

# 2023 Annual Report for *Lathyrus holochlorus*



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## PREFACE

IAE is a non-profit organization whose mission is the conservation of native ecosystems through restoration, research, and education. IAE provides services to public and private agencies and individuals through development and communication of information on ecosystems, species, and effective management strategies. Restoration of habitats, with a concentration on rare and invasive species, is a primary focus. IAE conducts its work through partnerships with a diverse group of agencies, organizations, and the private sector. IAE aims to link its community with native habitats through education and outreach.



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**Cover photographs:** *Lathyrus holochlorus* at Herbert Farm in May 2023. Photo by Sara Alaica.

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# 2023 Annual Report for *Lathyrus holochlorus*

## EXECUTIVE SUMMARY

The Institute for Applied Ecology (IAE) has been working in partnership with the Bureau for Land Management (BLM) to restore populations of the BLM-sensitive thin-leaved peavine (*Lathyrus holochlorus*) with the aim of preventing its federal and state listing. However, in 2023 the Oregon Department of Agriculture (ODA) listed the species as endangered Oregon.

In 2023, IAE managed Himalayan blackberry (*Rubus bifrons*), mowed, and planted 40 oceanspray (*Holodiscus discolor*) shrubs at Hansen. In addition, 6.4 grams of seed was collected from five sites, and the seed amplification bed produced 19.27 grams of seed. These critical efforts must be expanded upon in future years to keep the species from being listed federally and to reduce the likelihood of extinction.

## 1. INTRODUCTION

Thin-leaved peavine (*Lathyrus holochlorus*) is a rare member of the pea family (*Fabaceae*). Both the Bureau of Land Management (BLM) and U.S. Fish and Wildlife Service (USFWS) consider thin-leaved peavine a species of concern and the Oregon Biodiversity Information Center (ORBIC) categorizes it as a List 1 species. In 2023, the Oregon Department of Agriculture (ODA) listed the species as endangered in the state of Oregon.

Historically, thin-leaved peavine was found throughout the Willamette Valley and south towards Roseburg in Oregon, and in Lewis County, Washington. Most of the remaining populations exist along roadsides and unmowed fencerows, where they are commonly associated with Oregon white oak (*Quercus garryana*), common snowberry (*Symphoricarpos albus*), various species of rose (*Rosa* spp.), and poison oak (*Toxicodendron diversilobum*). Many populations are threatened by weed-management practices that utilize mowing and herbicides during the growing and reproductive season.

Thin-leaved peavine is a rhizomatous, perennial forb. Small populations are likely composed of a single, self-incompatible genetic clone that typically does not produce viable seed (Wilson et al. 1993). IAE and volunteers from the Native Plant Society of Oregon (NPSO) conducted a range-wide inventory from 2012-2014 and found that 31% (37) of the 90 known populations appeared to be extirpated. Of the remaining 53 populations, 17 had 10 or less stems, 23 had 100 or less stems, and 13 had greater than 100 stems.

Since 2013, IAE has been collecting seed from remaining thin-leaved peavine wild populations (Table 1). Part of the seed went to establish a raised seed amplification bed at Oregon State University in 2014, which unfortunately failed to produce seed. In 2015, IAE used the remaining collected seed to grow 1,000 plugs at the Corvallis Plant Materials Center for outplanting.

**Table 1.** Thin-leaved peavine (*Lathyrus holochlorus*) seed collected from wild populations.

Year	Cleaned weight (g)
<b>2022</b>	1.8
<b>2021</b>	17.87
<b>2020</b>	66.05
<b>2019</b>	32
<b>2016</b>	47
<b>2015</b>	47.9
<b>2014</b>	126.2
<b>2013</b>	174.2

In 2016, IAE planted 1,000 thin-leaved peavine plugs at four sites: Hansen, South Taylor, Dorena Prairie (“East” and “West” plots) and Bake Stewart (“East” and “West” plots); Appendix A). Bake Stewart Park is public land managed by the U.S. Army Corps of Engineers (ACOE). All other sites are on public lands managed by the BLM. In 2018, 1,464 thin-leaved peavine plugs were planted at two additional sites: Herbert Farm and Natural Area (“Big” and “Small” plots), and Greenbelt Land Trust’s Bald Hill Farm (“Big” and “Small” plots). An additional plot was established near the existing outplanted plot at Hansen (Appendix A).

