laysan Albatross management program to help alleviate overcrowding at USFWS Kilauea Point NWR by supporting new colony development on protected/fenced areas of privately-owned lands. Behind the LAAL decoy are three endangered nene*

the next day. This process resulted in 26 successful adoptions. The Refuge is diagonally opposite Barking Sands on the Island and an ideal location for chicks to "imprint" as their home to return to when sexually mature. The next season, PMRF acquired 1 emu egg incubator – Laysan eggs are approximately the same size as emu but not as large as Ostrich – and the process was repeated to supply as many viable eggs as the Refuge could accept. Then the next season, a second incubator was acquired.

Each season PMRF, USFWS, and USDA APHIS WS worked together to refine the process to maximize the opportunity for successful fledging from KPWNR. Even before the program, LAAL had been nesting on private lands – unprotected from predation and often adults and chicks were killed by domestic dogs. As the population on the Refuge continued to expand, “Albatross Hill” became over-crowded and the other component of the BASH Program – capturing and relocating unmated birds (non-nesters) that arrive after the nesting birds – had become challenging. As a solution, PMRF personnel negotiated with a private land owner with 400 acres and a dog-proof fenced for permission to use their site for releasing adult birds, hoping this will discourage the birds from returning to Barking Sands.

In the 2011-2012 and past seasons, PMRF personnel have worked closely with the State and private citizens with large coastal properties on the northeast corner of Kauai Island who are committed to conservation of the Laysan. These private properties, located along navigation routes, are provided with the necessary protection for the species, enhanced vegetation for encouraging nesting. Some locations already have a small colony. Overcrowding has necessitated these further creative conservation efforts that benefit the species, the Navy and the community of Kauai, while at the same time supporting BASH Program efforts.

*Eradication of Long Thorn Kiawe (LTK) (Prosopis juliflora)*: PMRF worked with the Kauai Invasive Species Committee (KISC) and a NAVFAC PAC field biologist starting in 2005 to develop another innovation, this time directed at LTK eradication. Previously, KISC had used hand-held power tools, loppers and protective gear to remove these massive bushes known as “The Fence” along the southwest coastline of Barking Sands. An added complication is that much of the area infested was also designated as Critical Habitat for an endangered plant that does not grow on Barking Sands, but the habitat is suitable. Combined with the potential for disturbance to culturally-sensitive sites that might be underlying the coastal zone, it was necessary to find a cost-effective, safe and more efficient solution, while at the same time insuring compliance with the

Integrated Cultural Resources Management Plan and the Critical Habitat designation.

The plan developed was to use a large, tracked excavator equipped with a shredding device, instead of a bucket, to grind down the LTK to within a foot of the underlying sand. KISC crew would then saw-cut the stump to create a clean surface to deploy a root-killing chemical. A small tracked dozer was used to rake up the debris into piles and the area was then seeded with native coastal plant seed collected on-base. The plan was first circulated through and accepted by the regulators. The result was the destruction of LTK in one week that previously required the one year of hand-effort by the KISC crew. The cost savings were immense - \$24,000 vs. one year of salary and benefits for a crew of 10. In order for this effort to be successful, KISC will return on at regular intervals to destroy seedlings before becoming too large and resistive to herbicides.

Using these combined techniques, annual destruction of additional stretches of LTK has been conducted throughout the award period. Regrowth of native coastal vegetation is evident all along the cleared areas. KISC leadership incorporated this technique in other projects, and PMRF is receiving inquiries from other Services with similar issues.



*PMRF continues a coordinated effort with the Kauai Invasive Species Committee, the Environmental Resources team at NAVFAC PAC, and local heavy equipment operators utilizing a technique to remove the highly invasive “Long Thorn Kiawe.”*

Protection of Nocturnal-Fledging Seabirds: Kauai has the largest population of ground-nesting seabirds in the main Hawaiian Islands. Both Migratory Bird Treaty Act (MBTA) and ESA-protected species of shearwaters nest on Kauai, as well as petrels. Because these birds leave the nest – or fledge – for the first time at night, they have no practice flights. The inland-dwelling species may have to fly several miles to reach the ocean where they can land and rest. Their navigation systems utilize moon and starlight. The presence of unshielded intense coastal lighting along their flyways results in confusion, disorientation, and circling in an area, until the birds becoming exhausted or strike an object. Once on the ground, they are unable to fly because of their anatomy (legs for swimming, mounted too far back on the body) and become targets for predators including feral animals and domestic pets.

On Kauai Island, this has become a litigious issue involving the regulators, NGOs, the County, the utility company, and some resorts. During the award period, PMRF took the initiative to undertake major “dark sky” improvement in lighting. In addition, testing the efficacy of “green lights” was conducted to determine if migratory seabirds will be less distracted as is the case with migratory song birds, water birds and shore birds in Europe. While currently working with the regulator through the ESA Section 7 process, PMRF personnel provided and continue to support the on-island conservation programs of the Kauai Endangered Seabird Recovery Project, Save our Shearwaters, the State Division of Forestry and Wildlife, and the Kauai Seabird Habitat Conservation Plan Office through facilitation of shearwater banding training at our wedge-tailed shearwaters colony (MBTA protected; *Puffinus pacificus*). This is done in anticipation of the fallout of threatened Newell’s shearwaters (*Puffinus auricularis newelli*), threatened Hawaiian petrels (*Pterodroma sandwichensis*), and State-listed Band-rumped Storm-petrels (*Oceanodroma castro*), during the period between 15 September and 15 December. PMRF personnel maintain an aid station for recovered birds and liaison with the Save Our Shearwaters Program as necessary during this period.

