Figure 1: *Tripidium ravennae* (Ravennagrass). Photo by Steve Matson (2011)

# California Pest Rating Proposal for

## *Tripidium ravennae* (L.) H. Scholz: Ravennagrass

**Family: Poaceae tribe Andropogoneae**

**Current Pest Rating: Q**

**Proposed Pest Rating: B**

**Synonym: *Saccharum ravennae* (L.) L.; *Erianthus ravennae* (L.) P. Beauv.; *Andropogon ravennae* L.**

**Comment Period: 03/15/2021 through 04/29/2021**

---

## Initiating Event:

This plant has been included on the CDFA noxious weed list [3 CCR § 4500] as a plant pest. However, ravennagrass has not been reviewed under the current pest rating system. A pest rating proposal is required to evaluate the current rating and status of ravennagrass in the state of California.

## History & Status:

**Background:** Ravennagrass is a large, densely tufted perennial bunchgrass, reaching 2-4 m (6-12 feet) in height (Webster, 2003; Skendzic, 2010). The base of the clumps can be several feet in diameter, indicating a significant root mass (Invasive Plant Atlas, 2021). The leaf blades are very long and narrow, 50-100 cm long by 5-14 mm wide, characteristically with dense hairs near the ligule but otherwise glabrous. The inflorescences are large feathery terminal panicles, with numerous branches, and evident rachises among the spikelet groups, which consist of paired sessile and short-stalked spikelets. The spikelets have prominent long silky hairs at the base, approximately equal to the spikelet in length (4-6 mm long), and the lemmas have a terminal awn 3-5 mm in length. The species is effective at colonizing seeps, pondsides, streambanks, and other wetland margins. Because of the widespread occurrence of these habitat types (in varying amounts) across the United States, and because the species is very cold hardy, ravennagrass has shown an ability to naturalize in many states. The plant can form impenetrable single species stands and can grow out from under other vegetation. It can exclude native communities through competition, although not consistently. Ravennagrass is occasionally available in the horticultural trade and has been recommended in areas too cold to grow pampas grass. Although it may have been sold in California from time to time, it is apparently not available at this time. It appears to most frequently naturalize in moist areas in California, Utah, and Arizona, and so may be more effective at harming important or rare species than its area/extent suggests, given the infrequency of moist habitats in these states.

The plant produces copious biomass in areas that generally have relatively little, especially by growing on harsh substrates like gravel banks, and being much taller than surrounding vegetation. This changes the shade profile, plant competition, and flammability of the community. Older stands may be able to carry fire that would not normally succeed in riparian vegetation. The plant can anchor soils normally more subject to shifting (e.g. mid-channel) and act as a physical barrier to stream flow through its biomass and accumulation of flotsam, thatch, and sediment. It also may impede irrigation maintenance.

Ravennagrass may be more widespread in California than currently documented, but perhaps has sometimes not been reported because of its similar overall appearance to the much more widely invasive species giant reed (*Arundo donax*), jubata grass (*Cortaderia jubata*) and pampas grass (*Cortaderia selloana*). It inhabits disturbed areas near creeks but has also moved into relatively undisturbed riparian areas, occupying much of the same habitat as both giant reed and tamarisk.

---

**Worldwide Distribution**: Ravennagrass is named after a town in Italy and is native to North Africa (Algeria, Libya, Morocco, Tunisia, Somalia), Southern Europe, Western Asia, the Caucasus, and parts of the Indian subcontinent (USDA/GRIN, 2021). The species has been grown as an ornamental and has become naturalized in a number of states of the U.S. It is listed by USDA/GRIN (2021) as naturalized in 19 states plus the District of Columbia, and mapped from California, Washington, Arizona, New Mexico, Utah, and Colorado sporadically eastward through the central Midwest and in several Atlantic seaboard states from Florida to Maryland and Delaware in the Invasive Plant Atlas (2021) .

**Official Control:** Ravennagrass is listed as a noxious weed list for California [3 CCR § 4500], Oregon (A and T lists), New Mexico (Class A species) and Washington (Class B species), and has been subject to active removal in Grand Canyon National Park (DiTomaso et al., 2013) and Glen Canyon National Recreation Area. The species is listed as a restricted noxious weed seed in California under CCR § 3855.

**California Distribution**: Currently ravennagrass is reported from multiple localities in Imperial County, and several in Colusa, Lake, Napa, Yolo, and Inyo Counties (Calflora, 2021; CCH, 2021). Small populations in Sacramento, Butte, and Sutter Counties may be eradicated, but there are individual dots indicated in the Calflora database for the Sacramento and Fresno areas and the border of Sutter and Yuba counties, so other small populations may be extant.

**California Interceptions**: The species was intercepted once from a vehicle at the Needles Border Inspection Station in 2019 and submitted to the CDFA Plant Pest Diagnostics Branch for identification (CDFA PDR database, 2021).