IAE monitored outplanting survival at all sites except for the Bald Hill Farm Small plot (Table 2). Because of low survival rates, monitoring only continued at the six original planting sites after 2019. The most recent monitoring took place in June 2021, when IAE found the highest survival rates at Dorena Prairie East (22%) and Hansen (20%). Based on these results, the BLM decided to focus restoration efforts on these two sites. In 2022, two new plots were created at Hansen by removing Himalayan blackberry (*Rubus bifrons*).

**Table 2.** Outplanting sites and survival rates of thin-leaved peavine (*Lathyrus holochlorus*).

Site	Year Planted	Number of Plugs	Most Recent Survey	Most recent survival data. No. (%)
<b>Bake Stewart E</b>	2016	200	2021	20 (10%)
<b>Bake Stewart W</b>	2016	200	2021	23 (12%)
<b>Dorena Prairie E</b>	2016	100	2021	22 (22%)
<b>Dorena Prairie W</b>	2016	100	2021	0
<b>Hansen</b>	2016	200	2021	40 (20%)
<b>South Taylor</b>	2016	200	2021	9 (5%)
<b>Herbert Farm Big</b>	2018	64	2019	1 (1%)
<b>Herbert Farm Small</b>	2018	64	2019	2 (4%)
<b>Hansen RAC</b>	2018	500	2019	45 (9%)
<b>Bald Hill Farm Big</b>	2018	312	2018	102 (33%)
<b>Bald Hill Farm Small</b>	2018	188	No data	No data

Since the creation of the original seed amplification bed in 2014, IAE has created a new seed amplification field in 2020 using nursery-grown plugs from wild-collected and donated seed from the NRCS Plant Materials Center. In 2021, IAE interplanted live stakes of snowberry (*Symphoricarpos albus*) to provide dappled light and structure for the thin-leaved peavine to grow on. The thin-leaved peavine did not produce seed in 2020 or 2021. In 2022, IAE installed a 24" tall wind fence to protect the plants from the brightest part of the day. The plants grew steadily but did not flower in 2022.

## 2. GOALS AND OBJECTIVES

The original goal of this project was to prevent the listing of thin-leaved peavine. Since ODA listed thin-leaved peavine as endangered in the state of Oregon in 2023, an updated goal is to prevent a federal listing and promote its downlisting within the state of Oregon. The primary objectives are to:

1. maintain thin-leaved peavine seed amplification fields;
2. continue to collect wild seed from a geographical range of extant populations to maintain genetic diversity;
3. monitor the establishment of outplanted plugs and seeded plots; and
4. improve habitat quality at reintroduction sites to increase plant-establishment success.

### 3. 2023 PROJECT ACTIVITIES

#### 3.1 Wild seed collection

In 2023, IAE collected approximately 6.42 grams of thin-leaved peavine seed from five sites: Herbert Farm, Coyote Spencer Wetland, Hwy 22 & Ridgeway, Freeway Lakes, and Hagg Lake (**Figure 1**). Compared to previous years, fewer seed was available at Herbert Farm (7 grams in 2021 vs. 2 grams in 2023), and Coyote Spencer Wetland (16 grams in 2021 vs. 0.4 grams in 2023).

While IAE was able to collect from more sites than previous seasons, initial scouting was not always an accurate portrayal of how much seed would be available. Many plants that flowered did not produce seed, and some sites where collections were expected, like Noble Woods, had too little seed to make a collection feasible.



**Figure 1.** Flowering thin-leaved peavine (*Lathyrus holochlorus*) at Coyote Spencer Wetlands, May 23, 2023 (left); dozens of flowers at Herbert Farm, May 15, 2023 (right).

#### 3.2 Seed production

For the first time since establishment, the seed amplification field produced flowers and seeds (**Figure 2**). IAE collected a total cleaned weight of 19.27 grams in 2023.





**Figure 2.** Thin-leaved peavine (*Lathyrus holochlorus*) growing next to snowberry (*Symphoricarpos albus*), April 12, 2023 (left); flowering plants behind wind fence, May 8, 2023 (right).

