How One CWMA is Helping the Monarch Butterflies

By: Dan Watt

Monarch butterflies have been receiving a lot of attention this year. So much so that President Obama, Canadian Prime Minister Stephen Harper, and Mexico's president Enrique Pena Nieto agreed at the North American Leaders Summit in Toluco, Mexico to support conservation efforts for the monarch butterfly because of its emblematic status in North America. This is a victory for conservation enthusiasts and butterfly lovers everywhere, but the question is why are the monarch butterflies disappearing?

According to a report from the World Wildlife Fund, Mexico's Environment Department, and the Natural Protected Areas Commission the monarchs occupied a 1.67 acre area in the pine and fir forests west of Mexico City in 2013. This is only a fraction of their 17 acre average and 44.5 acre peak in 1996. The reasoning for this population decline sites many factors such as increased drought frequency, colder temperatures in the late spring and early summer delaying the migration north, deforestation of winter habitat, planting more and more herbicide resistant corn, and therefore, increasing the use of herbicides. What most reports fail to recognize, however, are the affects non-native invasive plants have on the monarch butterfly.

Female monarchs evolved to lay their eggs on milkweed plants to ensure adequate resources for their offspring to develop. Their caterpillars cannot feed on other host plants, therefore, monarch butterflies rely on milkweed and a few related species to survive. The use of herbicide and farmers plowing more fields for corn production has diminished the milkweed populations in historically important monarch breeding grounds along the corn-belt. So areas undisturbed by these practices have become crucial to the survival of the monarch butterfly. Unfortunately, these safe havens are not as safe as we previously thought. A non-native invasive plant called black swallow-wort, which is part of the milkweed family native to Europe, was brought here in the late 19th century and has established itself along the monarch's migration route and other areas in the U.S. and Canada (Figure 1).

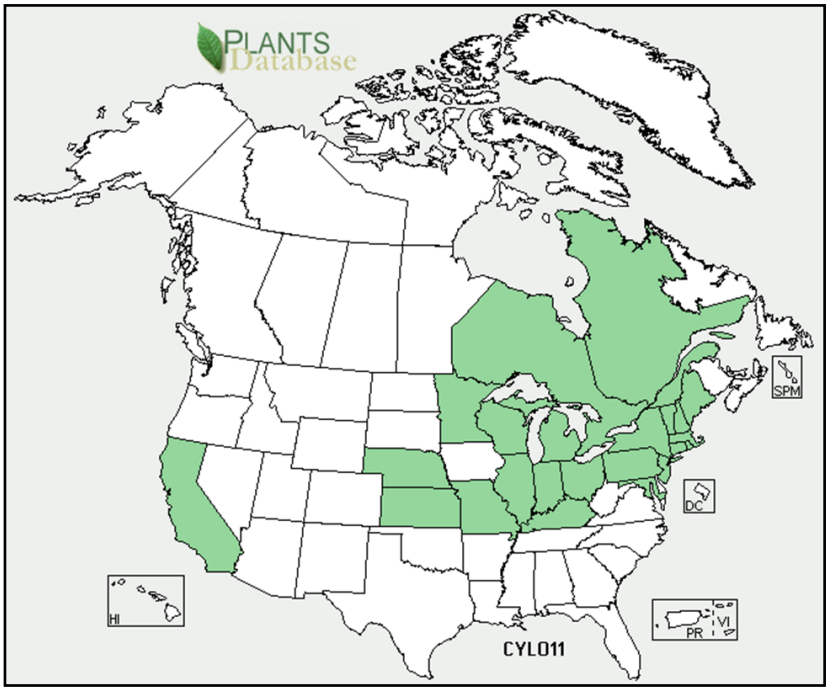

Figure 1. black swallow-wort in the United States and Canada. Source: USDA NRCS Plants Database, http://plants.usda.gov.

Black swallow-wort, *Cynanchum louisea*

According to a study on monarch oviposition on swallow-worts by Casagrande and Dacey (2007), female monarchs will lay eggs on black swallow-wort even when it is in the same field as common milkweed. Laboratory tests have shown that monarch caterpillars cannot feed on black swallow-wort meaning swallow-worts act as dead-end hosts and those eggs are essentially wasted. As if that was not enough, black swallow-wort also comes with all the bad attributes and symptoms of most invasive species such as reduction of biological diversity, crowding out native milkweeds, invading open grasslands, and allelopathy. All of these affects hinder not only the monarch population, but the grass nesting birds, insect diversity, and the overall ecological integrity of any environment in which it exists. Luckily this problem is being recognized and actions are beginning to take place.

The Central Upper Peninsula Cooperative Weed Management Area has received funding this year from a group called the Monarch Joint Venture, which will fund project efforts through 2016 to study treatment methods for black swallow-wort at Peninsula Point in the western Hiawatha National Forest. The money will also fund additional surveying for possible unknown populations. Work associated with this project will be done by The Hiawatha National Forest and Superior Watershed Partnership who are CUPCWMA partners. The treatments being tested will be the mechanical pulling of swallow-wort and the use of prescribed burns. The Forest Service is planning to establish test plots where the effectiveness of treatment methods can be monitored and analyzed for effectiveness.

Once this process of treatment and subsequent monitoring has been completed CUPCWMA hopes to have a clear idea of what best management practices are suitable for black swallow-wort and form a database on its locations along Peninsula Point. This project will be important in protecting a sensitive monarch breeding and research site at Peninsula Point and provide a model for future control of these species in the crucial corn-belt breeding range for eastern North American monarchs. Deb LeBlanc, the Hiawatha National Forest Zone Plant Ecologist will be leading this project, and she provided necessary information about the project for this article.

For more information visit www.monarchjointventure.org or contact Deb Leblanc dleblanc01@fs.fed.us

Resources

- Monarch Joint Venture fact sheet: black swallow-wort: *Cynanchum louiseae*, developed by Sarada Sangameswaren, Wendy Caldwell, and Karen Oberhauser. Available at: http://monarchjointventure.org/images/uploads/documents/Swallow-wort_flyer.pdf

- Casagrande, R.A. and J.E. Dacey 2007. Monarch Oviposition on Swallow-worts (*Vincetoxicum spp.*). Environ. Entomol. 36(3):631-636 (2007)

- Rendon-Salinas, E. & Tavera-Alonso, G. 2013, Forest Surface Occupied by Monarch Butterfly Hibernation Colonies in December 2013. World Wildlife Fund, Available at: http://worldwildlife.org/publications/forest-surface-occupied-by-monarch-butterfly-hibernation-colonies-in-december-2013