



***Plant Risk Evaluator -- PRETM
Evaluation Report***

Euonymus alatus 'Compactus' -- Georgia

2017 Farm Bill PRE Project

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

Confidence: 72 / 100

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

Privacy: Public

Status: Submitted

Evaluation Date: September 12, 2017

This PDF was created on August 13, 2018



Plant Evaluated

Euonymus alatus 'Compactus'



Image by Missouri Botanical Garden



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Euonymus alatus 'Compactus'*) 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 alatus 'compactus' is a variety which is described as being "not at all compact". It can be distinguished from the parent species by greatly reduced or absent corky ridges. As no resources suggest that the variety differs in overall fitness or reproductive features, many of the questions are answered using parent resource material. I think it is a fair assumption that this cultivar has a similar potential threat of invasiveness as the parent species, even though the slightly compact growth habit (~10 ft for 'compactus', compared with ~15-20 ft for parent) could help lessen the occurrence of impenetrable thickets. The PRE score from this evaluation indicates that the cultivar should not be considered for commercial sale in Georgia. It may be viable to consider another cultivar such as 'Rudy Haag' which has been reported to only grow between 3-5 ft and grows very slowly. However even cultivars such as 'Rudy Haag' should be used with caution because I do not think it is sterile, and considerable spread for this plant is due to the fact that the seed is attractive to birds and therefore be able to be spread long distances.

General Information

Status: Submitted

Screener: Kylie Bucalo

Evaluation Date: September 12, 2017

Plant Information

Plant: *Euonymus alatus 'Compactus'*

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

taken from MOBOT resource. "'Compactus' is a popular burning bush cultivar. It is a deciduous shrub which is not all that "compact" since it typically grows in a mound to 10' tall with a slightly larger spread, though it can easily be kept shorter by pruning. The corky ridges are absent or very reduced in size on the stems of 'Compactus'.



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

Answer / Justification:

Parent species information used. Native to Asia and central China, in the United States it can be found from New England to northern Florida and the Gulf Coast and also in Illinois. No difference in fitness or fecundity found in the cultivar so we can expect that if escaped, the potential threat of the cultivar would be as high as the parent species.

Reference(s):

- NPS (0). Winged Burning Bush (*Euonymus alatus*)_nps_KB.
-

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:

Parent species information used. Is present in Georgia, South Carolina and North Carolina, which are all a match to the region of concern . No difference in fitness or fecundity found in the cultivar so we can expect that if escaped, the potential threat of the cultivar would be as high as the parent species.



Reference(s):

- USDA Plants Database (0). Plants Profile for *Euonymus alatus alatus* (burningbush).
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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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

Parent species information used. Is reported invasive in CT, DE, IN, KY, MA, MD, MO, NH, NJ, OH, PA, RI, TN, VA, WI, and WV . Parts of Tennessee and Virginia are a climate match for the region of concern. No difference in fitness or fecundity found in the cultivar so we can expect that if escaped, the potential threat of the cultivar would be as high as the parent species.

Reference(s):

- US Forest Service (0). Weed of the week_*Euonymus alatus*.
-

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

Answer / Justification:

Parent species information used. Is reported invasive in CT, DE, IN, KY, MA, MD, MO, NH, NJ, OH, PA, RI, TN, VA, WI, and WV . Parts of Tennessee and Virginia are a climate match for the region of concern. The plant is considered an invasive in Connecticut but sales are not banned, however sales **ARE** prohibited in Massachusetts according to the USDA plant profile. No difference in fitness or fecundity found in the cultivar so we can expect that if escaped, the potential threat of the cultivar would be as high as the parent species.



Reference(s):

- US Forest Service (0). Weed of the week_Euonymus alatus.
 - USDA Plants Database (0). Plants Profile for *Euonymus alatus alatus* (burningbush).
-

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:

Euonymus europaeus is invasive in the US, mostly in the northeastern states, however Mississippi and Tennessee are also included. Both of these states are a climate match for Georgia.

Reference(s):

- USDA NRCS (0). Plants Profile for *Euonymus europaeus* (European spindle tree).
-

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:

Using parent species info. GBIF resource for georeferenced occurrences. Japan=



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

Answer / Justification:

Parent species used. It shades out native herbs and crowds out native shrubs. "Compactus" still grows between 8-10 feet, cannot imagine this being 'compact' enough to prohibit crowding and shading out.

