# *Umatilla National Forest – A Rare Plant Population Relocation Effort 2012 & 2013*

*Swertia perennis L. ~ Greenhorn Mountains ~ ORBIC List 2*

## *~ A Final Report to the Interagency Special Status Species Program ~*
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## PROJECT LEAD:

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## PROJECT OBJECTIVES:

1. To relocate as many rare plant populations as possible that have putatively been recognized in past surveys, but for which insufficient location data is available.

2. To enter collected data for any listed rare plant populations that are discovered into the NRIS TES Plants national database.

## INTRODUCTION

A prodigious list of vascular plant species has been assembled within the confines of the Umatilla National Forest over nearly 30-years of botanical survey efforts beginning approximately in 1984. The first was begun by Karl Urban, and subsequently by a long procession of other forest botanists and plant technicians, both seasonal and permanent employees. This forest vascular plant species list now totals nearly 1500 species and subtaxa. Amongst this list are several species that were either already documented on the forest, and were unintentionally overlooked, were not listed as being rare at the time – and were added to a rare species list at a later date, or that have been recognized as rare via the use of recently constructed regionally-extensive spatial databases such as is presently available at the Consortium of Pacific Northwest Herbaria (CPNWH) website: http://www.pnwherbaria.org/data/search.php. Amongst the latter group several potential new state records were also included. The suite of plants considered is either presently listed as rare on the Regional Forester's Special Status Species List (RFSSSL), or will be listed as sensitive or strategic when the next iteration of the list is published. The new Oregon Biodiversity Information Center (ORBIC) Rare, Threatened and Endangered list for 2013 has now been published: http://orbic.pdx.edu/rte-species.html. Entries on this list presage subsequent listings on the RFSSSL.

The primary purpose of this two-year project has been to assemble a list of these taxa and attempt to relocate and document as many of these sites as possible utilizing existing GIS and plant database resources available on the forest. During the course of the 2012 and 2013 field seasons a series of relocation efforts were conducted by TES botanist Mark Darrach with various amounts of assistance by forest botanist Joan Frazee and plant technicians Rachel Chambers (2011) and Tom Brumbelow (2013).

The list of rare plants (Table 1) mined from our existing on-forest historical botanical survey MS Access database resource – known locally as the TEPS database – an acronym for "threatened and endangered plant species", was cross-referenced with our spatial GIS resources that record the extent of old survey polygons. Unfortunately, only rarely were actual on-the-ground survey tracks available to pin down likely locations of rare plant populations with significant accuracy. With the recognition that person hours available to devote to this project were very limited by other project time constraints, a hierarchy of which populations to target for searches was created as a function of which were deemed most likely to be successful. Primary amongst considered constraints were historical survey polygon size and

whether old on-the-ground survey tracks were available in our recently compiled and established survey track GIS layer. Additionally, some taxonomic investigations were undertaken in an attempt to validate the likelihood of some taxa – particularly with respect to what seemed to be unlikely distribution data.

## RARE PLANT TAXA CONSIDERED

Table 1. List Of Rare Plants With Inadequate Location Information Extracted From Umatilla National Forest TEPS Survey Database

