

SMALL INSTALLATION AWARD NARRATIVE

Introduction:

Mission: The Pacific Missile Range Facility (PMRF) is the world's leading multi-dimensional integrated test and training range, capable of supporting surface, subsurface, air and space operations simultaneously. PMRF's mission is to enhance readiness of US and Allied forces by conducting safe and effective test and training events in an operationally realistic environment. It supports the largest multi-national naval fleet training evolution in the world, the Rim of the Pacific (RIMPAC) exercise and is the premium site for development and testing of missile defenses for the United States and our Allies around the world. At the same time, PMRF protects natural habitat for a variety of endangered, threatened and endemic species that in turn provides an unparalleled and accessible outdoor laboratory for academic research in a host of areas.

Location and Acreage: Located within the Hawaiian archipelago on western shores of the Island of Kauai, PMRF Barking Sands occupies a 7.5 mile, 1/2 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, with underwater instrumentation covering 1,100 square miles for an underwater training range, and, for missile defense testing, a temporary operating area of over two million square miles. On Kauai, PMRF occupies over 2,342 acres (937 hectares) in five separate areas: the coastal Barking Sands; the upland areas of Makaha Ridge, Kamokala Ridge and Kokee sites; 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 (RDT&E) of U.S. Navy, other Department of Defense (DoD), and Federal agency programs and platforms. Each of the Kauai facilities has unique features due to its location. Barking Sands contains 5 principal

vegetation types, including both native and introduced species, with smaller, landscaped project sites interspersed throughout approximately 1,991 acres (806 hectares). At the tip of the upland Makaha Ridge, the 245 acre (89 hectare) Navy facility contains landscaped portions, shrub, native forest and woodlands, and overlooks Barking Sands, PMRF underwater training ranges and beyond. The upland Kokee sites are comprised of 16 acres (6.6 hectares) and are located within the native forest habitat on a series of landscaped sites. Kamokala Ridge's magazine area of 89 acres (36 hectares) consists of shrub, forest and ruderal vegetation.

Barking Sands is located on Kauai's Mana Plain, historically associated with an extensive wetland separated from the coastal beach by high sand dunes. Barking Sands abuts a 7,000 acre (2,833 hectares) 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 (T) Green Turtle can bask and nest and the Endangered (E) Hawaiian monk seal hauls 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 1500 ft. above the Pacific, at the outermost point on the Ridge, and has been home to feral goats as well as the (E) 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 ft. above sea level. The native terrestrial ecosystem is also a lowland dry and mesic forest, woodland, and scrublands. 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 5th site.

The *Kamokala Ridge* magazine area is the location used for storage of ordnance used in training and testing programs. 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 which the Navy uses approximately 4 hectares for inert air-to-surface weapons delivery on the southern tip of the Islet. Kaula is home to a variety of nesting seabirds, and routine ship-based surveys of these populations are performed. SHORTEN

The *Mauna Kapu Facility* is a 2 acre (1 hectare) 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 T&E species.

Civilian and Military Population: Seventy military, 152 govt. civilian, 518 Operations & Maintenance (O&M) contractor personnel, and 182 contractors representing over 25 companies provide assistance to specific functional groups or for specific program support. The staff is concentrated at Barking Sands, which provides the command and control center for (RDT&E), fleet training – including anti-submarine warfare, submarine commander qualification and multi-national exercises including the semi-annual RIMPAC exercise .

Background:

PMRF's 2010 Integrated Natural Resources Management Plan (INRMP) is currently under revision and is scheduled for completion in 2016. The revision has been a multi-year process requiring numerous communications and meetings with a working group of stakeholders that include the U.S. Fish and Wildlife Service (USFWS), the National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries (NMFS) and Office of Protected Species (OPS), and State of Hawaii Dept. of Land and Natural Resources (DLNR), along with the Hawaii State Department of Business and Economic Development and Tourism, the Coastal Zone

Management (CZM) program office, and County of Kauai representatives.

