

## Invasive Species Impact and Prevention/Early Action Assessment Tool

| Species/Guild Name:                    |              |                  |              |
|--|--------------|------------------|--------------|
| Through the Gate?                      | Here         | Near             | Far          |
| <b><u>Summary of Scores</u></b>        |              |                  |              |
|  |              | <b>Potential</b> |              |
|  |              | <b>Max.</b>      | <b>Score</b> |
| Ecological Impacts                     |              | 40               | _____        |
| Economic Impacts                       |              | 40               | _____        |
| Human Health Impacts                   |              | 10               | _____        |
| Invasive Potential                     |              | 33               | _____        |
| Difficulty of Control                  |              | 10               | _____        |
|  | TOTAL IMPACT | 133              | _____        |
| Feasibility of Prevention/Early Action |              | 50               | _____        |
| Number of 'Unknown' Scores Recorded:   |              |                  |              |
| Level of Certainty in Assessment:      |              |                  |              |
|  | High         | Medium           | Low          |

Invasive species – plants, animals, insects, and pathogens – are a threat to Washington’s environment and economy, exacting a high price for their presence. These biological invaders can produce serious, often irreversible effects on our natural resources and natural resource-based industries; they may also harm the health of humans and livestock. While not all non-native species have aggressive or harmful traits, the sheer number of these species coming through our gates increases the risk of significant adverse impacts. With limited resources available to manage this problem, agencies and stakeholders must be strategic in their approach.

In response to this increasing threat, the Washington Invasive Species Council has developed a ranking system to evaluate the impacts and potential invasiveness of invasive species to our natural areas, natural resource-based industries, and public health. This ranking system has been designed to be a robust and transparent procedure to aid the Council in (1) **identifying the most problematic invasive species in or near to the state** and (2) **prioritizing Council actions**. We created an impact assessment process by incorporating components from other assessment models (e.g., Invasiveness Ranking System for Non-native Plants in Alaska, California Invasive Plant Inventory), in which species are ranked by a series of questions in five broad categories: ecological impacts, economic impacts, human health impacts, invasive potential, and difficulty of control. In addition, in keeping with the Council’s strategic focus on prevention and early detection and rapid response as identified in *Invaders at the Gate*, we have included a separate assessment of how feasible it would be for Washington state agencies to take preventive measures or be effective with early action for a species.

The first three sections of the impact assessment pertain to the severity of a species’ potential or actual impact on the natural environment, natural-resource based industries, and human health. These impacts may have been observed occurring in Washington or, if not yet here, in another state or region. The Invasive Potential section focuses on a species’ biological characteristics associated with its potential to disperse, spread, and flourish into and within a new area. The questions in this section provide a measure of a species’ potential to be invasive. The fifth section, Difficulty of Control, measures the financial and human investment needed to control a species. **A higher total impact score corresponds to a greater detrimental impact caused by a species.**

The second part of the assessment, the Current Ability to Prevent/Take Early Action section, asks questions related to entry and transport pathways, current distribution, and policy and outreach measures already in place to facilitate efforts to conduct prevention measures or an effective rapid response. **A higher score for Current Ability to**

**Prevent/Take Early Action corresponds to a greater likelihood of Washington state agencies being able to effectively implement prevention measures or conduct early action on a species.**

For most questions, scores range from 0 to 10 points. This numeric spread was adapted from Alaska's ranking system and chosen to highlight relative differences among species. Any score of 'unknown' is given a numeric score of 1 and incorporated into the overall score. The number of unknown responses are recorded and used to determine the level of certainty in the assessment (i.e., high, medium, low).

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**WORKSHEET**

**IS IT THROUGH THE GATE?**

- Here Species has established populations in Washington.
- Near Species has established populations in western U.S. region and similar habitat exists in Washington or species has been identified entering Washington through pathways but is not yet established.
- Far Species has established populations in areas outside of western U.S. region that have climate conditions similar to Washington.

**IMPACTS**

A score of 'unknown' will be given a numeric score of 1.

**1. \_\_\_\_\_ ECOLOGICAL IMPACT**

\_\_\_\_\_ Impact on ecosystem processes

- A. No impact on ecosystem processes. 0
- B. Influences ecosystem processes to a minor degree (e.g., has a perceivable but mild influence on soil nutrient availability). 3
- C. Causes significant alteration of ecosystem processes (e.g., increases sedimentation rates along streams or coasts, reduces areas of open water important to waterfowl, alters water chemistry, alters rate of water retention, reduces ecosystem productivity). 7
- D. Causes major, possibly irreversible, alteration or disruption of ecosystem processes (e.g., alters geomorphology, hydrology, or fire frequency; fixes substantial levels of nitrogen in the soil which favors non-native species). 10
- U. Unknown

