

grazing, fertilization, and irrigation. Do not use orange hawkweed as a garden ornamental, and review the ingredients of wildflower mixes to avoid accidental introduction. When possible, avoid using wildflower mixes with unidentified seed components entirely.

Integrated Pest Management (IPM) practices are recommended for managing populations of invasive plants. IPM involves a combination of control methods to maximize effective control and minimize negative environmental impacts.

Small infestations can be controlled through early detection and eradication methods. For control of small infestations, recommendations include: carefully digging out plants in spring or early summer when soil is moist, taking care to remove all of the below ground rhizomes and roots (since even a small piece of overlooked rhizome may develop into a new plant), covering small areas with light-impenetrable ground covers for several years, or spot treating with an appropriate herbicide, all followed by reseeding with a suitable grass or grass-forb mixture. If the plants are flowering, make sure that all plant materials are discarded in a sealed, heavy-duty plastic bag and landfilled. Any remaining flower heads should be removed and bagged before seeds mature. Because orange hawkweed is perennial and reproduces through rhizomes that will resprout from any fragments left in the soil, as well as stolons, mowing these weeds is not effective. Monitoring of treated areas for missed plants or regrowth is suggested for several years with continued treatments as needed.

For larger infestations, herbicides may be the only effective control method. For seedling control, the earlier they can be treated, the better. For established plant control, the vegetative to pre-flowering stages of plant growth are best, followed by a fall regrowth stage, after the plants have completed their seed filling for the season and are storing excess food reserves in the rhizomes/roots. Monitoring of treated areas for plants growing from seed or root fragments should continue for several years.

Orange hawkweed will quickly reinfest a non-revegetated area following a non-selective herbicide application, which would kill both orange hawkweed and non-target vegetation. Selective broadleaf herbicides should be used, which minimize non-target organism control as well as minimize environmental degradation. Contact your nearest Cooperative



Figure 4. *Orange hawkweed spreading along a roadside in Anchorage.*

Extension Service office for current information on herbicide recommendations and use. Once areas have been treated, an ongoing commitment is required to ensure new infestations do not establish. Poorly planned control efforts or lack of monitoring can actually increase the spread of this weed and worsen the problem.

Many invasive weeds, including orange hawkweed, have escaped from gardens. Always obtain correct species identification prior to planting something new in your garden. The detrimental impacts of these weeds far outweigh any potential horticultural benefits. Do not buy seeds via the Internet or mail order catalogues unless you can be sure they are free of invasive plants such as orange hawkweed. Take care when traveling to not bring back seeds attached to hiking or camping equipment, and “spread the word not the weed” (Figure 4).

Caution: Herbicides can be dangerous to the user and the environment unless used according to the label directions. Federal law requires that the user read, understand, and follow all label directions. Consult with a UAF Cooperative Extension Service office near you for more information on use of herbicides. Mention of a herbicide in this publication does not constitute a recommendation for use by the USDA, nor does it imply registration of a product under Federal Insecticide, Fungicide, and Rodenticide Act, as amended. Mention of a proprietary product does not constitute an endorsement by the USDA.

References

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Orange Hawkweed

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Additional information on this plant can be obtained from your local UAF Cooperative Extension Service office, Alaska State Forestry office, or from:

USDA Forest Service State & Private Forestry Forest Health Protection

3301 “C” Street, Suite 202
Anchorage, Alaska 99503
Phone: (907) 743-9455

2770 Sherwood Lane, Suite 2A
Juneau, Alaska 99801-8545
Phone: (907) 586-8811, ext 283

3700 Airport Way
Fairbanks, Alaska 99709
Phone: (907) 451-2799

Or:

www.fs.fed.us/r10/spf/fhp
<http://akweeds.uaa.alaska.edu>
www.dec.state.ak.us/eh/pest/index.htm

Invasive Plant

Orange Hawkweed



Orange hawkweed (*Hieracium aurantiacum*), also known as devil's paintbrush, fox and cubs, king devil, and missionary weed, is a showy perennial distinguished by bright orange-red flowers that are evident throughout the summer and early fall. Hawkweed takes its name from the ancient Greek word hierax, "hawk", because the Roman naturalist Pliny believed that hawks fed on this plant to strengthen their eyesight (Nietering 1982).

Originating from Europe, orange hawkweed is recognized as an ecologically invasive plant and noxious weed in the United States and Canada and is also recorded on Australia's Alert List of 28 plants that threaten biodiversity and cause environmental damage. Orange hawkweed was introduced to North America as an ornamental, desirable for its attractive flame-colored flowers, sometime prior to 1818. Invasive qualities have allowed this plant to easily escape landscape and garden plantings and it can now be found in native meadows, forest openings, pastures, roadsides, and right-of-ways from Florida to Alaska. Once established, it quickly spreads by seed, aboveground stems (stolons), and below ground stems (rhizomes), developing dense patches that displace native vegetation.

