Region 1 FY 2014 Invasive Species Control Program Proposal

Refuge/complex name: Nestucca Bay NWR/ Oregon Coast NWRC

Project title: Coastal Prairie Invasive Species Control and Restoration

Total amount requested: $ 35,000

Project description: The Cannery Hill Unit of Nestucca Bay NWR overlooks the Pacific Ocean and Nestucca River estuary. The Invasive Species Control project proposed for funding in 2014 is control of highly aggressive, non-native grasses and other invasive plants on 25 acres of former coastal headland prairie on Cannery Hill and subsequent replacement with native coastal grasses and forbs. The primary species to be controlled are three invasive, aggressive grass species: rattail fescue (*Vulpia myuros)*, velvet grass (*Holcus lanatus*), and reed canary grass (*Phalaris arundinacea*). These invasive grasses, if not eliminated and replaced with natives, will quickly reestablish and prevent the restoration of native coastal prairie. In addition to the grass species, scattered patches of burnweed (*Erechtites minima)* have recently appeared on the unit. This plant is targeted for rapid response control because it produces huge amounts of seed and is capable of swiftly turning into a massive infestation if not controlled. Activities to take place in the current project year include chemical and mechanical control of invasive grasses and forbs; the collection and grow-out of additional native forbs and grasses; and seeding of native sand fescue and forbs. Replanting with native species is as critical to restoration as the elimination of the invasive species: if not replaced with natives, the invasive plants will quickly return and negate previous control efforts.

Distinct project with well-defined objectives (10 points): Like most refuges, Nestucca Bay NWR has its share of invasive plant infestations that are treated annually, as staff and funding allow, but are never quite controlled. This project is different in that it has highly specific goals for invasive plant species to be controlled, and native, locally sourced plants to replace the invasives. This is a distinct, clearly defined, and carefully planned project, located only on the Cannery Hill Unit. Native plant species were chosen for their utility in establishing a robust, diverse community that yields good suppressive capabilities in the face of aggressive, introduced vegetation, preventing reinfestation by the invasives. An additional primary role of the natives chosen for planting on Cannery Hill is to provide the structure and function needed for the eventual reintroduction of the threatened Oregon silverspot butterfly (*Speyeria zerene hippolyta*) into suitable habitat. The ultimate objective of this project is to restore this former coastal headland prairie to the desired condition articulated in the Nestucca Bay NWR CCP including measurable attributes for percent cover and density of native prairie and introduced plant species, thatch buildup, bare ground component, and early blue violet. Invasive species control undertaken with this funding will allow achievement of the most labor- and funds-intensive steps of replacing invasive grasses with a robust native grass, and collection of additional plant diversity to set the stage for full restoration.

Potential for maximum control/Likelihood of success (10 points): Based on test treatments in adjacent sites, we expect that invasive plant control, followed by a thorough native sand fescue (*Festuca ammobia*) seeding and later addition of native forbs, will result in a low persistence of invasive species, and many that appear should be quickly crowded out by the native grass. We have already enacted two years of control efforts on the project site, including an ecological burn in late summer 2013 which, although weed presence was high and the burn severity low, stimulated seed germination and caused a large flush of invasive plants that can now be managed by other means such as the herbicide to be applied in spring and summer 2014. Native grass seeding will take place in early February 2014 to maximize potential for strong establishment. One unique advantage of sand fescue is that it is resistant to grass-specific herbicides, allowing at least an additional year to control exotic grasses, the primary invasion issue on project site. With the use of sand fescue, we can extend that control period to two years to get proper control before adding in a greater diversity of grasses. By using this native grass species as our primary colonizer, we will simultaneously establish a strong native grass base during the project year while still controlling the exotic grasses in the same location. Engaging in establishment and control at the same time further increases the likelihood of success and we expect a robust sand fescue establishment on the project site based on success in the test plots. Combined with the few native grasses and butterfly forbs already available that will help prolong initial suppression of the invasives, it is this additional diversity that will help to maintain a less invasible native ecosystem over time, as increased native diversity is directly related to lowered invasibility.

