The Insects of Elkhorn Slough Reserve

While many associate Elkhorn Slough Reserve with its diverse assemblage of marine invertebrates (more than 500 species are known from the slough), what may not be as well known is that there is also a diverse group of land-based invertebrates, specifically insects. Recent additions to the Reserve's insect collection bring the tally to over 200 species. The collection thus far probably represents only a fraction of the total insect diversity of the slough and the species number will likely increase with further collecting.

The slough's insect collection was initiated by Frank Sala in the early 1990's and then taken up again by Susie Fork beginning Fall 2001. Besides hand collecting specimens, various methods were used to capture insects. Nighttime collecting using a blacklight trap (UV and incandescent lights) has been particularly productive for moths and beetles, while sweeping and beating foliage (coyote bush, live oak, grasses, and lupine) has produced flies, wasps, true bugs, leaf hoppers, etc. Litter sifting, pitfall trapping, and searching under woody debris has produced many otherwise hidden insects (particularly beetles and ants and fly larvae). A database of insect collection of ESR has been created using Biota, a software program designed specifically for organizing and cataloging scientific collections.

10 of the 28 total orders of insects are known at ESR, and include Coleoptera (beetles), Lepidoptera (moths and butterflies), Hymenoptera (bees, ants, and wasps), Diptera (flies), Hemiptera (the "true bugs" such as stink bugs, assassin bugs, etc.), Homoptera (e.g. aphids, leaf hoppers), Dermaptera (earwigs), Neuroptera (e.g. lacewings and snakeflies), Orthoptera (grasshoppers and crickets), and Psocoptera (bark lice). To date, a total of 66 families have been recorded from the Reserve (Table 1.). Most, including the larger wasps, moths, beetles, and flies has been keyed out to family level or lower while many of the tiny flies, beetles, and micro-moths await identification. In terms of species diversity and total numbers, three orders account for a majority of the collection: the moths (Lepidoptera) with greater than 50 species found at the slough, and the beetles (Coleoptera) and flies (Diptera) with greater than 20 species in each order. On a worldwide scale, four orders, Coleoptera, Hymenoptera, Lepidoptera, and Diptera account for over half of the species of animals on Earth (Fig. 1).

Some notable species in the collection include an infrequently encountered beetle the glowworm. The 3/4" male is characteristically beetle-like, while the much larger female (over 2") resembles a flattened millipede and glows greenish yellow, reminiscent of a train illuminated at night. The slough is also home to several striking moths, including the large Ceanothus Silk Moth and the hummingbird-like day flying Sphinx Moth, along with a variety of colorful butterflies (e.g. blues, skippers, checkerspots). One of the few insects that inhabit marine waters, water boatman can be seen in the upper reaches of the slough.

Several insect studies are currently underway at the slough, and include an investigation of insect diversity between native vs. nonnative vegetation. The presence of the nonnative Argentine Ant at Elkhorn Slough has also prompted a survey of the diversity of ants at the slough to assess the impact of this invasive species on the native ant fauna.