Plant Risk Evaluator -- PRE™
Evaluation Report

Eragrostis echinochloidea -- California

2023-2025 Western IPM Project

PRE Score: 19 -- High Potential Risk
Confidence: 78 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: September 23, 2024

This PDF was created on August 21, 2025

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Plant Evaluated

Eragrostis echinochloidea

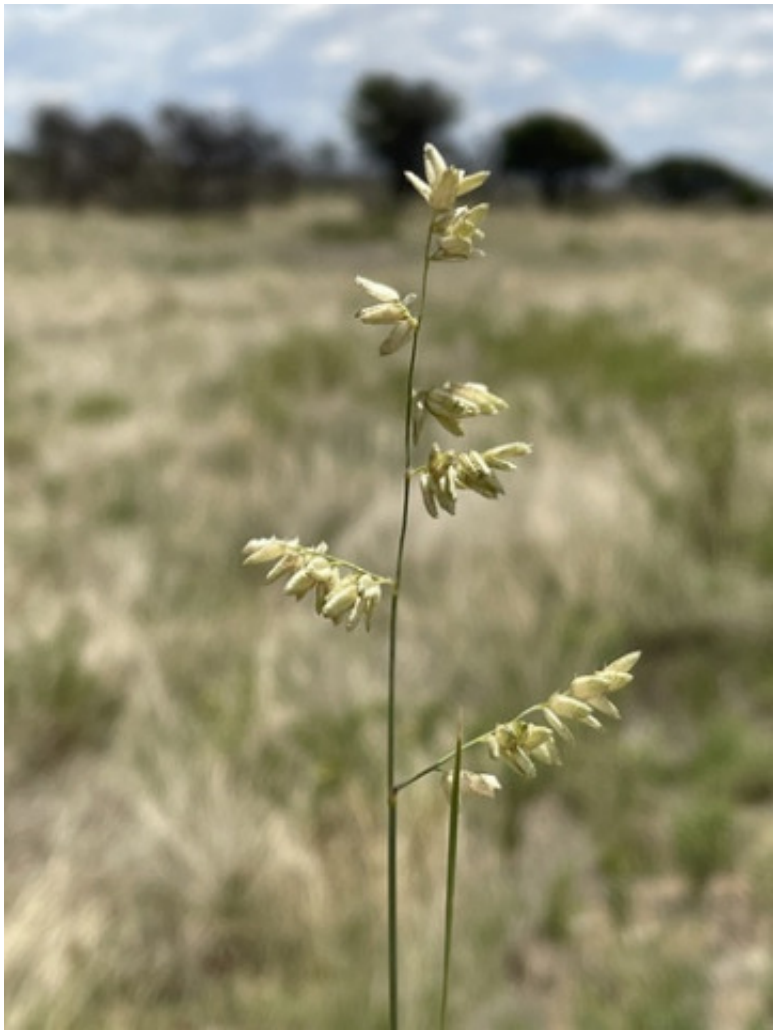

Image by Robert Taylor cc

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Eragrostis echinochloidea*) in an effort to understand the invasive history, reproductive strategies, and the impact, if any, on the region's native plants and animals. This research reflects the data available at the time this evaluation was conducted.

Summary

Erogrostis echinochloidea Staph (Poaceae), commonly African lovegrass, is a perennial grass that can reach up to a meter tall. It is native to arid regions of South Africa and has been newly documented in California as of 2020. It has been slowly spread throughout the southwest in Arizona and Mexico where it was introduced the 1940's, possibly with the Soil Conservation Service, and favors disturbed sites, roadsides, clay flats, grassy flats, slopes, river margins, cultivated areas, parking lots, sidewalks, gravel, near highways, vacant lots and cattle farms. Erogrostis echinochloidea primarily reproduces sexually through germination, and while has the potential for asexual, or vegetative, reproduction, it is slow spreading. This species is considered introduced or naturalized where it is found, likely because of it's slow growth rates. Here, we find that it should be considered a species of concern in climates like California's, likely for its ecological preferences, ability to generate a high number of viable seeds, long flowering period, because it can contribute to fine fuels that drive wildfires, and because it's adaptation to regions drier than California. Members of the Eragrostis genus have been found to be adapted to fire and can re-sprout vigorously after burning. This species is moderately palatable to livestock and has not been found to be toxic. Recommended mechanisms for removal of species in this genus that are considered invasive include include grazing, herbicide treatments, mechanical, and manual removal.

General Information

Status: Completed
Screener: Melanie Davis
Evaluation Date: September 23, 2024

Plant Information

Plant: *Eragrostis echinochloidea*

If the plant is a cultivar, how does its behavior differs from its parent's?
Not a cultivar.

