



The rare American basket flower (*Centaurea americana*) is a lovely native thistle known historically from Missouri.

Missouri's Thistles

By Tim E. Smith

Photos provided by the Missouri Department of Conservation

To many, the name “thistle” conjures images of prickly, invasive plants that spread aggressively by means of wind-dispersed seeds on prairies and other areas—plants that we are alarmed to find on our property and that require prompt attention to eradicate. That may be an accurate perception, as most of Missouri’s thistles are introduced from Europe and some can be aggressive pests, especially in agricultural settings. But there are species that are exceptions and that don’t deserve to be painted with the broad brush of anti-thistle sentiment.

As with all common names of plants, there is really no standard application of the name “thistle” to any particular group of plants. The name is often used for plants with spiny leaves and/or stems or involucrel (shingle-like) bracts below the head of flowers. Some species are characterized by a densely hairy, whitish lower leaf surface. In Missouri, according to *Steiermark’s Flora of Missouri*, Vol. 2 by George Yatskievych (2006), the name “thistle” has been applied to 29 species in nine genera within three plant families. As the table below shows, the introductions outnumber the natives by a margin of 23 to 6. In Missouri, only the genus *Cirsium* contains more native than introduced species and two of the introduced *Cirsiums* are native to other parts of North America.

One of our common native thistles, field thistle (*Cirsium discolor*), can become abundant in early successional vegetation but is not likely to persist in high numbers as succession proceeds. I have been contacted on several occasions by public land managers who noticed an abundance of field thistle in plots where native grasses and forbs were being restored. Once an accurate identification was made from a collected specimen or good photograph, there was no need to implement expensive control methods to combat the species. I am sure that money and time are wasted on control measures every year in Missouri by landowners who are unnecessarily battling field thistles.

Family	Genus	Common Name	No. of Native Species	No. of Introduced Species
Asteraceae	<i>Carduus</i>	Plumeless thistle	0	2
Asteraceae	<i>Centaurea</i>	Star thistle	1	8
Asteraceae	<i>Cirsium</i>	Thistle	5	4
Asteraceae	<i>Guizota</i>	Niger thistle	0	1
Asteraceae	<i>Onopordum</i>	Scotch thistle	0	1
Asteraceae	<i>Silybum</i>	Milk thistle	0	1
Asteraceae	<i>Sonchus</i>	Sow thistle	0	3
Boraginaceae	<i>Echium</i>	Blue thistle	0	1
Chenopodiaceae	<i>Salsola</i>	Russian thistle	0	2
		TOTALS	6	23

Both natives and exotics occur on prairies.

Another common Missouri thistle is tall thistle (*Cirsium altissimum*). A native inhabitant of prairies, as well as several other natural communities, it should be no cause for alarm to the landowner. It seldom grows in great abundance and is part of the natural diversity of the prairie ecosystem, providing a nectar source for butterflies during the summer and later providing seeds for visiting goldfinches and other birds. Thistledown, the fine hairs (or pappus) attached to the mature fruits of this and other thistles, are used by a variety of birds and small mammals for lining nests.

Far from being aggressive invaders, several of our native thistles are rather rare and restricted to less common habitats. One of the rarest is in the star thistle genus *Centaurea* and goes by the common name of American basket flower (*Centaurea americana*). It is known only historically from Missouri, having last been documented by a collection from a native habitat in Barry County in 1935. It was last collected along a railroad track in St. Louis in 1956. Wavy-leaved thistle (*Cirsium undulatum*) has similarly been documented from only a few Missouri counties. It was also last seen in a St. Louis railyard (1957) but formerly occurred in native habitats in northwestern Missouri, including loess hill prairies. Swamp thistle (*Cirsium muticum*) occurs primarily in fens where soils are saturated with calcareous groundwater. It is known from a number of sites but has been documented from only seven Missouri counties.

The aggressively spreading exotic thistles that really do cause problems in Missouri include spotted knapweed (*Centaurea stoebe* ssp. *micranthus*), musk thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*) and Scotch thistle (*Onopordum acanthium* ssp. *acanthium*), with the first two species being the most widespread in the state. Musk, Canada and Scotch thistles are on Missouri's noxious weed list, so there is a legal mechanism requiring control of them.

