

Ohio Invasive Plant Assessment Protocol

Botanical Name: *Microstegium vimineum*
 Common Name: Japanese stiltgrass, Nepalese brow
 Family Name: Poaceae
 Assessment conducted by: OIPC Team

Step I Outcome: **Invasive**
 Step II Score: **60**
 Step II Outcome: **Invasive**

Score

Notes

References

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

Step I

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=>only in region 5; 2=>in all 5 regions.
 Population densities are not included in maps.

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

1,2,7,8,9

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 [also in KY but not included here]

3,4,5,6

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

1,2

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)

4

1=>only in 1 region; 2=>4 regions [need to check region 4 as R. Gardner has observed this in the Wayne Forest]

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.)
- 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 [also in KY but not included here]

3,4,5,6

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.)
- 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)

4

10=> Produces stolons and tillers. 29=> grows horizontally by rooting at the nodes.

10,29

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)

5

19=>species produces both open, chasmogamous flowers, and closed, self-pollinated cleistogamous flowers. 8=>"these current findings suggest that most of this success may due to CH seeds, which are longer-lived and

8,9,10,19,34

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)

3

5-50 seeds per plant. 17=>"Each plant is capable of producing between 100 and 1000 seeds (Rhoads and Block 2002)." 19,20=>seed production is reduced in the shade vs. sun

8,10,17,19,20,34,40

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)

1

20=>during summer months. 41=>seeds in autumn.

10,20,41

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)

3

7,8,10=>state that species is able to disperse long distances b/c its ability to disperse by deer, flooding, and humans BUT ref. 9 & 10 caution that dispersal distances have yet to be

7,8,9,10,13,20,34,39,41

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)

3

species is an annual

7,8,9,10

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)

6 11=>in PA: stiltgrass was in very high densities in areas where deer were present (generally absent in deer exclusion areas). 14,29=>stiltgrass is a shade-tolerant, annual C4 grass; can invade interior forests. 15=>"Microstegium established 8,9,10,11,14,15,20,29,35,42, 43

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.)

6 Stiltgrass is associated with changes soil biota and chemistry. It contributes to declines in plant and wildlife diversity, and degrades forest 7,8,9,10,14,22,25,26,29,31,33,37,41

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.)

0 21=>stiltgrass is often found in wetlands inhabited by the endangered Northeastern 21

13. Impact on Native Animals

- no known negative impact on animals (0 pts.)
- documented direct or indirect negative effects on animal taxa (3 pts.)

3 8=>Species associated with decreased soil microarthropod and arthropod diversity. 8,18,27,28,36,38

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.)

3 Species reduces native plant diversity and can decrease important timber stock productivity. 12=>stiltgrass was associated with declines in 8,9,10,12,14,16,22

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 No evidence

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.)

4 Typically it is mentioned that the species forms monocultures. 11=>in PA: "The understory of the Liriodendron stand had 72% cover of Microstegium vimineum." and stiltgrass was 7,8,9,10,11,17,19,20, 24

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.)

4 The species does invade and persist in disturbed sites (and sites all across the successional gradient), but its ability to interfere with successional trajectories is unclear. All 7,8,9,10,17,23,25

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

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

* 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,

- 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.**)

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

Total Score:
Number of Unknowns:
Outcome:

3 9=>wetlands and forests; 10=>forests, wetlands and praries 9,10

60

0

Invasive