Plant Species Evaluation Form

*Alisma gramineum* Lej.

GRASS ALISMA

**Family:** Alismataceae (CNPS 2018)

**PLANTS Symbol:** ALGR (USDA 2018)

**Calif. Endemic:** No (CNPS 2018)

**Synonyms/Other Names:** *Alisma gramineum* was described by Lejeune in 1811. In 1830, Gorski coined the name *A. loeselii*, which was properly published by Juzepczuk in 1934. This name is considered an illegitimate synonym for *A. gramineum*. Nicollet described *A. geyeri* in 1843, on the basis of previous work by Torrey; this taxon was subsequently recombined into *A. gramineum*. An 1882 description of *A. plantago-aquatica* var. *decumbens* by Boissier suffered the same fate, and is now regarded as an invalid synonym for *A. gramineum*. In all, *A. gramineum* has three synonyms that may be encountered in the literature: *A. geyeri*, *A. loeselii*, and *A. plantago-aquatica* var. *decumbens* (Tropicos 2018).

**Identification Issues:** There are just three species of *Alisma* in California: *A. lanceolatum*, *A. triviale*, and *A. gramineum*. The latter is easily distinguished by its narrow leaves, proportionally smaller inflorescences, and coiled styles (Turner et al. 2012).

**Taxonomy:**

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Species In Genus: +- 9 species: generally northern temperate. Etymology: (Greek: ancient name). Note: North American species need study.

Leaf: 6--30 cm; blade 3--7 cm, 0.8--2 cm wide, linear to narrowly lanceolate, base tapered.

Inflorescence: < to +- > leaves; pedicels generally recurved to spreading. Flower: petals white or pink; style +- coiled. Fruit: lateral walls generally thick, opaque.

**eFlora Treatment Author:** Charles E. Turner, Robert R. Haynes & C. Barre Hellquist.

**Status:**

Note: Federally recognized Endangered, Threatened, Proposed, or Candidate species under the Endangered Species Act are omitted as they do not meet the definition of a Species of Conservation Concern (FSH 1909.12 § 12.52).

<table>
<thead>
<tr>
<th>State Listing</th>
<th>G-rank</th>
<th>S-rank</th>
<th>CRPR</th>
<th>R5 FSS</th>
<th>NFP SM</th>
<th>CA BLM</th>
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</thead>
<tbody>
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<td>G5</td>
<td>CA: S3</td>
<td>2B.2</td>
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<td>Not listed</td>
<td>Not listed</td>
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<td>NV: SNR</td>
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<tr>
<td>OR: Not listed</td>
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<table>
<thead>
<tr>
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<th>NNHP: Do not track</th>
<th>NNPS: Not listed</th>
<th>ORBIC: Not listed</th>
<th>OCS: Not listed</th>
<th>IUCN: Not listed</th>
</tr>
</thead>
</table>

Expanded abbreviations and citations: State Listing=California Endangered Species Act Listing (CDFW 2018b), Nevada Division of Forestry Fully Protected Plant Species (NAC 527) (NDF 2012), Oregon Department of Agriculture Listed Plants (ODA 2014); G-rank=Global Conservation Status (CDFW 2018a; NatureServe 2018); S-rank=Subnational (state or province-level) Conservation Status (CDFW 2018a; NatureServe 2018; NNHP 2017; ORBIC 2016); CRPR=California Rare Plant Rank (CNPS 2018); R5 FSS=USDA Forest Service Region 5 Regional Forester Sensitive Plant Species List (USDA 2013); NFP SM=Forest Service and Bureau of Land Management Northwest Forest Plan Survey and Manage Species (USDA 2001); CA BLM=California Bureau of Land Management Designated Sensitive Species (BLM 2010); SWAP=California State Wildlife Action Plan Status (CDFW 2015); NNHP=Nevada Natural Heritage Program Status (NNHP 2017); NNPS=Nevada Native Plant Society Status (NNHP 2017); ORBIC=Oregon Biological Information Center Status (ORBIC 2016); OCS=Oregon Conservation Strategy Species (ODFW 2016); IUCN=International Union for Conservation of Nature Red List Status (IUCN 2017).
**Distribution:** This species is found across much of the northern hemisphere: from Eurasia, through Canada and the western United States, to parts of eastern North America. In the western United States, there are records from Arizona, California, Idaho, New Mexico, Nevada, Oregon, Utah, and Washington. Within California, it is mostly confined to the Modoc Plateau (MP) bioregion, including the Warner Mountains (Wrn), where the Great Basin Province abuts the California Floristic Province; however, it can also be encountered in the Outer North Coast Ranges (NCoRO) bioregion. Reliable records exist from Lassen, Mendocino, Modoc, and Siskiyou counties (CNPS 2018, Turner et al. 2012). National Forest Service-administered lands on which *A. gramineum* has been documented potentially include Klamath NF and Modoc NF; two records appear to exist within Modoc NF, and one appears to be within Klamath NF (CNDDB 2018); however, most are from historical accounts or herbarium specimens and require further investigation and field surveys.
**Locations within California:**

