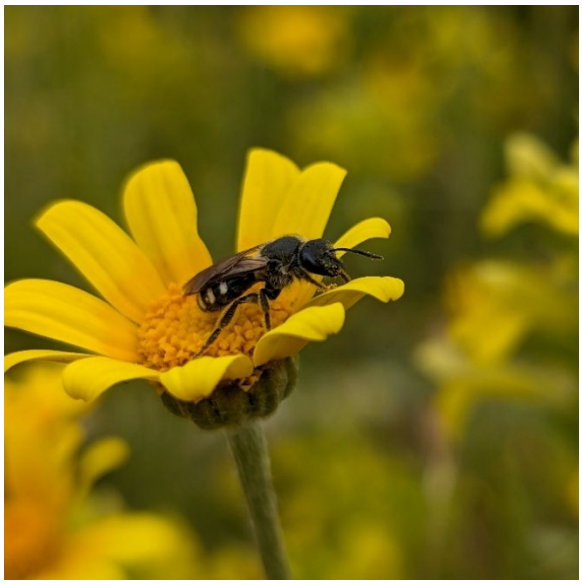
Conservation Research 2025 Annual Report



Prepared By Conservation Research Staff

Laura Estrada, Denise Giles, Christina Mitchell, Claire Rubens, Jessica Ruff, and Scott Harris

Institute for Applied Ecology

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.

Questions regarding this report or IAE should be directed to:

Keith Norris (Executive Director)
Institute for Applied Ecology
4950 SW Hout St.
Corvallis, OR 97333

phone: 541-753-3099
fax: 541-753-3098
email: info@appliedeco.org

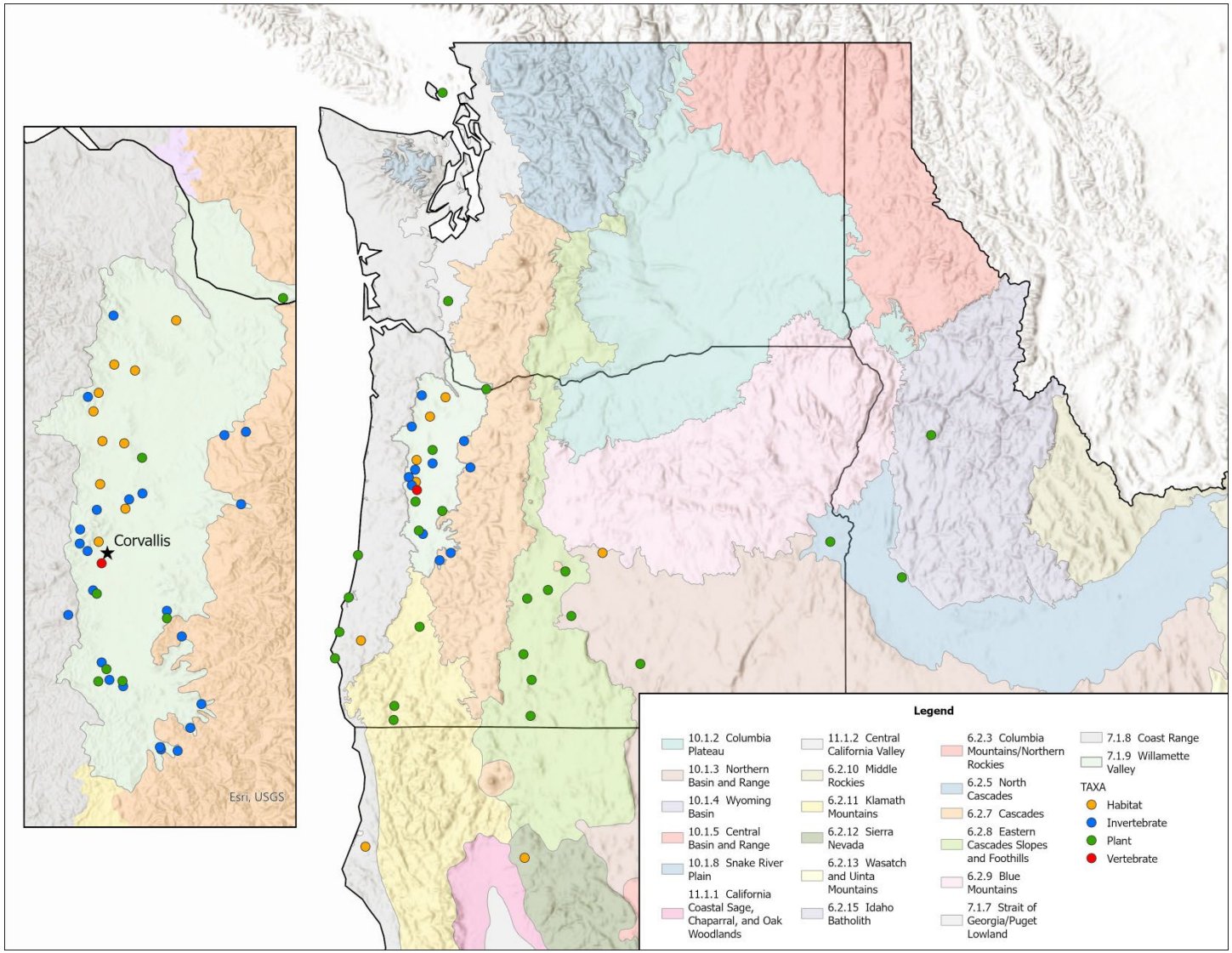
ACKNOWLEDGEMENTS

A big thank you to our seasonal staff. All that we accomplish each year simply wouldn't be possible without them. We thank ESRI for their support of our GIS program. Maps were created using ArcGIS® software by Esri. ArcGIS® and ArcMap™ are the intellectual property of Esri and are used herein under license. Copyright © Esri. All rights reserved. For more information about Esri® software, please visit www.esri.com.

Cover photographs: Top left: Marked Taylor's checkerspot butterfly by Claire Rubens, top right: Crinite mariposa lily (*Calochortus coxii*) by Laura Estrada, bottom left: Pumice moonwort (*Botrychium pumicola*) by Laura Estrada, bottom right: bee on Oregon sunshine (*Eriophyllum lanatum*) by Claire Rubens.

TABLE OF CONTENTS

2025 Conservation Impact Map



1. Climate-adapted Plant Materials

Climate-adapted plant material common garden. Photos by IAE staff.

Partner: Clean Water Services, Tualatin Soil and Water Conservation District

Project Timeline: 2021- 2040

Project Summary: As climate has changed and continues to change, plants are lagging in their ability to keep pace with the alterations to major climatic conditions. This presents a challenge for riparian restoration projects, where the goal is to seed plants that will successfully establish and continue to provide ecosystems services (e.g., stream shading, erosion control) for many decades. To address this challenge project partners are conducting a common garden study in the Tualatin River Watershed. Plant materials were sourced from three climate analogs (Umpqua, Humboldt, and Shasta areas) and planted in a common garden in 2025. A climate analog is an area where current climatic conditions are similar to those predicted for a given restoration. Our study will determine which individuals are most adapted to the climate in the Tualatin Watershed – to be used for future restoration projects.