In implementing the INRMP, PMRF utilizes a team approach for the daily management of the natural resources program. Support, coordination and guidance come from the field-experienced Wildlife Biologists at Naval Facilities Engineering Command, Hawaii (NAVFAC HI) and NAVFAC Pacific (NAVFAC PAC) on Oahu. On Kauai, the INRMP implementation is supported by the Installation Environmental Program Director, a contract Wildlife Biologist, two Range Complex Sustainment Support contractors, the U.S. Dept. of Agriculture's Wildlife Services Field Technicians (WSFT) responsible for implementation of the Bird Aircraft Strike Hazard (BASH) program and predator control, and the first-responder eyes and ears provided by base Physical Security team. Physical Security team diligently reports and documents wildlife sightings 24/7/365.

The overall program has been and continues to be 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". As implemented at PMRF, the outreach within and outside the confines of the Navy properties has been crucial to program development and execution. This approach actively engages other departments within the facility, including the Public Affairs Office, the Public Works Office, and the Physical Security Department, with full support and cooperation of the Command – both at PMRF and CNRH. Outside the Installation, PMRF maintains strong, collaborative working relationships with the State of Hawaii Department of Land and Natural Resources, NOAA and USFWS, the University of Hawaii/Kauai Community College, the Kauai Invasive Species Committee, Non-Government Organizations (NGOs) including the Cascadia Research Collective, The Nature Conservancy (TNC), the National Tropical Botanical Gardens (NTBG), the Kauai Endangered Seabird Recovery Project (KESRP), Save our Shearwaters (SOS), and two Hawaiian language charter schools for children from the neighboring Island of Ni`ihau.

PMRF is an active member of the Kauai Conservation Alliance. KCA is a consortium of government, NGOs and individuals who gather monthly to share experiences and lessons learned in their various specialties and areas of interest, with the focus on cultural and natural resource conservation and education related specifically to the Island of Kauai. It is an informal outreach forum where the wildlife biologists and concerned citizenry from different backgrounds with different mandates and/or opinions can network at a personal level.

PMRF developed and implemented numerous innovative projects and programs to accomplish INRMP objectives and Natural Resources conservation goals on the installation. Examples which document success during the award period are developed in the following “Accomplishments” section of this Submission.

Accomplishments:

Albatross Management Programs:

In 2014, the Pacific Missile Range Facility (PMRF) in partnership with the United States Fish and Wildlife Service (USFWS) and Pacific Rim Conservation (PRC) began participation in an innovative new project designed to reduce the risk of Bird Aircraft Strike Hazard (BASH) at PMRF’s airfield while simultaneously contributing to albatross conservation by establishing a new albatross nesting area in a protected site.

Since 2005, the Pacific Missile Range Facility (PMRF) has operated an annual “Egg-Swap” program which reduces Bird Aircraft Strike Hazard (BASH) risk by preventing Laysan Albatross (LAAL) from nesting with-in PMRF’s airfield safety zone while using the eggs to contribute to albatross conservation at protected nesting sites far from the base. Between 2005 and 2013 over 200 LAAL eggs laid at PMRF were placed with adoptive parents on the North Shore of Kauai. In 2013, several LAAL nesting areas that formerly received foster eggs from PMRF became unavailable for the egg-swap thereby greatly reducing the scope of the project. As a result, only 6 LAAL eggs from PMRF were placed in foster nests during the 2013-2014 nesting season compared

with an average of 28 per year since the inception of the program.

In 2014, in response to this limitation and in recognition of the potential for eggs from PMRF to support albatross conservation in other locations, biologists at Pacific Rim Conservation (PRC), proposed an entirely new project with an alternative destination for PMRF’s albatross eggs. The James Campbell National Wildlife Refuge (JCNWR) on the North Shore of Oahu was in the process of developing a new protected seabird nesting area on the refuge in a location that was well suited for albatross nesting.