### 3.3 Habitat enhancement

In 2023, IAE counted nine thin-leaved peavine individuals in the Hansen plots (Figure 3). IAE re-treated the Hansen plots to reduce the presence of Himalayan blackberry and other non-native woody species. The BLM hired a contractor to mow the plots in September following treatment. In November, IAE planted 40 oceanspray (*Holodiscus discolor*) to improve native shrub diversity and provide structure for the thin-leaved peavine to grow on (Figure 3).

**Table 3.** Restoration actions completed in 2023.

Date	Staff	Restoration action
5/9/2023, 7/26/2023	Paul Reed (IAE)	Visited Hansen to check treatment efficacy.
8/24/ 2023, 10/3/2023	Zade Clark-Henry, Paul Reed (IAE)	Spot sprayed Hansen plots for Himalayan blackberry ( <i>Rubus bifrons</i> ) and other non-native woody species.
9/11/2023	Contractor	Mowed Hansen plots.
11/07/2023	Aynesley Wilson, Paul Reed (IAE)	Planted 40 oceanspray ( <i>Holodiscus discolor</i> ) shrubs in Hansen plots.



**Figure 3.** Thin-leaved peavine (*Lathyrus holochlorus*) at Hansen, July 26, 2023 (left). Oceanspray (*Holodiscus discolor*) planted at Hansen, November 7, 2023 (right).

#### 4. 2024 MANAGEMENT RECOMMENDATIONS

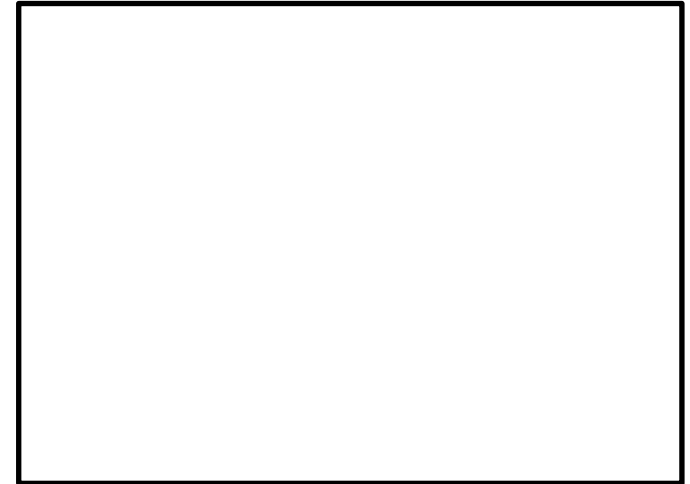
- Document number of plants present at five of the original outplanted plots and take photo points: Bake Stewart East and West, Dorena Prairie East, Hansen, and South Taylor.
- Mow approximately 40-60% of the Himalayan blackberry from plots that have thin-leaved peavine when shrub growth becomes too dense.
- Collect wild seed of thin-leaved peavine to use for plug production or to support seed amplification efforts.
- Grow plugs for outplanting at Hansen plots.

#### REFERENCES

- Lebo, C. and Esterson, A. 2022. *Lathyrus holochlorus*: 2021 Annual report. Unpublished report for the Bureau of Land Management, Northwest Oregon District. Institute for Applied Ecology. Corvallis, OR.
- Wilson, M. V., K. P. Connelly, and L. E. Lantz. 1993. Plant species, habitat, and site information for Fern Ridge Reservoir. A component of the project to develop management guidelines for native wetland communities. Submitted to Waterways Experiment Station, Army Corps of Engineers, Vicksburg, Mississippi and Soil Conservation Service, Portland, OR.

APPENDIX A. THIN-LEAVED PEAVINE INTRODUCTION PLOT MAPS.

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**Figure 1.** The white outlines show the perimeter of the introduction plots planted in 2016 at Dorena Prairie. The small orange box near the Dorena East introduction plot is the seed plot that was added in 2019.

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**Figure 2.** The white outlines show the perimeter of the introduction plots planted in 2016 at Bake Stewart Park. The small orange box near the west introduction plot is the seed plot that was added in 2019.

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**Figure 3.** The orange points represent the four corners of the original 2016 plot. The yellow outline shows the new plots established in 2022.

**Figure 4.** The white outline shows the perimeter of the introduction plot planted in 2016 at South Taylor. The small orange box near the introduction plot is the seed plot that was added in 2019. WEW = West Eugene Wetlands.

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**Figure 5.** Big (south) and Small (north) introduction plots at Herbert Farm.

