Hieracium caespitosum Dumort.; meadow hawkweed
Hieracium aurantiacum L.; orange hawkweed
Hieracium glomeratum Froeland; queendevil hawkweed
Hieracium piloselloides Vill.; kingdevil hawkweed
Hieracium pilosella L.; mouse-ear hawkweed

Hawkweeds

Family: Asteraceae
Range: Orange hawkweed is widely distributed across western provinces of Canada and the western states of Alaska, Washington, Oregon, California, Idaho, Montana, Wyoming, and Colorado. Meadow hawkweed is found in British Columbia, Washington, Oregon, Idaho, Montana and Wyoming. Tall hawkweed is found in Washington, Idaho and Montana. Yellow devil hawkweed has been found in two counties of Idaho.
Habitat: Peat bogs, forests with open canopies, mesic bunchgrass, sagebrush, and meadows. Also problematic in pastures and Conservation Reserve Program lands.
Origin: All non-native hawkweeds are native to Eurasia.
Impacts: Hawkweeds can dominate grasslands to the near exclusion of other species. Their low growth habit yields little usable forage for livestock or wildlife. Currently the species having the greatest impact include orange and meadow hawkweed.
Western states listed as Noxious Weed: *H. caespitosum,* Idaho, Montana, Oregon, Washington; *H. aurantiacum,* Colorado, Idaho, Montana, Oregon, Washington; *H. piloselloides,* Montana, Oregon, Washington (proposed); *H. pilosella,* Oregon, Washington; *H. atratum, H. glomeratum, and H. laevigatum,* Washington

Hawkweeds are perennial forbs in a genus that is divided into subgenera. Until recently, all invasive hawkweeds were in the subgenus *Pilosella*, a group with stolons and more-or-less leafless flowering stems. Hawkweeds native to North America are in the subgenus *Hieracium* or *Chionoracium* (and all *Chionoracium* are from the western hemisphere). The species in the *Hieracium* subgenus do not have stolons or leafless stems, so it formerly was easy to identify non-native hawkweeds. Unfortunately, other non-native hawkweeds in the subgenus *Hieracium* have established in North America, including *H. atratum* Fries., *H. lachenalii* C.C. Gmel., *H. laevigatum* Willd., *H. maculatum* Schrank, *H. murorum* L., and *H. sabaudum* L. If dense patches of hawkweeds have leaves along the flowering stems and do not have stolons, they may be one of the above species within the *Hieracium* subgenus. (However, native hawkweeds can also occur in dense clumps depending on site conditions; for example, the native *H. albertinum* can form dense stands in old burn piles.)

The five species listed at the top are all in the *Pilosella* subgenus, with stolons and leafless flowering stems. Orange hawkweed has orange flowers, and the others are yellow-flowered. Nearly all the weedy species have flowering stems arranged so that all flowerheads are at the same height, or all branches arise from the same point. Hair shape can also help to identify *Hieracium* species. Some species have star-like hairs and others simple hairs. Plants with mostly simple hairs, without hairs, and with few to no star-shaped hairs include *H. floribundum*, *H. bauhini* and *H. pillosellоides*.

Most hawkweeds are nearly obligate with respect to mycorrhizal relationships, and their competitiveness with grasses appears linked to their utilization of mycorrhizal networks. Dense, well-fertilized perennial grass stands will have lower levels of mycorrhizal fungi and more resilience to invasion from hawkweeds.

All weedy species reproduce vegetatively from stolons, rhizomes, and by seeds. Stolon fragments can generate new plants. Seed reproduction is generally less important than vegetative reproduction in a given locality. Most seeds fall near the parent plant but can disperse long distances with wind. Polyploid populations generally produce asexual seed (apomixis). Seeds appear to survive up to about 7 years under field conditions.