2. Dwarf Woolly Meadowfoam (*Limnanthes pumila ssp. pumila*)

Lower Table rock and seasonal staff walking on trail (left), dwarf woolly meadowfoam (center) Lower Table Rock and monitoring transect over vernal pool (right). Photos by Laura Estrada and IAE seasonal staff

Partner: Bureau of Land Management, Medford District

Project Timeline: 2006 – 2025

Species Status: Dwarf woolly meadowfoam *(Limnanthes pumila ssp. pumila)* is an Oregon state Threatened and Federal Species of Concern. It is endemic to only two populations, Upper and Lower Table Rocks in Jackson County, Oregon. This species strictly resides in vernal pools on the Table Rocks, which are threatened with grass invasion, recreation disturbance, and climate change.

Project Summary: Since 2006, IAE has surveyed Lower and Upper Table Rocks within the Area of Critical Environmental Concern (ACEC) administrated by Medford BLM District. The main survey activities are to monitor experimental plots to follow population trends, as well as examine the effects of recreation traffic and invasive species on dwarf woolly meadowfoam. In 2024, we focused monitoring efforts on both established transects on Lower Table Rock and on recreation traffic plots on Upper Table Rock. This was the fourth year we surveyed 30 random plots in Lower Table Rock to assess herbicide treatments (performed by our BLM partners) in this habitat. An annual report was developed and submitted to BLM partners in March 2025.

3. Crinite Mariposa Lily (*Calochortus coxii*)

Crinite mariposa lily (left), crinite mariposa lily bagged for seed collection (center), cleaned crinite mariposa lily seed (right). Photos by Laura Estrada.

Partner: Bureau of Land Management, Roseburg District

Project Timeline: 2011 – 2015; 2020 – 2027

Species Status: Crinite mariposa lily (*Calochortus coxii*) is listed as Endangered by the Oregon Department of Agriculture, a Federal Species of Concern, and a Heritage Rank G1 species (critically imperiled throughout its range). This species is endemic to a ten-mile serpentine ridge system between Myrtle Creek and Riddle, Oregon. Since the species discovery in 1988, 24 populations have been identified.

Project Summary: Since 2011, IAE has monitored the crinite mariposa lily, along with changes in habitat conditions and potential threats. Monitoring plots were originally established in response to the proposed Jordan Cove Liquid Natural Gas (LNG) pipeline, which would have passed through this endemic population. Although the pipeline project has since been terminated, the possibility of its return remains, and the BLM aims to maintain ongoing knowledge of the species.

In June 2025, surveys were conducted to assess population status and habitat conditions across permanent transects at all three sites: Bilger 1, Bilger 4, and New Pipeline. Starting in 2023, our agreement with BLM expanded to include a plant materials component. Because propagation methods for the crinite mariposa lily are unknown, BLM funded IAE to develop a plant materials protocol covering seed collection, cultivation, and outplanting. Seeds collected in summer 2024 and 2025 have been used in germination trials and bulb production. Looking ahead, IAE will implement an outplanting study to better understand the feasibility of population augmentation in serpentine soils.

4. Columbia Yellowcress (*Rorippa columbiae*)

Columbian yellowcress growing in southern Oregon and outplanting efforts on Stukel Mountain. Photos by IAE staff.

Partner: Bureau of Land Management, Lakeview District

Other Partners: Oregon Department of Agriculture

Project Timeline: 2022-2025

Species Status: State-listed in Oregon as Endangered; not federally listed.

Project Summary: In 2022, IAE partnered with the BLM Lakeview District Office for a three-year project to research how to maintain, enhance, and restore a BLM Sensitive plant Columbia yellowcress and its habitat. In 2025, we conducted the second annual Columbia yellowcress working group meeting with partners across the species' range (WA, OR, and CA) and submitted our final report to BLM partners. During this project, we grew and outplanted Columbia yellowcress plugs sourced from five populations at Stukel Mountain, Foley Lake, Featherbed Lake, and Paulina Marsh. We conducted annual population monitoring and collected vegetation community data to determine areas suitable for outplanting efforts. We submitted seed from Sprague River, Stukel Mountain, Featherbed Lake, Foley Lake, and Paulina Marsh to the Rae Selling Berry Seed Bank for long term storage.

5. Cook's Desert Parsley (*Lomatium cookii*)

Monitoring at French Flat (left), monitoring at Rough and Ready (center), Lomatium cookii seedlings in a seeded plot (right). Photos by Denise Giles.

Partner: Bureau of Land Management, Medford District

Project Timeline: 1999-2026

Species Status: *Lomatium cookii* is endemic to southwestern Oregon and is federally listed as Endangered. The two known population centers are the Illinois Valley in Josephine County and the Agate Desert north of the Medford Plains in Jackson County. This project focuses on the populations located on BLM land in the Illinois Valley at French Flat, Indian Hill, Reeve's Creek, and Rough and Ready Creek.

Project Summary: IAE has outplanted seeds and plugs at a variety of sites from 2020-2024. Seed and plugs were provided by the Medford District BLM and grown at the J. Herbert Stone Nursery. Seed was sourced from sites with serpentine influenced substrate.

In the spring of 2025, IAE monitored populations of Cook's desert parsley at multiple sites including French Flat Middle and French Flat South, Rough and Ready ACEC, Woodcock Bog, Reeves Creek, Waldo-Takilma, and Indian Hill. Monitoring at these sites included a sub-sample or complete census of plants, as well as demographic measurements in a sub-sample of the populations. At Rough and Ready, French Flat South, and Indian Hill, populations have generally declined since monitoring began. Monitoring is currently funded through 2026. Work in 2026 will include an assessment of population viability based on our long-term demographic data.

6. Emerald Ash Borer (*Agrilus planipennis*) Early Detection

An example of an ash forest (left), an adult emerald ash borer (center), and emerald ash borers caught on trap (right). Photos by IAE staff.

Partner: Bureau of Land Management, Northwest Oregon District

Other Partners: Oregon Department of Forestry & Oregon Department of Agriculture

Project Timeline: 2023-2026

Species Status: Emerald ash borer (EAB) is an invasive species native to north-eastern Asia. It is a destructive wood-boring pest that specializes on ash trees and was detected on Oregon ash (*Fraxinus latifolia*) around Forest Grove in 2022.

Project Summary: In 2023, IAE partnered with the Bureau of Land Management (BLM) Northwest Oregon District on a project aimed at surveying for emerald ash borer (EAB) and collecting pre-invasion riparian plant community data at sites around Oregon. In 2025, we scouted 20 possible BLM sites (in addition to the 35 scouted in 2024) for ash communities and selected six sites (in addition to the seven sites selected in 2024) for initial vegetation community data collection. We deployed purple prism traps at 11 sites to aid in detecting EAB across Oregon, resulting in the first detection on BLM land at a site east of Scotts Mills. We will continue participating in the state-wide EAB task force and the research-focused subcommittee.