Regional Information

Region Name: California

Climate Matching Map

To answer four of the PRE questions for a regional evaluation, a climate map with three climate data layers (Precipitation, UN EcoZones, and Plant Hardiness) is needed. These maps were built using a toolkit created in collaboration with GreenInfo Network, USDA, PlantRight, California Invasive Plant Council, and The Information Center for the Environment at UC Davis.

Click here to see the generated climate matching map for this region. This climate match database is hosted by GreenInfo Network and publicly accessible.

Evaluation Questions

These questions are based on an article published by PLOS One, which can be found here: https://doi.org/10.1371/journal.pone.0121053.

Invasive History and Climate Matching (Questions 1 - 6)

1. Has the species (or cultivar or variety, if applicable; applies to subsequent "species" questions) become naturalized where it is not native?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidea is native to South Africa and is introduced in Arizona, California, northern Mexico, and Israel. It is considered naturalized in Arizona and Mexico. Randall (2017) lists E. echinochloidea as naturalized in Europe and Israel, however there is not sufficient evidence with species documentation to support this as there are very little documentation of this taxon in these regions. In Arizona and Mexico, however, it is well supported in literature, management, and documentation that this taxon is naturalized.

Reference(s):

- Randall, R.P. (2017). A Global Compendium of Weeds. Third Edition..
- USDA (2024). Eragrostis echinochloidea Stapf.
- eFloraMex (2024). Eragrostis echinochloidea Stapf \textbar eFloraMex - Flora de México en línea [bajo construcción].
- van Devender, T.R., Felger R.S., & Dinnitt M.A. (2007). Sonoran Desert weed accounts. Roadside weed management.
- PlantRight (2024). ClimateMatch-Eragrostis_echinochloidea-California-20240922.pdf.

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2. Is the species (or cultivar or variety) noted as being naturalized in the US or world in a similar climate?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidea is naturalized in Arizona, which has a similar climate to California (the region in question). Regions that it occupies in Mexico also share a similar climate. Where it is native in South Africa, it can be found in the western Cape and near Johannesburg, which also share a similar climate to California. However, this is the edge of the species distribution in its native range, and it is primarily found in a region of South Africa which does not match the climate of California. Randall (2017) notes that its preferred climates are Mediterranean, Subtropical, and Tropical.

Reference(s):

- Randall, R.P. (2017). A Global Compendium of Weeds. Third Edition..
- PlantRight (2024). ClimateMatch-Eragrostis_echinochloidea-California-20240922.pdf.

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3. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

- Answer: **Yes**, which contributes **2** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidea is considered invasive in Mexico by Randall (2017). Randall cites a 2006 web page from Conabio that is no longer available and since 2006 there have been regulation changes regarding the definition changes of 'invasiveness' in Mexico, and because I was unable to find Eragrostris echinochloidea on any recent lists I can only assume that it is not longer considered invasive here. However, Pima County (Webb 2020) considers this species as invasive where it has spread from roadsides into multiple ecosystems.

Reference(s):

- Randall, R.P. (2017). A Global Compendium of Weeds. Third Edition..
- Gutiérrez-Gutierrez, O. G., Rivero-Hernández O., Vega-Mares J. Humberto, Melgoza-Castillo A., Gutiérrez-Gutierrez O. G., Rivero-Hernández O., et al. (2022). Patrones de germinación en gramíneas presentes en el Desierto Chihuahuense. Botanical Sciences. 100, 989–999.
- eFloraMex (2024). Eragrostis echinochloidea Stapf \textbar eFloraMex - Flora de México en línea [bajo construcción].
- SEInet (2024). SEINet Portal Network - Eragrostis echinochloidea.
- Sanchez-Ken, G. (2012). Catálogo de malezas gramíneas nativas e introducidas de México.
- Dávila, P., Mejia-Saulés M. Teresa, Soriano-Martínez A. María, & Herrera-Arrieta Y. (2018). Conocimiento taxonómico de la familia Poaceae en México. Botanical Sciences. 96, 462–514.
- Abarca, F. (2010). Recent regulation changes regarding invasive species in Mexico and the development of Mexico’s National Strategy on Invasive Species..
- Webb, A.D. (2020). Pima County ecological monitoring program's monitoring protocol for tracking invasive plant occurrences. In: Ecological Monitoring Program, Pima County Multi-species Conservation Plan..

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4. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

- Answer: **Yes**, which contributes **3** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

While the species is not widely considered invasive, Pima County has included it in invasive species monitoring programs where it is noted as "invading multiple ecosystems types including desert, thornscrub, semi-desert grasslands, xeric riparian areas, and mesic riparian areas...African lovegrass may pose a threat to MSCP covered species, particularly in thornscrub and desert areas where it alters vegetation structure and provides a source of fine fuels for wildfires." (Webb 2020). Pima County, Arizona, does have a similar climate to California.

