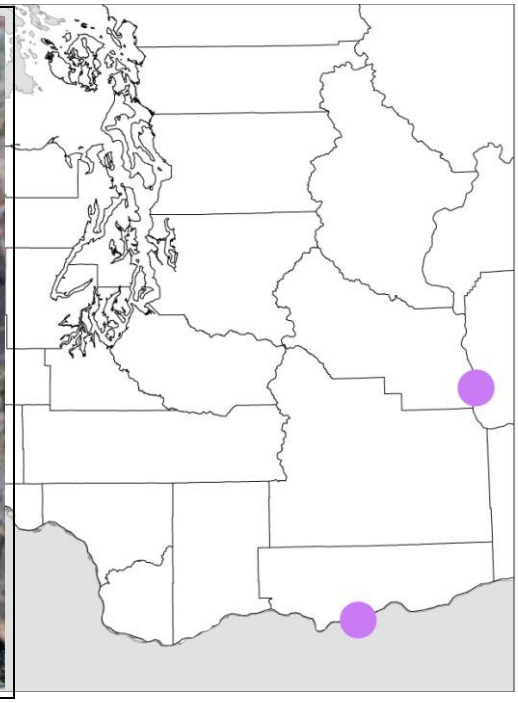
Species Fact Sheet
Northern wormwood
Artemisia campestris var. wormskioldii

Photo Credit: Melissa Carr



STATUS: CANDIDATE

Northern wormwood occur in Klickitat and Grant Counties, Washington.

Northern wormwood, *Artemisia campestris var. wormskioldii,* became a candidate for federal listing in October 1999 (Federal Register 1999).

Current and Historical Status

Historically, northern wormwood was collected along the banks of the Columbia River near the mouth of the John Day River in Wasco County, Oregon downstream to the vicinity of Hood River in Hood River County, Oregon.

All historical sites for this species have been resurveyed and no populations have been found. It is likely that disturbances due to the construction of several dams and subsequent flooding of habitat, highway construction and riprapping of long reaches of the Columbia River resulted in the extirpation of historical populations.

Currently, *Artemisia campestris* var. *wormskioldii* is known only from two natural populations along the Columbia River, one location each in Klickitat and Grant County, Washington. The Miller Island population located in Klickitat County at milepost 206 was discovered in 1983. The population known from Beverly, Grant County at milepost 413 was discovered in 1975. During the first survey of the Miller Island population, which was conducted in 1989, 75 plants were counted within an area less than 1 acre. Subsequent surveys in 1995 and 1999 counted less than 145 flowering plants during each survey. The population continued to decline and in 2010 just 29 plants were counted and by spring 2016 the population was down to 23 flowering plants. At the Beverly location counts began in earnest after the species was determined to be a Federal Candidate species. The first comprehensive survey counted 1,260 plants. The Beverly population increased to approximately 1,865 plants in 2005 and since then it has steadily declined to 280 plants counted in 2015, and fewer than 100 flowering plants when it was monitored in 2016.

Description and Life History

Northern wormwood is a perennial plant in the Aster family (Asteraceae). *Artemisia campestris* var. *wormskioldii* is a low-growing perennial plant, 15 to 30 centimeters (6-12 inches [in]) tall whose leaves are conspicuously covered with silky hairs. This plant has a taproot and basal leaves crowded in a basal rosette. The basal leaves are 2 to 10 cm (1 to 4 in) long and divided two or three times in mostly linear divisions. Leaves on the upper stems are similar but smaller and less divided. The fruits (achenes) and the enlarged upper ends of the flower-bearing stalks (receptacles) are glabrous, or without hairs. Northern wormwood is the only variety of *Artemisia* that flowers in early spring, usually in April and May. The arrangement of the yellowish flowers (inflorescence) on the stem is narrow, and the involucres (bracts at the base of flowers) are about 0.3 to 0.5 cm (0.1 to 0.2 in). The flower heads are relatively large. The outer female flowers are fertile, and the sterile disk flowers have undeveloped ovaries.