Record numbers indicate sites that contain an individual, population, or groups of populations located within ¼ mile of each other, per the California Natural Diversity Database (CNDDB 2017) definition of Element Occurrences (EOs) in California. Official EO numbers for plants in California are determined solely by the CNDDB and are included within the Reference (Source) column for CNDDB data. Duplicate records from the same site are given the same record number and included in red. The Population Info column includes total number of individuals and total number and size of populations/sub-populations when provided. Elevations provided in meters from source have been converted to feet. If not provided in original source, Land Manager information was obtained using the California Protected Areas Database (CPAD 2016) and Quad information was obtained using 24K Quads, SDE Feature Class (CDFG 2013). All other information is directly from the Reference (Source) unless additional citation is given.

<table>
<thead>
<tr>
<th>Rec. #</th>
<th>Locality</th>
<th>County</th>
<th>Quad</th>
<th>Reference (Source)</th>
<th>Date Last Observed</th>
<th>Population Info</th>
<th>Threats</th>
<th>Land Manager</th>
<th>Elev. (ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UPPER PARTS OF LITTLE LAKE VALLEY ALONG REYNOLDS ROAD, ON PRIVATE LAND 8 KM NE OF WILLITS.</td>
<td>Mendocino</td>
<td>Willits (3912343)</td>
<td>CNDDB, September 2018 (EO 2)</td>
<td>23-Jun-1983</td>
<td>ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1983 SMITH COLLECTION. NEEDS FIELDWORK.</td>
<td></td>
<td>PVT</td>
<td>1280</td>
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<tr>
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<td>MARGIN OF CAHTO LAKE, LAYTONVILLE.</td>
<td>Mendocino</td>
<td>Cahto Peak (3912365)</td>
<td>CNDDB, September 2018 (EO 3)</td>
<td>1-Sep-1983</td>
<td>ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1983 SMITH COLLECTION. NEEDS FIELDWORK.</td>
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<td>1646</td>
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<tr>
<td>3</td>
<td>10 MI N OF SUSANVILLE, WILLOW CREEK VALLEY.</td>
<td>Lassen</td>
<td>Johnstonville (4012045)</td>
<td>CNDDB, September 2018 (EO 4)</td>
<td>22-Jul-1949</td>
<td>MAIN SOURCE FOR THIS SITE IS A 1949 NOBS COLLECTION. A 1947 GRANT COLLECTION FROM ‘CREEK MIDWAY BETWEEN EAGLE LAKE AND SUSANVILLE’ ALSO ATTRIBUTED HERE. AREA NEAR STREAM CROSSING (PAST HISTORICAL MARKER) SEARCHED IN 2013, NO PLANTS FOUND.</td>
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<td>County</td>
<td>Quad</td>
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<td>Date Last Observed</td>
<td>Population Info</td>
<td>Threats</td>
<td>Land Manager</td>
<td>Elev. (ft.)</td>
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<tr>
<td>4</td>
<td>MADELINE PLAINS, DFG NESTING AREA, &quot;GEORGE WILLIAMS.&quot;</td>
<td>Lassen</td>
<td>Holbrook Canyon (4112015)</td>
<td>CNDDB, May 2017 (EO 5)</td>
<td>1-Aug-1947</td>
<td>OCCURRENCE IS BASED ON TWO COLLECTIONS BY GRANT AND SCHNEIDER FROM 1947. NEEDS FIELDWORK.</td>
<td>DFG?</td>
<td>5290</td>
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<tr>
<td>5</td>
<td>CATTLE POND DIRECTLY EAST OF STR #120, JUST NW OF ACCESS ROAD C9A.</td>
<td>Lassen</td>
<td>Likely (4112025)</td>
<td>CNDDB, September 2018 (EO 6)</td>
<td>10-Jul-1996</td>
<td>FEWER THAN 100 PLANTS OBSERVED IN 1996.</td>
<td>CATTLE GRAZING AND TRAMPLING. POND BANKS ARE HEAVILY TRAMPLED.</td>
<td>Unknown</td>
<td>5680</td>
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<tr>
<td>6</td>
<td>SOUTH FORK PITT RIVER, LIKELY.</td>
<td>Modoc</td>
<td>Likely (4112025)</td>
<td>CNDDB, September 2018 (EO 7)</td>
<td>22-Jul-1949</td>
<td>SITE IS BASED ON A 1940 EASTWOOD COLLECTION AND A 1949 NOBS COLLECTION. NEEDS FIELDWORK.</td>
<td>Unknown</td>
<td>4450</td>
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<tr>
<td>7</td>
<td>2 MI NE OF ALTURAS.</td>
<td>Modoc</td>
<td>Mahogany Ridge (4112055)</td>
<td>CNDDB, September 2018 (EO 9)</td>
<td>18-Aug-1935</td>
<td>NEEDS FIELDWORK.</td>
<td>ONLY SOURCE OF INFORMATION FOR THIS SITE IS A 1935 WHEELER COLLECTION. NEEDS FIELD-WORK. INCLUDES FORMER OCCURRENCE #8.</td>
<td>Unknown</td>
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### Alisma gramineum Lej.