| ***Taxon*** | ***Present Status/State*** | ***Perceived Likelihood Of Search Success If Plant Present*** | ***Surveys Conducted*** | ***Notes/Comments*** |
|---|---|---|---|---|
| *Antennaria corymbosa* | WA – Threatened / RFSSSL Sensitive | low/moderate | yes – not successful | a recently confirmed specimen from the Wenaha-Tucannon Wilderness collected in 2002 by Heather Bradtke will be investigated at a later date |
| *Astragalus misellus misellus* | ORBIC List 1 / RFSSSL Sensitive With Next Iteration | low/moderate | yes – successfully located 21 Jun 2012 | found as a population of approximately 150 plants on Thorne Spring Butte |
| *Botrychium lunaria* | ORBIC List 2 / RFSSSL Sensitive | low/moderate | yes – not successful | polygon search size was small, but only a single plant may have been found previously |
| *Calamagrostis tweedyi* | ORBIC List 3 | low/moderate | no – survey not conducted | exact location of plants found in 2011 was not recorded; definitive identification occurred post collection |
| *Calochortus nitidus* | WA – Endangered / RFSSSL Sensitive | low/moderate | yes – not successfully located | plant was confirmed as present on forest by Karl Urban and with a voucher sent to Douglas Henderson and later confirmed – species has apparently been extirpated from the forest |
| *Castilleja flava rustica* | ORBIC List 2 / RFSSL sensitive | moderate | yes – not successfully located | historical occurrence was in a very small polygon and a well-defined location – either plant was originally misidentified or the population is now extirpated |
| *Castilleja viscidula* | ORBIC List 2 / RFSSSL Sensitive With Next Iteration | high? | yes - successfully located, but see text below | population that had historically been called *Castilleja viscidula* in Sheep Ridge area of Asotin Co., WA was misidentified – see discussion below |

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|---|---|---|---|---|
| *Coptis occidentalis* | not listed | moderate | yes – not successfully located | would be new Oregon state record; the area of the historical occurrence was a small polygon and the habitat is indeed perfect for this species; I suspect the plant is indeed present |
| *Delphinium bicolor* | not listed | low | no – survey not conducted | original specimen collection from the supposed population was recently located and there are questions as to its taxonomy; species would be new to Oregon |
| *Elatine brachysperma* | not listed | moderate | yes – not successfully located | pond was found, but the plant was not located – would be new to Washington State |
| *Equisetum pratense* | ORBIC List 3 | low/moderate | yes – not successfully located | there was appropriate habitat in the search area, but the plant was not found; a verified voucher from the forest does exist however; see text below for further information |
| *Epilobium oreganum* | ORBIC List 1 / RFSSL sensitive | moderate/high | yes – not successfully located | location in McAlpine meadow was fairly well defined; plants were found, but they had been misidentified; actual species at site is *Epilobium ciliatum* ssp. *glandulosum* |
| *Hackelia diffusa diffusa* | WA – threatened / RFSSL sensitive | moderate | no – survey not conducted | location well defined, but too difficult to get to this site with allotted time |
| *Penstemon deustus variabilis* | ORBIC List 1 / RFSSL strategic | high | yes – successfully located 22 May 2013 | site of previous photograph was located; found as a population of approximately 300 plants growing out of cliff faces and steep soil pockets in Meacham Creek Canyon; most other occurrences in Oregon misidentified |
| *Piptatherum exiguum* | ORBIC List 3 | low | no – survey not conducted | location information too nebulous to attempt a search even though a voucher specimen exists |
| *Potamogeton praelongus* | ORBIC List 3 | low/moderate | no – survey not conducted | location on Lost Lake was never well defined |
| *Potamogeton praelongus tenuissimus* | ORBIC List 3 | low/moderate | no – survey not conducted | location on Jubilee Lake was never well defined |
| *Pyrola elliptica* | ORBIC List 3 | low | no – survey not conducted | size of original survey polygons deemed too large to conduct a search |
| *Ranunculus acriformis montanensis* | ORBIC List 3 | low | no – survey not conducted | size of original survey polygons deemed too large to conduct a search |

