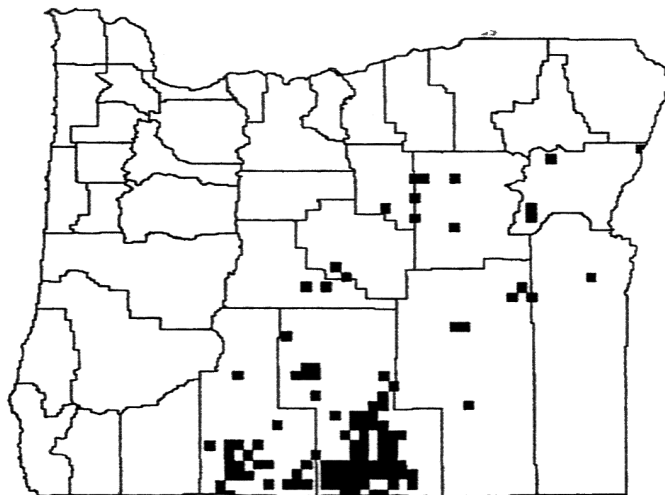


Figure A.31  
Mediterranean Sage



Source: Photo by Joseph McCaffrey, University of Idaho.

Figure A.32  
Mediterranean Sage



## A13. PURPLE STARHISTLE

### A. Description

Purple and Iberian starthistles (*Centaurea calcitrapa* and *Centaurea iberica*, respectively) are members of the sunflower family that are closely related to the knapweeds. These starthistles have the unique characteristic of having a sharp, spiny growing point on rosettes. There are also stiff spines at the base of all the flower heads. Dense infestations of these rigidly branched plants armed with long hard sharp spines make infested areas inaccessible. As with other knapweeds and starthistles, these species are unpalatable and may replace valuable forage species.

### B. Native Area/Arrival In The U.S.

Purple starthistle is native to the Mediterranean region, southern Europe and northern Africa. Iberian starthistle is native to Asia Minor in the region between the Caspian and Black seas.

### C. Current Status

Only one current infestation is known in Oregon, in Clackamas County. A site in Wasco County is considered eradicated. Its much broader distribution in California is evidence that this weed could occupy a much broader range here in Oregon were it not under containment.

### D. References For More Information

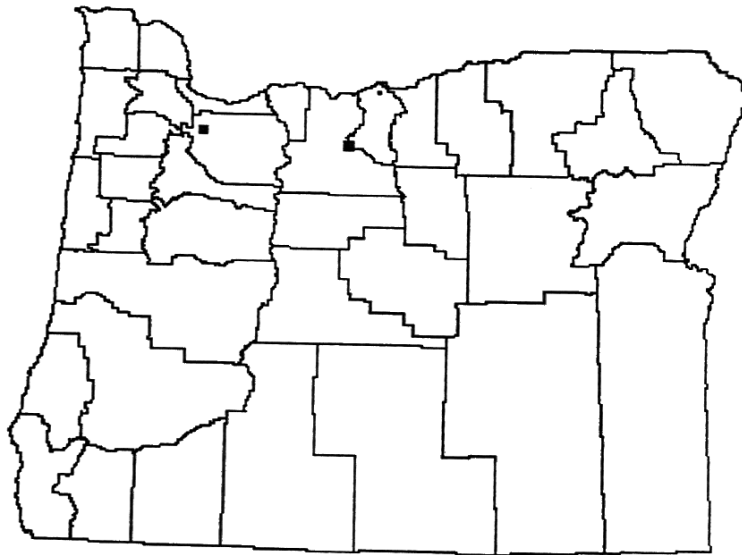
Roché, Cindy Talbott and Ben F. Roché Jr. Purple Starthistle (*Centaurea calcitrapa*) and Iberian Starthistle (*Centaurea iberica*). Pacific Northwest Extension Publication. PNW 350. March 1990.

Figure A.33  
Purple Starthistle



Source: Photo by Dave Pratt. UC Davis Coop. Ext. Farm Advisor.

