BEFORE THE SECRETARY OF THE INTERIOR

PETITION TO LIST THE THIN-LEAVED PEAVINE (*LATHYRUS HOLOCHLORUS*) UNDER THE ENDANGERED SPECIES ACT AND TO CONCURRENTLY DESIGNATE CRITICAL HABITAT

Credit: Christine Williams, Mackenzie Cowan, Sandra Miles, Sally Villegas, and West Eugene Wetlands staff.

CENTER FOR BIOLOGICAL DIVERSITY

April 29, 2025

Notice of Petition

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Pursuant to Section 4(b) of the Endangered Species Act ("ESA"), 16 U.S.C. § 1533(b); Section 553(e) of the Administrative Procedure Act ("APA"), 5 U.S.C. § 553(2); and 50 C.F.R. § 424.14(a), the Center for Biological Diversity hereby petitions the Secretary of the Interior, through the United States Fish and Wildlife Service ("FWS" or "Service"), to protect the thin-leaved peavine (*Lathyrus holochlorus*) as a threatened or endangered species under the ESA.

FWS has jurisdiction over this petition. This petition sets in motion a specific process, placing definite response requirements on the Service. Specifically, the Service must issue an initial finding as to whether the petition "presents substantial scientific or commercial information indicating that the petitioned action may be warranted." 16 U.S.C § 1533(b)(3)(A). FWS must make this initial finding "[t]o the maximum extent practicable, within 90 days after receiving the petition." *Id*. If FWS makes a positive initial finding, it must then determine within 12 months after receiving the petition whether the petitioned action is warranted, and if so, the Secretary shall "promptly" propose to implement the listing action with a general notice. 16 U.S.C. § 1533(b)(3)(B). Finally, the Secretary shall finalize the regulation to implement their listing determination "within the one-year period beginning on the date on which general notice is published." 16 U.S.C. § 1533(b)(6)(A). The petitioner also requests that critical habitat be designated for thin-leaved peavine concurrently with the species being listed, pursuant to 16 U.S.C. § 1533(a)(3)(A) and 50 C.F.R. § 424.12. References cited in this petition will be available through Dropbox at the following link: *Lathyrus holochlorus* literature cited.

The Center for Biological Diversity ("Center") is a nonprofit, public interest environmental organization dedicated to the protection of imperiled species and the habitat and climate they need to survive through science, policy, law, and creative media. The Center is supported by more than 1.7 million members and online activists across the country. The Center works to secure a future for all species, great and small, hovering on the brink of extinction. The Center submits this petition on its own behalf and on behalf of its members and staff with an interest in protecting the thin-leaved peavine and its habitat.

Submitted this 29th day of April, 2025.

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Executive Summary

Thin-leaved peavine (*Lathyrus holochlorus*) is a flowering, climbing plant which is found only in the Willamette Valley of western Oregon and at one site in adjacent southern Washington. This plant dwells in the forest edge habitats of prairies and oak savannas, ecosystems which once occupied half of the Willamette Valley but today have been reduced to less than 2%. At the federal and state levels, the thin-leaved peavine is recognized as being a species of concern due to its greatly reduced habitat, low numbers, restricted range, and many unprotected occurrences. Thin-leaved peavine was recently state-listed as Endangered in Oregon, but the state of remaining habitat and populations demands greater protections.

Today, most of thin-leaved peavine's habitat has been urbanized, converted to agriculture, or progressed to forestland, leaving thin-leaved peavine to grow mainly along roadsides and fencerows. These roadside habitats leave native plants vulnerable to mowing, herbicide spraying, and road maintenance projects. Thin-leaved peavine is threatened more broadly by the expansion of invasive species, declining pollinator populations, climate change, and projected human population growth in the Willamette Valley, and is perilously close to extirpation in Washington due to the small, isolated condition of the state's singular population. An estimated 30% of historical observances of this species have been extirpated, many of those extirpations occurring within the last several decades, and local extirpations and losses have been observed due to decision-making by both private landowners and federal agencies, indicating that few populations of this narrow endemic are adequately protected by present regulations.

Thin-leaved peavine is imperiled across a significant portion of its range. This petition seeks Endangered Species Act protection and critical habitat designation for the species, as thin-leaved peavine is vulnerable to habitat loss, inadequate regulations, and a suite of other demographic, ecological, and anthropogenic factors. The U.S. Fish and Wildlife Service must take immediate action to ensure that thin-leaved peavine will be protected, today and in the future, within the ever-changing natural and built landscapes of the Pacific Northwest.

Introduction

The Willamette Valley in Oregon is the southernmost reach of the Willamette Valley-Puget Trough-Georgia Basin (WPG) ecoregion, which extends northwards through Washington and into British Columbia. Though flanked by mountains and surrounded by coniferous forests, this region harbors flat lands and a mild, moist climate. Annual flooding of the Willamette River has created deep, rich soils, and low-intensity grass fires set by the native Kalapuyans maintained open spaces and prevented the spread of forestland for thousands of years (Dunwiddie and Alverson 2020, 498; USFWS 2017, 2).

In the mid-1800s, the European footprint in the Valley began to grow, with settlers converting flat grasslands into productive agricultural land and pushing out the Kalapuyan peoples who lived there. In 1840, it is estimated that oak savanna and prairie habitats comprised nearly half of the land; today, the valley floor is 95% agriculture (Wiley 2001, 6) and less than 2% of native grassland remains, with half of that land fragmented into small parcels of less than 25 ha (0.25 sq. km) (Dunwiddie and Alverson 2020, 498). As a result of this devastating and swift loss of habitat, a dozen Willamette Valley species have already required listing under the federal Endangered Species Act (USFWS 2017, 3). One of those species, Bradshaw's lomatium (*Lomatium bradshawii*) was delisted in 2021, only to have its main population stronghold—millions of plants occurring at one site on privately-owned land—plowed over for the creation of a golf course in 2024 (Neumann 2024). A growing human population in the Willamette Valley, presently around 2.7 million and expected to rise to 4 million by 2050 (USFWS 2017, 1), will continue to create conflicts between human land needs and habitat conservation. With only 9% of remaining prairie and oak savanna habitats under some type of conservation ownership (Dunwiddie and Alverson 2020, 498), existing populations of rare and imperiled plants must be given formal conservation designations to prevent further irreversible losses.

