



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

***Euonymus fortunei* 'Coloratus' -- Georgia**

2017 Farm Bill PRE Project

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

Confidence: 70 / 100

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

Privacy: Public

Status: Submitted

Evaluation Date: October 8, 2017

This PDF was created on July 06, 2018



Plant Evaluated

Euonymus fortunei 'Coloratus'



Image by MBOT



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Euonymus fortunei* 'Coloratus') 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 'coloratus' is a cultivar that differs in leaf color only. In winter the leaves becoming intensely burgundy-purple which is an attractive ornamental feature. However in every other way "Coloratus" is the same as its invasive parent species, and therefore shows no reduction in overall fitness that should lead the evaluator to suggest an outcome any different than the evaluation of the parent species. This PRE was conducted using both parent and cultivar based information and the result shows that the 'Coloratus' cultivar should not be planted. It has a high potential risk of invasiveness if it were to escape due to its aggressive vine like habitat, its ability to make dense mat-like groundcovers, and the fact that it has not been bred to reduce fitness or fecundity.

General Information

Status: Submitted

Screener: Kylie Bucalo

Evaluation Date: October 8, 2017

Plant Information

Plant: *Euonymus fortunei* 'Coloratus'

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

This cultivar is primarily a creeping ground cover like the parent species however the fall leaves take on a purple colored hue.

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

Answer / Justification:

Parent Species. Native to China. Distributed across the Southeast U.S

Reference(s):

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

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:

Parent species. 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.
-

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:

Parent species. 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.
 - Georgia Invasive Species Task Force (0). List of Non-native Invasive Plants in Georgia - Georgia Invasive Species Task Force- LIST.
-

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:

Parent species. 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.
-

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 Forest Service Data and Information Systems (0). *Euonymus alatus* (fs.fed).
 - Missouri Botanical Garden PlantFinder (0). *Euonymus alatus* - Plant Finder.
 - 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:



Parent specie used. Used GBIF geo referenced locations. New Zealand distribution is small, however ~ 50% of the occurences 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 *screeener* has a **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Yes. Given that the parent species is a vigorous vine, and cultivar 'Coloratus' has been described as a fast growing adaptable ground cover.

Reference(s):

- [Anonymous] .
-

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



Answer / Justification:

Parent species only. However habit and form are the same, assumed the cultivar would hold the same potential if it grows onto trees and dominated the trunk and canopy, could carry fire. "Observations by managers indicate that wintercreeper does not burn easily and is not likely to be killed by fire of any severity...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:

No. there is no evidence of this

Reference(s):

- [Anonymous] .
-

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 screener has not provided a confidence score on this question. Consider creating an issue on PRE so the screener can become aware of this detail.



Answer / Justification:

Its growth habit suggests it can become an impenetrable vine. 'Coloratus' has been described as a "dense entangled groundcover mat".

Reference(s):

- PlantFacts.OSU.edu (2002). Winter creeper _PDF _'coloratus'.
-

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:

'Coloratus', commonly called purple wintercreeper euonymus, is primarily a trailing ground cover form which typically grows to 6-9" tall and spreads indefinitely by rooting stems as a sprawling, tangled, bushy mat. It is similar in habit to English ivy (*Hedera helix*) in that it spreads along the ground, rooting as it goes, until it reaches a vertical surface which it then begins to climb.'

Reference(s):

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

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 *screeener* 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 it's 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:

'Coloratus' is described as having "Inconspicuous, greenish-white flowers may appear in June. Flowers are at best sparse, but are usually not present. If allowed to climb a wall, tree or other structure, this plant assumes more vine-like characteristics and is more likely to produce flowers, though still sparse and inconspicuous. '

Reference(s):

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

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

Answer / Justification:

See q 13. Parent species fruits are described as "dehiscent capsules; inconspicuous, if present at all"



Reference(s):

- PlantFacts.OSU.edu (2002). Winter creeper _PDF_'coloratus'.
-

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: **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. As seed is not a common method of reproduction

Reference(s):

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

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

Answer / Justification:

No as seed is not a main form of reproduction. Resources on parent plant suggest seed production is usually determined by whether the vine is acting as a groundcover or climbing a structure. "Fruiting occurs on upright, climbing stems. The flowering sections of the vines do not have aerial rootlets (Miller et al., 2010). Groundcover plants seldom fruit or flower because the vine diameter must reach approximately 1 cm to trigger flowering (Zouhar, 2009). "



Reference(s):

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

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:

No. Parent species resource used. 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.
-

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:

Parent species. WHEN seeds are formed. "Seeds can be carried long distances by birds, other animals and water." Some references describe 'Coloratus' as primarily being used as a groundcover which we know influences seed set, but it can and will grow up surfaces and has the possibility to trigger fruit set. Just because something is "more likely" to be grown a groundcover does not mean it will be in every case, and the potential threat from seed dispersal does not lessen. It should however be noted vegetative growth is main method of spread and dispersal.

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:

Parent species. WHEN seeds are formed. "Seeds can be carried long distances by birds, other animals and water." Some references describe 'Coloratus' as primarily being used as a groundcover which we know influences seed set, but it can and will grow up surfaces and has the possibility to trigger fruit set. Just because something is "more likely" to be grown a groundcover does not mean it will be in every case, and the potential threat from seed dispersal does not lessen. It should however be noted vegetative growth is main method of spread and dispersal.

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



Answer / Justification:

no. there is no evidence of this.

Reference(s):

- [Anonymous] .
-

Total PRE Score

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

Confidence: 70 / 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:

- Brian Jernigan

November 21, 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 # 5908

Date Created: November 21, 2017 - 6:30am

Date Updated: January 19, 2018 - 12:02pm

Submitted by: Brian Jernigan

Status: Fixed

Type: Suggestion

Severity: Minor

Scope: Q08. Is the plant noted as promoting fire and/or changing fire regimes?

Issue Description

should note the reference states the plant does not burn easily

Issue Resolution (Screener's Response to Issue)

Issue resolved by PRE Data Manager -- added text "Observations by managers indicate that wintercreeper does not burn easily and is not likely to be killed by fire of any severity..." from source to quote



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.