



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

Euonymus fortunei -- Georgia

2017 Farm Bill PRE Project

PRE Score: 18 -- Reject (high risk of invasiveness)

Confidence: 65 / 100

Questions answered: 18 of 20 -- Valid (80% or more questions answered)

Privacy: Public

Status: Submitted

Evaluation Date: September 24, 2017

This PDF was created on August 13, 2018



Plant Evaluated

Euonymus fortunei



Image by James H. Miller, USDA Forest Service



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Euonymus fortunei*) 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

Winter creeper can be a serious invader of both undisturbed and disturbed sites. It can quickly spread via its vine like growth and carpet an entire area. There are mixed reports about the potential for seed set to be an impact-full mechanism of dispersal, however it is known that when plants DO produce seed they can be dispersed via both animals and water. Currently the GAEPPC ranks *Euonymus fortunei* as a Category three plant which is considered as an "Exotic plant that is a minor problem in Georgia natural areas, or is not yet known to be a problem in Georgia but is known to be a problem in adjacent states." The outcome of this PRE shows that there is a serious potential threat for this plant to become a problem in the region of concern, and therefore sale of winter creeper should be limited.

General Information

Status: Submitted

Screener: Kylie Bucalo

Evaluation Date: September 24, 2017

Plant Information

Plant: *Euonymus fortunei*

Regional Information

Region Name: Georgia



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

Answer / Justification:

Native to China. Distributed in multiple states across the U.S. with a concentration in the southeast.

Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper)_CABI.
- USDA Forest Service Data and Information Systems (0). *Euonymus fortunei*_FS.
- USDA Plants Database (0). Plants Profile for *Euonymus fortunei* (winter creeper)_USDA.
- National Park Service (0). Winter Creeper (*Euonymus fortunei*)_NPS.
- Texas Invasive Species Institute (0). Winter Creeper: Texas Invasive Species Institute.

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

Answer / Justification:

Yes. Winter creeper has been naturalized across the US, including those states which are a climate match for Georgia (South Carolina and North Carolina).



Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper)_CABI.
 - USDA Plants Database (0). Plants Profile for *Euonymus fortunei* (winter creeper)_USDA.
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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** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

CABI resource states winter creeper is invasive in parts of the US. USDA profile shows invasive exotic plant species in Tennessee under the legal status tab.

Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper)_CABI.
 - USDA Plants Database (0). Plants Profile for *Euonymus fortunei* (winter creeper)_USDA.
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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 *screeener* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

From the climate matching map it is difficult to understand the shaded regions compared with the possible distribution of winter creeper in those states. CABI resource lists that the plant is invasive in New York and Maryland, and DC, however does not provide more information about exact locality. GAEEPC considers winter creeper a EPPC rank 3, which is "Exotic plant that is a minor problem in Georgia natural areas, or is not yet known to be a problem in Georgia but is known to be a problem in adjacent states."



Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper)_CABI.
 - Georgia Invasive Species Task Force (0). List of Non-native Invasive Plants in Georgia - Georgia Invasive Species Task Force- LIST.
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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 *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Euonymus alatus, winged burning bush can invade both disturbed and undisturbed forests. It is present in the state of Georgia and ranked category 3 which is known as an "Exotic plant that is a minor problem in Georgia natural areas, or is not yet known to be a problem in Georgia but is known to be a problem in adjacent states."

Reference(s):

- USDA, & NRCS (2017). The Plants Database.
 - Invasive Plant Atlas of the United States (0). winged burning bush: *Euonymus alatus* (Celastrales: Celastraceae): Invasive Plant Atlas of the United States.
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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** points to the total PRE score.
- The *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Used GBIF geo referenced locations. New Zealand distribution is small, however ~ 50% of the occurrences match climate map. China >50% match. U.S is >50% match. Europe is 50%.



Reference(s):

- GBIF (0). *Euonymus fortunei* (Turcz.) Hand.-Mazz. (gbif).
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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** points to the total PRE score.
- The *screeners* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Winter creeper is a vigorous vine that invades forest openings and margins. It grows across the ground, displacing herbaceous plants and seedlings and climbs trees high into the tree canopy by clinging to the bark. Forest openings, caused by wind, insects or fire are especially vulnerable to invasion.

