

## Oral presentation

### **The impact of ancient Maya home forest gardens on the modern tree species composition and biodiversity of Northwestern Belize**

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**Introduction.** The Maya culture exerted selective pressure on Mesoamerican tree species composition for millennia. Current patterns of plant diversity may be explained by the influence of ancient “forest gardens.”

**Objectives.** Assess the impact of ancient Maya forest gardens on the species composition and overall tree diversity of the extant forests. Tested hypotheses are: 1A) due to centuries of intensive management, ancient Maya “forest gardens” altered the tree species composition of the forests and these effects can still be detected today; 1B) there will be a significant difference in tree species composition between high (HSD) and low ancient settlement density (LSD) areas; and 2) modern forest in HSD areas will have greater “evenness” values than forest with little or no evidence of settlement.

**Methods.** In the forest around the ancient Maya urban center of El Pilar, Belize, tree species compositions of high and low ancient settlement density areas of similar forest type will be compared. In the ancient residential areas of El Pilar I will census 30 20 x 20m HSD plots (>100 archaeological structures per km<sup>2</sup>) and 30 20 x 20m LSD plots (<10 structures per km<sup>2</sup>) in similar forest areas. Potentially confounding edaphic characteristics will be tested using ordination.

**Results.** Neither LSD nor HSD rarefaction curves approached a species richness asymptote, arguing for the need for a larger number of samples. Similarity indices of a subset of useful species demonstrate a significant difference in species abundances between HSD and LSD areas (Chao-Jaccard 0.67 and 0.57, respectively, with non-overlapping confidence intervals).

**Conclusion.** The forest gardening practices of the ancient Maya have been discussed in anthropological research as a tool for biodiversity protection. The proposed research brings quantitative, ecological rigor to the question of the long-term impact of Maya forest gardening on tree species diversity.

Keywords: compositional stability, ecological awareness, synergisms

#### Selected References

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