Pacific Rim Conservation (PRC) proposed the initiation of a new program that would utilize eggs collected at PMRF to establish a new Laysan albatross nesting population at JCNWR. The idea quickly drew support from Navy biologists as well as a number of agencies. PMRF Biologists worked closely with PRC biologists in planning and logistical coordination and the program was up and running in time for the 2014-2015 albatross nesting season.

In November and December of 2014, albatross eggs were collected at PMRF by USDA Wildlife Services biologists and temporarily kept in an artificial incubator at the base. Each of the eggs was candled to determine whether it was a viable (living) or non-viable egg. In mid-December a selection of the viable eggs was used for the egg swap program on the North Shore of Kauai. The remaining viable eggs were then trans-located to Oahu where final incubation through hatching was overseen by Pacific Rim Conservation biologists. After hatching, the young albatross were taken to the National Wildlife Refuge where they were hand fed through fledging. Once the chicks were large enough to maintain body temperature, they were placed outside with-in a predator free nesting area where Laysan albatross recordings and decoys were used to attract adult albatross to visit the new nesting area.

USFWS strongly supported the effort as a means to increase nesting of LAAL in the main Hawaiian Islands to offset loss of nesting habitat elsewhere. The Navy contributed \$120,000 to support initiation of the project from plus up funds acquired for conservation projects. The remaining funding to total approx. \$650,000 over 5 years duration of the project

was provided by NFWF, USFWS, ABC, and other sources.



(Photo by John Nelson, Installation Environmental Program Director, PMRF)

Removal of eggs reduces BASH risk at PMRF. Placement of eggs in protected nesting areas supports PMRF's wildlife conservation objectives and INRMP requirements. Other benefits of the program include the opportunity to work in positive partnership with federal, state, and private stakeholders on a project of common interest to all. This project has been well received and supported by all identified stakeholders to date including: JCNWR, USFWS, NFWF, American Bird Conservancy (ABC), and others. This project is expected to be popular with the general public and should generate positive press for Navy and PMRF on both Kauai and Oahu including the possibility of garnering national attention.

This innovative new program was highly successful in its first year and will be continued for at least two additional years. A few lessons learned during the first year of the program have already led to improvements in the process for the current season and even greater success is expected during FY 2016.

Protection for Endangered Seabirds, PMRF's Dark Sky Initiative:

In 2015 PMRF significantly modified its approach to protection for the three protected seabird species collectively known as "shearwaters" in response to new findings and better understanding of the factors influencing past shearwater grounding events at

PMRF.

Three Endangered Species Act (ESA) protected seabirds, the Newell's Shearwater, the Hawaiian Petrel, and the Band-Rumped Storm Petrel, are subjects of special concern on the island of Kauai where State and Federal recovery efforts are ongoing to prevent the possibility of their extinction. A number of factors combine to put these species at risk including an issue known as "shearwater fallout" which is a familiar subject to most residents of Kauai. In recent years this issue has presented a challenge for PMRF's wildlife conservation program. These endangered birds require special consideration for PMRF operations in spite of the fact that none of these species nests or feeds on the base.

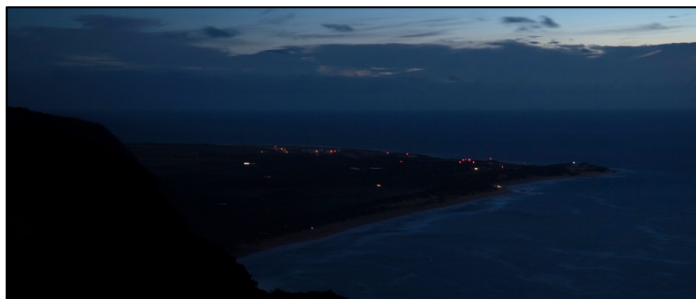
During the fall of each year on Kauai over a period of approximately three months new fledglings of these three species of mountain nesting sea birds take flight for the first time. As the young birds leave remote nest sites at night and make their inaugural flight to the sea they rely on instinctual navigation cues including the position of the moon and stars to find their way to safety. Each year a number of these birds become disoriented by artificial lights as they fly over or near human development and as a result some may end up flying toward or around artificial lights instead of out to sea. Repeated circling of lights may cause the birds to become too exhausted to continue flying or they may strike an object such as a power line. Once on the ground, the birds are usually unable to take flight again due to exhaustion, injury, or the lack of strong wind to assist them in take-off and they become targets for predators including both feral animals and domestic pets.

