



# HEADLINES

WINTER 2016

DoD's Environmental Research Programs

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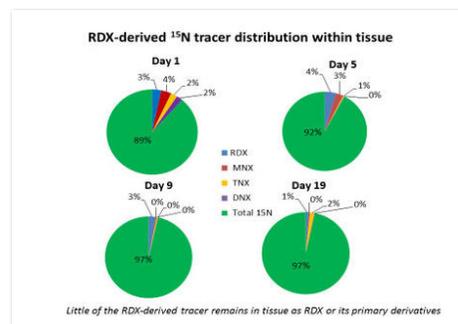
SERDP and ESTCP Announce 2017 Symposium

## 2016 SERDP AND ESTCP PROJECTS OF THE YEAR

The Strategic Environmental Research and Development Program (SERDP) and the Environmental Security Technology Certification Program (ESTCP) are pleased to announce the 2016 Projects of the Year. These awards recognize scientific advances and technological solutions to some of the Department of Defense's (DoD's) most significant environmental challenges. The findings, approaches, tools, technologies, and guidance developed by these projects will help DoD enhance its mission capabilities, improve its environmental and energy performance, and reduce costs. Read more about each project in the articles below.

### TRACKING THE UPTAKE, TRANSLOCATION, CYCLING, AND METABOLISM OF MUNITIONS COMPOUNDS IN COASTAL MARINE ECOSYSTEMS USING STABLE ISOTOPIC TRACER

Dr. Craig Tobias, from the University of Connecticut, and his team led a SERDP-funded project that quantified the pathways and rates of RDX and TNT processing at three typical coastal ecotypes: subtidal vegetated, subtidal unvegetated, and intertidal salt marsh. The team sought to understand the uptake rates of these compounds at the organismal to ecosystem scales, and which ecosystem components are important regulators of processing. In addition, the team investigated which ecosystem components act as zones of storage for munitions compounds versus those that promote metabolism, and whether ecosystem characteristics relate to processing or accumulation of munitions compounds. Finally, the team determined the extent to which these compounds were mineralized to inert inorganic end products. [MORE](#)



## ANNOUNCEMENTS

SERDP and ESTCP Continue Webinar Series - [View Schedule](#)

SERDP Solicits Proposals for FY 2018 Funding - [MORE](#)

SERDP Announces FY 2017 New Start Project Selections - [View Projects](#)

ESTCP Announces FY 2017 New Start Project Selections - [View Projects](#)

## CALENDAR

**Early January:** FY 2018 ESTCP Environmental Technologies Solicitation Release

**January 5:** FY 2018 SERDP Core Pre-Proposals Due

**January 12:** SERDP and ESTCP Webinar - Award Winning Projects: Energy and Water

**January 26:** SERDP and ESTCP Webinar - Award Winning Projects: Weapons Systems and Platforms

**Early February:** FY 2018 ESTCP Installation Energy Solicitation Release

**February 9:** SERDP and ESTCP Webinar - Award Winning Projects: Environmental Restoration

**February 23:** SERDP and ESTCP Webinar - Award Winning Projects: Hydroecology of Intermittent and Ephemeral Streams - Will Landscape Connectivity Sustain Aquatic Organisms in a Changing Climate?

**March 7:** FY 2018 SERDP SEED Solicitation Proposals Due

**March 9:** SERDP and ESTCP Webinar - Award Winning Projects: Decision Support Tools for Munitions Response Performance Prediction and Risk Assessment

**April 6:** SERDP and ESTCP Webinar - 1,4-Dioxane Impacts and Innovative Cleanup Technologies at DoD Contaminated Sites

**May 4:** SERDP and ESTCP Webinar

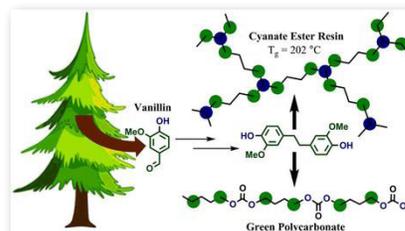
## DEEP MAPPING OF TEUTHIVOROUS WHALES AND THEIR PREY FIELDS

Recent research and development efforts have helped to greatly expand the understanding of both the behavior and biology of deep-diving marine mammals. There have been several studies of the physical habitat of these deep-diving predators but our understanding of the available prey, a key component in the biological habitat of these animals, is not as well developed. The main prey of these marine mammals are squid and they have proven to be difficult to study due to their rapid speed, relatively large size, and depth range. A SERDP-funded project led by Dr. Kelly J. Benoit-Bird from Oregon State University and the Monterey Bay Aquarium Research Institute (MBARI) and her team aimed to address this gap in research through the development of a new platform to carry the acoustic instruments needed to assess squid and then utilize the tool to understand the foraging ecology of deep-diving teuthivores (squid eaters). [MORE](#)



