Trail Network Analysis of TCU Tropical Biology Station

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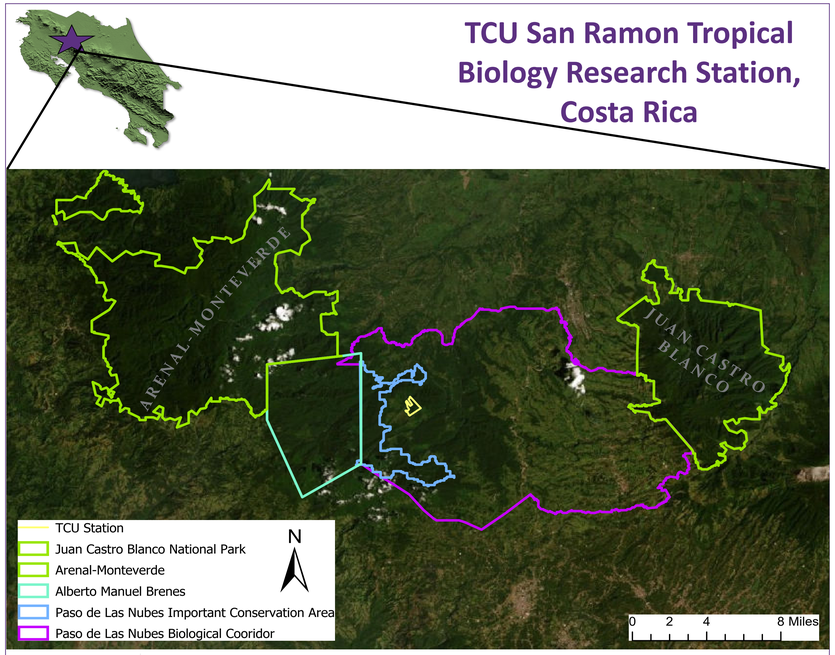
INTRODUCTION

The new world tropics represent an area of unparalleled biodiversity. Unfortunately, it also represents an area of increasing habitat loss and consequently is in dire need of protection and conservation (Figure 1). The TCU San Ramon Tropical Biology Station located on the Caribbean slope of Costa Rica protects 100 hectares of primary and secondary forest and is a unique and ideal location for studying tropical biology. In the summer of 2018, we mapped an updated trail network at the station using a Bad elf sub-meter GNSS receiver in conjunction with Arc Collector. For this project we analyzed the distance each trail traveled through the 2 habitat types found at the station (primary forest and secondary forest), which will be used to aid the sampling efforts of my Master's thesis project examining how mixed-species foraging flocks utilize the habitat protected by the station.

STUDY AREA



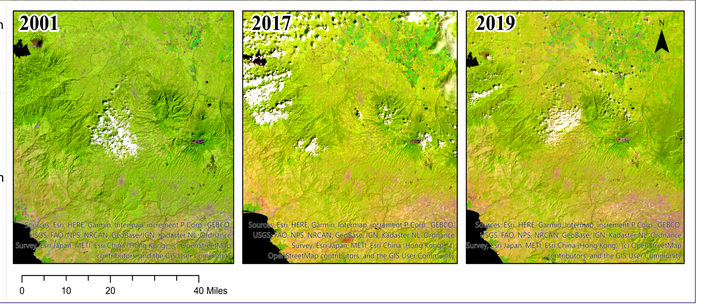
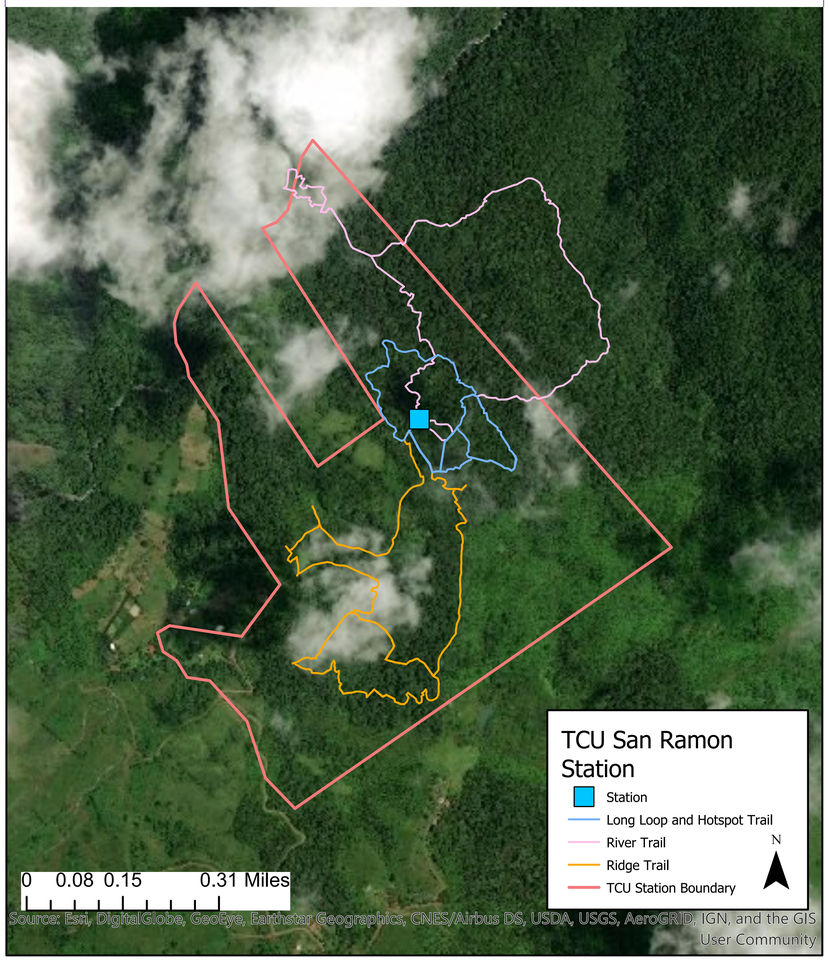


