Mouse-Ear Hawkweed

Pilosella officinarum (formerly *Hieracium pilosella*)

ALBERTA REGULATORY STATUS:
WEED CONTROL ACT
NOXIOUS

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Washington State University Archive, Washington State

Nicole Kimmel, Government of Alberta

Catherine Herms, The Ohio State University, Bugwood.org

Overview:

Mouse-ear hawkweed is a perennial forb in the Aster family native to Europe. It has fibrous roots and produces milky latex in its stems and leaves. Invasive hawkweeds were first detected in western Canada approx.-imately 50 years ago.[1] It is not known to be present in Alberta.

Recent taxonomic revisions have divided hawkweeds into two genera: *Pilosella* and *Hieracium*.[1] In Alberta, invasive hawkweeds belong to the genus *Pilosella*, while *Hieracium* includes both native and invasive species.[1]

Approximately half of the *Pilosella* species in Alberta produce stolons (above-ground runners), including mouse-ear, meadow, and orange hawkweeds.[1] *Pilosella* species typically form basal and have few, if any, well-developed stem leaves, in contrast to the *Hieracium* species that usually have well developed leaves along the stem.[1] In Alberta, invasive hawkweeds in the *Pilosella* genus can generally be distinguished in the field by carefully examining the type and density of hairs on stems and leaves.[2,3] Genetic analyses may not reflect these visible differences, making morphology the most practical approach for ID.[3] See the AISC's Quick Reference Guide to Invasive Hawkweed Species of Alberta for more information on identifying species.

Invasive *Pilosella* species reproduce both by seed and vegetatively through stolons (some species, including mouse-ear hawkweed), rhizomes, and occasional regrowth from root fragments.[2] *Pilosella* species produce wind-dispersed seeds. Most invasive hawkweeds can produce viable seed without pollination, meaning a single plant can establish a new infestation.[2]

Flower heads can continue to mature viable seed even after plants have been pulled, and seeds may remain viable in the soil for up to seven years.[2]

Habitat:

Prefer well drained, coarse textured soils, low in organic matter.[1] Found in disturbed areas, open fields, mountain meadows, permanent pastures, along edges and in clearings in forest zones.[1]

Identification:

Stems: Unbranched and leafless, hairy near the base. Generally shorter plants than other invasive hawkweeds 5-30cm tall.[1] Long, leaf-bearing **stolons (runners) present, 10–25cm long**.[1]

Leaves: Basal leaves are narrow to oval or egg-shaped and usually narrow gradually where they attach to the stem.[1] Upper surface of leaves is medium to dark green with many long, straight hairs. **The lower surface appears white because it is covered in dense, short, star-shaped hairs**.[1]

Flowers: **Solitary yellow flower heads** (sometimes but uncommonly two), **sometimes showing red stripes on the underside**.[1] The base of the flower head is covered with numerous star-shaped, glandular, and simple hairs.[1]

Seeds: Seed heads are surrounded by small, hairy bracts (leaf-like parts at base of seed). Seeds are ribbed, with white to tawny

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fluffy tufts (like dandelions).[1,2]

Lookalike species: Orange hawkweed (*P. aurantiaca*): distinguished by orange flowers, stem and leaves are very similar to meadow hawkweed and are covered with star-shaped, simple, and gland-tipped hairs. Stolons present. Meadow hawkweed (*P. caespitosa*): Stem and leaves are covered with star-shaped, simple, and gland-tipped hairs. Stolons present. Tall hawkweed (*P. piloselloides*): leaves mostly hairless except long hairs on underside midvein and leaf margin. Stolons absent. Queendevil hawkweed (*P. praealta*): stolons present. Yellowdevil hawkweed (*P. glomerata*): Leaves appear hairless but are rough due to the presence of short white and star-shaped hairs. Stolons absent. *Hieracium* spp. (native and invasive hawkweed species): typically have well-developed stem leaves. Stolons absent. Hawksbeard (*Crepis* spp.): differ in leaf shape and structure.

Impacts:

Hawkweeds' rapid growth and ability to exploit disturbed ground allow them to spread quickly and dominate sites. Even small, easily overlooked patches can develop into persistent infestations that are difficult to control. Dense mats can form, displacing native vegetation and overtaking yards, gardens, pastures and natural areas. Some studies suggest that invasive hawkweeds may also release chemicals into the soil that inhibit the growth of surrounding plants (allelopathy),[2] which may further contribute to their ability to dominate sites.