## CYANATE ESTER COMPOSITE RESINS DERIVED FROM RENEWABLE POLYPHENOL SOURCES

Carbon fiber polymer composites are important structural materials for weapon systems and aerospace platforms. They provide remarkable strength, reduced susceptibility to corrosion, and significant weight reductions compared to aluminum, this allows for enhanced warfighter capability, reduced fuel usage, and enhanced resistance to corrosion, thereby greatly reducing lifecycle costs. Most thermosetting resins are synthesized from phenols that are generated from unsustainable petroleum sources by multi-step routes that are energy and solvent intensive. Further, many of the precursors to conventional thermosetting resins have estrogenic effects and toxicity issues. To address these environmental challenges while increasing the availability of sustainable, domestic sources for high temperature materials, Dr. Benjamin Harvey and his team from the Naval Air Warfare Center developed new methods to efficiently convert bio-based feedstocks to polyphenols and thermosetting resins that in many cases outperform petroleum based materials. [MORE](#)



- Novel Coatings Systems for Use as High Performance Chemical Resistant Powder Topcoats

[June 14](#): June 2017 SAB Meeting

## RELATED EVENTS

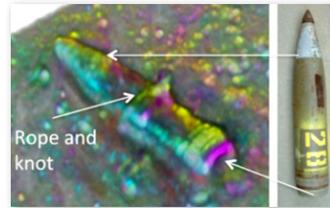
[January 9-12](#): Ninth International Conference on Remediation and Management of Contaminated Sediments (New Orleans, LA)

[February 27 - March 1](#): ARPA-E Energy Innovation Summit (Washington, DC)

[May 22-25](#): Fourth International Symposium on Bioremediation and Sustainable Environmental Technologies (Miami, FL)

## MULTI-PASS AND NON-CONCENTRIC TARGET CIRCULAR SYNTHETIC APERTURE SONAR

Circular Synthetic Aperture Sonar (CSAS) is a promising technique to classify and identify underwater objects, such as submerged or buried unexploded ordnance. It is easy to imagine CSAS being used to develop local training data to support acoustic surveys of the more than 400 Formerly Used Defense Sites that are potentially contaminated with submerged unexploded munitions. In the case of particularly high-value targets this technique may even be used for the survey. Under this year's winning project, Dr. Jermaine Kennedy (NSWC-PCD) and Dr. Timothy Marston (APL-UW) developed very sophisticated sonar processing algorithms to produce acoustic images and thereby advance the usability of CSAS. [MORE](#)



## IMPROVING ENERGY SECURITY AND RESILIENCE OF DOD INSTALLATIONS

The DoD is the largest single consumer of energy in the United States. It operates over 500,000 buildings and structures with diverse inventory encompassing barracks, commissaries, data centers, office buildings, laboratories, and aircraft maintenance depots. A majority of these bases are largely dependent on a commercial power grid that is vulnerable to disruption from cyber-attacks, aging infrastructure, weather-related events and direct attack. In an effort to reduce energy costs, increase security, and improve energy resiliency, DoD has adopted an energy strategy for fixed installations. An ESTCP-funded project led by Mr. Ryan Faries from Raytheon and his team aimed to demonstrate that microgrids with low cost, large-scale Energy Storage Systems (ESS) have potential to enhance energy security on military installations by facilitating integration of more renewable energy and reducing single-point-of-failure vulnerabilities associated with traditional electric service and back-up generators. This project was conducted at Marine Corps Air Station Miramar. [MORE](#)



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## PASSIVE BIOBARRIER FOR TREATING CO-MINGLED PERCHLORATE AND RDX IN GROUNDWATER AT AN ACTIVE RANGE

Perchlorate, hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX), and octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) are common and often co-mingled contaminants in soils and groundwater at military ranges worldwide. While in situ biodegradation of RDX, HMX, and perchlorate have individually been demonstrated, remediation of co-mingled plumes has not been reported. Dr. Paul Hatzinger from CB&I and his team led an ESTCP-funded project that aimed to investigate the feasibility of using a passive emulsified oil biobarrier to remediate co-mingled perchlorate, RDX, and HMX at a contaminated site while minimizing impacts to ongoing range activities. [MORE](#)