Thin-leaved peavine (*Lathyrus holochlorus*) grows in transitional habitats at the forest's edge, relying on the dappled light and readily available climbing substrate provided by trees and shrubs. With the destruction of most of the Willamette Valley's oak savanna and prairie habitats, this habitat is far less available than it once was. Today, most populations of thin-leaved peavine grow by the side of the road or along fencerows because the light availability provided by the clearing of forestland mimics the light availability at natural edge habitats. Unfortunately, roadside populations are vulnerable to anthropogenic activity and are often poorly protected because normal roadside maintenance—such as mowing and herbicide spraying—are imprecise and have large areas of effect. Other threats, including human population growth and urbanization, pollinator declines, invasive species, and small population sizes are poorly targeted by current state and federal policies, and multiple federal agencies have shown a willingness to allow infrastructure projects to affect this plant's small and fragile populations. In order to prevent thin-leaved peavine from further declines in Oregon and from imminent extirpation in Washington, increased protections for the plant and its habitat must be implemented.

Biology

I. Taxonomy

Kingdom: Plantae
Phylum: Anthophyta
Class: Dicotyledoneae
Order: Fabales
Family: Fabaceae
Genus: *Lathyrus*

Species: *Lathyrus holochlorus* (Piper) C.L. Hitchc.
Thin-leaved peavine

Thin-leaved peavine is a perennial member of the pea family (Fabaceae). Its taxonomy is accepted by the scientific community, including both states in its range (Washington Department of Natural Resources and Oregon Department of Agriculture), the USDA, the Consortium of Pacific Northwest Herbaria, and others.

II. Description

Credit: Joe Arnett, WNHP

Thin-leaved peavine is a perennial rhizomatous herb. These delicate plants grow to be 30-100 cm in length and produce clusters of whitish flowers between April and June, although populations in cultivation may not flower every year (Alaica et al. 2023, 3). Older flowers in the cluster turn orange as they age and senesce, creating an attractive gradient from the bottom up towards the brightest, youngest flowers at the top of the stalk.

The stem may be smooth or sparsely furred. It produces stipulate compound leaves in an alternating pattern, with each leaf comprising 3-6 pairs of leaflets and terminating in a climbing tendril. The leaflike stipules, from which each leaf emerges, are ovate or ovate-lanceolate with coarse, wavy margins. The leaflets themselves are green on top, paler underneath, and ovate-oblong, ovate, or elliptic with dentate or dentate-lobed margins. Tendrils may be simple, branched, or bristle-like (OregonFlora 2019).

Thin-leaved peavine grows stalks of 5-15 flowers, each of which is cupped by a toothed calyx with furred margins. The calyx is 9-12 mm long, the lower teeth approximately twice as long as the upper teeth and the lowest section around as long as the tube of the flower. Flowers are 13-17 mm long. The banner is 14-17 mm long, moderately reflexed, with a greenish-cream color on the

outside and a purplish lining; the wings are a pale lemon color and around the same length as the banner; the keel is white, slightly shorter than the wings, and has a recurved tip. The reproductive style is flattened and hairy only on one side. The pea pods produced by this plant are brownish, 3-5 cm long and 4-7 mm wide (OregonFlora 2019).

Thin-leaved peavine is capable of reproduction both through seed production and rhizomatous growth. This species is self-incompatible, meaning that viable seeds can only be produced when a flower receives pollen which came from a different genetic individual (Silvernail 2013, 4).

III. Habitat

Source: Currin et al. (2008).

Habitat for thin-leaved peavine includes upland prairie, creek banks, forest edges, oak savannas, and grasslands, primarily in the Willamette Valley of Oregon and associated southern Washington (OregonFlora 2019). This region harbors some of the wettest temperate grasslands in the world, with southern Washington and the Willamette Valley receiving 100-120 cm of precipitation annually. The climate is generally Mediterranean, with most precipitation occurring during mild, wet winters while the summer remains dry and warm (Dunwiddie and Alverson 2020, 491).

Today, many of these original habitats have been severely fragmented or lost, leaving thin-leaved peavine to occupy remnant or replacement habitat which can provide the same climbing structure and light availability. A survey by Currin et al. (2008) divided their observations of extant populations into two distinct habitat types: fencerows and roadside vegetation, where the peavine grows up through the vegetation very close to the fence; and forest edge, where it can be found growing amidst shrubs at the bases of trees (p 98). Commonly associated species include Oregon white oak (*Quercus garryana*), bigleaf maple (*Acer macrophyllum*), Douglas fir (*Pseudotsuga menziesii*), common snowberry (*Symphoricarpos albus*), Nootka rose (*Rosa nutkana*) and poison oak (*Toxicodendron diversilobum*) (OregonFlora 2019).

Thin-leaved peavine habitat is often vulnerable to encroachment from woody native species or from invasive species such as Himalayan blackberry (*Rubus bifrons*) and annual grasses (Marshall & Brown 2023, 24). Before European colonization, many of this region's open habitats were maintained by a combination of natural wildfires and low-intensity, high-frequency controlled burns set by the Kalapuyan peoples of the Willamette Valley (Dunwiddie and Alverson 2020, 497; USFWS 2017, 2). Fires kept the prairies from undergoing ecological succession to forestland, and without fire, some areas of thin-leaved peavine habitat today are now vulnerable to this type of succession.

