



***Plant Risk Evaluator -- PRETM
Evaluation Report***

Iris pseudacorus -- Nevada

2023-2024 Western IPM Project

PRE Score: 16 -- High Potential Risk

Confidence: 78 / 100

Questions answered: 20 of 20 -- Valid (80% or more questions answered)

Privacy: Public

Status: Completed

Evaluation Date: December 14, 2023

This PDF was created on April 01, 2025

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Plant Evaluated

Iris pseudacorus



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Iris pseudacorus*) 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

Iris pseudacorus, yellow flag iris, is a perennial herbaceous species from North Africa, Europe and Asia that is listed as invasive in Connecticut, Delaware, Maryland, New Hampshire, North Carolina, Oregon, Tennessee, Virginia, Vermont, Washington, Wisconsin, and West Virginia (US Fish and Wildlife Service, 2019). It was brought to the United States and Canada in the early 1900's as an ornamental plant. It spreads from seeds and rhizomes and quickly establishes, takes over native ecosystems, and forms dense colonies in mostly wet habitats. According to the climate matching map and due to this species having been reported as invasive in similar climates, this species is a risk of becoming invasive in Nevada. It is also been found from a study that this species has the potential for spreading and establishing in a wide variety of environments due to its broad germination niche (Gillard, M. B., Castillo J. M., Mesgaran M. B., Futrell C. J., & Grewell B. J., 2022). Another study found that introduced *Iris pseudacorus* plants had a greater ability to adapt to increased soil salinity due to sea levels rising from climate change than the native plants (Grewell, B. J., Gallego-Tévar B., Bárcenas-Moreno G., Whitcraft C. R., Thorne K. M., Buffington K. J., et al., 2023). These traits show that despite changing environmental conditions, this species is tolerant of a large variety of environments, and can possibly establish and continue to take over native ecosystems in the future, including suitable climate conditions in areas of Nevada.

General Information

Status: Completed

Screener: Whitney Nash

Evaluation Date: December 14, 2023

Plant Information

Plant: *Iris pseudacorus*

Regional Information

Region Name: Nevada



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

Answer / Justification:

Iris pseudacorus, from North Africa, Europe and Asia, was first documented escaping cultivation in 1911 (Bugwood Wiki, 2014). In 1961, *Iris pseudacorus* was reported to be naturalized in Canada, and it was established in California by 1957 and in Montana by 1958. It is now naturalized in parts of most states and provinces throughout North America except in the Rocky Mountains. (King County Department of Natural Resources and Parks Water and Land Resources Division, 2007).

Reference(s):

- US Fish and Wildlife Service (2019). Yellow Flag Iris (*Iris pseudacorus*) Ecological Risk Screening Summary.
- Bugwood Wiki (2014). *Iris pseudacorus*.
- King County Department of Natural Resources and Parks Water and Land Resources Division (2007). Yellow-flag iris (*Iris pseudacorus*) Iridaceae .

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



Answer / Justification:

According to the climate map, this species has become naturalized in many states of the U.S., including states with similar climates to Nevada. Washington state, particularly eastern Washington, has reports of *iris pseudacorus* that match Nevada climates. According to the Washington noxious weed board, this species is a particular problem and is found growing along shores in shallow water where it was not planted (Washington State Noxious Weed Control Board, 2024). California also has reported this species as being naturalized in parts of the state, and it has similar climates to Nevada (California Invasive Plant Council, 2023).

Reference(s):

- Washington State Noxious Weed Control Board (2024). Yellow Flag Iris *Iris pseudacorus*.
 - California Invasive Plant Council (2023). *Iris pseudacorus*.
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

This species is considered highly invasive as its fast-growing, spreads rapidly, and outcompetes native vegetation (California Invasive Plant Council, 2023). The North Carolina Invasive Plant Council has listed this species as invasive as it threatens specifically wetlands by rapidly spreading and taking over (North Carolina Cooperative Extension, 2023). Washington state lists this species as a category C noxious weed (Washington State Noxious Weed Control Board, 2024) and B pest rating in California (California Invasive Plant Council, 2023). It is reported as invasive in these other states as well: Connecticut, Delaware, Maryland, New Hampshire, Oregon, Tennessee, Virginia, Vermont, Wisconsin, and West Virginia (U.S. Fish and Wildlife Service, 2019).

Reference(s):

- California Invasive Plant Council (2023). *Iris pseudacorus*.
 - North Carolina Cooperative Extension (2023). *Iris pseudacorus*.
 - Washington State Noxious Weed Control Board (2024). Yellow Flag Iris *Iris pseudacorus*.
 - US Fish and Wildlife Service (2019). Yellow Flag Iris (*Iris pseudacorus*) Ecological Risk Screening Summary.
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Looking at the climate match tool, Washington and Oregon have reports of this species being invasive in areas with similar climates to Nevada while California has a couple occurrences in or along areas with similar climates to Nevada. (U.S. Fish and Wildlife Service, 2019)(California Invasive Plant Council, 2023)(Washington State Noxious Weed Control Board, 2024). The climate-matching occurrences in California are near South Lake Tahoe and it is difficult to discern whether the climate matching region overlaps here.

