Moria Robinson

Canyonlands Natural History Association – Discovery Pool

Project summary / update

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Plants and insects are key members of ecological communities. Not only are both groups highly abundant and diverse, but they also provide food for many other animals higher up the food chain. In this way, plants and plant-feeding (herbivorous) insects can be thought of as the foundation of food webs. As environments in the Western United States change, the responses of plants and their insect communities will be of pivotal importance to the health of entire ecosystems. In this project, members of the Robinson Lab at Utah State University are studying how insect communities vary across natural sources of environmental variation, in order to better understand how food webs might change as the landscapes around them dry, warm, and become more variable. Specifically, this project studies how nutritional and defensive traits of plants change across elevation and across soil types in the Wasatch Plateau. This information will tell us how plants have evolved to cope with different sources of environmental stress, and how such adaptations change their suitability as food for native insects. We are also studying differences in the abundance, diversity, and food web structure of the caterpillar (larval butterfly and moth) community across these different environments, and lastly measuring the importance of these insects as a resource for higher trophic levels (birds). To address these questions. this project focuses on *Ericameria nauseosa* (rubber rabbitbrush), a widespread and foundational Western plant that is of major ecological importance to herbivorous insects as well as to pollinators. Excitingly, this project is the first to rigorously document the caterpillar community reliant on rabbitbrush, and will share natural history discoveries via a “Pocket Naturalist’s Guide” of the herbivorous insects on rabbitbrush.

**Figure caption:**

*Clockwise from top left:* Project PI Dr. Moria Robinson (Utah State University) using a “beat-sheet” to collect native caterpillars; a native caterpillar species in the genus *Cucullia* (this species specializes on rabbitbrush flowers in the late summer/early Fall); The larva of *Somatolophia ectrapelaria*, one of the showiest caterpillar species on rabbitbrush (and likely toxic to predators); the same *Somatolophia* individual as an adult moth; caterpillars from the Watach Plateau, showing our process of rearing field-collected caterpillars to adulthood in the lab; Robinson Lab graduate students Jakob Palmer and Ryan Stuart and friends (including native caterpillar experts Dr. David Wagner, UCONN and Dr. Tanner Matson, NMNH) collecting caterpillars from rabbitbrush.