



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

Elaeagnus umbellata -- Texas

2017 Farm Bill PRE Project

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

Confidence: 84 / 100

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

Privacy: Public

Status: Completed

Evaluation Date: September 17, 2017

This PDF was created on July 06, 2018



Plant Evaluated

Elaeagnus umbellata



Image by KENPEI, Wikipedia user



Evaluation Overview

A PRE™ screener conducted a literature review for this plant (*Elaeagnus umbellata*) 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

Elaeagnus umbellata is naturalized across much of Eastern North America and is considered invasive in much of that region. It forms dense, often thorny thickets, crowding out native vegetation. It produces large numbers of fruits which are dispersed by birds and other animals.

General Information

Status: Completed

Screener: Kim Taylor

Evaluation Date: September 17, 2017

Plant Information

Plant: *Elaeagnus umbellata*

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

Answer / Justification:

Kartesz indicates the species is naturalized across most of eastern North America from Maine south to Florida and west to Oklahoma, with scattered occurrences in Colorado, Montana, Washington, and Oregon. It is also naturalized in Hawaii. The Invasive Species Compendium species datasheet indicates the species is also naturalized in Costa Rica, and the Netherlands.

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
- USDA Plants Database (0). Plants Profile for *Elaeagnus umbellata* (autumn olive).
- U.S. National Plant Germplasm Network (0). Taxonomy - GRIN-Global Web v 1.9.8.2 *Elaeagnus umbellata*.
- Kartesz, J. T. (2015). The Biota of North America Program (BONAP).

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



Answer / Justification:

Elaeagnus umbellata is naturalized across most of Eastern North America. The southern portion of this range shares a similar climate to Texas.

Reference(s):

- USDA Plants Database (0). Plants Profile for *Elaeagnus umbellata* (autumn olive).
 - Kartesz, J. T. (2015). The Biota of North America Program (BONAP).
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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:

Elaeagnus umbellata is listed as invasive and banned in the state of Connecticut, prohibited in Massachusetts and New Hampshire, and as a noxious weed in West Virginia. It is a category II species in Florida indicating "Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species." It is listed as invasive in Texas by TexasInvasives.com which also indicates the species is "reported invasive in CT, DC, DE, FL, GA, IL, IN, KY, MD, MI, MO, NC, NH, NJ, NY, OH, PA, RI, TN, VA, VT, and WI." The Global Compendium of Weeds indicates the species is an "agricultural weed, casual alien, cultivation escape, environmental weed, garden thug, naturalised, noxious weed, weed." The Invasive Species Compendium species datasheet indicates the species is also invasive in the Dominican Republic, Belgium, France, Italy, and the Azores. EDD maps indicates the species is invasive in New Hampshire, Massachusetts, Connecticut, Wisconsin, Illinois, West Virginia, Kentucky, Tennessee, Alabama, Georgia, South Carolina, and Florida.

Reference(s):

- FLEPPC (2017). List of Invasive Plant Species.
- Invasive Plant Atlas of the United States (0). autumn olive: *Elaeagnus umbellata* (Rhamnales: Elaeagnaceae): Invasive Plant Atlas of the United States.
- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
- Global Compendium of Weeds (GCW) (0). *Elaeagnus umbellata* information from the Global Compendium of Weeds (GCW).
- USDA Plants Database (0). Plants Profile for *Elaeagnus umbellata* (autumn olive).
- TexasInvasives.org (0). Texas Invasives *Elaeagnus umbellata*.



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:

Elaeagnus umbellata is listed as invasive in Texas by TexasInvasives.com. EDD maps indicates the species is invasive in Alabama, Georgia, South Carolina, and Florida, which share a similar climate to Texas.

Reference(s):

- Invasive Plant Atlas of the United States (0). autumn olive: *Elaeagnus umbellata* (Rhamnales: Elaeagnaceae): Invasive Plant Atlas of the United States.
 - TexasInvasives.org (0). Texas Invasives *Elaeagnus umbellata*.
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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:

Several species of *Elaeagnus* are listed in the Global Compendium of Weeds, including *E. angustifolia*, *E. argentea*, *E. commutata*, *E. crispa*, *E. ebbingei*, *E. glabra*, *E. macrophylla*, *E. multiflora*, *E. parvifolia*, *E. pungens*, and *E. reflexa*. *E. angustifolia*, *E. argentea*, *E. commutata*, *E. crispa*, *E. multiflora*, *E. pungens*, and *E. reflexa* are considered weeds. *Elaeagnus angustifolia* is a "serious weed in western North America" and considered invasive in South Carolina and New Mexico, which share a climate with Texas. *Elaeagnus pungens* is invasive in South Carolina, Georgia, Alabama, and Florida, which share a similar climate to Texas.



Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
 - Global Compendium of Weeds (0). Global Compendium of Weeds: species index.
 - Invasive Plant Atlas of the United States (0). Russian olive: *Elaeagnus angustifolia* (Rhamnales: Elaeagnaceae): Invasive Plant Atlas of the United States.
 - Invasive Plant Atlas of the United States (0). thorny olive: *Elaeagnus pungens* (Rhamnales: Elaeagnaceae): 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: **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). *Elaeagnus umbellata* Thunb. 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:

Elaeagnus umbellata exhibits "rapid growth that suppresses native plants... Due to its nitrogen-fixing capabilities, it has the capacity to adversely affect the nitrogen cycle of native communities that may depend on infertile soils." "This fast growing shrub spreads rapidly in mesic to wet habitats and disturbed areas. It forms dense thickets displacing native vegetation and preventing the growth and regeneration of native plants. The shrub resprouts quickly after burning or cutting. The plant is nitrogen-fixing and grows well in soils of low fertility." "The shrub can dominate almost any landscape type, from fencerows to meadows to open woods, even sand dunes and mine spoils." "E. *umbellata* grows vigorously and is competitive against native species, growing rapidly into impenetrable, thorny thickets, suppressing and/or displacing native and/or more valuable species and supplanting native habitat."

