

# Washington Invasive Ranking System

Washington Natural Heritage Program

## *Utricularia inflata* (Swollen Bladderwort)

Assessed by

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Ecological Impact Rank: **High** (79)

Confidence: **Low** (25)

Management Difficulty Rank: Moderate (67)

Confidence: Low (10)

Biological Characteristics of Invasiveness: High (78)

Confidence: Moderate (54)

Concern Related to Distribution and Abundance: Moderate (64)

Confidence: Moderate (60)



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### Ranking Notes

*Utricularia inflata*'s native range extends from Texas to the southeastern coastal plains and north to

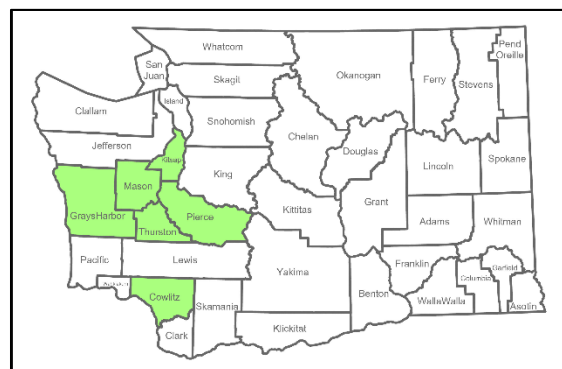
Delaware (Titus & Gris , 2009). It is introduced in Washington and the Northeastern U.S. (Urban & Dwyer, 2016). Little information was found regarding *U. inflata* populations in Washington, so most information on this species' invasiveness is from studies from New York.

### Legal Listings

[Washington State Weed Board](#): Washington State monitor list, Washington State quarantine list.

[Washington Invasive Species Council](#): No

### Section 1: Distribution and Abundance



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

### Q1: Current Range Size in Washington

Rating: Moderate

Confidence: Moderate

Herbarium and iNaturalist records of *Utricularia inflata* have been collected in 6 out of 39 counties in Washington state (15%) as of 2024 (CPNWH, 2024; EDDMapS, 2024; iNaturalist Community, 2024).

Source: Herbarium records and other observations

### Q2: Current Trend in Total Range

Rating: Moderate

Confidence: Moderate

*Utricularia inflata* is expanding its range in Washington. The earliest record for this species in the Consortium for Pacific Northwest Herbaria is from Kitsap County in 1980. Records were reported from Cowlitz, Mason, and Thurston counties by 1995, and from Pierce County in 2018 (CPNWH, 2024). A record from a Gray's Harbor County was reported in 2024 (iNaturalist Community, 2024).

Source: Herbarium records and other observations

### Q3: Proportion of Potential Range Currently Unoccupied

Rating: Moderate

Confidence: Moderate

The potential range for *Utricularia inflata* has not been modeled for Washington. Given habitat requirements, at minimum, this species can likely survive in all the counties west of the Cascades. Native *Utricularia* species are reported from all ecoregions in Washington, though they appear to be least abundant on the Columbia Plateau (CPNWH, 2024). This evidence suggests that a large portion of *Utricularia inflata*'s potential range is not yet invaded.

Source: Professional expertise, Herbarium records

### Q4: Local Range Expansion or Change in Abundance

Rating: Moderate

Confidence: Moderate

Quantitative data was not available regarding the increase in *Utricularia inflata* cover where it currently occurs in Washington. However, based on reported observations, abundance of this species appears to be increasing within the Puget Basin (CPNWH 2024; iNaturalist Community, 2024).

Source: Herbarium records and other observations

### Q5: Diversity of Ecosystems Invaded

Ecosystem Types: Shallow Water Wetland (Aquatic)

Rating: Low

Confidence: High

*Utricularia inflata* is a suspended aquatic plant limited to impounded freshwater environments. It occurs in ponds, lakes, swamps, sloughs, ditches, and canals (Crow, 2022). As a carnivorous plant, this species may be further limited to sunny, wet, and nutrient poor environments (Wiebush, 2022). In New York, this species is described as particularly problematic in oligotrophic (that is, deep, cold and clear) lakes (Titus & Gris , 2009). At least one study found that *U. inflata* was relatively robust to changes in pH, and is potentially capable of colonizing a wide variety of freshwater ecosystems (Titus & Urban, 2013).

