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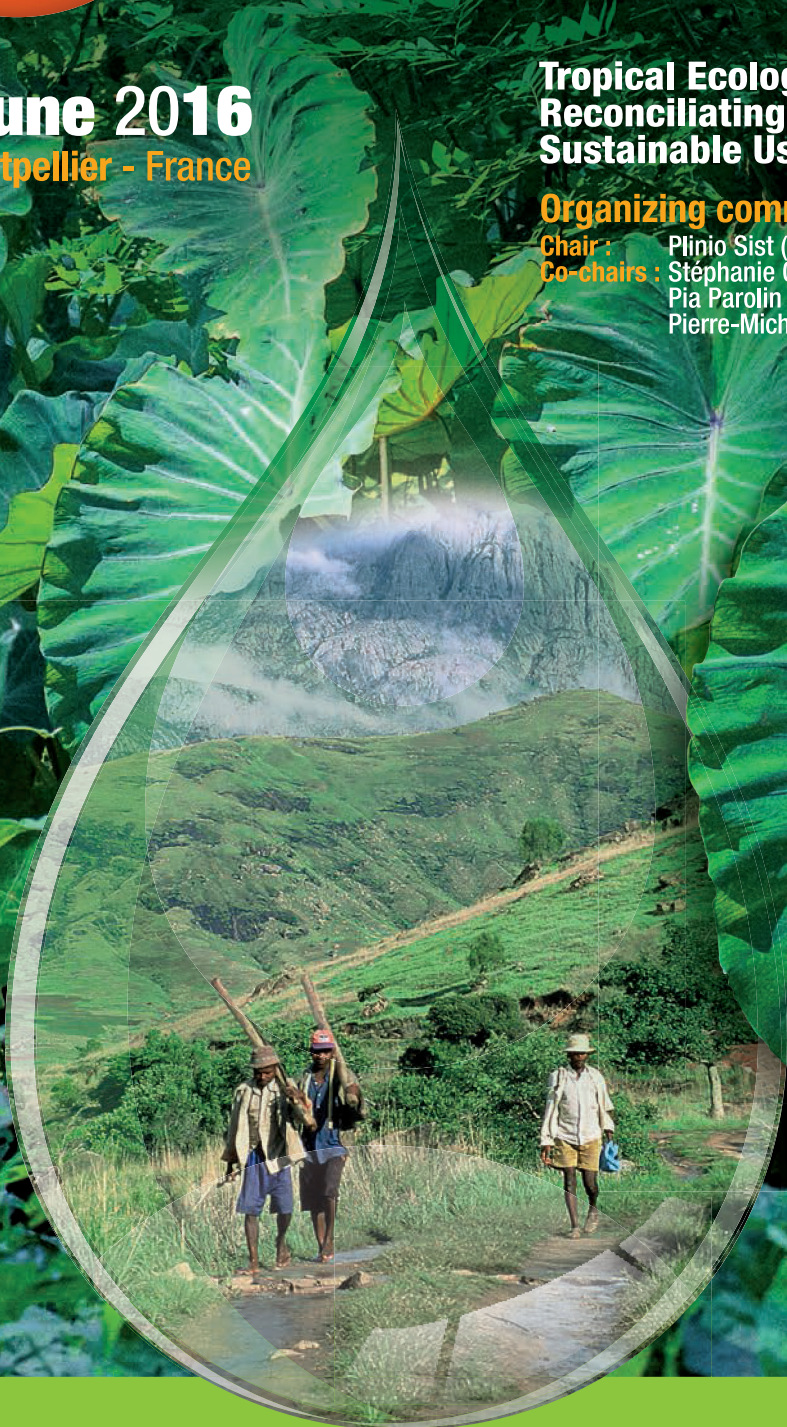
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# Annual Meeting of the Association for Tropical Biology and Conservation

**Tropical Ecology and Society  
Reconciling Conservation and  
Sustainable Use of Biodiversity**

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**PROGRAM  
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ABSTRACTS**