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Impact on community composition, structure, and interactions

- A. No impact on community composition, structure, and interactions. 0
- B. Influences community composition, structure, and interactions (e.g., reduces the number of individuals in one or more native species). 3
- C. Causes significant alteration of community composition, structure, and interactions (e.g., produces a significant reduction in the population size of one or more native species). 7
- D. Causes major alteration in community composition, structure, and interactions (e.g., forms a complete monotype, results in the extirpation of one or more native species reducing biodiversity or changing composition towards exotic species). 10
- U. Unknown

Comments: \_\_\_\_\_

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|       |   |    |
|-------|---|----|
| _____ | Impact on genetic integrity of native species/potential for hybridization   |    |
|       | A. No impact on genetic integrity of native species/no potential for hybridization.   | 0  |
|       | B. Known to hybridize with one or more native species and produce sterile offspring that lower the reproductive output of native species. | 5  |
|       | C. Known to hybridize with one or more native species and produce fertile offspring that can outcompete native species.                   | 10 |
|       | U. Unknown  |    |

Comments: \_\_\_\_\_  
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|       |   |    |
|-------|---|----|
| _____ | Impact on federal or state species of concern (SOC) or high-value/rare ecological communities as defined by the Washington Natural Heritage Program |    |
|       | A. No impact on SOC or high-value/rare ecological communities.  | 0  |
|       | B. Causes detrimental impact on SOC species or high-value/rare communities.   | 5  |
|       | C. Causes extirpation of one or more SOC species or eradication of a high-quality/rare ecological community.  | 10 |
|       | U. Unknown  |    |

Comments: \_\_\_\_\_  
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**2. \_\_\_\_\_ ECONOMIC IMPACT**

|       |  |    |
|-------|--|----|
| _____ | Impact on agricultural/aquaculture industry  |    |
|       | A. No impact on agriculture or aquaculture.  | 0  |
|       | B. Causes minor impact on agriculture or aquaculture (e.g., somewhat reduced production and crop yields, reduced forage for livestock).  | 3  |
|       | C. Causes significant impact on agriculture or aquaculture (e.g., major reduction in production and crop yields, loss of livestock, loss of markets by contaminants, genetic integrity of crop species, damage to water diversion system). | 7  |
|       | D. Potential to shut-down portions of the industry (could be due to regulatory measure).   | 10 |
|       | U. Unknown   |    |

Comments: \_\_\_\_\_  
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|       |   |    |
|-------|---|----|
| _____ | Impact on forest products industry  |    |
|       | A. No impact to forest products industry.   | 0  |
|       | B. Causes minor impact to forest products industry (e.g., somewhat reduced timber and other forest products yields, small increase in susceptibility to fire).              | 3  |
|       | C. Causes significant impact to forest products industry (e.g., major reduction in timber and other forest product yields, significant increase in susceptibility to fire). | 7  |
|       | D. Potential to shut-down portions of the industry (could be due to quarantine or other regulatory measure).  | 10 |
|       | U. Unknown  |    |

Comments: \_\_\_\_\_  
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\_\_\_\_\_ Impact on physical infrastructure

- A. No impact on physical infrastructure. 0
- B. Causes minor impact on physical infrastructure (e.g., minor damage and/or impediments to dams, roads, railways, fences, power lines, flood control ditches, aquaculture equipment). 3
- C. Causes significant impact on physical infrastructure (e.g., major damage and/or impediments to dams, roads, railways, power lines, aquaculture equipment). 7
- D. Potential to render parts of physical infrastructure unusable, replacement costs would be extreme. 10
- U. Unknown

Comments:

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\_\_\_\_\_ Impact on recreational sector

- A. No impact on recreational opportunities. 0
- B. Causes detrimental impact on recreational opportunities (e.g., diminished opportunities for camping, biking, hiking, boating, fishing/shellfish gathering, birding, hunting). 5
- C. Elimination of one or more recreational opportunities. 10
- U. Unknown

Comments:

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3. \_\_\_\_\_ **HUMAN HEALTH IMPACT**

- A. No impact on human health. 0
- B. Causes physical injury (e.g., thorns, shells of zebra mussel) or provides habitat for a disease vector or organism. 5
- C. Is a human disease vector or is a disease organism. May also cause individual mortality (e.g., accidental ingestion of poison hemlock, West Nile Virus). 10
- U. Unknown

Comments:

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4. \_\_\_\_\_ **INVASIVE POTENTIAL**

\_\_\_\_\_ Rate of spread with no management

- A. Does not occur – species does not spread within suitable habitat. 0
- B. Actual or potential slow rate of spread within suitable habitat. 3
- C. Actual or potential moderate rate of spread within suitable habitat. 7
- D. Actual or potential rapid rate of spread (doubling in < 10 years) within suitable habitat. 10
- U. Unknown