Figure 1: Vegetation analysis showing deforestation around the TCU station (2001-2019) using false color color composite images. Greener areas represent healthier vegetation and brown/tan areas represent deforestation and conversion to pastureland.

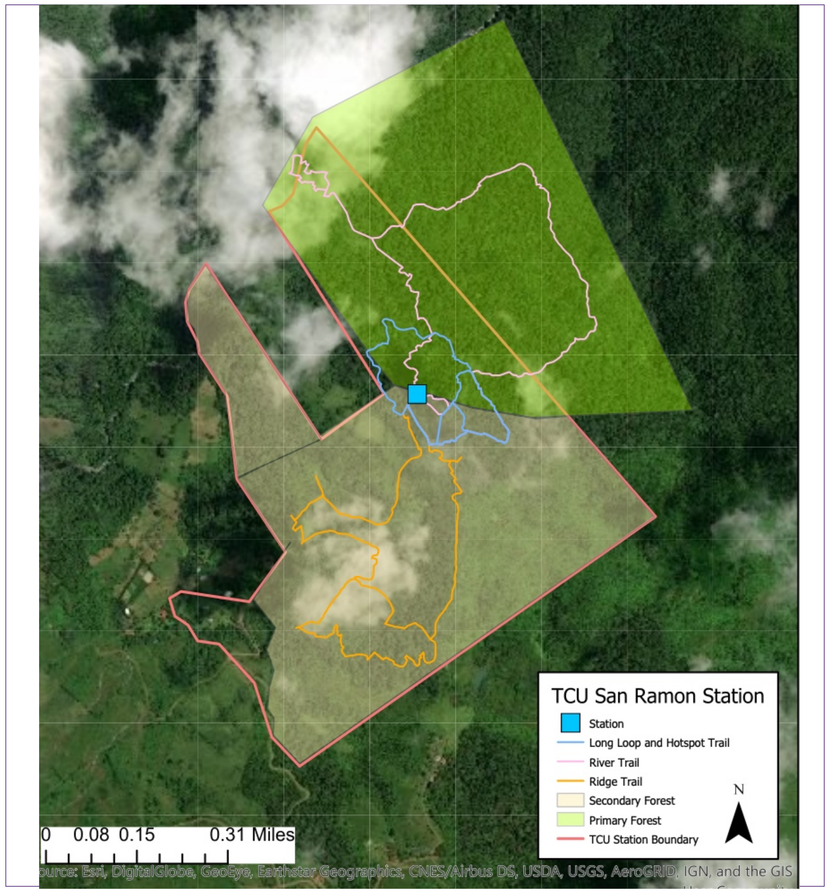
METHODS

- Landsat 8 imagery used to make a time series false color composite image using the vegetation analysis tool (Bands 543)
- Data imported using GPX to features tool then converted to lines using point to line tool
- Lines from multiple trails summarized using the integrate tool then cleaned up by modifying feature vertices
- New feature class created for polygon boundaries of primary and secondary forests habitat types
- Measure distance tool used to calculate the total length of each trail in each habitat type

RESULTS



RESULTS



DISCUSSION

The station has a total of 2.73 miles of trails in the primary forest habitat type and a total of 2.84 miles of trails in the secondary forest habitat type. This is roughly a 50:50 proportion of trails in each habitat type.

ACKNOWLEDGEMENTS

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