Plant Risk Evaluator -- PRE™
Evaluation Report

Pennisetum ciliare -- California

2022 Western IPM Grant Project

PRE Score: 21 -- High Potential Risk
Confidence: 90 / 100
Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Completed

Evaluation Date: September 20, 2022

This PDF was created on May 23, 2025

This project was funded in part by the USDA National Institute of Food and Agriculture through the Western Integrated Pest Management Center, grant number 2018-70006-28881.

Plant Evaluated

Pennisetum ciliare

Image by Keir Morse

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Pennisetum ciliare*) 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

Buffelgrass is a perennial grass that has been introduced as a forage species and for erosion control in semi-tropical to semi-arid regions across the globe. It was introduced to North America to increase forage production in semi-arid habitats and has expanded into natural areas. It has many characteristics that allow it to become invasive and spread, including asexual seed production, easily dispersed seeds, high seed production and tolerance of drought. Buffelgrass is invasive in the southwestern US and Mexico, and so far only a few populations have been found or have established in California.

General Information

Status: Completed
Screener: Chris McDonald
Evaluation Date: September 20, 2022

Plant Information

Plant: *Pennisetum ciliare*

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:

Buffelgrass has invaded southwestern North America, Arizona, New Mexico, Texas, Mexico incl. Sonora and Chihuahua. Also invading in Australia and South Central Asia (India, Pakistan), and also found in Hawaii. Native to Africa and the Middle East. Buffelgrass is on the Arizona noxious weed list and the New Mexico watch list.

Reference(s):

- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- Olsson, A. D., Betancourt J. L., Crimmins M. A., & Marsh S. E. (2012). Constancy of local spread rates for buffelgrass (Pennisetum ciliare L.) in the Arizona Upland of the Sonoran Desert. Journal of Arid Environments. 87, 136–143.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.
- Lucid Central (2016). Weeds of Australia: Buffelgrass.
- Arizona department of Agriculture (2022). Arizona Noxious Weed List.
- Beck, L., & Wanstall J. (2020). New Mexico Noxious Weed List.

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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:

Buffelgrass is invasive in Australia and southwestern North America, where the climate is similar to California including the Sonoran Desert.

Reference(s):

- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.

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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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Invasive in US and Australia

Reference(s):

- Farrell, H. L., & Gornish E. S. (2019). Pennisetum ciliare: a review of treatment efficacy, competitive traits, and restoration opportunities. Invasive Plant Science and Management. 12, 203–213.
- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.
- Lucid Central (2016). Weeds of Australia: Buffelgrass.

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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Invading southwestern North America and Australia, both of which have climates that match California.

Reference(s):

- Farrell, H. L., & Gornish E. S. (2019). Pennisetum ciliare: a review of treatment efficacy, competitive traits, and restoration opportunities. Invasive Plant Science and Management. 12, 203–213.
- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- GBIF—the Global Biodiversity Information Facility (2021). GBIF Distribution Map Buffelgrass Pennisetum ciliare, Cenchrus ciliaris.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.

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:

Several other Pennisetum's are also invasive. Including Fountaingrass (Pennisetum setaceum), kikuyu (Pennisetum clandestinum) Chinese fountain grass (P. alopecuroides) . Buffelgrass is also listed as Cenchrus ciliaris, several other Cenchrus' are also invasive (Cenchrus setiger)

Reference(s):

- DiTomaso, J. M., & Healy E. A. (2013). Weed control in natural areas in the Western United States. 544.
- Mastalerz, A., & Frey M. (2012). Invasive Plant Alert: Fountain Grass Pennisetum alopecuroides (L.) Spreng..
- USDA NRCS (2017). USDA PLANTS Database: Pennisetum alopecuroides (Chinese fountaingrass).

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

- 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:

Buffelgrass grows in southern Africa, the middle east, south central Asia, eastern Australia, southwestern North America and all these places match the climate of California. Buffelgrass seems to occur in about half of climate zones that it grows in that also match California. (NOTE: not listed as very high confidence, because there are several large semi-tropical areas where buffelgrass grows that are outside climate of CA, eastern Africa, eastern South America (Brazil), Texas and central Mexico.)

Reference(s):

- GBIF—the Global Biodiversity Information Facility (2021). GBIF Distribution Map Buffelgrass Pennisetum ciliare, Cenchrus ciliaris.

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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Buffelgrass displaces native plants in several locations where it is invasive, including Australia, Hawaii, and Sonoran Desert. It can also overtop and smother smaller native plants.

