

Washington Invasive Ranking System

Washington Natural Heritage Program

Amorpha fruticosa (Indigobush)

Assessed by

Emily Stevenson (Program Coordinator, Skamania County Noxious Weed Control Program)
Walter Fertig (Collections Manager, Marion Ownbey Herbarium, Washington State University)
29 December 2023 (WIRS Version 1.5)

Ecological Impact Rank: **Moderate** (67)

Confidence: **Moderate** (58)

Management Difficulty Rank: Moderate (54)

Confidence: Moderate (50)

Biological Characteristics of Invasiveness: High (76)

Confidence: High (71)

Concern Related to Distribution and Abundance: Moderate (64)

Confidence: High (70)

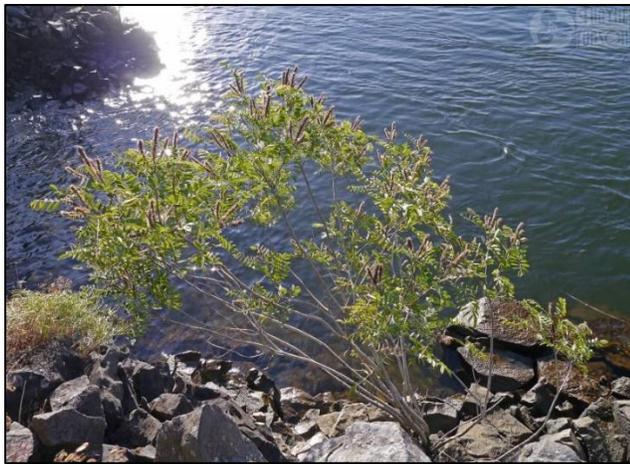


Photo Credit: Thayne Tuason 2013, used under Creative Commons license (Burke Herbarium, University of Washington, 2024).

Ranking Notes

Amorpha fruticosa was assessed by multiple individuals. Range of assessor ratings is provided in parentheses following the final assigned rating.

Legal Listings

[Washington State Weed Board](#): Class B, Washington State quarantine list

[Washington Invasive Species Council](#): No

Section 1: Distribution and Abundance

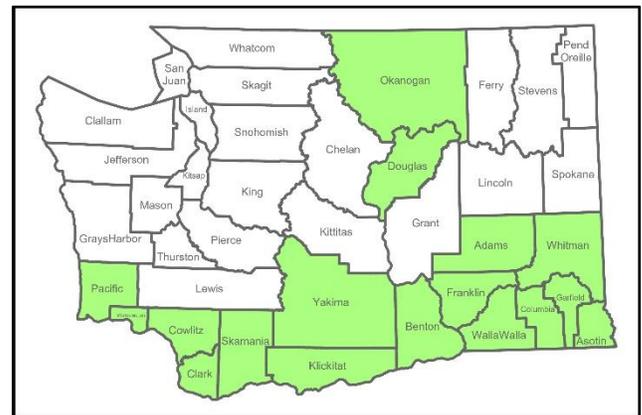


Figure 1. Distribution of counties where *Amorpha fruticosa* has been documented in Washington State (CPNWH, 2024; EDDMapS, 2024; iNaturalist Community, 2024).

Q1: Current Range Size in Washington

Rating: Moderate

Confidence: High

Amorpha fruticosa is known from 16 of 39 counties and 4 of 9 ecoregions. Most populations are currently along the Snake River and the Columbia River (downstream of the Snake River confluence). Two recent discoveries (since 2019) in Douglas and Okanogan counties greatly expand its potential range

(CPNWH, 2024; EDDMapS, 2024; iNaturalist Community, 2024).

Source: Professional expertise, Herbarium records and other observations

Q2: Current Trend in Total Range

Rating: Moderate

Confidence: High

New populations have become established in riparian habitats along the Columbia River and its tributaries. There is high potential for this species to spread to similar habitats along the Yakima, Spokane, and Grand Ronde rivers. The 2019 Okanogan County site is troubling because it is not a direct tributary of the Columbia River, suggesting the species could spread into other bodies of water (and might also spread into Canada) (CPNWH, 2024; EDDMapS, 2024; iNaturalist Community, 2024).

Source: Professional expertise, Herbarium records and other observations

Q3: Proportion of Potential Range Currently Unoccupied

Rating: Moderate

Confidence: Moderate

Establishment of *Amorpha fruticosa* in Grant, Kittitas, Lincoln, and/or Spokane counties seems likely, though it may occur only along major rivers or low-elevation riparian habitats.

