PLUMELESS THISTLE

Carduus acanthoides L.

Family: *Asteraceae* (Sunflower).
Other Scientific Names: None.
Other Common Names: Bristly thistle, spiny plumeless thistle.
Legal Status: Regional Noxious: Central Kootenay.

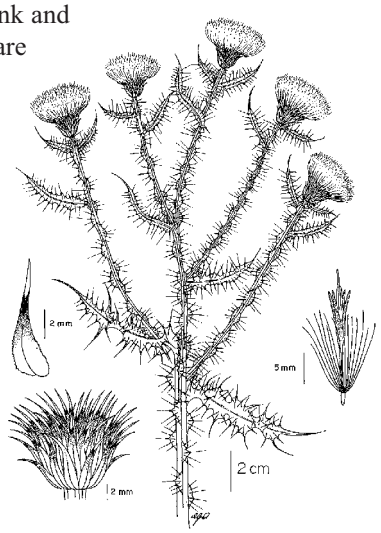
Identification

Growth form: Winter annual or biennial forb.

Flower: Flower heads are solitary at the ends of branches or in clusters of 2–5. Flower bracts are narrowly lance-shaped and appear as sharp spines. Flowers are purplish-pink and clustered in heads that are 2–5 cm in diameter.

Seeds/Fruit: One-seeded fruit (achene), capped by a ring of bristles.

Leaves: Basal rosette leaves are usually 10–20 cm long with spiny lobes. Stem leaves alternate, stalkless, hairy underneath, and blending into the stem.



Stems: Mature plants are 0.3–1.2 m tall and have a stout, fleshy taproot. Stems are freely branched above and covered with leaf-like spines that extend up to the flowering heads (Whitson et al. 1996).

Roots: Thick, fleshy taproot.

Seedling: No information available.

Other: Closely related to musk or nodding thistle (*Carduus nutans*).

Similar Species

Exotics: Similar to musk/nodding thistle. Rosettes are distinguished from those of nodding thistle by having deeply serrate (saw-toothed) leaves almost to the midrib.

Natives: Native thistles generally do not have leaves clasping the stem all the way from node to node (strongly decurrent leaves), and many have hairy upper and lower leaf surfaces and are blue-green or grey in colour.

Impacts

Agricultural: Unpalatable to livestock; large or dense infestations may reduce available forage.

Ecological: Does not typically pose a threat to high-quality natural areas, although it has been known to invade native and restored grasslands despite the presence of dense, native prairie vegetation (Wisconsin DNR 1998). One of the most aggressive thistles due to its large seed production (Feldman 1997).

Human: No information available.

Habitat and Ecology

General requirements: Grows in pastures, fields, disturbed habitats, and logged-over areas and along roadsides at mid-elevations.

Distribution: In BC occurs in isolated pockets in the Cariboo, Kamloops, Kootenay, and Boundary areas (Powell et al. 1994). Especially problematic on the Great Plains and in mesic pastures of the inter-mountain West of the US, it is a major concern in the Kootenay and Omineca agricultural reporting regions in the province and is also present in the Thompson agricultural region.

Historical: Introduced from Eurasia.

Life cycle: Seedlings emerge from early spring to late autumn and the length of time to flowering can vary from 4 to 22 months (Wisconsin DNR 1998). A single taproot is formed and stem elongation occurs in early May. Flowering begins in early June and lower branches continue to flower until mid-August (Wisconsin DNR 1998).

Mode of reproduction: By seed.

Seed production: A single plant can produce up to 9,000 seeds.

Seed bank: Under favourable conditions, 90–95% of seeds may germinate (Feldman 1997) and seeds can remain viable in the soil for up to 10 years (Wisconsin DNR 1998).

Dispersal: Seeds are mainly dispersed by wind.

Hybridization: May hybridize with musk or nodding thistle (*Carduus nutans*).

Management

Biocontrol: *Rhinocyllus conicus* (weevil) and *Trichosirocalus horridus* (rosette weevil) appear to limit populations of plumeless and musk or nodding thistle (Powell et at. 1994), but they may also use native thistles as an alternate host.

Mechanical: As with musk or nodding thistle, plumeless thistle flower heads can be cut and removed to eliminate seed production. Rosettes can also be removed mechanically. This can be an effective control method for relatively small infestations. However, it must be repeated annually to exhaust the soil seed bank.

Fire: No information available.

Herbicides: Picloram, dicamba, 2,4-D, and glyphosate have all been used successfully to manage this species. Metsulfuron-methyl will also control plumeless thistle. Herbicides should be applied in the spring, 10–14 days before bolting, or in the autumn to new rosettes. Metsulfuron-methyl should be applied to bolting plants. Consult the most recent edition of BC Ministry of Agriculture, Food and Fisheries Crop Production Guides for specific recommendations. **Before applying herbicides, read the label for full use and precautionary instructions.**

Cultural/Preventive: Reseed controlled areas with desirable species.

Integrated Management Summary

Management of plumeless thistle is similar to that of nodding thistle. Elimination of seed production is key. Rosettes can be pulled or dug out by hand prior to bolting, or treated with herbicide. Once plants have bolted, seed heads must be removed to prevent the production of viable seed.

References

Feldman, S. R. 1997. Biological control of plumeless thistle (*Carduus acanthoides* L.) in Argentina. *Weed Science* 45: 534–537.

Louda, S. M., D. Kendall, J. Connor, and D. Simberloff. 1997. Ecological effects of an insect introduced for the biological control of weeds. *Science* 277: 1088–1090.

Powell, G. W., A. Sturko, B. M. Wikeem, and P. Harris. 1994. *Field Guide to the Biological Control of Weeds in British Columbia*. Land Management Handbook No. 27. BC Ministry of Forests.

Whitson, T. D. (ed.), L. C. Burrill, S. A. Dewey, D. W. Cudney, B. E. Nelson, R. D. Lee, R. Parker. 1996. Plumeless thistle. *Weeds of the West.* Western Society of Weed Science, in cooperation with the Western United States Land Grant Universities Cooperative Extension Services, Newark, CA.

Wisconsin Department of Natural Resources. 1998. Musk or nodding thistle (*Carduus nutans*), plumeless or bristly thistle (*Carduus acanthoides*), and bull thistle (*Cirsium vulgare*). http://www.dnr.state.wi.us/org/land/er/invasive/factsheets/thistles.htm [27 Jan 99].