

Deleted *Solidago gigantea* from CRPR 2B.2 and added *S. lepida* var. *salebrosa* to CRPR 3.2 on September 29, 2014

**Rare Plant Status Review: *Solidago gigantea* and *Solidago lepida* var. *salebrosa*
Proposed Deletion of *S. gigantea* from California Rare Plant Rank 2B.2, G5 / S1
Proposed Addition of *Solidago lepida* var. *salebrosa* to 3.2 2B-2, G5T5Q / S1**
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Changes made to the original document appear in blue text.

Background

Solidago gigantea is a perennial rhizomatous herb in the Asteraceae that was added to the CNPS Inventory, 5th Edition in 1994 (Skinner et al. 1994). It is currently included on California Rare Plant Rank (CRPR) 2B.2. At the time it was added, it was known from two occurrences in California, one from the Modoc Plateau (based on *M. Manning 247*) and one from the northern Sierra Nevada (based on *Bacigalupi and Sweeney 4349*) (CNDDDB 2014). *Solidago gigantea* is found in almost every U.S. State and Canadian province/territory, but was scarcely known from California. According to J. Hickman (pers. comm. 1990), it may have been more common in California than indicated by those two collection records. It was included in *The Jepson Manual* (Semple 1993). However, research done in preparation for the *Flora of North America* (Semple and Cook 2006) and *The Jepson Manual, Second Edition* (Semple 2012) showed that *S. gigantea* does not occur in California. Based on a re-working of the genus by Semple and Cook (2006), the California plants are now assignable to *S. lepida* var. *salebrosa*. Given that the plants previously treated as *Solidago gigantea* are now referred to as *Solidago lepida* var. *salebrosa*, CNPS and CNDDDB recommend removing *Solidago gigantea* from California Rare Plant Rank 2B.2.

The *Solidago canadensis* / *S. lepida* complex, “one of the most difficult taxonomic problems in North America” (Semple 1993) has undergone major changes since the publication of *The Jepson Manual* (Semple 1993). These changes are responsible for the shifting identification of the California plants previously referred to as *S. gigantea*. In the revised taxonomic treatments, *Solidago lepida* var. *salebrosa* is separated from both *Solidago gigantea* and *Solidago elongata* (another close relative) by the former’s minutely stipitate-glandular peduncle bracts, which are lacking in the other two taxa. *Solidago lepida* var. *salebrosa* also has a more open inflorescence structure than *S. elongata*, and hairier stems than *S. gigantea* (Semple and Cook 2006; Semple 2012). See Semple and Cook (2006) for additional information regarding the distinction of *S. lepida* var. *salebrosa* from other taxa. Semple et al. (2013) performed a morphometric study on this group within *Solidago*; it supported recognition of *S. lepida*, but var. *salebrosa* will be covered in future studies.

A search of several botanical resources, including the Consortium of California Herbaria (CCH 2014), CalPhotos (2014) and Calflora (2014) suggests that *S. lepida* var. *salebrosa* is more common in California than *S. gigantea* was thought to be. Together,

these sources provide data on 13 specimens, 20 photos, and 5 additional observations of *S. lepida* var. *salebrosa*. However, the first author, J. Strother, and D. Bell reviewed those specimens, and found that only a few actually belonged to *S. lepida* var. *salebrosa*. Many of the specimens had originally been determined to *S. canadensis* var. *salebrosa*, a synonym of *S. lepida* var. *salebrosa*. When reviewed, however, nearly all of them keyed out to *S. elongata*, as they lacked the minute stipitate glands of *S. lepida* var. *salebrosa*. These misidentifications in the CCH (2014) were likely a result of past taxonomic treatments, some of which synonymized *Solidago elongata* with *S. canadensis* var. *salebrosa* (Smith and Wheeler 1992; Cronquist 1994). See the "Localities" tab of the attached "NewAdd_SolidagoLepidaSalebrosa" spreadsheet for a list of specimens that were reviewed. Although we can be confident in the identification of herbarium specimens, observation records cannot be reviewed for identification, and photos are not of sufficient quality to differentiate these taxa. One record from Calflora, an observation from the Modoc National Forest, is within the known range of *S. lepida* var. *salebrosa* for California, but is too vague to map. It should be reviewed for identification and location accuracy.

