Species: *Rhynchospora alba* (L.) Vahl, white beaked-rush

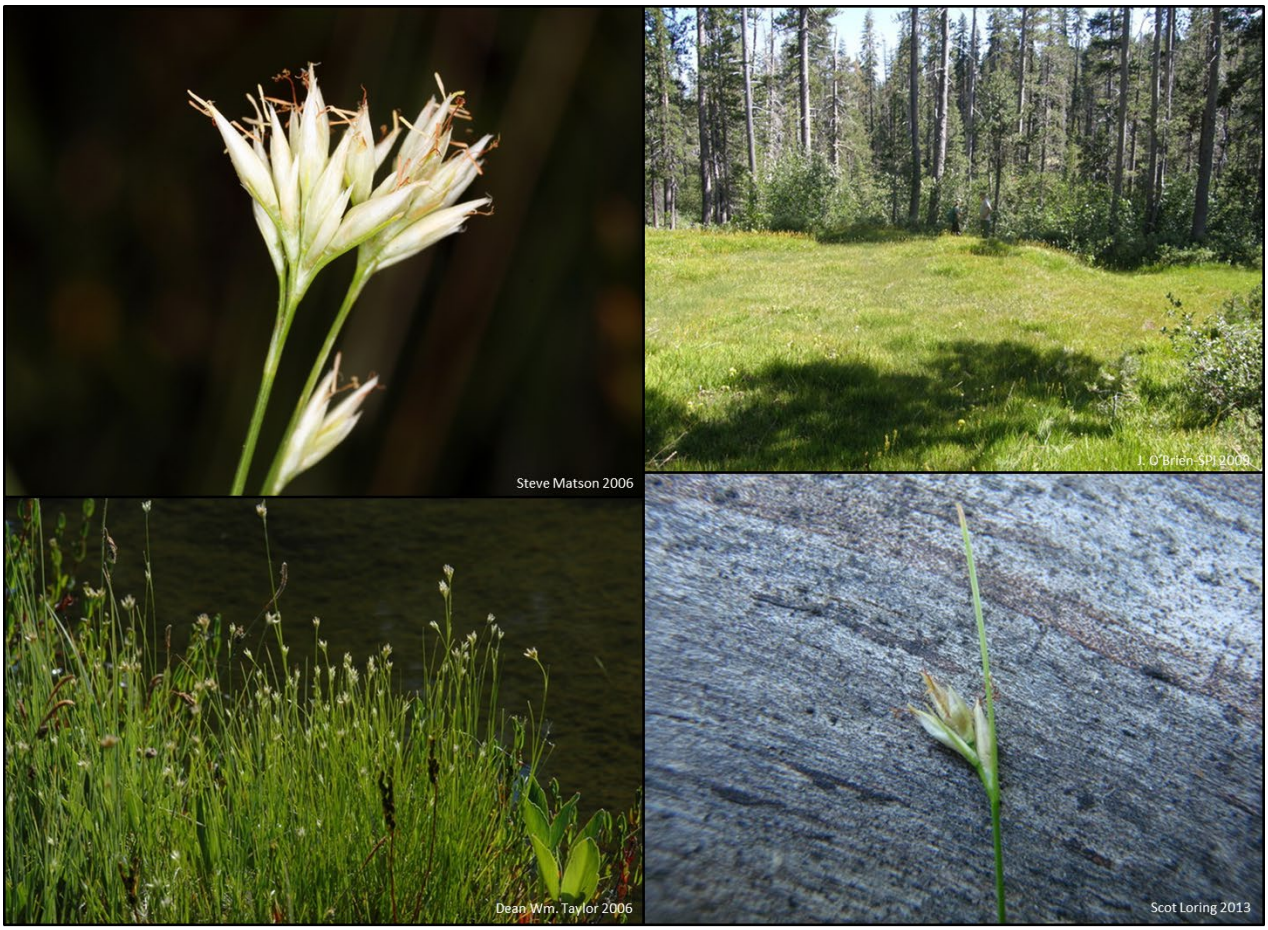


Photo Source: CalPhotos (2021)

Photo Credits: Clockwise from top left: Steve Matson, Jessica O'Brien (Sierra Pacific Industries Botany, used with permission), Dean Wm. Taylor, and Scot Loring.

Status

Table 1 summarizes the current status of this species or subspecies/variety by various ranking entities and defines the meaning of the status.

Table 1. Current status of white beaked-rush		
Entity	**Status**	**Status Definition**
NatureServe CA[a]	G5 S2	G5: Secure — Common; widespread and abundant. S2: Imperiled — Imperiled in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or

		other factors making it very vulnerable to extirpation from the nation or state.
California Rare Plant Rank[b]	2B.2	2B: Plants rare, threatened, or endangered in California, but more common elsewhere. 0.2: Fairly threatened in California. This taxon was added to the CNPS *Inventory of Rare and Endangered Plants of California* in 1974. It has undergone no changes in rank since 2001
California State Listing[c]	Not listed	
USDA Forest Service[d]	Not listed	
USDI FWS[e]	Not listed	
USDI BLM[f]	Not listed	
NatureServe OR[g]	S2 HP List 2	S2: Imperiled in Oregon because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation), typically with 6-20 occurrences. HP List 2: Contains taxa that are threatened with extirpation or presumed to be extirpated from the state of Oregon. These are often peripheral or disjunct species which are of concern when considering species diversity within Oregon's borders. They can be very significant when protecting the genetic diversity of a taxon. ORNHP regards extreme rarity as a significant threat and has included species which are very rare in Oregon on this list.
Oregon State Listing[h]	Not listed	
NatureServe NV[i]	Not present	
Nevada State Listing[j]	Not present	

