

Ohio Invasive Plant Assessment Protocol

Botanical Name: *Convolvulus arvensis*
 Common Name: Field bindweed
 Family Name: Convolvulaceae
 Posted Date: 7/20/16
 Initial assessment conducted by: Katelyn Morgan

Step I Outcome: **Continue**
 Step II Score: **42**
 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**

X

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

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

Indiana

3

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

Very common

2,4,5

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

3. Regional/US Distribution

- plant is not considered to be a problem in any other state (**0 pts.**)

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Notes

References

- 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)

3

IN

3

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)

3

1,2: Rhizomes and their root systems can spread as deep as 20ft below the surface. 10: "Buds along the lateral roots give rise to rhizomes in early spring, and when rhizomes reach the soil surface, they establish new crowns capable of generating independent plants."

1,2,10

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)

3

5: "Field bindweed reproduces vegetatively by means of endogenous root buds that develop into rhizomes and establish new shoots upon reaching the soil surface". 10: produce flowers and seeds with up to 25% immediate germination and extended seed dormancy because of a thick seed coat; seeds can remain viable for 20 years or more.

5,10

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

4,5: "An average plant produces about 550 seeds"; 8: "produce numerous seeds (10 to the 7th power per hectare), which survive 20-30 years in the soil (Timmons, 1949)".

4,5,8

7. Flowering Period

- one month or less per year (0 pts.)
- two months (1 pt.)

5: "Field bindweed flowers persist only 1 day and are insect

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Step II

	Score	Notes	References
<ul style="list-style-type: none"> - three to five months (2 pts.) - longer than five months (3 pts.) - Information unknown (U) 	2	persist only 1 day and are insect pollinated". 10: flowering begins in late June and continues into the fall as long as conditions are favorable. 11: flowers June to September	5,10,11
<p>8. Dispersal Ability</p> <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.) - Information unknown (U) 	3	4: " a single field bindweed plant can spread radially more than 10 feet in a growing season"; 9: species can disperse along waterways.	4,5,9
<p>9. Generation Time</p> <ul style="list-style-type: none"> - 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	5: "field bindweed seldom sets seed during the 1st year of growth, although plants grown in the greenhouse will flower within 6 weeks of emergence "	5
<p>10. Establishment</p> <ul style="list-style-type: none"> - 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	7: very aggressive weed in North America. 8: Roots are extensive and can reach as much as 9 m underground and 6 m deep.	4,5,7,8,10
Step II: Ecological Importance			
<p>11. Impact on Ecosystem Processes</p> <ul style="list-style-type: none"> - 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.) 	3	5,6: Can alter the water content in soil up to 24 inches deep	5,6
<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		
<p>13. Impact on Native Animals</p> <ul style="list-style-type: none"> - no known negative impact on animals (0 pts.) 			

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Score Notes References

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

0

8: provides a breeding site for insects attacking adjacent crops and serves as an alternative host for viruses that cause plant diseases [see references].

8

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

"One plant is able to reduce the available soil moisture in the top 24 inches (60 cm) of soil below the "wilting point". 8: provides a breeding site for insects attacking adjacent crops and serves as an alternative host for viruses that cause plant diseases [see references].

5,6,8

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

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.)

3

6

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.)

1

Because of vegetative reproduction and extensive root system and persistence

4,5,6

- 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.

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+ = 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

5: Forestlands and grasslands.
7: Many agricultural fields, 8: Maize and cereal fields and vineyards. 10: cultivated fields, pastures, gardens and lawns, roadsides and railways, and in waste places.

5,7,8,10

Total Score:

42

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