White-top aster (*Aster curtus*)

Photo by Thomas N. Kaye, Institute for Applied Ecology

Species

Common names: white-top aster, Columbia white-top aster, Curtus' aster
Latin name: *Aster curtus* (Cronq.)
Taxon synonym: *Sericocarpus rigidus* (Lindl.)

Range

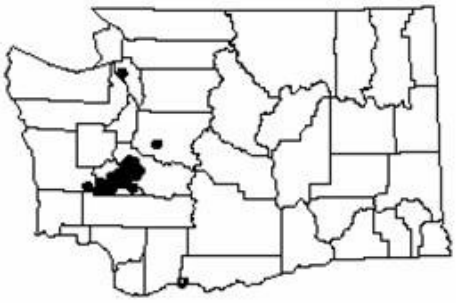
Oregon, Washington, and southern British Columbia

Climate, elevation

Aster curtus is endemic to low-elevation grasslands in the Pacific Northwest between 100 and 550'. (3, 9)

Local occurrence

This species occurs in only a few areas within the Pacific Northwest. It can be found in the southeastern portion of Vancouver Island, British Columbia, and in the glacial outwash soils of the Willamette Valley-Puget Lowlands in Oregon and Washington. There are approximately 80 occurrences in Washington State. (2, 9) Below is a map depicting its current known range in Washington.



Map source: http://www.dnr.wa.gov/nhp/refdesk/fguide/htm/4ascumap.htm (8)

Habitat preferences

Aster curtus grows in open, grassland areas that exhibit a xeric moisture regime: substantial rainfall through most of the year, with very dry summers. (9) It is most successful in areas that are still dominated by native prairie species such as Idaho fescue. (6) It is most commonly found on glacial outwash soils, but also occurs on clayey soils and bedrock. (6, 9)

Plant strategy type/ successional stage

Stress-tolerator. Grows slowly, but is able to tolerate very droughty conditions during summer months. Like many prairie species, it is likely that *A. curtus* has a positive relationship with fire, which helps to keep grasslands free of encroaching trees such as Douglas-fir. *A. curtus* spreads rhizometously and can form a dense mat 1 meter in diameter. (6) Relies on pollinator species to set adequate number of seeds. (3)

Associated species

Shrub and herbaceous species: snowberry (*Symphoricarpos albus*), service berry (*Almelanchier alnifolia*), Oregon sunshine (*Eriophyllum lanatum*), and early blue violet (*Viola adunca*).

Tree species: Douglas-fir (*Pseudotsuga menziesii*) and Oregon white oak (*Quercus garryana*). (2)
A common non-native species found within white-topped aster's habitat is Scot's broom (*Cytisus scoparius*). This species poses a threat to *A. curtus* by growing in dense stands and altering the soil nutrients.

Collection restrictions or guidelines

A. curtus is a federally listed species of concern, a listed sensitive plant in Washington, and a listed threatened species in Oregon* (5,8,9). There is no collection allowed for commercial or personal use. (5)

Seed germination

Different studies have had highly variable germination success with *A. curtus*. Some percentage of seeds may germinate with no processing, but rates will likely be lower. Germination is increased when seeds are either stratified for 8 weeks or scarified (nicked with a razor blade). In a study conducted by Kaye and Kuykendall, the highest germination success was achieved when seeds were scarified (50-58% germination). (3, 7) However, other researchers have had good germination rates when employing a cold moist stratification method for 8 weeks. With this method, sow seeds outside in November-January in a potting mix and leave outside for stratification. (Protect from heavy wind and rain.) After 8 weeks, move into a greenhouse or leave outside if temperatures are warm (~60º). (1) *A. curtus* needs light to germinate. (3, 7)

Seed life
Little difference has been observed in germination rates between 1 and 2-year old seeds. It is estimated that seed may be viable for 3 -5 years under optimal storage conditions. (1)

Recommended seed storage conditions
Store seeds in a cool, dry place out of direct light.

Propagation recommendations
A. curtus is not difficult to propagate. Its listed status is more of a result of habitat destruction due to development, agriculture, and the encroachment of Douglas-fir as a result of fire suppression/ exclusion. (3, 4)

Soil or medium requirements
When germinating, use a 35-35-25-5 potting mix (sand, compost, perlite or vermiculite, and pumice). (1)

Installation form
Seedlings.

Recommended planting density
Since *A. curtus* can spread up to 1 meter in diameter, it is best to space them at least 1 meter apart, depending on restoration design.

Care requirements after installed
A. curtus seems to prefer zones in the prairie that have a higher clay content, presumably due to more moisture availability. For this reason, watering new seedlings during dry spells may increase early survival rates. (1)

Normal rate of growth or spread; lifespan
A. curtus grows very slowly, spreading rhizometously up to 1 meter in diameter. (3)

* Listed threatened species: Taxa that are listed by the USFWS, NOAA Fisheries, ODA, or ODFW as threatened.
Threatened: Taxa that are likely to become endangered within the foreseeable future. (8)

References
(1) Byrne, Deag. The Nature Conservancy. Personal communication. April 25 & 26, 2006

(2) Center for Plant Conservation website: http://www.centerforplantconservation.org 4/11/06

(3) Clampitt, Christopher A. 1987. Reproductive Biology of *Aster curtus* (Asteraceae): A Pacific Northwest endemic. American Journal of Botany. 74(6): 941- 946.

(4) Ewing, Kern. Personal Communication. 4/12/06

(5) Gibble, Wendy. Rare Care Program Manager. Personal Communication. 4/19/06.

(6) Giblin, David Emmett. 1997. The relationships of reproductive biology and disturbance to the rarity of *Aster curtus* (Cronq.), a Pacific Northwest endemic.

(7) Kaye, Thomas N., Kuykendall, K. Germination and Propagation Techniques for Restoring Rare Pacific Northwest Prairie Plants. Report for the Institute of Applied Ecology. http://www.appliedeco.org/Reports /prairie_germination_Wash_proc.PDF

(8) Oregon Natural Heritage Information Center. 2004. Rare, Threatened, and Endangered Species of Oregon. Oregon Natural Heritage Information Center, Oregon State University, Portland, Oregon. 105 pp.

(9) Washington Natural Heritage Program website: http://www.dnr.wa.gov/nhp/refdesk/fguide/htm/fsp_ascu.htm 4/10/06

Data compiled by Samantha Martin Sprenger, April 2006