In order to prevent these birds from coming to harm due to operations at the base, PMRF modified all exterior lights on the base to reduce and redirect lighting which greatly reduced the level of ambient vertical illumination over the base. The use of green lights was also tested for fixtures that could not be shielded. However, after several years of evaluation of this reduced lighting program, it was found that these modifications alone were insufficient to reduce shearwater groundings to an acceptable level.

During this award period, PMRF's Environmental Biologist reviewed all existing data for Newell's Shearwater grounding events at PMRF and consulted

with several of the State of Hawaii's top experts on shearwater fallout to identify the best means by which the base could further minimize risk to sea birds.

Two critical factors were identified that changed the focus of the program. The first was the importance of timing of night operations with regard to lunar cycles and weather conditions. This variable was the most critical factor influencing grounding events at PMRF in the past. In addition, it was found that the orientation of lighting with respect to visibility from the ocean was at least as important as the orientation of lighting as seen from above.



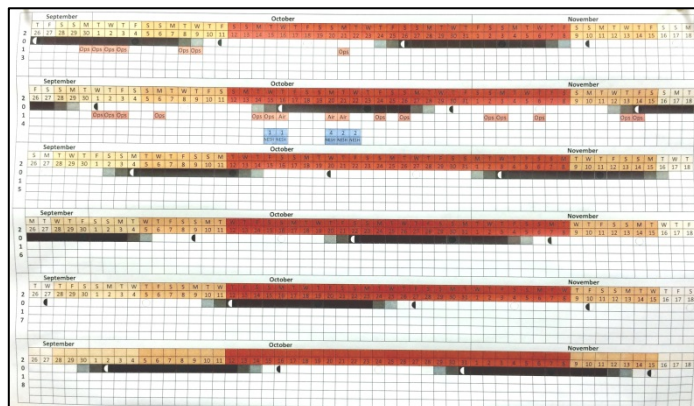
(Photo by John Nelson, Installation Environmental Program Director, PMRF)

Based on these findings and in response to heightened awareness of the urgency of preventing harm to these endangered sea birds, PMRF initiated an entirely new approach in its efforts to prevent shearwater fallout at the base to the maximum extent possible while continuing to support mission operations and security needs by implementing the following measures: 1) At the beginning of the 2015 shearwater season, the PMRF Commanding Officer issued a Command Notice alerting all personnel to the approach of shearwater fledging season. The notice provided instruction concerning changes in protocol for the upcoming three month period. 2) All non-essential exterior lighting was eliminated base wide prior to the September 15th start date of shearwater fledging season. 3) Implementation of a waiver system by which project managers who needed to conduct work at night on the base during the fledgling season could request permission to utilize exterior lighting providing it was coordinated with the PMRF Environmental Team to insure operations were carried out with the minimum level of lighting necessary to perform the operation safely and securely, and 4) Final approval of any use of

exterior lighting was at the discretion of the Commanding Officer based on level of importance of the operation and verification that the operation met the standards for minimization of lighting as detailed below.

The PMRF Environmental Team worked with facility tenants and project managers to minimize the potential for operations to impact night flying sea birds by ensuring that when possible, all scheduled activities requiring the use of lights were to be conducted outside of the three month shearwater fledging season.

For work, that had to be accomplished at night within the three month fledgling window, dates were chosen that were least likely to be problematic for fledgling sea birds based on moon phase and timing relative to peak of fledging.



