

**U.S. FISH AND WILDLIFE SERVICE
SPECIES ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM**

SCIENTIFIC NAME: *Physaria douglasii* subspecies *tuplashensis*, previously *Lesquerella tuplashensis*

COMMON NAME: White Bluffs bladderpod

LEAD REGION: Region 1

INFORMATION CURRENT AS OF: April 2010

STATUS/ACTION

Species assessment - determined we do not have sufficient information on file to support a proposal to list the species and, therefore, it was not elevated to Candidate status

New candidate

Continuing candidate

Non-petitioned

Petitioned - Date petition received: May 11, 2004

90-day positive - FR date:

12-month warranted but precluded - FR date:

Did the petition request a reclassification of a listed species?

FOR PETITIONED CANDIDATE SPECIES:

a. Is listing warranted (if yes, see summary of threats below)? Yes

b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? Yes

c. If the answer to a. and b. is "yes", provide an explanation of why the action is precluded: Higher priority listing actions, including court-approved settlements, court-ordered and statutory deadlines for petition findings and listing determinations, emergency listing determinations, and responses to litigation, continue to preclude the proposed and final listing rules for the species. We continue to monitor populations and will change its status or implement an emergency listing if necessary. The "Progress on Revising the Lists" section of the current CNOR (<http://endangered.fws.gov/>) provides information on listing actions taken during the last 12 months.

Listing priority change

Former LP:

New LP:

Date when the species first became a Candidate (as currently defined): October 25, 1999

Candidate removal: Former LPN:

A – Taxon is more abundant or widespread than previously believed or not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.

- U – Taxon not subject to the degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status due, in part or totally, to conservation efforts that remove or reduce the threats to the species.
- F – Range is no longer a U.S. territory.
- I – Insufficient information exists on biological vulnerability and threats to support listing.
- M – Taxon mistakenly included in past notice of review.
- N – Taxon does not meet the Act’s definition of “species.”
- X – Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Flowering plants; Brassicaceae (Mustard Family)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE: Washington

CURRENT STATES/COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE: Franklin County, Washington

LAND OWNERSHIP: Approximately 85 percent of the population occurs on the Hanford National Monument, which is jointly managed by the U.S. Fish and Wildlife Service (Service) and the Department of Energy (DOE). The balance of the species’ current distribution occurs on adjacent private land.

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LEAD FIELD OFFICE CONTACT: Carrie Cordova, Eastern Washington Field Office, Spokane, Washington, (509) 893-8022, e-mail: carrie_j_cordova@fws.gov

BIOLOGICAL INFORMATION

Species Description

Physaria douglasii tuplashensis is a low-growing, herbaceous, perennial plant with a sturdy tap root and a dense rosette of broad gray-green pubescent leaves. The species produces showy yellow flowers on relatively short stems in May, June, and July.

Taxonomy

Although specimens of this taxon were originally collected from a population in 1883, the material was in poor condition, no definitive identification could be made, and the plant was not recognized as a species at that time. The population was rediscovered in 1994, and was described and published as a species, *Lesquerella tuplashensis*, by Rollins et al. (1996). A petition requesting that *L. tuplashensis* be listed as threatened under the Act stated that its status as a valid species is non-controversial (Center for Biological Diversity et al. (CBD) 2004).

However, the nomenclature/taxonomy of the species has been investigated. Simmons (2000) in her Ph.D. thesis suggested that *L. tuplashensis* may be an ecotype of the more common *L. douglasii*. In addition, recent work by Al-Shehbaz and O’Kane (2002) suggested that the *Lesquerella* and *Physaria* genera should be united as *Physaria*, and that *L. tuplashensis* should be reduced to *Physaria douglasii* subspecies *tuplashensis*. A large-scale morphometric and common garden study was undertaken to investigate these issues. The results of the study showed statistically significant morphometric differences between *L. tuplashensis* and multiple populations of *L. douglasii*, and these significant morphometric differences were maintained in a common garden environment with plants of both taxa grown from seed. The authors recommended accepting the new genus name of *Physaria* and proposed a new combination: *Physaria tuplashensis* (Caplow et al. 2005).

We have carefully reviewed the available taxonomic information, and have determined that until additional information addressing the nomenclature/taxonomy of this plant becomes available in the peer-reviewed literature, we will continue to consider it as a subspecies, with the name *Physaria douglasii* subspecies *tuplashensis*.