7. Fender's Blue Butterfly (*Icaricia icarioides fenderii*) Range-wide Monitoring

FBB survey training at Oak Basin (left), FBB on Kincaid's lupine at Yamhill Oaks Preserve South (center), FBB pair at Yamhill Oaks Preserve South (right). Photos by Jessica Ruff.

Partners: US Fish and Wildlife Service, Oregon Parks and Recreation Department, Bureau of Land Management

Other Partners: Private Landowners, Greenbelt Land Trust, Benton County, Yamhill Soil and Water Conservation District, The Nature Conservancy, Army Corps of Engineers

Project Timeline: 2014 - 2025

Species Status: Threatened under the federal Endangered Species Act. Fender's blue butterfly (*Icaricia icarioides fenderii*) was down-listed from Endangered to Threatened in January 2023, based on scientific information indicating that the species' status has sufficiently improved such that extinction risk is reduced (but still at risk of reverting back to Endangered status).

Project Summary: IAE has managed the Fender's blue butterfly range-wide data collection since 2014. The objective of annual monitoring is to assess the range-wide population status. Fender's monitoring continued in 2025, and population estimate results will be presented in the annual range-wide report. IAE co-organized the annual range-wide meeting in March, conducted surveys, contracted expert surveyors, as well as coordinated surveys with various local agencies and stakeholders to ensure a comprehensive population survey across the species' range. This year over 90 sites were monitored by counting male adult butterflies during the flight season, using various survey methods depending on the size of the site. IAE staff and contractors surveyed butterflies at Baskett Slough National Wildlife Refuge, Hagg Lake, Oak Basin, Wren, and various sites in Yamhill County.

Due to funding cuts this year, IAE was unable to host the Fender's blue butterfly distance survey training or complete a habitat assessment survey. Despite a difficult year due to the funding

situation, all of the collaborators pulled together to complete the range-wide survey of the species. A huge thanks goes out to all the partners, surveyors, and land managers this year!

8. Golden Paintbrush *(Castilleja levisecta)* Range-wide Survey

2025 golden paintbrush monitoring crew members Tom Kaye, Melanie Birch, and Anna Merzenich (left), golden paintbrush (center), monitoring golden paintbrush (right). Photos by IAE staff.

Partner: *Oregon Department of Agriculture*

Other Partners: Bureau of Land Management, City of Corvallis, City of Eugene, Greenbelt Land Trust, The Nature Conservancy, Oregon Parks and Recreation Dept., US Army Corps of Engineers, US Fish and Wildlife Service, Portland Metro, Private Landowners

Project Timeline: 2025

Species Status: Golden paintbrush *(Castilleja levisecta),* formerly extirpated from Oregon, was delisted from the Endangered Species Act in 2023 but remains a state-listed endangered species in Oregon.

Project Summary: Golden paintbrush had been extirpated from Oregon and was federally listed as Threatened in 1997. In 2023, following extensive habitat restoration and reintroduction by IAE and partners, this species was delisted. Following delisting under the U.S. Endangered Species Act, populations need to be assessed for several years. An assessment conducted by IAE in 2023 showed declines in population totals since the last range-wide survey in 2019. Preliminary findings from repeat surveys in 2025 showed similar trends. A report will be developed and delivered to the Oregon Department of Agriculture in December 2025.

9. Herbert Farm Natural Area

IAE and ODFW staff conducting amphibian egg mass surveys (left), Northwestern pond turtle surveys (center), an example of an EAB trap in Oregon ash tree (right). Photos by IAE staff.

Partner: Oregon Department of Fish and Wildlife

Project Timeline: 2023-2025

Project Summary: In 2023, we joined IAE's Habitat Restoration program in partnering with Oregon Department of Fish and Wildlife (ODFW) to monitor natural resources at the City of Corvallis' Herbert Farm Natural Area. In 2025, we conducted three rounds of spring amphibian egg mass surveys. We also monitored five purple prism traps from May to September to aid in statewide efforts of detecting emerald ash borer.

10. Italian Arum (*Arum italica*)

Plot design at Fisherman Bay Preserve (left), Italian arum plants (center), seasonal staff monitoring treatment plots at Fisherman Bay (right). Photos by Laura Estrada.

Partner: Jim and Birte Falconer (Seattle Foundation)

Other Partners: Salem Audubon Society, Washington Department of Natural Resources, and the San Juan County Conservation Land Bank

Project Timeline: 2022 – 2025

Species Status: Italian arum (*Arum italicum*) is a nonnative invasive to the Pacific Northwest, classified as a Class C Noxious Weed in Washington state and is present on the Early Detection and Rapid Response (EDRR) list of invasive plants by the city of Portland. This species is of high management concern in western Washington and Oregon.

Project Summary: In 2022, IAE established experimental blocks at three sites to evaluate the effectiveness of various management treatments for controlling Italian arum. Treatments included: 1) control, 2) manual excavation (dig), 3) glyphosate only, 4) glyphosate + imazapyr, 5) imazapyr only, and 6) mowing with solarization (tarping).

In 2025, we completed our final year of monitoring, assessing both above- and below-ground biomass within the experimental blocks. Above-ground monitoring involved counting Italian arum within a 1 m^2 area, measuring plants, and categorizing them into size classes. We also collected below-ground biomass (corm) samples to evaluate overall treatment success. Initial results indicate a site-specific effect on which treatments are most effective. Final results will be shared through a stakeholder meeting and a comprehensive report at the end of 2025.

11. Jackson Meadow

Drone imagery before tree removal (left), and after tree removal (center), HOBO monitoring soil moisture and temperature (right). Photos by IAE staff.

Partner: Oregon State University

Project Timeline: 2022-2026

Project Summary: Jackson Meadow is an approximately 27-acre parcel managed by Oregon State University (OSU) with a mix of forest, upland prairie, wet prairie, and riparian ecosystems. In 2022, OSU partnered with IAE to quantify bird and vegetation community change over time while managing the site for oak community restoration. In 2023, we established two RestoreNet plots to quantify vegetation community responses to different management techniques. In 2025 we rototilled the two- and three-year chemical fallow treatment plots to mimic discing and monitored the changing vegetation community. We will sow the two-year chemical fallow treatment plots later this fall. We also collected the fourth round of data from the four Relevé plots to track change in vegetation communities.

12.Kincaid's Lupine (*Lupinus oreganus*) – Douglas County

Kincaid's lupine in Douglas County (left), IAE crew hiking out to monitor Kincaid's lupine (center), more Kincaid's lupine (right). Photos by Jessica Ruff.

