

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

FY 2023 STATEMENT OF NEED

Resource Conservation and Resiliency (RC) Program Area

**ADVANCED UNDERSTANDING AND METHODS OF INVASIVE
SPECIES CONTROL**

1. Objective of the Proposed Work

The objective of this Statement of Need (SON) is to advance scientific understanding of the changes in distribution, abundance, and population dynamics of invasive species, and their potential foreseeable impacts to military readiness as a result of changes to threatened and endangered species and species at risk, changes or development of vectors and vector-borne diseases, disruption of ecosystem services, and foreseeable resultant encumbrances to military land use such as training and testing activities.

Proposals are sought focused on innovative methods that address invasive species currently present or with a high likelihood of becoming established on Department of Defense (DoD) lands. Proposals must consider climate change induced effects, changes in invasive species abundance and distribution, and resultant impacts, if any, on the relevant ecosystem with a particular focus on impacts to threatened and endangered and at-risk species.

The following should be considered in the development of proposals:

- The use of existing or novel assessment techniques with preference being given to varied and integrated assessment techniques.
- Analysis of the potential for climate change induced biological invasions and potential mitigation.
- Invasive species that are, or hold a high potential to impact military training and testing lands, ecosystem services, endemic plant, and animal distributions, threatened and endangered species, vector-borne disease or other human, plant, animal, or ecosystem risks.

Preference will be given to proposals that reflect an detailed understanding of invasive species management in the context of DoD mission, land use, biosecurity posture, and responsibilities for the management of natural resources. Proposals must include the rationale for the species selected.

2. Expected Payoff of the Proposed Work

The proposed research work will benefit the DoD's critical need for strategic mobility, improved tools and procedures for biosecurity related activities, and reduced potential for invasive species impacts to efficient DoD land management.

3. Background

The impact of non-indigenous invasive species on military operations is four-fold: (i) invasive species may possess physical characteristics that can directly limit training activities; (ii) expansion of invasive species populations may negate realistic conditions for training or testing operations and lead to habitat destruction; (iii) invasive species and the biosecurity measures required for their control can slow or hinder strategic mobility; and (iv) operations to detect and control invasive species detract from other mission activities.

Invasive species of relevance to DoD include, but are not limited to the following:

Bindweed (<i>Convolvulus arvensis</i>)	Cheatgrass (<i>Bromus tectorum</i>)
Spotted Knapweed (<i>Centaurea maculosa</i>)	Kudzu (<i>Pueraria montana var. lobata</i>)
Leafy Spurge (<i>Euphorbia esula</i>)	Multiflora Rose (<i>Rosa multiflora</i>)
Scotch Broom (<i>Cytisus scoparius</i>)	Yellow Star Thistle (<i>Centaurea solstitialis</i>)
Musk Thistle (<i>Carduus nutans</i>)	Canada Thistle (<i>Cirsium arvense</i>)
Bull Thistle (<i>Cirsium vulgare</i>)	Russian Thistle (<i>Salsola tragus</i>)
Saltcedar (<i>Tamarix spp.</i>)	Phragmites (<i>Phragmites australis</i>)
Giant Reed (<i>Arundo donax</i>)	Spotted lanternfly (<i>Lycorma delicatula</i>)
Japanese beetle (<i>Popillia japonica</i>)	Gypsy Moth (<i>Lymantria spp</i>)
Invasive tramp ants (e.g. Little fire ant, etc)	Feral Hogs
Coconut Rhinoceros beetle (<i>Oryctes rhinoceros</i>)	Brown tree Snake (<i>Boiga irregularis</i>)
Japanese Stilt Grass (<i>Microstegium vimineum</i>)	Invasive Honeysuckles (<i>Lonicera spp.</i>)
Autumn Olive (<i>Elaeagnus umbellata</i>)	Cogon Grass (<i>Imperata cylindrica</i>)
Japanese Barberry (<i>Berberis thunbergii</i>)	Tree-of-Heaven (<i>Ailanthus altissima</i>)

In the development of predictive and assessment technologies for invasive plant species, extreme care must be taken in exercising these methods. For example, with regard to control, most herbicides are not specific to a species or single genus. As a result, listed endangered and threatened plant species can be adversely affected by chemical control methods. Biological controls must be tested against closely related plants to ensure that the control of the noxious and invasive plant does not harm other species. Other management methods such as mechanical control and controlled burns must also be undertaken in a manner that does not adversely affect protected plants and animals or their habitats.

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. The proposals must describe a complete research effort. It is anticipated that the scope of this SON is such that a multi-disciplinary team will be required to execute a successful effort. Nonetheless, single investigator efforts may compete successfully. The proposer should incorporate the appropriate time, schedule, and cost requirements to accomplish the scope of work proposed.

Two proposal 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 four years in length and vary considerably in cost consistent with the scope of the effort but must not exceed \$900,000 per year. Preference will be given to proposals that efficiently address and integrate specific research objectives. Project budgets vary but must remain consistent with the scope of the effort.

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 \$250,000 and approximately two 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

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