Key to *Heterotheca* of the northwestern United States—Idaho, Oregon, and Washington—based on Guy Nesom's treatment of *Heterotheca* section *Chrysanthe* (Phytoneuron 2020-68). Written by Patrick J. Alexander, 31 Jan 2022. My usage of the term "hispido-strigose" may benefit from a definition: having short, coarse trichomes that are ± perpendicular from the leaf or stem surface at the base but curved antrorsely to become ± parallel to the surface at the tip. I use "strigose" without further modification to mean the trichomes are appressed, while "loosely strigose" indicates the trichomes are strongly ascending from their bases but not appressed. "Glandular" without modification implies sessile glands.

1 Ray flowers absent ..... *Heterotheca oregona*

Found in the Cascade Range and coastal ranges. Plants are more or less densely stipitate-glandular, as well as hispid to hispido-strigose. The heads are ebracteate or occasionally subtended by a linear bract not much larger than the outer phyllaries. In the Flora of North America treatment, Semple recognizes four varieties, two restricted to California and two (*Heterotheca oregana* var. *oregana* and *Heterotheca oregana* var. *rudis*) occurring in Oregon or Washington. I haven't look at variation within this species enough to have an informed opinion, so I refer those looking for a varietal treatment to Semple.

1 Ray flowers present

1 Pubescence of the stems mostly ascending to appressed (strigose, hispido-strigose, or occasionally villous), sometimes also with a sparse overstory of long, spreading trichomes

2 Plants tall (usually > 40 cm, unless the plants stunted under harsh conditions); cauline leaves elliptic to oblong, 2–3 times longer than wide; leaves sericeous; plants of southeastern Idaho

3 Plants silver below the inflorescences but becoming greener above; adaxial surfaces of most cauline leaves silver, glandular but the glands obscured, the distalmost cauline leaves and bracts densely and conspicuously glandular and only sparsely strigose or hirsutulous; stem pubescence 2-storied below the inflorescences, with an overstory of long, spreading trichomes above a dense, short, silver understory, but becoming uniformly hirsutulous to hirsute above, the trichomes predominately spreading; phyllaries glandular and with sparse, ascending to occasionally spreading, eglandular trichomes as well ..... *Heterotheca utahensis*

This species is found around the northern Wasatch Range and Uinta Mountains, barely entering Idaho in Franklin County. Nesom associates sericeous leaves with *Heterotheca zionensis* and long, spreading trichomes on the stems with *Heterotheca utahensis*, but so far as I can tell the main stems and most of the cauline leaves are indistinguishable between the two. These features become useful on the distalmost leaves and in the inflorescences.

3 Plants silver throughout; adaxial leaf surfaces silver throughout the plant, eglandular or the glands obscured; stem densely strigose, silvery, often with a sparse overstory of long, spreading hairs below the inflorescence; in the inflorescence the short, silver hairs often ascending rather than appressed and the long, spreading overstory absent or nearly so; phyllaries eglandular, with short, ascending trichomes like those of the peduncles ..... *Heterotheca zionensis*

This species is widespread across Utah, Arizona, New Mexico, and western Texas but in Idaho Nesom reports it only in Bear Lake and Franklin counties. I differ a little from Nesom in the characters separating *Heterotheca zionensis* from *Heterotheca utahensis*, as described above. The cauline leaves of both species are typically oblong to elliptic and spreading to deflexed at least at the base.

2 Plants short (< 40 cm); cauline leaves narrowly elliptic to oblanceolate, 3–6 times longer than wide; either leaves not sericeous or plants not in southeastern Idaho

4 Stems eglandular, strigose, often with a sparser overstory of long, spreading trichomes; leaves eglandular, strigose on the surfaces, often with a few long, spreading marginal cilia near the bases ..... *Heterotheca vespertina*

This species is found in northern Idaho, eastern Washington, notheastern Oregon, and west along the Columbia River to near Portland. The closely strigose, often ± silvery, oblanceolate leaves are distinctive among the *Heterotheca* of the northwestern United States. The heads are not directly subtended by leafy bracts but there are usually narrow bracts on the peduncles and these can get within a few mm of the heads.

