Rights-of-Way Ecology at Penn State

Plant and animal community response to long-term vegetation management on rights-of-way

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Bees Survey

There are at least 4000 species of bees in North America: of these, 371 can be found in Pennsylvania[1]. Bees pollinate roughly 75% of the fruits, nuts and vegetables that are grown in the United States alone[2], and conservation of bees has become a worldwide priority.

Previous studies at State Game Lands 33, Centre County, Pennsylvania (SGL33) have examined the diversity of plants, mammals, birds, reptiles, amphibians, and butterflies found at the different treatment sites. With industry, government, and society increasingly focused on the conservation of pollinators and their habitats, the Project Director and Sponsors found that little is known about how different vegetation management methods used on power line rights-of-way affect our native bee populations. In 2016, the first survey of bees at SGL33 began.

Beginning in May 2016 bee surveys were conducted monthly for four months on SGL 33 sites following six different vegetation management practices. The practices included the following treatment methods: hand-cutting, mowing, cut stubble, low volume basal, low or ultra-low volume foliar, and high volume foliar.

Initial Findings

1. The most diverse collections of bees were gathered from sites where individual, noncompatible and/or non-native plants were selectively treated using low volume basal or low, ultra-low volume foliar herbicide applications.
2. The least diverse collections of bees were gathered from sites that had used broadly applied treatments such as mowing, hand-cutting, or herbicide which didn't maintain a diverse population of flowering plants.

Bees Survey

While there are a number of factors leading to a decline in native bee populations and diversity, one threat is the loss or fragmentation of habitat. There are millions of acres of transportation and power line rights-of-ways in the United States. The vegetation within these corridors are routinely managed and could serve as valuable habitat for native bee species. Better understanding the impacts commonly used vegetation management practices have on bees will allow vegetation managers to develop improved strategies for promoting native flowering plants and suitable nesting habitat in these spaces.

[1] *Donovall, III, L.R. and D. vanEngelsdorp. 2010. A checklist of the bees (Hymenoptera: Apoidea) of Pennsylvania. Journal of the Kansas Entomological Society. 83(1): 7-24.*

[2] *Moisset, B. and S. Buchmann. 2015. Bee Basics: An Introduction to Our Native Bees. A USDA Forest Service and Pollinator Partnership Publication. 42 pages.*

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