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<th>Rec. #</th>
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<th>County</th>
<th>Quad</th>
<th>Reference (Source)</th>
<th>Date Last Observed</th>
<th>Population Info</th>
<th>Threats</th>
<th>Land Manager</th>
<th>Elev. (ft.)</th>
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<tbody>
<tr>
<td>8</td>
<td>11 MI FROM DAVIS CREEK. SPRING FEEDING INTO SW SIDE OF GOOSE LAKE.</td>
<td>Modoc</td>
<td>Pease Flat</td>
<td>CNDDB, September 2018 (EO 10)</td>
<td>13-Aug-1955</td>
<td>MAIN SOURCE OF INFORMATION FOR THIS SITE IS A 1947 MASON COLLECTION. TWO 1955 MASON COLLECTIONS FROM &quot;SW SIDE OF GOOSE LAKE&quot; ARE ALSO ATTRIBUTED TO THIS SITE. NEEDS FIELDWORK.</td>
<td>USFS-Modoc NF</td>
<td>4730</td>
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<td>9</td>
<td>NORTHWESTERN M MILL POND, 9 MILES WEST OF WILLITS ON SHERWOOD ROAD.</td>
<td>Mendocino</td>
<td>Longvale</td>
<td>CNDDB, September 2018 (EO 11)</td>
<td>7-Sep-1983</td>
<td>OCCURRENCE IS BASED ON TWO 1983 SMITH COLLECTIONS. NEEDS FIELDWORK.</td>
<td>Unknown</td>
<td>2000</td>
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<td>10</td>
<td>0.25 MILE S OF EAST HILL RD, SW OF CEMETERY, 1.7 AIR MILES SE OF WILLITS POST OFFICE.</td>
<td>Mendocino</td>
<td>Willits</td>
<td>CNDDB, September 2018 (EO 12)</td>
<td>19-Jun-2006</td>
<td>20 INDIVIDUALS OBSERVED IN 2006. WITHIN PERMANENT IMPACTS AREA OF WILLITS BYPASS PROJECT.</td>
<td>Caltrans</td>
<td>426</td>
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<td>11</td>
<td>GRASS LAKE.</td>
<td>Siskiyou</td>
<td>Grass Lake</td>
<td>CNDDB, September 2018 (EO 13)</td>
<td>Unknown</td>
<td>ONLY SOURCE OF INFORMATION FOR THIS OCCURRENCE IS FROM 2006 COMMUNICATION WITH CLIFTON. NEEDS FIELDWORK.</td>
<td>Klamath NF</td>
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<td>Quad</td>
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<tr>
<td>12</td>
<td>ON WEST SHORE OF A RESERVOIR AT THE SOUTH END OF HIDDEN VALLEY.</td>
<td>Lassen</td>
<td>Johnstonville (4012045)</td>
<td>CNDDDB, September 2018 (EO 14)</td>
<td>15-Jul-1996</td>
<td>UNKNOWN NUMBER OF PLANTS SEEN IN 1996 BY SCHOOLCRAFT.</td>
<td></td>
<td>BLM</td>
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<tr>
<td>13</td>
<td>POND JUST SOUTHWEST OF THE INTERSECTION OF USFS ROAD 38N36 WITH HIGHWAY 395, SOUTH OF LIKELY.</td>
<td>Lassen</td>
<td>Likely (4112025)</td>
<td>CNDDDB, September 2018 (EO 15)</td>
<td>12-Jul-2016</td>
<td>1% COVER OF ALISMA GRAMINEUM OBSERVED DURING 2016 VEGETATION SURVEY.</td>
<td></td>
<td>BLM</td>
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</table>
**Alisma gramineum** Lej.

