

**Population Creation as a Recovery Tool
for the Federal Candidate
Artemisia campestris var. *wormskioldii***

**Phase Two: Large Scale Outplanting
Years 1 and 2**



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for
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Introduction

In 2004, Oregon Department of Agriculture (ODA) began efforts to recover *Artemisia campestris* var. *wormskioldii* (northern wormwood), an ODA Endangered and U.S. Fish and Wildlife Service Candidate species (Figure 1). A survey for extant sites and habitat suitable for creating new populations was completed in 2005-2006, along with studies to develop germination and cultivation protocols (Amsberry et al. 2007). In 2008, an administratively protected site managed by Oregon Parks and Recreation Department (OPRD) was secured and 359 cultivated plants were planted (Amsberry and Meinke 2011a).

Planting continued in this site in 2010, with 303 additional plants added in

appropriate habitat. Monitoring, which documented transplant survival, growth and reproduction was also completed (Amsberry and Meinke 2011b). ODA continues to work toward recovery of northern wormwood, with the goal of increasing viability through the creation of new populations. We ultimately hope to reduce the threat of extinction to the point where the conservation emphasis provided by state and federal T/E listing will no longer be needed. Recent studies completed by graduate student Alexis Brickner as an Environmental Science Master's Thesis project at Oregon State University focused on creating a large new population of this species. Native Plant Conservation Program leader/OSU faculty member Dr. Robert J. Meinke advised Brickner, and ODA staff



Figure 1. Northern wormwood plant in flower. Photo by M. Carr.

participated in project implementation. Brickner’s thesis describes the details of this successful project and is submitted as an addendum with this report.

Monitoring at created population at Squally Point (Years 1 and 2)

The population of northern wormwood that was created by ODA in 2008-2010 at the OPRD site continued to be monitored in 2011-2012. This site (Squally Point Natural Area) is located along the Columbia River west of The Dalles in Wasco County, Oregon (see Appendix A). Plants persist here in two planted areas, despite damage due to unauthorized recreational use and inundation due to exceptionally high river flows in 2012 (Figure 2). This project demonstrates that reintroduction of transplants into suitable habitat makes a valuable contribution to the viability of this taxon.

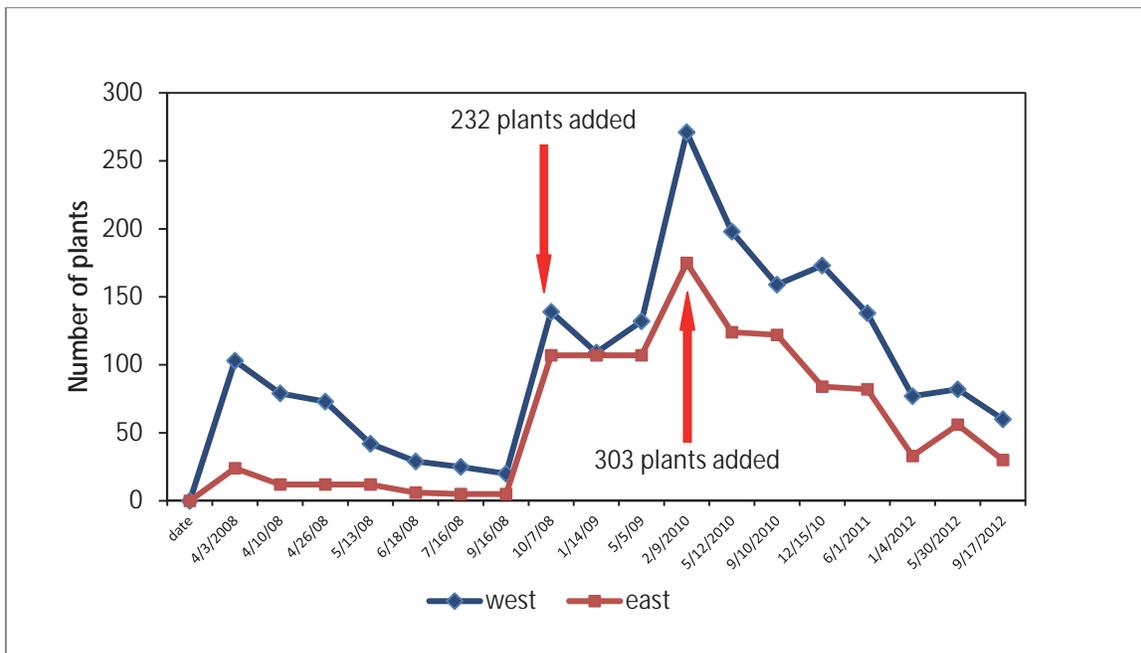


Figure 2. Over four years after transplanting, plants continue to persist at the Squally Point site. Plant counts include seedlings and new recruits.