Reference(s):

- US Forest Service (0). Weed of the week_Euonymus alatus.
 - Gardenia.net (0). Euonymus alatus 'Compactus' (Burning Bush)_GARDENIAKB.
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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 **Medium** confidence in this answer based on the available literature.

Answer / Justification:

no info found.

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: **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:

All parts of the plant can be toxic to humans if ingested in large quantities. Can cause vomiting, chills, diarrhea if ingested.

Reference(s):

- Gardenia.net (0). *Euonymus alatus* 'Compactus' (Burning Bush)_GARDENIAKB.
 - Missouri Botanical Garden PlantFinder (0). *Euonymus alatus* 'Compactus' - Plant Finder_MOBOTKB.
 - Plants.ces.ncsu.edu (0). *Euonymus alatus* 'Compactus'_NC stateKB.
-

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

Answer / Justification:

parent species and cultivar used. Even though it is described as shading out natives and outcrowding, I don't think the growth habit exactly produces thickets as a vine or denser bush would. Is described as being suitable for a hedge, but again habit doesn't look impenetrable. one resource says "if conditions are favorable, it will out-compete native plants to form dense thickets." so i have answered yes but kept CL at low because only one resources says that.



Reference(s):

- Gardenia.net (0). *Euonymus alatus* 'Compactus' (Burning Bush)_GARDENIAKB.
 - Missouri Botanical Garden PlantFinder (0). *Euonymus alatus* 'Compactus' - Plant Finder_MOBOTKB.
 - Plants.ces.ncsu.edu (0). *Euonymus alatus* 'Compactus'_NC stateKB.
 - US Forest Service (0). Weed of the week_*Euonymus alatus*.
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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 **High** confidence in this answer based on the available literature.

Answer / Justification:

parent species used. "It may spread by seed from where it is used as an ornamental shrub. It colonizes by root suckers and spreads by animal-dispersed seeds." Root Suckers. Cultivar is not sterile nor distinct in root morphology.

Reference(s):

- US Forest Service (0). Weed of the week_*Euonymus alatus*.
-

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

Answer / Justification:

Even though they can reproduce vegetatively none of the resources records that it is fragmented naturally and would be a large contributor to the spread.



Reference(s):

- US Forest Service (0). Weed of the week_Euonymus alatus.
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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 *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

Cultivar used. This is not a sterile cultivar, it produces seed, and it is a main method of reproduction.

Reference(s):

- Gardenia.net (0). Euonymus alatus 'Compactus' (Burning Bush)_GARDENIAKB.
 - Missouri Botanical Garden PlantFinder (0). Euonymus alatus 'Compactus' - Plant Finder_MOBOTKB.
 - Plants.ces.ncsu.edu (0). Euonymus alatus 'Compactus'_NC stateKB.
-

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:

No exact verbage about yield. cannot assume from any references studied.

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

Answer / Justification:

Resource mentions seeds readily germinate.

Reference(s):

- Plants.ces.ncsu.edu (0). *Euonymus alatus* 'Compactus'_NC stateKB.
 - US Forest Service (0). Weed of the week_*Euonymus alatus*.
-

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 blank. info not found

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 / Justification:

Leave blank. no info. Flowers appear in spring/summer and fruits mature in fall- couldnt find a better timeline. not enough info to answer.

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

Answer / Justification:

Yes. Attractive to birds. "The shrub may become a troublesome plant because of the ease with which seeds are spread, the readiness of germination, the adaptability to various soils, and tolerance of full shade."

Reference(s):

- Gardenia.net (0). *Euonymus alatus* 'Compactus' (Burning Bush)_GARDENIAKB.
 - Missouri Botanical Garden PlantFinder (0). *Euonymus alatus* 'Compactus' - Plant Finder_MOBOTKB.
 - Plants.ces.ncsu.edu (0). *Euonymus alatus* 'Compactus'_NC stateKB.
 - US Forest Service (0). Weed of the week_Euonymus alatus.
 - NPS (0). Winged Burning Bush (*Euonymus alatus*)_nps_KB.
-



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

Answer / Justification:

There is no evidence of this.

Reference(s):

- [Anonymous] .
-

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] .
-

Total PRE Score

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

Confidence: 72 / 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:

- Timothy Daly January 2, 2018
- Brian Jernigan November 21, 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.

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.