Rare Plant Status Review: *Stuckenia striata*
Proposed Addition to California Rare Plant Rank 2B.3, G3G4 / S2S3

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Changes to the original text are in blue font

This status review is being expedited through an agreement between the California Native Plant Society and the Utom Conservation Fund. Aside from being advanced as part of this agreement, the process, content, and information provided herein is not altered, modified, or developed differently in any way or form compared to other status reviews developed by CNPS.

Background and Taxonomy

Stuckenia striata (Ruiz & Pav.) Holub is an aquatic, rhizomatous, perennial herb in the Potamogetonaceae (Haynes and Hellquist 2000). It was originally described as *Potamogeton striatus* (Ruiz and Pavon 1798). It is treated in *The Jepson Manual* (Thorne 1993) as *Potamogeton latifolius* (Robb.) Morong, which is considered a synonym of *P. striatus* by Haynes and Hellquist (2000). It is included in the *Jepson eFlora* (Hellquist et al. 2012) and *Flora of North America* (Haynes and Hellquist 2000) as *Stuckenia striata*. Its range includes the western United States, Mexico, and parts of South America (Haynes and Hellquist 2000, POWO 2023).

Stuckenia taxa form a distinct group that was formerly treated as either a subgenus or section of *Potamogeton* (Les and Haynes 1996, Holub 1997). In addition to morphological differences, *Stuckenia* taxa are all hexaploid (2n = 78) while *Potamogeton* are generally diploid or triploid (Les and Haynes 1996, Holub 1997, Fehrer et al. 2022). Recent genetic studies have confirmed the monophyly of *Stuckenia*, as well as its close relationship with *Potamogeton* (Fehrer 2022). While hybridization is well documented within both genera, there are no records of hybridization between *Stuckenia* and *Potamogeton* (*s. s.*) (Holub 1997, Fehrer et al. 2022). In preparation for the *Flora of North America* Potamogetonaceae treatment, Les and Haynes (1996) segregated the group as the genus *Coleogeton* (Holub 1997). However, *Coleogeton* had been invalidly published, so Holub (1997) published new combinations under *Stuckenia* Börner, which had priority (Haynes and Hellquist 2000). As a result of the somewhat recent segregation of *Stuckenia*, there may be additional *S. striata* herbarium collections classified as *Potamogeton* sp., e.g., *Wheeler 7276* NLU, which was identified in 2021 as *Stuckenia striata* by C. B. Hellquist (SEINet 2023). Three duplicates of this collection are still listed as *Potamogeton* sp. (SEINet 2023).

Stuckenia is differentiated from *Potamogeton* by its long leaf sheaths with stipules adnate to blades for at least two-thirds of their length; leaves that are all submersed, opaque, turgid, and with longitudinal channels or grooves; flexible peduncles; and submersed inflorescences (Les and Haynes 1996, Hellquist et al. 2012). Two other *Stuckenia* taxa are known from California: *S. filiformis* ssp. *alpina* and *S. pectinata* (Hellquist et al. 2012, CCH2 2023). *Stuckenia striata* is differentiated by its broader leaves (1.5–5 mm wide; rarely from 0.4–8.5 mm) with abruptly pointed tips (the points being medium-long to long); uninflated stipule sheaths; fruits that are 3–3.9 mm long and conspicuously beaked; and inflorescences that are axillary (or rarely terminal) (Hellquist et al. 2012).

The genus *Stuckenia* was named for a German teacher and amateur botanist, Wilhelm Stucken (Charters 2023), while the specific epithet, *striata*, refers to the longitudinal striations on the leaves (Ruiz and Pavon 1798).

Ecology
Stuckenia striata is found in shallow waters of rivers, streams, lake margins, ponds, marshes, and drainage canals at elevations ranging from -70 m in the southern Coachella Valley to 2,135 m (Haynes and Hellquist 1997, Hellquist et al. 2012, CCH2 2023, SEINet 2023). While two herbarium collections as well as various references note either slightly alkaline or alkaline waters, no references were found that reported the range of pH tolerated by the species (Haynes and Hellquist 1997, Hellquist et al. 2012, CCH2 2023). Flowering primarily occurs in July and August, with a single outlier from June (CCH2 2023). Associated taxa include *Azolla microphylla* (CRPR 4.2), *Ceratophyllum demersum*, *Egeria densa*, *Lemna* spp., *Nasturtium officinale*, *Persicaria* spp., *Potamogeton crispus*, *P. illinoensis*, *P. nodosus*, *Ranunculus aquatilis*, *Ruppia maritima*, *Salix lasiolepis*, *Stuckenia pectinata*, *Typha domingensis*, *T. latifolia*, *Veronica anagallis-aquatica*, and *Zannichellia palustris* (CCH2 2023, SEINet 2023).

Distribution and Abundance
Within California, *Stuckenia striata* is known from approximately 21 occurrences in Contra Costa, Glenn, Inyo, Lassen, Merced, Modoc, Mono, Riverside, and Ventura counties (CCH2 2023, SEINet 2023). Eight of the records are at least partially on public lands managed by the East Bay Regional Parks District (1), LADWP (1), LADWP/BLM (1), Honey Lake Wildlife Area (BLM) (1), Inyo NF/BLM/CDFW (1), Humboldt-Toiyabe NF (1), Burcham and Wheeler Wildlife Area (CDFW) (1), or The Nature Conservancy (1). The remaining 13 records are on land of unknown ownership.