Source: Published research, Informal publication, Flora of North America treatment

## Section 2: Biological Characteristics

### Q6: Aggressive Mode of Reproduction

Rating: Yes

Confidence: High

Even *Utricularia* species that do reproduce sexually (including *Utricularia inflata*) are more likely to reproduce vegetatively from plant fragments than from seed (Wiebush, 2022). *Utricularia inflata* fragments easily, and is capable of reproducing even from small fragments (Titus & Urban, 2013). A study of introduced populations of *Utricularia inflata* in New York (Urban & Dwyer, 2016) found that asexual reproduction in this species was more prolific than in the native *Utricularia vulgaris* (*U. vulgaris* is the most widespread native *Utricularia* in Washington (CPNWH, 2024)). Aggressive vegetative



reproduction contributes to the spread of this species in New York (Urban & Dwyer, 2016).

Source: Published research, Informal publication, herbarium records

**Q7: Innate Potential for Long-Distance Dispersal**

Rating: Yes

Confidence: High

Vegetative propagules are more effective dispersal agents than seeds in aquatic plants, traveling further and establishing more easily than do seeds (Urban & Dwyer, 2016). All *Utricularia* species disperse through plant fragments and turions (small storage organs that allow *Utricularia* species to overwinter in cold climates). *Utricularia* that reproduce sexually also disperse small buoyant seeds. Dispersal agents are wind, water, and animals, particularly waterfowl. Many species of *Utricularia* are widespread, suggesting the capability for long distance dispersal is somewhat common in this genus (Wiebush, 2022). *Utricularia inflata* is fairly buoyant, which, in combination with its unrooted habit increases the likelihood of long-distance dispersal (Urban & Dwyer, 2016). In New York, dispersal of *U. inflata* after initial introductions appear to be mostly via water, with populations spreading downstream (Titus & Urban, 2013).

Source: Published research, Informal publications

**Q8: Potential to be Spread by Human Activities**

Rating: Yes

Confidence: High

Fragments of *Utricularia inflata* can be transported from invaded waterways to new locations by boats and boat trailers (Urban & Dwyer, 2016). *Utricularia inflata* was likely introduced in western Washington as an ornamental or for mosquito control (Howard Morgan, 2011). Buying, selling, and transport of *U. inflata* is illegal in Washington (Washington State Legislature, 2021), but this species is for sale through several internet sources based outside of Washington.

Sources: Published research, Informal publication, Web search, Washington Administrative Code

**Q9: Allelopathy**

Rating: Unknown

Confidence: Not Rated

*Utricularia inflata* is included in a list of plant species that may be allelopathic to algae in one review (Emery-Butcher et al., 2020), but no primary sources discussed allelopathy in this species. Further research is needed.

Source: Published research

**Q10: Competitive for Limiting Abiotic Factors**

Rating: Yes

Confidence: Moderate

*Utricularia* species are adapted to sunny, low-nutrient habitats, gaining most of their nitrogen, phosphorus, and other nutrients via the small aquatic invertebrates they capture and digest in their underwater traps (Wiebush, 2022). Being able to supplement nutrients through carnivory is a competitive advantage in nutrient-poor habitats; increases in nutrient availability can reduce or erase the competitive advantages of carnivory in plants (Givnish et al., 1984).

*Utricularia* species overwinter in cold environments as storage organs called turions or winter buds (Silva et al., 2018).

Source: Published research, Informal publication

**Q11: Growth Form**

Rating: Yes

Confidence: High

Where it is found in Washington, *Utricularia inflata* is reported to form dense floating mats of vegetation (Smith, 2007). In New York, studies have shown that mats of *Utricularia inflata* can shade out native aquatic vegetation (Titus & Gris , 2009; Urban & Dwyer, 2016). Outcompeting other aquatic species for light may be *Utricularia inflata*'s main mechanism for invasion (Fleming & Dibble, 2015).

