

Washington Invasive Ranking System

Washington Natural Heritage Program

Dipsacus fullonum (Common Teasel)

Assessed by

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Ecological Impact Rank: **Moderate** (69)

Confidence: **Moderate** (50)

Management Difficulty Rank: Moderate (67)

Confidence: Moderate (60)

Biological Characteristics of Invasiveness: High (76)

Confidence: High (83)

Concern Related to Distribution and Abundance: Moderate (67)

Confidence: High (80)



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Ranking Notes

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

Recent genetic evidence suggests *Dipsacus sativus* is a distinct species, not a subspecies or variety of

Dipsacus fullonum (Gaskin et al., 2024), but it is considered a synonym of *D. fullonum* in the Washington Flora (University of Washington Herbarium, 2018). *Dipsacus sylvestris* is a synonym for *Dipsacus fullonum*.

Legal Listings

[Washington State Weed Board](#): Class C

[Washington Invasive Species Council](#): No

Section 1: Distribution and Abundance

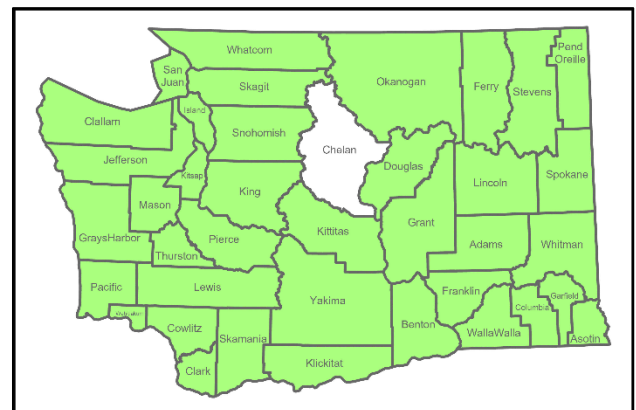


Figure 1. Distribution of counties where *Dipsacus fullonum* has been documented in Washington State (WSDA, 2018; CPNWH, 2023; EDDMapS, 2023; iNaturalist Contributors, 2023).

Q1: Current Range Size in Washington

Rating: High

Confidence: High

Dipsacus fullonum has been documented in 97% of Washington counties (WSDA, 2018; CPNWH, 2023; EDDMapS, 2023; iNaturalist Contributors, 2023).

Source: Herbarium data and other observations

Q2: Current Trend in Total Range

Rating: Low

Confidence: High

Dipsacus fullonum appears in most counties in Washington, with only Chelan County reporting no occurrences of this species. This species appears to occur in almost all the suitable habitat available in Washington (WSDA, 2018; iNaturalist Contributors, 2023; Jarnevich et al., 2023). This species has expanded to six or seven new counties in Washington since 2012 (NWCB, 2012), with most expansions in the last 20 years limited to the northwestern part of the Columbia Plateau (CPNWH, 2023). Expansion for this species may be limited in desert habitats (Gucker, 2009).

Source: Informal publication, Professional expertise, Citizen science observations, USGS and WSDA datasets

Q3: Proportion of Potential Range Currently Unoccupied

Rating: Low (range Low - Moderate)

Confidence: High

Dipsacus fullonum appears in most counties in Washington, with only Chelan County reporting no occurrences of this species. This species appears to occur, at least occasionally, in almost all suitable habitat in Washington (WSDA, 2018; iNaturalist Contributors, 2023; Jarnevich et al., 2023).

Source: Professional expertise, Citizen science observations, USGS and WSDA datasets

Q4: Local Range Expansion or Change in Abundance

Rating: Moderate (range Low - Moderate)

Confidence: Low (range Low - Moderate)

In 2009, *Dipsacus fullonum* was described as “occasional, locally common, scattered, or infrequent” throughout its range in North America (Gucker, 2009). *Dipsacus* species have been recently described as rapidly expanding in the western U.S., especially in the Pacific Northwest (DiTomaso et al., 2013), and it appears to be occupying more riparian areas in steppe and grasslands and persisting longer (perhaps indefinitely) in Eastern Washington. Herbarium records from Washington State suggest that while this species is expanding locally, expansion appears to be relatively slow (CPNWH, 2023). The Early Detection and Distribution Mapping System predicts populations of *Dipsacus fullonum* may expand in some counties in Washington, but remain steady in most Washington counties (EDDMapS, 2023).

Source: Informal publication, Professional expertise, Herbarium records

Q5: Diversity of Ecosystems Invaded

Ecosystem types: Forest & Woodland, Grassland & Shrubland, Emergent Open Wetland

Rating: Moderate

Confidence: High

Dipsacus fullonum is usually found in disturbed areas, and prefers moist, open, sunny habitat with limited canopy cover, but can occur in both upland and wetland ecosystems. This species occurs in woodlands, forest openings, savannas, grasslands and meadows, and riparian areas. *Dipsacus fullonum* is also reported from sagebrush and juniper habitats in eastern Oregon and from inland salt marshes in Ohio, though saline conditions appear to prevent reproduction in this species (Gucker, 2009; DiTomaso et al., 2013).