New site selection (Year 1)

Using information compiled in 2004 –2010 (Amsberry and Meinke 2011b), a new site was chosen for a large-scale outplanting in 2012. With help from Army Corps of Engineers

(ACOE), a site was selected and secured on Rufus Island, an informal wildlife refuge in Sherman County, Oregon that is managed by ACOE for waterfowl and fish habitat. See addendum for additional information on this site.

Management Plan implementation (Years 1 and 2)

A Management Plan for the Squally Point site was completed by ODA in 2008 and signed by OPRD in 2009. Implementation of the plan requires identification and treatment of weed infestations that potentially impact the new population. A knapweed infestation south of the area planted with northern wormwood was mechanically removed by ODA staff in 2009 and 2010 and OPRD weed treatment staff were notified. Staff from both agencies will continue to monitor and treat this infestation when feasible.

ODA continued to cooperate with OPRD and Oregon State Police to reduce unauthorized recreational use of the area. However, the Squally Point Natural Area is disjunct from the main portion of Mayer State Park, making monitoring and enforcement difficult for OPRD staff. To reduce use of the area, parking is now prohibited along I-84 near the access point.

Seed collection (Year 1)

Seed of northern wormwood was collected at the Beverly site in Washington in 2010 and at the Miller Island site in 2011. Additional seed for transplant cultivation was acquired from the Rae Selling Berry Seed Bank and Plant Conservation Program at Portland State University. See addendum for additional information on seed collection.

Transplant cultivation (Year 1)

Over 2,000 transplants were cultivated at OSU in preparation for outplanting at the selected site at Rufus Island. See addendum for additional information on transplant production.

Outplanting (Year 2)

Over 2,000 transplants cultivated in Year 1 were transported to Rufus Island and planted in fall 2012. See addendum for additional information on this outplanting effort.

Monitoring of new population (Year 2)

Newly installed transplants were monitored for survival, growth and reproduction for one year after transplanting. See addendum for results of this monitoring.

Continued cultivation of stock plants (Year 2)

Stock plants continued to be cultivated at OSU. In order to increase the genetic diversity of stock plants under cultivation, 1-3 plants from each seed lot grown for the Rufus Island outplanting were potted into large pots and added to existing stock in the nursery yard (Figure 3). A few of our oldest plants exhibited die-off or disease – these were discarded and replaced with new ones. Cultivated plants continue to produce copious amounts of seed. Although we attempted to collect as much seed as possible, a small percentage of the seed crop was inadvertently dispersed into the nursery yard. As in years past, this seed germinated and grew readily in the gravel, creating a “weed problem” for greenhouse staff! This is ironic, considering the rarity of this taxon, but demonstrates good seed viability.



Figure 3. Large stock plants blooming in the nursery yard at OSU. Photo by A. Brickner.

Seed bulking (Year 2)

Approximately 5,000 seeds were collected from cultivated plants in preparation for future reintroduction efforts. Germination tests demonstrated that the viability of this seed is good. A portion of this seed was retained at OSU for future transplant production, with the remainder transferred to the Rae Selling



Figure 4. Seeds of northern wormwood germinating under controlled conditions. Photo by M. Carr.

Berry Seed Bank and Plant Conservation Program for long term storage.