Figure A.34  
Oregon Purple and Iberian Starthistle 1999



## A14. HAWKWEEDS - MEADOW (YELLOW) AND ORANGE

### A. Description

Meadow hawkweed (*Hieracium floribundum*) and Orange hawkweed (*Hieracium aurantiacum*) are members of the chicory tribe of the sunflower family, being closely related to dandelion, prickly lettuce, sowthistle, and chicory. They possess a wide range of highly successful reproductive strategies: hawkweeds reproduce not only by seeds, but also by rhizomes, stolons, and adventitious roots. Furthermore, seeds can be produced either sexually or asexually. Meadow hawkweed and Orange hawkweed are among the 11 species of highly invasive hawkweeds introduced into North America from Europe. Hawkweeds are able to colonize and rapidly dominate new sites because of their varied reproductive strategies and a tolerance for low-productivity soils. Meadow and orange hawkweeds are tenacious invaders. They have spread quickly throughout much of the Northwest since their arrival only 30 years ago. There is serious concern with the loss of native plant diversity in infected areas. Once established, hawkweeds quickly develop into a patch that continues to expand until it covers the site with a solid mat of rosettes.

### B. Native Area/Arrival In The U.S.

Meadow hawkweed was probably introduced into the United States from northern, central, and eastern portions of Europe in 1828. The first report of meadow hawkweed in the Pacific Northwest is from 1969 in Pend Orielle County, Washington. In the western United States, populations of orange hawkweed were first reported from coastal Washington in 1941. In Europe, orange hawkweeds comprise a large, diverse group of plants originating from a restricted area in northern and central regions. In its native range, orange hawkweeds occur primarily in mountainous meadows and hillsides.

### C. Current Status

As of 1998, the largest infestations of meadow hawkweed are centered in northern Idaho, northeastern Washington, and northwestern Montana. In every location it is considered to be spreading rapidly. It is not yet reported to be a problem weed in Oregon or California, but it seems likely that this group has the potential to become serious weeds.

### D. References For More Information

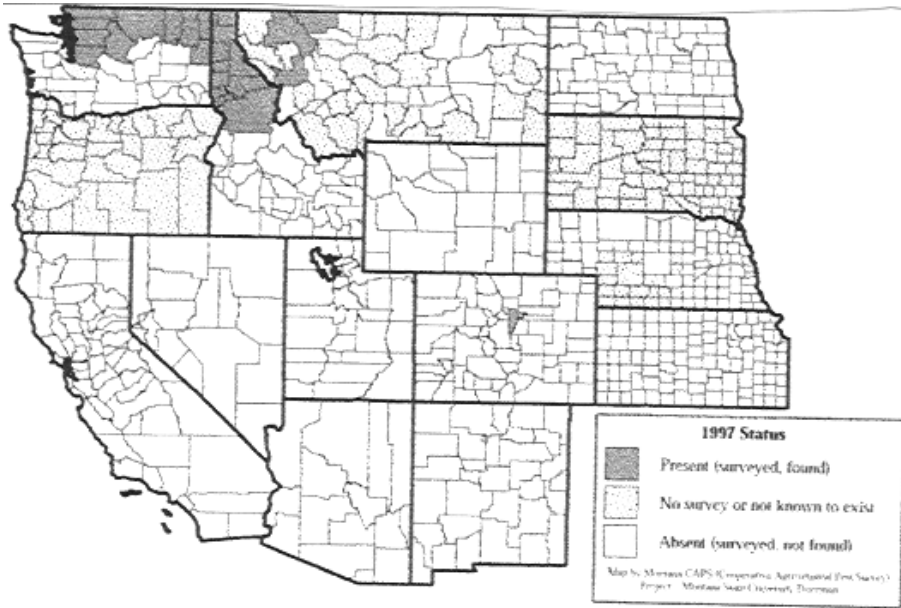
Wilson M. Linda and Robert H. Callihan. Meadow and Orange Hawkweed. Pp 238-248. In: Sheley, Roger L. and Janet K. Petroff (eds.). Biology and Management of Noxious Rangeland Weeds. Oregon State University Press. Corvallis, Oregon. 1999.