Reference(s):

- PlantRight (2024). ClimateMatch-Eragrostis_echinochloidea-California-20240922.pdf.
- Webb, A.D. (2020). Pima County ecological monitoring program's monitoring protocol for tracking invasive plant occurrences. In: Ecological Monitoring Program, Pima County Multi-species Conservation Plan..

5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis is an extensive monophyletic genus with approximately 350 taxa distributed across the word, about 24 of which are introduced outside of their native range. No species of Eragrostis are currently considered invasive in California, however six other non-native species and one subspecies of the genus have been documented in California. Eragrostis lehmanniana, native to South Africa, has become invasive in southwestern United States, primarily Arizona and Mexico, where it was introduced for restoration. The regions of Arizona and Mexico that this species has invaded are a similar climate to California, similar to Eragrostis echinochloidea. This taxon has also been found in California and should be considered for a PRE review.

Reference(s):

- Ingram, A.L., & Doyle J.J. (2004). Is Eragrostis (Poaceae) Monophyletic? Insights from Nuclear and Plastid Sequence Data. Systematic Botany,. 29(3):545-552.,
- CABI (2022). Eragrostis echinochloidea.
- M. Peterson, P. (2024). Flora of North America - Eragrostis echinochloidea Stapf.
- PlantRight (2024). ClimateMatch-Eragrostis_lehmanniana-California-20240928.
- Calflora (2024). Eragrostis echinochloidea Stapf, African love grass. Calflora: Information on California plants for education, research and conservation. Berkeley, CA: Calflora Database..
- Conser, C., Seebacher L., Fujino D. W., Reichard S., & DiTomaso J. M. (2015). The Development of a Plant Risk Evaluation (PRE) Tool for Assessing the Invasive Potential of Ornamental Plants: Erargostis curvula - Texas. (Liu, J., Ed.).PLOS ONE. 10, e0121053.

6. Is the species (or cultivar or variety) found predominately in a climate matching the region of concern?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

The majority of this species native range is in Botswana and Namibia, regions that are more arid than the region of concern. In the limited regions that it has become naturalized, the climate does not match that of California. While the Precipitation and Hardiness layers on the Climate Match tool do match the primary native range for this taxon does match southern California and the southwestern desert region, overall the majority of the species range does not match.

Reference(s):

- PlantRight (2024). ClimateMatch-Eragrostis_echinochloidea-California-20240922.pdf.

Impact on Native Plants and Animals (Questions 7 - 10)

7. Does this plant displace native plants and dominate (overtop or smother) the plant community in areas where it has established?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidae is a perennial bunch grass that can reach 1 meter tall; the plants grow in dense tufts or clumps and form mats (are cespitose), with erect stems. Plants that form dense clumps are capable of stabilizing substrate and potentially causing thick mats, thus have the ability to crowd out natives. However the plant is not a vine and does not have an overhanging cover and would not be at risk of smothering natives. This taxon has been reported as altering vegetation structure where it has invaded multiple ecosystems types including desert, thornscrub, semi-desert grasslands, xeric riparian areas, and mesic riparian areas, and has been reported as a potential threat to MSCP covered and sensitive species in Pima County, AZ.

Reference(s):

- CABI (2022). Eragrostis echinochloidea.
- M. Peterson, P. (2024). Flora of North America - Eragrostis echinochloidea Stapf.
- Webb, A.D. (2020). Pima County ecological monitoring program's monitoring protocol for tracking invasive plant occurrences. In: Ecological Monitoring Program, Pima County Multi-species Conservation Plan..

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8. Is the plant noted as promoting fire and/or changing fire regimes?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochoidea is reported as being capable of initiating grass-fire cycles in USA and provides a source for fine fuels for wildfires. In general, perennial grass dominated ecosystems burn more completely and generate higher temperatures than herbaceous and woody systems. However, it is not reported as forming monocultures where it has invaded, so while it can contribute positively to increased fire risk, it likely won't singularly drive fire.

Reference(s):

- Webb, A.D. (2020). Pima County ecological monitoring program's monitoring protocol for tracking invasive plant occurrences. In: Ecological Monitoring Program, Pima County Multi-species Conservation Plan..
- Wragg, P. D., Mielke T., & Tilman D. (2018). Forbs, grasses, and grassland fire behaviour.
- Bean, T.M., & Hannum C.A. (2009). Invasive grasses: cause for concern. In: Backyards & Beyond. 3(3). Tucson, AZ: Arizona CooperativeExtension, College of Agriculture and Life Sciences, University of Arizona. 4-5..
- CABI (2022). Eragrostis echinochloidea.
- M. Peterson, P. (2024). Flora of North America - Eragrostis echinochloidea Stapf.
- SEInet (2024). SEINet Portal Network - Eragrostis echinochloidea.