Source: Professional expertise

Q4: Local Range Expansion or Change in Abundance

Rating: Moderate

Confidence: Moderate

This species seems to be under-collected, so the growth in collections in herbaria over the past decade may not be a good proxy. There are over 50 observations on iNaturalist in the past three years, mostly in-filling the known distribution based on herbarium vouchers. Casual observers avoid wetland species and access issues on the Columbia suggest that current observation data may be under-reporting

its distribution and spread (CPNWH, 2024; EDDMapS, 2024; iNaturalist Community, 2024).

Source: Professional expertise, Herbarium records and other observations

Q5: Diversity of Ecosystems Invaded

Ecosystem types: Emergent Open Wetland

Rating: Low

Confidence: Moderate

Ecosystem information can be found in herbarium and citizen science observation records (CPNWH, 2024; iNaturalist Community, 2024).

Source: Professional expertise, Herbarium records and other observations

Section 2: Biological Characteristics

Q6: Aggressive Mode of Reproduction

Rating: Yes

Confidence: High

DiTomaso et al. (2013) and NWCB (2015) suggest that this species has an aggressive mode of reproduction.

Source: Informal publication, Professional expertise

Q7: Innate Potential for Long-Distance Dispersal

Rating: Yes

Confidence: High

Amorpha fruticosa's seed pods can float long distances. To date, spread in Washington has been mostly downriver on the Columbia from initial points of entry along the Snake and Walla Walla rivers. Establishment of new populations upriver in Douglas County and non-riverine sites in Okanogan County may be stepping stones for establishment elsewhere in central Washington. Recent (2022-2023) discoveries of populations in the Idaho panhandle (see iNaturalist) suggest a potential downstream invasion pathway in Northeastern Washington (Grabić et al., 2022).

Source: Published research, iNaturalist observations

Q8: Potential to be Spread by Human Activities

Rating: Yes

Confidence: High

Though on the noxious weed list in the Pacific Northwest, *Amorpha fruticosa* is sold and endorsed for ornamental use elsewhere in the United States. Water sports enthusiasts (boaters, fishers) could transport seed or fruit between bodies of water (NWCB, 2015).

Source: Informal publication, Professional expertise

Q9: Allelopathy

Rating: Yes

Confidence: Moderate

Evidence of allelopathy is mixed—*Amorpha fruticosa* is toxic to some plants and potentially stimulates others (Grabčić et al., 2022). The greater impact from this species is probably from crowding out other species in competition for space and resources.

Source: Published research

Q10: Competitive for Limiting Abiotic Factors

Rating: Yes

Confidence: High

Information on competitive abilities can be found in Grabčić et al. (2022). This species is a known nitrogen-fixer (Plants for a Future, 2012).

Source: Published research, Informal publication

Q11: Growth Form

Rating: Yes

Confidence: High

Information on growth form is available in the NWCB (2015) report.

Source: Informal publication, Professional expertise

Q12: Germination Requirements

Rating: Yes

Confidence: High

Amorpha fruticosa is pre-adapted to exploit natural or human disturbances to become established and spread (NWCB, 2015).

Source: Informal publication, Professional expertise

Q13: Invasiveness of Other Plants in Genus

Rating: No

Confidence: High

Amorpha fruticosa is the only *Amorpha* species known from Washington state (Hitchcock & Cronquist, 2018). No documentation was found regarding the invasiveness of other *Amorpha* species in other locales.

Source: Species treatment

Q14: Shade Tolerance

Rating: Not Rated

Confidence: Not Rated

This species may have some degree of shade tolerance.

Source: Professional expertise

Q15: Disturbance Tolerance

Rating: No

Confidence: Low

Other shrub species along the Columbia are also adapted to flooding disturbance. *Amorpha fruticosa*'s competitive advantage over other species is likely not due to relative disturbance tolerance. Perhaps this species lacks a significant herbivore at the sapling stage, is more fecund, or is just more aggressive once established.

Source: Professional Expertise

Q16: Propagule Persistence

Rating: Not Rated

Confidence: Not Rated

Source:

Q17: Palatability

Rating: No, plant is palatable

Confidence: High

This plant is palatable (NWCB, 2015).