IV. Distribution

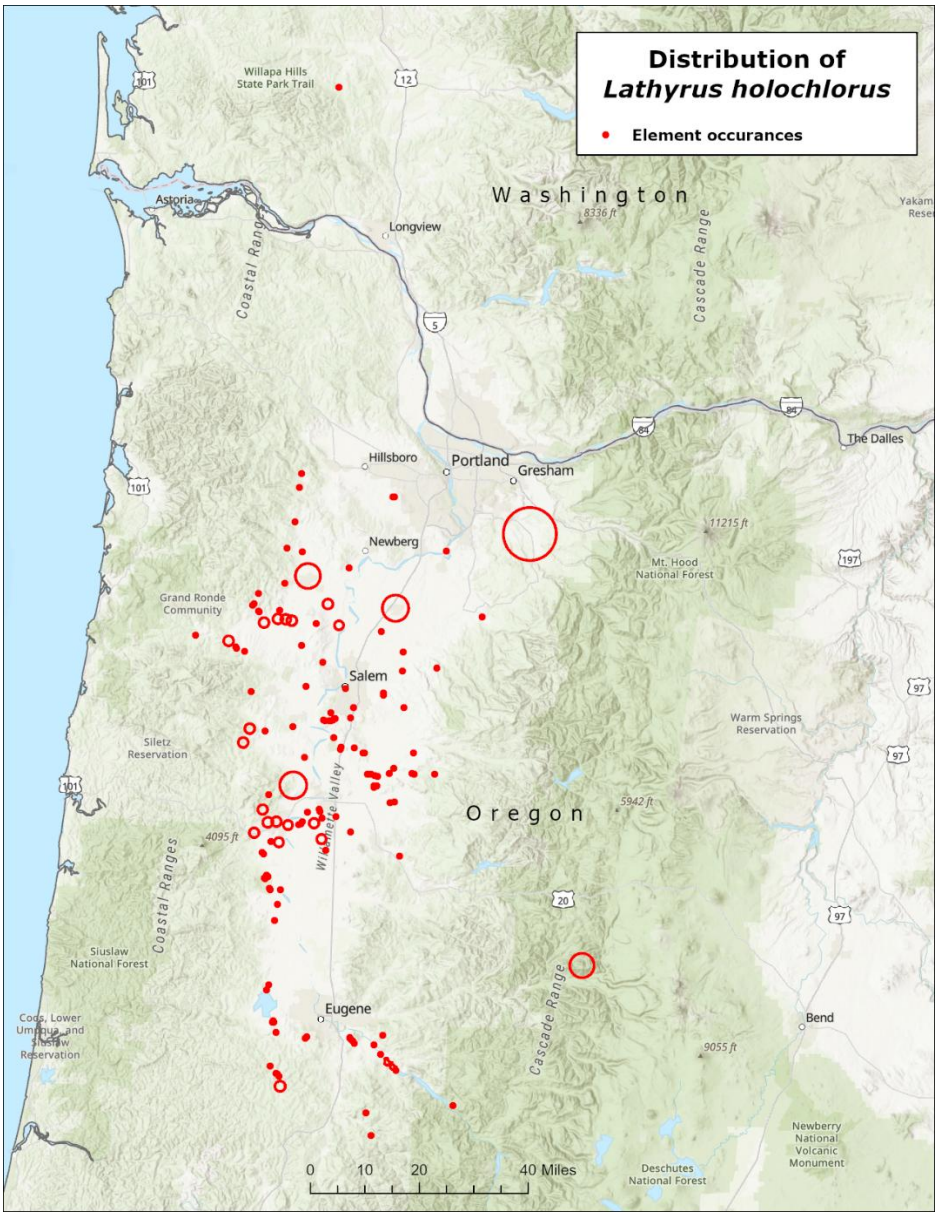

Figure 1. Map of known thin-leaved peavine occurrences from Marshall and Brown (2023) and WNHP (2025).

Thin-leaved peavine is endemic to Oregon and Washington, though its distribution in Washington is now limited to a single population in Lewis County (WNHP data). The Oregon distribution is much broader in comparison, primarily spanning parts of the Willamette Valley west of the Cascade Mountains and including Benton, Clackamas, Douglas, Lane, Linn, Marion, Polk, Yamhill, and Washington counties (Silvernail 2015, 7).

V. Population status

Thin-leaved peavine's numbers and range are greatly reduced from historic size. Numerous populations which were seen as recently as the 1970s and 1980s have been locally extirpated, and many others remain only as relic populations (Marshall and Brown 2023, 8-21). This observed and ongoing loss is of considerable concern because the species is proving exceptionally difficult to cultivate and introduce to new sites, even those with seemingly ideal conditions (see Lebo and Esterson 2022 and earlier Institute for Applied Ecology reports). It is becoming apparent that, at present, conservation of extant populations is of paramount importance for the continuation of the species.

Populations of thin-leaved peavine are counted in "stems", referencing the number of points where a stem emerges from the soil (See Silvernail 2014 and other IAE reports). This method, while broadly accepted, may produce population numbers that are larger than the true number of genetic individuals because it cannot account for the fact that thin-leaved peavine has a rhizomatous growth pattern which produces multiple aboveground stems as part of a single plant. The greatest worry with this growth habit is that some of the smallest known "populations" are likely to be no more than a single genetic individual. These one-plant populations will be unable to produce viable seed and will only persist as long as that plant lives (Silvernail 2013, 4).