Musk thistle was the target of a biological control effort initiated in the 1970s in which two

species of European weevils were released to feed on the plant's leaves and flower heads. The rosette weevil (*Trichosirocalus horridus*) feeds on leaves of this biennial thistle's overwintering rosette. The flower head weevil (*Rhinocyllus conicus*) lays eggs on the bracts of developing flowers and subsequent larvae burrow into the flower head, preventing seed development. Both insects are widely established in Missouri now and control many populations without the use of herbicides. Due to a lack of host-specificity, the flower head weevil has unfortunately attacked native North American thistles in the genus *Cirsium* and is widely cited as an example of the dangers inherent in introducing non-native insects to control non-native plants.

Native to Europe, where it is less competitive with other vegetation, the Scotch thistle is the national flower of Scotland. Legend has it that a Viking attacker of a Scottish castle stepped on the spiny plant during a sneak attack at night and his cries alerted the inhabitants who were able to repel the attackers. Unfortunately, its performance in North America has included no such redeeming qualities to endear it to our citizens.

With 29 thistles in Missouri, landowners should try to get beyond the negative reaction to all thistles. In natural, undisturbed habitats, one is more likely to find a native thistle than an invasive one. While it is important to catch infestations of invasive exotic thistles early, with accurate identification there may be no need for action. The key and illustrations on the adjoining pages may help you distinguish two of our native thistles from three of the more common invasive exotics. In addition, good specimens or photographs can be used for identification at Conservation Department offices, University Extension offices, university biology departments or botanical gardens. Thistles native to our region should be left to provide their benefits to wildlife. And if the Vikings decide to attack at night, having a thistle nearby could make all the difference.

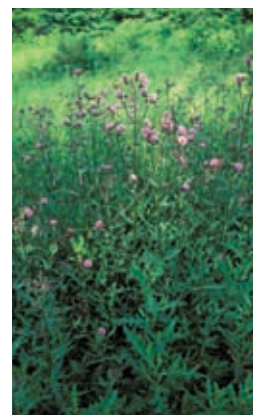
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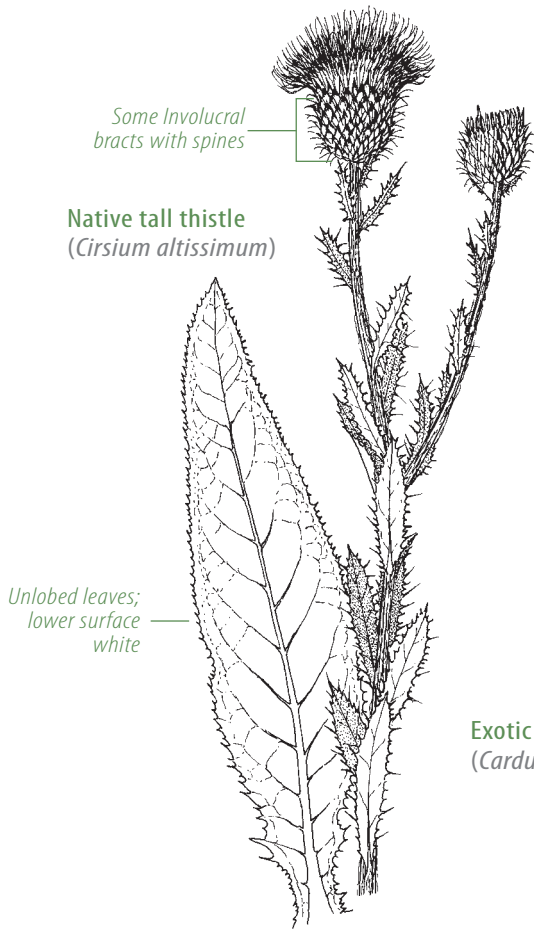
The native field thistle (*Cirsium discolor*).



The invasive exotic musk thistle (*Carduus nutans*).



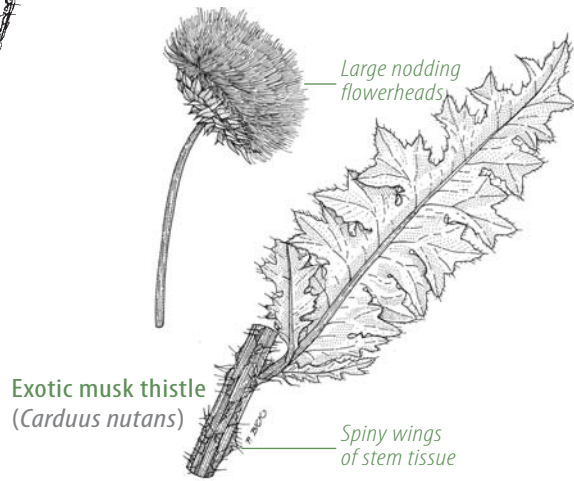
The invasive exotic Canada thistle (*Cirsium arvense*).



