

# CNO Environmental Research & Development Programs Release Annual Reports

LMR Program Report & NESDI Year In Review Report Now Available

**THE LIVING MARINE RESOURCES (LMR)** program and the Navy Environmental Sustainability Development to Integration (NESDI) program have released their annual reports to highlight each program's accomplishments in fiscal year 2015 (FY15).

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The LMR program addresses the Navy's key research needs and transitions the results and technologies for use within the Navy's at-sea environmental compliance and permitting processes. Its goals include improving marine species impact analysis (including marine mammal take

estimates), mitigation measures and monitoring capabilities. The FY15 report is the second for the relatively new program (formed in 2012) and includes a summary of the program's history, along with its mission statement, an explanation of the program structure and relative responsibilities of Navy research and monitoring programs, and an overview of how the LMR process works. The report provides brief updates on ongoing projects and partnerships, introduces new projects that were funded in FY15 and summarizes a project that was completed during the fiscal year. It also provides a list of 2015 publications that resulted from research either partially or fully funded by the LMR program.

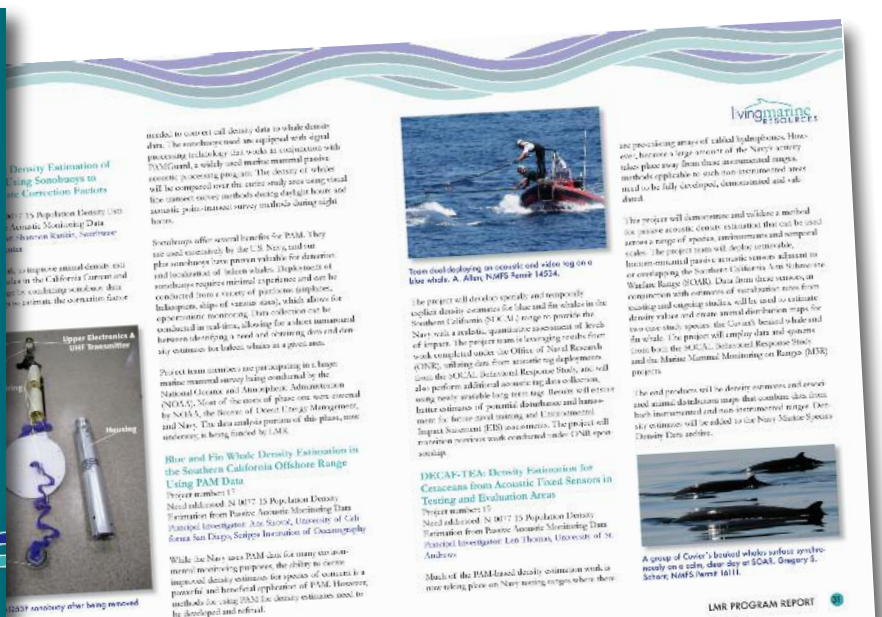
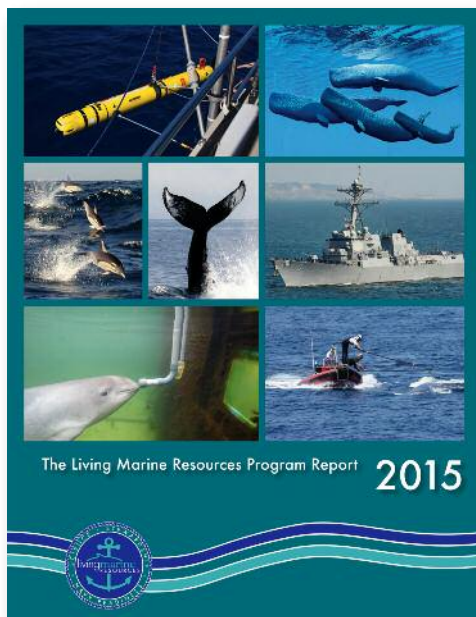
The LMR new start projects introduced in the FY15 report are:

■ **Project 13: Standardization of Auditory Evokes Potential (AEP) Audiometry Methods to Ensure Comparable Data Inclusion in a National Marine Mammal AEP Database**

Standardize hearing threshold measurement methods used in odontocetes (toothed whales) and increase species representation and sample sizes in hearing threshold estimates to reduce uncertainty in hearing range analyses used by Navy planners.

■ **Project 14: Behavioral Audiometry in Multiple Killer Whales**

Collect the first demographic hearing data from killer whales to understand how potential acoustic impacts



might vary within a mixed population of animals (across age and gender). Data from the study will help to determine mid-frequency cetacean composite audiograms and weighting functions for Navy at-sea environmental compliance.