Source: Informal publication

Section 3: Ecological Impact

Q18: Impact on Ecosystem Abiotic Processes

Abiotic Processes: Geomorphology, Nutrient dynamics, Light availability

Rating: Moderate

Confidence: High

Amorpha fruticosa produces dense thickets that can alter ecosystem processes by stabilizing soil (reducing erosion), adding more nitrogen to the system (as a nitrogen fixer), and shading out competing native vegetation (Grabíć et al., 2022).

Source: Published research

Q19: Impact on Ecosystem Structure

Rating: Low (range Low - Moderate)

Confidence: Moderate (range Low - Moderate)

Amorpha fruticosa is the dominant shoreline shrub along stretches of the Columbia and Snake Rivers. It seems likely that this species is replacing native plants in these systems. These systems have been majorly altered with the presence of dams. The main change in ecosystem structure is that stands of brush become denser and more shaded than they might otherwise be, with impacts on light-sensitive species. Secondary effects also occur from increases in litter, increase in available nitrogen, and bank stabilization (NWCB, 2015).

Source: Informal publication, Professional expertise

Q20: Impact on Ecosystem Composition

Rating: High

Confidence: Moderate (range Low - High)

Amorpha fruticosa likely reduces species richness where it occurs. However, arguably, regulation of the natural flow of the Columbia and competition from other invasive plant species (such as reed canarygrass) has had a more significant impact than *A. fruticosa* (NWCB, 2015).

Source: Informal publication, Professional expertise

Q21: Impact on Particular Native Species

Rating: Unknown

Confidence: Not Rated

Several rare plant species of the Columbia River drainage may be negatively impacted from loss of riverine habitat due to competition from *Amorpha fruticosa*. A partial list includes *Rorippa columbiae*, *Artemisia campestris* var. *wormskioldii*, *Astragalus riparius*, *Ammannia robusta*, *Astragalus kentrophyta* var. *douglasii* (TX/SX), *Bergia texana* (SX), *Eleocharis coloradoensis*, *Schizachyrium scoparium*, and *Spiranthes diluvialis* (WNHP, 2023). However, no information was provided on whether the impact is specific to these species, or part of the larger effect of *A. fruticosa* on the co-occurring plant community.

Source: Informal publication, Professional expertise

Q22: Observed Ability to Invade Undisturbed Ecosystems

Rating: Moderate

Confidence: Moderate

Source: Professional expertise

Q23: Observed Ability to Invade Naturally Disturbed Ecosystems

Rating: Yes

Confidence: High

Information on ability to invade naturally disturbed ecosystems can be found in the NWCB (2015) report for this species.

Source: Informal publication, Professional expertise

Section 4: Management Difficulty

Q24: General Management Difficulty

Rating: Moderate

Confidence: Moderate

The Columbia Land Trust had success containing an population of *Amorpha fruticosa* at Pierce Island through a 2–3-year project of digging, cutting, and targeted application of herbicide. Ongoing vigilance is necessary to keep new plants from becoming established, and there is no lack of seed source from upstream, making real control a regional endeavor by multiple partners (NWCB, 2015).

Source: Informal publication, Professional expertise

Q25: Minimum Time Commitment

Rating: Moderate

Confidence: Moderate

The Columbia Land Trust had success containing an population of *Amorpha fruticosa* at Pierce Island through a 2–3-year project of digging, cutting, and targeted application of herbicide (NWCB, 2015). A reasonable estimate of minimum time commitment is likely 2–5 years. Seed viability could affect this estimate, however.

Source: Informal publication, Professional expertise

Q26: Impacts of Management on Native Species

Rating: Low

Confidence: High

Impacts on co-occurring native species depend on the population and treatment history. Initial treatments typically occur in monocultures that are 100% *Amorpha fruticosa*. Follow up would be spot treatments in a more diverse vegetation community.

Source: Professional expertise

Q27: Accessibility of Invaded Areas

Rating: Moderate

Confidence: Moderate

Physically reaching populations of *Amorpha fruticosa* on the Columbia and Snake Rivers involves several logistical challenges. Gaining permission for access, especially across private lands, is likely also an obstacle for access of populations for this species.

Source: Professional expertise

Q28: Sociopolitical Implications of Management

Rating: Moderate/Low

Confidence: Low

Amorpha fruticosa occurs along a waterway. This species is also full of bees when in bloom. However, it is also crowding out willows, which are an important early food source for native bees. Objections to treatment could include objections to herbicide use, particularly near water, and the perceived importance of this species for pollinators.

Source: Professional expertise

Additional Comments

None

References

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