

FACT SHEET NAVY CORAL REEF PROTECTION

1. MAPPING ASSESSING AND MONITORING OF CORAL REEFS

- DoD Coral Reef Assessment. DoD Legacy Resource Management Program funding was received in FY-01 to support an overall assessment of DoD coral reefs through a joint initiative engaging a research team from Boston University, Navy Facilities Engineering Command (NAVFAC) marine ecologist and Navy Facilities Engineering Support Command (NFESC) SCUBA diver support teams. DoD ports and associated reef ecosystems will be surveyed to identify priority areas based on significant use and/or sensitive reef conditions to develop further project requirements for coral reef protection. This information will provide DoD installations with reef location data and condition information to develop environmental planning documentation and support natural resources management, operational requirements, and monitoring programs.
- Marine Environment Planning Tools. Navy is developing a Geographic Information System (GIS)-based system containing information on the marine environment to assist personnel in identifying and avoiding impacts to sensitive marine ecosystems. Coral reef assessment information will be a part of this system to provide reef locations, habitat condition information, and related marine fisheries information. Associated GIS planning tools will provide planners and others involved in marine resources protection the environmental data necessary for effective environmental planning. This will facilitate the siting and scheduling of operations in areas of least constraint and the writing of effective environmental planning documents when necessary.
- Vieques Reef Mapping and Baseline Study. A baseline assessment of coral reefs is being conducted on the eastern ends of Vieques, Puerto Rico and St. Croix, USVI. There are a total of 24 permanent monitoring sites: six fringing reef, six bank reef crest, and six bank reef slope sites at Vieques, and two each at St. Croix. Each study site is comprised of three 30m-long transects that evaluate coral species richness, as well as the incidence of coral injury, including disease, damage or bleaching. The detailed baseline coral population data includes cover, abundance, diversity, and community structure. Fish populations are being studied and sedimentation studies are being conducted at each coral reef study site. Reef habitats have been mapped to locate coral reefs by distinctive characteristics and classification. For the reef mapping project, the Navy employed an innovative technique that combined SHOALS Marine LIDAR with AISA Hyperspectral Imagery. This first-ever combination of digital mapping technologies was utilized to produce an underwater 3-D surface reflective model. Both bathymetric contour mapping and high resolution habitat classification mapping were generated. Coverage maps generated included seagrass beds and three types of reef communities contained within the 40 m depth contour and up to 2 km offshore: fringing reefs (approx. depth: 20-40 ft); hard ground areas or crest reefs (approx. depth: 20 ft); and, offshore reefs (approx. depth: 65 ft).

- Fort Kamehameha Outfall Extension. The Navy conducted a marine biological field survey, in FY-01, of the entire project corridor to ensure that the limited coral resources within the project corridor were protected in accordance with EO 13089. Avoiding coral areas will be accomplished by realigning the corridor and utilizing microtunneling. The microtunnel design will pass below the fossil limestone bench, on which the limited corals are growing to avoid disturbing them.
- Pacific Missile Range Facility (PMRF), Hawaii. Navy conducted a marine environmental survey at PMRF to differentiate the major marine habitat types found near PMRF, provide an overview of threatened and endangered species present in these waters, and recommended activities to fulfill objectives of PMRF's integrated natural resources management plan (INRMP). The survey consisted of a "swim-through" of the entire length of the study area, augmented by SCUBA dives at several areas considered to be of concern. These dive sites were selected based on the greatest relative abundance of biotic assemblages and greatest vertical relief. Intensive quantitative survey techniques (transects, quadrats, etc.) were not employed. During point-to-point underwater swims at each dive site, investigators evaluated abundance and other characteristics of marine communities. Both investigators had carried out quantitative surveys in the vicinity as part of other projects, and the results of these previous surveys were used in the assessment of marine resources for the INRMP.
- Coral Reef Mapping and Assessment, Roosevelt Roads, PR: Navy is conducting extensive baseline survey of the coral reef systems adjacent to the Naval Station Roosevelt Roads to ensure continued protection of these areas.
- Coral Reef Assessment, Naval Station Guantanamo Bay, Cuba: The Navy in partnership with The Nature Conservancy, conducted an assessment of coral reefs and associated systems to better conserve and protect these valuable areas.

2. RESEARCH

- Diego Garcia Ship Husbandry. The Pacific Division, Naval Facility Engineering Command, with the support of Mobile Diving Salvage Unit 1, conducted a rigorous assessment to evaluate potential effects of the Military Sealift Command's ship husbandry activities on the coral reefs and marine environment offshore of Diego Garcia. Qualitative and quantitative biological, chemical, and physical data were gathered, including sediment samples and tissue samples from fish and various invertebrates. Chemical analyses were completed in Honolulu by a marine organic chemist who specializes in hull coatings and their effect on marine organisms. The biological, chemical, and physical data all indicated that the Military Sealift Command's ship husbandry activities have not had a detectable adverse effect on the coral reefs or associated organisms in the area.