Reference(s):

- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- Jackson, J. (2005). Is there a relationship between herbaceous species richness and buffel grass (Cenchrus ciliaris)?. Austral Ecology. 30, 505–517.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.

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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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Buffel grass adds fuels to desert ecosystems where fuels are historically limited. Buffelgrass also adds fuels to semi-tropical grassland ecosystems altering the fire regime.

Reference(s):

- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- McDonald, C. J., & McPherson G. R. (2013). Creating hotter fires in the Sonoran Desert: Buffelgrass produces copious fuels and high fire temperatures. Fire Ecology. 9, 26–39.

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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:

Buffelgrass is often introduced to semi-arid ecosystems to increase forage for livestock. Buffelgrass has been viewed as a beneficial forage grass for livestock producers.

Reference(s):

- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- C Hanselka, W. (1988). Buffelgrass—South Texas wonder grass.

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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:

While buffelgrass increases fuels and has been planted as a forage grass, it does not create impenetrable thickets for most animal species. The grass is generally less than 1.5 m tall and less than 1 m tall when not in flower. It does alter habitat quality and decrease species richness.

Reference(s):

- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.

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 **High** confidence in this answer based on the available literature.

Answer / Justification:

Buffelgrass can reproduce via stolons or rhizomes. The main mode of reproduction is by seed and is apomictic (produces seed asexually).

Reference(s):

- Bashaw, EC., & Hignight KW. (1990). Gene transfer in apomictic buffelgrass through fertilization of an unreduced egg. Crop Science. 30, 571–575.
- Cook, B. (2007). Buffel grass fact sheet.
- Tu, M., Randall J., Rice B., Tillery K., Harris M., & Connor L. (2014). BugwoodWiki: Pennisetum ciliare.

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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:

Buffelgrass is a grass and may occasionally reproduce by tillers separating from the parent plant, however this is uncommon and would require the plant to be disturbed.

Reference(s):

- USDA Forest Service (2014). Field Guide for Managing Buffelgrass in the Southwest.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.

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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:

Yes, reproduces by seed

Reference(s):

- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.
- Bashaw, EC., & Hignight KW. (1990). Gene transfer in apomictic buffelgrass through fertilization of an unreduced egg. Crop Science. 30, 571–575.

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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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Individual buffelgrass inflorescences can produce over one hundred seeds and individual plants can have dozens of inflorescences.

Reference(s):

- Kumar, D., Dwivedi GK., & Singh SN. (2005). Seed yield and quality of buffel grass (Cenchrus ciliaris) as influenced by row spacing and fertilizer level. Tropical grasslands. 39, 107–111.
- Arizona Sonora Desert Museum (2022). Save Our Saguaros: Beat Back Buffelgrass.

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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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Germination of buffelgrass seeds was 25-35% in India and similarly as high in Mexico when placed under warm growing conditions. Seed viability drops over time.

Reference(s):

- Kumar, D., Dwivedi GK., & Singh SN. (2005). Seed yield and quality of buffel grass (Cenchrus ciliaris) as influenced by row spacing and fertilizer level. Tropical grasslands. 39, 107–111.
- Hacker, JB., & Ratcliff D. (1989). Seed dormancy and factors controlling dormancy breakdown in buffel grass accession from contrasting provenances. Journal of Applied Ecology. 201–212.
- Villa-Reyes, F., & de la Barrera E. (2016). Environmental cues for germination of the invasive bunch grass Pennisetum ciliare (L.) Link. Acta Physiologiae Plantarum. 38, 1–8.

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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 High** confidence in this answer based on the available literature.

Answer / Justification:

Buffelgrass plants can produce seed in two years or less.

Reference(s):

- Kumar, D., Dwivedi GK., & Singh SN. (2005). Seed yield and quality of buffel grass (Cenchrus ciliaris) as influenced by row spacing and fertilizer level. Tropical grasslands. 39, 107–111.
- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.

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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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Buffelgrass is a C4 grass and generally reproduces during the warm summer rains. It can produce flowers from spring through summer or anytime the soil is wet and warm enough. Jepson lists flowering from April to October.

Reference(s):

- Arizona Sonora Desert Museum (2022). Save Our Saguaros: Beat Back Buffelgrass.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.
- Smith, Jr., J. P. (2012). Jepson eFlora: Buffelgrass.

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: **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:

Buffelgrass seeds can disperse via animals, including getting stuck in their fur, and buffelgrass seeds can spread long distances and new patches form long distances from previously known patches.