[a] California Natural Diversity Database, California Dept. of Fish & Wildlife [CNDDB 2021, 2021a]
[b] California Native Plant Society [CNPS 2021]
[c] California Department of Fish and Wildlife [CDFW 2021]
[d] US Forest Service Region 5 Forester's List [USDA 2013] and Pacific NW Survey and Manage [USDA & BLM 2014]
[e] US Department of Interior Fish and Wildlife Service [USFWS 2021]
[f] US Department of Interior Bureau of Land Management [BLM 2021]
[g] Oregon Biodiversity Information Center [ORBIC 2019]
[h] Oregon Department of Agriculture [ODA 2018]
[i] Nevada Natural Heritage Program [NNHP 2020]
[j] Nevada Division of Forestry [NDF 2012]
Note: Individual State Heritage Programs (CNDDB, ORBIC, NNHP) represent NatureServe and contain more up-to-date ranks for their state than NatureServe Explorer.

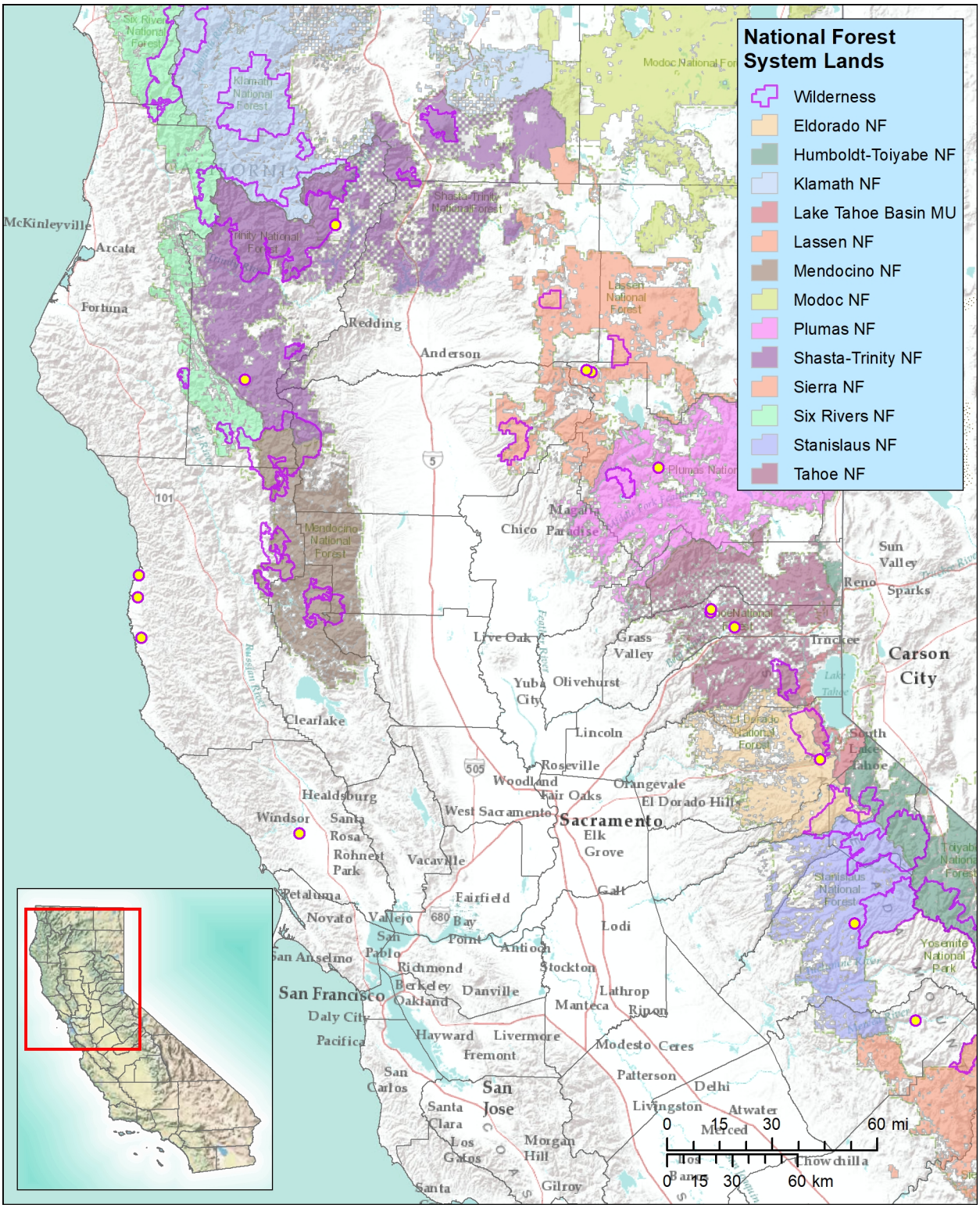
Distribution, abundance, and population trend on the planning unit[1]

Table 2 summarizes the distribution and frequency of this species or subspecies/variety within National Forest System Lands in California. Table 4 in Appendix 1 lists all known occurrences of this species or subspecies/variety within California. Individual occurrences are defined as sites that contain an individual, population, or groups of populations of the plant that are located more than 1/4 (0.25) of a mile apart from each other as defined by the CNDDB.

