

Unveiling
THE NAVY'S

RANGE SUSTAINMENT PROGRAM

**Ensuring Consistency and Continued Access
for Crucial Navy Training Areas**

In recent years, expanded interpretations of the applicability of environmental legal requirements to Navy operations and training have increased compliance requirements for Navy ranges and operating areas (OPAREA). These compliance issues involve urban growth near Navy bases and training areas; use of radio frequency spectrum for communication purposes; noise; access to airspace; ordnance impacts on and off-range; and the overall effect of military operations on civilian populations, marine species, and wildlife. At the same time, the need for Navy warfighters to accomplish new and more complex missions, along with technological advances that increase the strike distance and impact of Navy weapon systems, have made the maintenance and in some cases the expansion of range/OPAREA capabilities and infrastructure a critical goal for the future.

Based on growing concern about the impacts of environmental constraints on the Navy's ability to train sailors effectively on current and future weapon systems, the Navy has initiated a Range Sustainment Program. Budgeted in the Navy's Program Objectives Memorandum for 2004 (POM-04), the program is a comprehensive effort to assess and help manage Navy ranges while ensuring adequate range access for effective training of sailors. The goal of the Range Sustainment Program is to ensure consistency across range complexes, minimizing individual, range-by-range responses to issues that affect ranges as a whole. The program will encompass Navy training complexes and OPAREAs all over the United States, considering long-term sustainability goals as an integral part of the range management process.

As part of the Range Sustainment Program, the Navy has made organizational changes, initiated specific range management and environmental planning initiatives, and focused on knowledge advancement about marine mammals and related issues that are relevant to ranges.

An Engineering Aide relays grid coordinates of various targets to his mortars crew during a field exercise at Fort Hunter-Liggett, Monterey, CA.

U.S. Navy photo by Photographer's Mate Airman Lamel J. Hinton



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ORGANIZATIONAL CHANGES

Two major organizational shifts have taken place in the interest of better and more sustainable management of ranges. The first is the official grouping of training ranges into range complexes, and the second is the establishment of the new Navy Range Office.

Range Complexes

The Navy currently has approximately 300 individual active ranges and OPAREAs (not including small arms ranges). These include land-only, sea-only, air-only, land and sea, land and air, sea and air, and land, sea and air training locations. OPAREAs are designated ocean areas that are not “owned” by the Navy in the way that land ranges are owned, but where routine Navy training and testing takes place. In this way, OPAREAs serve essentially the same function as training ranges, and are considered training ranges in many aspects of the Navy’s range management approach.

From an operational perspective, military training ranges that exist in close proximity to one another give warfighters the opportunity to train in diverse environments within a convenient geographic area.

On a given day, training activities that are not available on a particular range, whether due to environmental restrictions, weather conditions, scheduling issues, or a lack of facilities, may be available at another range nearby. Training activities can be coordinated across multiple ranges to bring the multi-threat environment of modern combat to the warfighter in a controlled setting. The use of close-proximity ranges in this way also reduces wear and tear on equipment and non-productive time for opera-

tors, who might otherwise have to travel long distances to get the training they need.

This regional approach that has been in place for decades for the operational use of ranges has now been applied to sustainable range management. Based on recommendations from the Tactical Training Theater Assessment and Planning Program (TAP) [discussed below], the existing geographic “range clusters” have been officially designated as range complexes. The list is still being final-

The guided missile destroyer USS JOHN PAUL JONES (DDG 53) fires a five-inch round from a Mk-45 five-inch gun during a live-fire exercise.

U.S. Navy photo by Photographer’s Mate
2nd Class Bradley J. Sapp





A SEAL (Sea, Air, and Land) team member participates in an exercise during Forward Air Controller (FAC) School in Fallon, NV.