Lighting improvements were coordinated with

energy conservation initiatives – converting from conventional lamps to light emitting diodes (LEDs) and using full-cutoff fixtures to prevent viewing of light source from above. This resulted in a “dark sky” combined with energy savings. Solar powered fixtures are also full-cutoff design and horizontally mounted. Where high-wattage fixtures mounted above the horizontal are required for safety or security, they are equipped with “green” lamps.

Community Outreach/Natural and Cultural Resources Project - Mana Native Gardens: During the award period, PMRF partnered with two NGO’s and a Hawaiian language charter school to create four living displays surrounding the PMRF Main Gate. Each display, referred to as a “biome,” was constructed and planted to display native plants important to prehistoric Native Hawaiians that would have been present in the four distinct habitats on the Mana Plain prior to westernization (dry forest, rocky foothills, sand dunes and wetlands). The project is intended as an interactive educational display for visitors and guests, as well an opportunity for field trips. It was adopted as a science “project” by the Ke Kula Niihau O Kekaha Hawaiian language-based charter school. They are committed to maintaining the displays as well as assigning students individual plants to study and research.

Inter-agency Cooperative Conservation - Nesting Green Turtles: During the award period, and for the first time in a decade, the threatened green turtle, (green sea turtle; *Chelonia mydas*) nested successfully, twice in the summer of 2010 and once in the summer of 2011. Communicating with the NOAA and USFWS staff on Oahu and working directly with DLNR Aquatic Biologists, PMRF’s team of Security, Wildlife Service technicians, and Range staff ensured protection and monitoring of the sites. From nesting to hatching, there was no disturbance. Following what appeared to be the completion of each hatching cycle, the DLNR Aquatic Biologist and PMRF environmental staff excavated each nest to recover shells for shipment to the NOAA lab on Oahu for DNA analysis. A surprise discovery during one of the evening excavations uncovered hatchlings between the surface and the nest itself, resulting in a photo-op that circulated widely and

submitted to CURRENTS Magazine as a “Best Shot” documenting the release of the brood at the ocean’s edge.

The “Return of Ding:” In the spring of 2009, a large female green turtle was discovered at the outfall of Nohili Ditch on Barking Sands. She had severe anterior carapace damage from a small powerboat prop. Within 3 days, she was rescued by PMRF staff, turned over to the DLNR Aquatic Biologist, crated and overnight-air expressed to Oahu where she was taken the next day to the NOAA lab for emergency surgery: cleaning the wound, inserting drainage, suturing the carapace using a tool to bore holes in the shell and closing with stainless steel wire, silicon sealant, and a fiberglass patch over the top. She was released the following day at Kaneohe Beach Park on the eastern side of Oahu – and staff wondered if they would ever see her again on Kauai. Though officially known as UAI, for the last three letters of “Kauai,” staff still christened her “Ding” reflecting her fiberglass patch as it is called in surfboard repair. Within two months, she was spotted again at the Nohili Ditch outfall, the patch easily visible. She has been spotted frequently since, once providing a “photo op.” on the beach, while a disoriented green turtle was being rescued from behind the limestone bench and returned to the outfall by our Physical Security staff.

Marine Life Conservation: The PMRF Ohana (Family) participates in community programs sponsored by other conservation organizations, including the Hawaii Humpback Whale National Marine Sanctuary’s annual “OCEAN COUNT,” which includes a site at Nohili Ditch on Barking Sands. On the last Saturday of January through March, volunteers at numerous sites around the main Hawaiian Islands document sightings and behaviors that are then provided to the Sanctuary’s team for analysis.

PMRF aircrews routinely report whale and marine mammal sightings, providing type, quantity, and direction information to Range Safety. Naval vessels in and around the range are afforded more accurate data on mammal activities thereby reducing incursions. PMRF continues coordinating with USDA APHIS WS field technicians and Physical Security

team for logging sightings of Hawaiian monk seals and green turtles on PMRF beaches. These observations are then provided to the NOAA and DLNR team monitoring these species. During the award period, the Commander Pacific Fleet, NAVFAC, Commander Navy Region Hawaii and PMRF team invested considerable professional effort to prevent Kaula Islet from inclusion in the proposed Critical Habitat designation for the Hawaiian monk seal – not yet resolved at the time of this submission.

PMRF actively participates in NGO beach cleanup programs including World Ocean's Day and International Coastal Cleanup. In 2011, this included teaming Niihau students with sailors in September. The event made the national news media when a Navy sailor discovered a “message in a bottle” that had been released by a sixth grade graduating class student in Japan five years earlier. The sailor will return the message to the now high school senior when he travels back to Japan to visit his family.



*The patrolled and secure beach front of Barking Sands is the frequent choice of the Hawaiian monk seals to haul-out for a rest.*

Barking Sands has become a protected de-facto marine “sanctuary” through the control of beach access. New in 2011, PMRF invited and escorted experts in aquatic and marine sciences from outside the Navy community on tours of these secured (closed to public) areas of Barking Sands. The potential for these protected areas to recover flora and fauna to prehistoric levels was confirmed, and will be a resource considered for future cooperative conservation outreach and academic research that has been encouraged by the recent MOA between the United States Pacific Command and the University of Hawaii.