

Arthropod biodiversity of the Chihuahuan-Madreal Sky Islands: A Regional Assessment

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Abstract: Here we describe the preliminary results of an ongoing effort to better understand the arthropod biodiversity of the southwestern U.S. This project is the core-field work component of a NSF Postdoctoral Research Fellowship in Biology awarded to I. Del Toro. B. Bestelmeyer is the sponsoring ecologist at the Jornada LTER. This project's primary objectives are: 1) To document arthropod species richness, turnover and community composition along elevational gradients. 2) To model how biodiversity patterns may change as regional climate changes and 3) To sample arthropod communities on both sides of the US-MX border to compare biodiversity management practices. By sampling along environmental gradients we are able to hypothesize how alternative future landscapes and invertebrate-mediated ecosystem services might respond to a changing environment.

Starting in the summer of 2015, we systematically sampled four key taxonomic groups (ants, beetles, grasshoppers and spiders) at five sky-island mountain ranges in southern New Mexico and Arizona (>30 sites, Figure 1). This project provided an excellent opportunity to involve undergraduate and graduate student researchers. Undergraduates were supported in part by the Jornada REU program and the Chihuahuan Desert Biodiversity REU program at the University of Texas El Paso. This project also collaborates with other regional academic and non-profit institutions for taxonomic expertise and data analyses (e.g. University of Arizona, The Sky-Island Alliance). We also present the preliminary results from three student projects. 1) A method based study aimed at reducing vertebrate by-catch in arthropod pitfall traps 2) Evaluating population connectivity in grasshopper species of the sky islands and 3) an evaluation of the ant-mediated seed dispersal rates along elevation gradients in the sky-islands. In figure 2 we present preliminary results on the variation of seed dispersal rate changes of four seed species along the sky-island elevation gradients.

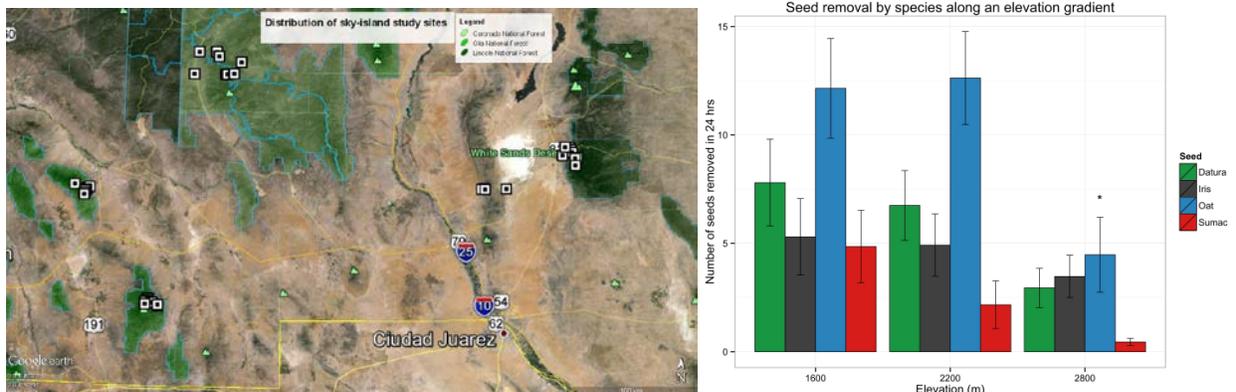


Fig 1. Study sites at JRN LTER and National Forests Fig. 2. Mean seed removal rates along the sky island elevation gradient.

Relationship with the LTER VI proposal: This poster contributes to Obj. 6 (a) & 7.