Table 2. Known Occurrence Frequency of white beaked-rush within the Planning Area (NRIS, CNDDB, Calflora/CCH databases)

National Forest System (NFS) lands in California	Record #s (from Table 4)	CNDDB EOs	Non-CNDDB Records	Recent (seen in past 20 years)	Historical (not seen in past 20 years)	Most Recent Obs. Date	Total Records on NFS lands
Eldorado:	14	0	1	1	0	17-Jun-2019	1
Lassen:	7	1	0	1	0	29-Jul-2006	1
Plumas:	6	1	0	1	0	6-Jul-2019	1
Shasta-Trinity:	9, 10	2	0	0	2	7-Jul-1996	2
Stanislaus:	12	0	1	1	0	24-Aug-2005	1
Tahoe:	11, 13, 15	1	2	2	1	29-Aug-2018	3
Totals:	N/A	5	4	6	3	N/A	9

[1] 1909.12 Chapter 10, Section 12.53, components 2, 3, and 4.



Sources: *Distribution*: Calflora 2021, CCH1 2021, CNDDB 2021, NRIS 2020. *Baselayers*: 2013 National Geographic Society, i-cubed, Esri, Garmin, NOAA, NPS, USGS.

White beaked-rush was last updated in the CNDDB on February 9, 2005 (CNDDB 2021), and therefore all Calflora, CCH, and/or NRIS records prior to this date are assumed to have already been reviewed and entered into the CNDDB for this plant. Accordingly, only records from Calflora, CCH, and/or NRIS reported after this date have been reviewed for potential new or updated occurrence information and are included in Table 4 in Appendix 1 as applicable.

In California, white beaked-rush is found in open, acidic wetlands from Sonoma County in the North Coast bioregion (NCo), to the Klamath Ranges (KR), High Cascade Range (CaRH), and north and central High Sierra Nevada bioregions (n SNH, c SNH), as far south as Yosemite National Park. Outside of California, white beaked-rush has a circumboreal distribution. In North America, this species occurs in Alaska and throughout Canada, with the southwestern portion of its range extending through the Pacific Northwest and into California, and the southeastern portion to Georgia and as far west as Minnesota. A disjunct population is also recorded in Colorado (FNA 1993+, JEPS 2021, NatureServe 2021).

White beaked-rush has 15 location records in California. Nine of those records are found on National Forest lands (including three records on the Tahoe NF, two records on the Shasta-Trinity NF, and one record each on the Eldorado, Lassen, Plumas, and Stanislaus NFs). Two non-forest records are on National Park Service lands, and one additional record is on land managed by the California Department of Parks and Recreation. The remaining three records occur on private lands, with one managed by the Nature Conservancy and another by the Sonoma Land Trust. None of these records are in Wilderness Areas. Record #6 is located in the Butterfly Valley Botanical Area. Eight of the California records are historical, and seven are recent. Record #5 is only known from a collection made in 1902. Four of the recent records (12, 13, 14 and 15) were first discovered after 2005 (Calflora 2021, CCH1 2021, CNDDB 2021, NRIS 2020).

In the few locations in California where population information on white beaked-rush has been recorded, the plants tended to be very abundant. At least three locations (records #7, 13, 15) had thousands of individuals present during at least one visit. Four sites have been revisited at least once (records # 4, 6, 7, and 13), but there are not enough data to tell if population sizes have changed over time in any of these locations (Calflora 2021, CCH1 2021, CNDDB 2021, NRIS 2020).

Four of the 15 California records of white beaked-rush are not currently included in the CNDDB. These non-CNDDB records are located at least 8 miles away from the nearest CNDDB occurrence, and would seem to represent new occurrences that should be evaluated for inclusion in the CNDDB. The most recent observation of white beaked-rush was added to Calflora from iNaturalist. Six other white beaked-rush observations on iNaturalist need verification and were not assessed in this report.

Brief description of natural history and key ecological functions[2]

White beaked-rush is a perennial herb that flowers from June to August. It reaches 6–75 cm tall in height, and has a triangular stem and narrow leaves (Ohlson and Mahlmer 1990, CNPS 2021). It has a relatively small and shallow root system for a perennial species and rarely forms rhizomes. In the fall, it dies back to a bulbil at the base of the stem, and regrows from this bulbil in the spring (Ohlson and Malmer 1990, FNA 1993+). Inflorescences are clusters of pale brown to white spikelets that are usually subtended by a green leafy bract (FNA 1993+). Each spikelet contains a single hermaphroditic flower, with the stigmas appearing before the anthers. The lowest spikelets flower first, and each flower produces a single seed (Villa-Machio et al. 2020).

White beaked-rush grows up to 2400 m in elevation in open, boggy or peatland habitats (including on floating mats or in peat-filled areas on rocky shores) that have low competition or low resource availability (Ohlson and Malmer 1990, FNA 1993+, CNPS 2021, JEPS 2021). Where substrate was recorded in California, white beaked-rush was found on serpentine and gabbro soils, but geological maps suggest that this species does not specialize on serpentine substrates (CDC 2021, CNDDB 2021).