The risk **ravennagrass** would pose to California is evaluated below.

## Consequences of Introduction:

1) **Climate/Host Interaction:** In the states and areas where it occurs, ravennagrass occupies wetland or roadside environments. Ravennagrass is expected to colonize riparian areas, pond margins, wetlands, roadside ditches, irrigation canal banks, and moist forest edges. Therefore, the species receives a **Medium (2)** in this category.

   Evaluate if the pest would have suitable hosts and climate to establish in California.
   **Score**: **2**
   - Low (1) Not likely to establish in California; or likely to establish in very limited areas.
   - **Medium (2) may be able to establish in a larger but limited part of California.**
   - High (3) likely to establish a widespread distribution in California.

2) **Known Pest Host Range:** Risk is **High (3)** as weeds do not require any one host, but grow wherever ecological conditions are favorable.

Evaluate the host range of the pest.

**Score: 3**

- Low (1) has a very limited host range.
- Medium (2) has a moderate host range.
- **High (3) has a wide host range.**

3) **Pest Dispersal Potential:** Ravennagrass reproduces by seed, with the spikelets separating as small downy-hairy seed dispersal units. Large numbers of seeds are produced on the upper portions of the several meter long stems, and so are introduced to the wind well above ground level; this along with the small seed size allows them to disperse easily on the wind. The small seed size also promotes floating on water surfaces. Ravennagrass also is spread over long distances by humans, either by being shipped as an ornamental or by seed being carried unintentionally on vehicles or equipment. The species resprouts readily after damage and is known to self-sow when grown for horticulture. Being a perennial with large quantities of seed, the plant can wait out unfavorable recruitment conditions, and capitalize on them when present (Cal-IPC, 2007). Ravennagrass receives a **High (3)** in this category.

Evaluate the natural and artificial dispersal potential of the pest.

**Score: 3**

- Low (1) does not have high reproductive or dispersal potential.
- Medium (2) has either high reproductive or dispersal potential.
- **High (3) has both high reproduction and dispersal potential.**

4) **Economic Impact:** Ravennagrass can interfere with crop management and appears to accumulate sediment and organic matter which can interfere with water delivery. Ravennagrass receives a **Medium (2)** in this category.

Evaluate the economic impact of the pest to California using the criteria below.

**Economic Impact: D, F**

A. The pest could lower crop yield.
B. The pest could lower crop value (includes increasing crop production costs).
C. The pest could trigger the loss of markets (includes quarantines).
**D. The pest could negatively change normal cultural practices.**
**E.** The pest can vector, or is vectored, by another pestiferous organism.
**F.** The organism is injurious or poisonous to agriculturally important animals.
**G. The organism can interfere with the delivery or supply of water for agricultural uses.**

**Economic Impact Score**: **2**

- Low (1) causes 0 or 1 of these impacts.
- **Medium (2) causes 2 of these impacts.**
- High (3) causes 3 or more of these impacts.

5) **Environmental Impact:** Ravennagrass can dominate wetland habitats that are often important for native species including sensitive species. In addition, the plant changes the profile and disrupts

natural communities. It appears to accumulate sediment and, in the seasonally flooding Capay Valley, accumulate organic matter and thatch filtered from the streamflow. (Cal-IPC, 2007). Experience in the San Diego area estuaries suggests that a similar invasive, pampas grass, uses much more water than the vegetation it replaced. The large increase in leaf area over some of the native communities it replaces may also facilitate water usage (Firestone, 2014). The addition of invasive plants often triggers treatment programs. Therefore, it receives a **High (3)** in this category.

**Environmental Impact: A, D**

**A. The pest could have a significant environmental impact such as lowering biodiversity, disrupting natural communities, or changing ecosystem processes.**
B. The pest could directly affect threatened or endangered species.
C. The pest could impact threatened or endangered species by disrupting critical habitats.
**D. The pest could trigger additional official or private treatment programs.**
E. The pest significantly impacts cultural practices, home/urban gardening or ornamental plantings.

**Environmental Impact Score:**
- Low (1) causes none of the above to occur.
- Medium (2) causes one of the above to occur.
- **High (3) causes two or more of the above to occur.**

## Consequences of Introduction to California for ravenna grass*:* High (13)

Add up the total score and include it here.
-Low = 5-8 points
-Medium = 9-12 points
**-High = 13-15 points**

6) **Post Entry Distribution and Survey Information**: Ravennagrass has been found to be established in several counties and at least two areas of California. It receives a **Medium (-2)** in this category.

**Score: -2**
-Not established (0) Pest never detected in California or known only from incursions.
-Low (-1) Pest has a localized distribution in California or is established in one suitable climate/host area (region).
**-Medium (-2) Pest is widespread in California but not fully established in the endangered area, or pest established in two contiguous suitable climate/host areas.**
-High (-3) Pest has fully established in the endangered area, or pest is reported in more than two contiguous or non-contiguous suitable climate/host areas.