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**Figure 6.** Big (east) and Small (west) introduction plots at Bald Hill Farm.



APPENDIX B. THIN-LEAVED PEAVINE PHOTOPOINTS.

Hansen



**Bake Stewart East**



**Bake Stewart West**



**Dorena East**



Dorena West



South Taylor



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## APPENDIX D: HISTORY OF COMPLETED RESTORATION ACTIVITIES (2012-2023)

### 2012

- Obtained historic location records from the Oregon Biodiversity Information Center (ORBIC) and the U.S. Fish and Wildlife Service (USFWS).
- Visited small local populations in Corvallis to increase familiarity of species appearance, habit, and phenology.
- Prioritized sites and made maps to prepare for field surveys in 2013.

### 2013

- Inspected site and coordinated with partners.
- Removed Scotch broom, Himalayan blackberry, and fruit trees.
- Surveyed known locations of thin-leaved peavine. IAE and Native Plant Society (NPSO) volunteer Julie Gibson visited a total of 62 sites.
- IAE collected a total of 174.2 grams of seed from 12 different populations with the two largest populations yielding 73.5% of the total collected by weight.
- Tested germination and planted germinated seeds in greenhouse to test results of different types of cultivation.

### 2014

- IAE and NPSO surveyed 90 of the 109 sites visited in 2013 and 2014.
- Collected 126.2 grams of seed from 20 different populations in July and August.
- Conducted germination trials.
- Direct seeded into a raised bed at the Forestry Sciences Laboratory (FSL) at OSU.

### 2015

- Collected 47.8 grams of seed.
- Grew 1,000 plants at the NRCS Corvallis Plant Materials Center.
- IAE grew 100 second year-old plants.
- Visited four potential introduction sites selected for soils, habitat, and location.
- Mowed introduction sites with hand-held brush cutter to reduce vegetation height and limit competing vegetation and root grubbing by Himalayan blackberry.

### 2016

- Due to poor germination at FSL, planted two beds totaling 480 ft<sup>2</sup> with nursery-grown plugs in March. Weeded, fertilized, and irrigated beds. None of the transplants flowered or set seed in 2016.
- Transplanted 1,000 plants to four introduction sites in March: Dorena East and West, Bake Stewart East and West, Hansen, and South Taylor.



- Monitored introduction plots for survival and plant community composition and analyzed and synthesized data.

2017

- Weeded FSL beds and replaced dead plants with live transplants.
- Monitored introduction plots for survival and plant community composition and analyzed and synthesized data.

2018

- Weeded FSL beds.
- Established and planted 1,464 thin-leaved peavine at five new introduction plots: Herbert Big and Small, Bald Hill Big and Small, and Hansen RAC.
- Monitored introduction plots for survival and plant community composition and analyzed and synthesized data.
- Weeded introduction plots.

2019

- Weeded FSL beds.
- Monitored outplanted plots and analyzed data.
- Collected seed from four wild populations: Coyote Spencer Wetland, Cutler Lane, Fish Hatchery Road, and Linn Benton Community College.
- Planted 59 shrubs in 3 locations with highest potential for site enhancement.

2020

- Monitored outplanted plots and analyzed data.
- Collected seed from large, healthy, wild populations.
- Established seed production field.

2021

- Monitored outplanted plots and analyzed data.
- Collected seed from large, healthy, wild populations.
- Took photo points in June.

2022

- Maintained seed amplification beds and installed protective fencing.
- Collected 1.8 grams of seed from Cutler Lane.
- Visited five introduction plots: Dorena East and West, Bake Stewart East and West, and Hansen.
- Prepared two new plots at Hansen by spraying Himalayan blackberry with Garlon 3A (triclopyr) in August and mowing in October.
- Mowed diagonal strips in Dorena East and West introduction plots with brush cutter.

2023

- Produced 19.27 grams of seed from seed amplification beds.
- Collected 6.42 grams of wild seed from Herbert Farm, Coyote Spencer Wetland, Hwy 22 & Ridgeway, Freeway Lakes, and Hagg Lake.
- Spot sprayed Hansen plots for Himalayan blackberry and other non-native woody species with Garlon 3A (triclopyr).
- Mowed Hansen plots.
- Planted 40 oceanspray shrubs in Hansen plots.