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9. Is the plant a health risk to humans or animals/fish? Has the species been noted as impacting grazing systems?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidea is was not listed by CDFA (2015) as a noxious weed and is not included in the Cornell list of poisonous plants (2018) nor listed in the California Poison Control System (2023). It was potentially introduced to the US for the regeneration of rangelands and as a forage grass, however it does not have a high forage value and has a rating of moderate grazing value. Thus, while it might not be the most palatable forage grass, it is not toxic and does not pose as a health risk.

Reference(s):

- Irob, K., Blaum S., Kerger L., Strohbach B., Kanduvarisa A., Lohmann D., et al. (2022). Browsing herbivores improve the state and functioning of savannas: A model assessment of alternative land?use strategies. Ecology and Evolution. 12(3):e8715,
- Ravhuhali, K. E., Mlambo V., Beyene T. S., & Palamuleni L. G. (2021). Effect of soil type on spatial distribution and nutritive value of grass species growing in selected rangelands of South Africa. South African Journal of Plant and Soil. 38, 361–371.
- Dougill, A. J., & Thomas A. D. (2004). Kalahari sand soils: spatial heterogeneity, biological soil crusts and land degradation. Land Degradation & Development. 15, 233–242.
- Van Devender, T. R., & Reina A.L. (0). SONORA.
- CABI (2022). Eragrostis echinochloidea.
- California Poison Control System (2023). Plants · California Poison Control System (CPCS).
- CDFA (2015). California Noxious Weed List.
- Cornell University Department of Animal Science (2018). Plants Poisonous to Livestock.

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10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidae is a perennial bunch grass that can reach 1 meter tall; the plants grow in dense tufts or clumps and form mats (are cespitose), with erect stems (culms). Plants that form dense clumps are capable of stabilizing substrate and potentially causing thick mats, however due to this plants height and lack of thorns, it does not prove as a physical barrier to humans, animals, or livestock.

Reference(s):

- M. Peterson, P. (2024). Flora of North America - Eragrostis echinochloidea Stapf.

Reproductive Strategies (Questions 11 - 17)

11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidea has been reported as sometimes rooting at the nodes. Species of the Eragrostis genus can be stoloniferous or rhizomatous. There is very little other documentation of this taxon spreading or reproducing vegetatively, so while it has been reported that it can, this does not seem to be the primary mode of reproduction.

Reference(s):

- Peterson, P. M. (2024). Flora of North America - Eragrostis Wolf.
- SEInet (2024). SEINet Portal Network - Eragrostis echinochloidea.
- Tropicos (2024). Tropicos - Eragrostis echinochloidea.

12. If naturally detached fragments from this plant are capable of producing new plants, is this a common method of reproduction for the plant?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

As stated in question 11, Eragrostis echinochloidea has been reported as having the ability to root at the nodes, however this is not a common method of reproduction.

Reference(s):

- Peterson, P. M. (2024). Flora of North America - Eragrostis Wolf.
- SEInet (2024). SEINet Portal Network - Eragrostis echinochloidea.
- Tropicos (2024). Tropicos - Eragrostis echinochloidea.

13. Does the species (or cultivar or variety) commonly produce viable seed?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochoildea primarily reproduces from seed.

Reference(s):

- Gutiérrez-Gutierrez, O. G., Rivero-Hernández O., Vega-Mares J. Humberto, Melgoza-Castillo A., Gutiérrez-Gutierrez O. G., Rivero-Hernández O., et al. (2022). Patrones de germinación en gramíneas presentes en el Desierto Chihuahuense. Botanical Sciences. 100, 989–999.
- CABI (2022). Eragrostis echinochloidea.
- M. Peterson, P. (2024). Flora of North America - Eragrostis echinochloidea Stapf.
- SEInet (2024). SEINet Portal Network - Eragrostis echinochloidea.
- Tropicos (2024). Tropicos - Eragrostis echinochloidea.

14. Does this plant produce copious viable seeds each year (> 1000)?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

I was unable to find calculations in the literature of the number of viable seed Eragrostis echinochloidea can produce however I was able to ascertain an approximate number by calculating the average fertile florets per spikelet (5-16) and spikelets per raceme (~10) using numbers provided in the taxon's treatment. An individual inflorescence can easily produce on average 100 viable seeds per year, thus, a single plant would only need to produce 10 inflorescences per year. Personal observation of 147 verified photo occurrences on iNaturalist show that is not an uncommon occurrence, however it depends on the size of the individual plant. Young plants appear to be producing

15. Is there significant germination (>25%) of seeds the next growing season, with no requirement of an infrequent environmental condition for seeds to germinate (i.e. fire) or long dormancy period?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Gutiérrez-Gutiérrez et al. (2022) reports that germination of seeds occur in about 2 days after being stored in paper bags at 24C (75.2F) for 2-3 years after being cleaned, however germination rate was low, at less than 3%. These results are from a lab setting. However, other species in the Eragrostis genus have well documented germination rates. Eragrostis plana showed high germination rates (up to 98%) in optimal simulated conditions (Bittencourt et al 2017). Bittencourt et al (2016) also found a 85% germination rate of Eragrostis tenuifolia in a similar study. In an experiment testing seed treatments on Eragrostis lehmanniana, Haferkamp and Jordan (1977) found that the control sample had a germination rate of 36% just 48 hours after imbibition. In an earlier study, Wright (1973) found germination of untreated Eragrostis lehmanniana seeds to be as high as 80% 150 weeks post-harvest. The ample evidence that Eragrostris species have high germination rates imply that E. echinochloidea would too given a more controlled experiment. Thus, I am answering Yes with a Medium confidence here.