### Distribution on National Forest System (NFS) Lands:

(Please see Reference column of Locations table above for references pertaining to Record Numbers indicated on NFS lands.)

<table>
<thead>
<tr>
<th>National Forest System (NFS) lands</th>
<th>Record #s (from Locations table above)</th>
<th>CNDDB EOs</th>
<th>Non-CNDDB Records</th>
<th>Recent (seen in past 20 yrs.)</th>
<th>Historic (not seen in past 20 yrs.)</th>
<th>Most Recent Obs.</th>
<th>EOs/Recs. (5 mile buffer)</th>
<th>Total Records on NFS lands</th>
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<td>2</td>
<td>N/A</td>
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</table>

### Demographic and Population Trends:

*Alisma gramineum* is known from 14 occurrences, with only four occurrences providing information on population size: occurrence six (EO 6) documents “fewer than 100 plants” in 1996, occurrence 12 (EO 12) had 20 plants observed in 2006, occurrence 15 (EO 15) had 1% ground cover of *A. gramineum* observed in 2016, and occurrence 16 (EO 16) had one plant seen in 2014. There are no year-on-year data. All other occurrences are indicated to only be referenced from historical herbarium collections or observations (EO 13) with notes that field work is needed; occurrence four (EO 4) was searched for in 2013 and no plants were found.

Eleven occurrences have unknown overall site/occurrence quality/viability, one occurrence (EO 4) is ranked “Poor”, occurrence 16 (EO 16) is ranked “Fair”, and occurrence 12 (EO 12) is ranked as being in “Good” condition (CNDDB 2018). Additional field work will be required for useful estimates of this species’ distribution within California, and its population dynamics.

### Life History:

*Alisma gramineum* is a perennial rhizomatous herb, which grows in aquatic habitats. It blooms between June and August (CNPS 2018). The pollination biology of *Alisma* has not been well explored; Diptera are known to visit and to transfer pollen, but the details of...
this interaction are lacking. The genus is also known to be capable of self-pollination (CPC 2018).

