Rare Plant Status Review: *Distichlis littoralis*
Proposed Addition to California Rare Plant Rank 4.2, G4 / S3

Adam J. Searcy (CNPS), Ellen A. Dean (CNPS), Katie Ferguson (CNDDB)
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Changes to the original document are in blue text.

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

Distichlis littoralis (Engelm.) H.L. Bell & Columbus is a perennial rhizomatous and stoloniferous herb in the Poaceae known from coastal habitats in southern California, Texas, Louisiana, Florida, and parts of Mexico and the Caribbean (Thieret 2003, Bell 2012, POWO 2024). It is included in *The Jepson Manual* and the *Flora of North America* within the genus *Monanthochloe* (Wilken 1993, Thieret 2003) and in the *Jepson eFlora* (Bell 2012) within *Distichlis*. *Monanthochloe* and *Distichlis* share many morphological characters (Bell and Columbus 2008). Phylogenetic analyses by Bell and Columbus (2008) found *Monanthochloe* nested within *Distichlis,* necessitating a new combination within *Distichlis* which most subsequent treatments have followed. In vegetative condition, *Distichlis littoralis* can be differentiated from the more common *D. spicata* by its leaf blades which are shorter (<1.5 cm vs. > 1.5 cm) and sharply folded (vs. flat) (Bell 2012). While in flower, *D. littoralis* has inflorescences with a single spikelet (vs. 2 to 20 per inflorescence in *D. spicata*) and does not have glumes (vs. two glumes in *D. spicata*) (Bell 2012). Both *D. littoralis* and *D. spicata* are dioecious, with *D. spicata* inflorescences being much larger and more obvious while those of *D. littoralis* are partially concealed by the leaves and therefore more inconspicuous (Mason 1968, Bell 2012). *Distichlis* means "two-ranked" and refers to the leaf arrangement, while *littoralis* refers to the species' coastal habitats (Charters 2024).

Ecology

Within California, *Distichlis littoralis* occurs in coastal salt marshes or rarely as isolated occurrences on coastal bluffs (Bell and Columbus 2008, Bell 2012, CCH2 2024). While it is not known from inland California, it does occur rarely in saline habitats in the interior deserts of northern Mexico (Bell and Columbus 2008). Frequently noted associates include *Arthrocnemum subterminale*, *Atriplex watsonii*, *Batis maritima*, *Cressa truxillensis*, *Distichlis spicata*, *Frankenia palmeri* (CRPR 2B.1), *F. salina*, *Jaumea carnosa*, *Limonium californicum*, *Salicornia pacifica*, *Suaeda esteroa* (CRPR 1B.2), and *S. taxifolia* (CRPR 4.2) (CCH2 2024, CNPS 2024, Dean 2024 pers. comm.). It requires open habitat and does not grow well with shading.
Elevations range from zero to 12 meters above sea level; approximately 74% of the records are from zero to two meters, 24% are from three to five meters, and 2% (nine records) are from six to 12 meters (Calflora 2024, CCH2 2024, iNaturalist 2024). The highest occurrences (12m) are elevational outliers from the sea cliffs at the east end of Santa Rosa Island. Flowering occurs mainly from April to July, with early records from February and March and late records from September, November, and December (CCH2 2024).

Distribution and Abundance
Within California, *Distichlis littoralis* is known from approximately 67 occurrences in Santa Barbara, Ventura, Los Angeles, Orange, and San Diego counties (Calflora 2024, CCH2 2024, iNaturalist 2024). The number of occurrences was estimated using methods described by Green and Sims (2018). All the occurrences are on the immediate coast of mainland California except for three from the Channel Islands, of which two are from Santa Rosa and one is from Catalina (Calflora 2024, CCH2 2024, iNaturalist 2024). Fifty-three (79%) of the mainland occurrences are clustered in 14 coastal salt marshes or estuaries. These sites are separated from each other by unsuitable habitat, including large areas of extensive coastal development. Forty-nine of the occurrences are recent and 18 are historical (last seen more than 20 years ago). Based on aerial imagery, six occurrences (#s 13, 28, 31, 38, 46, 47) are presumed extirpated by development. Land ownership includes Channel Islands National Park (2), State Parks (5) or ecological reserves managed by the State of California (11), local wildlife reserves (6), National Wildlife Refuges (7), one on a National Wildlife Refuge and adjacent State Park lands, University of California (2), US Navy (11), local parks (6), and lands of unknown ownership (16).

D. littoralis spreads via rhizomes and stolons and forms dense mats, making population sizes difficult or impossible to estimate. Visually distinguishing between genets and ramets is probably impossible, although large patches with only male or only female flowers may represent individual clones. Estimated total cover within each occurrence may be a more useful metric for this species. Qualitative descriptions of abundance at 21 sites include rare (1), occasional to rarely found (1), uncommon (3), uncommon to locally abundant (1), fairly common (1), common to occasional (1), locally common (1), locally abundant (3), and common or abundant (9) (Calflora 2024, CCH2 2024). Five Calflora (2024) observations from three occurrences include numerical estimates; three from occurrence #35 in Newport Bay estimated 51 to 100, 101 to 1,000, or 1,001 to 10,000 plants, one from Seal Beach (#42) estimated 1,001 to 10,000 plants, and one from Ballona Lagoon (#51) estimated 51 to 100 plants. These numbers are difficult to interpret as none of these records include a methodology used to define individual *D. littoralis* plants.