Reference(s):

- Gutiérrez-Gutierrez, O. G., Rivero-Hernández O., Vega-Mares J. Humberto, Melgoza-Castillo A., Gutiérrez-Gutierrez O. G., Rivero-Hernández O., et al. (2022). Patrones de germinación en gramíneas presentes en el Desierto Chihuahuense. Botanical Sciences. 100, 989–999.
- Bittencourt, H. von Hertwi, Bonome L. Tomas da S., Pagnoncelli F. de Bortoli, Lana M. Alberto, & Trezzi M. Muzell (2016). Seed germination and emergence of Eragrostis tenuifolia (A. Rich.) Hochst. ex Steud. in response to environmental factors. Journal of Plant Protection Research. vol. 56,
- Bittencourt, H. V. H., Bonome L. T. S., Trezzi M. M., Vidal R. A., & Lana M. A. (2017). Seed germination ecology of Eragrostis plana, an invasive weed of South American pasture lands. South African Journal of Botany. 109, 246–252.
- Haferkamp, M. R., & Jordan G. L. (1977). The Effect of Selected Presowing Seed Treatments on Germination of Lehmann Lovegrass Seeds. Journal of Range Management. 30, 151–153.

16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very Low** confidence in this answer based on the available literature.

Answer / Justification:

CABI states that it has been reported that Eragrostis echinochloidea has a slow growth rate, however I was unable to verify this with the listed source (out of commission site). I was also unable to find any observations or reports regarding the amount of time it takes this species to develop fruit. However, many perennial grasses, including species of Eragrostis, produce seed within three years; Eragrostis secundiflora produces viable seed within the first year of planting (Maher and Reilley 2016).

Reference(s):

- CABI (2022). Eragrostis echinochloidea.
- Maher, S., & Reilley J. (2016). Plant guide for red lovegrass (Eragrostis secundiflora).

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17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Two sources (CalFlora and Flora of Israel) site this taxon of having a 1-2 month flowering period, however the sample size for both of these sources are unknown, and assumed to be small as vouchering of the taxon in California and Isreal is minimal. California Consortium of Herbaria list flowering time as in the spring and fall (February, April, September, and October) with a sample size of 9, however some of the vouchers used here were collected in South Africa, which, being in the Southern Hemisphere, has opposite seasons from the United States. That being said, in looking at verified iNaturalist photo observations in South Africa, Eragrostis echinochloidea can be found flowering throughout all 12 months of the year (n=72). In the Northern Hemisphere this species has been documented on iNaturalist (verified photos) as flowering almost every month out of the year, excluding January, July, and December (n=75). While it is unknown of one individual will produce seeds more than twice a year, it is appears that seeds can be continuously produced for over three months out of the year.

Reference(s):

- Danin, A., & Fragman-Sapir O. (2023). Analytical Flora Flora of Israel and adjacent areas Flora of Israel and adjacent areas.
- iNaturalist (2024). iNaturalist - Worldwide observations of Erarostis echinochloidea.
- Calflora (2024). Eragrostis echinochloidea Stapf, African love grass. Calflora: Information on California plants for education, research and conservation. Berkeley, CA: Calflora Database..
- CCH (2024). CCH2 Portal Collection Search Parameters - Erarostris echinochloidea.

Dispersal (Questions 18 - 20)

18. Are the plant's propagules frequently dispersed long distance (>100 m) by mammals or birds or via domestic animals?

- Answer: **No**, which contributes **0** point(s) to the total PRE score.
- The *screener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidea can be found throughout grazing rangeland, and some assessments have speculated that with proximity to livestock, the species could use animals as a vector, especially because of the minuscule size of the seeds (

19. Are the plant's propagules frequently dispersed long distance (>100 m) by wind or water?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Eragrostis echinochloidea is naturalized and native to arid regions and is not generally find in wet environments, therefore dispersal via water is unlikely. However, this species, and its close relatives are dispersed via wind and have seed morphology that aides in distance wind dispersal (such as winged palea), which it shares with other naturalized members of the Eragrostis genus.

