

Distribution of Knotweeds (*Fallopia* spp.) in western North America

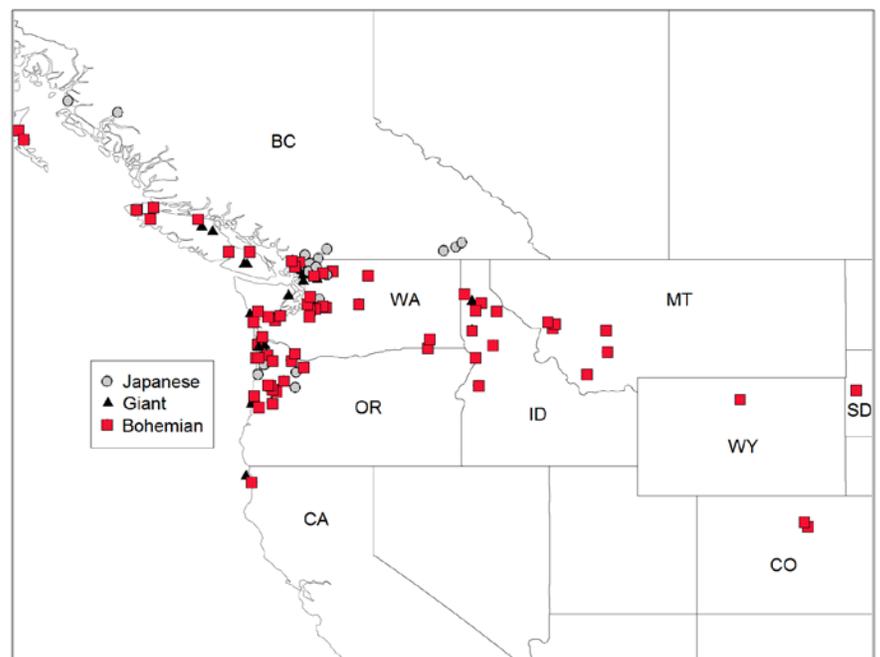
Dr. John Gaskin and colleagues have been researching the distribution of knotweed genotypes throughout the western U.S. and Canada. Knowing the distribution of different genotypes insures that all of the genetic diversity represented by knotweed invasions will be present in host-specificity tests of current and proposed biological control agents, thus improving their effectiveness and reducing risk to closely related non-target species. Dr. John Gaskin provided the update below about this research.

What a confusing group of weeds to work with. Not only do they keep changing what genus they belong to (*Reynoutria*, then *Polygonum*, and now *Fallopia*, according to the Flora of North America), but there seems to be some confusion in morphologically distinguishing between Giant, Japanese and the hybrid Bohemian knotweed (*F. sachalinensis*, *F. japonica*, and *F. x bohemica*, respectively). If they can't be identified, we don't know their distribution in our region. That makes a big difference when thinking of using the psyllid biocontrol agent that Canada and the U.S. are trying to get approved for release, as the agent was developed for Japanese knotweed, and varies in its effectiveness on the other two species, as well as on different genotypes of those species.

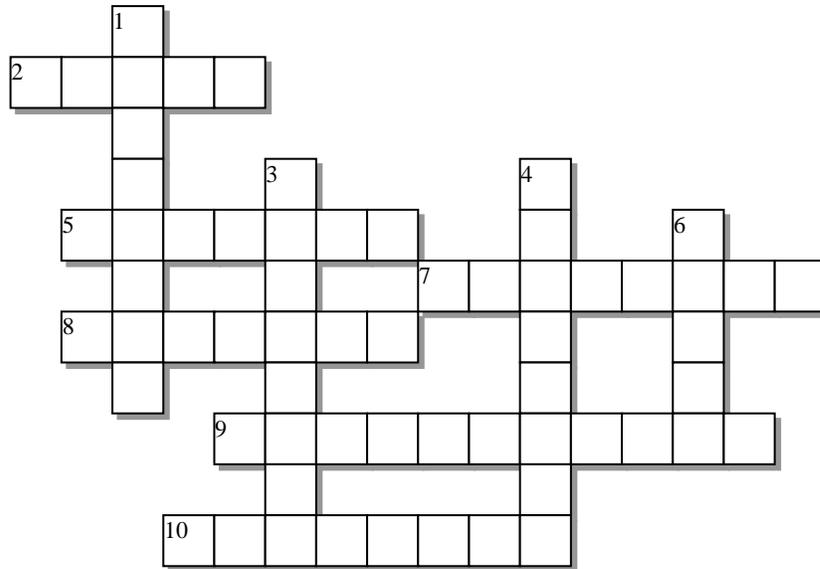


We wanted to figure out which knotweeds are found where, so Marijka Haverhals (Idaho), Fritzi Grevstad (Oregon) and Tim Miller (Washington) rounded up a bunch of excellent volunteers to send us 865 knotweeds from 132 populations across the West. Here at the USDA-Agricultural Research Service station in Sidney, MT, we did DNA fingerprinting on those plants to identify (ID) to species, and found out a few things. First, the hybrid Bohemian knotweed is the most common plant in the West (72%), and is the only species we found in Montana. That is a different result than shown in some sources like USDA PLANTS Database (<http://plants.usda.gov>), which show no Bohemian knotweed in the U.S. Second, our Japanese knotweed in the West is genetically identical to the Japanese knotweed in England, so the biocontrol agent they developed should be promising for our Japanese knotweed (but we will still need an agent that controls the hybrid, especially for Montana). Third, Fritzi and Tim tried to identify many of their populations using a key similar to that featured in MSU Extension bulletin "Biology, Ecology and Management of the Knotweed Complex" (<http://msuextension.org/publications/AgandNaturalResources/EB0196.pdf>

See Figure 4, page 5) and it turns out their IDs agreed with our DNA results for all of their 222 plants, even when populations had mixes of species. So give the morphological ID a shot. If you find a real mystery plant, contact John Gaskin at Sidney USDA-ARS (john.gaskin@ars.usda.gov) and we will gladly help you with a collection protocol and ID the plant with DNA analysis, no charge. We'd be especially interested if you find anything other than the hybrid Bohemian knotweed in Montana.



Test your knowledge of Distribution of Knotweeds in Western North America



Across:

- 2 - Bohemian knotweed is a hybrid of Japanese and _____ knotweed*
- 5 - Japanese knotweed in the West is identical to Japanese knotweed in _____
- 7 - The underside leaf vein of this knotweed (common name) has small stout hairs*
- 8 - This biocontrol agent is being developed for Japanese knotweed in the U.S. and Canada
- 9 - Without knowing the genetic diversity of an invasive species, host-_____ tests may fail to test a native species closely related to the target pest
- 10 - A hand lens is necessary to see the underside _____ of knotweeds and tell them apart

Down:

- 1 - The underside leaf vein of this knotweed (common name) has rough ridges, but no hairs*
- 3 - The new genus name for knotweed
- 4 - The only knotweed species found in Montana to date
- 6 - The underside leaf vein of this knotweed (common name) has long, multi-cellular hairs*

*Refer to Knotweed Extension bulletin for answer

Solutions are posted to the MSU Extension Invasive Rangeland Weed website:

<http://www.msuextension.org/invasiveplantsMangold/extensionsub.html>