**Diversity:** The genus *Alisma* consists of nine species of aquatic herbs, distributed across much of the northern hemisphere. Most members of the genus exhibit an extraordinary degree of phenotypic plasticity, such that morphology depends on environmental conditions. This has led to taxonomic confusion in the past, as environmentally-determined variants were inappropriately assigned species status. The center of diversity for *Alisma* lies in Eurasia, where the related genera *Baldellia* and *Luronium* are also found. It may be inferred that the genus originated in the Old World. The genus has not been subject to extensive phylogenetic analysis; but multiple lines of molecular evidence resolve *A. gramineum* as sister to *A. wahlenbergii*—a species native to the northern Baltic Sea region of Eurasia (Jacobson and Hedren 2007).

**Habitat:** *Alisma gramineum* occurs in aquatic habitats—including marshes, swamps and other shallow freshwater sites. It has been observed at elevations ranging from 390 to 1,800 meters (CNPS 2018).

**Habitat Status or Trend:** The greater Modoc bioregion—including the Warner Mountains and adjacent parts of the Columbia Plateau—was subject to intense livestock grazing during the 19th and early 20th centuries. Overgrazing is still occurring, albeit to a lesser degree. Together with ongoing fire suppression, this has resulted in pronounced shifts in vegetation community membership and structure, with ramifying effects for native species like *A. gramineum* (Vale 1977). In addition to this lasting anthropogenic influence, models of climate change predict an advance of evergreen conifer forest in the cold desert regions of the Modoc Plateau and northeastern Sierra Nevada, along with spreading grasslands in more mesic areas presently dominated by mixed evergreen forest and shrubland. Accompanying shifts in surface water distribution will impact the availability of aquatic habitats. Uniform increases in standing biomass are predicted, likely resulting in greater fire severity during increasingly xeric summers. In the Outer North Coast Ranges bioregion, a shift in composition from coniferous to mixed coniferous forest is predicted under most climate models—with uncertain implications for aquatic species like *A. gramineum*. As in much of the state, inter-annual variation in precipitation is expected to increase in this region, making wildfires larger and more damaging. The degree to which shifting fire regimes will influence aquatic habitats is a question in need of research (Lenihan et al. 2003).

**Capacity for the Species to Disperse:** The capacity for self-pollination—as has been documented in *Alisma*—is conducive to successful establishment after long-distance dispersal (Baker 1955, Turner et al. 2012). The principal dispersal mechanisms in *Alisma* appear to be gravity and flowing water: mature achenes are shed directly, and seeds are exposed by mechanical removal of the dry pericarp. *Alisma* species are known to exhibit delayed germination, and seeds may remain viable through extended periods of submergence. While the embryo itself does not exhibit dormancy, mechanical or chemical scarification of the pectin-rich seed coat is required for germination (Crocker and Davis 1914). Together with the rhizomatous habit, this characteristic promotes site persistence; in addition, the seed may be dispersed by flowing water during the period of scarification. There are no data available on dispersal distance.

**Threats:** This species is threatened by road construction (CNPS 2018), and by direct disturbance from livestock (CNDB 2017). The biology of *Alisma* is poorly known; the threats facing species in the genus are accordingly ill-defined.
Alisma gramineum Lej.

Literature Cited


[CDFG] California Department of Fish and Game. 2013. 24K Quads, SDE Feature Class. Index for 1:24,000-scale (24K), 7.5-minute by 7.5-minute, paper U.S. Geological Survey maps in California.


[CNDDB] California Department of Fish and Wildlife, Natural Diversity Database. 2017. RareFind 5 [Internet application] and CNDDB Maps and Data. Available at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data [Government Version, May 2017].

____. 2018. RareFind 5 [Internet application] and CNDDB Maps and Data. Available at: https://www.wildlife.ca.gov/Data/CNDDB/Maps-and-Data [Government Version, March 2018].


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Alisma gramineum Lej.

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Alisma gramineum Lej.


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**Reviewer(s) and Date:**
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Julie Ann Kierstead, USDA Forest Service Region 5 Ecosystem Planning, 28 October 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.

**Additional Considerations at the Forest Level:** Habitat amount and juxtaposition of both the species and habitat locations.