

FIELD AND HERBARIUM INVESTIGATIONS OF TWO SENSITIVE SPECIES
ON THE BOISE NATIONAL FOREST:

CRYPTANTHA SIMULANS (PINE WOODS CRYPTANTH)
AND
STIPA VIRIDULA (GREEN NEEDLEGRASS)

by

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ABSTRACT

Field investigations and herbarium reviews were conducted for *Cryptantha simulans* (pine woods cryptanth) and *Stipa viridula* (green needlegrass) by the Idaho Department of Fish and Game's Conservation Data Center¹. These investigations were a cooperative Challenge Cost-share project between the Department and the Boise NF. Both species are currently Region 4 Sensitive Species for the Boise National Forest.

Prior to 1992, one occurrence of pine woods cryptanth and two occurrences of green needlegrass were reported for the Boise NF. All of these occurrences were based on herbarium records, none of them recent. Field surveys for both pine woods cryptanth and green needlegrass failed to find either of the target species, instead, we found similar looking species to be common. These similar species are members of the *Cryptantha torreyana*/*C. ambigua* (Torrey's cryptanth/obscure cryptanth) complex and members of the *Stipa occidentalis* (western needlegrass) complex.

The original material upon which the occurrences of pine woods cryptanth and green needlegrass was based was subsequently reviewed at the University of Idaho Herbarium and the Marion Ownbey Herbarium at Washington State University. Examination revealed these collections to be misidentified. What was originally identified as pine woods cryptanth was actually representative of the Torrey's cryptanth/obscure cryptanth complex, while the green needlegrass collections were actually western needlegrass. Additional field and herbarium work revealed the reported occurrence of pine woods cryptanth in the Owyhee Mountains near Silver City to also be in error.

These findings indicate that neither pine woods cryptanth nor green needlegrass occur on the Boise NF, and it is recommended both be taken off the Forests' Sensitive Species list.

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INTRODUCTION

The National Forest Management Act and Forest Service policy require that Forest Service land be managed to maintain populations of all existing native animal and plant species at or above the minimum viable population level. A minimum viable population consists of the number of individuals, adequately distributed throughout their range, necessary to perpetuate the existence of the species in natural, genetically stable, self-sustaining populations.

The Forest Service, along with other Federal and State agencies, has recognized the need for special planning considerations in order to protect the flora and fauna on the lands in public ownership. Species recognized by the Forest Service as needing such considerations are those that (1) are designated under the Endangered Species Act as endangered or threatened, (2) are under consideration for such designation, or (3) appear on a regional Forest Service sensitive species list.

Both pine woods cryptanth and green needlegrass are Forest Service, Region 4 Sensitive Species for the Boise National Forest. Very little data concerning the distribution and abundance of either species has been documented for Idaho, and is based mostly on information contained in herbarium records. Our field investigations for both species were augmented with reviews of the original collections deposited at the University of Idaho Herbarium and the Marion Ownbey Herbarium at Washington State University. This project was conducted by the Idaho Department of Fish and Game's Conservation Data Center through the Cooperative Challenge Cost-share Program of the Boise NF.

The primary objectives of this investigation were as follows:

- 1) Confirm the presence and location of pine woods cryptanth on the Idaho City Ranger District, and green needlegrass on the Mountain Home Ranger District, Boise NF.

If confirmed,

- 2) Search potential habitats for new populations on the Boise NF.

- 3) Characterize habitat conditions for known populations on the Boise NF.

- 4) Assess population data on, and threats to existing populations and make management recommendations to the Boise NF based on these assessments.

RESULTS

Pine Woods Cryptanth

Prior to 1992, pine woods cryptanth was reported from three widely separated locations in Idaho, all disjunct from the main range of the species which extends from southern California to central Washington. Each of these occurrences were based solely on herbarium records, none of them recent. The Idaho City Ranger District, Boise NF location was based on a 1950 collection by J.H. and C.B. Christ from along the North Fork Boise River, five miles west of Deer Park Guard Station. A field survey of this general area on June 9, 1992, failed to locate any pine woods cryptanth (see Appendix II for a list of areas searched). Instead, we found a different annual cryptanth, *Cryptantha ambigua* (obscure cryptanth) to be fairly common in the area. Obscure cryptanth is a common and widespread species. Obscure cryptanth very closely resembles another widespread species, *Cryptantha torreyana* (Torrey's cryptanth), and it is possible these species are sympatric in the area.

