Washington Invasive Ranking System

Washington Natural Heritage Program

Potamogeton crispus (Curly-leaf Pondweed)

Assessed by
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31 May 2024 (WIRS Version 1.5)

Ecological Impact Rank: **High** (73) Confidence: **Moderate** (42)

Management Difficulty Rank: Not Rated	Confidence: Not Rated
Biological Characteristics of Invasiveness: Not Rated	Confidence: Not Rated
Concern Related to Distribution and Abundance: High (94)	Confidence: Moderate (60)

Photo Credit: Christopher J. Earle 2023, used under Creative Commons license (iNaturalist Community, 2024).

Ranking Notes

Rapid assessment, only Distribution and Abundance and Ecological Impacts are rated.

Legal Listings

Washington State Weed Board: Class C

Washington Invasive Species Council: No

Section 1: Distribution and Abundance

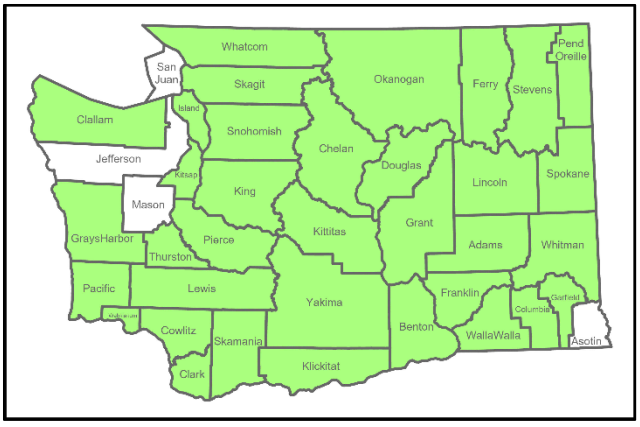

Figure 1. Distribution of counties where *Potamogeton crispus* has been documented in Washington State (WSDA, 2018; CPNWH, 2023; EDDMapS, 2023; iNaturalist Contributors, 2023).

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

Q1: Current Range Size in Washington

Rating: High

Confidence: High

Potamogeton crispus is documented in 90% of Washington Counties (WSDA 2018; CPNWH, 2023; EDDMapS, 2023; iNaturalist Contributors, 2023; Washington State Department of Ecology, 2023).

Source: Professional expertise, Herbarium records and other observations

Q2: Current Trend in Total Range

Rating: High

Confidence: Moderate

New discoveries may be of populations that have already been established for some time (Washington State Department of Ecology, 2023).

Source: Professional expertise, Washington State Department of Ecology unpublished data

Q3: Proportion of Potential Range Currently Unoccupied

Rating: High

Confidence: Moderate

There are likely many suitable water bodies where this plant has yet to establish (Tamayo & Olden, 2014).

Source: Published research, Professional expertise

Q4: Local Range Expansion or Change in Abundance

Rating: Unknown

Confidence: Not Rated

There has not been extensive study or reporting on this species in Washington to estimate this with certainty.

Source: Professional expertise

Q5: Diversity of Ecosystems Invaded

Ecosystem types: Emergent Open Wetland, Shallow Water Wetland (Aquatic)

Rating: Low

Confidence: High

This species is a submersed aquatic plant and thus limited in its ability to colonize many different habitats (Bolduan et al., 1994).

Source: Published Research, Professional Expertise

Section 2: Biological Characteristics

Q6: Aggressive Mode of Reproduction

Rating: Not Rated

Confidence: Not Rated

Source:

Q7: Innate Potential for Long-Distance Dispersal

Rating: Not Rated

Confidence: Not Rated

Source:

Q8: Potential to be Spread by Human Activities

Rating: Not Rated

Confidence: Not Rated

Source:

Q9: Allelopathy

Rating: Not Rated

Confidence: Not Rated

Source:

Q10: Competitive for Limiting Abiotic Factors

Rating: Not Rated

Confidence: Not Rated

Source:

Q11: Growth Form

Rating: Not Rated

Confidence: Not Rated

Source:

Q12: Germination Requirements

Rating: Not Rated

Confidence: Not Rated

Source:

Q13: Invasiveness of Other Plants in Genus

Rating: Not Rated

Confidence: Not Rated

Source:

Q14: Shade Tolerance

Rating: Not Rated

Confidence: Not Rated

Source

Q15: Disturbance Tolerance

Rating: Not Rated

Confidence: Not Rated

Source:

Q16: Propagule Persistence

Rating: Not Rated

Confidence: Not Rated

Source:

Q17: Palatability

Rating: Not Rated

Confidence: Not Rated

Source:

Section 3: Ecological Impact

Q18: Impact on Ecosystem Abiotic Processes

Abiotic Processes: Nutrient dynamics, Light availability

Rating: Moderate

Confidence: Low

This species has been documented as having a high impact in other regions of North America (Nichols & Shaw, 1986; Bolduan et al., 1994; Woolf & Madsen, 2003), but these impacts have not yet been thoroughly evaluated in Washington. At least in the warmer regions of western and southern Washington, its impacts do not seem as severe as other areas of North America.

In cooler climates, curly-leaf pondweed grows rapidly in the winter, under the ice, and rapidly dies off as the water warms. This rapid die-off can cause substantial reductions in water clarity and fuel algae growth (Nichols & Shaw, 1986; Bolduan et al., 1994; Woolf & Madsen, 2003). The extent to which this occurs in Washington lakes, however, is unknown.

Source: Published research, Professional expertise

Q19: Impact on Ecosystem Structure

Rating: Moderate

Confidence: Moderate

The species can grow very densely and top out at the water's surface, creating a canopy where one did not exist before. In cooler climates where its growth occurs before other species, it creates a new early-season layer of plants within the water column that would not have occurred with the native flora (Nichols & Shaw, 1986; Bolduan et al., 1994; Woolf & Madsen, 2003).

Source: Published research, Professional expertise

Q20: Impact on Ecosystem Composition

Rating: Low

Confidence: Low

Because of its early-season phenology in cooler climates, it doesn't directly compete with native species for very long. Occurances here in Washington and the Pacific Northwest do not appear to cause reductions in native species richness, but this has not been tested. Based on its ability to grow densely and rapidly, it is likely at least impacting the abundance of native species in colonized waterbodies (Bolduan et al., 1994; Verhoeven et al., 2020).

Source: Published Research, Professional Expertise

Q21: Impact on Particular Native Species

Rating: Unknown

Confidence: Not Rated

The assessor was not aware of impacts to particular native species.

Source: Professional expertise

Q22: Observed Ability to Invade Undisturbed Ecosystems

Rating: High

Confidence: High

This plant readily spreads to waterbodies that are otherwise undisturbed (Washington State Department of Ecology, 2023).

Source: Professional expertise, Washington State Department of Ecology data

Q23: Observed Ability to Invade Naturally Disturbed Ecosystems

Rating: Yes

Confidence: High

This plant demonstrates an ability to invade naturally disturbed ecosystems (Bolduan et al., 1994).

Source: Published research, Professional expertise

Section 4: Management Difficulty

Q24: General Management Difficulty

Rating: Not Rated

Confidence: Not Rated

Source:

Q25: Minimum Time Commitment

Rating: Not Rated

Confidence: Not Rated

Source:

Q26: Impacts of Management on Native Species

Rating: Not Rated

Confidence: Not Rated

Source:

Q27: Inaccessibility of Invaded Areas

Rating: Not Rated

Confidence: Not Rated

Source:

Q28: Sociopolitical Implications of Management

Rating: Not Rated

Confidence: Not Rated

Source: Not Rated

Additional Comments

None

References

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