***Cynoglossum officinale*** 简体中文 正體中文

**System:** Terrestrial

| Kingdom | Phylum | Class | Order | Family |
|---|---|---|---|---|
| Plantae | Magnoliophyta | Magnoliopsida | Lamiales | Boraginaceae |

**Common name**

Hundtunga (English, Sweden), dog bur (English), beggar's lice (English), houndstongue (English), dog's tongue (English), hound's tongue (English), gypsy flower (English), common houndstongue (English), Lengua de perro (Spanish), Lingua-di-cane vellutina (Italian, Italy), hondstong (Dutch, Netherlands), sheep lice (English), Orvosi ebnyelvufu (English, Hungary), Harilik rass (English, Estonia), Rohtokoirankielet (English, Finland), Hundetunge (English, Norway), ebnyelvufu (English, Hungary), common bur (English), Užanka lékarská (English), woolmat (English), Gewone hondstong (Dutch, Netherlands), Ostrzen pospolity (Polish, Poland), glovewort (English), Langue-de-chien (French, France), Hundetunge (Danish, Denmark), rats and mice (English), Cynoglosse officinal (French, France), Gemeine Hundszunge (German, Germany), Echte Hundezunge (German, Germany), Echte Hundszunge (German, Germany), Læge-Hundetunge (Danish, Denmark), Gebräuchliche Hundszunge (German, Germany), Közönséges ebnyelvufu (English, Hungary)

**Synonym**

*Cynoglossum officinale* , f. *bicolor*

**Similar species**

*Cynoglossum boreale, Cynoglossum grande, Cynoglossum occidentale, Hackelia spp., Lappula spp., Verbascum thapsus*

**Summary**

*Cynoglossum officinale* otherwise known as hound's tongue in common vernacular is a biennial herbaceous plant that invades disturbed areas and waste places. It occurs widespread throughout North America, in the U.S. and Canada. The leaves of the plant, in particular the rosette leaves, are high in toxic alkaloids that can poison livestock. Hound's tongue also has a thick, deep taproot that makes it successful at competing with native vegetation for soil resources. The seeds of hound's tongue are burred so they easily attach to the fur of animals or on the clothing and shoes of humans allowing them to spread to new uninfested areas.

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**Species Description**
Hound's tongue, *C. officinale*, is a biennial with two distinct growth phases, a first year rosette vegetative growth phase, followed by a second year reproductive flowering phase (McAdoo *et al*. 2002). The first year basal rosette has leaves that are dark green, 15-20cm long and 2-5cm wide, petiolate and elliptical, tapering to the base and pubescent on both upper and lower surfaces (USGS-NPWRC, 2006). During the second year an erect stem that reaches heights of 30-120cm produces alternate, sessile, or clasping, leaves (Fertig & Arnett, 2001) that are narrower in the upper portions of the plant with the lower leaves broader (Zouhar, 2002). The infloresence is a raceme on branches forming into cymes in the axils of the upper leaves (USGS-NPWRC, 2006). Flowers are perfect (USGS-NPWRC, 2006), with five blunt, green pubscent sepals (Fertig & Arnett, 2001), fused into the shape of a star (USGS-NPWRC, 2006). The corolla is five-lobed, reddish-purple and fused at the lower part into a cylindrical tube (USGS-NPWRC, 2006). The anthers are located along the throat of the corolla (Fertig & Arnett, 2001) and the pistil is simple (USGS-NPWRC, 2006). The infloresence usually bears no more than 10 flowers but up to 35 flowers can develop (Zouhar, 2002).The fruit is an indehiscent, divided into 1-4 nutlets, that are 5-7mm long, flattened along the top and covered with small hooked burrs or spines (USGS-NPWRC, 2006).

**Lifecycle Stages**
*Cynoglossum officinale* is a biennial with two distinct growth phases in its lifecycle, a first year vegetative rosette growth, followed by a second year reproductive phase (McAdoo *et al*. 2002). Hound's tongue's vegetative growth diesback in the first year after a hard frost, but its taproot remains alive and stores carbohydrate reserves which act as an antifreeze (Harrison, undated). Seed germination occurs in the spring, mainly in the months of March and April, after a vernalization period to break seed dormancy along with some form of scarification or softening of the seed coat (Zouhar, 2002). Seedling establishment is not competitive until root system is well-developed (Zouhar, 2002).Vernalization is required for initiating reproductive growth the following spring (Harris & DeClerke-Floate, 2005). In the second year stems sprout from the taproot and flowering occurs from May to July with fruits developing from July to October (Fertig&Arnett, 2001). Fruits dry and either fall from the parent plant or may be retained on the parent plant until the next spring, delaying seed germination until the following year (USGS-NPWRC, 2006) thus creating an above-ground seed bank (Zouhar, 2002).

**Uses**
Hound's tongue was used traditionally in the external treatment of wounds and burns as well as boiled for a cure for coughs. The use of this plant medicinally is not recommended by modern practitioners (Harrison, undated).

**Habitat Description**
*Cynoglossum officinale* establishes on disturbed areas, roadsides, rangeland, old fields and meadows, forest margins, riparian corridors (Fertig & Arnett, 2001) and coastal sand dunes (Zouhar, 2002). Cold temperatures during the growing season limit its northern range and is typically found at subalpine elevations or lower (Zouhar, 2002). Due to a deep and thick taproot, hound's tongue can establish well in dry sites with a minimum of 300mm of annual precipitation and grows poorly in waterlogged soils(Zouhar, 2002). Hound's tongue is shade tolerant and performs well in the shade at dry sites (Harris & DeClerke-Floate, 2005), but does best in full sun (Zouhar, 2002). This species relates positively to closed canopies (Zouhar, 2002). It grows best in sandy, alkaline soils and not in acidic or clay soils (Zouhar, 2002). Periodic disturbance favours its establishment and expansion (Harrison, undated) with 10% or more of bare ground increasing establishment (USGS-NPWRC, 2006).