Material from Christ's original collection are deposited at both the University of Idaho Herbarium in Moscow, Idaho, and the Marion Ownbey Herbarium at Washington State University in Pullman, Washington. Review of this material revealed it to be misidentified. This determination was based on the fact that the herbage very clearly possessed spreading hairs. This is contrary to the herbage of pine woods cryptanth which is essentially without spreading hairs. In addition, some of the material deposited in Pullman had a few nearly mature fruits. These nutlets were smooth, and not roughened as reported for pine woods cryptanth. The material at Pullman was annotated to *Cryptantha torreyana* (Gray) Greene.

In light of our findings in the field and in the herbarium, it is our determination that pine woods cryptanth does not occur on the Boise NF.

These findings raised suspicions concerning the validity of the other two pine woods cryptanth reports for the state. A review of Davis' 1940 collection from the Dewey Mine area near Silver City in Owyhee County, revealed its original identification to be wrong, as its herbage also possessed many spreading hairs. During a one day field survey of the Owyhee Mountains in the Dewey Mine/Silver City vicinity we did not find any pine woods cryptanth. Again, instead we found plants representative of the Torrey's cryptanth/obscure cryptanth complex to be fairly common. Our conclusion is that pine woods cryptanth does not occur in the Silver City area either.

A review of Piper's 1894 collection from Moscow Mountain in Latah County verified this collection as pine woods cryptanth. No field work was done to try to verify its presence. This Moscow Mountain population is now the only known occurrence for pine woods cryptanth in Idaho.

Green Needlegrass

Green needlegrass is largely a northern and central Great Plains species and is at the periphery of its range in Idaho. Prior to our 1992 investigation, populations were reported for Caribou, Clark, and Elmore Counties. Although rather vague, the two Elmore County locations were known to be from the Cat Creek Summit area, north of Mountain Home, on or near Boise National Forest lands. Both occurrences were based on collections made by C.L. Hitchcock in 1950.

In early July, Greg Lind, at the time a volunteer botanist for the Boise NF, spent one day looking for green

needlegrass in the Cat Creek Summit area, but did not locate any (Lind pers. comm.). On July 30, 1992, CDC botanist Michael Mancuso also surveyed for green needlegrass in the general Cat Creek Summit vicinity (see Appendix II for a list of areas searched). No green needlegrass was found. At least two varieties of another needlegrass, *Stipa occidentalis* (western needlegrass) was encountered in the area, however.

In mid-August, a trip was made to the Marion Ownbey Herbarium at Washington State University, to examine Hitchcock's original collections deposited there. After careful examination and comparison with known green needlegrass specimens it was determined that Hitchcock's material from the Cat Creek Summit area was misidentified. Both specimens were annotated to *Stipa occidentalis* Thurb. var. *minor* (Vasey) Hitch. Based on our field and herbarium observations it is our determination that green needlegrass does not occur on the Boise NF.

Following is information on the taxonomy, identification, range, habitat, conservation status and recommendations for pine woods cryptanth and green needlegrass.

Cryptantha simulans Greene

CURRENT STATUS USFS Region 4 - Sensitive (Boise NF)
USFWS - None
Idaho BLM - Sensitive
Idaho Native Plant Society - Sensitive
Heritage Rank - G4/S1

TAXONOMY

Family: Boraginaceae (Borage)

Common Name: Pine woods cryptanth

Citation: Pitt. 5:54. 1902.

Synonymy: *Cryptantha ambigua* f. *simulans*

Technical Description: Openly branched or subsimple annual, 1.5-5 dm tall; herbage strigose, often canescent, essentially without spreading hairs; leaves scattered, linear or linear-oblong; spikes relatively few, naked, tending to be paired; fruiting calyx 4-6 mm long, strigose-hirsute and commonly with some stiffer but not very long bristles that may be somewhat curved; corolla 1-2 mm wide; nutlets 4, ovate, 2-3 mm long, 1.1-1.5 mm wide, coarsely granular and with scattered, low tubercles, the scar closed; style a little surpassed by the nutlets (Cronquist 1959).

Nontechnical Description: Pine woods cryptanth is an openly branched annual up to about 0.5 meter tall. Leaves are alternate, narrow, and scattered along the stem. The herbage has straight, appressed hairs that point upward, and very few or no spreading hairs. Petals are white and only 1-2 mm wide. The sepals are 4-6 mm long and hairy with some stiffer curved bristles. The fruit is a nutlet, these are coarsely granular with minute bumps.