Oregon

The vast majority of thin-leaved peavine populations are located in Oregon. A 2023 assessment of the species by the Oregon Department of Agriculture (ODA) found that thin-leaved peavine populations within the state are threatened by habitat loss, degradation, and fragmentation, small population size, inadequate protections, pollinator declines, invasive species, and difficulties with *ex situ* cultivation (Marshall and Brown 2023). Their report drew in part from an ongoing, decade-long project by the Institute for Applied Ecology (IAE) and the BLM which is aimed at conserving thin-leaved peavine and preventing the need for state or federal ESA listing (Celis 2019, 4). Beginning in 2012, the project has included surveys of known historic locations, seed collection and storage, germination and propagation work, and attempted establishment of cultivated seedlings at new sites (Ottombrino-Haworth and Silvernail 2014). This work has been critical in expanding the working knowledge of the ecology and life cycle of thin-leaved peavine.

After surveying historic locations, IAE found that more than 40% of previously-known populations were extirpated (Silvernail 2015, 6). Much of the species' historic forest edge habitat was likely lost to agriculture and development, leaving nearly half of current occurrences along roadsides (Marshall and Brown 2023, 5) where they are subjected to mowing, herbicide spraying, runoff from roads, and other similar anthropogenic stressors (p 23). Habitat loss remains a concern, such as with a road maintenance project in 2006 which eliminated existing thin-leaved peavine habitat and was re-seeded with competitive grasses (p 24). Similarly, the US Department of Energy reported that three occurrences of thin-leaved peavine known from a site

in Linn County have not been observed since 1979, and that the area's history of industrial and agricultural development indicate that the species is "highly unlikely" to be present any longer (DOE 2010, 23).

Many extant populations are precariously small, with 32% having fewer than 10 stems (Silvernail 2015, 7) and around 61% having fewer than 20 stems (Marshall and Brown 2023, 5). Only two populations appear to have greater than 500 stems (p 25). As part of an effort to expand population sizes and establish thin-leaved peavine at ecologically ideal sites, the IAE outplanted seedlings grown at the Corvallis Plant Materials Center to 4 different sites in 2016. Despite annual monitoring and conservation efforts, these seedlings had a 60% survival rate after a year (in 2017) and a 12% survival rate by 2021, with only moderate vigor and no sexual reproduction seen in those surviving seedlings (Lebo and Esterson 2022, 7). The issues IAE has had with successful propagation and outplanting were factors in ODA's assessment, given that a plant which is difficult to cultivate has additional barriers to successful restoration (Marshall and Brown 2023, 26).

With these findings, and despite the IAE's ongoing and dedicated work, the ODA determined that it was necessary to list thin-leaved peavine as Endangered within the state in 2023 (requiring the IAE to amend the project goal as "to prevent a federal listing and promote its downlisting in the state of Oregon"). Because Oregon harbors nearly all thin-leaved peavine remaining today, this is an indication that federal listing may be warranted to ensure that populations on federal land are given sufficient protection and management.

Washington

Thin-leaved peavine is presently known in Washington from a single population of 30 plants, occupying a ~3.3m^2 patch of land on private property in Lewis County. Thin-leaved peavine in Washington is demonstrably threatened by habitat loss, herbicide spraying, encroachment of invasive species, and issues which arise from a population being small and geographically isolated.

In 1994, the total number of thin-leaved peavine stems in the state was reported to be 425, all located in the Boistfort area as a single population with two subpopulations (Cemetery Hill and Mallonee Farm). Unfortunately, further surveys between 1994 and 2018 document a progressive decline in habitat quality and availability for the Cemetery Hill subpopulation (WNHP 2025), and ultimately a massive decline in population size. Cemetery Hill plants in 1994 had already been negatively impacted by aerial herbicide spraying (Fertig 2020, 57). By 2010, the peavine was being crowded out by the invasives *Cytisus scoparius* (scotch broom) and *Festuca arundinacea* (tall fescue). In 2018, more Cemetery Hill habitat was apparently lost due to an expansion of farming, and no thin-leaved peavine was observed. As of 2019, only 25-30 plants, all of them at Mallonee Farm, are reported to remain (WNHP 2025).

The apparent loss of the entire Cemetery Hill subpopulation is itself a poor omen for the persistence of thin-leaved peavine in Washington, but equally concerning is the size of the Mallonee Farm subpopulation which remains—30 plants, a mere 7% of the already-small population documented in 1994. This 93% decline occurred in only 16 years, and while the Mallonee Farm subpopulation was being "protected under current management" as of 2018 (WNHP 2025), any further disturbances could be enough to snuff out the subpopulation—and, as a result, cause the extirpation of this species in Washington.

As the population is so greatly reduced, steps to maintain local genetic diversity and habitat availability are imperative. This single known population is extremely isolated (~75 mi) from the nearest occurrences of thin-leaved peavine in Oregon, placing it well outside of pollinator forage distances or any other reasonable means of genetic connectivity with the rest of the species; loss of even a few plants could lead to genetic bottlenecks and ultimately collapse the population's reproductive potential.

Threats

Under the ESA, 16 U.S.C. § 1533(a)(1), FWS is required to list thin-leaved peavine if it is in danger of extinction or likely to become endangered across all or a significant portion of its range. This species must meet at least one of the factors enumerated in section 4(a):

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;
(B) Overutilization for commercial, recreational, scientific, or educational purposes;
(C) Disease or predation;
(D) The inadequacy of existing regulatory mechanisms;
(E) Other natural or manmade factors affecting its continued existence.

16 U.S.C. § 1533(a)(1)(A)-(E); 50 C.F.R. § 421.11(c)(1)-(5).

The review and determination by FWS must be based solely on the best scientific and commercial data available.