Any new occurrences of *D. littoralis* will probably be found in marshes where the species is already known to occur; in some cases, additional records from these marshes may lead to a decrease in total occurrences but an increase in documented areal extent. Most of the coastal salt marshes from Santa Barbara County south to San Diego County already have many *Distichlis littoralis* collections (CCH2 2024). Of the few non-saltmarsh records, most are from coastal bluffs and represent isolated populations or perhaps isolated individuals. While new occurrences may be found between some of the documented population centers in coastal marshes, much of the intervening habitat is unsuitable or marginal, and the discovery of new large populations is unlikely.

The *Jepson eFlora* includes the Sonoran Desert (DSon) in the taxon's bioregional distribution based on a specimen (*Reed 5713*) that was incorrectly georeferenced at the Salton Sea (Bell 2012, CCH1 2024, CCH2 2024, Bell and House 2024 pers. comm.). A duplicate of this collection was correctly georeferenced at Arch Beach in coastal Orange County (CCH2 2024). The bioregional distribution will be corrected when the *Distichlis* treatments are updated in the *Jepson eFlora* (Bell and House 2024 pers. comm.). Two iNaturalist (2024) records and 28

herbarium records (CCH2 2024) were excluded from this analysis: 26 had high location uncertainty or could not be georeferenced, three were in atypical habitat and may have been misidentified, and one from San Miguel Island (*Elmore 318*) was a misidentified collection of *Distichlis spicata* (Sanders 2024 pers. comm.). These 30 records are highlighted in pink at the end of the location spreadsheet.

Status and Threats
Distichlis littoralis has no conservation status in California. It is globally ranked G4/G5 rounded to G4 (Apparently Secure), but the global rank has not been reviewed since 1985 (NatureServe 2024). It is unranked in Texas, ranked S4 (Apparently Secure) in Florida, and S1 (Critically Imperiled) in Louisiana (NatureServe 2024). While threats to *Distichlis littoralis* occurrences in California have not been documented, the species occurs with rare saltmarsh taxa such as *Frankenia palmeri* (CRPR 2B.1), *Suaeda esteroa* (CRPR 1B.2), and *S. taxifolia* (CRPR 4.2) (CCH2 2024, CNPS 2024). These taxa are threatened by development and non-native plants, and potentially threatened by illegal dumping (CNPS 2024). *Distichlis littoralis* occurs in a relatively narrow microhabitat near the edges of salt marshes, a habitat that is threatened by sea level rise and subsequent changes to tidal regimes (Garner et al. 2015, Thorne et al. 2018). Many marsh complexes in southern California are surrounded by development and there is little to no potential habitat into which plants can migrate as sea level rises (Thorne et al. 2018).

Summary
Based on the available information, CNPS and CNDDB propose adding *Distichlis littoralis* to California Rare Plant Rank 4.2 of the CNPS Inventory. If knowledge on the distribution, threats, or rarity status of *Distichlis littoralis* changes in the future, it may be re-evaluated at that time.

Recommended Actions
CNPS: Add *Distichlis littoralis* to CRPR 4.2
CNDDB: Add *Distichlis littoralis* to G4 / S3

Draft CNPS Inventory Record
Distichlis littoralis (Engelm.) H.L. Bell & Columbus
shore grass
Poaceae
USDA Plants Symbol: DILI11
Synonym(s)/Other Name(s): None
CRPR 4.2
Counties: Santa Barbara, Ventura, Los Angeles, Orange, San Diego
States: California, Texas, Louisiana, Florida, Baja California
Quad name (code): CARPINTERIA 3411945, DEL MAR 3211782, DOS PUEBLOS CANYON 3411948, ENCINITAS 3311713, GOLETA 3411947, IMPERIAL BEACH 3211751, LA JOLLA 3211772, LAGUNA BEACH 3311757, LONG BEACH 3311872, NATIONAL CITY 3211761, NEWPORT BEACH 3311768, OCEANSIDE 3311724, POINT LOMA 3211762, POINT MUGU 3411911, RANCHO SANTA FE 3311712, SAN LUIS REY 3311723, SAN PEDRO 3311863, SANTA CATALINA NORTH 3311844, SANTA CATALINA WEST 3311845, SANTA ROSA ISLAND EAST 3311988, SEAL BEACH 3311861, TUSTIN 3311767, VENICE 3311884

General Habitat: Marshes and swamps (coastal salt), coastal bluff scrub (rarely)
Microhabitat Details: Usually found along saltmarsh edges near high tide lines.
Microhabitat: Edges
Elevation: 0 to 12 meters (0–40 ft)
Life form: Perennial rhizomatous herb
Blooms (February to March) April to July (September to December).
Threats: Possibly threatened by development, non-native plants, illegal dumping, and urbanization. Potentially threatened by sea level rise.
Selected References:
- CNPS Status Review: Proposed addition to CRPR 4.2, G4 / S3 (2024)
- Original Description: *Transactions of the Academy of Science of St. Louis* 437, pl. 13–14 (1859)
- Taxonomic Treatment: *Systematic Botany* 33(3): pp. 536–551 (2008)

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Personal Communications

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