Canada thistle

Cirsium arvense (L.) Scop.

Synonyms: *Breea 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: creeping thistle, California thistle, field thistle
Family: Asteraceae

Description
Canada thistle is a perennial from deep and extensive horizontal roots, which can form new shoots. Stems are mostly 1-4 feet tall, branching above. Leaves are alternate, lacking petioles, shallowly to deeply pinnatifid or merely lobed, the margin spiny. The leaf underside is often covered with soft, woolly hairs. Flowers are purple in heads ½ to ¾ inch in diameter. Male and female flowers heads appear on separate plants. Flowers are almost exclusively insect-pollinated. Fruits are brownish, with a tuft of hairs at the top (Whitson et al. 2000).


Canada thistle flower heads

Canada thistle is the only thistle in Alaska with narrow flowering heads and lacking a winged stem.

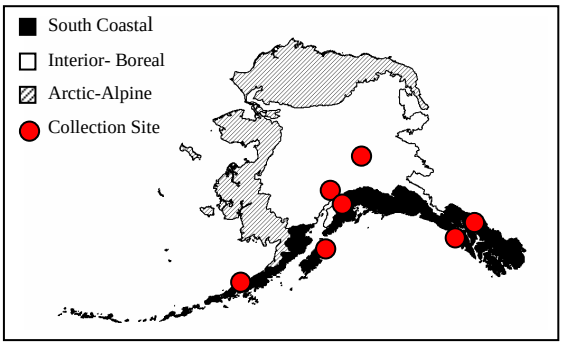
Ecological Impact
Impact on community composition, structure, and interactions: Canada thistle threatens natural communities by directly competing for water and nutrients and displacing native vegetation, decreasing species diversity. It produces allelopathic chemicals that assist in displacing competing plant species (Evans 1984, Hayden 1934). 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 and the spiny leaves scratch animal skin, causing infection, at a minimum. It is a host for bean aphid and stalk borer, and for sod-web worm (Nuzzo 1997).
Impact on ecosystem process: Canada thistle can increase fire frequency and severity due to its abundant and readily ignited litter (Zouhar 2001).

Biology and Invasive Potential
Reproductive potential: Canada thistle readily propagates from stem and root fragments. It reproduces by seeds, but mostly spreads by lateral roots sending up new shoots each year. An individual plant may produce over 40,000 seeds a year (Royer and Dickinson 1999).
Role of disturbance in establishment: Canada thistle has been observed on natural areas around ponds and wetlands where water levels fluctuate, areas of soil erosion, gopher mounds. It apparently cannot become established or spread in undisturbed or good or excellent condition pastures (Bossard et al. 2000, Evans 1984, Zouhar 2001). Cultivation stimulates the growth of horizontal roots, thereby increasing the number of new upright shoots borne by the horizontal runners (Hayden 1934).
Potential for long-distance dispersal: The pappus breaks off easily from the seed and most seeds land near the parent plant. However a small proportion of seeds (0.2%) can disperse 1 km or more from the parent plant (Bostock and Benton 1979, Nuzzo 1997). The seeds float and are easily distributed by water. It can also be dispersed in dung. There is a belief that ducks and other waterfowls are the agents of distribution of Canada thistle seeds (Hayden 1934).
Potential to be spread by human activity: It spreads as a contaminant in crop seed, hay, and packing material. Additionally, it can be spread in mud attached to vehicle and farm equipment (Nuzzo 1997).
Germination requirements: Canada thistle seeds germinate best in the top 1 cm of soil at abundant soil

moisture and temperatures averaging from 68 to 86°F. New seeds will germinate in bright light. Approximately 90% of seeds germinate within one year; some seeds remain dormant in the soil for up to 20 years, however (Hutchison 1992). The deeper the seed is buried, the longer the viability (Nuzzo 1997).
Growth requirements: Canada thistle grows on variety of soil types: clay, loam, silt, gravel, and chalk. It does not tolerate shade (Nuzzo 1997).
Congeneric weeds: *Cirsium canescens* Nutt., *C. orchocentrum* Gray, *C. scariosum* Nutt., *C. undulatum* (Nutt.) Spreng., *C. vulgare* (Savi) Ten. (USDA 2002, Whitson et al. 2000).
Listing: Canada thistle has been declared noxious by 35 states and 6 Canadian provinces (Invaders Database System 2003). It is considered a serious pest in 37 countries (Zouhar 2001). It is a prohibited noxious weed in Alaska (Alaska Administrative Code 1987).

Distribution and Abundance
Canada thistle 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 is found throughout Canada and the northern half of the United States (USDA 2002). It is common on roadsides, railway embankments, lawns, gardens, abandoned fields, agricultural fields, and pastures. Natural areas invaded include prairies and wet grasslands (Canada, Dakota), sedge meadows (Wisconsin and Illinois). In eastern North America, it occurs in sand dunes, stream banks, lakeshores, swamps, and ditches (Nuzzo 1997).

Native and current distribution: Native to southeastern Europe, western Asia, and northern Africa. It now has a near global distribution, exclusive of Antarctica. It cccurs throughout Europe, northern and south Africa, western and central Asia, India, Japan, China, North and South America, New Zealand, Tasmania, and Australia (Hultén 1968, Nuzzo 1997).



Distribution of Canada thistle in Alaska

Management
Canada thistle is very difficult to control once established. The literature on *C. arvense* control focuses on agricultural systems. At this time, 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 methods are more effective than any single method used alone. Potential biocontrol organisms are not adequately synchronized with Canada thistle's life cycle in North America (Nuzzo 1997).

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