

**WRITTEN FINDINGS OF THE  
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD  
Updated 2015**

Scientific Name: *Centaurea nigrescens* Willd.

Common Name: Vochin knapweed, alpine knapweed, short-fringed knapweed, Tyrol knapweed

Synonyms: *Centaurea debeauxii* Gren. & Godr. subsp. *thuillieri* Dostál, *Centaurea dubia* Suter, *Centaurea dubia* Suter subsp. *vochinensis* (Bernh. ex Rchb.) Hayek, *Centaurea dubia* Suter ssp. *nigrescens* (Willdenow) Hayek, *Centaurea pratensis* Thuill., non Salisb., nom. illeg., *Centaurea vochinensis* Bernh. ex Rchb., *Centaurea jacea* subsp. *nigrescens* (Willd.) Čelak., *Centaurea transalpina* Schleicher ex de Candolle

Family: Asteraceae

Legal Status: Class A noxious weed in 1988



Images: left, line drawing of *Centaurea nigrescens* from the USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. 3 vols. Charles Scribner's Sons, New York. Vol. 3: 558; right: *C. nigrescens* flowerhead in bud and in bloom, image details at [http://commons.wikimedia.org/wiki/File:Centaurea\\_nigrescens\\_subsp.\\_nigrescens\\_bgiu.jpg](http://commons.wikimedia.org/wiki/File:Centaurea_nigrescens_subsp._nigrescens_bgiu.jpg)

**Description and Variation:**

**Overall habit:**

*Centaurea nigrescens* is a perennial that grows 7.9 inches to 3.3 feet (20 to 100 cm) tall, sometimes taller, up to 5 feet (150 cm) (Keil and Ochsmann 2006, Hitchcock et al. 1955). Plants are roughly hairy to

somewhat hairless and sometimes arachnoid (covered with white hairs) when young (Hitchcock et al. 1955).

#### Roots:

Plants have rhizomes, and stems grow from a woody root crown (Roché 1992).

#### Stems:

*Centaurea nigrescens* stems are erect and upright, 0.8 to 5 feet tall, openly branching above the middle (Roché 1992).

#### Leaves:

Basal and lower stem leaves taper to a petiole. Leaf blades are oblanceolate to elliptic, 2.0 to 9.8 inches (5–25 cm) long, and have entire, shallowly dentate or irregularly lobed margins (Keil and Ochsmann 2006, Roché 1992). Lobed leaves have a larger, rounded, terminal lobe (Roché 1992). Leaves reduce in size going up the stem, blades become linear to lanceolate, entire or dentate (Keil and Ochsmann 2006). Small, stiff hairs line the leaf edges (Roché 1992).



Images: left, *Centaurea nigrescens* leaf shape, image information: Dipartimento di Scienze della Vita, Università di Trieste - Progetto Dryades - Picture by Andrea Moro - Comune di Padova, Orto Botanico., PD, Veneto, Italia, - Image licensed under a Creative Commons Attribution Non Commercial Share-Alike 3.0 License; right, stem leaves with lobed blades, image by WSNWCB.

#### Flowers:

*Centaurea nigrescens*'s flowerheads often have terminating stem and branch tips (Hitchcock et al. 1955). They are in few-headed clusters on leafy-bracted peduncles (Keil and Ochsmann 2006). Involucral bracts, in rows at the base of flowerheads, are mostly 0.43 to 0.71 (11 to 18 mm) long, with small dark triangular tips that have 6 to 8 fringes (wiry lobes, like comb teeth) on each side (Roché 1992). The fringes do not extend down the sides of the bracts (Roché 1992). These dark bract tips are mostly 1 to 3 mm long (Hitchcock et al. 1955). The flower's purple color may tinge the center of bract (Roché 1992).

Flowerheads are oblong, relatively narrow, around ½ to ¾ inch tall and are made up of many (40 to 100+) flowers with enlarged marginal flowers (Roché 1992, Hitchcock et al. 1955). Flowers are either all

fertile or marginal flowers are sterile (Keil and Ochsmann 2006). Flower corollas (petals collectively) are purple (rarely white) (Keil and Ochsmann 2006).



