

Plants 4 bees - Thistles of Canada

Common Name: Canada Thistle, Bull Thistle, Scotch Thistle

Scientific Name: *Cirsium arvense* (L.) Scop., *Cirsium vulgare* (Savi), Tenore, *Onopordum acanthium* L.

Native Range: All of these thistles are considered pests, not only in Canada but throughout North America and in much of the rest of the world. The most widely distributed thistle in Canada, the Canada thistle, *Cirsium arvense*, is not originally from Canada at all. It was first introduced to North America in the 1600's from southeastern Europe and by the late 1700's laws were being enacted in New England (USA) to control this pest. Canada thistle is considered to be one of the most tenacious and economically important agricultural weeds. Strangely enough it is called Canada thistle in many other countries as well as here.

Bull thistle, *Cirsium vulgare*, native to Europe, western Asia and North Africa, as with Canada thistle has become a global pest.

Scotch thistle, *Onopordum acanthium*, originally came from Europe. Despite this thistle being the national symbol of Scotland, it prefers the summer-dry warmer Mediterranean climate.

Canadian Distribution: Canada thistle is found in all provinces and territories of Canada. It is highly adaptable and tends to be an early colonizer on disturbed sites. Not all thistles in the *Cirsium* genus are such adaptable, widely distributed pests. The Pitcher's thistle, *Cirsium pitcheri*, is an endangered native species found in Ontario on Manitoulin Island and around Lake Huron.



Bull thistle, *Cirsium vulgare*

Bull thistle has a wide distribution in the US and is found in most Canadian provinces. It is generally less common on the prairies.

Scotch thistle has a more limited distribution in Canada, being found mostly in the more southern regions along the US border.

Description: All of these thistles are herbaceous members of the aster family (*Asteraceae*). The Canada thistle is a perennial herb, the bull thistle a biennial and the Scotch thistle an annual or biennial. The Scotch thistle is the largest, growing to 2 to 3 m in height while the Canada and bull thistles generally manage only 0.3 to 1 m. The bull thistle can occasionally reach 2m in height.

The Canada and bull thistles have deep horizontally spreading root systems while the Scotch thistle has a large fleshy taproot system.

Four varieties of *C. arvense* have been recognized based on variation in leaf characters, texture, segmentation, and spinyess. The stems are slender, green, and freely branched. The leaves are alternate, sessile (no stalk), and deeply lobed. The leaf margins have stiff yellowish spines. The plants are dioecious (plants are either male or female) with many

relatively small (1 to 2 cm) purple flowers heads (up to 100/plant).

C. vulgare is distinguished from the other thistles by the covering of short, sharp prickles on the upper, dark green surface of the leaf blade, these prickles (apart from the obvious spines along the margins and tips of the lobes) make the surface harsh to the touch. The bracts (modified leaves below the flower) have spines on the bull thistle but not on the Canada thistle (see photos). It is bisexual with purple flower heads larger (3.5 to 5 cm) than those of the Canada thistle. There can be up to 400 flower heads on a plant, although generally less than 100.

O. acanthium is coarse, many-spined and is highly branched. The stems of this plant are relatively thick with 'wings' of ribbon-like leaf material. The leaves are oblong and prickly being toothed or slightly lobed along the margins. They are sessile, with the lower leaves measuring up to 30cm. They are covered with cottony hairs that give the plant a grey-green colour. If a plant is biennial, in the first year of its growth, only the basal rosette of leaves will be present. The flower heads are purple in color and measure 2.5 to 5cm in diameter. All of the bracts are tipped with flat, pale, orange-colored spines.



Canada thistle, *Cirsium arvense*

Canadian Habitat: Thistles tend to populate disturbed sites, particularly open non-forested spaces such as verges of roadways, over grazed fields, etc.

Ecology: Canada thistle grows in most soil types but does poorly in wet, waterlogged soils. It is most common in disturbed sites (i.e. road and rail rights of way, fields and riparian zones) with little shade. Flowering occurs when day length reaches 15 hours. The blooming period is longer in the north than in the south. In Canada blooming occurs from mid-June to October, generally July through mid-September.

Herbivores tend to avoid *Cirsium* spp., this encourages its spread in managed rangelands, especially when over grazed.

Bull thistle forms short-lived populations as an early colonizer species. It dies out after a few years as other species recover. Flowering occurs from mid to late summer, but inflorescences (flowers) can be seen until the 1st frost or snowfall in autumn. Individual flowers last for a few days depending on relative humidity. A single plant may flower from 1 to 6 weeks, and a population can flower for up to 5 months. The blooming period can occur from June to September but July to September is most common.

Scotch thistle tends to grow larger in cooler climates but has a corresponding lower germination rate. They can flower from July to October but tend to have a shorter flowering season than most of the other thistles.