7) **The final score is** the consequences of introduction score minus the post entry distribution and survey information score:

***Final Score:*** *Score of Consequences of Introduction – Score of Post Entry Distribution and Survey*

*Information* **= *Medium (11)***

## Uncertainty:

As ravennagrass has shown its ability to spread in California if neglected, there is little uncertainty.

## Conclusion and Rating Justification:

Ravennagrass is a potentially serious weed of wetlands, disturbed areas, and riparian zones. Because it is present in more than 5 counties in well separated regions of northern and southern California, a "B" rating is justified.

## References:

Calflora. 2021. Information on California plants for education, research and conservation, with data contributed by public and private institutions and individuals. Accessed January 15, 2021: https://www.calflora.org/cgi-bin/species_query.cgi?where-calrecnum=7242

California Department of Food and Agriculture (CDFA). 2021. Pest and damage record database (PDR). Accessed January 15, 2021: https://pdr.cdfa.ca.gov/PDR/pdrmainmenu.aspx

California Invasive Plant Council (Cal-IPC). 2007. Plant Assessment Form: *Saccharum ravennae*. Accessed April 9, 2020: https://www.cal-ipc.org/plants/paf/saccharum-ravennae-plant-assessment-form/

Consortium of California Herbaria (CCH). 2021. Data provided by the participants of the CCH. Regents of the University of California. Accessed January 15, 2021: http://ucjeps.berkeley.edu/consortium/

DiTomaso, J.M., Kyser, G.B., et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California.

Firestone, J., 2014. Global Invasive Species Team. Bugwood Wiki. Accessed March 24, 2020: https://wiki.bugwood.org/Saccharum_ravennae

Invasive Plant Atlas. 2021. Ravennagrass, *Saccharum ravennae* L. Accessed January 15, 2021: https://www.invasive.org/browse/subinfo.cfm?sub=57527

Proceedings of the California Invasive Plant Council Symposium. 2005. 9: 88-93.

Skendzic, E.M. 2012. *Saccharum*. P. 1484 in Baldwin, B.G., Goldman, D. H., Keil, D.J., Patterson, R., Rosatti, T.J., and Wilken, D.H., editors. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley.

United States Department of Agriculture (USDA), Agricultural Research Service (ARS), National Plant Germplasm System. 2021. Germplasm Resources Information Network (GRIN-Taxonomy). Accessed January 15, 2021: https://npgsweb.ars-grin.gov/gringlobal/taxon/taxonomydetail?id=481904

United States Department of Agriculture (USDA), Natural Resources Conservation Service. 2021. PLANTS database. Accessed January 15, 2021: https://plants.usda.gov/core/profile?symbol=SARA3

Webster, R.D. 2003. *Saccharum* L. Pp. 609-616 in Flora of North America Editorial Committee, eds. Flora of North America North of Mexico. Volume 25, Magnoliophyta: Commelinidae (in part): Poaceae, part 2. Oxford University Press, New York and Oxford.

## Author:

Dean G. Kelch, Environmental Program Manager; CDFA/PHPPS Permits and Regulation/Environmental Compliance/ PDAS; 2800 Gateway Oaks Drive, Suite 200, Sacramento, CA 95833; Tel. (916) 403-6650; permits[@]cdfa.ca.gov.

## Responsible Party:

Robert Price, Primary State Botanist; California Department of Food & Agriculture; Seed Laboratory and Herbarium; 3294 Meadowview Road, Sacramento, CA 95832; Tel. (916) 738-6700; permits[@]cdfa.ca.gov

## *Comment Period: 03/15/2021 through 04/29/2021

## *NOTE:

You must be registered and logged in to post a comment. If you have registered and have not received the registration confirmation, please contact us at permits[@]cdfa.ca.gov.

## Comment Format:

- Comments should refer to the appropriate California Pest Rating Proposal Form subsection(s) being commented on, as shown below.

  **Example Comment:**

  Consequences of Introduction: 1. Climate/Host Interaction: [Your comment that relates to

"Climate/Host Interaction" here.]

- Posted comments will not be able to be viewed immediately.

- Comments may not be posted if they:

  Contain inappropriate language which is not germane to the pest rating proposal;

  Contains defamatory, false, inaccurate, abusive, obscene, pornographic, sexually oriented, threatening, racially offensive, discriminatory or illegal material;

  Violates agency regulations prohibiting sexual harassment or other forms of discrimination;

  Violates agency regulations prohibiting workplace violence, including threats.

- Comments may be edited prior to posting to ensure they are entirely germane.
- Posted comments shall be those which have been approved in content and posted to the website to be viewed, not just submitted.

**Proposed Pest Rating: B**