

Ohio Invasive Plant Assessment Protocol

Botanical Name: *Acer platanoides*
 Common Name: Norway Maple
 Family Name: Aceraceae
 Posted Date: 7/20/16
 Initial assessment conducted by: n Mastalerz and Theresa t

Step I Outcome: **Invasive**
 Step II Score: **36**
 Step II Outcome: **Pending Further Review**

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. Place on invasive plant list, no further investigation needed. **STOP**
 No. Continue on to question 2.

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. Place on invasive plant list, no further investigation needed. **STOP**
 No. Continue on to question 3.

X

1,2

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
 Unknown

X

2: Naturalized in 5 regions of Ohio. 9: It is considered a species with "competitive superiority,...reducing abundance and diversity of native species and alteration of forest community structure".

1,2,8,9

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
 No
 Unknown

X

IN, MI, PA, CT

3,4,5,6,7,9

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.)
- plant occurs in natural areas away from site of planting (3 pts.)
- Information unknown (U)

3

Species has been observed in natural areas, but it is unclear how it got there. The plant A. Mastalerz observed was in California Woods - it is possible that it was a remnant from a previous planting.

1,2, personal observation

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.)
- plant is naturalized in four regions in Ohio (4 pts.)
- plant is naturalized in five regions in Ohio (5 pts.)
- Information unknown (U)

5

2: The species is in all 5 regions.

1,2

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.)

1

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	Score	Notes	References
<ul style="list-style-type: none"> - plant has been reported to be a widespread problem in 1-2 adjoining states (3 pts.) - 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) 	5	IN, MI, PA	3,5,6,17
Step II: Biological Characters			
4. Vegetative Reproduction			
<ul style="list-style-type: none"> - no vegetative reproduction (0 pts.) - reproduces readily within the original site (1 pt.) - has runners or spreading rhizomes that root easily (3 pts.) - 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.) - Information unknown (U) 	0	Plant can be propagated vegetatively, but it is doubtful it reproduces this way in the wild.	No evidence
5. Sexual Reproduction			
<ul style="list-style-type: none"> - 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) 	3	8: Readily propagated from seed. 9: One reproductive event per year. 26: Species is a prolific seeder with large seed crops produced every 1-3 years.	8,9,26
6. Number of Viable Seeds or Propagules per Plant			
<ul style="list-style-type: none"> - few (0-10) (1 pt.) - moderate (11-1,000) (3 pts.) - prolific (>1,000) (5 pts.) - Information unknown (U) 	5	9: Species produces viable seeds. Species is known for producing abundant seedlings each year. 12: Seed viability in the native range can be over 75%. 26: Species is a prolific seeder that begins bearing seed at 25-30 years old with large seed crops produced every 1-3 years.	9,12,26
7. Flowering Period			
<ul style="list-style-type: none"> - 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) 	0	April	8,10
8. Dispersal Ability			
<ul style="list-style-type: none"> - 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.) 		9: Fruit is a samara and is wind dispersed. Avg. distance is in one trial was ~50 meters. 19: seeds are wind-dispersed with	

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p II	- Information unknown (U)	3	21: Seeds are wind dispersed with fairly short range dispersal (citing Matlack 1987). 22: Roads and trails were important means of long distance dispersal for Norway maple. 23: In an intense study of an introduced population of Norway maple, in MI "a comparatively small but potential influential set of individuals were observed at relatively long distances from the main invasion front." 26: Seeds can travel approx. 50 m from a parent tree given a gentle wind.	9,19,22,23,25,26,27
	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)	0	10: species is slow growing, but specific generation times were not provided. 26: Species is a prolific seeder that begins bearing seed at 25-30 years old with large seed crops produced every 1-3 years.	10,26
	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)	3	9: This species is a very good competitor in closed-canopy and forest gap environments. It can suppress regeneration of other species. It has been noted to become a dominant species in some New England forests and has been noted to "be gradually replacing previously dominant oaks." 14: Norway maple is tolerant of drought and shade, which has allowed it to flourish in a wide range of habitats. 19: Norway maple can colonize intact forests but its rate of invasion is more likely to be suppressed than in a disturbed forest. [The more conservative 3 pt answer was selected here but may increase with more information on OH populations of Norway maple.]	9,14,19,27
	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.)		11: There was a significantly lower total	

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Step I

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<p>- causes long-term, substantial alterations in the ecosystem (e.g., changing fire regime of an area, changing hydrology of wetlands) (6 pts.)</p>	3	<p>leaf herbivory and fungal damage in N. American vs. native European sites. 12: Under future warmer environmental conditions, the species will produce smaller seeds with lower N concentration and reduced viability. 13: Norway maples experiences significantly less leaf damage than sugar maples - "the spread of Norway maple in Northern America, by reducing amounts of insect herbivory, may have further ecosystem-wide impacts". 14: Invasion by Norway maple has "greatly altered community structure and ecosystem processes in these forests."21: In Montana, Norway maples was associated with a dramatic change in community composition and local loss of species diversity.</p>	11,12,13,18,21,26
<p>12. Impact on Rare Organisms</p> <ul style="list-style-type: none"> - 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.) 	0		No evidence
<p>13. Impact on Native Animals</p> <ul style="list-style-type: none"> - no known negative impact on animals (0 pts.) - documented direct or indirect negative effects on animal taxa (3 pts.) 	0		No evidence
<p>14. Impact on Native Plants</p> <ul style="list-style-type: none"> - 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.) 		<p>13: Within its invasive range, Norway</p>	

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Score **Notes** **References**

- impacts native plants to such an extent that community structure is greatly altered (**6 pts.**)

3

maple can dominate forest stands and decrease understory species richness (see citations). 14: invasion of Norway maple "significantly altered canopy structure and community dynamics in the hardwood forest" and because red maple seedlings cannot grow well under the canopy of Norway maple, the latter will likely continue to expand in N. America. 15: In NJ, native sapling growth was inhibited when growing under or competing with Norway maple. 16: Soil collected from under Norway maple can reduce the root:shoot ratio of red maple. 17: Norway maple had mixed effects on the growth and survival of native tree seedlings. 18: Norway maple seedlings had greater biomass growth and assimilation rates, better able to capture light, and were less negatively affected by herbivory than sugar maple.

13,14,15,16,17,18,20,24,26

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.**)

0

8: Norway maple has been hybridized with *A. truncatum* to form some commercial cultivars. It has also successful ben hybridized with *A. opalus* [This question currently received a 0 score but this can change with more information specific to Ohio.]

8

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.**)

1

9: "In a New Jersey Piedmont mixed hardwood forest, Norway maple seedlings reached densities of 40,500 stems/acre (100,000 stems/ha) or 0.9 stems/ft² (10 stems/m²). Norway maple seedlings and saplings appear to be strong understory competitors beneath native species such as sugar maple." 11: Often forms "sensitive monospecific stands" in the northeastern US. [Note that only sporadic individuals have been observed in NE Ohio but this could change over time.]

9,11,27

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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.)**

1

9: Species is able to become a dominant species in Northeastern forests, displacing native vegetation. 18: By negatively impacting the late successional species, sugar maple, the Norway maple may interfere with succession. 21: Norway maple trees "suppress most native tree species, including the regeneration of the natural canopy dominants, but facilitates conspecifics in their understories".

9,18,21,25

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.)**

1

11: Common invader in northeastern US of woodland patches in urban and suburban areas. 21: Norway maple invades riparian communities in Montana.

9,11,15,21

Total Score:

36

Number of Unknowns:

0

Outcome:

Pending Further Review

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