Reference(s):

- USDA (2014). Field guide for managing Lehmann and weeping lovegrasses in the Southwest..
- CABI (2022). Eragrostis echinochloidea.
- M. Peterson, P. (2024). Flora of North America - Eragrostis echinochloidea Stapf.
- SEInet (2024). SEINet Portal Network - Eragrostis echinochloidea.
- Tropicos (2024). Tropicos - Eragrostis echinochloidea.

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20. Are the plant's propagules frequently dispersed via contaminated seed (agriculture or wildflower packets), equipment, vehicles, boats or clothing/shoes?

- Answer: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

This species presence near highways, lots, disturbed sites and cattle farms suggests it is moving with vehicles, or otherwise anthropogenically. In Mexico, E. echinochloidea was first reported as an escaped forage grass in 2001 near a toll station of Road 15 at Magdalena de Kino, Sonora.

Reference(s):

- van Devender, T.R., Felger R.S., & Dinnitt M.A. (2007). Sonoran Desert weed accounts. Roadside weed management.
- Webb, A.D. (2020). Pima County ecological monitoring program's monitoring protocol for tracking invasive plant occurrences. In: Ecological Monitoring Program, Pima County Multi-species Conservation Plan..
- Bowers, J. E., & Turner R. M. (1985). A Revised Vascular Flora of Tumamoc Hill, Tucson, Arizona. Madroño. 32, 225–252.
- Reeder, J.R., & Redder C.G. (1985). Notes on Arizona grasses.. Desert Plants 7(1):22-23. The University of Arizona. Tucson, AZ..
- Gutiérrez-Gutierrez, O. G., Rivero-Hernández O., Vega-Mares J. Humberto, Melgoza-Castillo A., Gutiérrez-Gutierrez O. G., Rivero-Hernández O., et al. (2022). Patrones de germinación en gramíneas presentes en el Desierto Chihuahuense. Botanical Sciences. 100, 989–999.
- Van Devender, T. R., & Reina A.L. (0). SONORA.
- CABI (2022). Eragrostis echinochloidea.

Total PRE Score

PRE Score: 19 -- High Potential Risk
Confidence: 78 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

PRE Score Legend

The PRE Score is calculated by adding the point totals for each (answered) question.
< 13 : Low Potential Risk
13 - 15 : Moderate Potential Risk
> 15 : High Potential Risk

Questions Answered Legend

It is important to answer at least 16 questions to consider a PRE Score as "valid".
>= 16 : valid (80% or more questions answered)
<= 15 : invalid (not enough questions answered)

Organization Ownership and Content Privacy

Organization: 2023-2025 Western IPM Project
Content Privacy: Public

Evaluation Reviewers

The PRE approach is to base decisions on science and make decisions by consensus of diverse horticultural stakeholders. The literature review and process of answering PRE's questions are based on science; the decisions of which plants to prioritize are based on consensus. To ensure this process is in place and that PRE is collaborative, volunteer stakeholders are recruited from each region to review evaluations. The following experts in their profession (plant science, conservation, or horticultural trade) have participated as volunteer PRE reviewers for this evaluation:

• Chris McDonald	February 21, 2025
• Elizabeth D. Brusati	February 7, 2025
• Jutta Burger	January 29, 2025
• Nicole Valentine	January 7, 2025
• Ron Vanderhoff	October 9, 2024

This evaluation has a total of 5 reviewer(s).

Evaluation Issues

The following section lists all public issues for this evaluation. Issues provide a way for stakeholder reviewers to communicate any concerns or suggestions they might have with the plant or evaluation. Please email info@plantright.org if additional action is required to resolve open issues.

Issue ID # 10831

Date Created: February 12, 2025 - 12:10pm
Date Updated: February 26, 2025 - 4:19pm

Submitted by: Chris McDonald

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: General Information

Issue Description

I would emphasize in the introduction that this species is found in its native range in a more dry climate than in California. Which could be problematic, as it is adapted to aridity. I'd also remove the word "moderate" from concern, the PRE score is high. We might be lucky this is a slow growing Eragrostis. There are large patches of E. Lehmanniana in Southern California that are underreported as well as other love grasses that are abundant (Stink grass E. ciliensis). CM

Issue Resolution (Screener's Response to Issue) Edited info - done

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Issue ID # 10830

Date Created: February 12, 2025 - 11:59am
Date Updated: February 26, 2025 - 4:04pm

Submitted by: Chris McDonald

Status: Fixed

Type: Suggestion
Severity: Minor
Scope: Q16. Does this plant produce viable seed within the first three years (for an herbaceous species) to five years (for a woody species) after germination?

