A Bee's Eye View: Native vs. Non-Native Plants

We have many theories to explain why weeds are successful invaders: they have escaped their natural enemies, their seeds are readily and quickly spread via human activities, or they out-compete native plants for water or nutrients, to name a few. One recent idea has surfaced as another possible explanation for why weeds might be successful: they are more attractive to pollinators.

A bumble bee and a biological control agent feasting on a spotted knapweed flower

But what do pollinators have to do with the success of weeds? Most flowering plant species need animals like bees, butterflies, wasps, flies, and sometimes even birds and bats to move around their pollen between flowers in order to produce viable seeds. If a weed and a native plant are flowering at the same time in the same place, the presence of the weed could change the behavior or abundance of pollinators. This could then affect the reproduction of the native plant since changes in the numbers of pollinators that visit a flower could change how many seeds it will make.

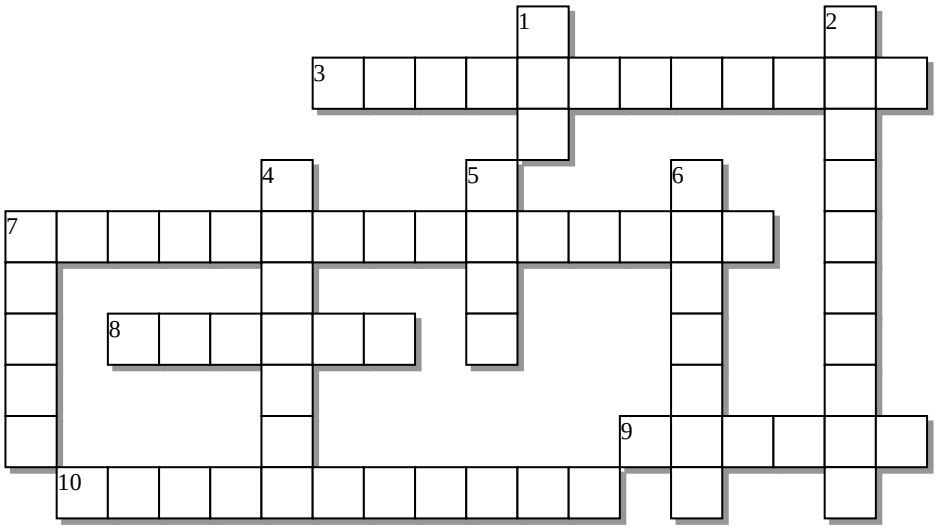
Studies over the past two decades using a variety of different native and non-native species have found that in some cases invasive non-native plants actually increase pollinator visits to native plants (facilitation), in other cases the invader's presence makes no difference to pollinators visiting native flowers (neutral interaction), but most often that the invader decreases pollinator visits to native flowers (competition). A study being conducted by researchers at Montana State University is addressing these plant-pollinator interactions in spotted knapweed infestations in Montana rangelands. This ongoing research has found that spotted knapweed shares pollinators with many native flowers including yarrow, dotted gayfeather, lupine, nodding wild onion, and hairy false goldenaster.

Hairy false goldenaster being visited by a solitary bee

Preliminary analysis of an experiment this past summer comparing pollinator visits to hairy false goldenaster (*Heterotheca villosa*) in the presence of spotted knapweed suggests that increasing density of knapweed has little effect on the number of pollinators visiting goldenaster flowers. This would suggests that knapweed is not competing with goldenaster for pollinators (good news for this native plant!), but further lab work must be done to clarify the trends. Several other interesting findings were that bumble bees (pictured above on the right) and honey bees almost always visited knapweed over goldenaster, but that flies tended to visit the goldenaster flowers more than knapweed flowers.

These kinds of studies are important not only for understanding how weeds impact native plants but also for gaining information for pollinator conservation. Alarming declines in both native and commercial bee species have recently received high profile attention. The role of weed invasions in this phenomenon, however, is still debated. It has been suggested that invasive plants could increase pollinator populations by providing more food resources (especially during times when few other flowers are blooming), but alternatively could decrease pollinator diversity by reducing native plant diversity.

Test Your Knowledge of A Bee's Eye View: Native vs. Non-Native Plants



Across:

3 - _____ is when the presence of one plant increases pollinator visits to another plant

7 - The noxious weed that MSU researchers studied in their experiment with pollinators

8 - Plants need pollinators to move around their_____

9 - Spotted knapweed shares pollinators with this native plant that was used by the Greek hero Achilles for healing

10 - _____ is when the presence of one plant decreases pollinator visits to native flowers

Down:

1 - In the MSU study, this kind of insect visited goldenaster more than knapweed

2 - Another name for a bee that refers to the service it provides a plant

4 - Native and commercial bee species are in _____, which is alarming many scientists and farmers

5 - Along with contributing to spooktacular halloween decorations, these creatures can also serve as pollinators

6 - In _____ interactions, the invader's presence makes no difference to pollinators visiting native flowers

7 - Want these to start a garden? You better have some pollinators flying around

Solutions are posted to the MSU Extension Invasive Rangeland Weed website:
http://www.msuextension.org/invasiveplantsMangold/extensionsub.html

MONTANA STATE UNIVERSITY EXTENSION

Montana noxious weed Education Campaign