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
 - Pacific Island Ecosystems at Risk (PIER) (0). *Elaeagnus umbellata* (PIER species info).
 - TexasInvasives.org (0). Texas Invasives *Elaeagnus umbellata*.
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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 *screeener* has a **High** confidence in this answer based on the available literature.

Answer / Justification:

The Invasive Species Compendium species datasheet indicates an impact outcome of "Modification of fire regime".

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
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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: **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:

There is no indication that *Elaeagnus umbellata* is toxic.

Reference(s):

- Plants For A Future (PFAF) (0). *Elaeagnus umbellata* Autumn Olive PFAF Plant Database.
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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:

Elaeagnus umbellata is a deciduous shrub which grows to approximately 20 ft in height. It resprouts from the base. "This fast growing shrub spreads rapidly in mesic to wet habitats and disturbed areas. It forms dense thickets displacing native vegetation and preventing the growth and regeneration of native plants. The shrub resprouts quickly after burning or cutting. The plant is nitrogen-fixing and grows well in soils of low fertility." "Autumn olive grows rapidly into an impenetrable, thorny thicket, usurping space from more valuable species." "E. umbellata is a deciduous shrub 2-4 (-5) m tall and 10 cm in diameter with slender, spreading branches, more or less spiny with thorns about 2.5 cm long." "growing rapidly into impenetrable, thorny thickets."

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
 - Pacific Island Ecosystems at Risk (PIER) (0). *Elaeagnus umbellata* (PIER species info).
 - TexasInvasives.org (0). Texas Invasives *Elaeagnus umbellata*.
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Reproductive Strategies (Questions 11 - 17)

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

- 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:

"Spreads: by seed that is dispersed by birds and mammals; some vegetative propagation also occurs." The species is able to resprout from the base but it is not clear whether it spreads vegetatively.

Reference(s):

- NPS (0). Autumn Olive (*Elaeagnus umbellata*).
 - TexasInvasives.org (0). Texas Invasives *Elaeagnus umbellata*.
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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: **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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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:

Seeds are viable.

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
 - Pacific Island Ecosystems at Risk (PIER) (0). *Elaeagnus umbellata* (PIER species info).
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14. Does this plant produce copious viable seeds each year (> 1000)?

- 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:

"A single plant can produce 200,000 seeds each year, which are spread widely by birds." The Invasive Species Compendium species datasheet indicates the species has "high seed production." "Mature trees producing about 14 kg of fruit per annum, equivalent to 1.4 kg or 66,000 seeds."

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
 - Pacific Island Ecosystems at Risk (PIER) (0). *Elaeagnus umbellata* (PIER species info).
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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 *screeener* has a **Medium** confidence in this answer based on the available literature.

Answer / Justification:

The Invasive Species Compendium species datasheet indicates the species has "high germination rates." Munger (2003) indicates 4 to 5 months of cold is optimum for seed germination. "Seed - best sown as soon as it is ripe in a cold frame. It should germinate in late winter or early spring, though it may take 18 months. Stored seed can be very slow to germinate, often taking more than 18 months. A warm stratification for 4 weeks followed by 12 weeks cold stratification can help. The seed usually (eventually) germinates quite well."

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
 - Plants For A Future (PFAF) (0). *Elaeagnus umbellata* Autumn Olive PFAF Plant Database.
 - Munger, G.T.. (2003). *Elaeagnus umbellata*. 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: **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:

"Fruiting begins at 3-5 years old under favourable conditions such as full sunlight and adequate moisture."

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) 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:

"flowering occurs in April and fruiting in July-August though this varies with the altitude." "In the United States (central and southern Appalachian regions), fruit ripens in August and September. Fruit generally remains on the plant until late winter."

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) 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 **Very High** confidence in this answer based on the available literature.

Answer / Justification:

"The small, round, juicy fruits are reddish to pink, dotted with scales, and produced in great quantity. Birds forage on its fruits and contribute to seed dispersal." "A single plant can produce 200,000 seeds each year, which are spread widely by birds." "Seeds are spread widely by birds, and to a lesser extent by small mammals." "Munger (2003) also lists species known to eat *E. umbellata* in the USA, including many birds (grey catbirds, hermit thrushes, wood thrushes, house finches, American robins, cardinals, cedar waxwings, common grackles, evening grosbeaks, fox sparrows, house sparrows, song sparrows, white-throated sparrows, mockingbirds, myrtle warblers, purple finches, rufus-sided towhees, starlings, tree swallows, veerys, northern bobwhite, ruffed grouse, mourning doves, ring-necked pheasants, wild turkeys and mallards), raccoons, skunks, opossums, and black bears, and it is also browsed by white-tailed deer."



Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.
 - Pacific Island Ecosystems at Risk (PIER) (0). *Elaeagnus umbellata* (PIER species info).
 - Munger, G.T.. (2003). *Elaeagnus umbellata*. In: Fire Effects Information System.
 - TexasInvasives.org (0). Texas Invasives *Elaeagnus umbellata*.
-

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

Answer / Justification:

Fruits are dispersed by birds.

Reference(s):

- TexasInvasives.org (0). Texas Invasives *Elaeagnus umbellata*.
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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: **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:

The Invasive Species Compendium species datasheet indicates the species is dispersed locally via land vehicles and machinery/equipment.

Reference(s):

- CABI (0). *Elaeagnus umbellata* (autumn olive) cabi.



Total PRE Score

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

Confidence: 84 / 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 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.