Issue Description

Many Eragrostis produce seed within 3 years, and many perennials grasses produce seed within 3 years. I'd suspect this species can produce seed within the first 3 years under decent growing conditions. I'd change this to a Yes with low or very low confidence, and cite that many Eragrostis species are capable of producing seed within 3 years, (E. curvula, E. lehmanniana, E. secundiflora) https://plants.sc.egov.usda.gov/DocumentLibrary/plantguide/pdf/pg_erso.pdf but add the caveat this species is slower growing and needs more data to confirm if it is capable of producing seeds within 3 years. CM

Issue Resolution (Screener's Response to Issue) I followed the reviewer suggestion here.

Issue ID # 10829

Date Created: February 12, 2025 - 11:41am
Date Updated: February 27, 2025 - 6:15pm

Submitted by: Chris McDonald

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q18. Are the plant’s propagules dispersed long distance (>100 m) by mammals or birds or via domestic animals?

Issue Description

I think we can evaluate this also based on seed morphology. The seeds of Eragrostis echinocloidea are very small. They should easily be able to lodge in the fur or feathers of wildlife and livestock. I think the answer here is a Yes, but with medium confidence, based on seed morphology and spread of other Eragrostis species with similarly small seeds and ability to easily disperse in rangelands of invaded ranges, including Arizona. CM

Issue Resolution (Screener's Response to Issue) I followed the suggestion however I kept it a low confidence due to lack of evidence. JB - After further communication with me and review of the "Help"

text for this question, MD did revert this answer back to a "no". Small seed size is not considered a morphological trait that can be inferred to allow movement by birds or wildlife.

Issue ID # 10828

Date Created: February 12, 2025 - 11:32am
Date Updated: February 26, 2025 - 3:56pm

Submitted by: Chris McDonald

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q15. Is there significant germination (>25%) of seeds the next growing season, with no requirement of an infrequent environmental condition for seeds to germinate (i.e. fire) or long dormancy period?

Issue Description

Several species in the genus Eragrostis are known for having high germination rates. If the Gutierrez study looked at 2-3 years old seed, which is getting close to the longevity of some Eragrostis species seeds (a few years). High germination was found in Eragrostis
plana
https://www.sciencedirect.com/science/article/pii/S0254629916339023#:~:text=Germination%20was%20equal%20or%20higher,a%20depth%20of%204%20cm. and Eragrostis
lehmanniana
https://www.fs.usda.gov/database/feis/plants/graminoid/eraleh/all.html#:~:text=RAUNKIAER%20LIFE%20FORM%20:%20Hemicryptophyte%20REGENERATION,at%20the%20nodes%20[30]. and E. tenuifolia https://journals.pan.pl/dlibra/publication/103835/edition/89841/content it is very likely it does have high germination rates, based on other closely related species, it is odd that the Gutierrez study found both E. lehmanniana and E. echinochloidea had low germination rates while the other two Eragrostis species had high germination rates. Wright
1973
https://acsess.onlinelibrary.wiley.com/doi/abs/10.2135/cropsci1973.0011183X001300040013x shows a germination rate for E. lehmanniana of 70-90% so Gutierrez must have had something go wrong with that species (they had less than 10% germination). It's safe to assume it likely has a high germination rate with medium or low confidence, since it's a comparison of closely related species. CM

Issue Resolution (Screener's Response to Issue) Thank you for the contextual research! I changed my answer and added the relevant citations.

Issue ID # 10826

Date Created: February 12, 2025 - 11:09am
Date Updated: February 26, 2025 - 4:20pm

Submitted by: Chris McDonald

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q02. Is the species (or cultivar or variety) noted as being naturalized elsewhere in the US or world in a similar climate?

Issue Description

I think we are supposed to add the weed map to this question (or one of the climate questions) https://weedmap.cal-ipc.org/climatematch/?areaType=states&areaList[]=06&mapView=2%2C113.81256%2C62.23927&gbif_search=Eragrostis%20echinochloidea&gbif_taxonkey=4933568&gbif_speciesname=Eragrostis%20echinochloidea&datalayer=COMBINED&datalayeropacity=60 CM

Issue Resolution (Screener's Response to Issue) The climate match tool is already cited in this question as well as like questions.

Issue ID # 10802

Date Created: February 7, 2025 - 10:06am
Date Updated: February 26, 2025 - 3:21pm

Submitted by: Elizabeth D. Brusati

Status: Fixed

Type: Suggestion
Severity: Minor
Scope: Q04. Is the species (or cultivar or variety) noted as being invasive in the US or world in a similar climate?

Issue Description

To score this as Yes, please add information on the invasive impacts seen in Pima County. Otherwise, it's not clear if it's on their list because it's having impacts or as a precaution. Either way, I would reduce the Confidence level to Medium based on the information presented.

Issue Resolution (Screener's Response to Issue) I added the additional information

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Issue ID # 10801

Date Created: February 7, 2025 - 10:04am
Date Updated: February 26, 2025 - 3:19pm

Submitted by: Elizabeth D. Brusati

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q03. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

Issue Description

The Yes score for Q3 does not match the text answer, which describes the species being naturalized but not really invasive

Issue Resolution (Screener's Response to Issue) The evidence in Webb 2020 for Pima country is enough of a note for invasive. I changed my wording.

