Platform Preferred

**Using Silicone Bands and Tissue Residues to Assess the Exposure of Wild Pollinators to Pesticides.** M.L. Hladik, U.S. Geological Survey, Sacramento, CA.

Wild bees are important pollinators of agricultural crops, yet few studies have looked at the pesticide exposure of field-captured bees. In 2019, we evaluated 24 conserved grassland fields (those implemented by the United States Department of Agriculture to create pollinator-friendly habitat) located in Iowa, USA, with corn and soybeans as the dominant crops. Pesticides were measured in silicone bands (to capture aerial application/drift; placed on the landscape for one month prior to retrieval) and bee tissue (collected via sweep net). Each field was sampled in July and August, to represent different parts of the growing season. Out of the 180 pesticides and degradates analyzed, 46 compounds were detected: 9 herbicides/degradates, 19 insecticides/degradates, 17 fungicides, and 1 plant growth regulator. Of the pesticides detected, 20 were observed in silicone bands and bees, 16 in just the bands, and 10 in the bee tissue. As expected, herbicide detections were more frequent and concentrations were higher earlier in the growing season, while insecticides and fungicides were more frequently observed and at higher concentrations later in the season. Of the 10 pesticides detected only in the bees, five were degradates/metabolites, indicating the potential for the bees to transform the pesticides. Pesticide concentrations in the silicone bands increased with percent agriculture (within a 1000-meter radius) indicating a higher exposure potential in grasslands surrounded by a greater percentage of agriculture. In an agro-ecosystem, wild bees and other pollinators are being exposed to pesticides even in grasslands created to support and protect pollinator diversity.