

**Metapopulation Augmentation of *Sidalcea hendersonii*
(Henderson's Checkermallow)**

**Project report
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Preface

The Institute for Applied Ecology (IAE) is a non-profit organization dedicated to natural resource conservation, research, and education. Our aim is to provide a service to public and private agencies and individuals by developing and communicating information on ecosystems, species, and effective management strategies and by conducting research, monitoring, and experiments. IAE offers educational opportunities through 3-4 month internships. Our current activities are concentrated on rare and endangered plants and invasive species.

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Cover photographs: *Sidalcea hendersonii* flowers from introduced plants at Dean Creek Area of Critical Environmental Concern (July 2009).

Except where noted, all photos by Andrea S. Thorpe.

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Introduction and review of previous work

Henderson's checkermallow (*Sidalcea hendersonii*) is a perennial forb in the Malvaceae family. This species was historically found in at least ten sites in Oregon; it currently only occurs naturally in Oregon on Cox Island in the Siuslaw Estuary near Reedsport. Including the relatively numerous *S. hendersonii* populations in Washington and British Columbia, there are believed to be fewer than 100 total populations. Many of these occur on unprotected, private land (Gisler and Love 2005). Due to the low number of populations and continued decline of population sizes, *S. hendersonii* has been listed as a Species of Concern by the USFWS and designated a List 1 (taxa threatened with extinction or presumed to be extinct throughout their entire range), G3 (globally rare, uncommon or threatened, but not immediately imperiled), S1 (critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation) taxon by the Oregon Natural Heritage Information Center (ORNHC 2007).

In 2005, the Institute for Applied Ecology planted approximately 300 plants in the Siletz Bay Refuge and at three sites in the Umpqua River Estuary (Blacks Island, Goose Island, and Butler Creek Ranch; Gisler 2006). When the Siletz Bay Refuge was revisited in July 2006, 87 out of 120 transplants were relocated (73% survival). Goose and Blacks Islands were revisited in June 2008. Informal surveys located 30 out of 70 plants at Goose Island (43% survival) and 37 out of 50 plants at Blacks Island (74% survival). Because transplanted individuals were not intensively searched for, these survival rates represent potential underestimates of the actual survival rates. Approximately 300 plants were outplanted in fall 2008 and 2009 by the Institute for Applied Ecology at Dean Creek Area of Critical Environmental Concern (ACEC), managed by the Coos Bay District BLM (in the Umpqua Estuary near Reedsport). Based on these outplantings, the BLM recently listed *S. hendersonii* as a Bureau Sensitive species (J. Sperling, *personal communication*).

Objective

The objective of this project was to augment the statewide metapopulation of *Sidalcea hendersonii* by planting up to 300 individuals at Bandon Marsh National Wildlife Refuge. The creation of new populations not only buffers the metapopulation against stochastic disturbances and increases the connectivity between existing populations in Oregon, it also allows us to collect pertinent data regarding the optimal habitat for outplanting and helps us refine our techniques for establishing new populations. For example, revisiting the populations resulting from Gisler (2006) helped us determine that plants lower in the tidal zone survive at a lower rate. We are currently investigating how different plant communities influence the success of *S. hendersonii* (Thorpe and Massatti 2008).

Methods and Results

Seed collection and grow-out

Sidalcea hendersonii seed was collected from Cox Island in the Siuslaw Estuary in October 2008. Seed was scarified, cold stratified, and germinated in early 2009. Seedlings were planted in gallon-sized pots in February 2008 and were grown at the Oregon State University west greenhouse complex until September 2009. Plants were placed outside to harden off for approximately two weeks before outplanting.

Sidalcea hendersonii outplanting

297 plants were outplanted in three areas at Bandon Marsh National Wildlife Refuge on October 22 and 23, 2009. Plants were placed along transects in order to facilitate relocation and monitoring. All plants were watered within 1 hour of planting. In addition to 3 IAE staff members, planting was completed by Madeleine Vander Heyden (Oregon Coastal Program Coordinator, U. S. Fish and Wildlife Service), Diane Bilderback (volunteer), and Dave Bilderback (volunteer).