Issue ID # 10699

Date Created: January 29, 2025 - 3:32pm
Date Updated: February 5, 2025 - 10:24am

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q06. Is the species found predominately in a climate matching the region of concern?

Issue Description

I like the care that you took in studying the components of the climate match map. However, it seems that overall the species still occurs in more area that does not match the climate of CA (esp in its home range as you write) than not. Please re-review. To me, this looks like a "no". - JB

Issue Resolution (Screener's Response to Issue) I agree. I changed the answer to 'No' and confidence to 'High'. I also amended my justification.

Issue ID # 10698

Date Created: January 29, 2025 - 3:20pm
Date Updated: February 5, 2025 - 12:14pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q03. Is the species (or cultivar or variety) noted as being invasive in the U.S. or world?

Issue Description

Since Randall always references his sources, it's strange that he'd identify this species as invasive (or just as having a high global invasiveness score?) without supporting documentation. Can you describe the primary reference that identified the species as invasive? Either way, since you have conflicting information, at a minimum, the confidence should go down. If you do have a published reference that states the species is invasive (is Webb, A.D. 2020 one?) and others don't clearly say it isn't, then this should probably revert to a "yes" (which would also change your answer to the "invasive in a similar

climate" question). JB

Issue Resolution (Screener's Response to Issue) I was unable to verify Randall's citation for 'Invasive' in MX. He cites Conabio, the page he links no longer works, and I was not able to find any information on the taxon on Conabio's site or within publications. However, the Webb report does consider it invasive in Pima County, so I changed my response to this one and Q5.

Issue ID # 10697

Date Created: January 29, 2025 - 3:14pm
Date Updated: February 5, 2025 - 12:25pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Regional Information

Issue Description

Please paste the link to the Climate Match site search in (using the Share Link) option once you've selected region and species. Sorry if you've already done this, there seems to be a bug in this system may not always allow this link to be saved! - JB

Issue Resolution (Screener's Response to Issue) Fixed!

Issue ID # 10696

Date Created: January 29, 2025 - 3:11pm
Date Updated: February 5, 2025 - 12:33pm

Submitted by: Jutta Burger

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Plant Information

Issue Description

A few typos and grammatical issues in Evaluation Summary, but the content is good. Give it one more read-through. - JB

Issue Resolution (Screener's Response to Issue) I read through the entire report and corrected typos and grammatical errors,

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Issue ID # 10668

Date Created: January 8, 2025 - 11:47am
Date Updated: February 5, 2025 - 12:21pm

Submitted by: Nicole Valentine

Status: Fixed
Type: Suggestion
Severity: Minor
Scope: Q20. Are the plant’s propagules frequently dispersed via contaminated seed, equipment, vehicles, boats or clothing/shoes?

Issue Description

Per the "How to answer PRE questions" guide: "Simply being a weed of roadsides does not warrant an automatic yes. Inference based on biological evidence may be necessary to answer the question." I think you could lower the confidence or include mention of biological characteristics that infer it is more likely to spread this way. -NV

Issue Resolution (Screener's Response to Issue) I lowered my confidence here.

Issue ID # 10530

Date Created: October 9, 2024 - 8:00am
Date Updated: February 5, 2025 - 12:25pm

Submitted by: Ron Vanderhoff

Status: Fixed
Type: Comment
Severity: Minor
Scope: Evaluation as a whole

Issue Description

I have very little to comment on. The responses appear accurate and well supported in te literature. To me this appears to be a very well researched and well done PRE. Ron

Issue Resolution (Screener's Response to Issue) Thanks!

Issue ID # 10529

Date Created: October 8, 2024 - 8:49am
Date Updated: February 5, 2025 - 12:20pm

Submitted by: Ron Vanderhoff

Status: Fixed
Type: Comment
Severity: Minor
Scope: Q17. Does this plant continuously produce seed for >3 months each year or does seed production occur more than once a year?

Issue Description

Very thorough and well researched report. I did review numerous (200+) images of the taxon from the Chihuahuan and Sonoran deserts of Mexico and Arizona with fruit shown. Images show inflorescences with fruit/seed at almost every month, esp. +/- March-Oct. confirming the fruiting/seed period well over three months.

Issue Resolution (Screener's Response to Issue) Thank you. I changed my confidence to Very High here.

About PRE and this Plant Evaluation Report

The Plant Risk Evaluator (PRE) is an online database and platform designed to assess the risk of a plant becoming invasive in a given region.This tool offers many benefits, and we encourage you to visit the PRE website (https://pretool.org) for more information.

If you would like to learn more about PRE, please email us at info@plantright.org, requesting a PRE Account.

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