

spiny sowthistle

Sonchus asper (L.) Hill

Synonyms: *Sonchus oleraceus* var. *asper* L.

Other common names: prickly sow-thistle, spiny milk-thistle, spiny-leaf sowthistle

Family: Asteraceae

Invasiveness Rank: 46 The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

Description

Spiny sowthistle is an annual or biennial that grows up to 1.2 m tall from a short taproot. The plant is glabrous and excretes a milky juice when broken. Stems are erect, single, and branched above. Stem bases are thick and hollow. Leaves are oblong to obovate or lanceolate and often have lobes that are pinnate and deltate. Leaves are 6 to 30 cm long, 1 to 15 cm wide, tough, and alternate. Stem leaves lack stalks and have strongly downward-curved, rounded basal lobes. Leaf margins are prickly. Three whorls of involucre bracts surround the flower heads. These involucre bracts are 9 to 13 mm long and lanceolate, narrowing to slender tips. Flower heads consist of 25 to 150 ligulate, yellow ray florets. Each flower head is 1.5 to 2 cm in diameter. Seeds are brown and flattened with three lengthwise ribs, wings on the margins, and a white pappus (Hutchinson et al. 1984, Hyatt 2006, DiTomaso and Healy 2007, Klinkenberg 2010, NatureGate 2010).



Sonchus asper (L.) Hill. Photo by C. Evans

Similar species: Perennial sowthistle (*Sonchus arvensis*) and annual sowthistle (*Sonchus oleraceus*) are similar, non-native weeds that grow in Alaska. Perennial sowthistle can be distinguished by its creeping roots and involucre bracts that are 15 to 22 mm long. Annual sowthistle can be distinguished by the acute basal lobes on its upper leaves. Also, the leaves of annual sowthistle are more deeply lobed than the leaves of spiny sowthistle, and its leaf margins are weakly or scarcely prickly and soft to the touch (Hultén 1968, DiTomaso and Healy 2007, NatureGate 2010).

Ecological Impact

Impact on community composition, structure, and interactions: Spiny sowthistle may increase the density of vegetation and decrease the population sizes of native species in disturbed areas. It is a host for several nematode and aphid species and supports several major plant viruses (Hutchinson et al. 1984). The plant is edible and may be grazed by herbivores (Lewin 1948). Because spiny sowthistle is insect pollinated, its presence could alter plant-pollinator interactions. The leaves have prickly, spiny margins (DiTomaso and Healy 2007).

Impact on ecosystem processes: Spiny sowthistle may delay natural successional processes or impede the establishment of native species in disturbed areas, but it is unlikely to significantly alter any ecosystem processes.

Biology and Invasive Potential

Reproductive potential: Spiny sowthistle reproduces by seed only (DiTomaso and Healy 2007) with each plant producing 20,000 to 26,000 seeds (Hutchinson et al. 1984, Royer and Dickinson 1999). Seeds can survive between two and eight years in the soil in field conditions (DiTomaso and Healy 2007).

Role of disturbance in establishment: Spiny sowthistle only germinates in disturbed areas (Hutchinson et al. 1997), and infestations have only been observed in disturbed areas in Alaska (AKEPIC 2010).

Potential for long-distance dispersal: Each seed has a pappus. Seeds are primarily dispersed by wind but can also be carried by water or spread after being ingested

by birds or small mammals (Hutchinson et al. 1984, DiTomaso and Healy 2007).

Potential to be spread by human activity: The pappus becomes sticky when wet. Seeds can be transported by animals on feathers and fur and by humans on clothing, shoes, vehicles, and machinery. Spiny sowthistle has been documented as a contaminant in some commercial grass seed (Hutchinson et al. 1984, DiTomaso and Healy 2007). Some seeds remain viable after passing through the digestive systems of livestock (Lewin 1948).

Germination requirements: Spiny sowthistle can germinate on compacted or uncompacted soil. Temperature stratification between 43°F and 77°F, moisture, and light stimulate germination. Germination rates decrease as the burial depths of seeds increase; only 5% of seeds germinate when buried underneath 3 cm of soil. Most seedlings emerge in the late spring but some emerge in the fall (Lewin 1948, Hutchinson et al. 1984, DiTomaso and Healy 2007).

Growth requirements: Spiny sowthistle can grow in most soil conditions, including clay and loamy or sandy soils. It grows best on well-drained, nutrient-rich soils with pH levels between 6.5 and 9. It grows well during temperate summers or tropic winters. Spiny sowthistle is tolerant of saline soil and can tolerate calcium carbonate (CaCO₃) content up to 55%. Plants that germinate in the fall overwinter as rosettes (Lewin 1948, Hutchinson et al. 1984).

