



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

Euonymus fortunei -- Texas

2017 Farm Bill PRE Project

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

Confidence: 75 / 100

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

Privacy: Public

Status: Submitted

Evaluation Date: September 21, 2017

This PDF was created on July 06, 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

Euonymus fortunei is a woody vine which can form a dense ground cover displacing natives. As it ages, it can also climb, causing tree-fall. The species spreads both vegetatively and by bird and water dispersed seeds. *E. fortunei* is naturalized in eastern North America and considered invasive in New Hampshire, Illinois, Kentucky, Tennessee, Georgia, and South Carolina.

General Information

Status: Submitted

Screener: Kim Taylor

Evaluation Date: September 21, 2017

Plant Information

Plant: *Euonymus fortunei*

If the plant is a cultivar, how does its behavior differs from its parent's?

This evaluation is for the species, not a particular cultivar.

Regional Information

Region Name: Texas



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

Answer / Justification:

Kartesz indicates the species is naturalized across the eastern half of North America, west to Colorado.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
 - USDA, & NRCS (2017). The Plants Database.
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

The species is naturalized in the southeastern US which shares a climate with Texas.

Reference(s):

- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).



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:

Euonymus fortunei is designated a "casual alien, cultivation escape, environmental weed, garden thug, naturalised, weed" by the Global Compendium of Weeds. This species is listed in the Invasive Exotic Pest Plants in Tennessee. It is also considered invasive in Wisconsin by Hoffman and Kearns. "Wintercreeper (*Euonymus fortunei*) has been identified by a task force of the Missouri Botanical Garden as one of the top twenty plants known to be spreading into native plant areas and crowding out native species in our region." EDD Maps indicates the species is invasive in New Hampshire, Illinois, Kentucky, Tennessee, Georgia, and South Carolina.

Reference(s):

- Missouri Botanical Garden PlantFinder (0). *Euonymus fortunei* 'Coloratus' - Plant Finder.
 - Global Compendium of Weeds (GCW) (0). *Euonymus fortunei* information from the Global Compendium of Weeds (GCW).
 - USDA, & NRCS (2017). The Plants Database.
 - EDDMapS (0). winter creeper, *Euonymus fortunei* N/A Celastrales: Celastraceae (EDD maps).
 - Invasive Plant Atlas of the United States (0). winter creeper: *Euonymus fortunei* (Celastrales: Celastraceae): Invasive Plant Atlas of the United States.
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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

Areas with a similar climate where *E. fortunei* is invasive include Georgia and South Carolina.



Reference(s):

- EDDSMaP (0). winter creeper, *Euonymus fortunei* N/A Celastrales: Celastraceae (EDD maps).
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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

17 species of *Euonymus* are listed in the Global Compendium of Weeds, including *E. japonicus*, *E. alatus*, and *E. europaeus* which occur in a similar climate to Texas (southeastern U.S.).

Reference(s):

- Global Compendium of Weeds (0). Global Compendium of Weeds: species index.
 - Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

Less than half of the species range has a similar climate to Texas.

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

Answer / Justification:

"Euonymus fortunei is an evergreen, shade-tolerant vine that can form a dense groundcover and also climbs...It can outcompete other ground layer species for resources and when it climbs on trees it adds extra weight to the branches that can make them more susceptible to storm damage. It may also change soil chemistry and food webs." "Euonymus fortunei 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. Euonymus fortunei has been reported to be invasive in natural areas in most of the states in the eastern half of the U.S."

Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper) - cabi.
 - Invasive Plant Atlas of the United States (0). winter creeper: *Euonymus fortunei* (Celastrales: Celastraceae): Invasive Plant Atlas of the United States.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

There is no evidence of this.

Reference(s):

- [Anonymous] .



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:

"Although no records of toxicity have been seen for this species, a number of plants in this genus are suspected of being poisonous and so some caution is advised."

Reference(s):

- Plants For A Future (PFAF) (0). *Euonymus fortunei* Winter Creeper, Wintercreeper *Euonymus* PFAF Plant Database.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

Euonymus fortunei is a vine and therefore does not form thickets.