Partner: Bureau of Land Management Roseburg District

Project Timeline: 2003 - 2025

Species Status: Kincaid's lupine (*Lupinus oreganus*) is an Oregon state and federally listed Threatened species. There are only a few remnant populations of Kincaid's lupine in Douglas Country, forming the southern edge of this species' range.

Project Summary: IAE has conducted previous monitoring of Kincaid's lupine (*Lupinus oreganus*; LUOR) in the Roseburg area from 2003 to 2012. This current project is scheduled from 2022 to 2025 and is funded by the BLM Roseburg District Office. In 2024, IAE assessed foliar cover and counted racemes to monitor the status and reproductive success of LUOR populations at five Roseburg sites: China Ditch, Dickerson Heights, Letitia Creek, Stouts Creek, and Callahan Meadows. In addition to the surveys, the team continued to improve mapping methods and protocols for these sites to aid in future monitoring years. Many plants are affected by encroaching vegetation, including poison oak. The conservation research team is working together with the BLM and IAE's restoration department to inform management actions at China Ditch and Stouts Creek, which are part of the Kincaid's Lupine Recovery Challenge project.

13. Kincaid's Lupine (*Lupinus oreganus*), Fir Butte, West Eugene Wetlands

Fir Butte site (left), Fender's blue butterfly egg on lupine (center), and Kincaid's lupine (right). Photos by Denise Giles and Laura Estrada.

Partner: Bureau of Land Management Northwest Oregon District

Project Timeline: 1999-2025

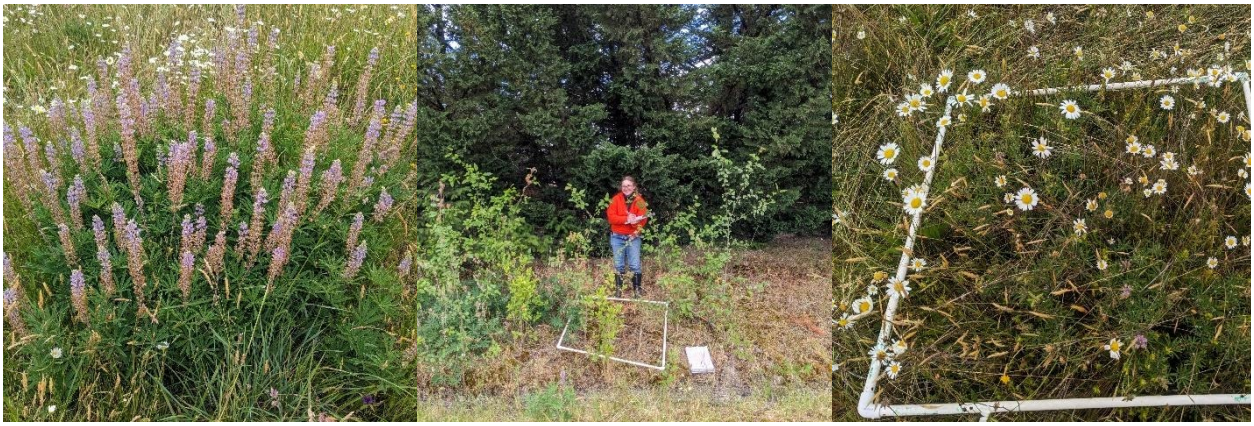
Species Status: Kincaid's lupine (*Lupinus oreganus*) is a state and federally listed Threatened species.

Project Summary: In summer of 2025, IAE monitored lupine and target weedy species at Fir Butte, a site managed by the NW District BLM in the West Eugene Wetlands. This site is host of Kincaid's lupine and Fender's blue butterfly. IAE has conducted monitoring at the site on a near annual basis since 1999.

The cover of lupine at the site has generally increased since monitoring and habitat management have continued at the site. Cover of introduced blackberry has decreased since monitoring began at the site from more than 28% (±6%) cover to less than 1% in 2025 (below the recovery threshold of 5% for the species).

Species level habitat monitoring across the site is collected to detect changes in the plant community in response to management treatments at the site, which have included burning, spraying, and seeding.

14. Kincaid's Lupine (*Lupinus oreganus*) Recovery Challenge



Kincaid's lupine in SW WA (left), habitat quality data collection (center), vegetation community quadrat (right). Photos by Jessica Ruff

Partner: US Fish and Wildlife Service, Oregon and Washington offices

Other Partners: Cow Creek Band of Umpqua Tribe of Indians, Cowlitz Indian Tribe, U.S. Fish and Wildlife Service Partners for Fish and Wildlife Program, Washington Department of Natural Resources, Bureau of Land Management Roseburg office

Project Timeline: 2023 – 2027

Species Status: Kincaid's lupine (*Lupinus oreganus*) is an Oregon state and federally listed Threatened species.

Project Summary: The range of Kincaid's lupine (*Lupinus oreganus;* LUOR) extends from Southwest Washington to Douglas County, Oregon; however, most remaining populations are in the Willamette Valley, where the restoration and management effort has been focused. For the species to persist and be resilient to environmental change, more connectivity between the populations is needed.

This Recovery Challenge project focuses on collecting current data about the population status and habitat quality in the northern and southern extremes of its range. In 2024, IAE surveyed nine sites in Douglas County and six sites in Southwest Washinton for lupine foliar cover, reproductive success and habitat quality measures. In addition, contact and access information was acquired for various privately owned sites, to ease future monitoring efforts. In 2025, IAE returned to five sites in Southwest Washington to collect prairie habitat quality and vegetation community data. The 2024 and 2025 data were compared to the Kincaid's lupine range-wide report published in 2016 by IAE to detect population trends and restoration priorities. The results are being prepared in a report for the US Fish and Wildlife Service and other partners.

15. Live Oak Drive

RestoreNet plots in the lower prairie (left) and upper oak savannah (right), and example of an emerald ash borer trap in Oregon ash tree (center). Photos by IAE staff.

Partner: Elizabeth Jones

Project Timeline: 2024-2027

Project Summary: In 2024, we joined IAE's Habitat Restoration program in partnering with Elizabeth Jones to restore and monitor natural resources on her property. In 2025, we established two RestoreNet plots to study effects of length of chemical fallow, discing, and fire on restored plant communities. We also deployed three purple prism traps to aid in statewide detection efforts of emerald ash borer, which were monitored between May and September. In 2025, we also assessed the bird community using point counts and passive acoustic recorders. We will assess changes in the bird community during and following habitat restoration activities.

16. Mulford's Milkvetch (*Astragalus mulfordiae*) Species Distribution Model

Melanie Birch monitoring in 2025 (left), Mulford's milkvetch and plant community (center), Mulford's milkvetch habitat (right). Photos by Denise Giles.

Partner: Bureau of Land Management, Vale District

Project Timeline: 2024-2026, (2007-2022)

Species Status: Mulford's milkvetch (*Astragalus mulfordiae*) is listed as Endangered in the state of Oregon but has no federal listing status.