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Acknowledgement

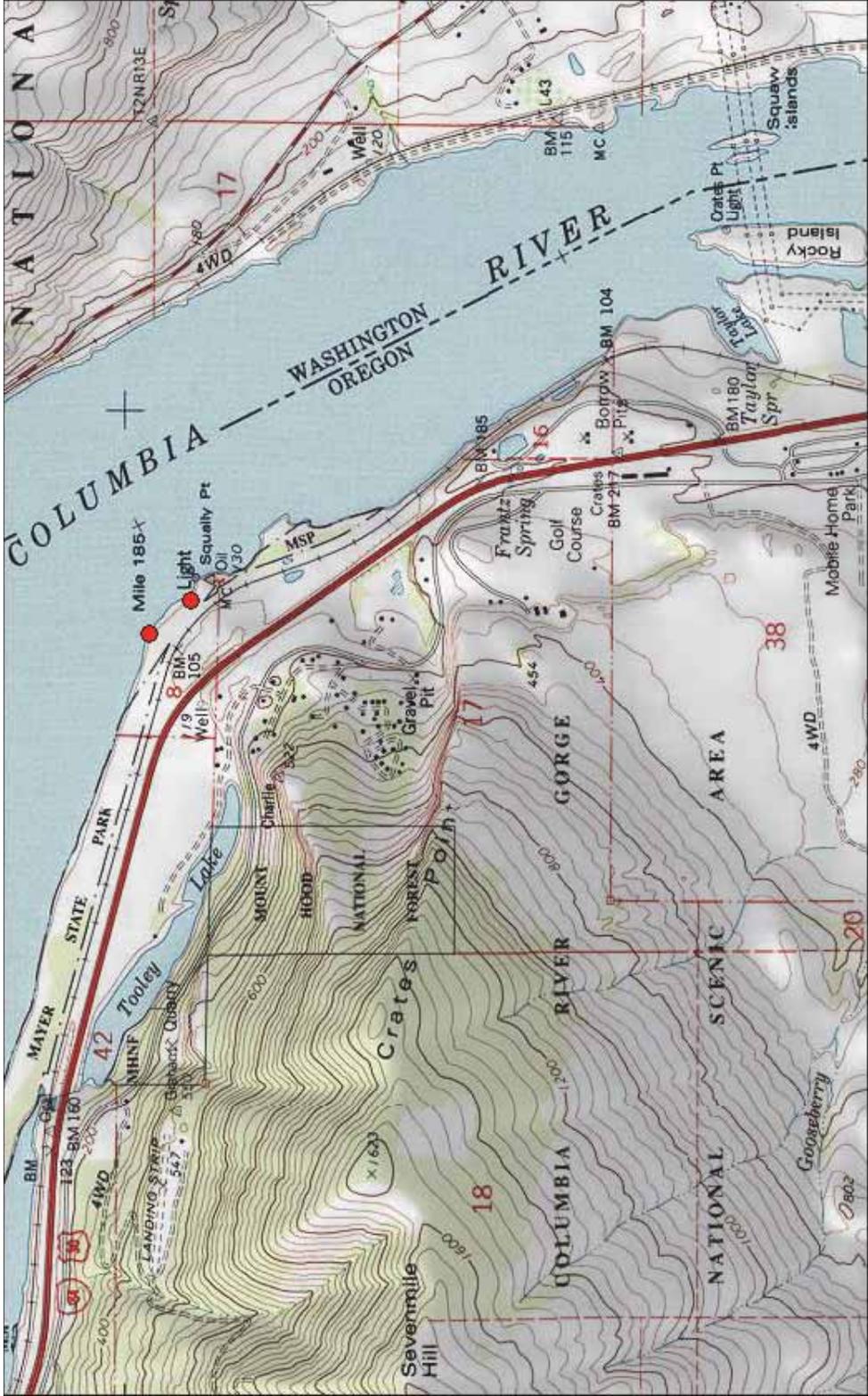
The addendum provided with this report was completed to meet a portion of the requirements for the Master's thesis of Alexis Brickner at Oregon State University. Alexis' hard work in the greenhouse, her attention to detail, and her organizational skills were critical to the completion of this project, as was her sense of commitment and most of all her never-ending enthusiasm! Thank you Alexis! ACOE provided transportation to Rufus Island, and ODA staff provided assistance with transplant cultivation in the greenhouse and nursery yard. Special thanks to ODA staff members Jordan Brown, Cassandra Reiss-Schmidt, Elizabeth Thorley, Glenn Miller, Diana Kimberling and Alex Parker, and to Dr. Dennis Albert (OSU), who cheerfully helped with the arduous work of transplanting. Funding for this project was provided by U.S. Fish and Wildlife Service, OR-EP-2, segments 22 and 23.

Literature cited

Amsberry, K and R.J. Meinke. 2011a. Population Creation as a Recovery Tool for the Federal Candidate Species *Artemisia campestris* var. *wormskioldii*; 2009. Report prepared for U.S. Fish and Wildlife Service, Portland Office. Native Plant Conservation Program, Oregon Department of Agriculture, Salem, Oregon

Amsberry, K and R.J. Meinke. 2011b. Population Creation as a Recovery Tool for the Federal Candidate Species *Artemisia campestris* var. *wormskioldii*; 2010. Report prepared for U.S. Fish and Wildlife Service, Portland Office. Native Plant Conservation Program, Oregon Department of Agriculture, Salem, Oregon.

Amsberry, K., R. Currin and R. J. Meinke. 2007. Reintroducing *Artemisia campestris* var. *wormskioldii* to Oregon: site selection, cultivation, and pilot outplanting. Report prepared for U.S. Fish and Wildlife Service, Portland Office. Native Plant Conservation Program, Oregon Department of Agriculture, Salem, Oregon.



Map created with TOPO!® ©2003 National Geographic (www.nationalgeographic.com/topo)

Appendix A. Transects 1, 2 and 7-9 are located at the eastern dot, and transects 3-6 and 10-12 at the western dot at Squally Point, Mayer State Park, Wasco County, Oregon. (UTM of west point = 10T 638751E, 5058448N; east point = 10T 638857E, 5058325N).

Population creation of northern wormwood; large scale outplanting years 1 and 2