Thin-leaved peavine is threatened by three of the ESA listing factors: (A) Habitat loss and degradation due to urban expansion, agriculture, and ecological succession; (D) A lack of existing federal protections and paucity of effective state regulations; and (E) Other natural or manmade factors, including climate change, invasive species, small populations, pollinator declines, and difficulties with *ex-situ* cultivation.

Source: OregonFlora.

Present or threatened destruction, modification, or curtailment of habitat

The prairies and oak savannas where thin-leaved peavine is found are one of the most imperiled ecosystems in North America, ranked as 'critically endangered' by Noss et al. (1995, p 77). Though once covering half of the Willamette Valley ecoregion (Boyer 2011, 278), these habitats have declined by 90-99% due to agricultural conversion, urban development, and fire suppression (Dunwiddie and Alverson 2020, 497). Lands which were once prairie are now primarily agricultural, and remaining prairies are largely fragmented and unprotected (p 498).

Urban development and roadsides

Many remaining thin-leaved peavine populations are threatened by their proximity to urban development and roadsides. Anthropogenic activity along these roads can degrade or eliminate habitat for this species and lead to local extirpations.

Urbanization is the source of approximately 10% of prairie loss in the Willamette Valley (Dunwiddie and Alverson 2020, 498), and today, roadside populations account for more than 40% of known thin-leaved peavine occurrences (Marshall and Brown 2023, 5). This environment may support thin-leaved peavine because it replicates the dappled light and climbing substrate

available in the species' native forest edge habitat, but conditions at these sites also expose the peavine to habitat loss and degradation from road expansion and maintenance projects. Roadways can also facilitate the vehicle-borne spread of invasive plant species, placing the adjacent habitats at particular risk of invasion (Blakeley-Smith and Kaye 2008, 3).

Mowing and herbicide use are common road maintenance activities which pose a risk to many thin-leaved peavine populations (Marshall and Brown 2023, 23; Currin et al. 2008, 88-89; T. Kaye, pers comm 7 March 2025). These activities are sometimes used to control invasive species and may even be used to maintain thin-leaved peavine habitat (see Marshall and Brown 2023, 22). Unfortunately, improper application can damage the fragile peavine as well. One schedule for mowing and habitat maintenance of a thin-leaved peavine population (non-roadside) in Albany, Oregon suggested conducting mowing only every three years, in the fall, to ensure the plants at that site would have time to flower, fruit, and drop seeds before the mowing took place (Marshall and Brown 2023, 22). In other situations, where habitat is not being managed for the persistence of thin-leaved peavine, these regular maintenance activities could easily disrupt or destroy small, fragile roadside populations if their presence is unknown. Non-repeat, fixed projects such as road expansions or repairs can also threaten thin-leaved peavine populations in their vicinity. A 2006 maintenance project destroyed part of a thin-leaved peavine habitat in Oregon, and an expert on the species has stressed that road expansion in sensitive habitats must be avoided to adequately protect the species (Marshall and Brown 2023, 24).

Even protected peavine populations can be vulnerable to these stressors when they occur on a boundary. For example, a population of thin-leaved peavine is known on the Ankeny National Wildlife Refuge in Marion County; unfortunately, it is located along the fencerow which separates the NWR from a road, leaving the population vulnerable to road maintenance activities even though it should be protected (Currin et al. 2008, 88).

A growing human population in the Willamette Valley will continue to create conflicts between human land needs and habitat conservation. Currently, the population is expected to be 4 million by 2050 (USFWS 2017, 1), but if the Willamette Valley is spared from some of the worst effects of climate change, there is concern that the region—and the PNW at large—may become a climate refuge for people fleeing droughts and unlivable heat in more southern parts of the US (USFWS 2017, 7). In this event, population growth in the Willamette Valley may exceed projected numbers, and the region will require even more infrastructure, resources, and space be available for human residents. Road expansion projects, agricultural conversion, and other land use changes will become a worsening threat for thin-leaved peavine.

Agricultural expansion

Around 70% of prairie loss and 45% of oak savanna loss in the Willamette Valley has been attributed to agricultural conversion (Dunwiddie and Alverson 2020, 498). This initial and

devastating loss of habitat, which reduced these ecosystems to 1-2% of their former extent (Boyer 2011, 278), is part of why thin-leaved peavine is so vulnerable today.

Agricultural expansion remains a threat to some remaining populations on private property. Due to the small number of individuals in many thin-leaved peavine populations, even small-scale land use changes on farmland can extirpate local populations. One of Washington's two subpopulations, located at Cemetery Hill, was apparently destroyed by expansion of blueberry farming in the early 2000s (WNHP 2025; WNHP 2021) and a population in Oregon was destroyed in 2008 after a farmer removed the hedgerow where it was growing (Boyer 2011, 280).

Inadequacy of existing regulatory mechanisms

Most populations of thin-leaved peavine are on public lands, either federal or non-federal, and a lack of regulations is likely to have contributed to the species' decline (Marshall and Brown 2023, 26). Although the state of Oregon has now listed thin-leaved peavine as Endangered within the state, this still leaves a number of populations on federal lands without adequate protections, and populations on state lands remain difficult to protect.

Federal

Thin-leaved peavine is listed as a Species of Concern by USFWS, a Special Status species by USFS, a Sensitive Species by the BLM, and a Priority Species by the joint USFS-BLM Interagency Special Status and Sensitive Species Program (ISSSSP). The BLM is also heavily involved with, and providing much of the funding for, the Institute for Applied Ecology's ongoing conservation efforts. Unfortunately, this level of concern from federal agencies does not translate to meaningful protections for thin-leaved peavine on federal lands. These regulations also do not protect thin-leaved peavine from climate change, invasive species, pollinator declines, or impacts on private land.