Project Summary: In 2024 IAE began work to create a species distribution model for Mulford's milkvetch *(Astragalus mulfordiae).* This species is only found in Idaho and Oregon, with populations under threat from urbanization, habitat degradation related to invasive species, and climate change. Previous work by IAE described below will be utilized in the creation of this model. In 2025, IAE visited populations in Oregon and Idaho to ground-truth the model.

Previous work by IAE has included monitoring populations on BLM land which included demographic analysis of the species, and evaluation of the effects of grazing. The demographic work showed that plants can be dormant for multiple years. There was not a clear effect of grazing on this species. Work in 2020-2022 focused on using the 10+ years of monitoring data to evaluate effects of climate on the survival, vigor, and reproductive effort of the species, and found that precipitation factors had the greatest impact on reproductive effort and survivorship.

17. Oak Basin Kincaid's Lupine (*Lupinus oregnaus*), Hitchcock's Blue-eyed grass (*Sisyrinchium hitchcockii*), and Habitat Assessment

Introduced graminoids and forbs are an issue at Oak Basin (left). A newly (re)-discovered patch of Eucephalis vialis (center). Habitat management has included increasing connectivity between meadows (right). Photos by Denise Giles.

Partner: Bureau of Land Management Northwest Oregon District

Other Partners: Private landowners Jim and Ed Merzenich

Project Timeline: 2007-2026

Species Status: Kincaid's lupine (*Lupinus oreganus*) is a state and federally listed Threatened species. Hitchcock's blue-eyed grass (*Sisyrinchium hitchcockii*) is state listed as Endangered, and federally listed as a Species of Concern.

Project Summary: In 2025, IAE monitored Kincaid's lupine and Hitchcock's blue-eyed grass at Oak Basin, a site managed by the NW District BLM. This site in the Coburg Hills is home to a population of Fender's blue butterflies and lies adjacent to private property that is also being maintained for these rare species. Monitoring in 2025 included lupine monitoring on the adjacent private property.

In 2020, IAE established a total of 10 blocks in each of the three meadows at the site, in each block there are three management treatments being tested, 1) Mow + Burn +Glyphosate, 2) Glyphosate + Burn + Glyphosate and 3) control. Each of the treated blocks was then divided in half with the first half being seeded and the second without seed addition. Treatments occurred in the fall of 2020, and plots were monitored annually through 2023. Burn + Glyphosate was the most effective at increasing native cover, however higher seeding rates are recommended than those used in our experiment to take advantage of the treatment effects and to shift composition longer term.

18. Oak Restoration Monitoring - Polk County

Habitat monitoring in action (left), hemispherical canopy photo (center), understory plant community plot during mid-treatment monitoring (right). Photos by IAE staff.

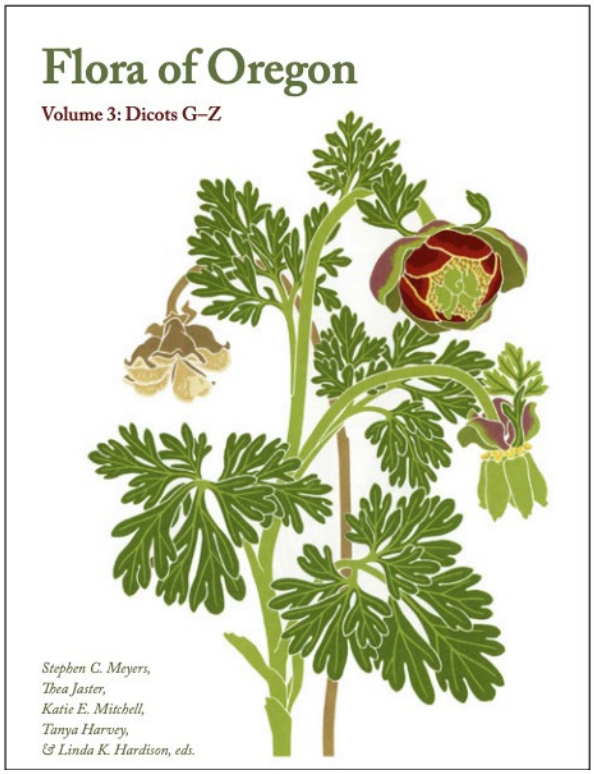
Partner: Polk Soil and Water Conservation District

Other Partners: Private landowners

Project Timeline: 2022 – 2027

Project Summary: Since 2022, this project has aimed to assess restoration actions in oak habitats enrolled in the Regional Conservation Partnership Program (RCPP) in Polk County. New private sites are enrolled annually as determined by the Polk Soil and Water Conservation District. In 2025, we surveyed mid-treatment vegetation communities at four properties. Surveying includes data collection of forest structure, vegetation cover, photo points, and hemispherical canopy photos. Comparisons will be made between pre-, mid-, and post-restoration treatment data to examine changes in plant community structure. Restoration work and site maintenance are ongoing by private landowners. In 2026, three sites are due for mid-treatment monitoring, and five sites are planned for post-treatment surveys. The final results will be documented in a report for the Polk Soil and Water Conservation District and the landowners.

19. Oregon Flora Volume 3 – Climate Chapter



Oregon Flora Volume 3: Dicots G-Z Cover. Publication is projected for 2025.

Partner: Native Plant Society of Oregon, IAE (Board Reserve)

Project Timeline: 2022-2025

Project Summary: IAE staff Tom Kaye, Scott Harris, and Paul Reed are writing an introductory chapter for the third and final volume of the Flora of Oregon. The chapter will describe the effects of climate change on Oregon flora.

20. Pink Sand Verbena (*Abronia umbellata ssp. breviflora)*

Pink sand verbena flowers (left), monitoring (center), visited by bumblebee (right). Photos by Denise Giles.

Partner: US Forest Service, Siuslaw National Forest and Bureau of Land Management, Coos Bay BLM District

Project Timeline: 1999-2026

Species Status: Pink sand verbena (*Abronia umbellata ssp. breviflora*) is a state-listed Endangered species and an Oregon BLM Sensitive Species.

Project Summary: In 2025, IAE conducted seeding (spring) and survey efforts (fall) for pink sand verbena (*Abronia umbellata* ssp. *breviflora*) at Coos Bay North Spit and New River ACEC managed by the Coos Bay BLM District. Seeding occurred at Forest Service sites including Overlook North, Overlook South, Tahkenitch and Siltcoos. The goal of this project is to monitor and augment existing populations of this listed species. IAE has conducted work on this species since its initiation in 1999. This work is in line with activities recommended in the recently completed Conservation Strategy for the species (completed in 2022 by IAE, funded by the USFS).

Management treatments including herbicide of introduced European beachgrass has occurred at both Forest Service and BLM sites and are also scheduled for the winter/spring of 2025/6. Discing occurs annually at the Coos Bay North Spit. Seeding efforts in 2026 will focus on newly treated areas to augment and expand existing populations.