Source: Published research, Informal publication

### Q12: Germination Requirements

Rating: Not Rated

Confidence: Not Rated

*Utricularia inflata* is a floating, aquatic plant that does not root in the soil and is found in a limited number of ecosystem types.

Sources:

### Q13: Invasiveness of Other Plants in Genus

Rating: Yes

Confidence: Moderate

*Utricularia* is a diverse and widespread genus, represented by over 240 species, and making up 30% of carnivorous plant diversity (Wiebush, 2022). However, it appears very few of those species have been documented as invasive. *Utricularia gibba* is considered invasive in New Zealand (Compton et al., 2012) and Croatia (Piria et al., 2022). Introduced populations previously thought to be *Utricularia inflata* in Japan have recently been identified as *Utricularia* cf. *platensis*. *Utricularia platensis* originates from South America (Kadono et al., 2019).

Source: Published research, Informal publication

### Q14: Shade Tolerance

Rating: Low/Insignificant

Confidence: Moderate

No information was directly available on *Utricularia inflata*'s shade tolerance. However, carnivorous plants, including most *Utricularia* species, are generally found in sunny, wet, nutrient-poor environments (Givnish et al., 1984).

Source: Published research

### Q15: Disturbance Tolerance

Rating: No

Confidence: Moderate

No information was found on *Utricularia inflata*'s disturbance tolerance relative to co-occurring species. Increases in water turbidity, eutrophication and changes to hydrogeology are generally regarded as a

threat for aquatic *Utricularia* species (Wiebush, 2022). Studies done in New York, where *U. inflata* is also introduced, found that this species is most abundant in waters sheltered from waves and currents (Urban & Titus, 2010). This suggests that *U. inflata* may not have a markedly different disturbance tolerance than other co-occurring species.

Source: Published research, Informal publication

### Q16: Propagule Persistence

Rating: Unknown

Confidence: Not Rated

Aquatic *Utricularia* species produce turions, or winter buds, which are storage organs that allow these species to overwinter. Turions can also resist desiccation (Silva et al., 2018). However, no details were available on how long turions or other propagules might remain viable.

Source: Published research

### Q17: Palatability

Rating: No, plant is palatable

Confidence: Moderate

*Utricularia* species in Washington may be eaten by fish, muskrats, and waterfowl (Washington Department of Ecology, 2024). However, grazing is not a practical management technique for this aquatic plant.

Source: Informal publication

## Section 3: Ecological Impact

### Q18: Impact on Ecosystem Abiotic Processes

Abiotic Processes: Nutrient dynamics, Light availability, Chemistry

Rating: Moderate

Confidence: Low

Information on *Utricularia inflata* impacts to abiotic processes in Washington was not available. In New York, invasions of *U. inflata* change sedimentary nutrient cycling processes by extirpating native plant

species, in turn changing the proportion of oxygen, metals, and other nutrients in the water column (Titus & Urban, 2013). These changes to nutrient cycles and water chemistry are an indirect effect of this species' ability to outcompete other aquatic species for light (Urban et al., 2009; Urban & Titus, 2010). However, the persistence of *U. inflata* invasions and their long-term impacts are unknown (Titus & Gris , 2009).

Source: Published research

### **Q19: Impact on Ecosystem Structure**

Rating: Moderate

Confidence: Moderate

Information on *Utricularia inflata*'s ecosystem affects in Washington are limited. Studies of *U. inflata* invasions in New York found this species capable of shading out aquatic vegetation rooted in the substrate, resulting in cascading effects on nutrient and oxygen availability (Urban et al., 2009; Urban & Titus, 2010). At minimum, presence of *U. inflata* in Washington could result in loss of some vegetation layers in aquatic ecosystems.

