

Biogeography of Caribbean Arachnids

A couple of newsletters ago we published a brief overview of the results of our preliminary arachnid inventory. As a result of this Dr. Ingi Agnarsson, Assistant Professor at the University of Puerto Rico and taxonomic expert on Theridiidae, informed us about a Caribbean Biogeography project on arachnids and asked if we were interested in participating. The answer was, of course, yes. This huge project is being funded by the National Science Foundation and will take place over the next five years, with collaborators from across the region and mainland USA. The aim of the project is to test hypotheses about how the age and dispersal ability of lineages and the geological history of islands interplay to generate biodiversity hotspots.



Dr. Agnarsson explains why arachnids were chosen during the workshop

National Park Ranger/Education Officer Hannah Madden flew to Puerto Rico in July to attend the one-day workshop held at UPR. The following day the team headed to El Yunque National Forest for collecting. Various collection methods were used: beating (hitting plants with a stick and holding a sheet underneath to catch what falls); Berlese funnels (a large flexible funnel with a mesh at the top to allow small litter particles and fauna to drop through); pitfall traps (plastic containers dug into the soil, into which unsuspecting creatures fall); and visual collection.

After collecting for three days (and nights) at El Yunque, approximately 5000 arachnid specimens were counted representing approximately 20 spider (Araneae) families, in addition to a diversity of scorpions (Scorpiones), harvestmen (Opiliones), tailless whip

scorpions (Amblypygi), and pseudoscorpions (Pseudoscorpiones). We collected approximately 46 species of our focal taxa, and probably well over 100 species of other taxa.



Day 1: Fresh faces at El Verde research station, El Yunque



How to use a Berlese funnel



Heating the litter so that any creatures will head for darkness and fall into the ethanol below



Pitfall traps in the forest



A tailless whip scorpion (Phrynus spp.) in the Amblypygi family



A tiny jumping spider (fam. Salticidae)



Tarantula (species undetermined)

Arachnid Biogeography (cont)



Family *Deinopidae*, a stick-like elongate spider that builds unusual webs which they suspend between their front legs. When prey approaches, the spider will stretch the net to two or three times its relaxed size and propel itself onto the prey, entangling it in the web.



Tiny recluse spider (Loxosceles spp.) in the family *Sicariidae*. Species within the family are known for their necrotic venom, such as the brown recluse spider which is responsible for a very painful bite. The venom attacks tissue and can lead to large open sores which in extreme cases may require a skin graft.



Scorpion in the family *Diplocentridae*



Tetragnathidae elyunquensis, a species of spider endemic to El Yunque National Forest

Following El Yunque the team moved to Guanica dry forest Biosphere Reserve. A similar number and diversity of arachnids was found in Guanica, with very little overlap in species diversity with El Yunque. The order of Camel Spiders (Solifugae) was added to the list, and likely over 100 species of arachnids.

As a result of participating in this workshop, STENAPA will begin collecting specimens all of arachnids from across the island which will be sent to UPR. STENAPA also looks forward to welcoming members of the team to Statia in the near future. For more information on this project you can visit <http://www.islandbiogeography.org/>.



Centruroides spp. scorpion in the family *Buthidae* glowing under an ultra-violet light

Photos by Hannah Madden

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