21. Point Reyes Bird's Beak and Western Marsh Rosemary (*Chloropyron maritimum spp. palustre* and *Limonium californicum*)

Point Reyes bird's beak (left), monitoring on the Coos Bay North Spit (center), Western marsh rosemary (right). Photos by Denise Giles.

Partner: Bureau of Land Management, Coos Bay District

Project Timeline: 2009-2026

Species Status: Point Reyes bird's beak (*Chloropyron maritimum spp palustre*) is a state-listed Endangered species and an Oregon BLM Sensitive Species.

Project Summary: In 2024 IAE staff conducted surveys at the Coos Bay North Spit for Point Reyes bird's beak (*Chloropyron maritimum* spp *palustre)* and Western marsh rosemary (*Limonium californicum*), funded by the Coos Bay District BLM. This work included mapping habitat classes throughout the population areas that are both protected and unprotected from offroad vehicle use. We also conducted plant counts and community monitoring along established transects in both areas to estimate the population of both species.

Since monitoring was initiated, the areal cover of habitats with Western marsh rosemary has increased concomitant with a decrease in habitat classes dominated by Point Reyes bird's beak. In 2021-23 Western marsh rosemary was associated with higher micro-elevations than Point Reyes bird's beak, with marsh rosemary being found 20 cm higher than bird's beak. IAE has conducted work at the site intermittently since 2009 when long-term transects were established in the protected portion of the habitat; work in 2026 will focus on restoration for these coastal species.

22. Pumice Moonwort (*Botrychium pumicola*) – Restoration Strategy

Botrychium pumicola with pencil eraser for scale (left), typical montane habitat (center), Botrychium pumicola growing with phacelia in pumice pebble substrate (center). Photos by Jessica Ruff.

Partner: US Forest Service, Deschutes and Fremont-Winema National Forests

Other Partners: Bureau of Land Management Prineville District, Crater Lake National Park

Project Timeline: 2021 - 2026

Species Status: Pumice moonwort (*Botrychium pumicola*) is a rare fern currently listed as Threatened by the State of Oregon, and part of the Forest Service Region 6 Sensitive Species list and the BLM Special Status Plant list.

Project Summary: IAE partnered with the US Forest Service in 2021 to develop a species distribution model of *Botrychium pumicola* using long-term monitoring data in conjunction with habitat and climate datasets available for the species range. Two models were developed for the species in 2021: one for the alpine populations and another for the montane populations, due to their differences in current distribution and habitat requirements. IAE and Forest Service staff ground-truthed the alpine model in 2022 and 2023, finding seven new populations! Ground-truthing of the montane model is ongoing by IAE and USFS.

In 2023, IAE developed new protocols and conducted habitat surveys assessing pumice moonwort survival and distribution and installed ten soil temperature and moisture probes. In 2024 and 2025, IAE monitored new sites for habitat requirements and downloaded data from the soil sensors. In 2025, IAE monitored thirteen montane populations and worked together with USFS botanists to obtain historical information about trends at these sites. The final objective of these activities is to develop a restoration plan for the species.

23. Rare Plant Seed Collections

Frasera umpquaenis (left), photo by Adma Schneider. Sisyrinchium hitchcockii (center), photo by Katelin Kutella. Stanleya confertiflora (right), photo by Allison Autry.

Partner: Center for Plant Conservation

Other Partners: Bureau of Land Management, Rae Selling Berry Seed Bank

Project Timeline: 2025-2026

Project Summary:

In 2025, IAE partnered with the Center for Plant Conservation to collect seed from rare and endangered plants in Oregon and Idaho. The goal of this project is to collect seed from wild populations (using conservation protocols) and banking them at the Rae Selling Berry Seed Bank at Portland State University. These collections would then serve as valuable resources for research and for possible reintroductions if the species became extinct in the wild.

24.Restoring Forb Islands in Core Habitat for Greater Sage-grouse

Sage-grouse photo (left) by Darren Clark. Study site near Brothers, Oregon (center and right), Photos by IAE staff.

Partners: East Cascade Audubon Society, Greenfield Hartline Habitat Restoration Fund, TerraWest Conservancy

Project Timeline: 2021-2025

Project Summary: Despite substantial collaborative efforts to conserve Greater sage-grouse (*Centrocercus urophasianus*), and their habitat, the dramatic decline in populations over the past 50 years has yet to be arrested. The breeding population of sage-grouse in Oregon was estimated to be 15,927 in 2021, the third lowest population estimate since 1980. Forbs, perennial grasses, and forb-associated arthropods in sagebrush understories are critical for chick-rearing and reproductive success. Studies have shown that annual recruitment is directly correlated to how sagebrush understories provide these dietary and cover resources. Therefore, restoration of these understory plant communities is a high priority, as they are scarce or missing in many priorities' sage-grouse conservation areas.

To identify best practices for restoring forbs and perennial grasses to benefit sage-grouse, we tested how various treatments (seeding methods, mowing, micro-irrigation, and grazing exclusion) affect restoration success near Brothers, Oregon. Preliminary results show that after a droughty first growing season, the seeding method using a manual seed drill (a "Jang" seeder) more than doubles the germination success of seeded species. Additionally, mowing and micro-irrigation increases the cover of perennial forbs. Results from our study can inform forb island restoration in core sage-grouse habitat and contribute to species recovery.

25. Restoring Nesting Habitat for Streaked Horned Lark

Streaked horned lark (left), photo by David Maloney. Streaked horned lark nest (center), photo by Joel Geier. Prairie restoration (right), photo by IAE staff.

Partner: Oregon Dept. of Fish and Wildlife

Other Partners: City of Corvallis

Project Timeline: 2024 - 2026

Species Status: Streak horned lark (*Ermophila alpestris strigata*) is a federally Threatened species and a Species of Concern by Oregon Department of Fish and Wildlife.

Project Summary: The rangewide population of streaked horned lark is estimated at fewer than 2,000 individuals, with most remaining populations in the Willamette Valley. Larks require large, open landscapes with low-stature herbaceous vegetation for foraging and sparsely vegetated ground for nesting. Agricultural practices and prairie succession, in the absence of natural or cultural fire, reduce available habitat. The species' federal listing and recovery plan outline habitat restoration guidelines, which IAE has been implementing and evaluating since 2016.

Most recently, we examined whether created vernal pools and swales could provide nesting habitat. Results showed that success depends heavily on seasonal weather patterns—specifically, how long pools remain wet and limit suitable nesting areas. Based on these findings, our current project at Herbert Farm and Natural Area is testing the creation of small, sparsely vegetated habitat patches.

In 2024 and 2025, we established 10 such patches using a variety of treatments to reduce vegetation cover. During spring and summer 2025, we monitored habitat use to determine whether streaked horned larks were utilizing these patches. The project will continue into 2026.