Reference(s):

- Olsson, A. D., Betancourt J. L., Crimmins M. A., & Marsh S. E. (2012). Constancy of local spread rates for buffelgrass (Pennisetum ciliare L.) in the Arizona Upland of the Sonoran Desert. Journal of Arid Environments. 87, 136–143.
- USDA Forest Service (2014). Field Guide for Managing Buffelgrass in the Southwest.
- Arizona Sonora Desert Museum (2022). Save Our Saguaros: Beat Back Buffelgrass.
- Tu, M., Randall J., Rice B., Tillery K., Harris M., & Connor L. (2014). BugwoodWiki: Pennisetum ciliare.

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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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Seeds have bristles and can be spread by wind or water. Several sources suggest seeds can float. And populations can spread and disperse quickly in variety of patterns (guerrilla and phalanx, see Olssen et al. 2012).

Reference(s):

- Olsson, A. D., Betancourt J. L., Crimmins M. A., & Marsh S. E. (2012). Constancy of local spread rates for buffelgrass (Pennisetum ciliare L.) in the Arizona Upland of the Sonoran Desert. Journal of Arid Environments. 87, 136–143.
- USDA Forest Service (2014). Field Guide for Managing Buffelgrass in the Southwest.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.
- Lucid Central (2016). Weeds of Australia: Buffelgrass.

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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: **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:

Seed dispersal can be on clothes as the seeds have bristles, however references do not suggest the frequency of this type of dispersal. Most often buffelgrass is intentionally dispersed to increase forage, or seeds are dispersed by wind, water or animals. Buffelgrass has been introduced across the globe intentionally as a pasture grass, to remediate reduced forages, while others have viewed its invasiveness as a problem for natural areas (see Marshall et al. 2012).

Reference(s):

- USDA Forest Service (2014). Field Guide for Managing Buffelgrass in the Southwest.
- CABI, Invasive Species Compendium (2014). Invasive Species Compendium: Buffelgrass.
- Arizona Sonora Desert Museum (2022). Save Our Saguaros: Beat Back Buffelgrass.
- Marshall, VM., Lewis MM., & Ostendorf B. (2012). Buffel grass (Cenchrus ciliaris) as an invader and threat to biodiversity in arid environments: a review. Journal of Arid Environments. 78, 1–12.

Evaluation Notes

Websites accessed:

***Pennisetum ciliare* (L.) Link in GBIF Secretariat (2021). GBIF Backbone Taxonomy. Checklist dataset https://doi.org/10.15468/39omeiaccessed via GBIF.org on 2022-11-30.**

https://keyserver.lucidcentral.org/weeds/data/media/Html/cenchrus_ciliaris.htm **accessed 2022-11-30.**

https://agriculture.az.gov/pestspest-control/agriculture-pests/noxious-weeds accessed 2022-11-30

https://wiki.bugwood.org/Pennisetum_ciliare#Reproduction accessed 2022-11-30

https://pubs.nmsu.edu/_circulars/CR698/ accessed 2022-11-30

https://www.desertmuseum.org/buffelgrass/learn.php access 2022-11-30

James P. Smith, Jr. 2012, *Pennisetum ciliare*, in Jepson Flora Project (eds.) *Jepson eFlora*, https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=36817, accessed on November 30, 2022.

https://keys.lucidcentral.org/keys/v3/pastures/Html/Buffel_grass.htm accessed 2022-11-30

Total PRE Score

PRE Score: 21 -- High Potential Risk
Confidence: 90 / 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: 2022 Western IPM Grant 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:

• Nicole Valentine	December 15, 2022
• Lauren Quon	December 14, 2022
• Scott Oneto	December 14, 2022
• Michael Chamberland	October 24, 2022
• Jutta Burger	October 23, 2022
• Marie Jasieniuk	October 19, 2022

This evaluation has a total of 6 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 # 8308

Date Created: October 23, 2022 - 9:43pm
Date Updated: November 30, 2022 - 1:12pm

Submitted by: Jutta Burger

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

It would be helpful to add a reference for its flowering period in California. The Jepson manual lists flowering period to be from April - October. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Added that it blooms from April to October and added Jepson reference

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Issue ID # 8307

Date Created: October 23, 2022 - 9:39pm
Date Updated: November 30, 2022 - 9:43am

Submitted by: Jutta Burger

Status: Fixed

Type: Suggestion
Severity: Major
Scope: Q11. Does this species (or cultivar or variety) reproduce and spread vegetatively?

