### Ohio Invasive Plant Assessment Protocol - 2015

**Directions:** Place an “X” in the Score column next to the selected answer to each of the 18 questions.

<table>
<thead>
<tr>
<th>Step I</th>
<th>Step II: Invasion Status</th>
</tr>
</thead>
</table>
| 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. | **Step I Outcome:** Invasive  
**Step II Score:** 58  
**Step II Outcome:** Invasive

| 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?**  
Yes. Place on invasive plant list, no further investigation needed. **STOP**  
No. Continue on to question 3. | **Notes:** Species is in all but one county in Ohio, but information regarding density of stands is lacking.  
**References:** 7

| 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 | Upon completion of Step II, this question should be answered in the affirmative  
| No | See Step II answers

| 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?**  
Yes | **Notes:** IN, WV (Moderately invasive species)  
**References:** 3, 5

**Step II: Biological Characters**

| 5. **Vegetative Reproduction** |
| **Notes:** Smooth brome has variable germination rates from seed.  
**References:** 13, 14, 15, 20, 21

| 6. **Sexual Reproduction** |

| 7. **Family Name:** Poaceae  
| **Common Name:** Smooth bromegrass  
**Step I Outcome:** Invasive  
**Step II Score:** 58  
**Step II Outcome:** Invasive  
**Team Score:** | **References:** 9, 12, 14, 15, 20, 21

---

**Notes:**  
- A plant is considered invasive if the score is 7 or more in Step II.  
- If the score is 6 or less, the plant is not considered invasive and further investigation is warranted.  
- If the score is 7 or more, the plant is placed on the invasive plant list and further investigation is needed.  
- If the score is 5 or less, the plant is not considered invasive and no further investigation is needed.
### Step II

#### 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 (>1 km) (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)

#### 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.)
- Information unknown (U)

#### 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.)
- Information lacking (this species may impact Royal Catchfly in OH but citation is needed.)

#### 13. Impact on Native Animals
- no known negative impact on animals (0 pts.)
- 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.)

---

### Step II: Ecological Importance

#### 8: alters nitrogen cycling and carbon storage, lower plant diversity, and shift seasonal forage production. 10: alters soil microbial communities. 13: "smooth brome (Bromus inermis Leyss.), a Eurasian perennial threatening the structure and function of native prairie remnants". The increased litter created by smooth brome affects the availability of mineral resources, light and water in prairie sites.

#### 9: most seeds fall within a meter of parent plant, but can seeds can be transported by water, allowing for moderate potential for long-distance seed dispersal. 15: "can be spread by wind, water, birds and mammals”. Species is planted for erosion control and forage. 20: Seeds are wind dispersed, but may not disperse beyond several meters from invading clones; seeds may also attach to animal fur.

#### 10: smooth brome needs fertile soils to persist, and is more prevalent in moderate to highly disturbed areas.

#### 11: smooth brome ranges between 2.6 and 75.8%.

21: Reproduces sexually through outcrossed wind pollination and clonally through an underground rhizome.
- 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 areas 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
Fossilized: Floodplain forest, hemlock-hardwood forest, mixed mesophytic forest, beech-maple forest, oak-maple forest, oak-hickory forest.

Grasslands: Alva*, beach-dune community*, bur oak savanna*, slough-grass-bluejoint prairie*, sand barrens*, big bluestem prairie, little bluestem prairie (xeric

Wetlands: Bog*, fen*, beargrass-wetland 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 ODNR’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.)

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Assessment Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-34</td>
<td>Not Known to be Invasive</td>
</tr>
<tr>
<td>35-44</td>
<td>Pending Further Review</td>
</tr>
<tr>
<td>45-80</td>
<td>Invasive</td>
</tr>
</tbody>
</table>

| Total Score: 58 | Number of Unknowns: 0 | Outcome: Invasive |

12: "reduces grassland plant diversity by up to 70%" and suppresses growth of the forb Solidago canadensis L.
16: is able to "exclude virtually all other species, forming dense monocultures";
18: reduces growth of native prairie cordgrass, Spartina pectinata, in eastern North Dakota.
20: Species often escapes and poses threat to the biodiversity of revegetated and natural areas.

- Impact on Species Selection
- "Invasive pending further review" (0 pts.)