Figure A.35  
Meadow Hawkweed and Orange Hawkweed



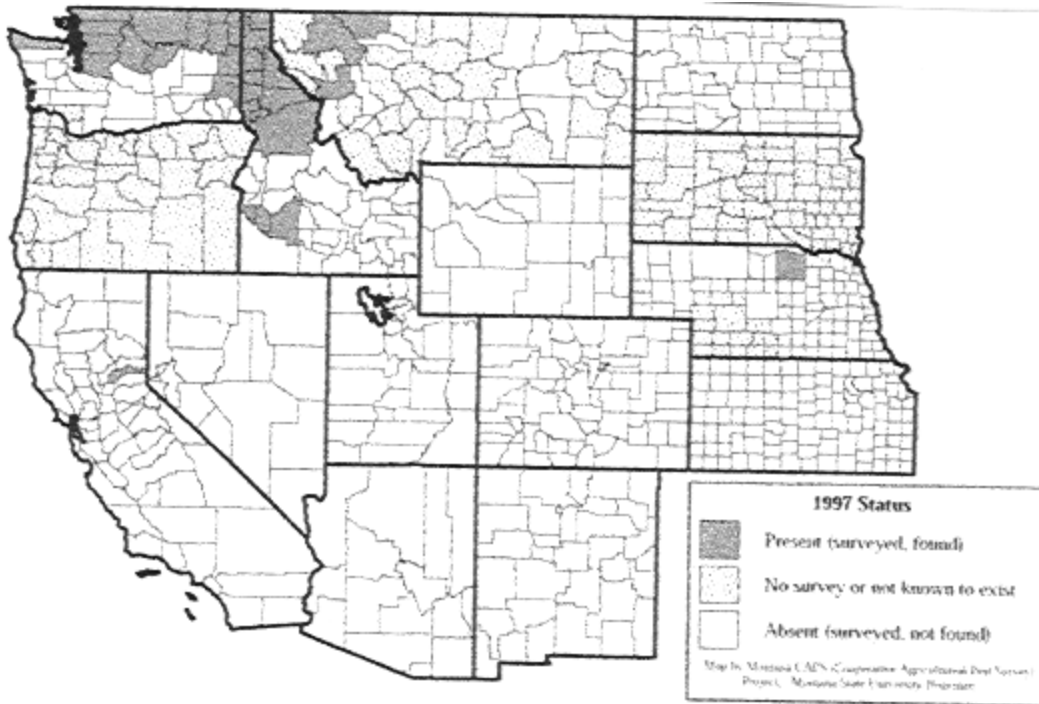
Note: Meadow hawkweed is on the left and Orange hawkweed is on the right.  
Source: Photos by Linda M. Wilson. University of Idaho.

Figure A.36  
Distribution of Meadow Hawkweed by County in the Western United States



Note: Data were collected by surveying various weed authorities in each state.

Figure A.37  
Distribution of Orange Hawkweed by County in the Western United States



Note: Data were collected by surveying various weed authorities in each state.

## A15. SPARTINA

### A. Description

There are several species of spartina (*Spartina* spp.) established along the west coast of North America, but the most problematic is *spartina alterniflora*. These species are grasses that tolerate saline and/or brackish conditions, and they establish and maintain populations much lower in the intertidal zone than do any of our native marsh grasses, sedges or rushes. *S. alterniflora* can grow to six feet or more in height, and stands of spartina reduce the velocity of water flowing through stands and permit the settling of particulates. Over time this has the effect of increasing the elevation of infested sites and effectively transforming mudflats to marshes. There are approximately 64,000 acres of mudflats at risk of infestation from *spartina* spp. in Oregon, and this includes oyster beds, clam beds, and eelgrass and algae stands that are a base of the food chain utilized by native species, including several that are regarded as threatened or endangered.

### B. Native Area/Arrival In The U.S.

Several species of spartina occur as natives along the eastern coasts of North and South America. Several of these species have been introduced into other parts of the world, and California and Washington both have many well-established infestations of different *spartina* spp. *Spartina* infestations have become a major problem in Willapa Bay, Washington and San Francisco Bay, California.