The wetland habitats that support white beaked-rush also support a wide diversity of other plant species including other rare plants such as: *Drosera anglica*, *Oreostemma elatum*, *Scheuchzeria palustris*, and *Rhynchospora capitellata* (CNDDB 2021, CNPS 2021). White beaked-rush has also been recorded as occurring with: *Abies magnifica*, *Alnus* spp., *Carex* spp., *Darlingtonia californica*, *Drosera rotundifolia*, *Eriophorum gracile*, *Juncus* spp., *Kalmia polifolia*, *Mentha pulegium*, *Nuphar polysepala*, *Sisyrinchium californicum*, *Sphagnum* spp., *Triantha occidentalis* subsp. *occidentalis*, *Tsuga mertensiana*, and *Vaccinium uliginosum* subsp. *occidentale* (CNDDB 2021, CNPS 2021, NRIS 2020).

The genus *Rhynchospora* is found on every continent except Antarctica, and consists of approximately 350 species. Its center of diversity is in the tropical and subtropical savannas of the Americas, which contain 80% of the known species (Thomas et al. 2009, Buddenhagen et al. 2017). Unusual for graminoids, insect pollination has been demonstrated in several tropical members of *Rhynchospora* (Buddenhagen et al. 2017). White beaked-rush is the only temperate member of this genus known to benefit from insect pollinators (Buddenhagen et al. 2017, Villa-Machio et al. 2020). While white beaked-rush can also be wind pollinated (CPC 2021), research suggests that generalist insect pollinators such as honeybees and hoverflies increase the success of sexual reproduction (Villa-Machio et al. 2020). White beaked-rush maintains a short-term persistent seedbank (Egawa et al. 2009). Seed dispersal by wind, water, and animals has been observed in *Rhynchospora* species, but white beaked-rush's seeds may have a relatively short dispersal distance (Leck and Schütz 2005, Egawa et al. 2009). White beaked-rush is an early colonizer in disturbed wetlands, and some observations suggest that it might increase in abundance with some habitat disturbance (Slater and Agnew 1977, Hirata and Tsuyuzaki 2016).

[2] Basis for other 1909.12 Chapter 10, Section 12.53 components.

White beaked-rush may also facilitate later colonizing plant species in restored fens and bogs (Egawa and Tsuyuzaki 2011).

Overview of ecological conditions for recovery, conservation, and viability[3] including Threats and Risk Factors

Habitat quality was noted for only three of the CNDDB records for white beaked-rush: two were ranked as good quality, and one was in excellent quality. Recorded threats include: hydrological alterations that could change water levels, flow, and/or quality; disturbance through livestock activities; pesticide use; or proximity to human recreation (NRIS 2020, CNDDB 2021). However, there is not enough information available to determine if these threats have affected populations at any of the known locations. One study found that frequent trampling by hikers increased the abundance of white beaked-rush (Slater and Agnew 1977). These authors further speculated that increased abundance of this species could increase the probability of the wetland burning, but this needs further study.

Fens provide habitat to a wide diversity of plant species, including many rare species. Although white beaked-rush may sometimes benefit from localized disturbance, in general fens and bogs are particularly vulnerable to physical disturbance, which can increase the loss of peat layers (Sikes et al. 2013). Grazing and recreation (both motorized and non-motorized) can disturb wetlands by exposing peat to oxygen, which increases its rate of decay, and by changing the flow patterns of surface water (Sikes et al. 2013). Changes in water flows could affect aquatic plants such as white beaked-rush by changing the availability of suitable habitats for them within a wetland. Other activities that affect the water table (such as groundwater pumping or runoff from roads or other disturbed sites) could also affect water levels or soil moisture of wetlands and therefore the quality and availability of suitable habitat. Climate change could also affect water levels and soil moisture, and wetlands are particularly vulnerable to these changes, especially in semi-arid climates like California (Sikes et al. 2013).

Taxonomy[4]

Table 3 summarizes this species or subspecies/variety's name status in key literature.

Table 3. Name status of white beaked-rush

Entity	Name Status
CNDDB and CNPS	*Rhynchospora alba* (L.) Vahl
Jepson eFlora	*Rhynchospora alba* (L.) Vahl
Jepson Manual (1993)	*Rhynchospora alba* (L.) Vahl
Flora of North America	*Rhynchospora alba* (Linnaeus) Vahl
USDA NRCS[a] PLANTS	*Rhynchospora alba* (L.) Vahl
[a] Natural Resources Conservation Service [NRCS 2021]	

[3] 1909.12 Chapter 10, Section 12.53, components 7, 9, 10, 11 and 12, as appropriate.
[4] 1909.12, Chapter 10, Section 12.53, component 1.

Synonymy: *Schoenus albus* L., *Phaeocephalum album* (L.) House, *Dichromena alba* (L.) J.F. Macbr., *Triodon albus* (L.) Farw., *Mariscus albus* (L.) Gilib., *Scirpus albus* (L.) Salisb., *Rhynchospora luguillensis* Britton (FNA 1993+, Tropicos 2021).

