



***Plant Risk Evaluator -- PRE™
Evaluation Report***

Dipsacus fullonum -- Minnesota

2017 Farm Bill PRE Project

PRE Score: 16 -- Reject (high risk of invasiveness)

Confidence: 81 / 100

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

Privacy: Public

Status: Completed

Evaluation Date: September 11, 2017

This PDF was created on June 15, 2018



Plant Evaluated

Dipsacus fullonum



Image by MPF, Wikipedia user



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Dipsacus fullonum*) 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

Dipsacus fullonum is invasive largely due to its copious seed production and the likely high germination rate of the seed. The vectors by which it disperses are somewhat unclear. While it does disperse by water, the typical distance or frequency which it is dispersed by water was not reported. Also, there is some mention of it being dispersed by wind and by human intervention (as a decoration in arrangements), but again this method was not quantified. The fact that it does not prolifically reproduce vegetatively somewhat limits its invasiveness and subsequent PRE score.

General Information

Status: Completed

Screener: Mike Monterusso

Evaluation Date: September 11, 2017

Plant Information

Plant: *Dipsacus fullonum*

Regional Information

Region Name: Minnesota



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 in an original article published at the University of California, Davis, and can be found on the PLOS One website, 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** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

D. fullonum has naturalized in numerous US states.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for *Dipsacus fullonum* (Fuller's teasel).
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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** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

It has naturalized in Wisconsin and Minnesota.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for *Dipsacus fullonum* (Fuller's teasel).



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

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

Answer / Justification:

It is invasive in multiple US states including Wisconsin.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for *Dipsacus fullonum* (Fuller's teasel).
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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** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

It is invasive in Wisconsin.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for *Dipsacus fullonum* (Fuller's teasel).
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5. Are other species of the same genus (or closely related genera) invasive in a similar climate?

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

Answer / Justification:

Dipsacus laciniatus is invasive in Wisconsin.

Reference(s):

- United States Department of Agriculture (2017). Plants Profile for *Dipsacus laciniatus* (cutleaf teasel).
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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** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

According to GBIF, *D. fullonum* is found predominately in Europe. (it should be noted that GBIF indicates an unaccepted author "Thore" associated with the species)

Reference(s):

- GBIF (2016). *Dipsacus fullonum* Thore.
-



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** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

"Teasel can be an aggressive competitor allowing it to displace desirable plants and form a monoculture. Its presence reduces forage availability and contributes to decline in species diversity and range quality."

Reference(s):

- United States Department of Agriculture (2014). Field Guide for Managing Teasel in the Southwest.
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8. Is the plant noted as promoting fire and/or changing fire regimes?

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

Answer / Justification:

"Fire regimes in teasel's native range were not described in the reviewed literature. Teasel's preference for moist sites suggests that fires may be infrequent and of low severity in nonnative North American habitats. Teasel would likely persist in periodically burned habitats... Annual burning would limit teasel reproduction, and long fire-free intervals would likely limit teasel establishment, which is best in canopy gaps and in early- to mid-seral habitats..."

Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-



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** points to the total PRE score.
- The *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

As indicated in the following quote, *D. fullonum* could minimize available grazing land if present at a high enough density: "While teasel does not withstand moderate to heavy grazing, it is not highly palatable or serve as desirable forage. Most foraging animals (including cattle, sheep, and goats) avoid teasel and will not graze it."

Reference(s):

- US Forest Service (2012). Region 3 - Invasive Species.
-

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

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .
-



Reproductive Strategies (Questions 11 - 17)

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

- Answer: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"Teasel reproduces entirely by seed, but plants may regenerate following damage."

Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-

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** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .
-

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

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



Answer / Justification:

"Teasel reproduces entirely by seed..."

Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-

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

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

Answer / Justification:

"In Michigan, common teasel plants produced an average of 854.6 seeds per flower head. Typically, 3 to 9 flower heads were produced per plant, although 1 to 35 flower heads were observed. In Michigan roadside populations, common teasel produced an average of 3.9 flower heads/plant and an estimated 3,333 seeds/plant..."

Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-

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** points to the total PRE score.
- The *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"In an old field at the University of Toronto Joker's Hill Research Station, 40% to 60% of the common teasel seeds germinated after 4 months in pots buried in the soil, 30% to 50% germinated after 11 months of burial, and 20% to 50% germinated after 16 months of burial in the soil."



Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-

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** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"In abandoned fields, common teasel rosettes that reached 20 inches (51 cm) in diameter in their 1st year flowered in their 2nd year."

Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-

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** points to the total PRE score.
- The *screeener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

The answer could be yes or no depending on the interpretation of the question. For Minnesota, this screener assumed a single flower and seed set cycle that occurs from early summer through fall. While flowers might persist for 3 months, seed set will generally occur in a relatively short period of time. "Generally teasel flowering dates were later, July to October, in the midwestern and eastern United States and adjacent Canada... In eastern North America, common teasel seeds mature and disperse from September to late November."



Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
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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** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

"Teasel seeds are not morphologically adapted for wind dispersal. In a field in Kalamazoo County, Michigan, 99.9% of common teasel seeds fell within 4.9 feet (1.5 m) of the parent plant... Water... and human activities... are the most likely methods of long-distance teasel seed dispersal."

Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-

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

- Answer: **Yes**, which contributes **1** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

"Water... and human activities... are the most likely methods of long-distance teasel seed dispersal... Long-distance teasel seed dispersal by water is likely. Common teasel seeds floated in water for 22 days without losing viability..."



Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
-

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** points to the total PRE score.
- The *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Some evidence suggest that teasel is dispersed by its inclusion in decorative flower arrangements (seasonal displays, cemeteries, etc.) but this does not appear to be a significant dispersal method: "Seed dispersal through the collection and use of dried teasel flower heads is probable... Reviews report that teasel often occurs in and around cemeteries and likely came from floral arrangements left at gravesides."

Reference(s):

- Gucker, C. (2009). *Dipsacus fullonum*, *D. laciniatus*.
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Total PRE Score

PRE Score: 16 -- Reject (high risk of invasiveness)

Confidence: 81 / 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 : accept (low risk of invasiveness)

13 - 15 : evaluate further

> 15 : reject (high risk of invasiveness)



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: 2017 Farm Bill PRE 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:

- Laura Van Riper November 21, 2017
- Tom Buechel November 9, 2017

This evaluation has a total of 2 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 PlantRight@suscon.org if additional action is required to resolve open issues.

Issue ID # 5916

Date Created: November 21, 2017 - 1:06pm

Date Updated: November 28, 2017 - 12:37pm

Submitted by: Laura Van Riper

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q07. Does this plant displace native plants and dominate the plant community in areas where it has been established?

Issue Description

Link did not work:

<https://www.fs.usda.gov/detailfull/r3/forest-grasslandhealth/invasivespecies/?cid=stelprdb5420896&width=full>

Issue Resolution (Screener's Response to Issue)

Looks like the reference was moved or deleted at the source. A new reference was added. This raises a potential problem with the PRE database as many of the references rely on websites as the source host. However, these websites/hosts are often not permanent.





About PRE and this Plant Evaluation Report

The PlantRight Plant Risk Evaluator -- PRE is an online database and platform enabling those involved in non-native, terrestrial plant production to know before they grow if a plant poses a regional invasive risk. This tool offers many benefits, and we encourage you to visit the PRE website (<https://pre.ice.ucdavis.edu>) for more information.

If you are a nursery trade association, or involved in the research, development or distribution of horticultural plants we invite you to join the PRE community. If you are a plant scientist, affiliated with a horticultural college or botanic garden, and would like to learn more about becoming a PRE Screener, please drop us an email, PlantRight@suscon.org, requesting a PRE Account.

PRE beta funding is provided by Sustainable Conservation (<http://www.suscon.org/>) and a USDA Farm Bill grant.