

Canada thistle

Cirsium arvense (L.) Scop.

Synonyms: *Breca arvensis* Less., *B. incana* (Gmel.) W.A. Weber, *Carduus arvensis* (L.) Robson, *Cirsium arvense* var. *argenteum* (Vest) Fiori, *C. arvense* var. *horridum* Wimmer & Grab., *C. arvense* var. *integrifolium* Wimmer & Grab., *C. arvense* var. *mite* Wimmer & Grab., *C. arvense* var. *vestitum* Wimmer & Grab., *C. incanum* (Gmel.) Fisch., *C. setosum* (Willd.) Bess. ex. Bieb., *Serratula arvensis* L.

Other common names: California thistle, Canadian thistle, creeping thistle, field thistle

Family: Asteraceae

Invasiveness Rank: 76 The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Description

Canada thistle is a perennial plant with deep and extensive horizontal roots that can form new shoots. Stems usually grow 30½ to 122 cm tall and branch above. Leaves are alternate, sessile, and shallowly to deeply pinnatifid or lobed with spiny margins. The lower surfaces of leaves are often covered with soft, woolly hairs. Male and female flower heads appear on separate plants. Flower heads measure 13 to 19 cm in diameter. Flowers are purple and almost exclusively insect-pollinated. Seeds are brownish with a tuft of hairs at the top (Whitson et al. 2000).



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Similar species: Canada thistle is the only thistle in Alaska that has narrow flower heads and lacks winged stems.

Ecological Impact

Impact on community composition, structure, and

interactions: Canada thistle threatens natural communities by competing for water and nutrients, displacing native vegetation, and decreasing species diversity. It produces allelopathic chemicals that assist in displacing competing plant species (Hayden 1934, Evans 1984). Pollinating insects appear to be drawn away from native species to visit Canada thistle (Zouhar 2001). This species has been reported to accumulate nitrates that cause poisoning in animals. The spiny leaves scratch skin, sometimes causing infections. Canada thistle is a host for bean aphid, stalk borer, and sod-web worm (Nuzzo 1997).

Impact on ecosystem processes: Canada thistle can increase fire frequency and severity because of its abundant, readily ignited litter (Zouhar 2001).

Biology and Invasive Potential

Reproductive potential: Canada thistle reproduces sexually by seeds and vegetatively from its lateral roots, which send up new shoots every year. It readily propagates from stem and root fragments. An individual plant can produce over 40,000 seeds per year (Royer and Dickinson 1999).

Role of disturbance in establishment: Canada thistle has been observed in natural areas around ponds and wetlands where water levels fluctuate. It has also been documented growing in areas of soil erosion and on gopher mounds. This species cannot establish or spread in undisturbed habitats or pastures in good condition (Evans 1984, Bossard et al. 2000, Zouhar 2001). Cultivation stimulates the growth of the horizontal roots, thereby increasing the number of new upright shoots borne by the horizontal runners (Hayden 1934).

Potential for long-distance dispersal: Each seed has a pappus, but the pappus breaks off the seed easily. Most seeds land near the parent plant. However, a small proportion of seeds (0.2%) can disperse 1 km or further from the parent plant (Bostock and Benton 1979, Nuzzo 1997). Seeds float and are dispersed by water. They can also be dispersed in dung. Ducks and other waterfowl

may be agents of distribution for Canada thistle seeds (Hayden 1934).

Potential to be spread by human activity: Canada thistle spreads as a contaminant in crop seed, hay, and packing material. Additionally, it can be spread in mud attached to vehicles or farm equipment (Nuzzo 1997).

Germination requirements: Canada thistle seeds germinate best in the top 1 cm of soil under conditions with abundant soil moisture and temperatures between 20°C and 30°C. New seeds will germinate in bright light. Approximately 90% of seeds germinate within one year. Some seeds, however, can remain dormant in the soil for up to 20 years (Hutchison 1992). The amount of time for which a seed remains viable increases as the depth at which the seed is buried increases (Nuzzo 1997).

Growth requirements: Canada thistle can grow on a variety of soil types, including clay, loam, silt, gravel, and chalk. It does not tolerate shade (Nuzzo 1997).

Congeneric weeds: Bull thistle (*Cirsium vulgare*), prairie thistle (*C. canescens*), meadow thistle (*C. scariosum*), Flodman's thistle (*C. flodmanii*), Japanese thistle (*C. japonicum*), yellowspine thistle (*C. ochrocentrum*), marsh thistle (*C. palustre*), and wavyleaf thistle (*C. undulatum*) are each considered noxious weeds in one or more states of the U.S. or provinces of Canada (Invaders 2010, USDA 2010).

Legal Listings

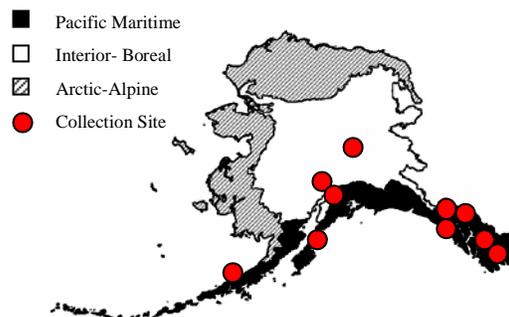
- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states (AL, AR, AZ, CA, CO, CT, DE, HI, IA, ID, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MT, NC, ND, NE, NJ, NM, NV, NY, OH, OK, OR, PA, RI, SD, TX, UT, VT, VA, WA, WI, WY)
- Federal noxious weed
- Listed noxious in Canada or other countries (AB, BC, MB, ON, PQ, SK; considered a serious pest in 37 countries)

Distribution and Abundance

Canada thistle commonly grows in roadsides, railroad embankments, lawns, gardens, abandoned fields, agricultural fields, and pastures. Natural areas that have been invaded by Canada thistle include prairies, wet

grasslands (Canada, North Dakota, and South Dakota), and sedge meadows (Wisconsin and Illinois). In eastern North America, Canada thistle grows in swamps, ditches, sand dunes, stream banks, and lakeshores (Nuzzo 1997).

Native and current distribution: Canada thistle is native to southeastern Europe, western Asia, and northern Africa. It was introduced to North America in the early 17th century and was declared a noxious weed by the state of Vermont in 1975 (Nuzzo 1997). It grows throughout most of Canada and the U.S. (USDA 2010). Canada thistle currently has a nearly global distribution, exclusive of Antarctica. It is known to grow throughout Europe, northern and southern Africa, western and central Asia, India, Japan, China, North America, South America, New Zealand, Tasmania, and Australia (Hultén 1968, Nuzzo 1997). Canada thistle has been documented from the Pacific Maritime and Interior-Boreal ecogeographic regions of Alaska (Hultén 1968, AKEPIC 2010, UAM 2010).



Distribution of Canada thistle in Alaska

Management

Canada thistle is very difficult to control once it has established. Most research on Canada thistle control focuses on agricultural systems. Currently, there are no control methods suitable for wide-spread use in natural areas. Greater effort is warranted in areas that have new or small invasions. A combination of mechanical, cultural, and chemical control methods are more effective than any single control method alone. Potential biological control organisms are not adequately synchronized with Canada thistle's life cycle in North America to provide effective control (Nuzzo 1997).

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