■ **Project 15: Jawphone Simulations to Maximize the Utility of Psychoacoustic and Auditory Evoked Potential Experiments**

Use a computational approach to identify the mechanism(s) by which jawphones (a suction cup containing a transducer) stimulate hearing when they are used to gather data on toothed whale auditory capabilities and formulate sensitivity maps as guidance for optimal placement of the jawphones to maximize their utility in gathering hearing data for a variety of animals.

■ **Project 16: Passive Acoustic Density Estimation of Baleen Whales: Using Sonobuoys to Estimate Call-Rate Correction Factors**

Estimate baleen whale density in the California Current and the Navy's Southern California Offshore Range (SCORE) range by combining sonobuoy data with visual sightings to estimate the correction factor needed to convert call density data to whale density data.

■ **Project 17: Blue and Fin Whale Density Estimation in the U.S. Pacific Fleet Southern California Offshore Range Using Passive Acoustic Monitoring Data**

Develop spatially and temporally explicit density estimates for blue and fin whales in the Southern California (SOCAL) range to provide the Navy with a realistic, quantitative assessment of levels of impact. Results will ensure better estimates of potential disturbance and harassment for future naval training and environmental impact statement (EIS) assessments.

■ **Project 18: Acoustic Metadata Management for Navy Fleet Operations**

Expand development of Tethys, a passive acoustic monitoring metadata database, to improve its utility for long-term Navy monitoring data management and support Navy mitigation efforts.

■ **Project 19: DECAF-TEA: Density Estimation for Cetaceans from Acoustic Fixed Sensors in Testing and Evaluation Areas**

Demonstrate and validate a method for passive acoustic density estimation that can be used across a range of species, environments and temporal scales.

Density estimates will be added to the Navy Marine Species Density Database.

■ **Project 20: Behavioral Dose-Response Relationship and Temporary Threshold Shifts in Harbor Porpoises**

Establish a dose-behavior response relationship and determine sound exposure levels associated with temporary threshold shifts (TTS) and hearing recovery under varying sound exposures and conditions. Results will be used to update the criteria and thresholds for harbor porpoises

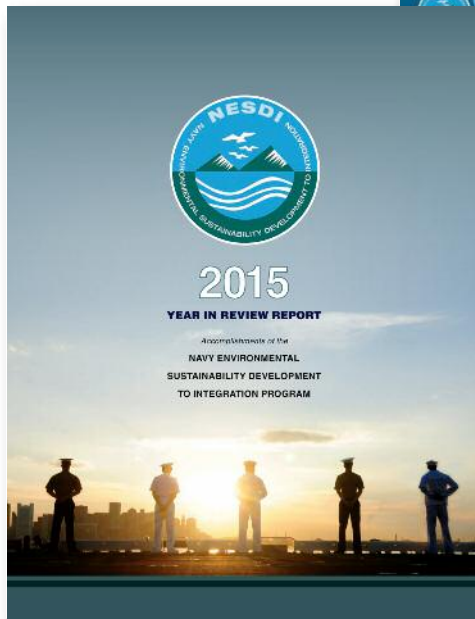
## For More Information

**FOR MORE DETAILS** on the LMR program's FY15 investments, read our story "LMR Program Announces FY15 New Projects " in this issue of *Currents*.



The NESDI program's mission is to demonstrate, validate, and integrate innovative technologies, processes, and materials; and fill knowledge gaps to minimize operational environmental risks, constraints and costs while ensuring Fleet readiness. The program seeks to accomplish this mission through the evaluation of cost-effective technologies, processes, and materials and knowledge that enhance environmental readiness of naval shore activities and ensure they can be integrated into weapons system acquisition programs.

The NESDI report profiles "new starts" for FY15 and discusses projects that were particularly successful over the course of the year in demonstrating the use of an innovative technology or integrating critical information to stakeholders across the Navy. Some notable accomplishments in FY15 include:



- **Project 465: Demonstration of Passive Samplers for Assessing Environmentally Realistic Concentrations of Munitions Constituents at Underwater UXO Sites**  
Develop a passive sampler that detects ultra-low levels of constituents of concern with greater accuracy than any previous system.
- **Project 476: A Quantitative Decision Framework for Assessing Navy Vapor Intrusion Sites**  
Develop a decision framework to help the Navy evaluate risk and remediation options at sites with vapor-phase contamination.
- **Project 485: Demonstrate and Validate Alternatives to Methylene Chloride-based Chemical Paint Strippers**  
Demonstrate an environmentally friendly thixotropic paint stripper. A draft military specification is underway.
- **Project 492: Capacitive Deionization (CDI) Water Treatment System**  
Develop a prototype system for treating drinking water at small facilities.
- **Project 495: Radioactive Material Permit Generation, Management, and Tracking System**  
Develop a database that streamlines Radiological Affairs Support Office (RASO) operations and ensures compliance with environmental rules and regulations.
- **Project 506: Evaluation and Implementation of Compliance Options for NPDES Cooling Water Intake Structures at Existing Facilities**

Reduce the accidental intake of fish eggs and larvae into shipyard cooling water intake structures via a structural design modification that was accepted by the U.S. Environmental Protection Agency.