| | | | | |
|---|---|---|---|---|
| *Rorippa columbiae* | ORBIC List 1 / RFSSSL sensitive | high | yes – not successfully located | search area was very well defined on Looking Glass Creek, but plant was not found even though the habitat may have been suitable; it is presumed this was a misidentification originally |
| *Swertia perennis* | ORBIC List 2 / RFSSSL Strategic, will be Sensitive With Next Iteration | high | yes successfully located and mapped 3 Aug 2012 | largely confined to serpentine or derivative lithology substrates in Greenhorn Mons; see text below |
| *Tauschia tenuissima* | WA – State Extirpated / RFSSSL Strategic | low | yes – not successfully located | searched a portion of the area where the plant was initially found in the 1990's in Moore Flat wetlands complex, but plant was not found |
| *Thelypodium sagittatum* | ORBIC List 3 | low | no – survey not conducted | plant's presence in the Target Meadows and Fox Prairie areas part of polygons considered too large to search |
| *Trichophorum cespitosum* | ORBIC List 3 / not RFSSSL listed | moderate | no – survey not conducted | time did not allow for searches for this species; supposedly known from White Pine Spring |

## RARE PLANT TAXA DISCUSSION

This section of the report presents a more comprehensive discussion of selected species from the above Table 1.

*Antennaria corymbosa*

This species is listed as Threatened by the Washington State Natural Heritage Program (WNHP). At present, it is documented from a single population in Pend Orielle County in the northeast corner of the state. In the Umatilla N.F. TEPS survey database it is listed as occurring 6 times in the Washington State portion of the forest. Surveys conducted in early August of 2012 in conjunction with the South George restoration project were unsuccessful in locating either of the 2 populations of the species thought to occur in the project area.

In 2013 it was recognized that a specimen collected by botanist Heather Bradtke in 2002 in the Wenaha-Tucannon wilderness that was initially identified as *Antennaria rosea* was misidentified and actually is *Antennaria corymbosa*. Scanned photos of the herbarium sheet were sent to Dr. Randall Bayer at the University of Memphis and he confirmed the identification as *A. corymbosa.* The specimen resides in the Umatilla N.F. herbarium in Pendleton with a duplicate at the Rocky Mountain Herbarium in Laramie, Wyoming. Further searches will continue for this plant as time permits in 2014.

*Astragalus misellus* var. *misellus*

*Astragalus misellus* var. *misellus* (Fig. 1) is a narrow Oregon endemic species found in a small area of the central part of the state. Rupert Barneby's 1964 monograph of the genus notes that the species is locally abundant, but it has been collected only 10 times in the last 75 years. With the 2013 iteration of the ORBIC Rare, Threatened and Endangered list the species is now a List 1 entity and will be listed on the R6 RFSSSL. Plants noted in the TEPS database were last encountered in 1993 in the Bologna Basin and Tamarack Mountain area. A population of approximately 150 plants was located on the slopes of Thorne Springs Butte on 21 June 2012. The population is healthy and appears to be reproducing quite successfully.

Figure 1. *Astragalus misellus* var. *misellus* in mature fruit on Thorne Springs Butte, Grant County, OR

*Calochortus nitidus*

*Calochortus nitidus* – broadfruit mariposa lily – is rare throughout its range. Preferring alluvial and loess-derived soils with or without a rock component, it is known at the present time from a single extant population in Washington in east-central Garfield County. Another small population of the species has been known historically from the Lick Creek area on the Pomeroy Ranger District of the Umatilla N.F. Documented by former forest botanist Karl Urban in the 1990's and confirmed as to identity by the late University of Idaho professor Dr. Douglass Henderson, the location of the original population has never been particularly well-defined. An attempt to relocate the population was conducted on the phenologically appropriate date of 3 July of 2012 searching approximately 100 acres of potential habitat.

It was not successful. The population is now assumed to be extirpated. A significant amount of appropriate habitat for the species does exist in the general area, and further early July surveys in the area should be conducted in the future – particularly utilizing binoculars to extend the geographic breadth of the survey. Given the amount of potential habitat, the species is suspected to occur on the Umatilla N.F.

*Castilleja flava* var. *rustica*

*Castilleja flava* var. *rustica* is recorded in the Umatilla TEPS database 4 times. One of the putative occurrences is recorded from a small polygon near a pond on the North Fork Ranger District. An attempt to relocate this site was made in early August of 2012. It was not successful, and, owing to the taxonomic difficulty of identifying this taxon it seems possible that the species may have been misidentified on the forest in the past. However, appropriate habitat does appear to be present in the general area, and verified collections of the species are known within approximately 15 air miles of the investigated site on the Umatilla N.F., so the species should still be considered as "suspected" on the forest.