### C. Current Status

The only known Oregon occurrences of these introduced grasses are in the Siuslaw River Estuary near Florence, Oregon. *Spartina alterniflora* was planted as a beach sand control project in the 1980's. The infestation initially expanded at a rate of 200 m<sup>2</sup>/yr, and without control, expansion would likely have continued. Control efforts were initiated in 1990, and presently this infestation is regarded as eradicated. Most Oregon estuaries are at risk of invasion by *spartina* spp., but aerial and ground surveys for *spartina alterniflora* in other areas have been negative. Established in Willapa Bay in Pacific County in southwest Washington for more than a century, organizations in the state of Washington now expend more than \$1 million collectively in an attempt to manage spartina.

### D. References For More Information

Isaacson, Dennis L. Restoration of Estuarine Wetlands in the Pacific flyway: Preventing the Establishment of *Spartina* spp. In Oregon. Oregon Department of Agriculture. March 29, 2000.

Figure A.38  
Spartina



Aerial view of circular  
Spartina clonal patches



Single healthy young  
plant with rhizomes at  
red base of stems



One of the main determining characteristics of Spartina is the ligule with fine hairs; other plants have papery sheaths, or often no ligule at all.



Ligule of fine hairs



## A16. BRAZILIAN ELODEA

### A. Description

Brazilian elodea (*Egeria densa*) is a submersed, freshwater perennial herb, generally rooted on the bottom in depths of up to 20 feet or drifting. It looks very much like a larger, more robust version of its commonly-found native relative, *Elodea canadensis* (waterweed). Brazilian elodea leaves occur in whorls of four to eight. The leaves are minutely serrated, linear, and its short internodes frequently give the plant a very leafy appearance. The leaves and stems are generally a bright green. The lowest leaves are opposite or in whorls of 3, while the middle and upper leaves are in whorls of 4 to 8. Stems are erect, cylindrical, simple or branched and grow until they reach the surface of the water where they form dense mats. The white flowers have three petals and float on or rise above the water's surface. Brazilian elodea is a popular aquarium plant and can be found for sale in most pet shops, usually under the name *Anacharis*, although the sale of this plant in Washington is illegal. The trouble starts when Brazilian elodea is accidentally or deliberately introduced into lakes and ponds. The characteristics that make Brazilian elodea a good aquarium plant, also make it a nuisance plant out of its native habitat. It forms dense monospecific stands that restrict water movement, trap sediment, and cause fluctuations in water quality. Dense beds interfere with recreational uses of a waterbody by interfering with navigation, fishing, swimming, and water skiing.

### B. Native Area/Arrival In The U.S.

Brazilian elodea is native to the central Minas Geraes region of Brazil and to the coastal areas of Argentina and Uruguay. Due to its popularity as an aquarium plant, Brazilian elodea has also spread to New Zealand, Australia, Hawaii, Denmark, Germany, France, Japan, and Chile. The earliest report of Brazilian elodea in the United States was from Millneck, Long Island where the plant was collected in 1893. It was offered for sale in the United States in 1915, where it was recommended as a good "oxygenator" plant. In the United States, this plant has run wild in fresh inland waters from Washington to Massachusetts, California, and Florida. In Washington State, Brazilian elodea has been reported in Long Lake, Kitsap County since the early 1970s.

### C. Current Status

Brazilian elodea infests many western Oregon and Washington lakes scattered over a wide geographic area.. It, along with several other invasive aquatic plants, also infests the sloughs and drainage ditches in the Lower Columbia, particularly in the Longview/Kelso area. Brazilian elodea has not yet been reported growing in eastern Oregon or Washington Lakes. Brazilian elodea is regarded as the worst aquatic plant problem in Oregon. In Washington State, local and state government and lake residents spend thousand of dollars every year to manage Brazilian elodea infestations. The cost of one control project in Silver Lake, Cowlitz County is over one million dollars.

D. References For More Information

Catling, P.M. and W. Wojtas. "The Waterweeds (Elodea and Egeria, Hydrocharitaceae) in Canada." *Canadian Journal of Botany*. Vol. 64: 1525-1541. 1986.

Gibbons, M.V., H.L. Gibbons, Jr., and M.D. Sytsma. A Citizen's Manual for Developing Integrated Aquatic Vegetation Management Plans, First Edition. Washington State Department of Ecology. Olympia, Washington. 1994.