Five of the occurrences are recent and 16 are historical, with 10 of the historical occurrences last documented from 50 to 126 years ago (CCH2 2023, SEINet 2023). Seven records include qualitative abundance descriptions including occasional (1), uncommon (1), common (2), locally abundant (1), or abundant (2) (CCH2 2023, Duman et al. 2021, SEINet 2023). Thirty years ago, this species was considered very uncommon but sometimes locally abundant (Thorne 1993); more recent treatments have reiterated that statement (Hellquist et al. 2012). While the 21 occurrences are geographically widespread, *Stuckenia striata* collections account for approximately 1% of the total Potamogetonaceae herbarium collections (ca. 4,440) and approximately 6% of the total *Stuckenia* collections (ca. 880) available on CCH2 (2023). At present, there are no Calflora (2023) or iNaturalist (2023) observations of *Stuckenia striata* from California. While the number of occurrences within California would likely increase with additional survey effort, the fact that early treatments noted its scarcity and that so few records have accumulated suggests that the apparent rarity of *Stuckenia striata* in California is not entirely attributable to low collection effort.

Two herbarium specimens (*Lemmon s.n.*, *Austin 439*) with vague localities could not be georeferenced (CCH2 2023). An additional specimen (*Briggs 232*) of *Hippuris vulgaris*, originally identified as *Potamogeton latifolius*, has been corrected but is still returned in searches for *Stuckenia striata* (CCH2 2023). Munz (1974) includes Little Lake, Inyo County, in the species' distribution but cites no collections and none were found online (CCH2 2023, SEINet 2023). These excluded records are highlighted in pink at the end of the location spreadsheet.

Status and Threats
Stuckenia striata has a global status ranking of G3G4 (rounded to G3, Vulnerable) and is ranked S2 (Imperiled) in Nevada, S1 (Critically Imperiled) in Oregon and Texas, and is unranked in other states where it occurs (NatureServe 2023). The global rank was last assessed in 2001 (NatureServe 2023). While threats to *Stuckenia striata* in California are currently unknown, other rare Potamogetonaceae (e.g., *Potamogeton epihydrus* CRPR 2B.2, *P. robbinsii* CRPR 2B.3, and *P. zosteriformis* 2B.2) are threatened by non-native plants, recreation, altered flood/tidal/hydrologic regimes, degraded water quality, erosion/runoff, and pollution (CNDDB 2023). During Forum Review, a comment was made that *Stuckenia striata* may be exposed to herbicide use during waterway management in Contra Costa County.

Summary
Based on the available information, CNPS and CNDDB recommend adding *Stuckenia striata* to California Rare Plant Rank 2B.3 of the CNPS Inventory. If knowledge on the distribution, threats, and rarity status of *Stuckenia striata* changes in the future, we will re-evaluate its status at that time.

Recommended Actions
CNPS: Add *Stuckenia striata* to CRPR 2B.3
CNDDB: Add *Stuckenia striata* to G3G4 / S2S3

Draft CNPS Inventory Record
Stuckenia striata (Ruiz & Pav.) Holub
broadleaf pondweed
Potamogetonaceae
USDA Plants Symbol: STST20
CRPR 2B.3
Counties: Contra Costa, Glenn, Inyo, Lassen, Merced, Modoc, Mono, Riverside, Ventura
States: Arizona, Colorado, Idaho, Nevada, New Mexico, Oregon, Texas, Utah; to South America
Quad name (code): Antioch North (3812117), Bishop (3711834), Butte City (3912148), Fales Hot Springs (3811934) Fish Slough (3711844), Furnace Creek (3611647), Gustine (3712038), Honker Bay (3812118), Lookout (4112122), McGinty Point (4112074), Mecca (3311651), Poleta Canyon (3711833), Santa Paula (3411931), Standish (4012034), Valerie (3311652), Wendel (4012032), Whitmore Hot Springs (3711867), Willow Ranch (4112083)
General Habitat: Marshes and swamps (lakes, ponds, rivers, and drainage canals)
Microhabitat:
Elevation: -70 to 2135 meters
Life form: perennial rhizomatous herb (aquatic)
Blooms (June) July to August
Threats: Possibly threatened by biocides.
Taxonomy: Treated as *Potamogeton latifolius* in *TJM* (1993). Differentiated from other *Stuckenia* spp. in California by its broader leaves with abruptly pointed, long to medium-long tips; uninflated stipule sheaths; 3–3.9 mm long fruits with conspicuous beaks; and axillary (or rarely terminal) inflorescences (Hellquist et al. 2012).
Selected References:
- CNPS Status Review: Proposed Addition to CRPR 2B.3, G3G4 / S2S3 (2024)

- Original Description: *Flora Peruviana, et Chilensis* 1: 70 (1798)
- Revised Nomenclature: *Preslia* 69: 361–366 (1997)

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Personal Communications

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