*Castilleja viscidula*

*Castilleja viscidula* in Oregon is known entirely from higher elevations in the Wallowa Mountains, a single collection in the Strawberry Mountains, and a small cluster of recently recognized sites in the Greenhorn Mountains of northeast Oregon. The species has been listed as a list 2 entity by ORBIC with the newly released iteration of the 2013 RTE document.

The Umatilla National Forest has also putatively recognized a small cluster of collections from much lower elevation grasslands in Idaho fescue dominated sites in southeast Washington. Investigations of these plants were included with this study owing to the convenient proximity of various other rare plant populations in the area. While the Umatilla N.F. plants in southeast Washington do indeed key readily to *Castilleja viscidula* utilizing existing references, it became clear immediately that the plants in this area are another taxonomic entity entirely. Correspondence with Dr. David Tank at the University of Idaho and Mark Egger, both recognized world experts in the genus, revealed that these plants are presently known as *Castilleja cusickii* forma *lutea* (synonym is *Castilleja lutea* Heller). The taxonomic status of these plants is in question at the present time. An ongoing molecular genetic study by PhD student Sarah Jacobs at the University of Idaho will include these plants with the hopes that the taxonomic questions can be adequately addressed.

*Coptis occidentalis*

*Coptis occidentalis* has been tallied as occurring in two survey polygons in the TEPS database in Oregon on the Walla Walla ranger district of the forest. The species has never been recorded and vouchered in Oregon before – a collection by Thomas Howell in Douglas County in 1892, now housed at the herbarium at Portland State University, appears instead to be *Coptis laciniata*. One of the supposed locations for the species on the forest is confined to a very small survey polygon adjacent to Brock Meadows. An attempt to relocate the Brock Meadows site was conducted on 11 July 2012. Survey results were negative. However, as the species is unmistakable, and the habitat in this area is excellent for supporting the plant, it is still strongly suspected to be present somewhere in the immediate area.

*Elatine brachysperma*

This species was supposedly encountered in 1996 during a survey in the Wenaha-Tucannon wilderness. A follow-up to this area was conducted on 18 July 2013. While *Elatine brachysperma* was not found, *Utricularia minor* was encountered and collected. This species was listed by the WNHP as a review 1 entity. It has however just been very recently delisted. It remains very rare in eastern Oregon (3 known sites) and eastern Washington.

*Equisetum pratense*

This species had never been officially recorded from either Oregon or Washington, although 3 specimens at the herbarium at Portland State University have been identified as such and are awaiting confirmation. In the Umatilla N.F. TEPS database the plant appears 12 separate times on the Walla Walla ranger district on past plant surveys. One of these sites includes a voucher specimen collected in 1996 that indeed is clearly *Equisetum pratense* displaying branched fertile stems with stomates. An attempt to relocate these plants in the Looking Glass Creek drainage was conducted on 22 August 2013. The attempt was not successful. A noteworthy aside to this particular survey is that the effort did result in the discovery of the largest known population of a recently confirmed species of *Erigeron* that is new to science. This strongly rhizomatous species, now known informally as *Erigeron instillauratus* is quite abundant in this limited locality. At the time it was the second discovered population of the species; there are now four confirmed sites where the plant is known to occur in Oregon.

*Epilobium oreganum*

This species has been reported by Stuart Markow in 2003 from McAlpine Meadow in the Greenhorn Mountains of Grant County, Oregon. With adequate location information in hand, this area was visited in 2011 and again in August of 2012 in conjunction with a survey of fens on the forest. These surveys did not successfully locate a population of this very rare serpentine obligate species hitherto known only from southwestern Oregon and northwestern California. The lack of an apparent ultramafic substrate in the immediate area suggested the original determination was a misidentification. The only member of the genus found in the target area was the common wetland species *Epilobium ciliatum* ssp. *glandulosum*.

