



Musk Thistle

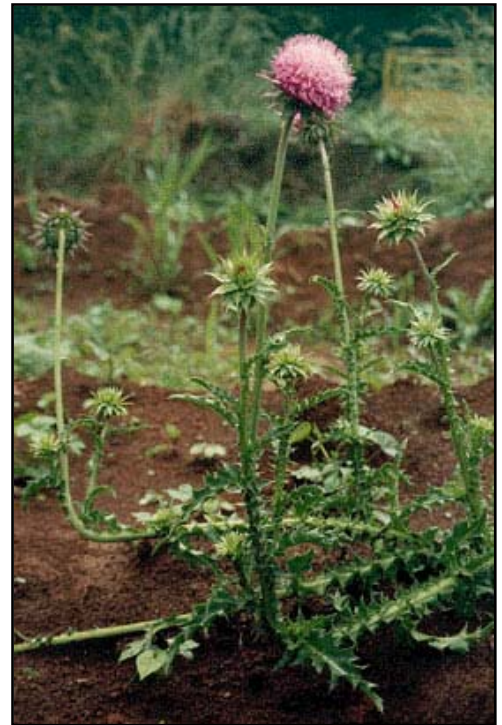
Carduus nutans L.
Aster family (Asteraceae)

NATIVE RANGE

Europe and Asia.

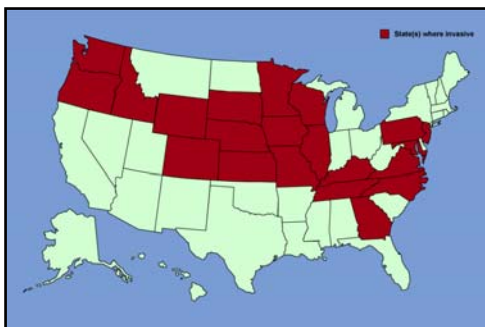
DESCRIPTION

Musk, or nodding thistle is an aggressive, biennial herb with showy red-purple flowers and painful spiny stems and leaves. Mature plants range in height from 1½ to 6 feet tall, and have multi-branched stems. Leaves are dark green, coarsely lobed, with a smooth waxy surface and a yellowish to white spine at the tip. The large disk-shaped flower heads, containing hundreds of tiny individual flowers, are 1½ to 3½ inches in length and occur at the tips of stems. Flower heads will droop to a 90-degree angle from the stem when mature, hence its alternate name, nodding thistle. Each plant may produce thousands of straw-colored seeds adorned with plume-like bristles.



ECOLOGICAL THREAT

Because musk thistle is unpalatable to wildlife and livestock, selective grazing leads to severe degradation of native meadows and grasslands as wildlife focus their foraging on native plants, giving musk thistle a competitive advantage. Although musk thistle is infrequently found in dense forests, it can colonize areas subjected to natural disturbances such as landslides or frequent flooding. Meadows, prairies, grassy balds, and other open areas are susceptible to invasion.



DISTRIBUTION IN THE UNITED STATES

Musk thistle is found throughout the U.S. except for Maine, Vermont, Florida, Alaska and Hawaii.

HABITAT IN THE UNITED STATES

Musk thistle grows from sea level to about 8,000 ft elevation, in neutral to acidic soils. It invades open natural areas such as meadows, prairies, and grassy balds. It spreads rapidly in areas subjected to frequent natural disturbance events such as landslides and flooding but does not grow well in excessively wet, dry or shady conditions.

BACKGROUND

A native of western Europe, musk thistle was introduced into the eastern United States in the early 1800s and has a long history as a rangeland pest in the U.S. It was first discovered in Davidson County, Tennessee in 1942 and has been declared a noxious weed in many states, including North Carolina.

BIOLOGY & SPREAD

Musk thistle is usually a biennial, requiring 2 years to complete a reproductive cycle, but may germinate and flower in a single year in warmer climates. Seedlings emerge in mid to late July and develop into a rosette where plants can reach 4 feet in diameter. Plants overwinter in the rosette stage until they begin to bolt in mid-March. During the bolting stage plants form multi-branched stems to a height of 6 feet. The number of seedheads per plant is site-dependent and ranges from about 24 to 56 on favorable sites and 1 to 18 on less favorable sites. Flowers emerge in early May to August and seed dissemination occurs approximately one month after the flowers form. A single flower head may produce 1,200 seeds and a single plant up to 120,000 seeds, which may be wind blown for miles. Seed may remain viable in the soil for over ten years, making it a difficult plant to control.

MANAGEMENT OPTIONS

Mechanical, biological and chemical methods are some of the effective methods available for control of musk thistle.

Mechanical and Manual

Hand pulling is most effective on small populations and can be done throughout the year, but is most effective prior to the development of seeds. Flowers and seedheads should be bagged and disposed of in a landfill to prevent or minimize seed dispersal. Minimizing disturbance to the soil during removal activities will help reduce the chance of germination of seeds stored in the soil.

Biological

Two weevils have been introduced from Europe and released in the United States as a biological control for musk thistle, the thistlehead-feeding weevil (*Rhinocyllus conicus*) and the rosette weevil (*Trichosirocalus horridus*). These weevils have been released in a number of western states with some notable successes achieved. However, recent observations of unintentional and unanticipated impacts of the thistlehead-feeding weevil to native thistles, including some rare species, has raised a red flag about its continued use, at least in the western U.S.

Chemical

Foliar spraying is effective on established populations of musk thistle. Apply a 2% solution of glyphosate (e.g., Roundup®) or triclopyr (e.g., Garlon®) and water plus a 0.5% non-ionic surfactant wetting all leaves and stems. Chlorpyralid (e.g. Transline®) is effective at a concentration of 0.5% and is selective to Aster, Buckwheat, and Pea families. A low pressure and coarse spray pattern will limit drift and damage to non-target species. Treatments should be applied during the rosette stage or prior to flowering. Glyphosate is a non-selective systemic (i.e., moves through the plant) herbicide that can kill non-target plants that are only partially contacted by spray. Triclopyr is selective to broadleaf species and is a better choice if native grasses are present.

USE PESTICIDES WISELY: Always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations.

NOTICE: mention of pesticide products on this page does not constitute endorsement of any material.

CONTACTS

For more information on the management of musk thistle, please contact:

- Kris Johnson, Great Smoky Mountains National Park, Gatlinburg, TN

SUGGESTED ALTERNATIVE PLANTS

Although not a popular ornamental in the U.S., suitable native alternatives for musk thistle in the eastern U.S. might include butterfly weed (*Asclepias tuberosa*), Joe-pye weed (*Eupatorium dubium*), black-eyed Susan (*Rudbeckia fulgida*), ironweed (*Vernonia noveboracensis*), wild blue phlox (*Phlox divaricata*) and many others. Many plants native to the West are also available. Check with the native plant society in your state for more suggestions.

OTHER LINKS

- <http://www.invasive.org/search/action.cfm?q=Carduus%20nutans>

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