Jepson eFlora link (JEPS 2021): https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=41238

Type locality: "Habitat in Europae borealis paludibus siccitatis" (Linnaeus 1753). The lectotype specimen is in Herb. Linn. No. 68.17 (LINN) (Simpson in Cafferty and Jarvis 2004).

Key literature

Buddenhagen, C. E., W. W. Thomas, and A. R. Mast. 2017. A first look at diversification of Beaksedges (tribe Rhynchosporeae: Cyperaceae) in habitat, pollination, and photosynthetic features. *Diversity and phylogeny of the monocotyledons, Contributions from Monocots V. Memoirs of the New York Botanical Garden* 118: 113–126.

Egawa, C., A. Koyama and S. Tsuyuzaki. 2009. Relationships between the developments of seedbank, standing vegetation and litter in a post-mined peatland. *Plant Ecology* 203(2): 217–228.

Egawa, C., and S. Tsuyuzaki. 2011. Seedling establishment of late colonizer is facilitated by seedling and overstory of early colonizer in a post-mined peatland. *Plant Ecology* 212: 369–381

Hirata, A. K. B. and S. Tsuyuzaki. 2016. The responses of an early (*Rhynchospora alba*) and a late (*Molinia japonica*) colonizer to solar radiation in a boreal wetland after peat mining. *Wetlands Ecology and Management* 24(5): 521–532.

Ohlsen, M. and N. Malmer. 1990. Total nutrient accumulation and seasonal variation in resource allocation in the bog plant *Rhynchospora alba*. *Oikos* 58(1):100–108.

Slater, F. M. and A. D. Q. Agnew. 1977. Observation on a peat bog's ability to withstand increasing public pressure. *Biological Conservation* 11(1): 21–27.

Thomas, W. W., A. C. Araujo and M. V. Alves. 2009. A preliminary molecular phylogeny of the Rhynchosporeae (Cyperaceae). *The Botanical Review* 75(1): 22–29.

Villa-Machio, I. J. C. Zamora, J. V. Sandoval-Sierra, J. L. Blanco-Pastor, M. Fernandez-Mazuecos, and P. Jimenez-Mejias. 2020. Insect pollination in temperate sedges? A case study in *Rhynchospora alba* (Cyperaceae). *Plant Biosystems*.

Literature cited

[BLM] U.S. Dept. of Interior Bureau of Land Management. 2020. Special Status Plants in California, Including BLM Designated Sensitive Species. January 17, 2020. Provided by Christina Lund, State Botanist, California BLM on 30 April 2020.

Buddenhagen, C. E., W. W. Thomas, and A. R. Mast. 2017. A first look at diversification of Beaksedges (tribe Rhynchosporeae: Cyperaceae) in habitat, pollination, and photosynthetic features. *Diversity and phylogeny of the monocotyledons, Contributions from Monocots V. Memoirs of the New York Botanical Garden* 118: 113–126.

Cafferty, S. and C.E. Jarvis. 2004. Typification of Linnaean plant names in Cyperaceae. *Taxon* 53: 177–181.

Calflora. 2021. Information on wild California plants for conservation, education, and appreciation. Website http://www.calflora.org/ [accessed February 2021].

[CDC] California Department of Conservation. 2015. Geologic Map of California (2010). California Geological Survey, Geologic Data Map No. 2. Available at https://maps.conservation.ca.gov/cgs/gmc/ [accessed March 2021].

[CDFW] California Department of Fish and Wildlife, Natural Diversity Database. 2020. State and Federally Listed Endangered, Threatened, and Rare Plants of California. Last updated January 2, 2020. 10 pp. Available at https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline [accessed February 2021].

[CNDDB] California Department of Fish and Wildlife, Natural Diversity Database. 2021. RareFind 5 [Internet application] and CNDDB Maps and Data, Version 5.2.14. Available at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data [Government Version, February 2021].

[CNPS] California Native Plant Society, Rare Plant Program. 2021. *Inventory of Rare and Endangered Plants of California* (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed February 2021].

CalPhotos. 2021. CalPhotos: Plants. Regents of the University of California, Berkeley. Website http://calphotos.berkeley.edu/flora/ [accessed Month 2021].

[CPC] Center for Plant Conservation. 2021. CPC National Collection Rare Plant Database. Website https://saveplants.org/national-collection/pollinator-search/ [accessed Month 2021].

[CCH1] Consortium of California Herbaria Portal 1. 2021. Data provided by the participants of the Consortium of California Herbaria. Regents of the University of California, Berkeley. Website http://ucjeps.berkeley.edu/consortium/ [accessed February 2021].

Egawa, C., A. Koyama and S. Tsuyuzaki. 2009. Relationships between the developments of seedbank, standing vegetation and litter in a post-mined peatland. Plant Ecology 203(2): 217–228.

Egawa, C., and S. Tsuyuzaki. 2011. Seedling establishment of late colonizer is facilitated by seedling and overstory of early colonizer in a post-mined peatland. Plant Ecology 212: 369–381

[FNA] Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 20+ vols. Missouri Botanical Garden, New York and Oxford. Vol. 23, 2003.

Hirata, A. K. B. and S. Tsuyuzaki. 2016. The responses of an early (*Rhynchospora alba*) and a late (*Molinia japonica*) colonizer to solar radiation in a boreal wetland after peat mining. *Wetlands Ecology and Management* 24(5): 52 –532.