Source: Published research

### **Q20: Impact on Ecosystem Composition**

Rating: Moderate

Confidence: Moderate

While no information was available from Washington, a study from New York comparing changes in aquatic vegetation from 1933–2000 found increases in *Utricularia inflata* corresponded with decreases in native aquatic vegetation. *Utricularia inflata* was the most abundant species found in the target systems by 2000. The authors attributed the majority of changes in community composition to *U. inflata*'s presence and abundance (Titus & Gris , 2009). Given *U. inflata*'s ability to shade out native species in other ecoregions, it seems likely that this species could have similar effects in Washington.

Source: Published research

### **Q21: Impact on Particular Native Species**

Rating: Unknown

Confidence: Not Rated

No impacts on particular native species in Washington were found in the literature search, but in the northeast, *Utricularia inflata* may be contributing to extirpation of some native aquatic plant species from lakes where it occurs (Urban & Dwyer, 2016). *Utricularia* species are also known to hybridize with each other (e.g. Wiebush, 2022) but no information was found on *U. inflata* hybridizing with native *Utricularia* species in Washington.

Source: Published research, Informal publication

### **Q22: Observed Ability to Invade Undisturbed Ecosystems**

Rating: High

Confidence: Moderate

Disturbance responses were not discussed in most of the literature available on *Utricularia inflata*. However, based on descriptions of *U. inflata* invasions in New York, it seems likely that this species is capable of invading undisturbed ecosystems when the habitat is suitable. Other ecological factors are likely more important for determining where this species is capable of invading an ecosystem (Titus & Gris , 2009; Urban et al., 2009; Urban & Titus, 2010; Titus & Urban, 2013; Urban & Dwyer, 2016).

Source: Published research

### **Q23: Observed Ability to Invade Naturally Disturbed Ecosystems**

Rating: Yes

Confidence: Low

Research suggests that once *Utricularia inflata* establishes in a waterway, natural disturbance can help it spread (Titus & Urban, 2013). Related studies found that *U. inflata* abundance increased in areas where plants were sheltered from wave action and currents (Urban & Titus, 2010). Ecological factors other than disturbance may be more important for determining whether this species is capable of invading an ecosystem or not.



Source: Published research

## Section 4: Management Difficulty

### Q24: General Management Difficulty

Rating: High

Confidence: Low

*Utricularia* species can be difficult to identify without flowers (Wiebush, 2022), but *U. inflata* produces distinctive floating platforms from which flowers eventually emerge. Successful manual removal of this species requires capturing all vegetative fragments. Other suggested options include draining the waterbody in which the plant occurs, or using herbicides (NWCB, 2024). Practical and effective management methods for this species seem to be limited.

Source: Informal publication

### Q25: Minimum Time Commitment

Rating: Unknown

Confidence: Not Rated

The persistence and long-term effects of *Utricularia inflata* invasions are not currently known, and at least some invasive populations observed in New York appeared to be short-lived (Titus & Gris , 2009).

Source: Published Research

### Q26: Impacts of Management on Native Species

Rating: Moderate

Confidence: Low

No information was available discussing the effects of *Utricularia inflata* management on co-occurring native species. However, suggested treatment options for *U. inflata* occurrences, particularly draining lakes, seem likely to result in significant collateral damage to native species (NWCB, 2024).

Source: Informal publication

### Q27: Inaccessibility of Invaded Areas

Rating: Insignificant

Confidence: Moderate

*Utricularia inflata* was introduced by human activities (Howard Morgan, 2011) and is currently found in a limited area in Washington (CPNWH, 2024; iNaturalist Community, 2024), suggesting that most water ways where this species occurs are currently fairly accessible.

Source: Informal publication, Herbarium records and other observations

### Q28: Sociopolitical Implications of Management

Rating: Insignificant

Confidence: Moderate

Public objection to treating this species seems unlikely, particularly since it can contribute to degradation of recreation opportunities on the waterbodies where it occurs (Smith, 2007). Draining occupied areas to eliminate *U. inflata* populations could potentially be unpopular, but this suggestion is also less appealing for other reasons (see Q26). The most likely objection to management comes from generalized opposition to herbicide use, particularly in aquatic systems.

Source: Informal publication, Professional expertise

### Additional Comments

None

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bladderwort; *Utricularia vulgaris* L.,  
common bladderwort or greater  
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