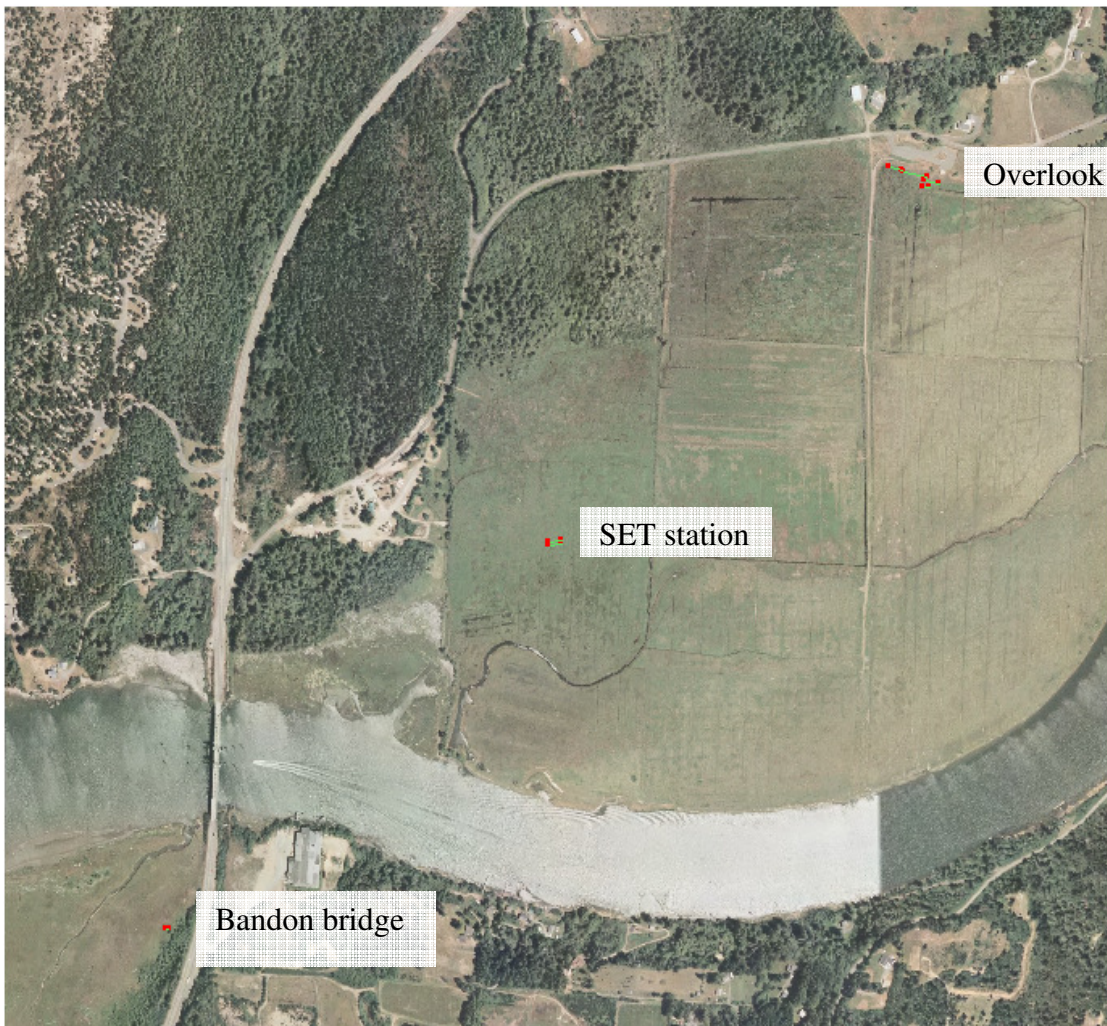


Figure 1. *Sidalcea hendersonii* introduction areas at Bandon Marsh National Wildlife Refuge.

Site Name	Transect #	# of plants	Length of Transect (m)
Overlook	1,2,3,4	49, 102, 51, 22	25m, 50m, 25m, 12m
SET station	5,6	24, 25	22m, 22m
Bandon Bridge	7	24	10m



Figure 2. (Top) Recently planted *Sidalcea hendersonii* and (bottom) planting transect at the Overlook site at Bandon Marsh National Wildlife Refuge.



Figure 3. (Top) Planting at the Overlook site at Bandon Marsh National Wildlife Refuge. (Bottom, left to right) Denise Giles, Diane Bilderback, and Dave Bilderback planting *Sidalcea hendersonii*.

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