

Project update

Title: Effect of Natural Disturbance Regime of Canopy Openings on Amphibian Assemblage

Diversity: Multiscale Analysis

Application ID: 39506-1

In the project, we recorded 890 individuals belonging to 13 species of amphibians, of which 10 species inhabited canopy openings and 12 were found within the forest of Los Tuxtlas. Our results indicate that amphibian diversity was considerably higher in the forest than in canopy openings, demonstrating a response to the environmental filters created by the natural fall of trees. Our findings suggest that the traits of amphibians that best explain habitat preference in Los Tuxtlas are related to volume, biomass, snout-vent length (anurans), total length (caudates), head width, and mouth width. We particularly demonstrated that small-bodied forest-dwelling species are highly susceptible to the natural disturbance of tree falls, in contrast to large-bodied amphibians, which can exploit the resources provided by these disturbances due to their tolerance to the created environmental filters.

Regarding the establishment of connections with five communities of Zoque, Popoluca, Nahua origin, and the central and northern regions of Veracruz, we identified at least three leaders interested in the monitoring and protection of the Los Tuxtlas forest. This engagement process has been crucial in integrating conservation practices with local ancestral knowledge of amphibians and reptiles, promoting active and informed participation in the protection of the natural environment. Additionally, direct conflicts between humans and amphibians and snakes were identified. We were able to channel and provide antidotes to treat two young people attacked by the fer-de-lance (*Bothrops asper*) and a girl attacked by the variable coral snake (*Micrurus diastema*).

Based on these scientifically and conservationally valuable results, we have established monitoring brigades with three communities. The brigades will initially be trained in the safe monitoring and handling of amphibians and reptiles, particularly snakes. We hope that the formation of these brigades and traditional knowledge will encourage both young people and adults to engage in activities related to the biodiversity of Los Tuxtlas.

The project's initial objectives sought formal participation and collaboration with Mexico's environmental sector, particularly the National Commission of Natural Protected Areas (CONANP). However, in the meetings we managed to establish with them, their participation was not possible.

The reasons expressed by the directors of the region to which the Los Tuxtlas Biosphere Reserve (RBTL) belongs were a lack of personnel and resources to address the issues, limiting support for the creation of management units, fire brigades, environmental monitoring, among others, to easily accessible regions. Our proposal to CONANP was to establish Timbre A.C. as a reference point, functioning as an extension of linkage with CONANP to facilitate requests and administrative processes between the communities and the agency. However, we have not received any response from this agency. Subsequently, we established contact with the local deputy of the 26th district of Veracruz, who raised the issue of the RBLT in the national chamber of deputies in the environment section, but this alliance did not yield consistent results.

Therefore, Timbre, in collaboration with the research group created from this project, Amplexus, began working on a conservation plan for the communities, in which conservation actions will be specifically established for each community based on their uses and customs. Three field visits to the region are planned between August 2024 and January 2025. The objectives of these visits are:

1. Communication with the communities about the results obtained in this research.
2. Communication through a theatrical play for children from preschool to secondary school, which are the educational levels present in the area.
3. Dissemination of the proposed local conservation treaty for the Los Tuxtlas communities.
4. Training on the identification of amphibians and reptiles for the formed brigades.

Based on this, we have updated the initial budget to include the purchase of basic herpetological equipment for the outfitting of three monitoring brigades, as well as for two educational workshops with preschool and primary school children. The updated budget is described as follows:

Budget update

Dscription	Amount	Item cost	total
Terrestrial transportation Morelos - Santa Marta (Fuel and toll booths).	3	260	780
Terrestrial transportation Santa Marta – Morelos (Fuel and toll booths)	3	260	780
95 cm herpetological hook	6	34.31	205.86
122 cm herpetological hook	3	38.6	115.8
snake bagger	3	47.18	141.54
snake leggings	3	72.91	218.73
Payment for educator and trainer (20 days)	20	42.89	857.8
Projector for training, workshops and research dissemination	1	317.36	317.36
head lamp for brigades	9	60.4	543.6
		Total	3960.69

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Community guides from the La Perla community, Los Tuxtlas, Mexico.



Measurement of functional traits of amphibians from the Tuxtlas by Aarón Chávez, responsible for the project.

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Image of Mountain toad (*Incilius cavifrons*) species with a preference for living in canopy openings formed by the natural disturbance of falling trees.

We hope you find the progress of this project, funded by The Rufford Foundation, to be of interest. On behalf of myself and my collaborators, I extend our warmest regards.

Sincerely,

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