Habitat/Life History

The only known population of *P. douglasii tuplashensis* is found primarily on near-vertical exposures of cemented, highly alkaline, calcium carbonate paleosol (a “caliche” soil). This hard calcium carbonate paleosol caps several hundred feet of alkaline, easily eroded, lacustrine sediments of the Ringold Formation. The species may be an obligate calciphile, as are many of the endemic *Lesquerella* (now *Physaria*) (Rollins and Shaw 1973). The habitat is arid, with rainfall of about 6 inches (15 centimeters) per year. There is little other vegetation in the area (Caplow 2003).

Because of its recent discovery and limited range, little is known of its life history. In a presentation of preliminary life history studies, Dunwiddie et al. (2000) reported that most individuals reach reproductive condition in their first or second year, most adult plants flower every year, and that the life span of the species is probably 4 to 5 years. The population appears to vary from year to year, and the survival of seedlings and adults appears to be highly variable (Dunwiddie et al. 2000).

Historical Range/Distribution

The taxon was recognized as a species, as *L. tuplashensis* in 1996. At that time it was only known from a single population that occurred along the upper edge of the White Bluffs of the Columbia River in Franklin County, Washington. The population occurred intermittently in a narrow band (usually less than 33 feet (ft) (10 meters (m)) wide) along an approximately 10.6-mile (mi) (17 kilometer (km)) stretch of the river bluffs (Rollins et al. 1996). Most of the species distribution (85 percent) was within lands owned by the Department of Energy (DOE) and managed by the Washington Department of Fish and Wildlife as the Wahluke Wildlife Area

(USFWS 2002). This land is now managed jointly by the Service and DOE. The remainder of its distribution was on private land (Caplow 2003).

Current Range/Distribution

This taxon is still known only from the single population that occurs along the upper edge of the White Bluffs of the Columbia River in Franklin County, Washington. The population occurs intermittently in a narrow band (usually less than 33 ft (10 m) wide) along an approximately 10.6-mi (17 km) stretch of the river bluffs. Most of the species distribution (85 percent) is within the Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge (Hanford National Monument), managed jointly by the Service and the DOE (USFWS 2002). The remainder of its distribution is on private land (Caplow 2003).

Population Estimates/Status

The size of the population varies considerably between years, but censuses in the late 1990s estimated over 50,000 adult (flowering) plants in years of high population (Caplow 2003). Since 1997, the population has ranged between an estimated low of 12,038 plants in 2002 and an estimated high of 32,603 plants in 1998 (Newsome & Goldie 2008). The species is State-listed as Threatened, with a G2 (imperiled world-wide, very vulnerable to extinction) global ranking and an S2 (very vulnerable to extirpation) State ranking (WDNR 2005).

THREATS

A. The present or threatened destruction, modification, or curtailment of its habitat or range.

Groundwater movement from adjacent, up-slope agricultural activities has caused mass-failure landslides in portions of the White Bluffs. The habitat within an approximately 3.7-mi (6.0 km) reach of the bluffs, or about 35 percent of the known range of *P. douglasii tuplashensis*, has been moderately to severely altered by landslides. *P. douglasii tuplashensis* plants have not been found in areas that have been disturbed by landslides, regardless of whether the landslide disturbance is moderate or severe. All mass-failures occurring along the White Bluffs, with one exception, are found in association with water seepage. Water, particularly water from irrigated agriculture adjacent to the bluffs, is the primary factor triggering the mass-failures (Lindsay 1997). The entire population of *P. douglasii tuplashensis* is down-slope of irrigated agricultural land, and is at risk of landslides induced by water-seepage. The threat is greater in the southern portion of the species' distribution where irrigated agriculture is in closest proximity to the plants; in several locations, irrigated agriculture occurs directly adjacent to the bluffs (Service 2008a). Active farming has occurred on these lands since at least the early 1970s (Lindsay 1997). Any increase in irrigation on these lands that alters the hydrologic conditions of the general area is likely to increase the probability of landslides. The loss of habitat to landslides appears to be permanent.

An infestation of yellow starthistle (*Centaurea solstitialis*), a nonnative weed that is known as a rapid invader of arid environments even in the absence of disturbance, was discovered during 2003 within a portion of White Bluffs bladderpod's range (Evans et al. 2003). The infestation was mapped and plants were removed manually. Timely followup treatment and monitoring of this infestation is necessary to protect the narrow habitat of *P. douglasii tuplashensis*. Off-road vehicles (ORVs) (e.g., dirt bikes, three- and four-wheelers) may also threaten the species, by potentially crushing plants, destabilizing the soil, and spreading seeds of invasive plants. Although ORV activity is prohibited on the monument, it occurs intermittently within the Federal portion of the species distribution. ORV activity is more common within the private portion of the species distribution. ORV activity has increased soil disturbance and erosion in the area, and has destroyed individual plants that occur on more moderate slopes (Evans et al. 2003).

