

## **The Bees and Butterflies of the Litzsinger Road Ecology Center, St. Louis, MO**

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Plants and vertebrates are often monitored very closely in restoration projects, but invertebrates are neglected. This group, particularly the insects, is essential to monitor because insects comprise the majority of the species in the restoration and provide many ecosystem services such as pollination. Bees are important monitoring subjects because they are the most important pollinator in the Midwest, being the only one that actively collects pollen. Also, bees can be habitat restricted, oligolectic (adults collect plant pollen or drink plant nectar from one plant genus or family), and vary in their social nature and nest type. All of these characteristics can be considered different functional groups that can be compared between remnant natural communities and restorations to understand if bee community structure has been restored. Butterflies are also good monitoring subjects because they are easy to identify, can be important pollinators for the reproduction of certain plant species, are highly oligophagous (caterpillars eat only one plant genus or family), are often habitat restricted and may be sensitive to common restoration practices such as prescribed burns.

We monitored bee and butterfly species at the Litzsinger Road Ecology Center (LREC) in suburban St. Louis, Missouri. It is an environmental educational center and restoration project that is managed by the Missouri Botanical Garden. The LREC comprises 14 ha, 5 ha of which are prairie reconstructions, and 6 ha of which are restored woodlands which surround 1 km of Deer Creek. We compared the bee and butterfly diversity and functional groups in the restorations at the LREC to local remnant areas to evaluate whether our site had comparable levels of diversity and functional group composition.

Clinebell collected bees at the LREC from 1996-2005. He primarily concentrated on collecting pollinators from certain species of plants. I collected bees at the LREC from 2004-2006 in randomly selected plots and observed butterflies in plots from 2004-2006.

We compared our bee data to 7 reference areas within 50 km of the LREC that included some undisturbed remnant habitat: Calvary Cemetery, Cuivre River State Park (CRSP), Englemann Woods, Shaw Nature Reserve (SNR), Tyson Research Center (TRC), Valley View Glade, and Victoria Glade. Because bee data collection was more extensive at CRSP and TRC, more comparisons were made to these sites. Butterfly data was compared to data from CRSP, SNR, and TRC.

We found more bee species at the LREC (105) than were found at any of the 7 reference communities except for TRC (110). We found similar percentages of bee species in each functional group as at TRC and CRSP, and similar percentages of oligolectic bee species. We found more honeybees at the LREC than at other sites, probably due to neighbors' nearby hives. Honeybees are not native, so they may be having negative effects on our pollinator and/or plant communities. We found fewer butterfly species at the LREC (26) than at any of the reference sites, but the butterfly functional groups were pretty similar between sites. The reference sites were much larger in area than the LREC. When two smaller areas of CRSP were compared to the butterfly data at the LREC were examined, the number of butterfly species was comparable. Our comparisons indicate that the bee community at the LREC seems to have been restored to the functional group composition and number of species of much larger remnant natural areas, and when the size of the area was taken into account, the butterfly community also seems to be restored to the functional group composition and number of species of a remnant natural area. More sampling over a longer period of the pollinator community will help us to understand effects of management practices and insure the viability of this community. Continued promotion of plants favored by oligolectic species will help increase pollinator diversity and preserve pollinator communities.