USFWS chose to exclude thin-leaved peavine when it published a Recovery Plan for western Oregon and southwestern Washington prairie species in 2010. The agency stated at the time that "*Lathyrus holochlorus* was originally included among the nonlisted species of conservation concern covered in the recovery plan, but there is so little published information about its ecology and locations that we decided we could not adequately address it in the recovery plan" (USFWS 2010, p G-5). While this may have been true in 2010, information on thin-leaved peavine has become much more readily available due to the long-running IAE project on the species. Their results have helped to paint a clearer picture of thin-leaved peavine's present-day status, and to show that it has been extirpated from a number of historic sites; that many populations are small enough to be inviable; and that the establishment of viable populations at suitable sites is exceptionally difficult. Multiple federal agencies have failed to adequately

protect thin-leaved peavine where it occurs on their lands or overlaps with projects under their purview.

Bureau of Land Management (BLM)

Areas of Critical Concern: Thin-leaved peavine is present in several BLM-managed ACECs in Oregon. The ACEC designation is mostly applied to areas with particular ecological, cultural, or scenic value; unfortunately, these are often multi-use areas which may ultimately neglect the natural resources for which they are designated. ACECs are frequently ill-represented in their associated Resource Management Plans (RMPs) (Sheldon and Baldwin 2017, 51) and critical resource management information for these sites is often left out of documentation (p 52). Many RMPs do not address whether or not the authorized resource use activities are actually in line with the reasons for which an ACEC was designated (p 54).

The Willamette Valley Prairie Oak and Pine Area ACEC is a series of small parcels totaling around 6.7 square km in an area just southeast of Eugene, OR. The parcels comprising this ACEC were selected because they contained or had the potential to contain sensitive species, including thin-leaved peavine (BLM 2024, 7). The population of thin-leaved peavine in this ACEC has not been surveyed since 2003, when 7 plants were counted (Marshall and Brown 2023, 20), and such a small number suggests that this may be one single plant rather than a population (Silvernail 2013, 4). The Dorena Prairie ACEC has harbored thin-leaved peavine since 2016, when 200 plugs across two sites were planted as part of the BLM-IAE collaboration. At one of these sites, the seedling survival rate was 0% by 2023; at the other, 22 plants (11% of total) have survived (Alaica et al. 2023b, 3; BLM 2024, 5).

The 1994 Salem District RMP also included the Yampo potential ACEC, a site which contained thin-leaved peavine and another BLM sensitive species (p 239). Unfortunately, the 2015 Proposed RMP for Western Oregon eliminated Yampo because thin-leaved peavine had not been observed there since the 1980s, and therefore "relevant and important values no longer [existed]" at that ACEC (BLM 2015, 136). According to Marshall and Brown (2023), there is a BLM-owned site called "Yampo", but little other data is available besides the fact that this population censused at 50 individuals in 1981 and 10 in 2014 (p 10). It is possible that reviews of ACECs for the 2015 Proposed RMP were conducted before the 2014 thin-leaved peavine survey, therefore mistakenly leading BLM officials to believe there was no conservation value held by the Yampo ACEC.

Institute for Applied Ecology outplanting plots: The BLM has been working with the Institute for Applied Ecology on thin-leaved peavine for over a decade. In 2016, 1,000 plugs were outplanted at six sites, including two at Dorena Prairie (Alaica et al. 2023b, 3). Today, survival is between 0 and 22% in these plots. Although the work being conducted by the IAE is extremely valuable for the continuation of thin-leaved peavine as a species, these outplanting plots are

unlikely to sufficiently protect thin-leaved peavine from decline because they have been largely inviable thus far.

Kirk Pond: BLM also has jurisdiction over a population of thin-leaved peavine at Kirk Pond. This site is to the north of Fern Ridge Lake, near the Fern Ridge Dam (see EO 11940 in Marshall and Brown 2023, 40). Information is not available about the date of survey or the population size of thin-leaved peavine at this site (Marshall and Brown 2023, 19). If no monitoring is being conducted on the population and no information is available, protections are unlikely to be sufficient.

Bureau of Reclamation (USBR)

USBR has jurisdiction over one population of thin-leaved peavine, located at Henry Hagg Lake. The first and only Land Management Plan for Henry Hagg Lake, a manmade reservoir under USBR jurisdiction, was published in 2004. It lists thin-leaved peavine as a species of concern which has "not been recorded in the vicinity of Henry Hagg Lake or in Washington County" as of 2001 (USBR 2004, p 54). However, a small population of thin-leaved peavine was recorded here in 2014 as part of the IAE surveys (Marshall and Brown 2023, 8). The USBR has not released an updated Plan since 2004 and thus does not account for this population of thin-leaved peavine. Management goals at Henry Hagg Lake seem to be oriented toward maintaining existing habitat and vegetation; however, if managers are not currently aware of this population of thin-leaved peavine, they will not be able to make decisions with the best available knowledge and ensure its protection.

US Department of Energy (DOE)

In 2014, the Department of Energy approved the Salem-Albany Transmission Line Rebuild Project by the Bonneville Power Administration (BPA) despite findings that one population of thin-leaved peavine, despite being recognized as a USFWS sensitive species, would be impacted due to its proximity to the project area (DOE 2014, 4). No mitigating actions to prevent this loss were discussed in the Final Environmental Assessment for the project. Construction commenced in 2016,[1] so it can be assumed this population has been damaged or lost.