B. Overutilization for commercial, recreational, scientific, or educational purposes.

There is no evidence of commercial, recreational, scientific, or educational use of *P. douglasii tuplashensis*, although the species is very showy while flowering and it may be subject to occasional collection by the public.

C. Disease or predation.

Some predation by larval insects on developing fruits of *P. douglasii tuplashensis* has been observed since 1996 (TNC 1998). More thorough investigations are necessary to determine whether this may represent a significant threat to the species by negatively impacting its seed production.

D. The inadequacy of existing regulatory mechanisms.

P. douglasii tuplashensis, as *L. tuplashensis*, was added to Washington's list of endangered, threatened, and sensitive vascular plants in 1997, and is designated as threatened by the WDNR (2008). At this time, there are no existing regulatory mechanisms that provide protection for State-listed plants in Washington. The DOE has no rare plant policy that provides specific protection for this species. The Service now manages DOE lands where *P. douglasii tuplashensis* is found as a part of the Hanford National Monument. The Service has completed a comprehensive conservation plan for the Monument that is expected to provide some conservation measures for rare plants in general that may benefit *P. douglasii tuplashensis*. However, the conservation of *P. douglasii tuplashensis* is only addressed by stating that the protection of this population, and thus the species, requires that these issues be addressed in any management action (Service 2008b). The Hanford Reach National Monument/Saddle Mountain National Wildlife Refuge Fire Management Plan addresses *P. douglasii tuplashensis* briefly with guidance for fire suppression activities on the White Bluffs. It states that protection of sensitive resources is an objective, unless achieving this objective jeopardizes either firefighter or public safety (Service 2001).

E. Other natural or manmade factors affecting its continued existence.

Part of the population lies adjacent to an access point along the river, making the plants more vulnerable to occasional collecting and increasing the risk of impacts resulting from establishment of nonnative species. Although a large portion of the population is on Federal land, the boundary between landowners is generally not marked or fenced, allowing unauthorized access by ORVs on to Hanford National Monument lands. Pollinators of *P. douglasii tuplashensis* may also be negatively affected by pesticide use on orchards and other irrigated fields in the vicinity of the site but we do not have any specific information on whether this is a threat. Finally, the population is likely naturally limited by the scarcity of its highly specific substrate (H. Newsome, pers. comm., notes from July 11, 2006, rare plant meeting).

In July 2007, after transect monitoring had been completed, a large wildfire burned through the northern portion of the *P. douglasii tuplashensis* population, and within the area of the population monitoring transects. Although fire is considered to be a threat to *P. douglasii tuplashensis*, the estimated population size after the 2007 fire falls within the documented range of variability discussed above. The 2008 monitoring results support a finding that the direct negative impacts of the 2007 burn on *P. douglasii tuplashensis* were minor, however, wildfire continues to be a threat to the existing population (Newsome & Goldie 2008). One likely consequence of fire, or any disturbance that removes native plants from the habitat, is the displacement of native vegetation by non-native weedy species, which may contribute to increases in wildfire frequency as well. Future studies would be helpful in addressing the effects of these threats to the *P. douglasii tuplashensis* population.

CONSERVATION MEASURES PLANNED OR IMPLEMENTED

No conservation agreements for this species are currently in place or planned. The final Hanford Reach National Monument Comprehensive Conservation Plan and Environmental Impact Statement (CCP) were recently completed (Service 2008b), but the CCP does not specifically address the conservation needs of *P. douglasii tuplashensis*.

In 2002, seeds were collected from wild *P. douglasii tuplashensis* and experiments conducted to look at germination and establishment of *P. douglasii tuplashensis* in a green house setting. A small number of seedling plants were produced from these experiments (53 seedlings). These seedlings were then out-planted into the White-bluffs area of the Monument during March of 2004 in various locations and soil types. This study was conducted to evaluate if nursery propagation and re-introduction could be a viable method to recover or restore this population if long-term monitoring indicates some form of active management is required to sustain this rare plant species.

It was concluded that selection of habitat locations in areas with proper soils is one key to the potential success of this effort. In the future, selection of more stable sites could increase the survival rates of out-planted seedlings. The initial results of this experiment indicate that this

method may have the potential to be implemented for the conservation of this species, if necessary (Newsome & Goldie 2006).

SUMMARY OF THREATS (including reasons for addition or removal from candidacy, if appropriate).