In BC, invasive hawkweeds were projected to cause up to $60 million per year in economic damages by 2020 if left unmanaged, driven by impacts to forage production, recreation, biodiversity, and human health.[5]

Prevention:

Reduce the risk of establishment by maintaining healthy, competitive plant communities and regularly monitoring high-risk areas, including properly identifying unknown species before they spread. Prevent introduction and movement by working from clean sites to infested sites, cleaning equipment and gear between locations, and minimizing soil disturbance. Use weed-free products where available, avoid generic wildflower seed mixes, and obtain seed certificates for large-scale seeding to assess for potential contaminants.

Control:

Effective control of invasive hawkweeds requires repeated treatment and ongoing monitoring, using an integrated approach to address both seed production and aggressive vegetative spread. Plants should be treated before flowering to prevent seed production. If flowers or buds are present, they should be removed and properly disposed of to prevent viable seed development. Root systems must be fully removed or effectively controlled to prevent regrowth from fragments. Pulled material must be bagged and disposed of in a landfill or incinerated, as plants can continue to produce viable seed after removal. Maintaining healthy, competitive vegetation helps reduce reinfestation, while regular monitoring is essential to detect regrowth and new seedlings from the seed bank. Cleaning equipment is also key to prevent the spread of seeds and root fragments.

Grazing: Targeted grazing can be an effective IPM tool in some contexts; however, due to limited information on plant response and grazing parameters, it is not currently recommended for invasive hawkweeds, including mouse-ear hawkweed.[6]

Mechanical: Mowing before flowering will prevent seed production of taller plants but will not inhibit vegetative reproduction. Hand digging of small infestations, ensuring all roots and stolons are removed, may be effective. Root fragments can generate new plants; therefore, any mechanical tilling/cultivation is not recommended. If manually removed while flowering, hawkweeds may still produce viable seed, so timing and disposal are important considerations to prevent seed dispersal.

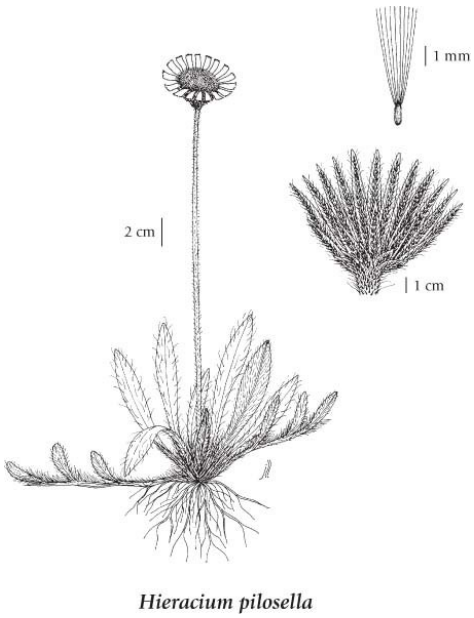
Cultural: Long-term management of hawkweeds requires maintaining healthy plant communities. Fertilizing and seeding desirable vegetation can help outcompete hawkweeds.[1] Use caution when sourcing seed for re-vegetation, reviewing the seed analysis certificate for the lot can help reduce risk of contamination.

Chemical: Registered herbicides for managing hawkweeds in Canada may include products containing active ingredients such as 2,4 D, acetic acid, aminopyralid, aminocyclopyrachlor, chlorsulfuron, dicamba, florpyrauxifen, glyphosate, hexazinone, MCPA, metsulfuron methyl, pelargonic acid, and picloram.[7] Some herbicide products list specific hawkweed species on their labels, always check the product label to confirm that the herbicide is registered for use on the target plant in Canada. Consult your local Agricultural Fieldman or Certified Pesticide Dispenser for more information.

Biological: The stolon-tip gall wasp (*Aulacidea subterminalis*) was first released in BC in 2011.[8] Establishment has been confirmed only on whiplash hawkweed (*Pilosella flagellaris*), where populations are spreading within large infestations.[8] The root-feeding hoverfly (*Cheilosia urbana*) has also

Mouse-Ear Hawkweed *(continued)*

been released in Canada to target several invasive hawkweed species, including mouse-ear hawkweed; however, establishment has not yet been confirmed.[8] Research is ongoing to identify and evaluate additional potential biological control agents for invasive hawkweeds.



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