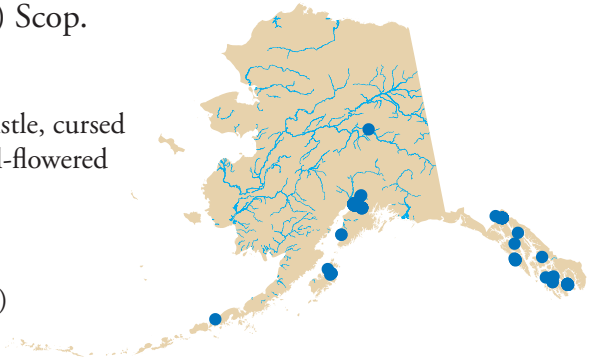
Canada Thistle

Cirsium arvense (L.) Scop.



Alternate Names

Creeping thistle, field thistle, cursed thistle, corn thistle, small-flowered thistle, green thistle

Synonyms

Cirsium incanum (Gmel.) Fisch., *Cirsium setosum* (Willd.) Bess. ex. Bieb., *Serratula arvensis* L.

XID Services photo by Richard Old

Male flower heads.

Description

Canada thistle is a perennial plant that can form new shoots from deep and extensive horizontal roots. Stems are generally 1–4 feet tall, branching above. Leaves are alternate, lacking petioles, shallowly to deeply pinnatifid or merely lobed, with spiny margins. The leaf underside is covered with soft, woolly hairs. Flowers are purple in heads measuring ½–¾ of an inch in diameter. Male and female flowerheads occur on separate plants. Flowers are mostly insect-pollinated. Fruits are brownish, with a tuft of hair at the top.

Similar Species

There are three native species of thistle whose ranges barely extend into the southern and northern portions of southeast Alaska as well as the western Aleutians (Hultén 1968): edible thistle (*Cirsium edule* Nutt.), Drummond's thistle (*C. foliosum* (Hook.) DC.), and Kamchatka thistle (*C. kamtschaticum* Ledeb. ex DC.), respectively. Canada thistle is one of

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Seed heads of female plants.

two species of exotic thistle in Alaska—the other being bull thistle (*C. vulgare* (Savi) Ten., included in this book)—and is the only thistle found in Alaska with narrow flowerheads. The edible thistle (*Cirsium edule* Nutt.) is found in the southern portion of southeast Alaska and is included in the Forest Service's Regional Forester's List of Sensitive Species. It has much larger flowerheads than Canada thistle.

Ecological Impact

Canada thistle threatens natural communities by directly competing for water and nutrients and displacing native vegetation, which often leads to a decrease in species diversity. It also produces allelopathic chemicals which assist in this displacement (Evans 1984, Hayden 1934). Pollinating insects appear to be drawn away from native species to visit Canada thistle (Zouhar 2001b). This species has been reported to accumulate nitrates that cause poisoning in animals upon ingestion. It is a host for several pests, including bean aphids, stalk borers, and sod-web worms (Nuzzo 1997). Canada thistle can increase fire frequency and severity due to its abundant and flammable litter (Zouhar 2001b). It is an aggressive agricultural weed and has the potential to reduce crop yields by 100% (Royer and Dickinson 1999).

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Biology and Invasive Potential

Canada thistle readily propagates from stem and root fragments. It reproduces by seeds but mostly spreads by sending up new shoots each year from lateral roots. An individual plant may produce over 40,000 seeds per year (Royer and Dickinson 1999). Canada thistle has been observed in natural areas around ponds and wetlands, areas of soil erosion, and gopher mounds. It apparently cannot become established or spread in undisturbed lands or in good to excellent pasture conditions (Zouhar 2001b, Bossard et al. 2000, Evans 1984), while soil disturbance increases

thistle densities (Hayden 1934). The pappus breaks off easily from Canada thistle seeds, thereby leaving most seeds landing near the parent plant. However, a small proportion of seeds (0.2%) will disperse 1 km or more from the parent plant (Nuzzo 1997, Bostock and Benton 1979). The seeds float and are easily distributed by water, ducks, and other waterfowl (Hayden 1934). They can also be dispersed in dung. Canada thistle also spreads as a contaminant of nursery rootstock, crop seed, hay, and packing material and in mud attached to vehicles and farm equipment (Nuzzo 1997). Seeds germinate best in the top half-inch of soil with abundant soil moisture and temperatures averaging between 68° and 86°F. New seeds will germinate in bright light. Approximately 90% of seeds germinate within one year, but some seeds can remain viable in the soil for up to 20 years (Hutchison 1992). Canada thistle can grow on a variety of soil types, including clay, loam, silt, gravel, and chalk, and is shade-intolerant (Nuzzo 1997). It has been declared noxious by six Canadian provinces and 35 of the United States, including Alaska (Alaska Administrative Code 1987), and is considered a serious pest in 37 countries (Zouhar 2001b).

UAF Cooperative Extension Service photo by Michael Rasy

Distribution and Abundance

Canada thistle was introduced to North America in the early 17th century and was first declared a noxious weed by the state of Vermont in 1795 (Nuzzo 1997). It is found throughout Canada and the northern half of the United States (NRCS 2005). It has been found in many locations in southeast and southcentral Alaska, as well as Fairbanks, Delta Junction, Afognak Island, and Cold Bay. The first recorded occurrence in Alaska was in Palmer in 1946 (ALA 2004). Outside of Alaska, it is common on roadsides, railway embankments, lawns, gardens, abandoned fields, agricultural fields, and pastures. Susceptible natural areas

include prairies and wet grasslands in Canada and the Dakotas and sedge meadows in Wisconsin and Illinois. In eastern North America, it occurs in sand dunes, stream banks, lakeshores, swamps, and ditches (Nuzzo 1997). It is native to southeastern Europe, western Asia, and northern Africa.

Management

Canada thistle is very difficult to control once established. Hand-pulling is ineffective because it fails to remove the lateral roots. A combination of mechanical, cultural, and chemical methods are more effective than any single method alone. Mowing is effective only if repeated monthly for several years. When using herbicides, proper timing and dosage are essential; otherwise the plants thrive because competing vegetation was killed. Mature thistle plants will not absorb herbicide well enough be completely killed, but after a mid- to late-summer mowing, they will readily absorb herbicides as rosettes. For best results, mow plants in mid- to late-summer and then apply herbicide in the early fall when photosynthate is being transported to the roots.

Notes

Despite its common name, Canada thistle was introduced from central Eurasia as a contaminant of crop seed. It has achieved nearly global distribution, excluding Antarctica.