



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

***Nandina domestica -- Texas***

***2017 Farm Bill PRE Project***

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

**Confidence:** 80 / 100

**Questions answered:** 19 of 20 -- Valid (80% or more questions answered)

**Privacy:** Public

**Status:** Completed

**Evaluation Date:** March 20, 2017

*This PDF was created on August 13, 2018*



## Plant Evaluated

*Nandina domestica*



Image by Emmanuel Douzery



## Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Nandina domestica*) 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

*Nandina domestica* is well documented as being naturalized. It can severely impact ecosystems where it has naturalized.

## General Information

**Status:** Completed

**Screener:** Kim Taylor

**Evaluation Date:** March 20, 2017

## Plant Information

**Plant:** *Nandina domestica*

## 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:

Naturalized in the US, Europe, Australia, and S Pacific islands

#### Reference(s):

- U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2.
  - Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
  - United States Department of Agriculture (2014). USDA-NRCS Plants Database.
  - GBIF (0). GBIF - *Nandina domestica*.
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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 **Very High** confidence in this answer based on the available literature.

#### Answer / Justification:

Naturalized in SE US in similar climate.



**Reference(s):**

- United States Department of Agriculture (2014). USDA-NRCS Plants Database.
  - Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
  - U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2.
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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 *screeners* has a **Very High** confidence in this answer based on the available literature.

**Answer / Justification:**

Listed on Invasive plant list by Florida, Alabama, Georgia, South Carolina, Tennessee.

**Reference(s):**

- United States Department of Agriculture (0). Invasive Species: Plants - Sacred Bamboo (*Nandina domestica*).
  - The University of Georgia Center for Invasive Species and Ecosystem Health (0). sacred bamboo, *Nandina domestica* N/A Ranunculales: Berberidaceae.
- 

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

**Answer / Justification:**

All places listed as invasive in previous question are within the same climate match.



**Reference(s):**

- United States Department of Agriculture (0). Invasive Species: Plants - Sacred Bamboo (*Nandina domestica*).
  - The University of Georgia Center for Invasive Species and Ecosystem Health (0). sacred bamboo, *Nandina domestica* N/A Ranunculales: Berberidaceae.
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.

**Answer / Justification:**

No other species were found

**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: **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:**

Over half of distribution overlaps the area of matching climate, including most of its native range.

**Reference(s):**

- GBIF (0). GBIF - *Nandina domestica*.



## 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:

The dense foliage of this shrub shades out native plants and prevents their regeneration. It forms extensive and dense stands displacing native vegetation. Abundant in both disturbed and natural settings, outcompeting many natives.

#### Reference(s):

- Nesom, G. L. (2009). ASSESSMENT OF INVASIVENESS AND ECOLOGICAL IMPACT IN NON-NATIVE PLANTS OF TEXAS. *Journal of the Botanical Research Institute of Texas*. 3, 971–991.
- Judd, W. S. (2003). New and Noteworthy Collections from Florida. *Castanea*. 68, 81–83.
- Granados, M., O'Kennon R. J., & Benz B. F. (2001). PLANT SPECIES-AREA RELATIONSHIPS IN TEN NORTH CENTRAL TEXAS PROTECTED NATURAL AREAS. *SIDA, Contributions to Botany*. 19, 1061–1072.
- Stone, K. R. (0). *Nandina domestica*. In: Fire Effects Information System.
- Pacific Island Ecosystems at Risk (PIER) (0). *Nandina domestica* (PIER species info).
- The University of Georgia Center for Invasive Species and Ecosystem Health (0). sacred bamboo, *Nandina domestica* N/A Ranunculales: Berberidaceae.

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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:

Seedlings reported as the first plants to emerge after prescribed fire in northern Florida, suggesting fire may promote seed germination but no evidence of promoting or changing fire regimes.



**Reference(s):**

- Stone, K. R. (0). *Nandina domestica*. In: Fire Effects Information System.
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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: **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:**

Reports of cedar waxwings dying from ingesting large quantities of *Nandina* in Texas and Georgia

**Reference(s):**

- Stewart, M. Margaret (2017). Invasive bushes in Decatur killing cedar waxwings.
  - CABI (0). *Nandina domestica* (CABI).
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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 *screeners* has a **Very High** confidence in this answer based on the available literature.

**Answer / Justification:**

"*Nandina* has the habit of forming dense thickets that displace native vegetation". Forms dense understory stands in Florida.

**Reference(s):**

- UF / IFAS Center for Aquatic and Invasive Plants (0). *Nandina domestica* – UF/IFAS Center for Aquatic and Invasive Plants.





## 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:

Reports suggest it spreads vegetatively via root fragments, as well as via suckers and rhizomes, though this does not appear to be consistent in all populations and is likely not a major contributor to spread.