US Fish and Wildlife Service (USFWS) Willamette Valley National Wildlife Refuge Complex

Two populations of thin-leaved peavine occur on USFWS National Wildlife Refuge (NWR) lands in Oregon, one in Ankeny NWR and the other in William L. Finley NWR. The Finley population is made up of as many as eight subpopulations, although only three were relocated in a 2006 survey by Currin et al. (2008, p 94). Two of those populations were extremely small (<10 stems). The Ankeny population is growing along the fencerow which separates the NWR from a road, leaving the population vulnerable to road maintenance activities even though it is partly on

[1] https://www.bpa.gov/learn-and-participate/public-involvement-decisions/project-reviews/salem-albany-trans-line-rebuild. Accessed 6 March 2025.

protected land. One survey found no plants on the NWR side of the fencerow, only the road-facing side (Currin et al. 2008, 93). Sufficient protections for this population will need to be a joint effort between the NWR and Marion County, which has jurisdiction over the road, as mowing and herbicide spraying are both considered risks to this population.

A Comprehensive Conservation Plan (CCP) was published in 2011 for the Willamette Valley NWRs (USFWS 2011). The CCP draws in part from the 2010 USFWS Recovery Plan for western Oregon and southwestern Washington prairie species, which does not include a plan for thin-leaved peavine (USFWS 2010); as a result, thin-leaved peavine is not given adequate consideration in the Willamette Valley NWR CCP, despite occurring on both the Ankeny and Finley NWRs.

In a 2017 report on conservation in the Willamette Valley, the USFWS identified candidate species for conservation targets but did not include thin-leaved peavine, despite its occurrence in two priority habitats (oak savanna and prairie) (see USFWS 2017, D-2). USFWS viewed the current state of land management and conservation in the Willamette Valley to be insufficient for protection of declining species (p. i).

US Forest Service (USFS)

Thin-leaved peavine is presently known to occur at one site in Willamette National Forest near Lookout Point Reservoir (Marshall and Brown 2023, 21). Another occurrence, known from the 1960s in H. J. Andrews Experimental Forest, was determined to be *Lathyrus lanszwertii* instead (USFS 2007, 24).

Thin-leaved peavine is a USFS-listed sensitive species (ISSSSP 2021). Under USFS sensitive species policy, the agency should work to develop and implement management strategies for thin-leaved peavine (USFS 2005, 4) and avoid or minimize impacts to species whose viability has been identified as a concern (p 5). The Resource Management Plan for the Willamette National Forest was published in 1990 and makes no mention of thin-leaved peavine. A road grading project negatively impacted this population in 2006 by altering available roadside habitat (USFS 2007, 24). Impacts to sensitive species, such as this one, are permitted under USFS policy at the discretion of officers with project approval authority as long as such decisions do not "result in loss of species viability or create significant trends toward federal listing" (USFS 2005, 5). This population was censused at 118 stems in 2013 (Marshall and Brown 2023, 21), making it one of the larger known populations, and it remains the only known population on Forest Service land. Protection of this population should be high priority for USFS, as it represents their only current jurisdiction over the health of a listed sensitive species.

US Army Corps of Engineers (USACE)

Fern Ridge Wildlife Area: Thin-leaved peavine here is on the southern end of Fern Ridge Lake, a manmade reservoir formed by the Fern Ridge Dam. The most recent census of this site was in 2013, when there were 136 thin-leaved peavine stems (Marshall and Brown 2023, 19). This site is USACE-owned with a management plan developed by the Oregon Department of Fish and Wildlife and released in 2020 (ODFW 2020). Objective 2.3 within the management plan is to 'protect and enhance 764 acres of upland prairie' (p 50), which will benefit thin-leaved peavine habitat. However, the site surveys which are planned by the USACE for this objective are focused only on federally-listed plant species (p 50). These management practices are well-positioned to do no harm to the known thin-leaved peavine population, but active monitoring should be implemented to ensure that the species continues to persist here.

State and local government

Oregon

In Oregon, many remaining populations of thin-leaved peavine are located along roadsides, which are far from ideal habitat and can be difficult to properly conserve. Roadside vegetation management, either herbicide spraying or mowing, is commonly undertaken to preserve road shoulders and comply with local ordinances at the County level. Benton County has Special Management Areas which limit roadside parking, mowing, and herbicide spraying where rare plants are known to grow,[2] but the efficacy of such SMAs can vary because they rely on awareness and compliance by maintenance workers and the public, which can be difficult to maintain (T. Kaye, personal communication, 7 March 2025).

Washington

The only population of thin-leaved peavine in Washington is on private lands (WNHP 2025), restricting the applicability of state regulations. Further, Washington's State Endangered Species Act does not contain provisions for plants at all (WAC 220-610). The state has little ability to sufficiently protect this thin-leaved peavine population without any formal conservation agreement.

Other natural or manmade factors that affect the survival of the species

Ecological succession

Historically, open grasslands in the Willamette Valley were maintained by a mix of frequent, low-intensity wildfires and controlled burns set by the Kalapuyan peoples (Dunwiddie and Alverson 2020, 497; USFWS 2017, 2). These fires, in part, kept encroaching woodlands at bay and would have ensured that the forest edge habitat where thin-leaved peavine grows was maintained. A long tenure of fire suppression by European settlers in the Willamette Valley altered these regimes, leading to succession from prairie to forestland in around 15% of historic

[2] https://pw.bentoncountyor.gov/smas/. Accessed 10 March 2025.

prairie habitat (Dunwiddie and Alverson 2020, 498). This remains a concern today for some populations of thin-leaved peavine, where control of woody species requires constant, unceasing management (Marshall and Brown 2023, 22).

A compounding issue today is the small size of many remaining prairie fragments. Woody encroachment in small prairie remnants may eventually lead to full conversion into forestland, leaving no appropriate habitat for thin-leaved peavine.

