Plant Risk Evaluator -- PRE™
Evaluation Report

Pyrus ussuriensis -- Minnesota

2017 Farm Bill PRE Project

PRE Score: 6 -- Accept (low risk of invasiveness)
Confidence: 71 / 100
Questions answered: 18 of 20 -- Valid (80% or more questions answered)

Privacy: Public
Status: Submitted

Evaluation Date: July 12, 2017

This PDF was created on June 15, 2018

Plant Evaluated

Pyrus ussuriensis

Image by Sten Porse

Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Pyrus ussuriensis*) 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

Pyrus ussuriensis is not widely distributed or studied. The species does not appear in early detection (EDDS) maps and has just one occurrence in GBIF. In conducting this screening, most information regarding the genus Pyrus is with relation to P. calleryana, which has a poor reputation due to weak branching structure. Further, Pyrus species and their cultivars are hybridizing and crossing with self-infertile varieties to produce plants that "seed out" into natural and non-native areas. Expanding the distribution of P. ussuriensis would likely contribute to this issue.

General Information

Status: Submitted
Screener: Mike Monterusso
Evaluation Date: July 12, 2017

Plant Information

Plant: *Pyrus ussuriensis*

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

Answer / Justification:

GBIF indicates occurrences in Europe, Northwest North America, and Western Asia

Reference(s):

- GBIF (2017). Pyrus ussuriensis Maxim. - Checklist View.

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

Answer / Justification:

Herbarium records reference at least one individual in Minnesota.

Reference(s):

- J. F. Bell Museum of Natural History (2017). Detailed Collection Record Information.

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

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

Pyrus calleryana is invasive in the Eastern US but not in areas with a climate similar to Minnesota.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

P. ussuriensis has naturalized in very few areas of the world; mostly in Asia.

Reference(s):

- GBIF (2017). Pyrus ussuriensis Maxim. - Checklist View.

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

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

Answer / Justification:

Propagation from seed is known to be successful.

Reference(s):

- Plants For A Future (PFAF) (2012). Pyrus ussuriensis Harbin Pear, Chinese pear, Ussurian Pear PFAF Plant Database.

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

Answer / Justification:

No studies regarding quantity of seed produced could be found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

While not scientific in nature, seed vendors report germination rates of at least 50%.

Reference(s):

- Sheffield's Seed Co. Inc. (2017). Pyrus ussuriensis - Tree Seeds - Chinese Pear, Sand Pear, Harbin Pear, Ussurian Pear :: Seeds for Sale, Tree seeds, Shrub seeds, Flower seeds, Vine seeds, Herb seeds,Grass seeds, Vegetable seeds.

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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 / Justification:

No studies or other references could be found regarding the maturity of the plant when grown from seed.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

Tree sets flowers and fruits once/year.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

While there is no direct evidence of this type of dispersal for P. ussuriensis, it is fairly safe to assume that fruits/seeds of this species would be dispersed in a manner similar to other Pyrus spp.

Reference(s):

- [Anonymous] .

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

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

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

Answer / Justification:

No evidence found.

Reference(s):

- [Anonymous] .

Total PRE Score

PRE Score: 6 -- Accept (low risk of invasiveness)
Confidence: 71 / 100
Questions answered: 18 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:

- Tom Buechel November 10, 2017

This evaluation has a total of 1 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 # 5963

Date Created: November 27, 2017 - 8:03am
Date Updated: February 8, 2018 - 10:29am

Submitted by: Laura Van Riper

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

Issue Description

In my emails relating to the Hennepin county Pyrus ussuriensis, Angela Isackson shared this paragraph she had found online (she didn't include the link). It indicates that its hardiness zones are zones 3 through 9 which indicate it would do fine in Minnesota.

Manchurian Pear

Perhaps the second most planted ornamental pear is the "Manchurian" (Pyrus ussuriensis), also referred to as the Chinese pear. This tree had the misfortune of being confused with the "Bradford" following a mix up in labeling in Australia that lasted until 1999. Rumors of its weakness spread for years all around the globe until the mistake was finally corrected. The true "Manchurian" has roots that are extremely strong and aggressive. Under some conditions, they can even be considered invasive, so planting close to other trees is not recommended since the roots can entangle. They are the hardiest of the ornamental pears, thriving in U.S. Department of Agriculture hardiness zones 3 through 9.

Issue Resolution (Screener's Response to Issue)

11/30/17 - leaving as "not fixed" for developer reference. Not sure what is being suggested here. Is there a reference to hardiness (or lack thereof) in the evaluation?

2/8/2018 -- Issue resolved by PRE Data Manager. Added a summary of the above paragraph to Evaluation Notes.

Issue ID # 5962

Date Created: November 27, 2017 - 7:56am
Date Updated: November 30, 2017 - 8:52am

Submitted by: Laura Van Riper

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

Issue Description

Pyrus ussuriensis has been found naturalizing in Minnesota already, indicating that the climate is fine for the species. There is an infestation in Elm Creek Park Preserve in Hennepin county. There is a specimen at the University of Minnesota Bell Herbarium.

http://bellatlas.umn.edu/collections/individual/index.php?occid=199046&clid=0

Catalog (Accession) #: 937195

Occurrence ID (GUID): ec20fbc2-a698-43d7-af7a-f71c8a3c431b

Taxon: *Pyrus ussuriensis* Maxim.
Family: Rosaceae

Determiner: Postman, J. (2014)

Collector: Isackson, Angela s.n.

Date: 14 August 2013

Locality: United States, Minnesota, Hennepin, Directly south of Lemans Lake.;Elm Creek Park Reserve County Park;;;

45.168041 -93.405264

Verbatim Coordinates: 45.168041° N,93.405264° W;collector

Elevation: 256 meters

Verbatim Elevation: 256m

Habitat: Open old field site, with scattered tree species, mostly open, site potentially had previous planting/nursery from old homestead.

Description: Throughout 65 acres with over 200 trees, mostly mature over 30 ft high, saplings and seedlings found thoughout. Flowers in early spring with white flowers, fruits are yellow/green maturing in fall turning brown in color, size of golf ball.

Issue Resolution (Screener's Response to Issue)

Herbarium reference added.Q2 changed from "no" to "yes".

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.