



HONDURAS DISSERTATION/THESIS PROJECT

HO12 Ecology of cloud forest butterfly communities

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Butterflies are a frequently-studied taxon due to being diverse, abundant, conspicuous, relatively easy to capture and relatively easy to identify in the field. Due to the above factors, and also because of their high habitat specificity, they are also frequently considered to be good biological indicators of other taxa which are more difficult to survey. As such, they are perhaps more frequently utilized by entomologists as study models than any other invertebrate group occurring in tropical forests.

The butterfly community of Cusuco National Park includes many species, including very large Owl butterflies (*Caligo* sp.) and the glass wings (Ithomiinae); forest specialists well known as Müllerian mimics of each other. While butterfly communities in general remain relatively well-studied in many ecosystems, the ecology of butterflies in cloud forest has not been well explored and systematic Lepidoptera surveys in Cusuco began fairly recently. As such, students taking this option have the opportunity to examine some very novel ecological questions relating to the butterfly community of the Park, using a large quantitative dataset.

This project seeks to examine tropical butterfly ecology in the cloud forests of Cusuco National Park, using Pollard walks as a principal methodology. This involves completing sweep transects and timed counts along the existing transect network established in the Park, which encompass a range of habitat types and elevational bands.

The range of specific questions this project could encompass are broad, but a focus could be on alpha and beta diversity of butterfly communities in relation to habitat structure, elevation, and other specific parameters such as sun patches and presence of food plants. The project could also look into the ecology of specific species and involve mark-recapture studies to estimate population size or look into biotic interactions such as predation rates or interspecific competition.

Alternatively, the evaluation of an umbrella group such as the glass wings as indicators for the butterfly community as a whole would be a most valuable research avenue and a potential great tool for future monitoring of butterfly communities in CNP.

Recommended Reading

Beccaloni, G.W. & Gaston, K.J. (1995) Predicting the species richness of neotropical forest butterflies: Ithomiinae (Lepidoptera: Nymphalidae) as indicators. *Biological Conservation*, 71: 77-86.

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Hill, J.K. (2001) Butterfly spatial distribution and habitat requirements in a tropical forest: impacts of selective logging. *Journal of Applied Ecology*, 36: 564-572.

Schulze, C.H., Waltert, M., Kessler, P.J.A., Pitopang, R., Veddeler, D., Mühlenberg, M., Gradstein, S.R., Leuschner, C., Steffan-Dewenter, I. & Tschardtke, T. (2004) Biodiversity indicator groups of tropical land-use systems: comparing plants, birds, and insects. *Ecological Applications*, 14: 1321-1333.

Willott, S.J., Lim, D.C., Compton, S.G. & Sutton, S.L. (2001) Effects of Selective Logging on the Butterflies of a Bornean Rainforest. *Conservation Biology*, 14: 1055-1065.