Habitat

The two known remaining natural populations of northern wormwood occur downstream from, but fairly close to, large dams on the Columbia River: the John Day Dam (constructed between 1958 and 1971) and Wanapum Dam (constructed between 1959 and 1963). Compared to the impounded stretches of river above the dams, the hydrological conditions just downstream from the dams are more similar—but not identical—to the riverine habitats where this plant occurred historically. These conditions are characterized by continuous strong and varied water flows and common but inconsistent changes in water levels. In years prior to dam construction, however, the rate of water flow through the Columbia River Basin near the two natural populations peaked at volumes twice the current levels and fluctuations in river levels, including occasional flooding, likely had an impact on northern wormwood survival and distribution

This species is restricted to riparian areas where the water level, substrate and vegetation cover appear to be critical elements affecting the species survival. The species is constrained to exposed basalt, cobbly-sandy terraces, and sand habitat along the banks of the Columbia River. The Klickitat County, Washington, population is found near water level in the crevices of basalt outcrops, compacted cobbly terrace, and sand. The Grant County, Washington, population occurs along the shore of the Columbia River and on several “islands” composed mostly of compacted cobbly terrace with a dense mat of moss. This population appears to be restricted to an area of compacted cobbles with varying amounts of sand and little, if any, soil development.

Reasons for Decline

The construction of dams along the Columbia River, and possibly railroad and highway construction resulted in the direct loss of suitable habitat as well as the loss of individuals and likely populations of *Artemisia campestris* var. *wormskioldii.* Losses of habitat and individuals probably resulted from disturbances due to dam construction and the resulting inundation. It was thought at one time that the manipulation of water flows by hydroelectric dams is a major threat to this variety; we have since determined that water flow is strongly controlled and that high peak and low flows are less than pre damn construction and the impact to northern wormwood plants is not considered a stressor at this time. Manipulated water regimes do not mimic historic water flows, which were not controlled by dams and historically were much higher during the winter, rainy season and likely much lower during late-summer drought, or summer, dry season. All of these factors may affect the ability of these plants to germinate and become established, grow, flower, reproduce, and colonize new sites. Recreational use, competition with nonnative invasive species, and small population size make the species susceptible to genetic drift and inbreeding depression, although none of these stressors rise to the level that would threaten the species continued existence.

Conservation Efforts

The Washington Natural Heritage Program, using funding from USFWS, prepared a conservation strategy and monitoring plan for northern wormwood. Fencing of the Beverly population located at the Grant County site, active management to remove nonnative, invasive plant species, collection of seed, and the monitoring of the population have contributed to the incremental recovery of the population. The storing of seeds in a Center for Plant Conservation facility allows for testing of the germination viability of the plant and contributes to recovery by producing plants that could be introduced into new habitat or reintroduced into existing natural populations.

Grant County PUD has developed a Conservation Agreement with the WDNR and the Service. This agreement includes measures to ensure annual demographic monitoring, erect and monitor fencing to control vehicle access at the site, and control noxious weeds that occur at the site. Grant County PUD is also working with the Bureau of Reclamation to reduce the impacts from recreational use by limiting public access around the largest population.

Northern wormwood has been translocated into 5 suitable habitat sites along the Columbia River within the historical range of the species. Monitoring of these sites will include counts of all translocated plants including any flowering plants as well as any new plant recruits. Because three of these sites have only northern wormwood and no variety *scouleriana* we can count all northern wormwood individuals and their offspring (recruits) at these locations. The other two planting sites have both varieties therefore we rely on a planting layout that is mapped and signs of transplanted plants (soil medium) at the base of the introduced plants. Amsberry et al. (2007) investigated the introduction of *Artemisia campestris* var. *wormskioldii* in Oregon. This project found that cultivation, selection of suitable habitat, and plant introductions can be achieved given high seed viability. Each of the introduced sites was counted in 2016 and each site except Island 18 (Hanford Reach National Monument) had moderate population numbers but no plants were observed at the Hanford location.

References and Links

Candidate Assessment
USFWS Threatened and Endangered Species Profile
U.S. Fish and Wildlife Service, Species Status Assessment (2016)