Images: left, side view of blooming flowerhead; center, blooming flower stem, left and center images by Joseph M. DiTomaso, University of California - Davis, Bugwood.org; right, base of flowerhead showing bracts with dark tips, image information Dipartimento di Scienze della Vita, Università di Trieste - Progetto Dryades - Picture by Andrea Moro - Comune di Padova, Orto Botanico., PD, Veneto, Italia, - Image licensed under a Creative Commons Attribution Non Commercial Share-Alike 3.0 License.

#### Fruit:

The fruit is an achene or also called cypsela (check spelling). Each fruit is tan or ivory with lengthwise lines, 2.5 to 3 mm long, finely hairy and typically without a pappus (Keil and Ochsmann 2006, Roché 1992). If a pappus is present, it consists of a few short, stiff hairs, 0.5 to 1 mm, that are opposite the oblique scar where the seed was attached (Roché 1992).

#### Similar Species:

Distinguishing *Centaurea nigrescens* from other knapweed species may be a challenge given the variable growth of *Centaurea* species and the ability of some species to hybridize. *Centaurea nigrescens* is closely related to spotted knapweed, *C. stoebe*, but its entire or coarsely lobed leaves distinguish it from *C. stoebe* and as well as from diffuse knapweed, *C. diffusa* (Grella 2012, Roché 1992). Also, the dark, triangular tip of the bracts of *C. nigrescens* separates it from meadow knapweed, *C. x moncktonii* (Roché 1992).

Several other *Centaurea* species are present in Washington and are on the State's noxious weed list: *C. calcitrapa*, purple starthistle (Class A); *C. diffusa*, diffuse knapweed (Class B); *C. jacea*, brown knapweed (Class B); *C. x moncktonii*, meadow knapweed (Class B); *C. macrocephala* (Class A); *C. nigra*, black knapweed (Class B); *C. solstitialis*, yellow starthistle (Class B); and *C. stoebe*, spotted knapweed (Class B). *Centaurea tricocephala*, featherhead knapweed, was listed as a Class A noxious weed but was removed and placed on the monitor list in 1991. Characteristics and pictures of flowerheads and bracts of these species can be seen in the brochure "Selected Knapweeds of Washington", which can be viewed online at [http://www.nwcb.wa.gov/publications/knapweed\\_trifold.pdf](http://www.nwcb.wa.gov/publications/knapweed_trifold.pdf) or contact the Washington State Noxious Weed Control Board for hard copies.

### Habitat:

*Centaurea nigrescens* grows in disturbed areas including roadsides, irrigation ditches, pastures, orchards, waste places, and cleared areas in forested regions (Roché 1992). Plants grow from 0 to 1000 meters elevation, require sunlight and are best adapted to moist conditions (Keil and Ochsmann 2006, Roché 1992).

### Geographical Distribution:

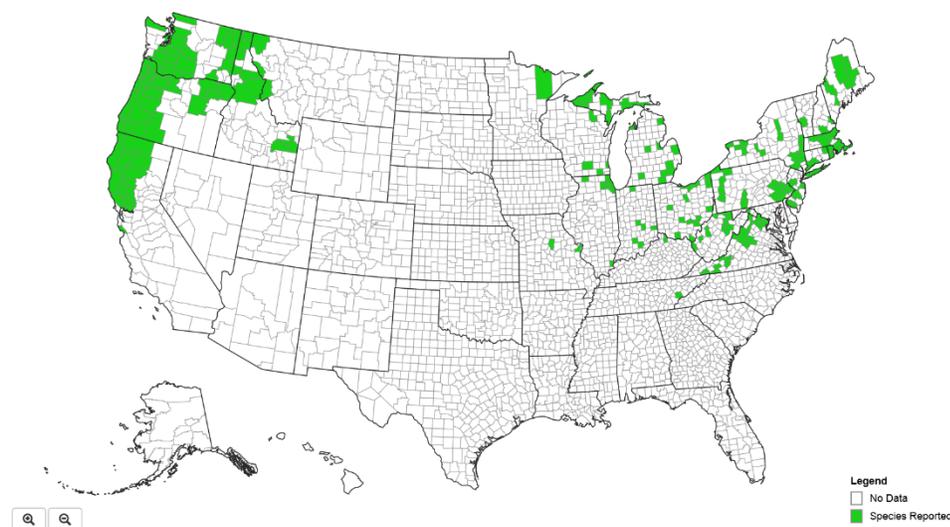
*Centaurea nigrescens* is native to parts of Europe and Asia. The USDA GRIN database (USDA ARS 2015) specifically lists *C. nigrescens* native in:

- Asia: Turkey
- Europe: Austria, Czech Republic, Germany, Hungary, Switzerland, Bosnia and Herzegovina, Bulgaria, Croatia, Italy, Romania, Serbia, Slovenia, France

USDA GRIN database (USDA ARS 2015) lists *Centaurea nigrescens* naturalized or adventive in:

- Australia
- Europe: Germany, Belgium, Poland, Macedonia
- Canada: Ontario, Quebec, British Columbia
- United States: Connecticut, Indiana, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, Illinois, Missouri, Wisconsin, Montana, Oregon, Washington, Wyoming, Delaware, Florida, Virginia, California
- Argentina

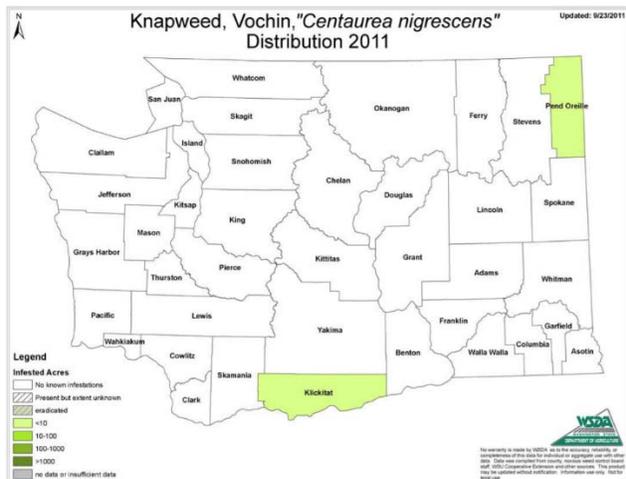
*Centaurea nigrescens* was introduced to North America in the 1800's, with the earliest herbarium collection in 1830 from Worcester County, Massachusetts (Grella 2012). Beside the introduction of *C. nigrescens* in the northeast United States, records support a separate introduction in the Pacific Northwest (Grella 2012). It is thought that like its congener spotted knapweed (*Centaurea stoebe*), *C. nigrescens* may have arrived in the United States in shipments of alfalfa (Müller-Schärer and Schroeder 1993 in Ruhren 2000).



Maps: County level distribution of *Centaurea nigrescens* in the United States (EDDMapS 2015).

### Washington:

Early herbarium collections of *Centaurea nigrescens* start with a 1928 collection from Klickitat County (WS 137947), a 1949 collection from Wahkiakum County (WS 189277), a 1972 collection from Klickitat County and a 1985 collection from Klickitat County where it was described growing along top of irrigation ditch, roadside, and pasture (WS 291024) (Consortium for PNW Herbaria 2015). The other two counties with herbarium records include Whitman and Pend Oreille counties (Consortium for PNW Herbaria 2015). In Roché (1992), populations in Wahkiakum County, and Kitsap County (no herbarium record) were said to have not persisted. The Washington State Department of Agriculture collected distribution of *C. nigrescens* in 2011 and created a county level distribution map in 2011. This map only shows *C. nigrescens* occurring in Washington, at that time, in Pend Oreille and Klickitat Counties (WSDA 2011).



Map: Washington State Department of Agriculture county level distribution map of *C. nigrescens* in 2011 (WSDA 2011).