26. Sand Dune Phacelia (*Phacelia argentea*) – Coos Bay BLM District

Sand dune phacelia habitat at Storm Ranch ACEC (left). Seasonal staff with sand dune phacelia at Floras Lake (center). Sand dune phacelia at Storm Ranch (right). Photos by Laura Estrada.

Partner: Bureau of Land Management, Coos Bay District

Project Timeline: 2022 – 2025

Species Status: Sand dune phacelia (*Phacelia argentea*) is a federally listed Threatened species. It is listed as Threatened by the Oregon Department of Agriculture and as a California Rare Plant (rank 1B.1) by the California Native Plant Society.

Project Summary: In 2022, IAE took over a long-term monitoring project that had been conducted since 1995 by Tim Rodenkirk (Coos Bay BLM District Botanist; retired 2023). The project involves a complete census and measurement of individual plants across five sand dune phacelia populations. In 2023 and 2024, IAE continued monitoring in partnership with BLM staff and interns.

Major threats to this species include dune stabilization, encroachment by European beach grass (*Ammophila arenaria*), invasion by annual grasses, and establishment of various coastal woody species. Active management and population augmentation have proven critical for the species' persistence at three of the five sites.

In 2025, we established demography plots at two BLM sites to improve understanding of the species' life history—a topic that remains poorly studied. These plots will provide valuable data to help guide future recovery efforts.

27. Sand Dune Phacelia (*Phacelia argentea*) – Horsfall Ridge USFS

TUI partner at Horsfall Ridge (left). Sand dune phacelia plugs (center). Sand dune phacelia planted at Horsfall ridge (right). Photos by Laura Estrada.

Partner: U.S. Forest Service, Siuslaw National Forest

Other Partners: The Understory Initiative (TUI)

Project Timeline: 2023 – 2026

Species Status: Sand dune phacelia (*Phacelia argentea*) is a federally listed Threatened species. It is listed as Threatened by the Oregon Department of Agriculture and as a California Rare Plant (rank 1B.1) by the California Native Plant Society.

Project Summary: In 2023, IAE in collaboration with TUI will be facilitating the introduction of sand dune phacelia to Horsfall Ridge in the Siuslaw National Forest. This project is novel in that the introduction site is north of the currently known sand dune phacelia range.

In 2025 IAE assisted with site preparation implemented by RSTN staff, plug production by PMP staff, and monitoring plot set up and planting by CR staff. TUI and IAE will be revisiting these plots to determine the success of seeding and planting efforts.

28. Sevendevils Onion (*Allium tolmiei var. persimile*)

IAE staff collecting morphological data on Allium tolmiei var. persimile (left). Allium tolmiei var. persimile (center). Allium tolmiei var. tolmiei (right). Photos by Laura Estrada

Partner: U.S. Forest Service, Payette National Forest

Project Timeline: 2024 – 2026

Species Status: Sevendevils onion (*Allium tolmiei var. persimile*) is a R4 Forester's Sensitive Species and a S3 Vulnerable Species by the Idaho Natural Heritage program that is endemic to the Payette National Forest. This species is not federally listed.

Project Summary: Sevendevils onion occurs within the Idaho Wildfire Crisis Strategy Landscape (SIL) in areas proposed for intensive fuel reduction efforts. The presence of this variety places certain limitations on SIL activities. This project aims to provide accurate population estimates and distribution data for sevendevils onion, while also addressing questions about its taxonomic identity. Sevendevils onion closely resembles the more common Tolmie's onion (*Allium tolmiei* var. *tolmiei*).

In 2025, we surveyed sevendevils onion populations across their range, as well as Tolmie's onion populations neighboring the forest, to identify distinguishing taxonomic traits for future in-field identification. These findings will help managers make informed decisions about conserving the variety within SIL areas. Additionally, updated population mapping and estimates were collected.

29. Taylor's Checkerspot, Host Plant Phenology and Microsite Effects

Golden paintbrush (left), Taylor's checkerspot butterfly (center), and Taylor's checkerspot butterfly on English plantain (right). Photos by IAE Staff.

Partner: Ecostudies Institute

Other Partners: Department of Defense, Joint Base Lewis-McChord

Project Timeline: 2024-2026 (Future funding pending)

Species Status: Taylor's checkerspot butterfly is listed as Endangered under the U.S. Endangered Species Act; golden paintbrush *(Castilleja levisecta)* was delisted from the Endangered Species Act in 2023 but remains a state-listed Endangered species in Oregon.

Project Summary: In 2024 IAE initiated a project in partnership with Ecostudies Institute to evaluate microsite effects on hostplant phenology and vigor across the range of Taylor's checkerspot butterfly. Host plants utilized by this butterfly include golden paintbrush (*Castilleja levisecta*), harsh paintbrush (*Castilleja hispida*), and plantain (*Plantago lanceolata*).

Plots will be established at nine sites across the range of the species, three each in the North South, South Sound, and Oregon. Each site will have plots established in four microsites, to capture the variability present at each site; with five replicates in each microsite type. Plant vigor, phenology, as well as temperature, and soil moisture will be measured to evaluate differences in microsites.

In order to reach recovery of this species, host plant introduction or augmentation will be necessary. This study will help to inform management actions to support this endangered butterfly species.

30. Willamette Daisy Establishment

Volunteer Cameron Johnson with Willamette daisy (left), Willamette daisy (center), treatment plot in the foreground with control plot in the background (right). Photos by Denise Giles.

Partner: Bureau of Land Management Northwest Oregon District

Project Timeline: 2020-2025

Species Status: Willamette daisy (*Erigeron decumbens*) is a state and federally listed Endangered species and is endemic to the Willamette Valley.

Project Summary:

In partnership with the Northwest District BLM, IAE has established plots at two sites, Vinci and Balboa, in the West Eugene wetlands to evaluate management treatments to improve seedling establishment of Willamette daisy (*Erigeron decumbens* var. *decumbens*). Plots were established in the spring of 2020 and treatments were implemented in the fall of 2021. Four management treatments tested include 1) burn, 2) burn + glyphosate, 3) glyphosate, 4) control; all plots were seeded with Willamette daisy in the fall of 2021 after treatments had occurred at a rate equivalent to 10 lbs/acre.

In 2022- 2025, there were significantly more seedlings in the burn + glyphosate treatment over all other treatments ($p<0.05$). The response of the plant community was more nuanced, with native forb cover higher in the burn + glyphosate treatments compared to other treatments and other plant functional groups responding variably depending on site and starting composition: Despite initial improvement in plant community following treatment, by the third year post-treatment plant community was trending back towards starting conditions – indicating that even in prairies in relatively good condition, that seeding of a native seed mix (and not just one species) following treatment is important to improve habitat quality.

31. Willamette Valley Pollinator Project

Native bee species pollinating prairie plants (left, right) and pollen supplementation on Kincaid's lupine (center). Photos by IAE staff.