NON-CHEMICAL CONTROL

Mechanical (pulling, cutting, disking)	Hand pulling has limited success for the control of hawkweeds, since disturbing the stolons and rhizomes may only help the plant to spread. In addition, due to their mat-forming growth, stoloniferous *Hieracium* spp. can successfully escape mowing. Although mowing prevents seed production by removing flowering stems, repeated mowing encourages faster vegetative spread. Tillage may spread stolons and root buds, so only repeated cultivation would have a chance of success.
Cultural	Competitive grass communities can delay hawkweed reinfestations for several years, perhaps allowing herbicide maintenance applications to be made only every 4 to 7 years. Maintaining fertilization at adequate levels for perennial grasses can also limit hawkweed invasion.
Biological	Biological control has been pursued for meadow hawkweed. No agents have, thus far, been registered for field release. A wasp *Aulacidea subterminalis* forms galls on stolons and has the potential to reduce stolon size and vegetative reproduction. Two flies are considered potential biological control agents. One feeds externally on the root system (*Cheilosia urbana*) and the other (*C. psilophthalma*) feeds on rosettes.

CHEMICAL CONTROL

The following specific use information is based on published papers and reports by researchers and land managers. Other trade names may be available, and other compounds also are labeled for this weed. Directions for use may vary between brands; see label before use. Herbicides are listed by mode of action and then alphabetically. The order of herbicide listing is not reflective of the order of efficacy or preference.

GROWTH REGULATORS	
Aminopyralid *Milestone*	**Rate:** 4 to 7 oz product /acre (1 to 1.75 oz a.e./acre) **Timing:** Postemergence to rosettes or bolting plants. Can also be effective when plants are flowering. **Remarks:** Not effective in fall. Earlier applications allow for release of suppressed perennial grasses.
Aminopyralid + metsulfuron *Opensight*	**Rate:** 2.5 to 3.3 oz product/acre **Timing:** Postemergence to rosettes or bolting plants. Also effective when applied during flowering. **Remarks:** Not effective in fall; earlier applications allow for release of perennial grasses. The combination will control many broadleaf species. This product is not registered for use in California.
Aminopyralid + 2,4-D *Forefront HL*	**Rate:** 1.2 to 2.1 pt product/acre **Timing:** Postemergence to rosettes or bolting plants. Also effective when applied during flowering. **Remarks:** Not effective in fall. Earlier applications allow for release of suppressed perennial grasses.
Clopyralid *Transline*	**Rate:** 0.67 to 1.33 pt product/acre (4 to 8 oz a.e./acre) **Timing:** Postemergence in spring to rosettes and bolted plants. **Remarks:** Not effective in fall. Earlier applications allow for release of suppressed perennial grasses.
Clopyralid + 2,4-D *Curtail*	**Rate:** 2 qt product/acre **Timing:** Postemergence in spring to rosettes. **Remarks:** Not effective in fall. The combination will damage other broadleaf species.
Dicamba *Banvel, Clarity*	**Rate:** 1 to 1.5 pt product/acre (0.5 to 0.75 lb a.e./acre) **Timing:** Postemergence to plants from rosette to beginning of bolting. **Remarks:** Broadleaf-selective herbicide often combined with other active ingredients. It is not typically used alone to control hawkweeds.
Picloram *Tordon 22K*	**Rate:** 0.5 pt product/acre (2 oz a.e./acre) **Timing:** Postemergence in spring to seedlings or bolting plants.

	Remarks: Broadleaf-selective herbicide with long soil residual. Also formulated as a premix with 2,4-D (*Grazon P+D*) to increase its effectiveness. Restricted use herbicide; not registered for use in California.
PHOTOSYNTHETIC INHIBITORS	
Hexazinone *Velpar L*	Not often used for hawkweed control, but hawkweed is included on the *Velpar* label. It has preemergence activity only and a long soil residual. High rates of hexazinone can create bare ground, so only use high rates in spot treatments.

RECOMMENDED CITATION: DiTomaso, J.M., G.B. Kyser et al. 2013. *Weed Control in Natural Areas in the Western United States*. Weed Research and Information Center, University of California. 544 pp.