Reference(s):

- CABI (0). *Euonymus fortunei* (wintercreeper) - cabi.
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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** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

The Invasive Species Compendium species datasheet indicates the species is propagated both vegetatively and by seed. "Plants can reproduce vegetatively, forming rootlets at nodes where branches contact the ground ." "Wintercreeper spreads both vegetatively and by animal and water dispersed seeds." "Stems may root where they touch the ground. May be propagated by rooted stem cuttings."

Reference(s):

- Missouri Botanical Garden PlantFinder (0). *Euonymus fortunei* 'Coloratus' - Plant Finder.
 - Zouhar, K.. (2009). *Euonymus fortunei* (fs.fed).
 - CABI (0). *Euonymus fortunei* (wintercreeper) - cabi.
-

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

Answer / Justification:

"Stems may root where they touch the ground. May be propagated by rooted stem cuttings." Since the species can be propagated by rooted stem cuttings, it is likely that naturally detached fragments can form new plants. However, this is not confirmed to happen naturally. More information is needed.

Reference(s):

- Missouri Botanical Garden PlantFinder (0). *Euonymus fortunei* 'Coloratus' - Plant Finder.
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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 *screeners* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

The Invasive Species Compendium species datasheet indicates the species is propagated both vegetatively and by seed. "Wintercreeper spreads both vegetatively and by animal and water dispersed seeds." " If used as an ivy-like climbing vine for covering walls, chimneys or fences, it more easily flowers and sets seeds that can increase its invasive spread."

Reference(s):

- Missouri Botanical Garden PlantFinder (0). *Euonymus fortunei* 'Coloratus' - Plant Finder.
 - 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 *screeners* has a **Low** confidence in this answer based on the available literature.

Answer / Justification:

"Each dry capsule holds up to 4 seeds." There is no indication on number of seeds produced by a plant, though plants can become very large and could potentially produce up to 1000 seeds. This does not appear to be the norm however.

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: **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:

"Propagation: Seed - best sown as soon as it is ripe in a cold frame. Stored seed requires 8 - 12 weeks warm followed by 8 - 16 weeks cold stratification and can then be sown in a cold frame." There does not appear to be any special requirements for germination.

Reference(s):

- Plants For A Future (PFAF) (0). *Euonymus fortunei* Winter Creeper, Wintercreeper *Euonymus* PFAF Plant Database.
-

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

Answer / Justification:

"Groundcover plants seldom fruit or flower because the vine diameter must reach approximately 1 cm to trigger flowering." Since plants tend to grow upwards as they age, young plants likely do not flower.

Reference(s):

- Zouhar, K.. (2009). *Euonymus fortunei* (fs.fed).
-



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

Answer / Justification:

"rounded capsules that mature in September to November." "It flowers from April to August and set fruits from July to December." "Fl. Apr-Jul, fr. Sep-Dec."

Reference(s):

- Zouhar, K.. (2009). *Euonymus fortunei* (fs.fed).
 - CABI (0). *Euonymus fortunei* (wintercreeper) - cabi.
 - efloras.org (0). *Euonymus fortunei* in Chinese Plant Names @ efloras.org.
-

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

Answer / Justification:

"Seeds are bird-dispersed". The Invasive Species Compendium species datasheet indicates long distance dispersal by birds. "Wintercreeper spreads both vegetatively and by animal and water dispersed seeds."

Reference(s):

- Missouri Botanical Garden PlantFinder (0). *Euonymus fortunei* 'Coloratus' - Plant Finder.
 - Zouhar, K.. (2009). *Euonymus fortunei* (fs.fed).
 - CABI (0). *Euonymus fortunei* (wintercreeper) - cabi.
-



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

Answer / Justification:

"Wintercreeper spreads both vegetatively and by animal and water dispersed seeds."

Reference(s):

- Missouri Botanical Garden PlantFinder (0). *Euonymus fortunei* 'Coloratus' - Plant Finder.
-

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 indication of this.

Reference(s):

- [Anonymous] .
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Total PRE Score

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

Confidence: 75 / 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:

- Steve Moore

September 26, 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.

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.