Source: Informal publication, Professional expertise

Section 2: Biological Characteristics

Q6: Aggressive Mode of Reproduction

Rating: Yes

Confidence: High

Dipsacus fullonum is biennial or a short-lived monocarpic perennial. This species only reproduces through seed and does not reproduce vegetatively.

Dipsacus fullonum plants can produce more than 3000 seeds, which have a 28%–86% germination rate. In old fields in Michigan, seed production four years post-introduction reached roughly 4500 seeds/m² (Gucker, 2009). *Dipsacus fullonum* produces perfect flowers but is mostly an outcrosser, though it can self-pollinate in rare circumstances (Gaskin et al., 2024). This species requires insect pollination, but has a generalist relationship with pollinators, with Hymenoptera, Diptera, and Lepidoptera all common visitors when *Dipsacus fullonum* is in flower (Werner, 1976; Gucker, 2009).

While individual plants do not produce seeds annually, many plants within a population are likely to produce a large number of seeds in any given year.

Source: Published Research, Informal Publication, Professional Expertise

Q7: Innate Potential for Long-Distance Dispersal

Rating: Yes

Confidence: High

Dipsacus fullonum is occasionally capable of natural long-distance dispersal by water, but most seeds fall within 1.5 meters of their parent plant. This species produces relatively large achenes (up to 8 mm long). These achenes float and seeds remain viable for at least 22 days in the water (Werner, 1975; Gucker, 2009). In eastern Washington, *Dipsacus fullonum* seeds are a measurable part of the diet in California quail, northern bobwhite, and pheasants. Several other birds and small rodents have been observed to eat this species' seeds (Gucker, 2009), suggesting that animal dispersal is also likely for this species.

Source: Published research, Informal publication, Professional expertise

Q8: Potential to be Spread by Human Activities

Rating: Yes

Confidence: High

Dipsacus fullonum dispersal usually follows highways, roads, and other human disturbance.

Mowing, particularly on highway right-of-ways, is likely a major dispersal mechanism for this species. The use of dried inflorescences in floral arrangements is also a mechanism for spread and is potentially the reason this species can be common in cemeteries. *Dipsacus* seeds are sometimes included in birdseed mixes (Gucker, 2009; Gaskin et al., 2024).

Source: Published research, Informal publication, Professional expertise

Q9: Allelopathy

Rating: Unknown

Confidence: Not rated

Little information was found on allelopathy in *Dipsacus fullonum*. Some evidence suggests that *D. fullonum* plants can reduce germination and growth in neighboring *D. fullonum* plants (Gucker, 2009), but a literature search turned up no information on the effects of *D. fullonum* on other species, or on potential allelochemicals found in *D. fullonum* tissues.

Source: Informal publication, Professional expertise

Q10: Competitive for Limiting Abiotic Factors

Rating: Yes

Confidence: Moderate (range Low - High)

Dipsacus fullonum is an aggressive competitor following disturbance; it is capable of excluding almost all other species once established. *Dipsacus fullonum* may even reduce *Cirsium arvense* occurrences. This species has deep taproots (up to 2 feet long and an inch in diameter at the root crown) that give it access to resources that vegetation with shallower roots can't reach. Large taproots may also allow plants to store resources to survive damage or poor climate conditions, and potentially provides a growth advantage early in the growing season. *Dipsacus fullonum* also overwinters as a rosette in its first winter, providing a competitive advantage early in the spring when other species are dormant. However, this species will eventually be outcompeted by other species in the absence of periodic disturbance (Gucker, 2009).

Source: Informal publication, Professional expertise



Q11: Growth Form

Rating: Yes

Confidence: High

Dipsacus fullonum's limited seed dispersal distance results in dense stands that can exclude all other species (Gucker, 2009). Large rosettes reduce the amount of sunlight available for other species, effectively outcompeting them for sunlight (Huarte et al., 2016) Competition for sunlight may be more important than competition for other abiotic resources in maintaining *D. fullonum* populations (Gucker, 2009).

Source: Published research, Informal publication, Professional expertise

Q12: Germination Requirements

Rating: No

Confidence: Moderate

Soil disturbance and warm temperatures promote germination in *Dipsacus fullonum* (Huarte et al., 2016). Cover (both litter and standing) reduces germination and seedling survival rate but does not eliminate it. While capable of invading perennial grasslands in moist areas, this species generally relies on small openings created by disturbance (or the death of its parent plants) for germination (Gucker, 2009). Seedlings germinate best on open ground, but have improved survival with light ground cover that prevents desiccation (Gucker, 2009).