Methods of Reproduction and Spread: Canada thistle has a complex system of roots that can survive our winters and give rise to vegetative (asexual) propagation through aerial shoots. Limited spread and reproduction occurs through seed. The bull and Scotch thistles do not reproduce vegetatively but when biennial have a limited ability to recover from vegetative damage.

Bull and Scotch thistle reproduce only sexually by seed, some of which can survive up to 20 years in the soil.

Honey/Pollen Potential: Canada thistle has fragrant flowers that are attractive to honeybees and are considered a good source of nectar and pollen. Small numerous flower heads produce abundant nectar. Because of its wide distribution it is probably the greatest contributor of the thistles to the honey crop. It provides a light honey, sometimes called water-white, that granulates to a fine texture and has a mild flavour. *C. arvense* is considered a class 3 (51 to 100 kg/ha) plant for honey production.

Little has been documented on the honey production of bull thistle. It probably has similar nectar properties to Canada thistle and likely contributes to an often mixed harvest of thistle honey. Scotch thistle has little importance in Canada for honey, however in Australia, in regions where it is common, it can produce 29 kg/hive.

Another 'thistle' genus that is found less commonly but is present across much of southern Canada is the nodding thistle, *Carduus nutans* L. The common name comes from the large flower heads (up to 7.5 cm) that bend over (or nod) under their own weight, they are also known as musk thistle. Although not considered a prolific honey producer in Canada, it is considered a good source in parts of New Zealand and Australia. It is often sold as a specialty honey due to its floral bouquet and slow crystallizing properties.

A 'thistle' with yellow flowers rather than the more common purple to pink is the sow thistle, *Sonchus* spp. Two species found in Canada that contribute to the honey crop, particularly in the Maritimes and central Canada, are *S. arvensis* L. and *S. asper* (L.) Hill. They produce an amber honey.

A plant genus that is sometimes referred to as 'thistle' but more commonly as knapweed or corn flowers is the *Centaurea* spp. The honey from one species, the star-thistle or St. Barnaby's thistle, *C. solstitialis* L., is sold in the US as a specialty honey. The genus can generally produce 51 to 100 kg/ha of dark amber honey. It is common in the southern interior of BC and is a significant source in these regions. In Australia a mean honey yield of 24 kg/hive is expected. The genus is considered an excellent source of pollen.

Probably the most famous of the thistles for honey production is the great globe thistle (*Echinops sphaerocephalus* L.). It has been reported to produce up to 1500 kg/ha but 200 to 500 kg/ha may be more realistic.

All of the thistles discussed here are classified as weeds, some more noxious than others. It is not advisable (or in some regions legal) to plant or even encourage a noxious pest such as Canada thistle on any property. However, if present, even when a management strategy is put in place it can take many years to reduce the population. During this time the beekeeper could include the thistle in their overall harvest strategy.

Other Notes: *Cirsium* comes from the Greek 'cirsos' meaning swollen veins for which the thistle was considered a remedy. The shoots and roots have been consumed by some people in Russia and by first nations people in North America. Many of these thistles have ancient herbal and/or medicinal uses identified.

The milk thistle (*Sylibum marianum* (L) Gaertner) is being studied for its medicinal properties and cultivation potential in the prairies. One day beekeepers may be able to harvest honey from this nutraceutical crop.

Article compiled by: Douglas Clay

References:

DiTomaso, J. 2001. Yellow star thistle information. Weed Research and Information Center, University of California, Davis, USA. Online at: <http://wric.ucdavis.edu/yst/index.html>

Hiemstra, H. 2001. Honey Plant of the Month: Great Globe Thistle. The Sting. 19(6):29.

Morrison, K. 2004. Research seeks shorter milk thistle season. Western Producer. Sep.2 p75.

Ramsay, J. 1987. Plants for beekeeping in Canada and the northern USA. IBRA, Cardiff, UK. 198pp.

Royer, F. and R. Dickinson. 1999. Weeds of Canada and the Northern United States. Lone Pine Publishing and University of Alberta. Edmonton, Canada. 434pp.

Somerville, D.C. 2000. Flora Resource Database for the NSW Apiary Industry. Rural Industries Research and Development Corporation. NSW Agriculture, Goulburn, Australia. 153pp. Online at: <http://www.rirdc.gov.au/reports/HBE/99-174.pdf> .

Whitson, T.D. (ed). 1992. Weeds of the West. The Western Society of Weed Science. University of Wyoming, Jackson, USA. 630pp.

Zouhar, K. 2001. *Cirsium arvense* and *Cirsium vulgare*. In: Fire Effects Information System, Rocky Mountain Research Station, Fire Sciences Laboratory, US Forest Service, Missoula, USA. Online at: <http://www.fs.fed.us/database/feis>