U.S. Navy photo

- San Francisco Complex (CA)
- Fallon Range Training Complex (NV)
- Southern California Complex (CA)
- El Centro Range Complex (CA)
- Boston Area Complex (ME, MA, NH, RI, NY)
- Virginia Capes (VACAPES) Complex (MD, VA, NC)
- Atlantic City Complex (NJ, NY)
- Narragansett Bay Complex (RI, NY)
- Cherry Point Complex (NC)
- Jacksonville Range Complex (FL, GA)
- Charleston Range Complex (SC)
- Key West Complex (FL)
- Gulf of Mexico (GOMEX) Complex (TX, GOMEX OPAREAs)
- Meridian Complex (MS)

ized, but major Navy training range complexes include the following:

- Hawaiian Islands Complex (HI)
- Whidbey Island Complex (WA, OR)

Each range complex contains several individual ranges within a given geographic area, and includes space (air, land, sea, underwater, or a combination) designated for maneuvering; a command and control system to manage the flow of personnel and equipment; and supporting infrastructure to allow practice firing and live munitions use against real and simulated targets. Some range complexes, such as the Navy's Fallon Range Training Complex in Nevada, also contain electronic instrumentation that provides feedback to range users.

Major Navy Training Range Complexes





A Standard SM-1 surface-to-air missile is launched from the USS GEORGE PHILIP (FFG 12) during training exercises off the California coast.

U.S. Navy photo by Photographer's Mate 2nd Class Kenneth Pace

The guided missile frigate USS FORD (FFG 54), guided missile cruiser USS LAKE CHAMPLAIN (CG 57) and guided missile destroyer USS HOWARD (DDG 83) are operating with USS JOHN C. STENNIS (CVN 74) during the Carrier Strike Group's Composite Training Unit Exercise (COMPTUEX) in the Southern California operating area.

U.S. Navy photo by Photographer's Mate 2nd Class Jayme Pastoric



An SH-60F Sea Hawk fires a Hellfire missile during a training exercise.

The New Navy Range Office

Commander, U.S. Fleet Forces Command (CFFC) has operational control of all ranges within the continental United States, and Commander, U.S. Pacific Fleet (CPF) has operational control over ranges from Hawaii westward. To ensure that these ranges can continue to meet the needs of the warfighter in light of range encroachment and other external issues, Navy leadership made the decision to designate a single entity at the headquarters level for policy and management oversight of all ranges.

As a result, the Chief of Naval Operations Ranges and Fleet Training Branch (CNO N433) officially took on new responsibilities as the Navy

Range Office on 15 October 2003. The Navy Range Office is now the single point of contact within the CNO organization for range policy and management oversight, including training ranges; research, development, testing and evaluation (RDT&E) ranges; target development and procurement; testing and evaluation (T&E) facilities, resource sponsorship; and policy development. The CNO Environmental Readiness Division (CNO N45) provides ongoing support to the Navy Range Office on range-related environmental issues, ensuring that ranges operate in full compliance with applicable environmental requirements without significantly affecting access for Navy training and testing.

RANGE MANAGEMENT INITIATIVES

The majority of range management initiatives begun as part of the Range Sustainment Program fall under the Tactical Training Theater Assessment and Planning Program, referred to as TAP. Initiated in 2000, TAP is the fleet training portion of the Range Sustainment Program, and was developed over a two-year period by an integrated team of operational, environmental, legal, and facility management personnel. Participants from the Atlantic Fleet, Pacific Fleet and CNO

THE BASICS ABOUT NAVY RANGES

1. What are ranges, and what purposes do they serve?

Military ranges are designated land and water areas set aside, managed, and used to conduct research on, develop, test, and evaluate military munitions and explosives, other ordnance, or weapon systems, or to train military personnel in their use and handling. Ranges include firing lines and positions, maneuver areas, firing lanes, test pads, detonation pads, impact areas, and buffer zones with restricted access and exclusionary areas.

2. How many ranges are there?

The precise number of ranges depends on how you define them, but a rough estimate would be about 300 active Navy ranges. Navy training ranges in the United States and in U.S. territories are now grouped geographically into range complexes.

3. Working Definitions

● ACTIVE RANGE

An active range is a military range that is currently in service and is being regularly used for military training and/or testing activities.

● INACTIVE RANGE

An inactive range is a military range that is not currently being used, but is still under military control and is considered by the military to be a potential range area, and that has not been put to a new use that is incompatible with range activities.

● CLOSED RANGE

A closed range is a military range that has been taken out of service as a range and has been put to new uses that are incompatible with range activities, or is not considered by the military to be a potential range area. A closed range is still under the control of a military service.