*Penstemon deustus* var. *variabilis*

The search for the confirmation of this taxa on the Umatilla N.F. was facilitated by a chance encounter in 2012. Forest botanist Joan Frazee took a photograph of a large white-flowered *Penstemon* in Meacham Creek Canyon on the Walla Walla ranger district while conducting work on a stream restoration project. The photo seemed to be *Penstemon deustus* var. *variabilis*, but phenological constraints meant that further work had to wait until mid-May of 2013.

*Penstemon deustus* var. *variabilis* was collected by Morton Peck in 1915 on what is now the Umatilla N.F., but the location information was of very low resolution and mounting a search for this taxon seemed unlikely to be fruitful. The possibility of this new locality was investigated on 22 May 2013. Indeed the site in Meacham Creek canyon proved to be *Penstemon deustus* var. *variabilis.* Shared between tribal lands and the national forest, this population (Fig. 2) is comprised of perhaps 500 plants growing out of basalt cliff faces and on interspersed very steep colluvial soil slopes. A visit to the site by *Penstemon* experts Noel and Patricia Holmgren provided further confirmation as to the plant's identity.

Dr. Holmgren is presently working on the taxonomy of this entity with the recognition that the present taxonomic treatments are wanting. *Penstemon deustus* var. *variabilis* is known to be tetraploid (Wolfe et al. 2006) in contrast to all other varieties of the species, which are diploid. The possibility that this taxon is best recognized as a separate species is being evaluated at the present time.

Figure 2. *Penstemon deustus* var. *variabilis* in flower in Meacham Creek Canyon, Umatilla County, OR

*Rorripa columbiae*

*Rorripa columbiae* is a WNHP endangered species. It is present in the Umatilla N.F. TEPS database as a single entry for a survey conducted in the early 1990's in the lower portions of the Looking Glass Creek drainage on the Walla Walla ranger district. This large stream does harbor a fairly extensive seasonally inundated gravelly flood plain that is appropriate habitat for this species (WNHP 2013). Survey results were negative, but the possibility of the plant still existing in this area cannot be discounted. However, it is surmised that a major flood event occurring in this drainage in early February of 1996 may have badly scoured the streambed and floodplain and possibly extirpated the plants.

*Swertia perennis*

*Swertia perennis* is an ORBIC list 2 entity in the most recent (2013) RTE publication (the present document that shows the species as a list 3 entity is a typographic error). The species on the Umatilla N.F. was known to be confined to high elevation wet subalpine woodlands and riparian margins where it is found as a few scattered plants. A survey in July of 2012 in the Greenhorn Mountains in the meadowy fen headwaters of the Salmon Creek drainage revealed the plant to be much more preferential to ultramafic substrates. A metapopulation of perhaps 1000 plants was mapped during this effort. The preference of the species for ultramafic substrates was a surprise. It strongly suggests that these populations on ultramafic sites may well be the seed source that supports the widely scattered diffuse populations further downstream in the watershed. These occurrences also serve to illustrate the importance of conservation of species on the edge of their range that are more common elsewhere.

*Tauschia tenuissima*

*Tauschia tenuissima* has been recognized from a single survey in the 1990's in the Moore Flat area of the Wenaha-Tucannon wilderness. This species at present is considered to be extirpated in the state of Washington. *Tauschia tenuissima* prefers moist to wet grassy openings in mixed coniferous forests (WNHP 2013). These habitat preferences match the conditions present in wetland sites in the Moore Flat area. Searches conducted on 18 July 2013 were however not successful at locating the species. Time constraints did not allow for a full search of high quality habitat in the area, and these wetland sites should be revisited in the future in the hopes that this very rare species may be successfully relocated.

## References Cited

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