[JEPS] Jepson Flora Project (eds.). 2021. Jepson eFlora. Website http://ucjeps.berkeley.edu/IJM.html [accessed February 2021].

Leck, M. A. and W. Schütz. 2005. Regeneration of Cyperaceae, with particular reference to seed ecology and seed banks. *Perspectives in Plant Ecology, Evolution and Systematics* 7: 95–133.

Linnaeus, C. 1753. *Species plantarum*. Stockholm

[NRCS] U.S. Department of Agriculture, Natural Resources Conservation Service. 2021. PLANTS Database. Website http://plants.usda.gov/ [accessed February 2021].

[NRIS] U.S. Department of Agriculture Forest Service, Natural Resource Information System. 2020. Natural Resource Information System; Threatened, Endangered and Sensitive Plants—Invasive Plants [accessed March 2020].

NatureServe. 2021. NatureServe Explorer. Website https://explorer.natureserve.org [accessed March 2021].

[NDF] Nevada Division of Forestry. 2012. NAC 527.010 List of fully protected species of native flora. April 2012. Available at: https://www.leg.state.nv.us/NAC/NAC-527.html#NAC527Sec010 [accessed May 2020].

[NNHP] Nevada Natural Heritage Program. 2020. Tracking and Watch Lists. Department of Conservation and Natural Resources. Available at: http://heritage.nv.gov/botany [accessed May 2020].

[ODA] Oregon Department of Agriculture. 2018. Oregon listed and candidate plants - complete list. Native Plant Conservation Program. October 12, 2018. Available at: https://data.oregon.gov/Natural-Resources/Oregon-listed-and-candidate-plants-complete-list/8s3k-ygh2 [accessed May 2020].

Ohlsen, M. and N. Malmer. 1990. Total nutrient accumulation and seasonal variation in resource allocation in the bog plant *Rhynchospora alba*. *Oikos* 58(1):100–108.

[ORBIC] Oregon Biodiversity Information Center. 2019. Rare, Threatened and Endangered Vascular Plant Species of Oregon. Institute for Natural Resources, Portland State University, Portland, OR. 49 pp. Available at https://inr.oregonstate.edu/sites/inr.oregonstate.edu/files/2019-rte-vascs.pdf [accessed May 2020].

Sikes, K., D. Cooper, S. Weis, T. Keeler-Wolf, M. Barbour, D. Ikeda, D. Stout, and J. Evens. 2013. Fen Conservation and Vegetation Assessment in the National Forests of the Sierra Nevada and Adjacent Mountains, California. Sacramento, CA: California Native Plant Society, Vegetation Program.

Slater, F. M. and A. D. Q. Agnew. 1977. Observation on a peat bog's ability to withstand increasing public pressure. *Biological Conservation* 11(1): 21–27.

Thomas, W. W., A. C. Araujo and M. V. Alves. 2009. A preliminary molecular phylogeny of the Rhynchosporeae (Cyperaceae). *The Botanical Review* 75(1): 22–29.

Tropicos. 2021. Missouri Botanical Garden. Website http://www.tropicos.org [accessed February 2021].

[USDA] U.S. Department of Agriculture Forest Service, Pacific Southwest Region. 2013. Regional Forester Sensitive Species List. Available at: http://www.fs.usda.gov/main/r5/plants-animals/plants [accessed May 2020].

[USDA & BLM] U.S. Department of Agriculture Forest Service and U.S. Department of Interior Bureau of Land Management. 2014. List of Survey and Manage Species in Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, rotection Buffer, and other Mitigation Measures; as amended by Annual Species Reviews 2001-2003. Available at: https://www.blm.gov/or/plans/surveyandmanage/files/sm-fs-enc3-table1-1-dec2003wrtv.pdf [accessed May 2020].

[USFWS] U.S. Dept. Interior Fish and Wildlife Service. 2021. Endangered Species List. Available at: https://www.fws.gov/endangered [accessed February 2021].

Villa-Machio, I. J. C. Zamora, J. V. Sandoval-Sierra, J. L. Blanco-Pastor, M. Fernandez-Mazuecos, and P. Jimenez-Mejias. 2020. Insect pollination in temperate sedges? A case study in *Rhynchospora alba* (Cyperaceae). *Plant Biosystems*.

Persons Contacted

No one was contacted for this account.

Author(s) and Date:

Molly S. Wiebush, California Native Plant Society, Rare Plant Botanist Coordinator, 11 March 2021; finalized 1 October 2021.

Reviewer(s) and Date:

Aaron E. Sims, California Native Plant Society, Rare Plant Program Director, 5 May 2021; Julie Ann Kierstead, USDA Forest Service Region 5, Ecosystem Planning, 14 September 2021

Formatting: Form is set up as 508 compliant. Please use the "styles" if further formatting is necessary.

Purpose: This is to maintain the best available science on a species that could be used by the Forest Service in a variety of functions. Specifically, there would be additional steps and evaluations to determine whether or not this species would be considered a Species of Conservation Concern under the 2012 Planning Rule or a Sensitive Species under the 1982 Planning Rule.

Appendix 1: Known Occurrences

Table 4. Known Occurrences of white beaked-rush within California (NRIS, CNDDB, Calflora/CCH databases).

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in red.