The major threat to *P. douglasii tuplashensis* is mass-failure landslides caused by groundwater movement from adjacent, up-slope agricultural activities. The entire population of *P. douglasii tuplashensis* is down-slope of irrigated agricultural land and is at risk of being destroyed by landslides induced by water-seepage, particularly water from irrigated agriculture adjacent to the bluffs. Other significant threats include physical damage to plants and to the soil from ORVs, fire, and the incursion of invasive nonnative plants.

We find that this species is warranted for listing throughout all its range, and, therefore, find that it is unnecessary to analyze whether it is threatened or endangered in a significant portion of its range.

For species that are being removed from candidate status: N/A

___ Is the removal based in whole or in part on one or more individual conservation efforts that you determined met the standards in the Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE)?

RECOMMENDED CONSERVATION MEASURES

The Service completed a Spotlight Species Action Plan for *P. douglasii tuplashensis* in 2009. This plan was developed to identify conservation goals and tasks that are needed to improve this species' conservation over the next several years. This plan can be found on the Service's website at: http://www.fws.gov/ecos/ajax/docs/action_plans/doc3090.pdf

At a meeting of rare plant species experts, Service, and Monument staff on July 11, 2006, several recommendations were developed to address most of the known threats. These are identified below and in the Service's Spotlight Action Plan for *P. douglasii tuplashensis*. The Service completed a Spotlight Species Action Plan for the *P. douglasii tuplashensis* in 2009. This plan was developed to identify conservation goals and tasks that are needed to improve this species' conservation over the next several years. This plan can be found on the Service's website at: http://www.fws.gov/ecos/ajax/docs/action_plans/doc3090.pdf.

- 1) monitor and collect data;
- 2) develop seed banking;
- 3) find/support funding for a USGS study proposal on slumping;
- 4) research and publish demographic and life history paper;
- 5) control access;
- 6) enforce when trespass occurs;
- 7) develop habitat management plan;

- 8) actively manage weeds;
- 9) explore grants/partnerships for research and monitoring; and
- 10) study slumping effects.

LISTING PRIORITY

THREAT			
Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3
	Nonimminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9*
	Nonimminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

Rationale for listing priority number:

Magnitude

The entire range *P. douglasii tuplashensis* occurs within a narrow band approximately 33 ft (10 m) wide and 10.6 mi (17 km) long, on highly alkaline, calcium carbonate paleosol (“caliche”) soils. The primary threat to the entire population is land slumping caused by irrigation seepage from nearby agricultural land. To date, the habitat in approximately 35 percent of the range of *P. douglasii tuplashensis* has been moderately to severely damaged by seepage and associated landslides due to its proximity to the agricultural land. This species is not found in areas damaged by landslides, and any such alteration of the habitat appears to be permanent. Irrigated agriculture is an established land use in the area and ongoing seepage and resulting landslides remain a significant threat to this species, particularly in the southern portion of its range. The likelihood of persistence of *P. douglasii tuplashensis* in the northern portion of its range is high due to the increased distance of agricultural activities from the bluffs on which *P. douglasii tuplashensis* occurs. The presence of invasive nonnative plants is a further threat, and following the disturbance of a large fire in 2007, invasive plants are likely to spread/increase throughout the burned area of the *P. douglasii tuplashensis* population. In addition, wildfire continues to be a threat to the entire existing population and future years of data analysis will help determine if the population decline in 2008 is a result of the 2007 fire or due to other environmental factors.

After reanalyzing the threats to *P. douglasii tuplashensis*, we have determined the magnitude of threats should remain as moderate.

Imminence

While *P. douglasii tuplashensis* is inherently vulnerable because it is a narrow endemic, the existing threats to the species are unlikely to increase in the immediate future, except with respect to invasive plants. Invasive plants are present in the vicinity, but have not been described as a significant problem as yet. The 2008 monitoring after the 2007 fire did not yield more information on invasive plants. Statistical analysis of population data showed negative impacts from the burn to be minor. Currently, we know of no plans to expand or significantly modify the existing agriculture activities in areas adjacent to the population, however, these activities are currently occurring and will continue to occur in the future. Deliberate modification of the species' immediate habitat is unlikely due to its remote location and the fact that 85 percent of the known distribution of *P. douglasii tuplashensis* occurs on Federal ownership. There is no known trade or harvest of the species, aside from occasional collecting. The impacts from recreational activities are not likely to change. Based on the available information and our analysis of the threats, we consider the threats for *P. douglasii tuplashensis* to be imminent because the threats are ongoing.

Yes Have you promptly reviewed all of the information received regarding the species for the purpose of determining whether emergency listing is needed?