Source: Published research, Informal publication, Professional expertise

Q13: Invasiveness of Other Plants in Genus

Rating: Yes

Confidence: High

Dipsacus laciniatus and *Dipsacus sativus* are also invasive in North America, but *Dipsacus fullonum* is more widespread than both. *Dipsacus sativus* is common throughout the west. *Dipsacus laciniatus* spreads much more slowly than *D. fullonum* and is not widespread in the west (Gucker, 2009; DiTomaso et al., 2013; Gaskin et al., 2024). Some sources,

including the Washington Flora Checklist, consider *D. sativus* and *D. fullonum* to be the same species (University of Washington Herbarium, 2018; Gaskin et al., 2024).

Source: Published research, Informal publication, Professional expertise

Q14: Shade Tolerance

Rating: Moderate

Confidence: High

Dipsacus fullonum grows in full sun to partial shade. Light shading from litter or established vegetation may aid in *D. fullonum* seedling establishment by preventing desiccation. However, after establishment, shading can significantly reduce seedling growth rates. Seedlings are generally found in canopy openings created by disturbance (Gucker, 2009).

Source: Informal publication, Professional expertise

Q15: Disturbance Tolerance

Rating: Yes

Confidence: High

Dipsacus fullonum is an early successional species and requires periodic disturbance to maintain suitable habitat for seed germination. However, severe annual disturbance does not benefit this species because it needs at least two years of growth to reproduce. Activities like plowing, dredging, and grazing can increase this species' abundance. In Washington, grazing in *Crataegus douglasii* habitats has been observed to increase *Dipsacus fullonum* populations (Gucker, 2009).

Fire can increase *D. fullonum* populations. Large rosettes may be capable of surviving low or moderate severity fire in the same way that they survive mowing. Plants with below-ground meristematic tissue, such as *D. fullonum* (Gucker, 2009), are insulated from the heat of low and moderate severity fires by the soil (Wiggers et al., 2013, M. Wiebush, unpublished data). This could provide a competitive advantage in communities that are not adapted to fire or grazing disturbances but may not provide much

advantage in fire-dependent ecosystems (e.g., Willamette Prairie).

Source: Published research, Informal publication, Professional expertise

Q16: Propagule Persistence

Rating: <5 years

Confidence: High

Dipsacus fullonum has a short-lived seed bank and produces seeds with very little dormancy—very few viable seed remain in the soil after five years. This species' seeds *can* survive longer when stored indoors (Gucker, 2009).

Dipsacus fullonum seeds germinate readily, even when immature or when inflorescences have been cut from the stem. Soil disturbance and warm temperatures promote germination. Alternating periods of light and dark and alternating temperatures may improve germination (Huarte et al., 2016), but in some cases *Dipsacus* seeds have germinated within 3 days of sowing without treatment. Maternal provisioning also affects germination, with larger seeds having higher germination rates. Freezing temperatures can induce dormancy and the presence of thick litter and established vegetation can prevent germination in *Dipsacus fullonum* (Gucker, 2009).

Source: Published research, Informal publication, Professional expertise

Q17: Palatability

Rating: Yes, plant is unpalatable

Confidence: High

Spines, tough stems, and bitter flavor generally make *Dipsacus fullonum* unpalatable to grazers (Gucker, 2009; DiTomaso et al., 2013), though livestock will occasionally eat *Dipsacus* flowers.

Source: Informal publication, Professional expertise

Section 3: Ecological Impact

Q18: Impact on Ecosystem Abiotic Processes

Abiotic Processes: Geomorphology, Hydrology, Light availability, Fire

Rating: Moderate

Confidence: Moderate

Dipsacus fullonum usually occurs in moist areas where fire is less likely to spread, and dense stands of this species can further reduce the spread of fire (Gucker, 2009). The horizontal growth form of the rosettes can also reduce light availability for seeds and seedlings of co-occurring species (Werner, 1976; Huarte et al., 2016). In some systems, the deep taproot can alter water table levels if a high number of plants are present. If this species replaces natives with fibrous roots (e.g., perennial grasses), the switch to tap-rooted plants can lead to increased erosion.

Source: Published research, Informal publication, Professional expertise

Q19: Impact on Ecosystem Structure

Rating: Moderate

Confidence: Moderate (range Low - Moderate)

Dipsacus fullonum frequently occurs in monospecific stands, changing both density and cover of associated native species in ecosystems where it occurs. The tall biennial forb-dominated community this species creates is a departure from historical communities.