In addition to the implementation of tested techniques, likelihood of success will be increased due to collaboration with the refuge's primary non-federal partner in this restoration project, the Institute for Applied Ecology (IAE). IAE has been working with Nestucca Bay NWR under a cooperative agreement for coastal prairie restoration since 2010. Their strong partnership with the Natural Resource Conservation Service (NRCS) Plant Materials Center (PMC) and their direction of the Willamette Valley Seed Cooperative allows for pooling of resources to enable

larger seed production fields and reduced production cost for high quality, genetically diverse certified native seed to meet the demands of expanding prairie restoration programs, including this one.

Biological benefit to priority species or BIDEH (10 points): In the recently completed CCP, Nestucca Bay NWR included goals for restoring high quality native coastal prairie and establishing a healthy Oregon silverspot butterfly population on refuge lands. Neither coastal prairie restoration nor subsequent introduction of this threatened species can take place without first controlling these invasive species and replacing the invasive species with a robust native ecosystem. One expected outcome of this project is the restoration of 25 acres of coastal prairie to a level that is sustainable and needs only spot-treatment of invasive plants and addition of plant species diversity. The other expected outcome is the establishment of grow-out fields for native coastal prairie species that can be maintained and harvested indefinitely to enrich the project site. Historically present but now highly degraded, coastal headland prairie is a priority for restoration on the refuge. As an exceedingly rare and highly imperiled habitat type on the west coast, the restoration of native coastal prairie is an important objective in and of itself. It will directly benefit bees and other pollinators as well as a range of coastal grassland-dependent species. However, the plant species that will replace the invasives on the refuge are specifically targeted to eventually provide the species and structure required for all life stages of the Oregon silverspot butterfly.

Sustainability (10 points): Once the additional native seed has been collected during the project year, and cultivation has been initiated at the PMC, grow-out fields will continue to yield easily-accessed native seed for restoration beyond the proposed project period. The forbs that will be collected and grown out with these project funds will be seeded and/or planted on site in late fall 2014 and into the spring of 2015, followed by seeding with additional forb and native grasses for a more robust plant assemblage in subsequent years. Anticipated future maintenance activities, including spot spraying and hand pulling of invasive plants, will be undertaken by refuge staff and volunteers using station funds.

Monitoring to document and evaluate project success (10 points): Inventory and monitoring of invasive species control and native replanting on the project site will follow IAE established protocols. Pre- and post-treatment monitoring will include monitoring at designated photopoints and GPS documentation of invasive species presence. After seeding with native sand fescue in late fall, monitoring the following spring will include establishment of randomly placed 1-m^2 plots. In each plot, sand fescue establishment and the percent cover of any invasive species will be assessed. This data will result in an understanding of the success of native grass establishment and invasive species control, and management activities will be adapted accordingly. Pre-treatment inventories have included plant collection and identification which will continue as treatment commences. Populations and individuals of any previously undiscovered invasive species will be mapped via GPS and immediately evaluated for management action.

Budget:

Action/ Explanation	Funding	Justification
Invasive plant treatment: specialized herbicides, IAE oversight to determine timing	$ 4,000	This project uses the most targeted herbicide possible for the plant species needing control; these are often more expensive than broad-spectrum herbicides. IAE determines the exact timing of application for maximum efficacy and refuge staff conducts the treatments. This cost estimate is based on results from test plots.
Pre- and post-treatment monitoring	$ 5,000	Monitoring is time-intensive and critical for determining the success of treatments and readiness for the next step. Monitoring will be conducted primarily by IAE.
Native plant seed collection, grow-out of native coastal prairie species	$ 21,000	Seed collection is labor-intensive. This request includes funding for seed scouting, collection, cleaning, processing and testing prior to grow-out. Grow-out requires a contract with the PMC to establish production fields for new species. Once established, these fields will continue to yield easily-accessed native seed for restoration into the future.
Planting/ seeding on project site.	$ 5,000	Successful seeding will require the use of a specialized seed drill and site preparation equipment. Planting crews will conduct forb plantings.
Total funding requested	**$ 35,000**	