● MAJOR RANGE AND TEST FACILITY BASE (MRTFB)

A Major Range and Test Facility Base (MRTFB) refers to a set of test installations, facilities, and ranges which are regarded as primary national assets for the development and deployment of U.S. warfighting capabilities through weapons testing and evaluation.

● UNEXPLODED ORDNANCE (UXO)

Unexploded ordnance (UXO) are military munitions that have been fired, placed or dropped as typically used, but failed to detonate due to malfunction, design, or any other causes.

staff coordinated to identify all training ranges and OPAREAs, validate the contribution of each training range/OPAREA to current fleet readiness capabilities, identify challenges facing these Navy training assets, and systematically plan the studies and procedures needed to proactively address each of the challenge areas. The team then ranked the implementation of TAP program objectives based on operational requirements and established an investment strategy to achieve and maintain sustainable range management. The investment strategy calls for the distribution of \$98.4 million in funding to the fleets, with support from other Navy commands including Naval Sea Systems Command (NAVSEA), Space and Naval Warfare Systems Command (SPAWAR), Naval Bureau of Medicine and Surgery (BUMED), Naval Sea Systems Command (NAVSEA), and Naval Facilities Engineering Command (NAVFAC) to support efforts that meet TAP objectives.

Range management initiatives that fall under TAP currently include the following.

Range Complex Management Plans

In order to document the contribution of individual range complexes to fleet readiness and ensure that each range or OPAREA is managed to fully support readiness requirements, the Navy has begun a range complex management plan (RCMP) for each range complex. Serving as a multi-purpose planning document, an RCMP will outline a strategy to ensure that a given range complex or OPAREA can support current and future training operations without compromising readiness, human health, or the environment.

Each RCMP will contain detailed information about the size and quanti-



An F/A-18F Super Hornet launches from the flight deck of USS JOHN C. STENNIS (CVN 74) during training exercises.

U.S. Navy photo by Photographer's Mate Airman Andre Rhoden



9mm pistol training on deck.

ties of ranges per complex, range capabilities, environmental planning, and specific sustainable range management practices. The RCMP will identify the procedures needed to ensure that the range complex and its infrastructure can meet future readiness needs. In addition, RCMPs will account for the coordination of individual range managers' activities within the larger range complex.

Presently, RCMP prototypes are 75 percent complete at Naval Air Depot (NADEP) Cherry Point and Marine Corps Base (MCB) Camp Lejeune, and are under review by the chain of command. Other range complexes are in the process of developing RCMPs as well, and the Navy hopes to have completed RCMPs and associated National Environmental Policy Act (NEPA) documents in place at all range complexes by 2010.

Marine Species Density Data

Despite decades of research, relatively little is known about the habits of marine life—particularly about the locations where whales and other marine mammals routinely congregate and travel in the oceans. This lack of knowledge about where marine mammals are can create challenges for Navy training, as both the Marine Mammal Protection Act (MMPA) and Navy environmental policy require that the Navy minimize impacts to marine mammals while performing its military mission.

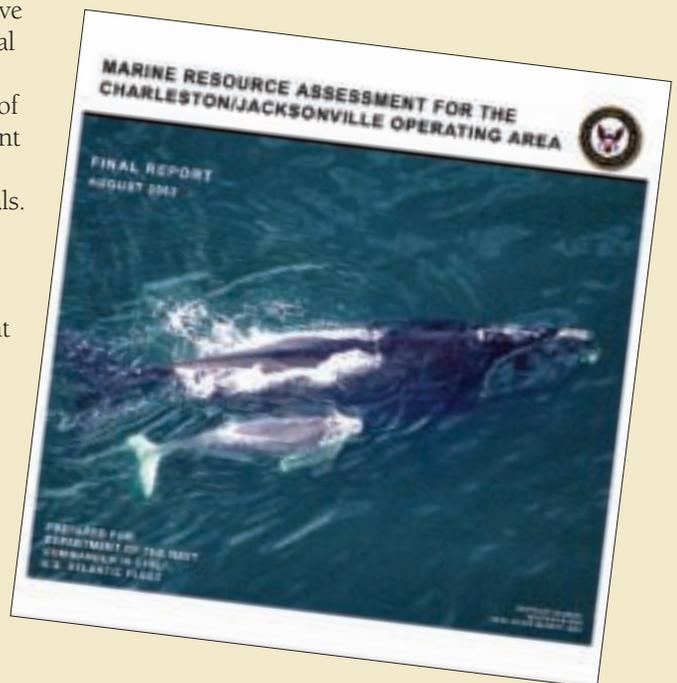
In order to increase the availability of knowledge about marine mammal locations world-wide, the Navy will perform a marine species literature search and validation of existing marine mammal data, and then use this information to build a centralized Navy database that will be accessible by Navy environmental planners. In addition, the Navy will cooperate with the National Marine Fisheries Service (NMFS) to conduct ship-based surveys of marine mammals within Navy operational areas. The surveys will gather new data about marine mammal locations and ecological information, which will in turn be used to improve predictive modeling of marine mammal densities. Surveys will be conducted for the majority of OPAREAs in order to account for seasonal variation in the numbers of marine mammals. The combined literature search and survey information will be used as part of Marine Resource Assessment (MRA) reports and other