Distinguishing Features and Similar Species: There are several other annual cryptanths known or expected to occur in the Boise NF area, including *Cryptantha affinis* (slender cryptanth), *C. ambigua* (obscure cryptanth), and *C. torreyana* (Torrey's cryptanth). The straight, appressed hairs of pine woods cryptanth make it readily distinguishable from obscure cryptanth and Torrey's cryptanth which have spreading hairs on the herbage. Slender cryptanth may have mostly appressed hairs, but typically has some spreading ones too. In addition, the nutlets of slender cryptanth are smooth or only inconspicuously granular, compared to the coarsely granular nutlets of pine woods cryptanth.

DISTRIBUTION

Range: Pine woods cryptanth is distributed from southern California to central Washington. It is also known from a disjunct population in Latah County, Idaho, and in the Pacific Northwest is confined to east of the Cascade crest.

Findings from our 1992 field survey and review of old herbarium records, reveal that earlier reports of pine woods cryptanth in Elmore and Owyhee counties, Idaho, were erroneous.

Habitat: Pine woods cryptanth usually occurs in open ponderosa pine forests habitats.

CONSERVATION STATUS

Conservation Status - Idaho: In a continuation of their evaluation and consolidation of rare plant data in Idaho, it was the Rare and Endangered Plants Technical Committee of the Idaho Natural Areas Council that first recognized pine woods cryptanth as a possible conservation concern in Idaho in 1981 (Steele 1981). Steele recommended it be added to the State Watch List with the note that it was widely distributed in Idaho, but was quite rare, being known from only a few collections in the state. Region 4 of the Forest Service first recognized pine woods cryptanth as a conservation concern in 1986 when it appeared on the Sensitive Plant Species list for the Boise NF (Atwood 1986). In light of its Sensitive Species status, but lack of conservation information, the need for a use, condition, and trend cumulative effects assessment was identified as a management implication for pine woods cryptanth by Spahr et. al. (1991).

Pine woods cryptanth is not a candidate for any listing with the U.S. Fish and Wildlife Service. Besides its current status as a Forest Service Region 4 Sensitive Species for the Boise NF (Spahr et al. 1991), it is also on the Idaho Bureau of Land Management Sensitive Species list (Moseley and Groves 1992).

The Idaho Native Plant Society considers pine woods cryptanth to be a Sensitive Species in Idaho (Idaho Native Plant Society 1992). This category refers to taxa with small populations within Idaho that presently do not meet the criteria for Priority 1 or 2 classification, but whose populations and habitats may be jeopardized without active management or removal of threats (Moseley and Groves 1992).

The Idaho Conservation Center currently ranks pine woods cryptanth as G4/S1 (G4 = not rare and apparently globally secure, but with cause for long-term concern, S1 = critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; Moseley and Groves 1992).

Conservation Status - Elsewhere:

Oregon - The Oregon Natural Heritage Data Base (1989) list pine woods cryptanth as a Review species in Oregon. The Review list contains species for which more information is needed before status can be determined, but may be threatened or endangered in Oregon or throughout its range.

Ownership: In Idaho, pine woods cryptanth is now known from only one rather vague location on Moscow Mountain in Latah County. It is uncertain whether this population occurs on State or private land. Previous accounts of it on the Boise NF, as well as in the Owyhee Mountains are in error.

Threats: The Idaho population of pine woods cryptanth known from the Moscow Mountain area is based on a collection that is nearly a century old. The present status of this population, including whether it is still even persists is unknown. Threats to this population likely include activities that would significantly alter or destroy the habitat of pine woods cryptanth. Logging, and housing or other building developments represent the most likely threats to the long-term viability of this population.

ASSESSMENT AND RECOMMENDATIONS

Summary: Material from J. H. and C. B. Christ's original collection of pine woods cryptanth from the North Fork Boise River were reviewed at both the University of Idaho Herbarium and the Marion Ownbey Herbarium at Washington State University. These original specimens were found to have been misidentified, and instead are believed to be the common and widespread species *Cryptantha torreyana* (Torrey's cryptanth). A field survey along the North Fork Boise River in the general vicinity of Christ's original collection also failed to locate any pine woods cryptanth, instead finding Torrey's cryptanth and/or *Cryptantha ambigua* (obscure cryptanth) to be fairly common. This combination of field and herbarium information indicates that pine woods cryptanth does not occur on the Boise NF and that earlier accounts of its occurrence there were in error.