Congeneric weeds: Perennial sowthistle (*Sonchus arvensis*) and annual sowthistle (*Sonchus oleraceus*) are known to occur as invasive species in Alaska (AKEPIC 2010). Perennial sowthistle is listed as a noxious weed in AK, AZ, CA, CO, HI, IA, ID, IL, MI, MN, NV, SD, WA, and WY. Slender sowthistle (*Sonchus tenerrimus*) occurs as a non-native weed in California, Alabama, and New York. Marsh sowthistle (*Sonchus palustris*) occurs as a non-native weed in Ontario (USDA 2010).

Legal Listings

- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states
- Federal noxious weed

References:

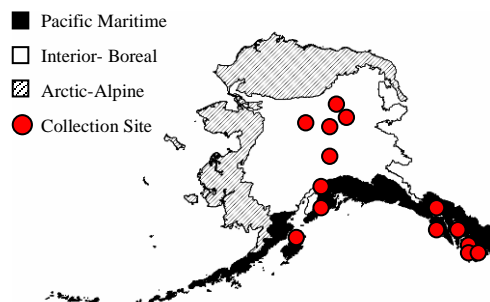
- AKEPIC database. Alaska Exotic Plant Information Clearinghouse Database. 2010. Available: <http://akweeds.uaa.alaska.edu/>
- DiTomaso, J., and E. Healy. 2007. Weeds of California and Other Western States. Vol. 1. University of California Agriculture and Natural Resources Communication Services, Oakland, CA. 834 p.
- Hultén, E. 1968. Flora of Alaska and Neighboring Territories. Stanford University Press, Stanford, CA. 1008 pp.

- Listed noxious in Canada or other countries (all *Sonchus* species are listed as noxious weeds in Ontario)

Distribution and Abundance

Spiny sowthistle is a colonizer of waste places, disturbed sites, roadsides, and cultivated areas. It can also grow in riparian and coastal habitats as well as areas that have been naturally disturbed by grazing, digging, or fire. It is a common annual weed in agricultural fields in Canada and Europe (Lewin 1948, Hutchinson et al. 1984, AKEPIC 2010).

Native and current distribution: Spiny sowthistle is native to Europe, West Asia, and North Africa. The plant has been introduced to North America, South America, East Asia, South Africa, Australia, and New Zealand (Hyatt 2006). It has been collected from arctic Scandinavia (Vascular Plant Herbarium Oslo 2010, University Museums Norway 2010). Spiny sowthistle grows in the Pacific Maritime and Interior-Boreal ecogeographic regions of Alaska (Hultén 1968, AKEPIC 2010, UAM 2010).



Distribution of spiny sowthistle in Alaska

Management

Manually removing plants before they release seeds is an effective control measure for spiny sowthistle (DiTomaso and Healy 2007). The plant is susceptible to a broad selection of herbicides, although some biotypes may be resistant to herbicides (Hutchinson et al. 1984, Rashid et al. 2003).

- Montana. Missoula, MT.
<http://invader.dbs.umt.edu/>
- ITIS. 2010. Integrated Taxonomic Information System.
<http://www.itis.gov/>
- Klinkenberg, B. (Editor) 2010. *Sonchus asper* (L.) Hill.
 In: E-Flora BC: Electronic Atlas of the Plants
 of British Columbia. Lab for Advanced Spatial
 Analysis, Department of Geography, University
 of British Columbia. Vancouver, BC. [10
 September 2010] Available:
[http://www.geog.ubc.ca/
 biodiversity/eflora/index.shtml](http://www.geog.ubc.ca/biodiversity/eflora/index.shtml)
- Lewin, R. 1948. The Biological Flora of the British Isles
Sonchus L. Journal of Ecology. 36(1). 203-223
 p.
- NatureGate. 2010. Finland Nature and Species.
 Helsinki, Finland. [4 October 2010] Available:
<http://www.luontoportti.com/suomi/en/>
- Rashid, A., J. Newman, J. O'Donovan, D. Robinson, D.
 Maurice, D. Poisson, L. Hall. 2003.
 Sulfonylurea herbicide resistance in *Sonchus*
asper biotypes in Alberta, Canada. Weed
 Research. 43(3). 214-220 p.
- Royer, F. and R. Dickinson. 1999. Weeds of the
 Northern U.S. and Canada. The University of
 Alberta Press. Edmonton, AB. 434 p.
- UAM. 2010. University of Alaska Museum, University
 of Alaska Fairbanks. Available:
<http://arctos.database.museum/home.cfm>
- University Museums of Norway (MUSIT) (accessed
 through GBIF data portal,
<http://data.gbif.org/datasets/resource/1996>,
 2010-09-15). Oslo, Norway.
- USDA. 2010. The PLANTS Database. National Plant
 Data Center, Natural Resources Conservation
 Service, United States Department of
 Agriculture. Baton Rouge, LA.
<http://plants.usda.gov>
- Vascular Plant Herbarium, Oslo. 2010. Accessed
 through GBIF (Global Biodiversity Information
 Facility) data portal
<http://data.gbif.org/datasets/resource/1078>,
 2010-09-15). Natural History Museum,
 University of Oslo. Oslo, Norway.