Source: Professional expertise

Q20: Impact on Ecosystem Composition

Rating: Moderate (range Moderate - High)

Confidence: Moderate (range Moderate - High)

Dipsacus fullonum reduces the diversity and abundance of native species in the ecosystems in which it occurs. This species may also indicate reduced biotic integrity in riparian habitats, particularly related to changes in vertebrate and invertebrate composition (Ringold et al., 2008). However, it is unclear how much the loss in biotic integrity is due to the presence of invasive plants like



D. fullonum, and how much is due to co-occurring factors, such as anthropogenic disturbance (Gucker, 2009). Abundance and density of *D. fullonum* is site-dependent. Monocultural stands of this species are more likely to develop in mesic areas. In drier areas, it seems to remain persistently low in cover and is only mildly competitive with natives, likely because these areas are at the edge of suitable habitat for *D. fullonum*.

Source: Published research, Informal publications, Professional expertise

Q21: Impact on Particular Native Species

Rating: Unknown

Confidence: Not Rated

No information was found on species-specific effects of *Dipsacus fullonum* on native species in Washington State.

Sources did note this species as a threat to rare plants, but effects were mostly community-wide (Gucker, 2009), such as light competition or potentially pollinator competition (based on observations during bumblebee surveys in eastern Washington.)

Seeds from this species can make up a meaningful percentage of the late season diet for a number of wildlife species (upland game birds and small mammals) (Gucker, 2009).

Source: Informal publication, Professional expertise

Q22: Observed Ability to Invade Undisturbed Ecosystems

Rating: Moderate (range Moderate - High)

Confidence: Moderate (range Moderate - High)

Dipsacus fullonum is most common in disturbed areas, but it is occasionally capable of invading established native communities by taking advantage of small disturbances (e.g., frost heaves, rodent burrows) (Gucker, 2009). This species can establish, but will not persist in forest openings, usually disappearing as the canopy closes. *Dipsacus fullonum* will establish and persist in open riparian areas regardless of successional stage.

Source: Informal publication, Professional expertise

Q23: Observed Ability to Invade Naturally Disturbed Ecosystems

Rating: Yes

Confidence: High (range Low - High)

Dipsacus fullonum can take advantage of natural disturbances to establish in suitable habitat (Gucker, 2009).

Source: Informal publication, Professional expertise

Section 4: Management Difficulty

Q24: General Management Difficulty

Rating: Moderate

Confidence: Moderate (range Moderate - High)

For short lived species like *Dipsacus fullonum*, effective management focuses on preventing reproduction. Immature seeds from cut stems can still be viable, and care needs to be taken not to spread seed during management efforts. The most consistent recommendation for managing this species is to use both mechanical and chemical control methods over multiple years. Timing of treatment is also important. Herbicide application alone may encourage seed germination by opening areas for seedlings to establish, so application efforts should include plans to prevent seedling germination or target emerging seedlings after initial herbicide application. Hand-pulling can be effective for small occurrences if care is taken to remove as much of the root as possible. Reestablishing healthy native plant communities can also help in control efforts, since *D. fullonum* is less likely to establish in existing vegetation. There are currently no biocontrol options available for this species and burning or mowing alone are likely to increase its abundance (Gucker, 2009; DiTomaso et al., 2013; Gaskin et al., 2024).

Source: Published research, Informal publication, Professional expertise



Q25: Minimum Time Commitment

Rating: High

Confidence: High

In theory, *Dipsacus* species require 4–6 years of treatment to reduce viable seed in the seed bank (DiTomaso et al., 2013). In practice, 17 years of management efforts in Western Washington indicate that populations of *D. fullonum* may be reduced, but rarely fully controlled. Reinvasion of treated areas is quick if management is not continuous (R. Johnson, pers. comm., 2024).

Source: Informal publication, Professional expertise

Q26: Impacts of Management on Native Species

Rating: Moderate (range Moderate - High)

Confidence: Low (range Low - High)

Discing or herbicide may cause reduction in co-occurring native species. However, the benefits of treatment could outweigh the costs in some cases, given *D. fullonum*'s dense, monospecific habit and relatively transient propagule bank. Spot treatments using herbicides can also reduce risk to native plant species.

Source: Professional expertise

Q27: Inaccessibility of Invaded Areas

Rating: Low

Confidence: Moderate

Dipsacus fullonum is mainly spread by human activities and human disturbance (Gucker, 2009), so it is likely that the largest populations of this species are in areas that are easily accessible for management.

Source: Informal publication, Professional expertise

Q28: Sociopolitical Implications of Management

Rating: Insignificant (range Insignificant - Moderate/Low)

Confidence: High (range Moderate - High)

Dipsacus fullonum is sold as a garden plant in the United States where it is advertised for attracting birds and pollinators, and used in floral arrangements

(Gucker, 2009). However, it seems most likely that public opposition to treatment of this species would center around general objections to herbicide use or other treatment options, and not management of the species itself.

Source: Informal publication, Professional expertise

Additional Comments

None

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