Project Update: January 2014

The first objective of this study was to characterise the assemblage of Geometridae and Erebidae-Arctiinae moths across four land use types in a rural Costa Rican landscape. Moths were sampled with automatic light traps for six months (February-July 2013), and were then sorted and identified to morphospecies level. The following are the preliminary results for each of these moth groups:

- Geometridae: We collected a total of 1340 geometrid individuals distributed among 170 morphospecies. Richness and abundance of geometrids was highest in the old-growth forest interior sites and lowest in the oil palm plantations, maintaining intermediate values in old-growth forest edges and young secondary forest sites. Oil palm plantations showed the lowest diversity and species evenness values.
- Erebidae-Arctiinae: A total of 2304 arctiid individuals, representing 142 morphospecies, were collected at the 20 sites. Contrary to Geometridae, this group showed a higher richness and abundance in the young secondary forest sites, while oil palm plantations still presented the lowest values. Oil palm plantations also showed the lowest diversity and species evenness values.

In general, these preliminary results suggest a preference of geometrids for closed canopied forest habitats, while arctiids seem to prefer open habitats; this finding has been demonstrated in a high number of published articles pertaining to this topic. These results also confirm the prediction that oil palm plantations are not a suitable habitat for tropical moth fauna, as both of the groups sampled showed lower values of richness, abundance and diversity in this ever-growing monoculture. Thus, land use change in this rural landscape does have a significant effect on moth composition and structure. This may be explained by various factors such as vegetation composition and structure, temperature, or canopy cover, which will be all used as predicting variables in upcoming statistical analyses to determine their contribution to the distribution of local moth fauna.

Left: View of La Gamba rural lanscape, located in the Golfo Dulce Region of Costa Rica. Right: Automatic light trap in an oil palm plantation site