

Ohio Invasive Plant Assessment Protocol - 2015

Botanical Name: *Elaeagnus angustifolia*
 Common Name: Russian olive
 Family Name: Elaeagnaceae
 Assessment conducted by: Allison Mastalerz, Theresa Culley

Step I Outcome: **Pending Further Review**
 Step II Score: **48**
 Step II Outcome: **Invasive**

Team Score

Notes

References

Step I

Directions: Place an "X" in the Score column next to the selected answer to each of the four questions.

1. Is this plant known to occur in the state and listed as "noxious" on any federal or Ohio Department of Agriculture plant list?	Yes. <i>Place on invasive plant list, no further investigation needed. STOP</i>			
	No. <i>Continue on to question 2.</i>	X		
2. Has this plant demonstrated widespread dispersion and establishment (i.e. high numbers of individuals forming dense stands) in natural areas across two or more regions in Ohio?^a	Yes. <i>Place on invasive plant list, no further investigation needed. STOP</i>	X	Species occurs in 2 regions (2 & 3), but information regarding individual populations needed.	1,7
	No. <i>Continue on to question 3.</i>			
3. Does this plant form self-replicating populations outside of cultivation in Ohio and is it documented to alter the composition, structure, or normal processes or functions of a natural ecosystem?	Yes			
	No	X		
	Unknown			
4. Is the plant listed as invasive in an adjoining state or a nearby state east of the Mississippi within the USDA Plant Hardiness zones 5-6?^{b,c}	Yes	X		
	No		Considered "potentially invasive, banned" in PA, IN, MI, WV (moderately invasive),	1,2,3,4,5,6
	Unknown			

If the answer was yes for both questions 3 and 4, the plant is placed on the invasive plant list and no further research is needed. Stop here. If the answer is no for both questions 3 and 4, the plant is not considered invasive and no further investigation is warranted. Otherwise, proceed to Step II.

Step II: Invasion Status

Directions: Place the appropriate numerical score (or "U") in the Score column next to the selected answer to each of these 18 questions.

1. Current Invasion in Ohio				
- plant is not found in natural areas (0 pts.)				
- plant is found in natural areas but only because it persist from previous planting in that location (e.g. old home sites) (0 pts.)				
- plant is only expanding from sites of previous planting (1 pt.)		1	Species occurs outside of cultivation, but more documented information is needed to assert its existence occurring "away from site of planting", so 1 point answer was selected.	9, 10
- plant occurs in natural areas away from site of planting (3 pts.)				
- Information unknown (U)				
2. State Distribution^a				
- plant is not naturalized in any region of Ohio (0 pts.)				
- plant is naturalized in only one region in Ohio (1 pt.)				
- plant is naturalized in two regions in Ohio (2 pts.)				
- plant is naturalized in three regions in Ohio (3 pts.)		4	Species occurs in 2 regions (2 & 3); 14: Regions 2,3,4,5	1,7,14
- plant is naturalized in four regions in Ohio (4 pts.)				
- plant is naturalized in five regions in Ohio (5 pts.)				
- Information unknown (U)				
3. Regional/US Distribution				
- plant is not considered to be a problem in any other state (0 pts.)				
- plant has been reported as a widespread problem in another non-neighboring state within the USDA Plant Hardiness Zones 5-6 (1 pt.)				
- plant has been reported to be a widespread problem in 1-2 adjoining states (3 pts.)		5	PA, IN, MI, WV (moderately invasive)	1,2,3,4,5
- plant has been reported to be a widespread problem in 3 or more adjoining states (5 pts.)				
- plant has been reported to be a widespread problem in similar habitat outside the US (1 pt.)				
- Information unknown (U)				

Step II: Biological Characters

4. Vegetative Reproduction				
- no vegetative reproduction (0 pts.)				
- reproduces readily within the original site (1 pt.)				
- has runners or spreading rhizomes that root easily (3 pts.)		0		
- fragments easily and fragments can be easily dispersed (4 pts.)				
- has runners or spreading rhizomes that root easily AND fragments easily and fragments can be easily dispersed (5 pts.)				10

- Information unknown (U)

5. Sexual Reproduction

- no sexual reproduction (0 pts.)
- infrequent sexual reproduction (1 pt.)
- frequent sexual reproduction, but high variation among years in seed production (3 pts.)
- frequent sexual reproduction (one or more events per year) (5 pts.)
- Information unknown (U)

6. Number of Viable Seeds or Propagules per Plant

- few (0-10) (1 pt.)
- moderate (11-1,000) (3 pts.)
- prolific (>1,000) (5 pts.)
- Information unknown (U)

7. Flowering Period

- one month or less per year (0 pts.)
- two months (1 pt.)
- three to five months (2 pts.)
- longer than five months (3 pts.)
- Information unknown (U)

8. Dispersal Ability

- low potential for long-distance seed/propagule dispersal (>1km) (0 pts.)
- medium potential for long-distance seed/propagule dispersal (3 pts.)
- high potential for long-distance seed/propagule dispersal (5 pts.)

- Information unknown (U)

9. Generation Time

- long juvenile period (>5 or more years for trees, 3 or more years for other growth forms) (0 pts.)
- short juvenile period (<5 years for trees, <3 years for other forms) (3 pts.)
- Information unknown (U)

10. Establishment

- unable to invade natural areas (0 pts.)
- can only colonize certain habitat stages (e.g. early successional habitats) (1 pt.)
- aggressively colonizes and establishes in edge habitats (3 pts.)
- aggressively colonizes and establishes in intact and healthy natural areas (6 pts.)

- Information unknown (U)

Step II: Ecological Importance

11. Impact on Ecosystem Processes

- no known effect on ecosystem-level processes (0 pts.)
- moderate effects on ecosystem-level processes (e.g., changes in nutrient cycling)(3 pts.)