#### Reference(s):

- UF / IFAS Center for Aquatic and Invasive Plants (0). *Nandina domestica* – UF/IFAS Center for Aquatic and Invasive Plants.
- 

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

#### Answer / Justification:

while plants can resprout from roots, it does not appear that plants can regenerate from fragments. I found no mention of the ability to do so in the literature.

#### Reference(s):

- Stone, K. R. (0). *Nandina domestica*. In: Fire Effects Information System.
-



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

#### Answer / Justification:

Seedlings are frequently found in the vicinity of plantings.

#### Reference(s):

- Pacific Island Ecosystems at Risk (PIER) (0). *Nandina domestica* (PIER species info).
  - eFlora (0). *Nandina domestica* in Flora of North America @ efloras.org.
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### 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:

I found no record of number of seeds per plant in a year, but it appears each plant produces potentially hundreds of seeds.

#### Reference(s):

- CABI (0). *Nandina domestica* (CABI).
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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: **No**, which contributes **0** points to the total PRE score.
- The *screeener* has a **Very High** confidence in this answer based on the available literature.



**Answer / Justification:**

Seeds ripen in late winter and germination occurs the following fall, with 2 cold periods required to stimulate embryo development.

**Reference(s):**

- Stone, K. R. (0). *Nandina domestica*. In: Fire Effects Information System.
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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:**

"Though one source reports that plants as young as 18 months can produce numerous fruits, other sources suggest that it takes several years for sacred bamboo to reach maturity". I was not able to find a reference to verify this.

**Reference(s):**

- Stone, K. R. (0). *Nandina domestica*. In: Fire Effects Information System.
- 

**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:**

Fruit shown to be present on trees in about equal amounts from Dec through Feb by McPherson. Flora of North America notes that it flowers from May through July and fruits from September through December.



**Reference(s):**

- McPherson, J. M. (1987). A Field Study of Winter Fruit Preferences of Cedar Waxwings. *The Condor*. 89, 293–306.
  - eFlora (0). *Nandina domestica* in Flora of North America @ 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:**

Berries eaten by many types of birds as well as mammals including opossum, raccoon, and rodents. Birds have been shown to have the potential move seeds long distances.

**Reference(s):**

- McPherson, J. M. (1987). A Field Study of Winter Fruit Preferences of Cedar Waxwings. *The Condor*. 89, 293–306.
  - Stone, K. R. (0). *Nandina domestica*. In: Fire Effects Information System.
  - Pacific Island Ecosystems at Risk (PIER) (0). *Nandina domestica* (PIER species info).
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**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:**

Sources indicate it is possibly dispersed by water but no direct evidence was stated; plants often found along riparian corridors, so water dispersal is likely.

**Reference(s):**

- CABI (0). *Nandina domestica* (CABI).
  - Stone, K. R. (0). *Nandina domestica*. In: Fire Effects Information System.
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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 *screeners* has a **Medium** confidence in this answer based on the available literature.

**Answer / Justification:**

No evidence was found for this.

**Reference(s):**

- [Anonymous] .
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**Total PRE Score**

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

**Confidence:** 80 / 100

**Questions answered:** 19 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:

This evaluation does not have any reviewers.



## 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](mailto:PlantRight@suscon.org) if additional action is required to resolve open issues.

### Issue ID # 3112

**Date Created:** May 9, 2017 - 11:39am

**Date Updated:** June 5, 2017 - 2:50pm

**Submitted by:** Charlotte Reemts

**Status:** Fixed

**Type:**

**Severity:** Minor

**Scope:** Regional Information

### Issue Description

There has, in fact, been a weed risk assessment for *Nandina* in Texas:

[http://www.texasinvasives.org/professionals/assessment\\_print.php?symbol=NADO](http://www.texasinvasives.org/professionals/assessment_print.php?symbol=NADO)

### Issue Resolution (Screener's Response to Issue)

This question is no longer available so no changes have been made.

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### Issue ID # 3105

**Date Created:** May 9, 2017 - 9:24am

**Date Updated:** June 5, 2017 - 2:57pm

**Submitted by:** Steve Moore





**Status:** Fixed

**Type:**

**Severity:** Minor

**Scope:** General Information

### **Issue Description**

Agreed that *Nandina domestica* produces copious seed that can pose a threat to native plant habitats. However, recent hybrids have been introduced that should be taken into consideration because of their reported sterility. These varieties have become a major resource for the nursery and landscape industry and deserve to be evaluated on their own.

### **Issue Resolution (Screener's Response to Issue)**

A note was added to the evaluation about the new potentially sterile cultivars. These will each need to be evaluated independently.

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## **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](mailto: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.