Reference(s):

- US Fish and Wildlife Service (2019). Yellow Flag Iris (*Iris pseudacorus*) Ecological Risk Screening Summary.
 - Washington State Noxious Weed Control Board (2024). Yellow Flag Iris *Iris pseudacorus*.
 - California Invasive Plant Council (2023). *Iris pseudacorus*.
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5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

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

Answer / Justification:

There are no known species from the same genus as *Iris pseudacorus* that are invasive in similar climates to Nevada. *Iris foetidissima* is on the watch list in Washington state, meaning it may have the potential to become invasive, and it therefore being carefully monitored in the state (Washington State Noxious Weed Control Board, 2024). However, no other iris species have been considered invasive in similar climates at this time.



Reference(s):

- Washington State Noxious Weed Control Board (2024). Stinking Iris *Iris foetidissima*.
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Looking at the climate matching map, it is apparent that this species is not found in climates that predominately match the region of concern.

Reference(s):

- [Anonymous] .
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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 *screeners* has a **Very High** confidence in this answer based on the available literature.



Answer / Justification:

This species can spread vegetatively through rhizomes and form dense stands that alter nature habitat as a result (gardenia.net, 2023). These stands can be compared to cattails where they form almost impenetrable thickets (California Invasive Plant Council, 2023). A peer reviewed study found that *Iris pseudacorus* helped with species richness and evenness in its native environment, but when it's an invader plant, it significantly reduced plant diversity of the native population (Gallego-Tévar, B., Grewell B. J., Whitcraft C. R., Futrell J. C., Bárcenas-Moreno G., & Castillo J. M., 2022).

Reference(s):

- Gardenia.net (2023). Native Plant Alternatives to *Iris pseudacorus* (Yellow Iris) .
 - California Invasive Plant Council (2023). *Iris pseudacorus*.
 - Gallego-Tévar, B., Grewell B. J., Whitcraft C. R., Futrell J. C., Bárcenas-Moreno G., & Castillo J. M. (2022). Contrasted Impacts of Yellow Flag Iris (*Iris pseudacorus*) on Plant Diversity in Tidal Wetlands within Its Native and Invaded Distribution Ranges. *Diversity*. 14(326), 1-16.
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8. Is the plant noted as promoting fire and/or changing fire regimes?

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

Answer / Justification:

There is no data currently that supports this species promotes fire and and is fire-adapted (USDA Forest Service Fire Effects Information System, 2023). It is assumed that fire would likely kill both *Iris pseudacorus* seedlings and mature plants. It is assumed that underground rhizomes might survive fires however.

Reference(s):

- USDA Forest Service Fire Effects Information System (2023). *Iris pseudacorus*.
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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: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

This species can harm livestock and other animals if ingested (King County, 2024). It also can cause skin irritations to humans when coming in contact with the resin. Overall, it is noted that herbivores typically avoid grazing this species due to all parts of the plants being toxic (USDA Forest Service, 2006).

Reference(s):

- King County (2024). Yellow flag iris identification and control *Iris pseudacorus*.
 - USDA Forest Service (2006). Yellow Iris *Iris pseudacorus* L..
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10. Does the plant produce impenetrable thickets, blocking or slowing movement of animals, livestock, or humans?

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

Answer / Justification:

This species can form dense thickets or colonies in either fresh or brackish water that displace native plants and also alter the habitat for native animals (USDA Forest Service, 2006). There isn't literature available that states specifically that these thickets block or slow the movement of animals, but it can be inferred that these dense thickets would slow or prevent animals from accessing drinking water or crossing the body of water from one side to the other.

Reference(s):

- USDA Forest Service (2006). Yellow Iris *Iris pseudacorus* L..
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

This species can spread by rhizomes breaking (USDA Forest Service, 2006).

Reference(s):

- USDA Forest Service (2006). Yellow Iris *Iris pseudacorus* L..
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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: **Yes**, which contributes **1** point(s) to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

The tuberous rhizomes spread rapidly each rhizome can produce up to 10 plants each. These large dense colonies are common and can have up to several hundred individual plants (NOAA Great Lakes Aquatic Nonindigenous Species Information System, 2018).

Reference(s):

- NOAA Great Lakes Aquatic Nonindigenous Species Information System (2018). *Iris pseudacorus* L..
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

A study found that invasive *Iris pseudacorus* seeds remain viable after 55 days in saline water, despite typically needing water freshwater to germinate. (Gillard, M. B., Castillo J. M., Mesgaran M. B., Futrell C. J., & Grewell B. J., 2021). This study also found that other factors such as varying temperatures and daylight also did not significantly prevent this species from germinating. This shows that seed germination is a dependable method of reproduction, especially under invasive conditions, despite changing or varying environmental factors due to climate change.