- causes long-term, substantial alterations in the ecosystem (e.g., changing fire regime of an area, changing hydrology of wetlands) (6 pts.)

12. Impact on Rare Organisms

- no known negative impact on Ohio State-listed or federal-listed plants or animals (0 pts.)
- negatively impacts listed species, such as through displacement or interbreeding (3 pts.)

13. Impact on Native Animals

- no known negative impact on animals (0 pts.)

5

5

5

1

5

3

3

3

0

3

10: Occurs one time a year, and is considered a prolific seed producer.

10: Considered a prolific seed producer. 20: Seeds remain dormant for 1-3 years.

10: May-June in IL, June-July in "eastern states". 13: mid to late spring (in Canada)

8,10: Dispersed primarily through birds, but can be dispersed via small vertebrates. Seeds are buoyant and can be transported via waterways. 13,20: fruits are consumed and dispersed by birds and mammals, and "potentially through fluvial transport". 15: Fruits dispersed by birds and small rodents. 17: European starlings effectively disperse Russian olive seeds.

3 to 5 years

12: This is particularly true in riparian habitats, where species germinates according to environmental cues that signal good growing conditions. 19: Species is limited in its southern distribution in the US by a seed chilling requirement.

Can cause significant changes biogeochemical cycling (it is a nitrogen-fixing species), especially in riparian areas. 13: dominates understory of habitats composed of pioneer species [in Canada]. 15: May facilitate invasion by other plants because it enhances riparian soils with nitrogen. 20: Species is an actinohorizal species and has vesicular-arbuscular mycorrhizae.

None known for OH

10: "Altered structural and compositional plant

10

8,10,20

10,13

8, 10,13,15,17,20

8,10

12,19,21

8,9,10,11,13[and references therein],15,18,20,22,23

- documented direct or indirect negative effects on animal taxa (3 pts.)

14. Impact on Native Plants

- no known negative effects on native plants (0 pts.)
- negatively impacts some native plants (increasing their mortality and/or recruitment of certain taxa) (3 pts.)
- impacts native plants to such an extent that community structure is greatly altered (6 pts.)

15. Hybridization

- no known instances of hybridization with other plant species (0 pts.)
- can hybridize with native Ohio plants or commercially-available species, but seeds are inviable (1 pt.)
- can hybridize with native Ohio plants or commercially-available species, producing viable seed (3 pts.)

16. Population Density

- occurs only as small, sporadic populations or individuals (1 pt.)
- typically forms small, monospecific patches (3 pts.)
- is a dominant plant in area where population occurs (absolute cover 15-50%) (4 pts.)

- forms an extensive, monospecific stand (absolute cover >50%) (5 pts.)

17. Role in Succession in Natural Areas

- successional information is unknown (0 pts.)
- is an early successional species that temporarily invades a disturbed site but does not persist as the site matures (0 pts.)
- readily invades disturbed sites and persists, but does not interfere with succession (1 pt.)

- readily invades disturbed sites, persists and interferes with succession of native plants (4 pts.)

18. Number of Habitats Invaded

Forestlands: Floodplain forest, hemlock-hardwood forest, mixed mesophytic forest, beech-maple forest, oak-maple forest, oak-hickory forest.

Grasslands: Alvar*, beach-dune community*, bur oak savanna*, slough-grass-bluejoint prairie*, sand barren*, big bluestem prairie, little bluestem prairie (xeric limestone prairie*+), post oak opening*+

Wetlands: Bog*, fen*, twigrush-wiregrass wet prairie*, marsh, buttonbush swamp, mixed shrub swamp, hemlock-hardwood swamp*, maple-ash-oak swamp, white pine-red maple swamp*

* Considered a rare plant community in Ohio by ODW's Biodiversity Database Program.

+ = xeric limestone prairies or cedar glades and post oak openings are unique to the Interior Low Plateau Region of Adams, Highland and Pike counties, and are not included in Schneider and Cochrane (1997).

- not found in any natural habitats in Ohio (0 pts.)
- only found in 1 broad category (1 pt.)
- found in 2 broad categories or 2 rare habitat types (3 pts.)
- found in 3 broad categories or 3 rare habitat types (4 pts.)
- found in 4 or more rare habitat types (5 pts.)

10: "Altered structural and compositional plant diversity may lead to lower wildlife diversity". 13: Studies have shown that the species lowers bird species richness and diversity; species is also food for the invasive common carp, which then outcompetes other native fish. 17: Stands of Russian olive can support diverse bird communities (although some types of birds are sparse).

10,13,17,20,21

3

Grows rapidly and aggressively out-competes native plants. Can create dense thickets that crowd out/out-compete native species.

8,9, 10,12,20

0

3

Can grow aggressively and form dense thickets, but does not yet do this extensively in Ohio. 20: In western states (NM, AZ, UT, CO, NE, MT, ID), density is 0-5120 plants/ha with a % cover of 0-81.2%.

8,9,10,20

1

10: "Russian-olive can establish at early successional stages, on bare, nutrient poor soils, and at later successional stages, under a well-developed canopy. It can persist into later stages of succession and change successional trajectories in the native communities that it invades." 20: Invasion may alter the successional dynamics of riparian forests (but mainly in western North America). [Currently, the score for this question is a 1 but it may need to change to a 4 if the species becomes more prevalent in OH].

10,20

3

grasslands and edges of forests and open woodlands. 12: Analysis of aerial photos shows that species in ND is found in riparian habitats, roadsides and agricultural fields.

8,9,12,21

48

Total Score:
Number of Unknowns:

Outcome: Invasive

Total Points	Assessment Decision
4 or more U	Insufficient Data
0-34	Not Known to be Invasive
35-44	Pending Further Review
45-80	Invasive