Marine Resource Assessment (MRA) reports are being completed for each range complex.

data that supports NEPA/Overseas Environmental Impact Statement (OEIS) planning, as well as training exercises and mission planning.

Operational Range Clearance

For closed and transferring ranges, the Navy conducts range clearance, or removal of spent munitions and munitions constituents in and around impact areas, as part of the environmental restoration process. (See our story on the cleanup of Kaho'olawe



entitled, "Cleaning Up Kaho'olawe: Navy Nearly Finished with Ordnance Removal on Former Bombing Range" on page 56 of this issue of Currents.) For operational ranges, range clearance has historically been performed on an "as-needed" basis to restore target areas or prevent the migration of munitions constituents off-range.

In coordination with CFFC, the Navy Range Office (NRO) is presently developing a uniform policy for removing existing visible and partially buried munitions and inert residue from target areas and access routes at all land-based operational ranges. As part of this effort, the NRO is proposing annual range clearance of future ordnance, which may include three-to-five year expanded line sweeps (where explosives ordnance personnel fan out from the target area to detect any outlying munitions items and remove

them or render them inert). Munitions materials and related scrap items that are removed from ranges will be processed by qualified recycling or disposal firms as appropriate. These steps will help ranges continue operating effectively while protecting human health and the environment and minimizing public and regulatory concern.

Range Sustainability Environmental Program Assessment (RSEPA)

The Navy has created a Range Sustainability Environmental Program Assessment (RSEPA) process to support the sustainment of Navy ranges by evaluating the present environmental condition of each land-based operational range under Navy control. Knowledge of range-specific

environmental conditions will help operators make informed range management decisions and simplify the planning required for Navy training activities in the future. Once range-specific environmental conditions are understood, appropriate measures can be implemented to ensure compliance with environmental laws and regulations.

RSEPA will include comprehensive, periodic assessments of range conditions using an interdisciplinary team of operational, conservation, compliance, facilities, real estate, environmental planning, noise, and legal personnel. The assessments developed by these experts will be utilized as part of RCMPs and NEPA/OEIS planning.

