

**Strategic Environmental Research and Development Program
(SERDP)**

FY 2018 STATEMENT OF NEED

Resource Conservation and Climate Change (RC) Program Area

**CLIMATE CHANGE VULNERABILITY ASSESSMENT OF MAJOR
HABITATS ON AND AROUND DOD LANDS**

1. Objective of Proposed Work

The objective of this Statement of Need (SON) is to improve our understanding of how natural communities occurring on and around Department of Defense (DoD) lands and waters are likely to be vulnerable to climate change effects on their composition, structure and function. Furthermore, the goal of this SON is to translate our understanding of these issues into actionable information that DoD site managers can use to better manage their sites. Specific research objectives include the following:

- Assess habitat vulnerability to climate change and identify the factors that drive vulnerability.
- Develop an improved understanding of the spatial variability in drivers of vulnerability across a species' range.
- Develop an improved understanding of the relationship between changing climate and key ecological processes such as fire regime, hydrological regime or food webs.
- Develop methodologies, tools or guidance that translates research on these issues into practical information that will improve adaptive management of these sensitive habitats to meet conservation objectives.

Proposers must address each specific objective listed above. Proposers must specifically state the rationale for selection of the species and associated habitats that will be assessed. Timeframes for assessment should include forecasts of near term or mid-century vulnerability, which inherently have increasing uncertainty, or current, observed trends in vulnerability that can be assessed with higher levels of certainty. Research must support vulnerability assessments that can lead to appropriate management responses to ensure continued provision of key ecosystem services while supporting other mission-critical needs.

2. Expected Benefits of Proposed Work

Climate change vulnerability assessment for habitat types can support DoD natural resource managers with spatially explicit, site-specific, climate-informed options for adaptive management to meet conservation objectives. These assessments will help end-users better manage the natural resources they are committed to sustaining.

3. Background

Climate change represents a globally pervasive stress on natural ecosystems. As the current rate of global change increases, substantial shifts in key ecological processes can cascade through natural communities resulting in altered productivity, changes in species composition, local extinctions, and many instances of ecological degradation or collapse (IPCC, 2014). Land managers often lack a sufficient understanding of the many linkages between changing climate and key ecological processes. Nor do land managers fully understand the many interactions of climate-induced stress with other ecological stressors (e.g., land use) that may already reduce the resiliency of natural communities.

Vulnerability assessments for natural communities can produce diverse and highly relevant information regarding ecological processes such as fire regime, hydrological regime, or food webs; trends in the most ecologically relevant climate variables; the functional roles of component guilds, and the vulnerability of keystone species for the target community. Most climate change vulnerability assessments focus on individual species, by examining the degree of climate change to which they are projected to be exposed, and life history characteristics that make a species more or less vulnerable to climate change effects. These methods score for the relative vulnerability of a given species, but they do not typically convey information about the spatial variability in drivers of vulnerability across a species' range. This limits their usefulness for decisions about site-based activities that might confer resistance or resilience to climate change for a given species. A complimentary approach is to assess natural communities or habitat types for climate change vulnerability using measures that convey site-specific information about the drivers of climate change vulnerability. This approach recognizes the value of managing habitat that is critical for a given resource of interest, such as a particular vegetation type that is critical to multiple species of conservation concern.

Complementary SERDP-Funded Projects: SERDP has supported numerous projects relating to climate change vulnerability and impact assessment. A brief description of these completed and ongoing projects can be found at the [SERDP website](#).

4. Cost and Duration of Proposed Work

The cost and time to meet the requirements of this SON are at the discretion of the proposer. Two options are available:

Standard Proposals: These proposals describe a complete research effort. The proposer should incorporate the appropriate time, schedule, and cost requirements to accomplish the scope of work proposed. SERDP projects normally run from two to five years in length and vary considerably in cost consistent with the scope of the effort. It is expected that most proposals will fall into this category.

Limited Scope Proposals: Proposers with innovative approaches to the SON that entail high technical risk or have minimal supporting data may submit a Limited Scope Proposal for funding up to \$200,000 and approximately one year in duration. Such proposals may be eligible for follow-on funding if they result in a successful initial project. The objective of these proposals should be to acquire the data necessary to demonstrate proof-of-concept or reduction of risk that

will lead to development of a future Standard Proposal. Proposers should submit Limited Scope Proposals in accordance with the SERDP Core Solicitation instructions and deadlines.

5. Point of Contact

Kurt Preston, Ph.D.
Program Manager for Resource Conservation and Climate Change
Strategic Environmental Research and Development Program (SERDP)
4800 Mark Center Drive, Suite 17D08
Alexandria, VA 22350-3605
Phone: 703-405-8294
E-Mail: kurt.t.preston.civ@mail.mil

For Core proposal submission due dates, instructions, and additional solicitation information, visit the [SERDP website](#).