Rec. #	Locality	County	Quad	Ref. (Source)	Date Last Obs'd	Population Info	Threats	Land Mgr.	Elev. (ft.)
1	YOSEMITE VALLEY.	Mariposa	Half Dome (3711965)	CNDDB, Feb 2021 (EO 1)	unknown	NEEDS FIELDWORK TO DETERMINE EXACT LOCATION.		NPS-Yosemite NP	
2	PITKIN MARSH, APPROXIMATELY 0.25 MILE NORTH OF END OF TEMPLETON ROAD.	Sonoma	Sebastopol (3812247)	CNDDB, Feb 2021 (EO 2)	6-Sep-1987	750 PLANTS SEEN IN 1987. INCLUDES SEVERAL COLLECTIONS FROM 1945-1951. NEEDS FIELDWORK.	CATTLE PASTURE. NO THREATS IN 1987, BUT MAY BE SUBJECT TO OVERGRAZING OR HERBICIDE SPRAYING OF NON-NATIVE BLACKBERRIES.	Sonoma Land Trust	200
3	ABOUT 2.4 MILES NORTHEAST OF ALBION, ALONG ALBION-LITTLE RIVER ROAD, NEAR COUNTY AIRPORT.	Mendocino	Mathison Peak (3912336)	CNDDB, Feb 2021 (EO 3)	27-Aug-1987	EXACT LOCATION UNCLEAR; NEEDS FIELDWORK. COLLECTION FROM "NEAR COUNTY AIRPORT" (MCKELVEY #43) AND REFERENCE TO "COUNTY AIRPORT" (SLID ND) ALSO ATTRIBUTED HERE.		The Nature Conservancy	490

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in red.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
4	ABOUT 1.8 MILES EAST OF NOYO, JUST WEST OF SUMMERS LANE ABOUT 0.3 MILE NORTH OF HIGHWAY 20.	Mendocino	Fort Bragg (3912347)	CNDDB, Feb 2021 (EO 4)	30-Jul-1981	ONLY SOURCES ARE 1964 AND 1981 COLLECTIONS; NEEDS FIELDWORK.		Private	275
4		Mendocino	Fort Bragg (3912347)	Calflora, Feb 2021 (dfa12738)	11-Feb-2015	1+ individuals		Private	
5	INGLENOOK FEN, ADJACENT TO SANDHILL LAKE.	Mendocino	Inglenook (3912357)	CNDDB, Feb 2021 (EO 5)	1902	ONLY SOURCE IS 1902 COLLECTION (REFERENCED IN GUG96U04). NEEDS FIELDWORK.		DPR-Mackerricher SP	
6	ABOUT 1.5 MILES WEST OF KEDDIE, BUTTERFLY VALLEY BOTANICAL AREA.	Plumas	Crescent Mills (4012018)	CNDDB, Feb 2021 (EO 6)	24-Sep-1998	53 PLANTS SEEN IN 1998: 2 IN NORTHERN POLY, 50 IN CENTRAL, AND 1 IN SOUTHERN. RARE PLANTS DARLINGTONIA CALIFORNICA, OREOSTEMMA ELATUM, AND RHYNCHOSPORA CAPITELLATA ALSO OCCUR HERE.	ORIGINAL CONSTRUCTION OF RAILROAD BED (NOW A ROAD) SIGNIFICANTLY MODIFIED HYDROLOGY. SOME TRAMPLING.	Plumas NF	3880

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in red.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
6		Plumas	Crescent Mills (4012018)	Calflora, Feb 2021 (wb2112-345)	6-Jul-2019			Plumas NF	
7	WILLOW LAKE.	Plumas	Mt. Harkness (4012143)	CNDDB, May 2017 (EO 7)	10-Aug-1989	1500+ PLANTS SEEN IN 1989 AND 10,000+ IN 1988.	SOME TRAMPLING BY FISHERMAN, BUT LITTLE DISTURBANCE.	Lassen NF	5430
7	Unnamed Road, Chester, CA 96020, USA	Plumas	Mt. Harkness (4012143)	Calflora, Feb 2021 (mu8822)	29-Jul-2006	1+ individuals		Lassen NF	
8	LITTLE WILLOW LAKE, ABOUT 1.2 MILES EAST OF SIFFORD MOUNTAIN, LASSEN VOLCANIC NATIONAL PARK.	Plumas	Reading Peak (4012144)	CNDDB, May 2017 (EO 8)	10-Aug-1990	ONLY SOURCE IS 1990 COLLECTION.		NPS-Lassen Volcanic NP	6150
9	LAKE ELEANOR, ABOUT 5.5 AIR MILES NORTH OF COVINGTON MILL.	Trinity	Covington Mill (4012287)	CNDDB, Feb 2021 (EO 9)	7-Jul-1996	ONLY SOURCE IS 1996 COLLECTION.		Shasta-Trinity NF	5000