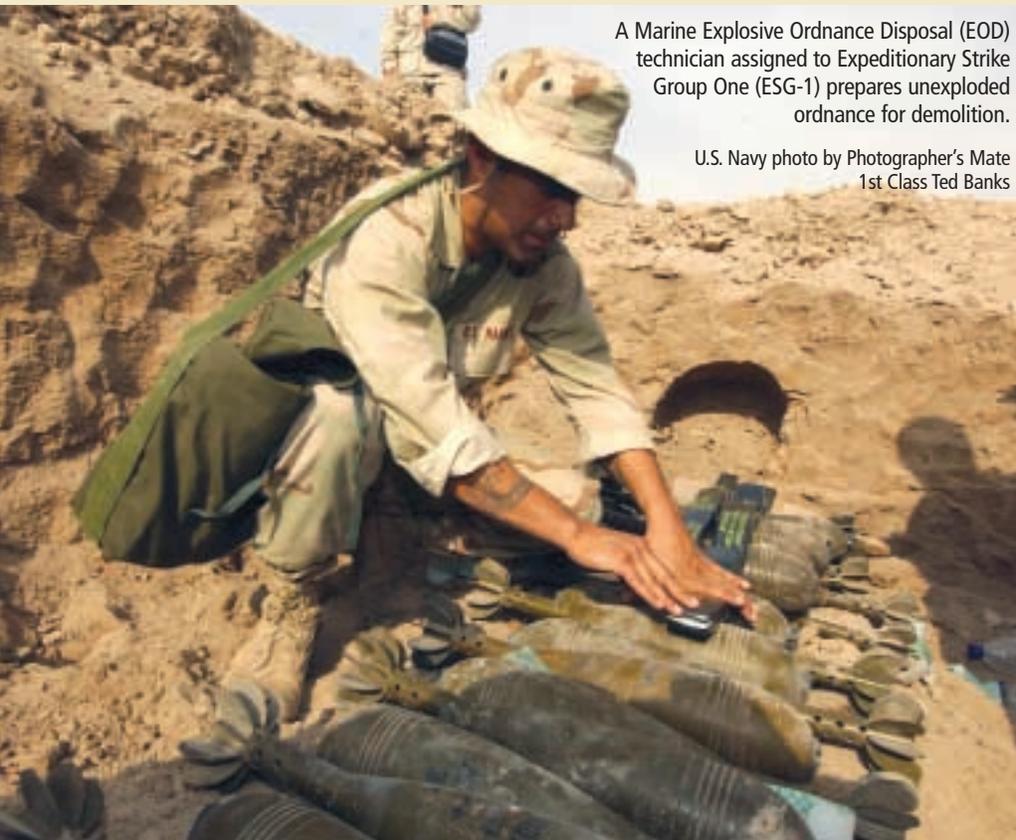
The RSEPA process will include three primary phases that are designed to determine the risk, magnitude, and appropriate solutions for potential munitions constituents from ranges impacting human health and the environment. These phases consist of a range condition assessment (RCA), a comprehensive range evaluation (CRE), and sustainable range oversight (SRO).

Range Condition Assessment (RCA)

An RCA will evaluate the risk of compliance issues arising and the need for further research to assess the potential for an off-range release of munitions constituents at a given range. RCAs will be conducted every five years for each range.

Comprehensive Range Evaluation (CRE)

When deemed necessary following an RCA, a comprehensive range evaluation (CRE) involving on-range sampling will help pinpoint whether munitions constituents on the range exceed regulatory criteria, and if so whether those constituents may migrate beyond the range boundary.



A Marine Explosive Ordnance Disposal (EOD) technician assigned to Expeditionary Strike Group One (ESG-1) prepares unexploded ordnance for demolition.

U.S. Navy photo by Photographer's Mate 1st Class Ted Banks

Sustainable Range Oversight (SRO)

If munitions constituents are determined to pose an unacceptable risk to human health and the environment off-range, the Navy will use a specified system of oversight (Sustainable Range Oversight) in conjunction with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) process to address off-range releases through environmental cleanup, inform regulators and the public throughout the process, and ensure that the environmental response actions do not adversely affect the long-term sustainability of the range.

Protective measures, such as relocating targets away from water sources, using a greater proportion of “green” and/or inert ordnance, posting warning signs or erecting fences, and modifying actual use of the range can be implemented at any point during the RSEPA process to sustain range operations and maintain environmental compliance.

ENVIRONMENTAL PLANNING

As a federal agency, the Navy is required under NEPA and other environmental regulations to consider environmental factors when planning actions or projects, and to complete Environmental Impact Statements (EIS) for activities that have the potential to significantly affect the quality of the environment. In compliance with NEPA and laws such as the Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), Coastal

Zone Management Act (CZMA), and Clean Air Act (CAA), the Navy has incorporated environmental planning steps into the process of constructing and modifying facilities, closing and transferring installations, acquiring and basing weapon systems, managing natural resources through Integrated Natural Resource Management Plans (INRMP), preserving cultural resources, and planning formal military exercises.