Partner: US Army Corps of Engineers & Bureau of Land Management, Eugene District Office

Project Timeline: 2019-2026

Species Status: This project involves pollinator-related work with Willamette daisy (*Erigeron decumbens*), Kincaid's lupine (*Lupinus oreganus*), and golden paintbrush (*Castilleja levisecta*). Willamette daisy is federally listed as Endangered, Kincaid's lupine is federally listed as Threatened, and golden paintbrush was federally delisted in 2023 but remains state listed as Endangered.

Project Summary: Understanding native pollinating insects and their relationships with plant species is crucial to promoting intact prairie ecosystems for conservation and restoration. Conservation of endangered plants may rely on successful habitat management that includes protection of pollinators. Information on 1) the importance of pollinators for plant reproduction and 2) the identity and habitat requirements of those pollinators can directly assist land managers with priority recovery actions. In 2025 we conducted network surveys at four sites, with sites ranging from three years of data collection (Dorena East Wildlife Area, new site in 2023) to seven years (Fisher Butte). We conducted pollen supplementation experiments on Kincaid's lupine and golden paintbrush at four different sites for each species. These experiments can elucidate how effective background pollination rates are to flowers supplemented with pollen by comparing seed set.

32. Yamhill Haul Fender's Blue Butterfly Roadside Monitoring

Fender's blue butterfly basking on the road (left), logging truck passing by Fender's habitat (center), dust on Kincaid's lupine leaves at roadside site (right). Photos by Jessica Ruff.

Partner: Bureau of Land Management (BLM) Northwest Oregon District, Tillamook Field Office

Project Timeline: 2023 - 2028

Species Status: Fender's blue butterfly (*Icaricia icarioides fenderii*; FBB) is a federally Threatened (recently downlisted from Endangered) species that relies on its host plant, Kincaid's lupine (*Lupinus oreganus*), which is also federally Threatened.

Project Summary: In 2023, IAE renewed a partnership with the Bureau of Land Management (BLM) Northwest Oregon District, Tillamook Field Office to continue the project of monitoring Fender's blue butterflies inhabiting roadside patches of Kincaid's lupine in Yamhill County. These species co-occur in publicly owned areas along roadsides and the populations extend into privately-owned areas. We surveyed public roadsides for Fender's blue butterfly before, during, and after the flight period to determine the actual flight dates and provided real-time data to the BLM. The objective of this project is to inform BLM hauling operations. Fender's blue butterfly observation numbers were similar to previous years and vehicles driving along gravel roads produced substantial dust on Kincaid's lupine foliage and racemes.

33. Taylor's Checkerspot Reintroduction Effectiveness Study

TCB larvae release (left), TCB larvae on English plantain (center), TCB butterfly (right). Photos by Jessica Ruff

Partner: US Fish and Wildlife Service, Greenbelt Land Trust, Coffee Creek Correction Facility butterfly technicians

Project Timeline: 2024 - 2029

Species Status: Taylor's checkerspot butterfly (*Euphydryas editha taylori;* TCB) is listed as Endangered under the U.S. Endangered Species Act.

Project Summary: In 2025, IAE conducted an enclosure study with Taylor's checkerspot butterfly at Bald Hill Farm in Corvallis, Oregon. This species inhabits only two other sites in Oregon, and more information is needed to guide reintroduction efforts. The objective of this study is to assess the survival rate of the various life stages during reintroduction and to determine the habitat needs at each life stage.

Larvae and pupae were reared by butterfly technicians at the Coffee Creek Correctional Facility and then released into mesh tent enclosures in three different habitats at Bald Hill Farm. In total, 547 immature Taylor's checkerspot butterfly were placed in 26 enclosure tents, and the enclosures were monitored as the larvae fed on one of their host plants, English plantain (*Plantago lanceolata*) and developed into pupae. When a butterfly emerged, IAE recorded information about each individual, marked the wings with a unique code, and released the butterfly. The butterflies were then resighted to determine survival and behavior. Overall, 175 adult butterflies emerged, resulting in a 32% eclosion rate. In addition, five wild butterflies were captured, indicating that the reintroduction effort last year succeeded! The effects of various habitat variables will be analyzed to better understand where to reintroduce Taylor's checkerspot butterfly in the future and to determine restoration strategies to create ideal habitat for the species.

2025 Conservation Research Staff

Scott Harris (he/him)
Conservation Research Program Director
Employee since June 2021

Denise Giles (she/her)
Conservation Research Ecologist
Employee since January 2009

Christina Mitchell (she/her)
Conservation Research Ecologist
Employee since May 2022

Laura Estrada (she/they)
Conservation Research Ecologist
Employee since March 2021

Jessica Ruff (she/her)
Conservation Research Ecologist
Employee since March 2024

Claire Rubens (she/her)
Conservation Research Technician
Employee since April 2023

Tom Kaye
Chief Scientist
Employee since 1999

2025 Seasonal Conservation Research Staff

2025 staff, left to right. Top row: Anna Merzenich, Christina Mitchell, Paris Coleman, Claire Rubens, Svea Bruslind, Laura Estrada, Scott Harris. Middle row: Jessica Ruff, Denise Giles. Bottom row: Truman Krafsky, Melanie Birch, Claire Massaro, E Redick, Leo Case, (missing) Annie Lamas

Our seasonal staff play an indispensable role in the success of our work. Throughout the 2025 field season, these dedicated individuals were at the forefront of many of the projects highlighted in this report. Their efforts not only advanced our conservation goals but also allowed them to develop valuable skills and experiences that will serve them as the next generation of environmental stewards. We are profoundly grateful for their hard work, passion, and commitment to making a difference.

Conservation Research Crew Lead

- Melanie Birch

Conservation Research Crew Members

- Anna Merzenich
- Truman Krafsky
- Leo Case
- Svea Bruslind
- Annie Lamas

Willamette Valley Pollinator Crew Lead

- Claire Massaro

Willamette Valley Pollinator Crew Members

- E Redick
- Paris Coleman

2025 Apprenticeship in Science and Engineering (ASE) Interns

2025 ASE Interns Emme Obermire and Cole Hanson

Since 2010, IAE has annually hosted high school interns through the Apprenticeship in Science and Engineering (ASE) program. ASE connects motivated high school students with mentors in science, technology, engineering, and math (STEM) pre-professional internships. Internships are eight-week, full-time summer positions.

In 2025, IAE hosted two students with funding provided by the Native Plant Society of Oregon (NPSO). Cole Hanson (West Albany High School) and Emme Obermire (Crescent Valley High School), both juniors at the time of their internship, were mentored by Denise Giles. Both students contributed to field work for a variety of research and monitoring projects around the Willamette Valley. Cole's project investigated the relationship between soil moisture and elevation in Taylor's checkerspot butterfly habitat. Emme tackled the complex topics of assisted migration and climate change. Both students presented their results at the ASE student symposium in August and will present at NPSO in October 2025.