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in red.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
10	SILVER SPRING, ABOUT 1.2 MILES SOUTHWEST OF SWIM MEADOW.	Trinity	Smoky Creek (4012332)	CNDDB, Feb 2021 (EO 10)	14-Sep-1979	ONLY SOURCE IS 1979 COLLECTION (WHICH WAS ORGINALLY IDENTIFIED AS R. GLOMERATA VAR. MINOR).		Shasta-Trinity NF	3700
11	EAGLE LAKES.	Nevada	Cisco Grove (3912035)	CNDDB, Feb 2021 (EO 11)	1973	NOTE IN 1973 TRUE REPORT IS THE ONLY SOURCE FOR THIS SITE. NEEDS FIELDWORK.		Tahoe NF	5400
12	Clear Lake, Clavey River watershed (ca. 6 air miles SE of Pinecrest)	Tuolumne	Pinecrest (3811928)	CCH1, Feb 2021 (JEPS109753)	24-Aug-2005			Stanislaus NF	7251
12	Clear Lake, Clavey River watershed (ca. 6 air miles SE of Pinecrest)	Tuolumne	Pinecrest (3811928)	Calflora, Feb 2021 (gr16256)	24-Aug-2005	1+ individuals		Stanislaus NF	6919
13	Sierra Nevada, Pat Yore Flat (Celina Ridge, situate along U.S. Forest Road 50 - Hooser Road, watershed South Yuba River)	Nevada	Graniteville (3912046)	CCH1, Feb 2021 (SEINET9157662)	30-Jul-2008			Tahoe NF	

Duplicate records from the same site are given the same record number and are included in red. Rows containing questionable records are highlighted in red.									
Rec. #	**Locality**	**County**	**Quad**	**Ref. (Source)**	**Date Last Obs'd**	**Population Info**	**Threats**	**Land Mgr.**	**Elev. (ft.)**
13	NNE of Washington. Pat Yore Flat along Forest Route 50 in the middle of Celina Ridge. Plants were in fruit and had turned brown.	Nevada	Graniteville (3912046)	Calflora, Feb 2021 (po114503)	14-Aug-2018	1+ individuals		Tahoe NF	
13	Pat Yore Fen	Nevada	Graniteville (3912046)	NRIS, Mar 2020 (RHAL3T NF01W)	24-Sep-2010	2 volunteers found "1000's" of plants at fen.	Did not observe any signs of cattle or OH vehicles in the fen. Road 50 is used by OHV. Observed bear, fox and unknown mid-sized mammal on the road durring past visits-probably a well used corridor for animals.	Tahoe NF	
13	Pat Yore Fen	Nevada	Graniteville (3912046)	NRIS, Mar 2020 (RHAL3T NF01W	29-Aug-2018	10,000 estimated plants.	Some channelization in fen may affect habitat.	Tahoe NF	
14	Edge of swampy area among at top of granite slab outcrops.	El Dorado	Echo Lake (3812071)	Calflora, Feb 2021 (gp17269)	17-Jun-2019	2-10 individuals		Eldorado NF	
15	Murphy Flat Fen	Nevada	Graniteville (3912046)	NRIS, Mar 2020 (RHAL3T NF02W)	29-Aug-2018	1,000 estimated plants.		Tahoe NF	

Appendix 2: Additional Considerations at the Forest Level

<This section, including the next 5 subheadings, would be filled out by **Forest Service botanists**.>

<Forest Name>

Geographic distribution within the Forest

A. Scarce or isolated
B. Patchy or gaps
C. Contiguous

<Select a geographic distribution rank and provide references or cite 'specialist expertise, <name>' where appropriate.>

Abundance of the species on the Forest

A. Rare – current abundance is low enough that stochastic and other factors could lead to potential imperilment.
B. Uncommon – current abundance is large enough that demographic stochasticity is not likely to lead to rapid local extinction, but, in combination with highly variable environmental factors, could pose a threat.
C. Common – current abundance is large enough that species persistence is not threatened by demographic stochasticity in combination with environmental variation.
D. Insufficient information to draw inferences about criterion.

<Select a species abundance rank and provide references or cite 'specialist expertise, <name>' where appropriate.>

Population trend on the Forest

A. Significant downward or suspected downward population trend.
B. Stable population.
C. Upward population trend.
D. Insufficient information to draw inferences about criterion.

<Select a population trend rank and provide references or cite 'specialist expertise, <name>' where appropriate.>

Habitat trend on the Forest

A. Decline in habitat quality or quantity.
B. Stable amounts of suitable or potential habitat, relatively unchanged habitat quality.
C. Improving habitat quality or increasing amounts of suitable or potential habitat.
D. Insufficient information to draw inferences about criterion.

<Select a habitat trend rank and provide references or cite 'specialist expertise, <name>'where appropriate.>

Vulnerability of habitat on the Forest

A. Substantial modification of habitat has occurred or is anticipated with conditions departing from expectations based on NRV, and/or habitat is impacted by modern stressors such as drought, climate change, high intensity wildfire and wildfire suppression disturbances, loss of natural openings due to historical wildfire suppression, nonnative invasive species, water impoundments and diversions, and recreation, etc.
B. Habitat modification is likely to result in ecological patterns similar to the range of historical conditions, but is being impacted by modern stressors.
C. Habitat resilient, changes are similar in frequency and intensity to those expected from NRV, and modern stressors not significant.
D. Insufficient information to draw inferences about criterion.

<Select a habitat vulnerability rank and provide references or cite 'specialist expertise, <name>'where appropriate.>

Additional Forest specific information related to the SCC determination

<This section is provided for Forest botanists to add additional Forest specific information that is not captured in the section above, if necessary. Provide a narrative description here of the additional relevant information. State "No additional information" if this section is not used.>