Orange hawkweed has the potential to seriously degrade many Alaskan ecosystems, particularly riparian and wildlife areas. It is currently recognized as an invasive weed in south-central and southeast Alaska, where it was reportedly introduced in the late 1950s in Juneau (Hultén 1968). Planted as a pretty ornamental, this weed has escaped and become established on many acres

of roadside and disturbed areas and is encroaching into many undisturbed sites across Alaska, including sites in Wrangell and Petersburg. It has become common in the communities of Homer and Kodiak, and is now invading natural forb/fern meadows within the Kodiak National Wildlife Refuge. Infestations have also been discovered around the Anchorage basin and in Girdwood.

Description

Orange hawkweed is an upright perennial of the sunflower family that is characterized by a single, leafless stem (occasionally one or two small leaves may be present on the stem), which is approximately 12 inches tall and covered with stiff black hairs. The oblong or lance-shaped basal leaves are also hairy, and measure about 4½ inches in length. Both stems and leaves exude a milky sap when broken.

Each stem terminates with a cluster of ray-type flowers that are characteristically red on the margin merging into an orange center. The bright orange-red flowers, each measuring about ½ inch in diameter, are easily distinguished from other flowers by their notch-tipped, square-edged petals (Figure 1).

Each flower produces 12–30 tiny, ribbed, black seeds flattened at one end. Each seed is typified by minute barbs along each rib that enable them to stick to hair, fur, clothing and vehicles, and a tuft of bristles on the flattened end. Seeds can be dispersed by wind, water, or "hitch-hiking", and are often moved in contaminated soil associated with transplanting new plants into gardens and



Figure 1. Orange hawkweed roots, leaves, stem, and flowers.

flowerbeds. Seeds remain viable in soil for up to 7 years and infested areas often form extensive seed banks.

The roots are shallow and fibrous with aboveground stolons (runners) and below ground rhizomes that allow for aggressive vegetative reproduction. Stolons originate from buds in the rosette when the plants flower. These runners radiate out from the original plant and form new rosettes where they touch down and take root. Under ideal conditions, one orange hawkweed plant can spread and infest an area 2–3 feet in diameter



Figure 2. Dense mats of orange hawkweed continually expand by seed, roots, and stolons (horizontal above-ground stems).

in its first year of growth. Plants regrow each year from the short underground rhizomes.

Related Species

Other native and exotic hawkweeds also exist in Alaska; most of these are yellow or white flowered species (USDA NRCS Plants Database). The natives *H. triste* and *H. gracile* are generally found in high elevation meadows and the native *H. albiflorum* is found only in the wooded areas near Lynn Canal and the southern tip of Southeast Alaska (Hultén 1968). Exotic and invasive yellow-flowered hawkweed species in Alaska include *H. caespitosum*, *H. lachenalii*, *H. pilosella*, *H. scabrum*, and *H. umbellatum*, several of which are considered noxious in other states such as Washington. Hawkweeds are often difficult to distinguish to the species level and orange hawkweed freely hybridizes with

each of these. However, orange hawkweed is the only species with orange flowers and a typically leafless stem.

Life History

Orange hawkweed usually begins to flower in late May or early June, depending upon the weather. Some plants may set seed as early as July, but flowering usually lasts through September. Once established, it rapidly develops into a dense patch that continues to spread by seed, stolons and rhizomes (Figure 2). Each plant produces seed for long-range dispersal and sends out 4–8 stolons for more close-range reproduction each season.

Orange hawkweed can grow over a wide range of temperature and site conditions. However, plants prefer full sun or partial



Figure 3. Orange hawkweed spreading into a native rich forb meadow on Camp Island, on the Kodiak National Wildlife Refuge.

shade and soil that is well drained and coarse-textured. Orange hawkweed easily invades disturbed sites such as those associated with roadsides and residential areas. Infestations of orange hawkweed can also occur when purchased as a component of commercial wildflower seed mixes or when propagated by the unwary wildflower enthusiast.

Impacts

Orange hawkweed is able to form dense mats, which displace native plants and lower biodiversity. With the ability to reproduce through prolific seed production as well as through vegetative means, orange hawkweed is an aggressive competitor for space, light and soil nutrients (Figure 3). It has also been reported to be allelopathic, producing phytotoxic chemicals in its pollen grains that inhibit seed germination, seedling emergence, or regeneration of other plants (S.D. Murphy 2001).

Guidelines for Control Options

The preferred method for control of orange hawkweed is prevention. To prevent plants from spreading from existing populations: carefully clean vehicles, boots, clothing, and pets after visiting infested areas. Seeds are small and easily carried in mud and debris. To prevent new infestations: monitor for invasive plants, maintain proper turf and ornamental management including watering, fertilizing, and mowing, and avoid unnecessary site disturbances. Maintain native vegetation that will provide competition for weedy invaders through appropriate seed mixtures, moderate