## DEMONSTRATION AND IMPLEMENTATION OF AUTONOMOUS AERIAL ACOUSTIC RECORDING SYSTEMS TO INVENTORY DOD INSTALLATION IMPACT AREAS FOR THREATENED, ENDANGERED, AND SPECIES AT RISK BIRD POPULATIONS

The DoD manages millions of acres of land for the purposes of training troops and testing weapons platforms to ensure military readiness. These lands are highly suitable as habitat for many Threatened, Endangered and At-Risk (TER-S) avian species across the country. DoD has both regulatory and stewardship responsibilities to manage and monitor for many of these species, which has proven difficult due to the inability to access these restricted areas on the ground. An ESTCP-funded project led by Dr. Richard Fischer of the U.S. Army Engineer Research and Development Center and Dr. Dave Buehler at the University of Tennessee aimed to assess the significance of inaccessible areas to TER-S bird populations. They have addressed the accessibility issue by using an autonomous aerial acoustic recording system composed of a weather balloon that transports an electronic payload over otherwise unreachable areas. [MORE](#)

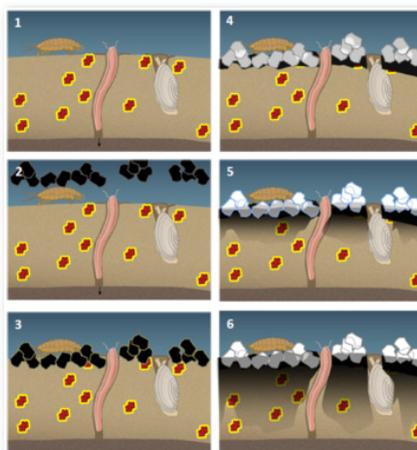


## COMPREHENSIVE EVALUATION AND TRANSITION OF NON-CHROMATED PAINT PRIMERS

An ESTCP-funded project led by Ms. Julia Russell and Ms. Brenna Skelley from Naval Air Warfare Command—Patuxent River developed a comprehensive evaluation protocol for development and application of chromate inhibited primers. Hexavalent chromium (chromate or Cr+6) is the key component for high-performance corrosion-inhibiting primers used across DoD weapon systems and platforms. This known carcinogen has been targeted by DoD for reduction since 2009, which resulted in a need to identify, test, validate and implement alternatives and applicable substrate surface preparations. [MORE](#)

## DEMONSTRATION OF IN SITU TREATMENT WITH REACTIVE AMENDMENTS FOR CONTAMINATED SEDIMENTS IN ACTIVE DOD HARBORS

Successful delivery, placement, and effectiveness of in situ treatment materials in active harbors has the potential to reduce costs, shorten recovery times, and provide more effective alternatives to traditional methods of remediation for a wide range of sites with contaminated sediments. Traditional remediation of sediments has involved removal by dredging, or isolation by capping. Removal actions may cause increased mobility and bioavailability of the contaminated sediments, while physical capping may not be practical in active harbors and navigable waterways. Dr. Bart Chadwick, from SPAWAR Systems Center, and his team led an ESTCP-funded project that aimed to demonstrate and validate the placement, stability, and performance of reactive amendments for treatment of contaminated sediments in active DoD harbor settings. [MORE](#)



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## DR. HERB NELSON BECOMES DIRECTOR OF SERDP AND ESTCP & DR. KURT PRESTON JOINS SERDP AND ESTCP AS PROGRAM MANAGER FOR RESOURCE CONSERVATION AND RESILIENCY

Following Dr. Anne Andrew's departure from SERDP and ESTCP in March, Dr. Herb Nelson has been officially appointed Director of SERDP and ESTCP. It is also with great excitement that Dr. Kurt Preston has joined the SERDP and ESTCP office this fall to fill the Resource Conservation and Resiliency Program Manager position vacated by Dr. John Hall earlier this year. Dr. Preston was previously at the Office of the Deputy Assistant Secretary of the Army (Research and Development) and looks forward to meeting all those involved in the RC program area. [MORE](#)

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## SERDP AND ESTCP ANNOUNCE 2017 SYMPOSIUM

After a five year hiatus, the SERDP and ESTCP Symposium will be returning to the Washington Hilton from November 28 - 30, 2017. This will be an opportunity for researchers, industry, and educators to collaborate and discuss innovations in environmental technology. [MORE](#)