In order to plan for current sustainment and future increased capabilities of range complexes and OPAREAs, the Navy is now preparing comprehensive EISs, OEISs, or combined EIS/OEISs (as appropriate) for range complexes and OPAREAs over the next five years. EISs are used for areas within 12 nautical miles (nm) of the United States coastline, and OEISs are used for areas outside 12 nm. Each EIS and EIS/OEIS will incorporate required public comment and review procedures, fully integrating input from other federal agencies and stakeholders. The public process will help concerned people better understand what the Navy plans to do on each range and why.

In conjunction with a host of other environmental studies and analyses both completed and ongoing, this

effort will identify all military activities anticipated at each range complex/OPAREA for the next several years and assess the potential environmental consequences during the public NEPA process. The Navy will address all issues of concern at each training area, paying particular attention to marine species distributions, biological assessments, threatened and endangered species, environmental permits, noise, and urban growth.

NEPA Guidance Document

To ensure a consistent approach to complying with NEPA, CNO N45 is now preparing a NEPA guidance document that will serve as a step-by-step manual for Navy personnel and contractors involved with preparing NEPA documents for all activities, including range activities. The manual will guide environmental planners through the preparation of EISs and OEISs for all Navy actions, with a special emphasis on NEPA for ranges. It will also highlight environmental planning for specific actions and contingencies to plan for when conducting a particular training exercise or testing a certain weapon system. The document will include a typical EIS/OEIS outline as well as



U.S. Marines offload from a Landing Craft Air Cushion (LCAC) as part of a beach assault exercise during the “Rim of the Pacific” (RIMPAC) 2002 multinational amphibious training exercise.

U.S. Navy photo by Lt. Cmdr. Jane Campbell

techniques for involving the public in the NEPA process. Armed with this information, Navy environmental planners will be able to streamline the NEPA process and reduce costs. The final version is planned for completion by February 2004.

KNOWLEDGE ADVANCEMENT

The Navy funds and participates in additional knowledge advancement initiatives that are not part of TAP, but play a critical role in Navy range sustainment. Among these are marine mammal research and development programs and knowledge advancement for underwater unexploded ordnance (UXO).

Marine Mammal Research and Development

The Navy is a leader in the area of marine mammal research and development, spending approximately \$7.5 million per year and funding 70 percent of the world's research on the effects of sound on marine mammals. (See our spotlight interview with Robert Gisiner, the Office of Naval Research's marine mammals expert in the winter 2003 issue of *Currents*.) Presently, most Navy marine mammal research and development projects fall into three main categories:

1. Location, abundance and movement,
2. Criteria, thresholds, physiology and behavior, and
3. Mitigation, monitoring, technology, and risk assessment.

Location, Abundance and Movement

The National Marine Fisheries Service (NMFS, or NOAA Fisheries) has the legal mandate to monitor the overall health of marine mammal populations. NMFS accomplishes this monitoring via visual surveys that usually take place on National Oceanographic and Atmospheric Administration (NOAA) ships, where trained observers note sightings of marine mammals as the ship transits on predetermined paths. In many instances, the number of sightings in a survey

can be as few as 10 to 20 animals or groups. These numbers are used to generate statistical models to estimate how many marine mammals of a given species are expected to be within the entire survey area. However, short-term climactic changes (e.g., El Nino) can dramatically alter the physical properties of the ocean environment, and these changes can reasonably be expected to affect the habitat location for some marine mammals. In addition, while the



Manatee.

Photo by Jim P. Reid, U.S. Fish and Wildlife Service



Dolphin.

total number of marine mammals can be expected to remain relatively constant over time within a survey area that might cover thousands of square miles, the Navy needs to be able to predict marine mammal abundance in small ocean regions over a short time scale (hours, days, weeks, or months) when marine mammals may arrive in or depart a small region in great numbers.

In order to arrive at marine mammal distribution data on which Navy fleets can make more practical, informed decisions for training and transit purposes, the Navy is funding additional studies in conjunction with NMFS and academic/research organizations. The studies involve:

- Habitat investigations that may link marine mammal movement and behavior to physical ocean features;
- Predictive modeling that takes into account short-term changes in the ocean environment to calculate marine mammal location and abundance;
- Behavioral ecology of marine mammals; and
- Additional data analysis and surveys.

The information collected through these efforts will enhance the data sought through TAP.