Invasive species

Invasive species are known to present an ever-worsening threat to native plants throughout the American West. In thin-leaved peavine habitat, one of the most significant invaders is Himalayan blackberry (*Rubus bifrons*). This species has invaded large swaths of the Pacific Northwest and is particularly difficult to manage because of its rapid growth and thorny stems. At one site with thin-leaved peavine in Albany (Oregon), constant management was required to keep invasive species out of a manually-opened oak savanna habitat; after management lapsed, blackberry brambles quickly overtook the site and prevented planned herbicide spraying (Marshall and Brown 2023, 22).

Other invasive species of concern include false brome (*Brachypodium sylvaticum*), scotch broom (*Cytisus scoparius*) and tall fescue (*Festuca arundinacea*) (Blakeley-Smith and Kaye 2008, 3; WNHP 2025). Roadside populations of thin-leaved peavine are also vulnerable to further invasions which might be facilitated by the movement of vehicles (Blakeley-Smith and Kaye 2008, 3).

In a study of southwestern Washington prairie fragments, rare plants were commonly found growing in close proximity to populations of non-native vegetation, and occasionally in prairie remnants that were almost entirely dominated by non-native species (Caplow and Miller 2004, 8). These invasive species may alter the availability of light and structure in a way that is hostile to thin-leaved peavine, or they may simply crowd the peavine out and prevent its growth (WNHP 2025). This is a primary threat to several sites surveyed by Currin et al. (2008), including populations at Freeway Lakes Park (p 85) and Muddy Creek (p 86).

Small population size

One study of rare plants found an extirpation rate of 27% over ten years, with highest rates of extinction for the smallest (<100 individuals) and most isolated populations (Matthies et al. 2004, 484). Most populations of thin-leaved peavine are well below 100 individuals, with more than half of currently known populations censused at below 50 stems (Marshall and Brown 2023, 25). Small populations face genetic consequences, including inbreeding and loss of genetic diversity, which can impact long-term fitness and stability at that site and ultimately contribute to stochastic losses (Ellstrand and Elam 1993, 219). Gene flow between populations is limited by

pollinator forage distance, meaning that isolated populations of thin-leaved peavine—particularly those composed of only one or a few genetic individuals—may rarely, if ever, produce viable seeds.

Pollinator declines

Native bumble bees (genus *Bombus*) are the primary pollinators of thin-leaved peavine (T. Kaye, pers comm, 5 February 2025). Unfortunately, bumble bee populations are declining across the United States due to pathogen outbreaks, climate change, pesticide usage, non-native species, and changing land use (Janousek et al. 2023). A loss of the native pollinators on which thin-leaved peavine relies will lead to lower reproductive success, reduce gene flow between populations, and heighten the risk of issues associated with small and isolated populations.

Difficulties with ex-situ cultivation

Cultivation of rare plants in greenhouses or ex-situ planting beds is common in conservation work, either to outplant the seedlings or produce seeds for future restoration use (Maunder 1992). The Institute for Applied Ecology (IAE) has been performing such work for decades, but its Chief Scientist, Dr. Tom Kaye, says that IAE has found thin-leaved peavine to be "much more challenging" than most of the rare plants they have worked on (T. Kaye, pers comm, 5 February 2025). The IAE has been actively working on thin-leaved peavine cultivation since 2013, when they collected seeds from wild populations and began germination tests (Silvernail 2014, 5). Only in 2023—a decade later—did cultivated peavine shoots successfully germinate, grow, and produce viable seeds under IAE care (Alaica et al. 2023b, 4). The difficulties associated with cultivation could arise from habitat suitability, naturally low germination rates, or an unsuitable soil microbiome which lacks certain fungi or bacteria (such as *Rhizobium*) on which the plant relies (T. Kaye, pers comm, 7 March 2025).

Request for critical habitat designation

Critical habitat as defined by Section 3 of the ESA is: "(i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the provisions of section 1533 of this title, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) the specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 1533 of this title, upon a determination by the Secretary that such areas are essential for the conservation of the species." (16 U.S.C. § 1532(5)).

Congress recognized that the protection of habitat is essential to the recovery and/or survival of listed species, stating that: "classifying a species as endangered or threatened is only the first step in ensuring its survival. Of equal or more importance is the determination of the habitat necessary for that species' continued existence... If the protection of endangered and threatened species depends in large measure on the preservation of the species' habitat, then the ultimate effectiveness of the Endangered Species Act will depend on the designation of critical habitat." H. Rep. No. 94-887 at 3 (1976).

The Center requests that the Service propose to designate critical habitat concurrently with the thin-leaved peavine's proposed listing. Given the rarity of available natural, non-roadside habitat today and the future expected human population growth in the Willamette Valley, designating critical habitat will be an important measure in the conservation of thin-leaved peavine.

Conclusion

Thin-leaved peavine is a rare, imperiled plant which is endemic to one of the most diminished and fragmented ecosystems in North America. This species has been nearly extirpated from Washington and has seen the loss of more than a third of its known populations in Oregon. Despite a decade of work in cultivating and outplanting this species to new sites, establishment of new populations and successful cultivation of seedlings remains a difficult and ponderously slow task.

Habitat loss, historic and contemporary, represents one of the greatest threats to thin-leaved peavine. The species has lost much of its historic forest edge habitat and today grows primarily along roadsides, which are difficult habitats to conserve and support. Small population sizes, pollinator declines, invasive species, and climate change are other factors in this plant's imperiled status. State and federal regulations do not meaningfully protect thin-leaved peavine populations or habitat, and as the human population in the Willamette Valley continues to grow over the next few decades, adequate protections for existing populations of thin-leaved peavine will be essential in ensuring that this species does not decline more than it already has. Without ESA protection and critical habitat designation, this species is at risk of great loss across a significant portion of its range.

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