Native tall thistle
(*Cirsium altissimum*)

Unlobed leaves;
lower surface
white

Some involucre
bracts with spines



Exotic musk thistle
(*Carduus nutans*)

Large nodding
flowerheads

Spiny wings
of stem tissue

Exotic spotted knapweed
(*Centaurea stoebe*)



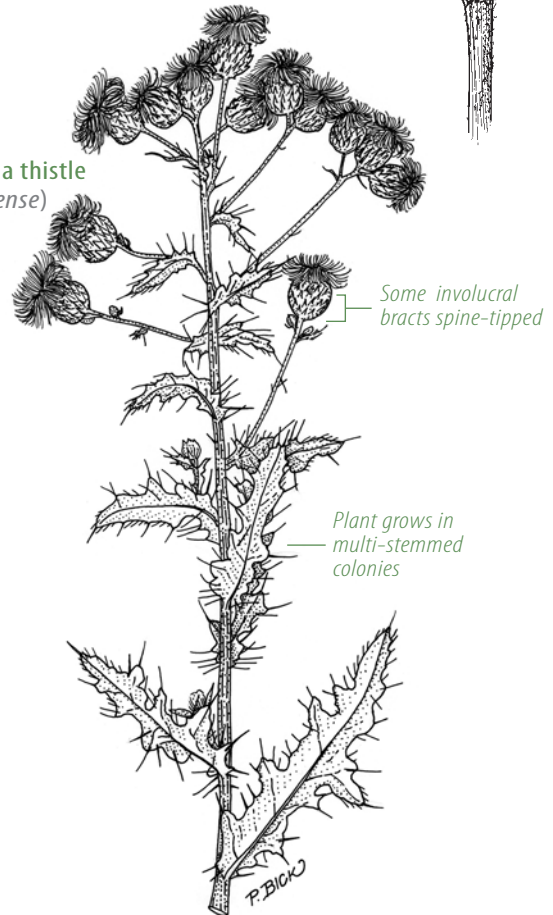
Spineless,
narrow-lobed
leaves

Native field thistle
(*Cirsium discolor*)



Leaves lobed
and spiny

Exotic Canada thistle
(*Cirsium arvense*)



Some involucre
bracts spine-tipped

Plant grows in
multi-stemmed
colonies



The invasive exotic spotted knapweed (*Centaurea stoebe*) can form thick stands.

Thistle Key

The following is a key to identification of five of the more common thistles in Missouri. Along with the illustrations on the facing page, it may help you to distinguish two of our native thistles from three of the more common invasive exotics. For more complete keys to all the thistles, consult *Steiermark's Flora of Missouri*, Vol. 2 by Yatskievych (2006).

- Leaves usually unlobed, lower surfaces white with felt-like hairs, some involucrel bracts spine-tipped, native biennial or short-lived perennial
-*Cirsium altissimum* (tall thistle)
- Leaves lobed or divided into narrow segments
 - Stems with spiny wings of tissue, leaves and stems with straw-colored spines, large flower heads (up to 3 in. in diameter) usually nodding, invasive exotic biennial*Carduus nutans* (musk thistle)
 - Stems without spiny wings of tissue
 - Leaves divided into 2 – 4 pairs of narrow lobes, without spines, involucrel bracts with comb-like fringe of bristles, invasive exotic, short-lived perennial
 -*Centaurea stoebe* ssp. *micranthus* (spotted knapweed)
 - Leaves lobed and spiny
 - Some of the involucrel bracts spine-tipped, not forming colony, native biennial or short-lived perennial
 -*Cirsium discolor* (field thistle)
 - Involucrel bracts sharp-pointed but not spine-tipped, growing in multi-stemmed colonies, invasive exotic perennial*Cirsium arvense* (Canada thistle)

Additional information on identifying and controlling musk thistle and Canada thistle can be found in the Missouri Department of Conservation's *Vegetation Management Manual*, available online at: <http://www.mdc.mo.gov/nathis/exotic/vegman/>