Although we cannot be fully confident in the identification of all records attributed as *S. lepida* var. *salebrosa* without an herbarium voucher, the results of our study of herbarium specimens suggests that the majority, if not all, of those unvouchered records are probably referable to *Solidago elongata*. Many of the photos given the name *S. lepida* var. *salebrosa*, for example, are from the southern Sierra Nevada and eastern side of the Sierra Nevada, where no specimens of that taxon have been confirmed. For comparison, D. Bell (pers. comm. 2014) examined *Taylor 4100* (RSA specimen in CCH as *S. canadensis* var. *salebrosa*), but observed that the plants did not have the stipitate glands typical of var. *salebrosa*. Also, nearly all of the photos and records in CalPhotos and Calflora, respectively, were taken before Semple's (2006) revision of the genus. Therefore, older keys which separated taxa differently had been used to identify those plants. If we only recognize occurrences that have been documented with a herbarium specimen, then *S. lepida* var. *salebrosa* is still restricted to just two, or possibly three occurrences, from the Modoc Plateau and northern Sierra Nevada. One of those occurrences, based on *Jepson 19366* (in CCH 2014 as *S. elongata*) was determined by J. Strother (pers. comm. 2014) to possibly be *S. lepida* var. *salebrosa*, but was not annotated as such.

Due to the remoteness of its distribution in California, it is possible that *S. lepida* var. *salebrosa* is more common than indicated by the herbarium specimens representing just two or three occurrences. Hickman's (pers. comm. 1990) suggestion, that *S. gigantea* may have been more common than indicated by collection records, could apply equally to *S. lepida* var. *salebrosa*. The plants occur in a remote part of the state, and therefore could have gone unnoticed. Additionally, other herbarium specimens of *S. lepida* var. *salebrosa* could still be filed under the name *S. elongata*; an exhaustive review of these specimens would be extremely time-consuming, as there are currently 731 records under this name in the CCH (2014). However, a good place to start could be to annotate specimens of *S. elongata* from Modoc and Plumas counties, the only counties where *S. lepida* var. *salebrosa* has been confirmed in California so far. Modoc

and Plumas counties currently include 71 records of *S. elongata* (CCH 2014), which would be far less specimens to annotate initially.

Outside of California, *S. lepida* var. *salebrosa* is known from western and central Canada south to Arizona and New Mexico (Semple 2006). The status of *Solidago lepida* var. *salebrosa* outside of California is not well known, as both USDA Plants (2014) and NatureServe (2014) have not yet recognized this new combination. Both of these databases recognize *Solidago canadensis* var. *salebrosa*, but apply this name more broadly, to as far east as Pennsylvania and Quebec. The inconsistency in distributions is likely due to the re-working of the genus by Semple (2006).

Little is known about the threats to *Solidago lepida* var. *salebrosa* in California, as no confirmed occurrences have been recently documented. Both of the confirmed occurrences, as well as the third possible occurrence, are at or near rural communities, so they could be threatened, or even possibly extirpated, by agriculture or development.

Based on the available information, CNPS and CNDDDB recommend adding *Solidago lepida* var. *salebrosa* to CRPR 3.2 2B.2 of the CNPS Inventory. If more information on this plant becomes available in the future, CNPS and CNDDDB will re-evaluate its status at that time.

Recommended Actions

CNPS: Delete *Solidago gigantea* from CRPR 2B.2

Add *Solidago lepida* var. *salebrosa* to CRPR 3.2 2B.2

CNDDDB: Delete *Solidago gigantea* from G5 / S1

Add *Solidago lepida* var. *salebrosa* to G5T5Q / S1

Current CNPS Inventory Record

Solidago gigantea Ait.

smooth goldenrod

Asteraceae

CRPR 2B.2

Alaska, Arizona, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Mississippi, Montana, North Carolina, North Dakota, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Washington DC, West Virginia, Wisconsin, Wyoming

Modoc, Plumas

Taylorville (605D) 40120A7, Mt. Bidwell (724B) 41120H2, Fort Bidwell (724C) 41120G2

Meadows and seeps (mesic), marshes and swamps (streambanks and lake margins); elevation 1000 – 1500 meters.

Perennial rhizomatous herb. Blooms July – September

Known in CA from fewer than five occurrences; is it more common? Similar to *S. canadensis*.

Available online at <http://www.rareplants.cnps.org/detail/1781.html>

Revised CNPS Inventory Record

Solidago gigantea

Considered But Rejected: does not occur in California

New CNPS Inventory Record

Solidago lepida de Candolle var. *salebrosa* (Piper) Semple

Rocky Mountains Canada goldenrod

Asteraceae

CRPR ~~32B.2~~

Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Washington, Wyoming
Modoc, Plumas

Meadow Valley (590A)? 3912181, Taylorsville (605D) 4102017, Fort Bidwell (724C)
4112072

Meadows and seeps (mesic), marshes and swamps (streambanks and lake margins);
elevation 1080 to 1390 meters

Perennial rhizomatous herb; blooms July to September.

[Move to CRPR 2B?](#) Previously identified as *S. gigantea*, which does not occur in CA. Similar to *S. elongata*; [many annotations of herbarium records of *S. elongata* records are needed in order to determine distribution and rarity](#). See *The Flora of the Palouse Region*, p. 185 (1901) by C.V. Piper and R.K. Beattie for original description and *Sida* 20(4):1611-1612 (2003) for taxonomic treatment.

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