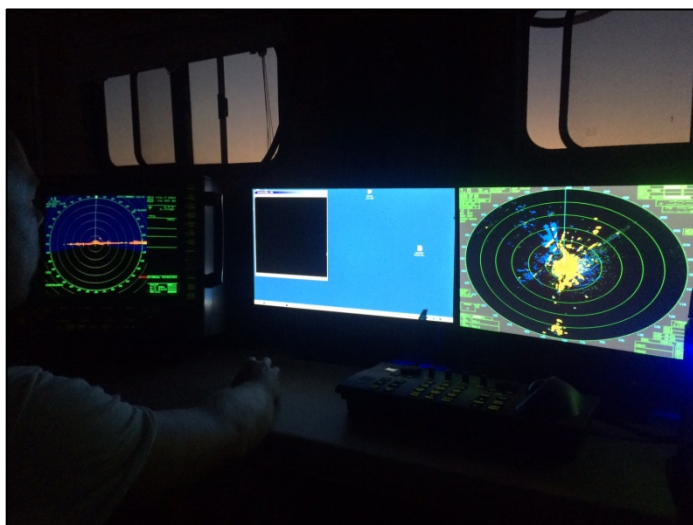
(Photo by John Nelson, Installation Environmental Program Director, PMRF)

All night time operations approved during the fallout season due to security or safety considerations were planned out in advance to use the minimal amount of light required to do the work securely and safely. The PMRF environmental team and base security ensured that no lights were left on when not required.

The implementation of these collective "dark skies" conservation measures resulted in a significant reduction of grounded seabirds during the 2015 fledgling season. PMRF's dark skies guidance has subsequently been adopted by COMNAVREG Hawaii as an Instruction and serves as a strong example of an installations ability to accomplish its mission in conjunction with safeguarding protected species.

Using Ornithological Radar to Study the Fallout of Shearwaters and Petrels on PMRF

In a proactive approach to learn more about the little understood flight behavior of endangered pelagic seabirds over and in proximity to PMRF, Hamer Environmental began conducting radar and night vision studies to monitor shearwater and petrel flight behavior over and in proximity to PMRF Barking Sands. The application of ornithological radar technology for surveillance of seabirds will help meet DoD federal trust responsibilities under the Endangered Species Act and Migratory Bird Treaty Act. This project will also supplement the work currently being conducted by the Kaua'i Endangered Seabird Recovery Project.



(Photo by John Nelson, Installation Environmental Program Director, PMRF)

Currently PMRF natural resources staff has little information to ascertain if there are regularly used flight paths of these species across the base and the final destination of these birds. Further, it is not known if seabirds attracted to base lights are flying in from the ocean to the west of from the mountains to the east, or both. It is unknown what number of seabirds are flying over the base nightly, how this number changes with season or time of night, their heights above ground level, or what proportion of fledglings flying over the base are attracted to lights. Through a combination of radar surveillance technology and outside visual observers (using night vision equipment), PMRF hopes to shed valuable light on these questions, and with this

information, both operations personnel and biological resource managers can make decisions that both enhance operational efficiency as well as support the conservation of endangered species by base operations.

Native Habitat Restoration - Long Thorn Kiawe Removal

During the summer of 2015, PMRF implemented an unprecedented management action to entirely remove Long Thorn Kiawe (*Prosopis juliflora*) from all areas of the base. Long Thorn Kiawe (LTK) is a highly invasive shrub/tree that had become established along coastal dune areas along the western coast of Kauai years ago before the species was identified as a problem. LTK thorns are sharp, strong, and long enough to penetrate a vehicle tire. Previous efforts to eradicate the plant fell short due to a lack of sufficient funding to completely remove all plants in a single treatment followed by monitoring and control of new sprouts required to prevent the species from reinfesting the treated area. The project initiated in 2015 differs from past efforts in its intention to completely treat and eradicate the species.

