Featured Weed: Houndstongue

PHOTO BY KAREN LAITALA

Houndstongue seeds spread easily due to their ability to attach to many surfaces.

by Karen Laitala
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Houndstongue *(Cynoglossum officinale),* a plant native to Western Europe to central Asia, is highly invasive outside of its native range and is a noxious weed in Montana. Present throughout much of North America and now a common rangeland, pasture, forestland, and riparian area weed across Montana, houndstongue was likely first introduced as a contaminant in cereal grain seed. It spreads locally by seed attached to the hide, hooves, and paws of wildlife, livestock, and pets as well as on nearly anything associated with humans such as clothing, recreational equipment, and any means of transportation. Houndstongue infestations are often associated with disturbed sites such as trails, roadsides, and logging areas. Accidental introductions occur when seeds disperse as contaminants of crop seeds or soil, or when attached to livestock or wildlife. Its presence reduces the availability of forage, is poisonous to livestock and wildlife if ingested in sufficient quantities, and has been reported to cause dermatitis when handled by humans.

The common name of houndstongue may be derived from the shape of the leaves or from the belief that a leaf worn in the shoe could ward off dog attacks. A long history of folklore associates houndstongue with various medicinal and practical uses including root extractions to cure fever, respiratory ailments, eczema, acne, and hemorrhoids. Its leaves were believed to be good for protection of stored vegetables and fruits from rodents, a mole repellent in gardens, and as an ingredient in an ointment that cured baldness.

Houndstongue is an herbaceous (i.e., non-woody) biennial or short-lived perennial plant that produces single or sometimes multiple erect hairy stems, generally ranging in height from 8 to 30 inches, and has a thick taproot that can reach depths greater than three feet in one year. Its deep root system gives it a competitive advantage over grasses and other native or desirable vegetation, in particular under moisture stress conditions. It has rough, hairy, leaves that are arranged alternately along the main stem of mature plants. Leaves are generally 7 to 11 inches long, 0.75 to 2.75 inches wide, and shaped like a hound's tongue with prominent veins.

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Houndstongue flowers are dull reddish-purple in color with five petals with individual flowers attached vertically along the main stem. Houndstongue flowers are self-pollinating, so seed production does not rely on insects or require pollen from other plants. Repeated flowering has been reported to occur in some houndstongue plants in the second, third, and even fourth year. In the majority of cases, however, plants die after flowering once.

Houndstongue plants produce seed clusters that consist of three or four nutlets (i.e., small fruits similar to a nut). A mature houndstongue plant can produce 2,000-4,000 seeds. Seedlings emerge in both spring and fall, and the rosettes bolt (i.e., produce the flowering stems from which seeds are produced) in the second year. Nutlets remain attached to the mother plant after maturation for up to three years or more. Seeds attached to the mother plant can remain viable for two to three years, whereas buried seeds rarely retain the ability to germinate for more than one year. Seeds do not disperse long distances naturally unless attached to animal fur or another vector, and approximately 75 percent fall to the ground within a four-foot diameter surrounding mother plants. Houndstongue seeds exert an allelopathic influence (a biochemical inhibition) on neighboring species. Seeds, primarily those which have lost their hard coat, release a substance that significantly inhibits seed germination, seedling growth, and root elongation of several grass and broadleaf plant species, but does not affect houndstongue itself.

Research into biological methods of control of houndstongue has included testing of several insects as well as fungal pathogens. The root weevil, *Mogulones cruciger* (released in Canada in 1997), and the flea beetle, *Longitarsus quadriguttatus* (released in Canada in 1998), are well established in British Columbia and Alberta. The root mining weevil released and utilized in Canada as a biological control agent has been shown to be effective, but is not approved for release in the U.S. because it feeds on native species in the same plant family as houndstongue. The weevil has spread and is present in Montana, however, intentionally moving it to new locations may result in severe penalties. Research is currently being conducted in both Canada and the U.S. on other Mogulones weevil species that may not impact native plants.

Control by hand pulling, digging, or tillage may be practical for small houndstongue populations, and hand-pulling is an effective preventative measure on new infestations prior to seed formation. The taproot must be severed at least one to two inches below the soil surface. Removing foliage by mowing, cutting or other means is not effective, as taproots often store enough nutrients for flowering and seed production to continue.

Herbicides including metsulfuron (e.g., Escort or Cimarron), chlorsulfuron (e.g., Telar) and 2,4-D can be used to manage houndstongue. Application rates, application timing, grazing and harvesting restrictions, and safety information are listed on the herbicide labels that accompany each product. In general, spring treatments provide better control than fall, as well as application at the rosette growth stage. Due to the hairy nature of houndstongue leaves, adding a surfactant to the herbicide tank mix is recommended to increase plant penetration and herbicide uptake.

While short-term management of houndstongue infestations may be challenging, correct identification, an understanding of its life cycle, and a working knowledge of effective treatment strategies will increase suppression. This management will reduce the potential negative impacts for producers, recreationalists, rangeland and native landscapes, and human and animal health. For more information, reference the MontGuide, *Houndstongue: Identification, Biology and Integrated Management*, or contact your local MSU Extension office or county weed coordinator. ■

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