Recommendations to the Regional Forester - Region 4: It is now known that pine woods cryptanth does not occur on the Boise National Forest. Because it is also not known from any of the other Forests in the Region, it is recommended that pine woods cryptanth be dropped from the Regional Sensitive Plant Species list.

Recommendations to the Boise National Forest: In light of the field and herbarium data presented in this report, pine woods cryptanth should be taken off the Sensitive Species list for the Boise NF.

Recommendations to the Bureau of Land Management: Field and herbaria investigations during 1992 found the Owyhee Mountains account of pine woods cryptanth to be in error. Davis' 1940 collection from near Silver City was found to be misidentified. In addition, no pine woods cryptanth was found during a day of searching in the general vicinity of the original Davis collection site. Because pine woods cryptanth was apparently included on the BLM Sensitive Species list based on this Davis collection, it should be removed from this list.

Stipa viridula Trin.

CURRENT STATUS USFS Region 4 - Sensitive (Boise and Targhee NFs)
USFWS - None
Idaho BLM - None
Idaho Native Plant Society - Sensitive
Heritage Rank - G4/S1

TAXONOMY

Family: Poaceae or Gramineae (Grass)

Common Name: Green needlegrass

Citation: Mem. Acad. St. Petersburg. VI, 21:39. 1836.

Synonymy: *Stipa parviflora* Nutt.; *Stipa nuttalliana* Steud.

Technical Description: Tufted perennial 5-11 dm tall, culms glabrous or sometimes more or less pubescent; sheaths glabrous to puberulent, the margins usually villous-ciliate near the tip, the collar usually villous; ligules rounded, glabrous to pubescent externally, the lower ones mostly 0.5-1.5 mm long, the upper sometimes to 3 mm long; blades strongly involute, 3-6 mm broad; panicle narrow, the branches erect, 10-25 cm long; glumes membranous, 9-12 mm long, abruptly acuminate, the lower one often 5-nerved; floret plump, usually 5-6 mm and about 1 mm thick; callus short, blunt, about 0.5 mm long; lemma indurate, sericeous, the terminal hairs usually somewhat longer and coarser; awn terminal (edges of lemma not prolonged past its base), twice genticulate, (2)2.5-3.5 cm long, subglabrous; palea scarcely 2 mm long, rounded, glabrous, hyaline; lodicules two, 1.2-1.5 mm long; fertile anthers 2.5-3 mm long, often vestigial and 1 mm long. 2N=82 (Hitchcock 1969).

Nontechnical Description: Green needlegrass is a tufted grass from about one-half to little over a meter tall. The sheaths are usually hairy along the margins and old sheath bases are persistent. Leaf blades are usually curled and 3-6 mm wide. Ligules are membranous and up to 3 mm long, and the panicle is narrow. Glumes abruptly taper to a sharp point, the lemma (the larger "scale" surrounding the seed) is brown and leathery, and the palea (the smaller "scale" associated with the seed) is less than 1/2 as long as the lemma and is without hairs. The lemma has an awn with the two lower segments twisted. The florets appear relatively "plump", being less than 6 times as long as wide. In addition, many plants are functionally pistillate, with only rudimentary, sterile anthers.

Distinguishing Features and Similar Species: Green needlegrass is similar to several other needlegrasses. The only other needlegrass encountered during our field survey was at least two varieties of the western needlegrass (*Stipa occidentalis*) complex. These can be distinguished from green needlegrass by a combination of morphological characters, including ligules only to about 1 mm long, the glumes acuminate, but not abruptly so, the palea hairy, the florets not appearing as "plump" (florets often more than 6 times as long as wide), and flowers typically perfect, with fully developed anthers.

DISTRIBUTION

Range: The range of green needlegrass is predominately east of the continental divide. It is native to the northern and central Great Plains from Alberta and Saskatchewan to as far south as Kansas in the east and Arizona in the west. It has been introduced in areas of Canada from British Columbia east into several other provinces, and south through the Rocky Mountain states (Hitchcock 1969; Hitchcock 1971; Welsh *et al.* 1987). In Idaho it is known from two stations, one near Soda Springs in Caribou County, the other near the head of Warm Springs Creek in Clark County. Little is known about these populations, and the population near Soda Springs was not relocated during a survey in 1991 (Moseley 1991). Findings from our 1992 field survey and review of old herbarium records, reveal that earlier reports of green needlegrass in Elmore County, Idaho, are erroneous.