### Listings:

According to the USDA NRCS (2015) PLANTS database, *Centaurea nigrescens* is listed as a noxious weed in Colorado (as *Centaurea pratensis*), Idaho (as *C. pratensis*), Oregon, and Washington. Meadow knapweed, *Centaurea x moncktonii* also has *C. pratensis* as a synonymous name. Given the scientific and common name used for these other states, it is likely that *C. nigrescens* is not the intended species listed as a noxious weed in Colorado or Idaho but rather *C. x moncktonii* (*C. pratensis*) is the intended species. According to the National Plants Database (2015), Oregon does not currently list *C. nigrescens* as a noxious weed.

*Centaurea nigrescens* is also listed on Washington State's Noxious Weed Seed and Plant Quarantine, WAC 16-752-600, prohibiting the sale, purchase, trade and transport of *C. nigrescens* in the state of Washington.

### Growth and Development:

All growth and development information is from Grella (2012) unless otherwise noted. *Centaurea nigrescens* seeds can germinate in the spring and summer. Plants form a rosette during its juvenile stage with a central crown and can flower their first year. It can overwinter as a rosette and then bolts, sending up a stalk in the spring. Stems can form numerous spreading branches. Plants flower and fruit

mid to late summer and then die back to the ground by late fall. Hitchcock et al. (1955) note that plants flower from July to October, and Roché (1992) reports plants release seed from August through winter.

#### Reproduction:

Plants can spread by seed and also vegetatively by rhizomes (Grella 2012). Flowers of *Centaurea nigrescens* are self-incompatible so must be cross pollinated. Each flowerhead can produce up to 25 seeds (EFlora in Grella 2012). Roché (1992) also reports that gardeners propagate plants by root division.

Grella (2012) conducted growth experiments with non-native *Centaurea nigrescens* seed and found the seed germination at 18°C was 56.56% (+/- 4.6) and at 28°C was 69.84% (+/- 5.32). Seeds from non-native North American *C. nigrescens* plants had a higher germination rate across different temperatures than *C. nigrescens* seed collected in its native range (Grella 2012).

*Centaurea nigrescens* seed fall freely from flowerheads when they are dry and the old flowers are dislodged (Roché 1992). Seeds fall near the parent plant when they lack plumes or may be moved by water, animals or people (Roché 1992). Plants may be also transplanted as an ornamental flower (Roché 1992).



Image: left, *Centaurea nigrescens* plants in bloom, image by Eric Coombs, Oregon Department of Agriculture, Bugwood.org; right, *C. nigrescens* seedling, image by Joseph M. DiTomaso, University of California - Davis, Bugwood.org

#### Economic Importance:

##### Detrimental:

While there is limited research on *C. nigrescens*, extensive research has been conducted on other *Centaurea* species that have become widespread and caused ecological and economic impacts (see written findings of other listed *Centaurea* species). If *C. nigrescens* became widespread, it might also cause these detrimental impacts; but since it is listed as a Class A noxious weed, eradication is required in Washington and populations have not been allowed to persist.

*Centaurea nigrescens* is not a particularly desired forage plant by livestock, though they will graze it, as plants are relatively coarse when mature (Roché 1992). *Centaurea nigrescens* ranks around the same palatability to livestock as *C. x moncktonii* and *C. macrocephala* (Roché 1992).

*Centaurea nigrescens* has been found to have maintained genetic diversity in its introduced range, which is like that of *C. stoebe*, an aggressive rangeland invader (Grella 2012). This genetic diversity may provide

an advantage to *C. nigrescens*, allowing it to survive in a wider range of habitats, making plants harder to eradicate and other possible benefits. More research is needed to determine *C. nigrescens* benefits from its genetic diversity.

#### Beneficial:

*Centaurea nigrescens* has been used as a garden plant (Roché 1992). Some species of *Centaurea* have medicinal uses, and *Centaurea nigrescens* may have some of these uses as well though species specific information is scarce.