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## O26-05 – S26 Ecological impacts of forest disturbance in the Brazilian Amazon

Tuesday 21 June / 10:00-12:00 – Antigone3

### Small rivers, big impacts: environmental disturbances to aquatic biodiversity in Eastern Amazon

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**Background:** Land use change and forest degradation are resulting in pervasive changes to tropical ecosystems around the globe. However the consequences for freshwater ecosystems remain poorly understood. This is especially true for the world's largest watershed, the Amazon basin; and in particular for the complex network of low-order streams that make up the vast majority of its watercourses and host an impressive biodiversity. Here we investigate taxonomic and functional responses of fish and macroinvertebrates assemblages to different anthropogenic disturbances in the deforestation frontier of the Brazilian Amazon.

**Methods:** We studied 99 low-order streams encompassing five river basins in two large regions (Santarém and Paragominas, both with more than 1 million ha) composed by a diverse mosaic of land uses in the human-modified eastern Amazon. High resolution satellite images were used to access landscape anthropogenic disturbances at different spatial scales.

**Results:** We sampled a total of 143 fish species, 134 Odonata species and 59 EPT (Ephemeroptera, Plecoptera and Trichoptera) genera. Streams appeared to be exceptionally heterogeneous in their biotic composition, as indicated by the high beta diversity and species turnover between sites, both for fish and EPT assemblages. We found mixed responses from the aquatic biota regarding the importance of different disturbances. For instance riparian forest cover was a major driver of dragonfly assemblage structure. Whereas fish functional richness, evenness and divergence were negatively impacted by the density of road crossings; suggesting that losing regional connectivity potentially contributes to a functional homogenization of local assemblages.

**Discussion:** Overall our findings underscore the importance of multiple land use changes and disturbances, at different spatial scales, in shaping aquatic assemblages in tropical forests. We particularly highlight the importance of some landscape disturbances often unrecognised, such as road crossings and agriculture intensification that can have a marked effect on streams. We draw on the relationships observed in our data to suggest priorities for the improved management of stream systems in the multiple-use landscapes that characterise so much of the human-modified tropics.

## O26-06 – S26 Ecological impacts of forest disturbance in the Brazilian Amazon

Tuesday 21 June / 10:00-12:00 – Antigone3

### Legacies of human history in Amazonian forests

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**Background:** Human societies are constantly transforming the environment where they live. In Amazonia, legacies of past human interventions are still evident even centuries after the demographic collapse of indigenous populations. However, the extent and degree to which forests were transformed is still unknown. More seasonal forests and those closer to rivers are thought to have been more modified than wetter and less accessible forests.

**Method:** Here we combine more than a thousand forest plots with the location of archaeological sites and maps of navigable rivers across Amazonia to test if human intervention explains the distribution of arboreal (tree and palm) species with some evidence of domestication. Human intervention often consists of a landscape domestication process, in which humans transform the structure and composition of a forest (or landscape) to increase the abundance of useful plants, some also selected.

**Result:** In all forest plots, we found 85 useful plants with evidences of domestication (hereafter domesticated species). Of those, 20 are considered hyperdominant species of the Amazonian Flora because they represent approximately half of all Amazonian arboreal species. When comparing different geological regions, we found much higher proportions of domesticated species in South-western and Eastern Amazonian forests. In these two regions, proximity to human settlements positively affects the abundance and richness of domesticated species. Moreover, we found that the probable origin of domestication of some species did not match with the location where these were most abundant, suggesting long distance dispersal of domesticated species across the Amazonia.

**Discussion and conclusion:** Our results indicate an intensive history of domestication by native peoples, especially across the Southwestern and Eastern Amazonian forests. Forests once thought virgin can actually contain varied legacies of ancient human occupation that can be detected by the distribution of domesticated plants. We show that almost one fourth of all domesticated species are hyperdominants, which highlights their importance not only for contributing to reveal human history in this vast tropical forest, but also their potential for socio-economic benefits for the people who live there today.