NAVFAC Hawaii biologists and PMRF Environmental Staff worked with contractors Tetra Tech and Pono Pacific to accomplish the initial cutting and shredding of all standing LTK shrubs and trees at PMRF. In some areas near public use areas, the cut stumps were removed to an isolated confinement location where they will be monitored to control potential of re-sprouting. The Kauai Invasive Species committee was contracted to treat areas with new growth and continue with follow up treatments as needed over time to prevent reoccurrence.

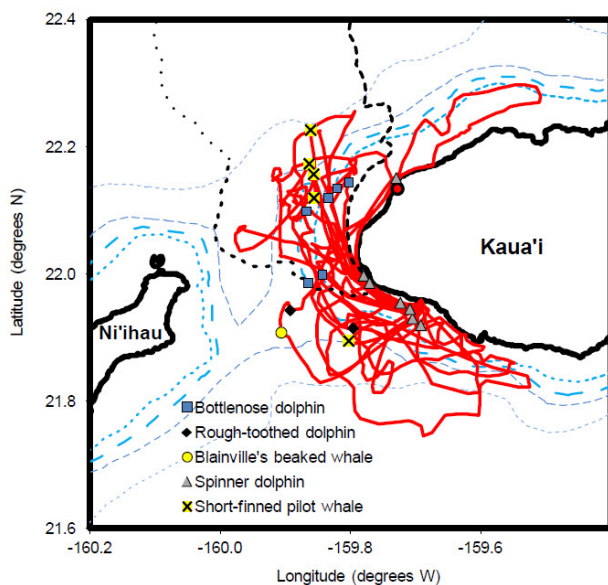


(Photo by John Nelson, Installation Environmental Program

The vast majority of the initial cutting was finished in 2015 with a small section to be completed during the second quarter of FY 2016 in order to prevent disturbance to native seabird nesting area during their nesting season. A total of 10,641 LTK trees have been removed thus far. Regrowth of native coastal vegetation is evident all cleared areas.

Odontocete Studies:

With continued funding from Commander, Pacific Fleet (CPF) and the Navy's Living Marine Resources program, Cascadia Research Collective (CRC) under the leadership of Dr. Robin Baird continues to assess odontocete cetaceans off the Pacific Missile Range Facility (PMRF) in collaboration with the Marine Mammal Monitoring on Navy Ranges (M3R) project.



(Figure by Robin W. Baird, Cascadia Research Collective)

This joint project was carried out in February 2014 on and around the PMRF instrumented hydrophone range, utilizing passive acoustic monitoring and boat-based field efforts. 30 hours of search time were spent within the PMRF instrumented hydrophone range boundaries. There were 26 sightings of five species of odontocetes, six of which were directed by acoustic detections from the M3R system. Recordings on the M3R system were made for four species to improve species classification for future acoustic monitoring efforts.

These monitoring efforts inform the Navy about spatial movement patterns and habitat use of odontocetes that are exposed to mid-frequency active (MFA) sonar, and how these patterns influence exposure and potential responses. Continued collection of movement and habitat use data from these species will provide a better understanding of the use of the range as well as provide datasets that can be used to estimate received sound levels at animal locations and examine potential responses to exposure.

Green Sea Turtle Monitoring:

Endangered Green Sea Turtles (*Chelonia mydas*) are known to nest on PMRF beaches from May through September, with hatching typically beginning in July and continuing through the end of September. The extent of turtle nesting at PMRF is poorly understood due to limited staffing resulting in the inability to closely monitor nesting activity on the base. The last recorded turtle hatch at PMRF was in the summer of 2012. Luckily the PMRF Environmental Biologist was able to hire a wildlife technician in the summer of 2015, whereupon she developed a turtle nesting monitoring program to better understand turtle utilization of PMRF beaches for nesting. A total of 18 digs were documented in 2015 with 8 of those being true nests. A total of 499 eggs were laid with 468 successfully hatched resulting in a 94% hatch rate. PMRF will continue its turtle monitoring program in 2016 to better understand the usage of PMRFs protected beaches by turtles as a preferred nesting site.



(Photo by Ingrid Rotto, PMRF Wildlife Technician)