Reference(s):

- National Park Service (0). Winter Creeper (*Euonymus fortunei*)_NPS.
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8. Is the plant noted as promoting fire and/or changing fire regimes?

- 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:

Although the plant itself has very low fire potential it can carry fire if covered by other dry fuel, or if the leaves are very dessicated and left as duff or dry tinder. Taken from FS refrence. "Observations by managers indicate that wintercreeper does not burn easily and is not likely to be killed by fire of any severity (personal communications [38,63]). When it does burn, wintercreeper is only top-killed and sprouts from roots after burning (see Fire adaptations and plant response to fire). Even holding a propane torch in one place for long periods did not kill wintercreeper roots; plants were only top-killed and later sprouted (personal communication [38]). " Wintercreeper can carry fire in areas where bur oak (*Quercus macrocarpa*) leaves have accumulated on top of the wintercreeper. Patches of wintercreeper where leaves have been scorched with a propane torch and allowed to desiccate in warm, dry weather for 3 days may also carry fire (personal communication [38])."

Reference(s):

- USDA Forest Service Data and Information Systems (0). *Euonymus fortunei*_FS.
-

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

Answer / Justification:

There is no evidence of this.

Reference(s):

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



Answer / Justification:

Winter creeper is a vigorous vine that invades forest openings and margins. It grows across the ground, displacing herbaceous plants and seedlings and climbs trees high into the tree canopy by clinging to the bark.

Reference(s):

- USDA Forest Service Data and Information Systems (0). *Euonymus fortunei*_FS.
 - National Park Service (0). Winter Creeper (*Euonymus fortunei*)_NPS.
-

Reproductive Strategies (Questions 11 - 17)

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

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

Answer / Justification:

"Wintercreeper stems have abundant aerial rootlets or trailing roots [1,52] that form at nodes [46]. Aerial rootlets aid wintercreeper plants in climbing vertical surfaces [1,3,73] or form independent plants by sprouting along the ground surface [1]."

Reference(s):

- USDA Forest Service Data and Information Systems (0). *Euonymus fortunei*_FS.
 - National Park Service (0). Winter Creeper (*Euonymus fortunei*)_NPS.
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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** points to the total PRE score.
- The *screeners* has a **Medium** confidence in this answer based on the available literature.



Answer / Justification:

There is no evidence of this in the literature, but i have answered "yes" because of its vine habit.

Reference(s):

- [Anonymous] .
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13. Does the species (or cultivar or variety) commonly produce viable seed?

- 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:

from CABI "Groundcover plants seldom fruit or flower because the vine diameter must reach approximately 1 cm to trigger flowering"

Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper)_CABI.
-

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

- 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:

none of the resources describes fruit set as abundant, and several resources comment on ground covering winter creeper not producing seed at all.

Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper)_CABI.



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 / Justification:

leave unknown. not enough information.

Reference(s):

- [Anonymous] .
-

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:

leave unknown. not enough information.

Reference(s):

- [Anonymous] .
-

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



Answer / Justification:

WHEN seed is produced (see question 13 and 14) flowers arrive in June or July and fruits ripen September to November. So i think it is a no .

Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper)_CABI.
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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: **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:

WHEN seeds are formed. "Seeds can be carried long distances by birds, other animals and water."

Reference(s):

- Texas Invasive Species Institute (0). Winter Creeper: Texas Invasive Species Institute.
-

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:

WHEN seeds are formed. "Seeds can be carried long distances by birds, other animals and water."



Reference(s):

- Texas Invasive Species Institute (0). Winter Creeper: Texas Invasive Species Institute.
-

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

Answer / Justification:

There is no evidence of this.

Reference(s):

- [Anonymous] .
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Total PRE Score

PRE Score: 18 -- Reject (high risk of invasiveness)

Confidence: 65 / 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:

- Karan Rawlins February 22, 2018
- Timothy Daly January 2, 2018

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.

There are currently no issues associated with this evaluation.



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.