Is Emergency Listing Warranted? No. Although there have been recent changes in the magnitude or imminence of threats to *P. douglasii tuplashensis*, we do not consider these as immediate threats to the species continued existence.

DESCRIPTION OF MONITORING: Monitoring efforts for *P. douglasii tuplashensis* began in 1997, with initial funding provided by the National Fish and Wildlife Foundation. Because the population has a relatively long, narrow distribution (approximately 10.6 mi (17 km)), a subsample approach was implemented to census the population. The WDNR's Natural Heritage Program, TNC, Calypso Consulting, and volunteers monitored permanent quadrats to investigate life history characteristics of the species from 1997 through 2002. In addition, permanent transects to track changes in population size were monitored every 1 to 2 years during the same period. The decision was made in 2002 to monitor these transects every 3 to 5 years. (Caplow 2003). Monitoring was conducted in June 2007 to capture this 5 year interval suggested (Newsome et al. 2007).

On July 13, 2007, a large lightning-sparked wildfire burned throughout the entire area occupied by the *P. douglasii tuplashensis* population on the Wahluke Slope of the Hanford Reach National Monument. Field monitoring occurred in 2008 to initially assess changes in the *P. douglasii tuplashensis* population post-fire. The monitoring plots were visited in late May 2008 based on the known phenology of the plant. as this is the appropriate time for the phenology of the plant.

Although not statistically significant, it appears that the 2007 fire may have had an adverse effect on *P. douglasii* ssp. *tuplashensis* based on the 2008 monitoring results that show burned transects averaged lower numbers of *P. douglasii tuplashensis* plants per transects than unburned transects (Newsome and Goldie 2008). Given the short term of the post-fire period, these findings should not be considered definitive. Monitoring is scheduled to occur in 2010 and 2013 to further evaluate the effects of the 2007 fire on the *P. douglasii tuplashensis* population and to evaluate the status of the entire population.

This level of monitoring is considered sufficient because the occurrences of landslides, which are the primary threat to the species, are intermittent over a multi-year time frame, and no expansion of the upslope agriculture is currently anticipated. Field monitoring has shown wide annual fluctuations in the number and location of flowering plants. However, the over-all size of the population remains relatively stable.

COORDINATION WITH STATES

Indicate which State(s) (within the range of the species) provided information or comments on the species or latest species assessment: Washington. This species is not covered in the Washington's Comprehensive Wildlife Conservation Strategy as a species of conservation concern.

However, under the Washington Department of Natural Resources, Natural Heritage Program. *P. douglasii tuplashensis* is State-listed as Threatened, with a G2 (i.e., imperiled world-wide, very vulnerable to extinction) global ranking and an S2 (i.e., very vulnerable to extirpation) State ranking (WDNR 2005).

In preparation for this assessment, we researched our files and queried knowledgeable individuals and land managers for current information. The Washington Natural Heritage Program was contacted, and there was no new information to report. We also referred to the update of the current status of *Physaria (Lesquerella) douglasii tuplashensis* on the Hanford site prepared by Newsome & Goldie (2008).

Indicate which State(s) did not provide any information or comments: None

LITERATURE CITED

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U.S. Fish and Wildlife Service. 2008b. Final Hanford Reach National Monument Comprehensive Conservation Plan and Environmental Impact Statement. U.S. Fish and Wildlife Service, Richland, Washington. On file and obtainable online at: <http://www.fws.gov/hanfordreach/planning.html>

Washington Department of Natural Resources. 2005. Natural Heritage Program Website, www.dnr.wa.gov/nhp/.

Personal Communication

Newsome H. 2006. Notes from a July 11, 2006, rare plant meeting.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes, including elevations or removals from candidate status and listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all resubmitted 12-month petition findings, additions or removal of species from candidate status, and listing priority changes.

Approve:

Carolyn L. Bohan
Acting Regional Director, Region 1, Fish and Wildlife Service
5/18/10
Date

Rowan W. Gould
ACTING
Director, Fish and Wildlife Service
October 22, 2010

Concur:

Do not concur: _____
Director, Fish and Wildlife Service Date

Director's Remarks:

Date of annual review: April 19, 2010
Conducted by: Carrie Cordova, Eastern Washington Field Office
Fish and Wildlife Biologist

Comments:

Reviewed by: Michelle Eames, Eastern Washington Field Office
Listing Coordinator Date: April 19, 2010
Jodi Bush, Washington Fish and Wildlife Office
Listing Coordinator Date: May 3, 2010
Ken Berg, Western Washington Fish and Wildlife Office
Project Leader Date: May 3, 2010