Comments:

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|       |   |    |
|-------|---|----|
| _____ | Natural ability for dispersal beyond parent population  |    |
|       | A. Does not occur.  | 0  |
|       | B. Infrequent or inefficient dispersal (occurs occasionally despite lack of adaptations).   | 3  |
|       | C. Efficient dispersal occurs but population remains within a natural boundary (such as a waterbody or natural area surrounded by human development).                           | 7  |
|       | D. Numerous opportunities for dispersal (species has ability to move across natural barriers or has adaptations such as wings or hooked fruit-coats that facilitate dispersal). | 10 |
|       | U. Unknown  |    |

Comments: \_\_\_\_\_  
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|       |   |    |
|-------|---|----|
| _____ | Habitat specialization (How far-reaching can infestation become/potential distribution)                 |    |
|       | A. Highly specialized habitat requirements (species is found in only one ecotype or ecological niche).  | 0  |
|       | B. Moderately specialized habitat requirements (species is found in 2-3 ecotypes or ecological niches). | 5  |
|       | C. General habitat requirements (species occupies a wide range of ecotypes or ecological niches).       | 10 |
|       | U. Unknown  |    |

Comments: \_\_\_\_\_  
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 \_\_\_\_\_

|       |                                     |   |
|-------|-------------------------------------|---|
| _____ | Other species in the genus invasive |   |
|       | A. No.                              | 0 |
|       | B. Yes.                             | 3 |
|       | U. Unknown                          |   |

Comments: \_\_\_\_\_  
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**5. \_\_\_\_\_ DIFFICULTY OF CONTROL – LEVEL OF EFFORT REQUIRED**

|  |  |    |
|--|--|----|
|  | A. Management is not required (e.g., species does not persist).  | 0  |
|  | B. Management is relatively easy and inexpensive; requires a minor investment in human and financial resources.            | 3  |
|  | C. Management requires a major short-term investment of human and financial resources, or a moderate long-term investment. | 7  |
|  | D. Management requires a major, long-term investment of human and financial resources.                                     | 10 |
|  | U. Unknown   |    |

Comments: \_\_\_\_\_  
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**Total Impact Score \_\_\_\_\_**

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**CURRENT ABILITY TO PREVENT/TAKE EARLY ACTION**

- \_\_\_\_\_ Potential for entry into and transport within Washington via human activities (both directly and indirectly – possible mechanisms include commercial sales, use as forage/ revegetation, aquaculture, biological supply, horticulture, transport on boats, etc.)
- A. High - numerous pathways for entry into and transport within Washington exist and species is routinely identified traveling on these pathways. 0
  - B. Moderate - some entry into and transport pathways within Washington exist and species is occasionally identified on these pathways. 3
  - C. Low - entry and transport pathways are infrequent and inefficient. 7
  - D. Does not occur. 10
  - U. Unknown

Comments:

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- \_\_\_\_\_ Regulatory barriers to prevent entry into and transport within Washington
- A. No or minor regulatory restrictions on organisms/host and no surveillance. 0
  - B. No or minor regulatory restrictions on organisms/host with surveillance. 3
  - C. Regulatory oversight on organisms/host with restricted trade. 5
  - D. Trade and/or transport of organisms/hosts illegal. 7
  - E. Strict prohibition on organisms/host and some infrastructure for interception. 10
  - U. Unknown

Comments:

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- \_\_\_\_\_ Current distribution in Washington
- A. Widely distributed throughout state. 0
  - B. Regionally distributed. 3
  - C. More than one infestation known spread within one or multiple watersheds. 5
  - D. Isolated infestation, 1-3 known locations encompassing fewer than 50 acres. 7
  - E. Not present. 10
  - U. Unknown

Comments:

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- \_\_\_\_\_ Degree to which control is mandated
- A. No regulatory barriers, voluntary control may or may not be encouraged. 0
  - B. Mandatory control at local level. 3
  - C. Mandatory containment of species where regionally established and mandatory control of species where not yet established. 7
  - D. Mandatory eradication of species. 10
  - U. Unknown

Comments:

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\_\_\_\_\_ **Current efforts for education and outreach**

- A. No education and outreach efforts are undertaken for this species. 0
- B. Some education materials exist and passive outreach occurs (e.g., signs posted at public access points, information cards made available at public events). 3
- C. Education materials exist and outreach occurs sporadically and/or after a new species or infestation is discovered. 7
- D. Education and outreach materials and programs exist and are actively provided to targeted audiences before the species or a new infestation is discovered. 10
- U. Unknown

Comments: \_\_\_\_\_

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\_\_\_\_\_ **Total Current Ability to Prevent/Take Early Action Score**