5 Stems glandular or not; leaves usually glandular; both stems and leaves hispido-strigose to loosely strigose; long, spreading trichomes or long marginal cilia absent or very few ..... *Heterotheca depressa*

Within the area of this key, *Heterotheca depressa* is limited to the eastern edge of Idaho. Plants usually lack capitular bracts. Nesom indicates that the more southern populations (presumably including the majority of plants in Idaho) are more densely glandular than usual for the species and sporadically have capitular bracts.

1 Pubescence of the stems spreading to deflexed

6 Stems with dense, dimorphic, 2-storied pubescence: a sparser overstory of long, spreading trichomes and a much shorter, denser, hirsutulous to hispido-strigose understory ..... *Heterotheca utahensis*

Plants of southeastern Idaho, with stem pubescence always dimorphic but the understory varying from predominately ascending to predominately spreading. Additional discussion above, first lead of couplet 3.

6 Stems hirsute, the trichomes often varying in length but not in two distinctly different classes

7 Phyllaries glandular and without eglandular pubescence; heads not subtended by leafy bracts

8 Stems hirsutulous to minutely hispido-strigose; bases of cauline leaves widely spreading to deflexed; some of the heads subtended by inconspicuous bracts shorter than the phyllaries ..... *Heterotheca cinerascens*

Sprawling plants of rock outcrops in southeastern Idaho, also found throughout Nevada and western Utah. The leaves are small but very numerous, gradually reduced in size toward the heads. The leaves are usually prominently glandular and sparsely hispido-strigose, often with a few long cilia or sparsely hirsute on the surfaces.

8 Stems hirsute to hirsute-villous; bases of cauline leaves ascending; capitular bracts absent ..... *Heterotheca scelionis*

This is a narrow endemic to the general vicinity of the Rogue River in Douglas, Jackson, and Josephine counties, southwestern Oregon. In general appearance it most resembles *Heterotheca orovillosa*.

7 Phyllaries eglandular-pubescent, sometimes glandular as well; heads subtended by leafy bracts or not

9 Heads not subtended by leafy bracts; plants of southwestern Oregon ..... *Heterotheca orovillosa*

This species is found primarily in California. In Oregon, Nesom reports it only in Josephine County. The stems and leaves are eglandular or glandular; when glandular, the glands are usually inconspicuous amid the denser eglandular pubescence. Capitular bracts are usually absent, occasionally linear, 1–3, about equalling or a little shorter than the phyllaries. Plants are often ± rhizomatous or decumbent, forming loose mats from which arise many short, erect stems.

9 Heads subtended by leafy bracts; plants of northern Oregon, northern Idaho, and Washington

10 Stems and leaves both eglandular; stems hirsute; leaves and bracts densely hispido-strigose on the surfaces; margins of the capitular bracts usually not ciliate ..... *Heterotheca hispida*

This is a widespread species, from northern Colorado north to southern Saskatchewan and northwest to southern British Columbia. Plants are usually eglandular throughout, though Nesom mentions a glandular-leaved form in Wyoming. Capitular bracts are linear to oblanceolate and generally about equalling the phyllaries, present but few (1–3) on at least some of the heads but often absent from some heads as well.

10 Stems and leaves both glandular; stems sparsely hirsute to hirsutulous; leaves and bracts sparsely hispido-strigose, hirsutulous, or hirsute on the surfaces; margins of the bracts stiffly ciliate ..... *Heterotheca hirsuta*

This is a widespread species with about the same overall range as *Heterotheca hispida*. Most or all heads have 2–6 linear, linear-oblong, or oblanceolate bracts about equalling or a little longer than the phyllaries. Although stems and leaves are almost always prominently glandular as well as eglandular-pubescent, the glands and trichomes vary quite in density. Occasional plants may be densely glandular and nearly devoid of eglandular pubescence at one extreme, or sparsely hirsute and nearly eglandular at the other extreme.