Criteria, Thresholds, Physiology and Behavior

Marine mammals are equipped with senses and other body characteristics that allow them to take advantage of the unique properties of the ocean. As a result of these marine mammal attributes that are neither shared nor fully understood by humans, as well as the lack of specimens for many



Killer whale.

marine mammal species, it is challenging to draw meaningful conclusions about how marine mammals are affected by sound and other factors within the ocean environment. Legal and ethical considerations prevent marine mammal scientists from conducting experiments on live animals that could cause them injury, so researchers continue to seek alternative means of building criteria and thresholds for physical injury to marine mammals.

Some data on physical injury is collected from analyzing marine mammal carcasses, either through experiments on the carcass itself or through quantifying the physical characteristics of bone and other body tissues. A measure for impact on marine mammals that is less than physical injury is Temporary Threshold Shift (TTS), where a level of sound exposure causes a temporary loss of hearing for the animal. Using trained marine mammals, Navy scientists analyze the magnitude of a controlled TTS, the length of time before full hearing is restored, the type of signal causing the TTS, and other factors. A final criterion of concern is behavior modification, where underwater sound causes marine mammals to alter their actions. The lowest form of behavior modification may be a “startle response,” where an animal temporarily stops its activities to



Humpback whale.

Photo by Robin Hunter, U.S. Fish and Wildlife Service

assess a change in its environment caused by sound, and then resumes its normal activities. The opposite extreme would be habitat abandonment, where marine mammals residing in a local region are forced to vacate the area due to high intensity sound. In working to establish these criteria and thresholds, the Navy's goal is to use science to minimize such impacts on marine mammals without unduly limiting its ability to train realistically.

Mitigation, Monitoring, Technology, and Risk Assessment

Within Navy sea ranges and OPAREAs, the Navy makes use of technology and other science to track marine mammals, evaluate the likeli-

A BQM 74 remote-controlled drone is launched from the flight deck aboard the guided missile frigate USS ROBERT G. BRADLEY (FFG 49) to serve as a target for an anti-air warfare exercise.

U.S. Navy photo by Photographer's Mate 2nd Class Robert Taylor



hood of encountering them, and reduce or eliminate impacts to marine mammals and their habitat. As an example, the Navy is presently using passive acoustics to monitor the presence of marine mammals in regional areas of interest, including ranges. Data logger tags, which are small battery-powered devices equipped with hydrophones and electronics for recording sound, have also been attached to marine mammals for tracking purposes. Finally, to help standardize methodologies for determining the potential impact of underwater sound on marine mammals, the Navy is using operations analysis, a statistical approach developed by the Department of Defense in the 1970s and 1980s to predict the importance of variables in a problem. These tools are helping the Navy to further understand marine mammals today and acquire data over time that will help predict their behavior and activities in the future.

Underwater Unexploded Ordnance

At water-based training ranges and OPAREAs, munitions are sometimes fired in (or over) the ocean environment during training events to realistically simulate maritime combat. A small percentage of these ordnance items fail to detonate and end up in the water. Since 2001, the Navy has been developing science to make sound decisions about underwater UXO that fully consider operational, safety and environmental factors. Through Navy-sponsored studies and other initiatives such as the Strategic Environmental Research and Development Program (SERDP), scientists are currently examining data about the fate and effects of underwater UXO constituents, determining where additional studies are needed, and developing appropriate Navy responses in partnership with the U.S. Army and ocean research organizations.

STEAMING FORWARD

The Navy needs continued access to ranges and OPAREAs to prepare sailors for combat. However, with the increase of residential and commercial growth near Navy installations and the changes in interpretations of environmental legislation over the past decade, the Navy faces challenges in ensuring that ranges can continue operating effectively while minimizing impacts to civilian communities and maintaining compliance with modern environmental regulatory requirements. The Navy's Range Sustainment Program is focused on these challenges. By standing up a single Navy Range Office dedicated to range policy and oversight; managing geographic "range clusters" as complexes; beginning range management initiatives such as operational range clearance procedures and standardized environmental planning for ranges; and investing in knowledge advancement programs that will assist in making science-based decisions about ranges and OPAREAs, the Navy is setting the stage for future range capabilities and ongoing effective training while safeguarding the environment. ⚓

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