3. REDUCE IMPACTS OF COASTAL USES

- Integrated Natural Resource Management Plans (INRMP). An INRMP is a planning and management document prepared by DoD installations that charts conservation and management of the installation's natural resources in relation to military operations. When areas controlled by the installation include coral reef ecosystems, natural resource management actions planned for those areas are described in the INRMP. Installations in close proximity to reef systems include: NAS Key West; the Pacific Missile Range Facility in Kekaha, Hawaii; Naval Station GTMO Bay Cuba; Marine Corps Base Hawaii, HI; Naval Station Roosevelt Roads, PR; Naval Activities Guam; PMRF Barking Sands, HI; and Naval Air Station, Barbers Point, HI.
- Dredging Operations in the Pearl Harbor Entrance Channel. The Navy surveys and implements protective measures for corals in the vicinity of the Pearl Harbor Entrance Channel as part of recurring dredging operations in the area. These activities are conducted annually.
- Marker and Mooring Buoys at Phillips Park Dive Pier. NAVSTA Guantanamo Bay purchased buoy markers to establish a boat free zone over a popular coral reef dive site. The buoys were installed as a joint effort between Port Operations and the Base Dive Club. The marker buoys delineate the site and the mooring buoys allow boats to tie up for recreational diving/fishing without dropping anchor in the reef.
- Proper Training, Operations, and Construction Practices
Tandum Thrust: U.S. and Australian training exercises on the islands of Tinian and Guam are planned to ensure that Landing Craft Air Cushion (LCAC) vehicle operations are accomplished with minimal impacts to coral.
AUTEC: Navy hydrophone arrays placed by the Atlantic Undersea Test and Evaluation Center off-shore of Andros Island, Bahamas was accomplished by divers to ensure that coral reefs systems were protected.
MCBH LCACS: LCAC transit between Mokapu Peninsula and Bellows Marine Corps tactical Air Base is carefully accomplished to avoid coral reefs fringing the area.
- Coral Reef Protection Buoy Markers, US Virgin Islands: Navy Special Unit 4 placed marker buoys around a coral reef off the coast of a NPS area on St. Johns Island to protect the valuable reefs.
- Implementation of Natural Resources Management Program, Midway Atoll: The Navy and FWS have worked together to protect this island, associated coral reefs, and renowned populations of albatross and other seabirds.
- Establishment of the Haputo Ecological Reserve Finegayan, Guam: This Ecological Reserve Area was established in 1984 to better protect a very diverse coral reef ecosystem and associated fishery on the western side of Guam.

4. REDUCE POLLUTION IMPACTS

- Advanced Delivery System Training Device. Navy divers use this structure in training exercises to practice submarine docking maneuvers. Placement of this structure on the sea floor, offshore of Pearl Harbor, Hawaii, was initiated only after divers selected an area free from coral reefs to ensure that such ecosystems would not be impacted by the structure itself or the practice maneuvers.
- Shipboard Pollution Prevention. Navy, in accordance with the Act to Prevent Pollution from Ships (APPS), aggressively manages shipboard pollution to protect sensitive marine ecosystems.
- Waste Reduction Afloat Program (WRAPS). Navy program to work with vendors to reduce the amount of cardboard, paper packing, and shipping supplies brought on board .
- Uniform National Discharge Standards (UNDS): Program to evaluate and properly contend with unregulated discharges such as deck runoff, incidental to military vessel operations.
- Oil Spill Prevention, Response, and Clean-Up Programs: DOD, represented by the Navy, is executive agent for the National Response Team (NRT) to provide quick response and clean-up of oil spills. DOD installations also have Spill Prevention Control and Countermeasures (SPCC) Plans to contend with spill events.
- Invasive Species Management: To minimize the risk of introduction of invasive species from ballast water, the Navy has voluntarily adopted International Maritime Organization (IMO) guidelines for double exchange of ballast water, outside the 12 mile zone.
- Pollution Prevention: Best Management Practices (BMPs) to ensure that point and non-point pollution is controlled and that point source discharges are consistent with receiving waters Total Maximum Daily Load (TMDL).
- Sediment Control: DOD installations implement sediment control measures to ensure that pollutants carried by sediments into waterways are minimized.
- Wetlands Protection: DOD wetlands are mapped to ensure that they are protected to maintain their filtering capabilities which can help to protect adjacent coral reef systems

5. RESTORE DAMAGE REEF SYSTEMS AND PROTECTING REEF SYSTEMS

- Reef Cleanup at Marine Corps Base Hawaii (MCBH). Since 1998, MCBH has worked with State and community volunteers to remove over 5,000 pounds of net debris each year in Kane'ohu Bay alone. These cleanup activities are an annual Earth Day event.
- Los Machos and Red Mangrove Restoration, Puerto Rico. Over 1000 acres of mangroves were restored through a DoD Legacy project in the Los Machos and Red Mangrove Forests to support the recovery and protection of nearby coral

reefs. Mangroves benefit coral reefs by filtering pollutants in runoff, increasing coastal habitat, and, depending on proximity, protecting coral reefs from hurricane damage.

- Protection of Sea Grass Beds at John Pennekamp Coral Reef State Park: Navy, in cooperation with FL DNR and NOAA, purchased and installed shallow water marker buoys to help protect this important area.

6. IMPROVE COORDINATION AND ACCOUNTABILITY

- DoD Coral Reef Protection Implementation Plan. The *DoD Coral Reef Protection Implementation Plan* was developed and printed in FY-01. The Department of Defense, through Navy lead, submitted the CRPIP to the Coral Reef Task Force in response to the requirements of EO 13089. This document serves two purposes: (1) to provide guidance and information to the DoD services regarding protection of coral reef ecosystems; and, (2) to provide the Coral Reef Task Force with information describing DoD's implementation of the EO 13089 through its existing programs, authorities, policies, and current funding authorities.
- Coral Reef Conservation Guide for the Military. The *Coral Reef Conservation Guide for the Military* serves as a general outreach brochure to heighten awareness within DoD. It provides an overview of activities conducted by DoD that have the potential for adverse impacts on coral reef ecosystems and outlines pertinent DoD and U.S. national laws and policies regarding coral reef protection. This guide serves as a major outreach accomplishment for DoD and will continue to be available on the DENIX website for military and public awareness of DoD policy and program for coral reef protection.