Issue Description

Pennisetum ciliare does also reproduce vegetatively (https://wiki.bugwood.org/Pennisetum_ciliare#Reproduction). - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Added that buffelgrass reproduces vegetatively, via rhizomes, and added sources.

Issue ID # 8306

Date Created: October 23, 2022 - 9:31pm
Date Updated: November 30, 2022 - 1:25pm

Submitted by: Jutta Burger

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

Issue Description

Add text to the "Summary" section that describes the species in context of the PRE conducted. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Added a few sentences to the summary.

Issue ID # 8305

Date Created: October 23, 2022 - 9:29pm
Date Updated: November 30, 2022 - 1:20pm

Submitted by: Jutta Burger

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

Issue Description

Add the link to your CA Climate Match results for this species by copying the link through the "Share and Download" button in the Climate Match tool. - Jutta Burger

Issue Resolution (Screener's Response to Issue)

Updated. Please double check to see if done correctly.

Issue ID # 8296

Date Created: October 15, 2022 - 8:14pm
Date Updated: November 30, 2022 - 1:18pm

Submitted by: Michael Chamberland

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

Issue Description

It may be worth commenting on the divided opinions surrounding buffelgrass in Texas, where different stakeholders regard it as either a valuable forage or a serious invasive weed.

https://rangeplants.tamu.edu/plant/buffelgrass/

http://www.tsusinvasives.org/home/database/cenchrus-ciliaris

- Michael Chamberland

Issue Resolution (Screener's Response to Issue)

Added a comment about the intentional international dispersal of buffelgrass and how it is viewed as a positive and negative.

Issue ID # 8295

Date Created: October 15, 2022 - 8:05pm
Date Updated: November 30, 2022 - 12:47pm

Submitted by: Michael Chamberland

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

Issue Description

Question 18 is specifically asking about dispersal by animals. The answer of Yes with Very High confidence does not elaborate on a mechanism for how the seeds might spread by birds or domestic animals, it only says the seeds can spread long distances. - Michael Chamberland

Issue Resolution (Screener's Response to Issue)

Added that animals are one of the sources for seed dispersal because the seeds get stuck in their fur.

Issue ID # 8294

Date Created: October 15, 2022 - 8:00pm
Date Updated: November 30, 2022 - 1:07pm

Submitted by: Michael Chamberland

Status: Fixed
Type: Comment
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

There is an abundant body of literature on buffelgrass. Is it possible to reference an evaluation of the germination rate in the arid southwest? The evaluation mentions a study from India, which may not match the climate of California well. - Michael Chamberland

Issue Resolution (Screener's Response to Issue)

Added citation from study in Mexico also showing at least 25% germination rate.

Issue ID # 8293

Date Created: October 15, 2022 - 7:49pm
Date Updated: November 30, 2022 - 1:27pm

Submitted by: Michael Chamberland

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

Issue Description

Buffelgrass in California is an odd plant to be receiving a PRE evaluation (unless for the sake of calibrating the PRE). The invasive behavior of buffelgrass is abundantly documented in neighboring Arizona. Its ornamental use appears minimal. - Michael Chamberland

Issue Resolution (Screener's Response to Issue)

Buffelgrass has scored high on the PRE (20+ points). The PRE climate match tools help to illustrate this species is likely to spread in CA if introduced.

Issue ID # 8292

Date Created: October 15, 2022 - 7:35pm
Date Updated: November 30, 2022 - 2:56pm

Submitted by: Michael Chamberland

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

Issue Description

Adjust citations so that none indicate (0) for the year. - Michael Chamberland

Issue Resolution (Screener's Response to Issue)

A year has been added to the citations.

Issue ID # 8291

Date Created: October 15, 2022 - 7:32pm
Date Updated: November 30, 2022 - 9:31am

Submitted by: Michael Chamberland

Status: Fixed
Type: Suggestion
Severity: Major
Scope: Q01. Has the species (or cultivar or variety, if applicable) become naturalized where it is not native?

Issue Description

It is worth noting that buffelgrass invasion is significant enough to warrant its listing on the Arizona State Noxious Weed list and the New Mexico State Watch List. - Michael Chamberland

Issue Resolution (Screener's Response to Issue)

Added that buffelgrass is on the noxious weed lists in AZ and NM, added citations for lists.

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.

PRE beta funding was provided by Sustainable Conservation (https://www.suscon.org/) and a USDA Farm Bill grant. Additional funding has been provided by the Western Integrated Pest Management Center.