Habitat: Plains, prairies, foothills at lower elevations, to mountain meadows, open woodlands and hillsides at higher elevations. It is quite drought resistant, and is adapted to grow on a wide range of soils, but does especially well on clay soils and moderately alkaline soils derived from calcareous shales (Tirmenstein 1987).

CONSERVATION STATUS

Conservation Status - Idaho: Green needlegrass was first recognized as a possible conservation concern in Idaho, in 1981, by the Rare and Endangered Plants Technical Committee of the Idaho Natural Areas Council (Henderson 1981). Henderson recommended it be added to the State Watch List, remarking that its abundance, distribution, and possible threats are unknown at the time. In the Region 4 Sensitive Plant Program Handbook, green needlegrass is listed as a Sensitive Species for the Targhee NF (USDA Forest Service 1988). It is additionally listed as a Sensitive Species for the Boise NF in Spahr *et al.* (1991), who also note that concerning management implications, data are needed to assess use, condition and trend for green needlegrass.

The Idaho Native Plant Society considers green needlegrass to be a Sensitive Species in Idaho (Idaho Native Plant Society 1992). This category refers to taxa with small populations within Idaho that presently do not meet the criteria for Priority 1 or 2 classification, but whose populations and habitats may be jeopardized without active management or removal of threats (Moseley and Groves 1992).

The Idaho Conservation Data Center currently ranks green needlegrass as G4/S1 (G4 = not rare and apparently globally secure, but with cause for long-term concern, S1 = critically imperiled in Idaho because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; Moseley and Groves 1992).

Conservation Status - Elsewhere: Green needlegrass is not considered a conservation concern elsewhere.

Ownership: The Caribou County population occurs on Idaho Falls District, BLM land, and the Clark County population is on private land. Previous accounts of green needlegrass in Elmore County, on or near the Boise NF, were in error.

Threats: No known threats have been documented for either Idaho population, although both are believed to be small in extent. There are questions concerning whether the Idaho populations, especially the one near Soda Springs, are indeed native, or the result of a reseeded or similar project. The Soda Springs

population was not relocated during a 1991 survey for rare plants in the Bear River Range area (Moseley 1991), and so there is also the question of its persistence at this site.

ASSESSMENT AND RECOMMENDATIONS

Summary: Material from C. L. Hitchcock's original collections of green needlegrass from around the Cat Creek Summit area north of Mountain Home was reviewed at the Marion Ownbey Herbarium at Washington State University. These original specimens were found to have been misidentified, and instead are believed to be *Stipa occidentalis* (western needlegrass). A field survey in the general vicinity of Hitchcock's original collections found no green needlegrass, but instead found at least two varieties of western needlegrass to be locally common. This combination of field and herbarium information strongly suggests that green needlegrass does not occur on the Boise NF, and that earlier accounts of its occurrence there were in error.

Recommendations to the Regional Forester - Region 4: It is now known that green needlegrass does not occur on the Boise National Forest. It is recommended it be taken off the Sensitive Species list for the Boise NF. The population in Clark County is near the Targhee NF and should remain on its list.

Recommendations to the Boise National Forest: In light of the field and herbarium data presented in this report, green needlegrass should be taken off the Sensitive Species list for the Boise NF.

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Appendix 1

Line drawings of *Cryptantha simulans* and *Stipa viridula*
(From Cronquist 1959 and Hitchcock 1969)

Appendix 2

List of areas searched on the Boise National Forest and adjacent lands for *Cryptantha simulans* and *Stipa viridula*.

Cryptantha simulans

1. North Fork Boise River area from Deer Park Guard Station downstream to the mouth of Rabbit Creek.
2. Rabbit Creek, along FS Road # 327, from its mouth to head of drainage.
3. Lower portions of Little Owl Creek, along FS Road # 384.

Stipa viridula

1. Flats and slopes on west side of Little Camas Reservoir.
2. Along Highway 20 from FS Road # 131 junction northeast to Cat Creek Summit area.
3. Lower portion of Wood Creek Road (FS Road # 1643).
4. Along FS Road # 134 to Anderson Ranch Dam, then along FS Road # 113 to Danskin Bridge, and back to Highway 20 via FS Road # 131.
5. FS Road # 194 from Cat Creek Summit area to the head of Little Camas Creek.