**Reproduction**
Reproduction of hound's tongue is through seed production and does not reproduce vegetatively (USGS-NPWRC, 2006). The flowers are self-compatible, but greater seed production occurs when cross-pollinated (Harris & DeClerke-Floate, 2005). Pollination is through insects, mainly bumble bees, but also thrips, butterflies and other bee species (Zouhar, 2002). Seed production rates vary between 50 -2000 seeds per plant (USGS-NPWRC, 2006). Seed viability and germination are strongly dependent on soil depth. The germination rate is low for seeds exposed on the soil surface(~4%) compared to alomst 100% germination for seeds buried 1-3cm below the surface of the soil (Zouhar, 2002). Seeds that are buried deepr than 5cm germinate but do not emerge (USGS-NPWRC, 2006). Seeds are not persistent in the soil, with a viability of one year buried (USGS-NPWRC, 2006) and up to two years on the soil surface (McAdoo *et al*. 2002).

**General Impacts**
*Cynoglossum officinale* can effectively compete with native vegetation for soil water and nutrients due to its extensive branching and deep taproot (USGS-NPWRC, 2006). Hound's tongue seed also leaches allelopathic chemicals from its seeds which in scientific studies (Rashid *et al*. 2005) has shown to inhibit the germination and root elongation of some species of grass and broadleaf plants. The leaves of *C. officinale* also contain pyrrolizidine alkaloids that can prevent the reproduction of liver cells and cause illness and death in livestock (Graham & Johnson, undated). The attachment of seeds to the coats and fur of domesticated animals results in extra labour hours for sanitation and cleaning (Harris & DeClerke-Floate, 2005).

**Management Info**
Preventative measures: Prevntion strategies are the best option for control if they can be implemented before an infestation develops. Some preventative measures include using native species, regulating and limiting land use options, enforcing quarantine and border intercepts before they enter the region, using local soils and substrates, and most importantly monitoring (Mullin *et al*. 2000).
Physical: Mechanical methods of control only work to reduce the seed bank available for re-establishment of the species. Digging and pulling are not effective in control unless the root crown of the plant is severed several inches below the surface of the soil (Kedzie-Webb & Sheley, 2002). Tilling or cultivation is a good method of control in areas with small infestations, but it has to be repeated frequently to make sure that root reserves are depleted and that new growth does not occur (McAdoo *et al*. 2002). Mowing several centimeters above the surface of the plant when in flowering can reduce the seed spread and seed bank, but mowing needs to be repeated to ensure that plant recovery is reduced (USGS-NPWRC, 2006). Fire will probably kill the aerial portion of the plant while a severe fire may be needed to kill the taproot (Zouhar, 2002). Fire effects on this plant still need to be further studied. Postfire may help in the establishement of hound's tongue by reducing or eliminating the competition by other species opening up the canopy, *etc*. (Zouhar, 2002). Fire is not recommended for the control of hound's tongue at this time.
Cultural: Any control plan should have a revegetative component when dealing with hound's tongue, as bare soil from eradication will only increase the population of hound's tongue through successive generations or another weedy species could invade into the areas hound's tongue was displaced from (McAdoo *et al*. 2002). Regulating livestock grazing on rangeland is important so that competitive species are not overstressed and have enough vigor to recover and keep invasive species like hound's tongue from invading (Kedzie-Webb & Sheley, 2002). Overseeding with competitive grass or native species is another cultural plan that should and could be incorporated into a chemical or biological control plan.
Chemical: A variety of chemical herbicides have been used for the control of hound's tongue, picloram, 2,4,D-amine, metsulfuron (Kedzie-Webb & Sheley, 2002), chlorsulfuron, and dicamba (USGS-NPWRC, 2006). Follow the label for application strengths and rates, and use the right chemical for your particular area, depending on the sensitivity of the site, other surrounding vegetation and management logistics. For small infestations, a spot spray may work best and reduce the effect the herbicide is going to have on other vegetation, wildlife, and the envrionment. Timed chemical applications in the spring or early summer on first year's growth, or in the spring when the second-years growth begins to bolt has shown 97% and 77% control respectively (USGS-NPWRC, 2006).

**Principal source:** Zouhar, K., 2002, *Cynoglossum officinale*, Fire Effects Information System [online], U.S. Department of Agriculture, Forest Service, , Rocky Mountain Research Station, Fire Sciences Laboratory;
United States Geological Survey- Northern Prairie Wildlife Research Center, Aug. 2006, Species Abstracts of Highly Disruptive Exotic Plants at Scotts Bluff National Monument *Cynoglossum officinale*, United States Department of the Interior;
McAdoo, J.K., Johnson, W.S., Wilson, R.E., Donaldson, S., & Graham, J., 2002, Fighting Invasive Weeds- A Northeastern Nevada Landowner's Guide to Healthy Landscapes, University of Nevada, Reno, Cooperative Extension Service.

**Compiler:** National Biological Information Infratsructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

**Review:**

**Pubblication date:** 2007-08-07

**ALIEN RANGE**

**[10]** CANADA

**[45]** UNITED STATES

**BIBLIOGRAPHY**

**17** references found for **Cynoglossum officinale**