#### Control methods:

##### Mechanical methods:

Individual plants and small infestations can be eliminated by digging up plants and roots. Tools may be needed to dig out root crowns (Roché 1992). Make sure to continue digging up plants to exhaust the seedbank (Roché 1992). Prevent plants from flowering and adding seeds back into the seedbank. Remove all the roots from the soil if possible as fragments left can resprout (Roché 1992).

*Centaurea nigrescens* will not survive on annually cultivated land (Roché 1992). On tillable land, cultivate land repeatedly and then seed with competitive, non-invasive forage and native plants to provide competition (Roché 1992).

*Centaurea* (knapweed) species in general are not controlled by mowing. Plants that are mowed can survive and regrow to produce seed (DiTomaso et al. 2013). Mowing plants after they have set seed can help spread seed, but mowing plants when they are in late bud to early bloom stage will reduce seed production (DiTomaso et al. 2013). Mowing plants 2 to 4 times per year for several consecutive years, cutting only bolting and early blooming plants, can suppress knapweed and may favor other competitive species (DiTomaso et al. 2013).

##### Cultural Methods:

Promote healthy pasture and rangeland plant communities to help prevent *Centaurea nigrescens* from establishing.

##### Biological Control:

Eradication is required of Class A noxious weeds in Washington. Biological control, while an effective management tool in controlling a number of knapweed species, will not provide eradication. Because eradication is not achieved with biological control agents, they are not recommended for the control of *Centaurea nigrescens*.

##### Response to Herbicides:

Please refer to The Pacific Northwest Weed Management Handbook for information on timing, herbicides and herbicide rates to use for *Centaurea nigrescens* control

<http://pnwhandbooks.org/weed/other-items/control-problem-weeds/knapweeds-centaurea-spp-and-acroptilon-repens>.

In general, use herbicide control in combination with other control methods to reduce usage when possible. If using a foliar spray, treat plants when pollinators are not present or are the least active.

##### References:

Consortium of Pacific Northwest Herbaria. 2015. *Centaurea nigrescens*. Access online at: <http://www.pnwherbaria.org/>

DiTomaso, J. M., G. B. Kyser et al. 2013. Weed Control in Natural Areas in the Western United States. Weed Research and Information Center, University of California. 544 pp.

EDDMapS. 2015. Early Detection and Distribution Mapping System. The University of Georgia-Center for Invasive Species and Ecosystem Health. Available online at <http://www.eddmaps.org>

Grella, R. A. 2012. Invasion of *Centaurea nigrescens*, Tyrol knapweed, in North America. Doctor of Philosophy Dissertation. Stony Brook University. 133 pages.

Hitchcock, C. L., A. Cronquist, M. Ownbey, J. W. Thompson and J. R. Janish. 1955. Vascular Plants of the Pacific Northwest, Part 5: Compositae. University of Washington Press. 349 pages.

Keil, D. J. and Ochsmann, J. 2006. *Centaurea*. In: Flora of North America Editorial Committee, eds. 1993+ Flora of North America North of Mexico. 18+ vols. New York and Oxford. Accessed online at

National Plants Board. 2015. Accessed online at: <http://nationalplantboard.org/>

Roché, C. 1992. Short-fringed knapweed (*Centaurea nigrescens* Willd., *C. Dubia* Suter in Flora of the Pacific Northwest). A Pacific Northwest Extension Publication, Bulletin PNW 417.

Ruhren, S. 2000. Seed-head fly interactions across diverse knapweed patches. Northeastern Naturalist. 7(3): 270-276.

USDA, ARS. 2015. National Genetic Resources Program. Germplasm Resources Information Network- (GRIN) Online Database. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: <http://www.ars-grin.gov/cgi-bin/npgs/html/taxon.pl?403429>

USDA, NRCS. 2015. The PLANTS Database (<http://plants.usda.gov>). National Plant Data Team, Greensboro, NC 27401-4901 USA.

WSDA. 2011. Vochin knapweed, *Centaurea nigrescens*, distribution 2011. Map. <http://agr.wa.gov/PlantsInsects/Weeds?WeedMapLists/> .