

Montana Plants Travel Abroad without a Passport

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Most of us are adversely affected by the introduction of weedy exotic plants; even if it's just the hawkweed (*Hieracium aurantiacum*) in our lawns or the Norway maple (*Acer platanoides*) seedlings in our flower beds. Weeds are a lot more than just a nuisance to farmers fighting whitetop (*Cardaria spp*) or ranchers struggling with leafy spurge (*Euphorbia esula*). It's gotten to the point that some of our plant communities look more like Europe than North America. What few of us realize is that weedy plant introduction is a two-way street; many of our native plants have been introduced into Europe or Asia and are causing havoc over there!

More than 150 species of plants endemic to North America have become naturalized in Europe, more than from any other continent (Weber, 1997). Eight species of Montana natives are serious weeds of natural areas on other continents (Daehler, 1998), including tall coneflower (*Rudbeckia laciniata*), Canada goldenrod (*Solidago canadensis*), Washington lupine (*Lupinus polyphyllus*) and plains cottonwood (*Populus deltoides*). Lodgepole pine (*Pinus contorta*) has escaped cultivation and is spreading rapidly in many southern hemisphere countries. Thirty-nine species of native Montana plants are common agricultural weeds introduced on other continents, and many are considered serious threats to agriculture in at least one country (Table 1). More than one-fourth of these are in the Aster Family, and nearly half are aquatic or wetland plants.

Five species of Montana natives are listed among the world's worst agricultural weeds (Holm et al., 1997). Horseweed (*Conyza canadensis*) is a weed of crops from wheat to bananas throughout temperate and tropical regions of the world. Both small spikerush (*Eleocharis acicularis*) and seaside bulrush (*Scirpus maritimus*) are serious weeds of rice in much of Asia. They have become pervasive pests in countries such as Japan where broad-leaved plants are now controlled with herbicides. Seaside bulrush is reported to infest 80% of rice fields in South Korea, sometimes causing complete loss of crop yield. Floating-leaved pondweed (*Potamogeton natans*) and Canada waterweed (*Elodea canadensis*) are both aquatic plants that block canals and ditches in western Europe. Canada waterweed is a significant problem in Australia, where it infests 5,000 miles of ditches. Canals must be cleaned by hand up to six times each year in the Netherlands.

Examination of Table 1 suggests that it is Montana's widespread and weedy natives that become problems elsewhere. Montana has several species of penstemons that prefer disturbed habitats and occur only in our region. None of these narrowly distributed species have become naturalized in Europe, although several have been introduced for horticultural purposes. Boxelder (*Acer negundo*) is North America's most widespread maple and the only one to become naturalized in Europe. Northern bedstraw (*Galium boreale*) is introduced in Finland, and small cleavers (*G. trifidum*) is common in Japan; however, common cleavers (*G. aparine*), our most common species, is a serious

problem throughout much of Europe and Asia. Our native goldenrods provide another example. Tall goldenrod (*Solidago gigantea*) is common in many habitats throughout Montana, while grass-leaved goldenrod (*S. graminifolia*) is found only along our major rivers in the eastern part of the state. Both were introduced to Europe 150 years ago for horticultural purposes, but only tall goldenrod has spread rapidly (Weber, 1998).

So there you have it – some of our good natives have run amok in foreign lands. It's sad but true. Weed invasions are a world-wide phenomenon. Few regional floras don't contribute weeds, and even fewer are impervious to invasion. So next time you travel abroad look for these ugly Americans; they're everywhere.

Literature Cited

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Table 1. Common (C), principal (P) and serious (S) weeds of agriculture native to Montana and introduced onto other continents; taken from Holm et al., (1979).

<i>Ambrosia artemisiifolia</i>	C,P	Guatemala, Japan, Australia
<i>Ambrosia psilostachya</i>	P	Australia
<i>Androsace filiformis</i>	C	former Soviet Union
<i>Anemone patens</i>	C	Australia
<i>Bacopa rotundifolia</i>	C	Japan
<i>Bidens frondosa</i>	C	Iran, Japan, Portugal
<i>Bidens tripartita</i>	C	Europe, Japan
<i>Chenopodium rubrum</i>	C	Europe
<i>Coyza canadensis</i>	C	Europe, Asia, Hawaii
<i>Eleocharis acicularis</i>	S,P	Asia, Australia
<i>Erigeron annuus</i>	C,P	Asia
<i>Erigeron philadelphicus</i>	C	Japan
<i>Erysimum cheiranthoides</i>	C	Europe
<i>Erysimum repandrum</i>	C	Argentina
<i>Galium aparine</i>	P,S	Asia
<i>Galium boreale</i>	C	Finland
<i>Galium trifidum</i>	C	Japan
<i>Geranium carolinianum</i>	C	Japan
<i>Heliotropum curassavicum</i>	C	India, Iran
<i>Heracleum spondylium</i>	C	Europe
<i>Hippuris vulgaris</i>	C	Iran
<i>Lappula echinata</i>	C	Africa, former Soviet Union
<i>Matricaria matricarioides</i>	C	Europe
<i>Panicum capillare</i>	S	India
<i>Phalaris arundinacea</i>	P,S	Africa, Asia, New Zealand
<i>Potamogeton natans</i>	C,P	Europe Africa
<i>Potamogeton nodosus</i>	C	Africa
<i>Potamogeton pectinatus</i>	S,P	Africa
<i>Purshia tridentata</i>	P	Ghana
<i>Ranunculus flammula</i>	C	Germany
<i>Rubus parviflorus</i>	C	Australia
<i>Scirpus maritimus</i>	P,S	Africa, Asia, Europe
<i>Sitanion hystrix</i>	C	Australia
<i>Solanum rostratum</i>	C	Australia, Africa
<i>Solidago gigantea</i>	C	Japan
<i>Veronica americana</i>	C	Japan
<i>Veronica peregrina</i>	C	Europe, Japan
<i>Xanthium strumarium</i>	C,P	Europe, Asia, Africa
<i>Zannichellia palustris</i>	C	Portugal