

## Goldenrod: a Global Invasive?

Late summer tends to be the time for all the yellow wildflowers to display their color. One imagines sunflowers, primroses, coneflowers, and many others waving in a gusty wind. However, in certain regions of the globe, one of these showy prairie plants is considered “the most successful and widespread invasive plant species”—the goldenrods (*Solidago* spp.)

Thought to be introduced to Asia and Europe via gardeners, goldenrods have managed to cause havoc across the globe. Three Minnesota natives that are commonly put on worldwide “most wanted” lists include Canada goldenrod (*Solidago canadensis*), stiff goldenrod (*Solidago rigida*), and giant goldenrod (*Solidago gigantea*). These hardy plants tolerate disturbed areas, grow in different moisture regimes, spread multiple different ways, and are all perennial.

Aside from simply shading out nearby vegetation, goldenrods have also been implicated in changing the soil chemistry around them. They do this by decreasing plant available nutrients such as nitrogen and phosphorus, starving their neighbors. Similar to black walnut (*Juglans nigra*) or garlic mustard (*Alliaria petiolata*), goldenrods are also thought to be allelopathic. Allelopathic species release chemicals in the soil to hurt nearby plants, fungi, or microbes. While goldenrod pollen and nectar sources benefit certain flies and spiders in Europe and Asia, it comes with a cost to their beetles and bees. Even European birds were noted to be less abundant in goldenrod patches.

Usually when we hear about invasive species in the media, Europe and especially Asia are mentioned as where these creatures originate. Indeed, buckthorns (*Rhamnus* spp.), emerald ash borer (*Agrilus planipennis*), or Japanese beetles (*Popillia japonica*) do come from those areas. These pests pose serious dangers to our agricultural, economic, and environmental health. However, we also need to realize that North America has played a role too in spreading damaging pests—even aside from goldenrod. These include raccoons (*Procyon* spp.), Colorado potato beetles (*Leptinotarsa decemlineata*), and ragweed (*Ambrosia* spp.) We export much to the world just as we import much. Invasive species are no different, but it is easy to reside in our bubble when we hear about a new one entering Minnesota.

Important to note there is no Olympic medal for “least damaging exported pest”. Instead of fostering resentment about different countries, I was encouraged by the plans for an invasive species lesson between Owatonna Public Schools and a sister school in Japan. Students from both countries can learn about their invasive “exports” and how they affect each ecosystem. In that case, invasive species can be more of a grey area than a black and white one. Perhaps it can also be a shade of yellow, depending on where those goldenrods bloom.