

The Effects of Liana Coverage on Soundscape Variability in Tropical Dry Forests

Shawna Stack

Tropical dry forests (TDF) have arguably experienced the highest degrees of human disturbance in Central America. Limited research and monitoring efforts, inadequate conservation policies and an unregulated socio-economic system are largely to blame for Neotropical forest degradation. Global and local changes in the political and economic realms since the late 1980's have resulted in the regrowth of TDFs and the formation of secondary forests. Researchers have since refocused their attention on these successional TDFs and are documenting their recovery through a variety of methods. A particularly recent field called 'soundscape ecology' has provided unique insight into the recovery of mobile, vocal animals such as amphibians, birds and insects. Soundscapes include all the sounds of a region—biophony, geophony and anthrophony—that emanate through space and time and reflect ecological health and the extent of human interference. This project aims to understand the response of soundscapes to the various structural attributes induced by liana coverage in the TDFs of Santa Rosa National Park, Costa Rica. Soundscape metrics were collected using up-to-date recording devices, sound clips were quantified using acoustic indices and structural variables and the extent of liana coverage were determined via field measurements, hemispherical photography and LIDAR methodology. It is predicted that higher acoustic diversity will be found in areas where lianas are dominant. Furthermore, forest metrics that include leaf area index, canopy openness and canopy height are predicted to have the highest influence on tropical dry soundscapes. Results obtained from this study will contribute to the growing knowledge of biodiversity and forest recovery in Neotropical ecosystems.