- **Project 509: Enterprise NAVFAC Hazardous Waste Application**  
Develop a secure, web-enabled hazardous waste application that can be used by Naval Facilities Engineering Command installations worldwide.

Both the LMR and NESDI programs are sponsored by the Chief of Naval Operations Energy and Environmental Readiness Division and managed by the Naval Facilities Engineering Command. Electronic (pdf) versions of the LMR and NESDI reports can be downloaded from [www.lmr.navy.mil](http://www.lmr.navy.mil) and [www.nesdi.navy.mil](http://www.nesdi.navy.mil) respectively. To obtain a hardcopy of either report, contact Lorraine Wass at 207-384-5249 or [ljwass@outlook.com](mailto:ljwass@outlook.com).

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## NAVFAC Marianas Demonstrates Good Environmental Stewardship

### Earth Month Events Contribute to Resiliency Ashore

**IN CELEBRATION OF** Earth Day in April 2016, Naval Facilities Engineering Command (NAVFAC) Marianas promoted resiliency ashore and demonstrated the Navy's commitment to improving the ecological health of the island of Guam through a variety of activities and month-long events.

During the week of April 11–15, NAVFAC Marianas leadership and personnel participated in the 7th Annual Center for Island Sustainability Conference hosted by the University of

Guam. Some took on speaking engagements, including Commanding Officer Captain Stephanie Jones, who was a panel speaker during the Western Pacific Subsection Water and Wastewater Conference. Others served as judges in the Green Dream Home Competition, a sustainable home design contest for local high school students.

NAVFAC Marianas also organized three Earth Month cleanup events on the island. Each event demonstrated the Navy's commitment to good environmental stewardship ashore by holding steadfast to sustainability and the protection and preservation of endangered species and federal properties.

“The Navy cares for thousands of acres of federal properties on Guam, and the way we do that is through an environmental management plan,” said Mark

Bonsavage, NAVFAC Marianas Environmental Business Line Coordinator and Joint Region Marianas Environmental Program Manager. This environmental management plan details all of the programs in place that protect endangered species, the forest, and the ecosystem. According to NAVFAC Marianas Regional Environmental Coordinator Mark Cruz, this includes efforts to preserve animals, plants, cultural and archeological resources. “We do quite a few archeological, plant and animal surveys,” said Cruz. “Once we identify those specific resources, we manage those areas by keeping the forests in good shape and managing the type of activities within the forest, around the beach or in the ocean.”

The cleanups throughout April are designed to help improve Guam's ecological health, but environmental stewardship continues year round. “We take our responsibility to the environment seriously,” said Carlo Unpingco, NAVFAC Marianas Earth Month Cleanup Activities Coordinator. “Our outreach supports the One Guam partnership; it's good for the wildlife. Besides, this is our home and the home of future generations.” 📍



Sailors and volunteers pick up trash during an Earth Month Cleanup on April 23 at Tanguisson Beach Park in Dededo. NAVFAC Marianas hosted the cleanup to protect the environment and demonstrate the Navy's commitment to a One Guam and a Green Guam.

Leah Eclavea

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## Building a Bridge to the Future

### STEM Outreach at NAVFAC Northwest

**PERSONNEL FROM THE** Naval Facilities Engineering Command (NAVFAC) Northwest partner with local schools and participate in Science, Technology, Engineering, and Mathematics (STEM) outreach initiatives with an eye toward long-range sustainability.

Sustainability is core to the culture across the Pacific Northwest. NAVFAC Northwest's facility management for Navy Region Northwest exceeded goals set by the Energy Independence and Security Act of 2007 at all locations. The legislation called for a 30 percent energy reduction compared to a 2003 baseline and a 16 percent water reduction compared to a 2007 baseline. Northwest Navy installations produced a collective 39 percent energy reduction (with most facilities posting much higher gains) and 47 percent water reduction.

Northwest engineers and technicians employed a wide range of methods to meet and exceed the legislated sustainability goals. Just two examples:

1. Naval Station Everett installed smart meters which resulted in a 15 percent reduction in energy use.
2. Naval Base Kitsap introduced a new ground source heat pump system in two base housing structures. The system, combined with additional modernization efforts, upgrades and sustainable design improvements, resulted in a utility savings of over \$191,000 in fiscal year 2015.



Sierra used 'golf ball aerodynamics' to test the distance attained by a grape versus a raisin of the same weight. Shown with her is Mike Capuano, NAVFAC Northwest energy engineer.

