

# How do Colombian mountains shape the life history of treehoppers?

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## Mountains, richness and life histories

- Species can respond to changes in elevation in different ways – distribution and richness' patterns<sup>1,2</sup>
- Tropical mountains are regions that promote changes in species life histories – rapid changes in abiotic factors<sup>1,2</sup>
- Species living in low elevations experience different environmental conditions than species living at high elevations<sup>1,2</sup>

## Who are the treehoppers?

- **Insects** of the order **Hemiptera** (True-bugs, stink-bugs, leafhoppers, planthoppers, cicadas)
- 'Treehoppers', 'Insectos espina' – family **Membracidae**

## Objective

- To assess the variation in species richness and life history of treehoppers in two mountains in Colombia



## Results

- 45 confirmed new species
- **Richness of treehopper decrease** with an **increase** in elevation
- **Ant-treehopper interactions decrease** with elevation, with stronger associations decreasing more rapidly.
- **Maternal care** and the most developed defensive behaviors tended to **increase** in higher elevations.
- **Gregarious** behavior does not exhibit a significant variation.

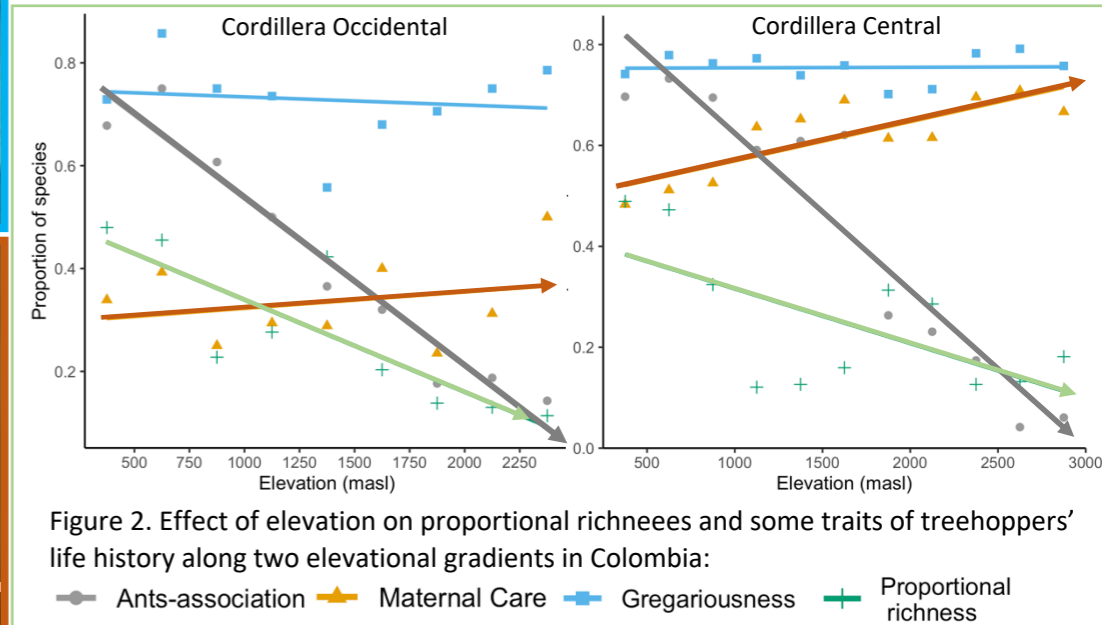


Figure 2. Effect of elevation on proportional richness and some traits of treehoppers' life history along two elevational gradients in Colombia:

—●— Ants-association —▲— Maternal Care —■— Gregariousness —+— Proportional richness



## Methods

### Data collection

- Active searched along **two mountains in Colombia**: Cordillera Occidental and Cordillera Central
- Behavioral and ecological aspects were recorded: **ant-treehopper interactions, maternal care** and **aggregation size**.

### Identity of species

- Based on original descriptions, identification keys, examination of entomological collections.



Figure 1. Treehoppers' life history along two elevational gradients in Colombia. Photos by: C. Flórez-V

## Conclusions/Perspectives

- **Mountains are factors in the distribution and life histories of the treehoppers**

Now we know the patterns, but what about the mechanisms?:

- Elevation affects diversity of ants<sup>3</sup> → decrease ant-treehopper interaction
- Predation and predators change along mountains<sup>4</sup> → different behaviors of maternal care and ant-treehopper interaction

## References

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