July 5th, 2007

Perennial Pepperweed, a New Invasive Mustard Found in Wisconsin

Mark J. Renz, Extension Weed Scientist

Perennial pepperweed (*Lepidium latifolium* L.) is an invasive creeping herbaceous perennial weed recently found in Green Bay, Wisconsin. This plant is capable of invading pastures, alfalfa fields, roadsides and many other upland sites, as well as riparian areas, irrigation ditches, floodplains and wetlands. Shoots emerge early in the spring forming a rosette which will persist for several weeks. By late spring, plants bolt producing an inflorescence where flowers will develop. After seed production, flowering shoots senesce, although new rosettes can emerge in the fall in moist soils.

Originally from Europe and Asia, perennial pepperweed can be commonly found throughout many western states, but plants have recently been found invading several eastern and Midwestern states. Concern for large-scale spread is high as perennial pepperweed has the potential to invade natural and managed areas. The population found in Wisconsin was along a disturbed roadside near a large transportation hub for a shipping company. This indicates that propagules are being imported from long-distance sources. Rapid response and eradication of existing infestations is critical to prevent the spread of this invasive weed throughout the entire state.

IDENTIFICATION

- STEMS are green, semi-woody, and can be numerous. They can range from 2 feet to over 4 feet tall, but senesce by late summer.
- ROOTS can be herbaceous or form semi-woody crowns. Herbaceous roots are often creeping and are responsible for localized spread.
- LEAVES are smooth and green to gray-green in color. Rosette leaves are 4 to 11 inches long and 1 to 3 inches wide with long petioles. Leaves on the stem are reduced in size compared to rosette leaves and have a shorter petiole.
- FLOWERS/FRUIT: Small, white flowers form dense clusters throughout the top third of the stems. Fruit are small, round, 2 chambered pods, 1/16th of an inch long

- SIMILAR SPECIES: Perennial pepperweed is often confused with another invasive weed called hoary cress (*Cardaria draba*). However, unlike the taller perennial pepperweed, hoary cress stems are less than 3 ft tall and have leaves that clasp the stem and lack an obvious petiole.

REPRODUCTION & SPREAD

Perennial pepperweed can spread either by seeds or perennial roots.

- SEEDS: Infestations can produce over 6.4 billion seeds per acre annually (Young et al. 1998), but few seedlings are observed in the field. Long distance dispersal is likely primarily from seeds, even though germination events are rare.
- PERENNIAL PROPAGULES: Plants primarily reproduce from perennial roots capable of generating new shoots. Expansion of populations typically occurs from this method. Populations can spread more than 10 feet from the parent plant each year without disturbance, but if roots are fragmented by tillage or a natural event, spread can increase dramatically (M. J. Renz 2002).

MANAGEMENT

Proactive management is the best approach for controlling perennial pepperweed since large, dense stands are difficult to control. Frequent monitoring is critical to locate new plants before they become established. If new infestations are found, plants should be removed immediately to prevent further spread. If possible include revegetation methods to reduce the possibility of reinvasion after management.

- *Physical/Mechanical/Cultural:* Establishing and maintaining competitive perennial vegetation can dramatically slow the introduction and spread of perennial pepperweed. Established plants are not effectively controlled by hand-pulling, tillage, mowing, or burning as shoots quickly re-sprout.
- *Biological control:* Intensive livestock grazing through the growing season can effectively suppress populations, but once livestock are removed, perennial pepperweed populations quickly recover; therefore grazing should be integrated with other tools. Native insects and diseases have been observed to reduce seed production, but do not appear to otherwise reduce the health of the plant.
- *Herbicides* :Several herbicides can reduce perennial pepperweed populations, but repeat applications in combination with revegetation are needed to prevent reinvasion (Young et al 2002). In areas with a dense buildup of thatch, mow or burn old shoots before applying herbicides. Herbicide application timing is critical as herbicides work best when applied at the flower bud stage (Young et al 1998). If herbicide cannot be applied at the flower bud to flowering stages, mow plants and treat re-sprouting shoots. See table 1 for a summary of herbicides available within each area. **For all herbicide applications, it is important to read the herbicide label BEFORE making any application, as different herbicides will have different requirements and restrictions.**

Table 1.Herbicides recommended for controlling perennial pepperweed

Registered for use in		
Alfalfa	*Pasture*	*Noncrop*
Glyphosate (many) Imazamox (Raptor) Imazethapyr (Pursuit)	Glyphosate (many) Metsulfuron (Escort, Cimarron) 2,4-D (many)	Chlorsulfuron (Telar) Glyphosate (many) Metsulfuron (Escort, Cimarron) Imazapyr (Arsenal, Habitat)

REFERENCES

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Young, J.A., C.D. Clements, and R.R. Blank. 2002. Herbicide residues and perennial grass on establishment perennial pepperweed sites. J. Range Manage. 55: 194-196.