*Leslie Yuenger*



Tabitha Pierzchala, Installation Energy Manager, viewed Cooper's project, a study of the 'play-ability' of a football with various pounds per square inch inflation.

*Leslie Yuenger*

On March 31, NAVFAC Northwest Sailors and energy, environmental, engineering, and environmental civilians participated in a science fair at Brownsville Elementary, a STEM-focused school in the local community. Students who gravitate to this line of study hold the promise to future improvements in the way the Navy manages its facilities. Many of the children at Brownsville Elementary have parents that work in science and engineering fields at local Navy commands.


School officials invite professionals from the community to participate in the annual science fair to give the students an opportunity to explain their projects to people they don't know, build upon their presentation skills, and encourage further development of the projects they presented. Navy representatives scored fifth and sixth grade science projects that were presented on electronic devices that save the students' work in "the cloud." Students were graded on how well they followed the scientific method and demonstrated a firm understanding of their subject matter. They were also evaluated on imbedded videos and other aspects of their presentation.

Topics of the science projects show that many students have an interest in subjects related to energy and the environment. One student conducted experiments to determine whether potatoes generate more sustained electricity when cooked, refrigerated, or left at room temperature. Another student lowered dry batteries that he constructed from aluminum foil and paper towels into various liquids to see which combination would generate the most electricity.

Another tested the effect of different liquids on the time required to sprout plant seeds.

This year Brownsville Elementary also hosted a STEM open house. Navy representatives provided and manned an energy table at the event, where they educated children and parents about Navy accomplishments in energy and water management, and provided energy and water saving tips.

Attracting the next generation of scientists and engineers to apply their young technical minds to Navy goals is vital to future operations. NAVFAC Northwest engineers are reaching out to local schools, showing potential scientists and engineers of the future what the Navy is doing today to enhance sustainability.

NAVFAC Northwest is responsible for maintaining and modernizing more than 15 million square feet of facilities at naval installations in the Pacific Northwest. The installations, all located in Washington State, are: Naval Base Kitsap, which has sites in Bremerton (including Puget Sound Naval Shipyard & Intermediate Maintenance Facility), Bangor, Keyport, Manchester Fuel Depot, and Naval Magazine Indian Island; Naval Air Station Whidbey Island; and Naval Station Everett. 

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## Tell Your Story in *Currents* • Deadline for Winter 2016-17 Issue is October 21, 2016

Have some good news about your energy or environmental program? Want to share it with others? *Currents* is the place to do it. *Currents*, the Navy's official energy and environmental magazine, has won first place in the Navy's Chief of Information (CHINFO) Merit awards competition three times. Most recently, the magazine snagged an honorable mention in the last CHINFO competition. Its people like you and the stories you submit that make *Currents* the best magazine in the Navy.

So if you have a story that you'd like us to promote in our winter 2016-17 issue, submit your text and images by Friday, October 21, 2016. Any submissions received after this date will be considered for our spring 2017 issue.

You can get a copy of the *Currents* article template by sending an email to Bruce McCaffrey, our Managing Editor, at [brucemccaffrey@sbcglobal.net](mailto:brucemccaffrey@sbcglobal.net). This template has proven to be a tremendous asset in helping us edit and track your article submissions. Bruce is also available at 773-376-6200 if you have any questions or would like to discuss your story ideas. And don't worry. If writing isn't one of your strengths, we'll handle all of the editing necessary to get your submission into publishable form.

As a reminder, your Public Affairs Officer must approve your article before we can consider it for inclusion in the magazine.

Don't forget to "like" us on Facebook at [www.facebook.com/navycurrents](http://www.facebook.com/navycurrents). *Currents'* Facebook page helps expand the reach of the magazine and spread the news about all the great work you're doing as the Navy's energy and environmental guardians

### *Currents* Deadlines

Winter 2016-17 Issue: Friday, October 21, 2016  
 Spring 2017 Issue: Friday, January 20, 2017  
 Summer 2017 Issue: Friday, April 21, 2017  
 Fall 2017 Issue: Friday, July 21, 2017

You can also refer to your *Currents* calendar for reminders about these deadlines.

### *Currents* Magazine's History of Awards

2014	Russell Egnor Navy Media Award	Honorable mention in "Funded News Publication" category
2011	CHINFO Merit Award	First place medal ("Best magazine in the Navy")
2008	CHINFO Merit Award	First place medal ("Best magazine in the Navy")
2004	CHINFO Merit Award	First place medal ("Best magazine in the Navy")
2004	Department of Defense Thomas Jefferson Award	First place medal ("Best magazine in the Department of Defense")
2003	CHINFO Merit Award	Second place medal
2001	CHINFO Merit Award	Third place medal