Reference(s):

- New York Invasive Species Information (2019). Yellow Flag Iris.
 - Alaska Natural Heritage Program (2010). yellow flag iris *Iris pseudacorus* L..
 - Gillard, M. B., Castillo J. M., Mesgaran M. B., Futrell C. J., & Grewell B. J. (2021). High aqueous salinity does not preclude germination of invasive *Iris pseudacorus* from estuarine populations. *Ecosphere*. 12(5),
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14. Does this plant produce copious viable seeds each year (> 1000)?

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

Answer / Justification:

This species does produce up to several hundred seeds per plant, however, under 1,000 seeds per plant on average (New York Invasive Species Information, 2024). One study found that each plant produced 400-480 seeds per plant in Britain and between 150-240 seeds in Montana, and that they remained viable for up to a year (Alaska Natural Heritage Program, 2010).

Reference(s):

- New York Invasive Species Information (2019). Yellow Flag Iris.
- Alaska Natural Heritage Program (2010). yellow flag iris *Iris pseudacorus* L..



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

Answer / Justification:

In certain field conditions this species has shown low germination rates with one source finding only around 20 percent success in the field of germination of seeds (Bugwood Wiki, 2014). However, other studies have found that germination from seeds is moderately successful. From a study in the British Isles, it was found that the seeds collected had a 48% germination rate (Morgan, V.H., Berent L., & Fusaro A., 2018). Seeds collected from a swamp in Florida were found to have a germination rate of 62%. In addition, a study found that seed germination rate was not negatively affected by changing factors such as light and temperature, or environmental stressors such as flooding (Gillard, M. B., Castillo J. M., Mesgaran M. B., Futrell C. J., & Grewell B. J., 2022). This suggests that this plant can germinate and thrive in a large variety of environmental conditions despite factors such as climate change impacting the ecosystem.

Reference(s):

- Bugwood Wiki (2014). *Iris pseudacorus*.
 - Gillard, M. B., Castillo J. M., Mesgaran M. B., Futrell C. J., & Grewell B. J. (2022). Germination niche breadth of invasive *Iris pseudacorus* (L.) suggests continued recruitment from seeds with global warming. 2024,
 - Morgan, V.H., Berent L., & Fusaro A. (2018). *Iris pseudacorus* L..
-

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



Answer / Justification:

This species requires at least 3 years of growth until it reaches maturity and is able to produce viable seed (NOAA Great Lakes Aquatic Nonindigenous Species Information System, 2018).

Reference(s):

- NOAA Great Lakes Aquatic Nonindigenous Species Information System (2018). *Iris pseudacorus* L..
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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: **No**, which contributes **0** point(s) to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

The flowering period for this species is late spring to early summer typically, around April or May to June (Invasive Plant Atlas of the United States, 2018). *Iris pseudacorus* flowers for three months or less from April to June in California (Calflora).

Reference(s):

- Invasive Plant Atlas of the United States (2018). pale yellow iris, yellow flag iris *Iris pseudacorus* L..
 - Calflora (0). Calflora: Plant Search.
-

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



Answer / Justification:

This species is toxic to animals and no species of birds are known to disperse the seeds of this species (Invasive Plant Atlas of the United States, 2018).

Reference(s):

- Invasive Plant Atlas of the United States (2018). pale yellow iris, yellow flag iris *Iris pseudacorus* L..
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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

The seeds are light and buoyant and the mature plants are typically found near water, so the seeds can travel long distances (Invasive Plant Atlas of the United States, 2018, and USDA Forest Service Fire Effects Information System, 2023). The seeds will float down the shoreline and then germinate when the water recedes (U.S. Fish and Wildlife Service, 2019).

Reference(s):

- Invasive Plant Atlas of the United States (2018). pale yellow iris, yellow flag iris *Iris pseudacorus* L..
 - USDA Forest Service Fire Effects Information System (2023). *Iris pseudacorus*.
 - US Fish and Wildlife Service (2019). Yellow Flag Iris (*Iris pseudacorus*) Ecological Risk Screening Summary.
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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 **Medium** confidence in this answer based on the available literature.



Answer / Justification:

There is no literature found that suggests plant propagules are dispersed either directly or indirectly by humans. This species is found mostly in wetland areas where there might not be a lot of human traffic coming through. It is possible that the light seeds floating downstream (Invasive Plant Atlas of the United States, 2018) could be picked up by boats and transported to another location. One source states that this species has clogged drainage pipes and flood control ditches in urban settings. It's possible that this species could have gotten to these locations by human transportation (USDA Animal and Plant Health Inspection Service (APHIS), 2013).

Reference(s):

- Invasive Plant Atlas of the United States (2018). pale yellow iris, yellow flag iris *Iris pseudacorus* L..
 - USDA Animal and Plant Health Inspection Service (APHIS) (2013). Weed Risk Assessment for *Iris pseudacorus* L. (Iridaceae) – Yellow flag iris.
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Evaluation Notes

Nikki Valentine also edited the evaluation in response to issues.

Brenda Grewell also provided feedback.

Total PRE Score

PRE Score: 16 -- 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: 2023-2024 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:



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.



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.