

# Jenna Keany

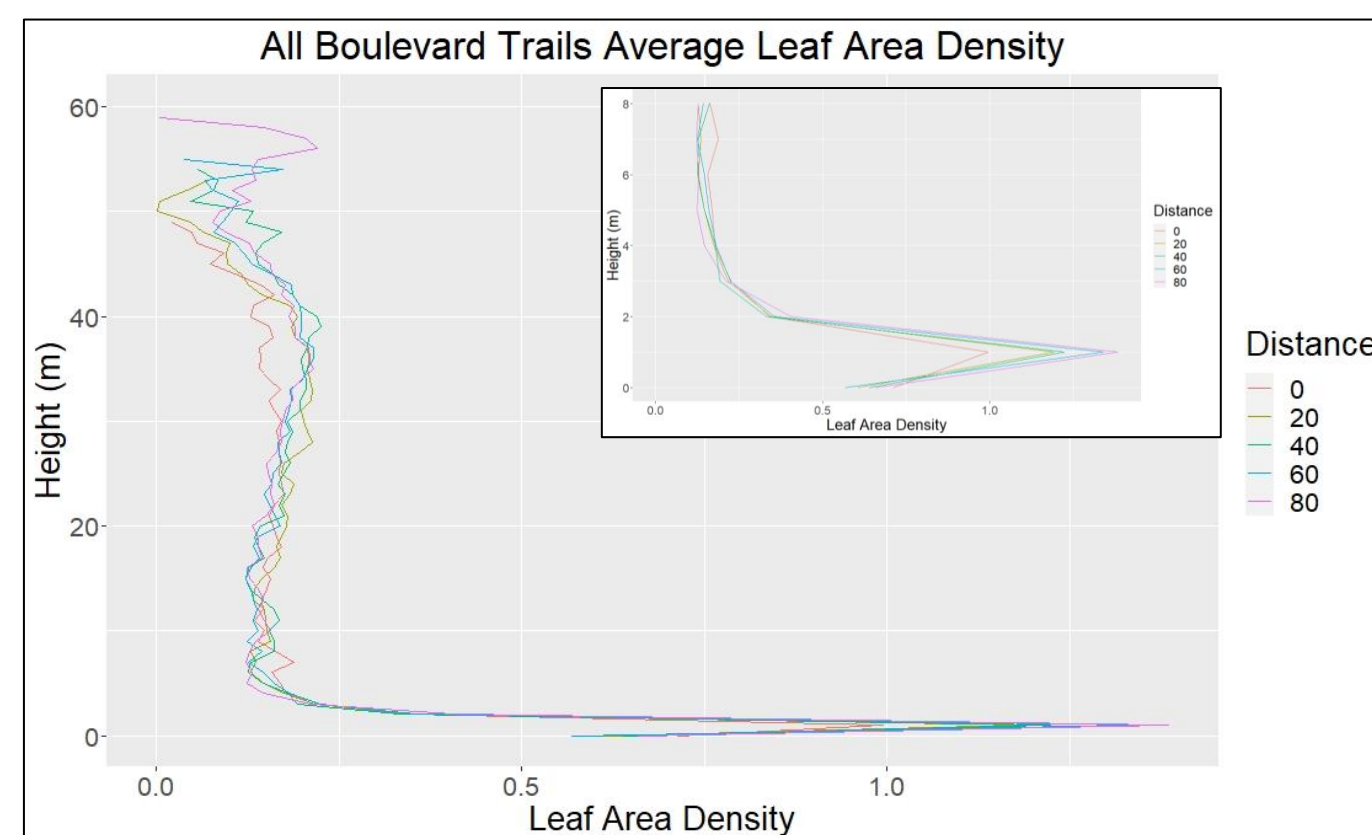
## Introduction

- African forest elephants face severe threats from poaching
- Forest elephants are known for seed dispersal and nutrient transfer, but what about ecosystem engineers?
- Using remotely sensed lidar, we can determine their impact on canopy structure

## Methods

- Collected elephant trail geolocations in Lope NP, Gabon
- Clipped airborne lidar (AfriSAR) from Lope NP to elephant trails
- Analyzed leaf area density (LAD), vertical complexity index (VCI), vegetation area index (VAI), and canopy height (CH) for major trails along 90 m transects to determine structural complexity changes

## Results

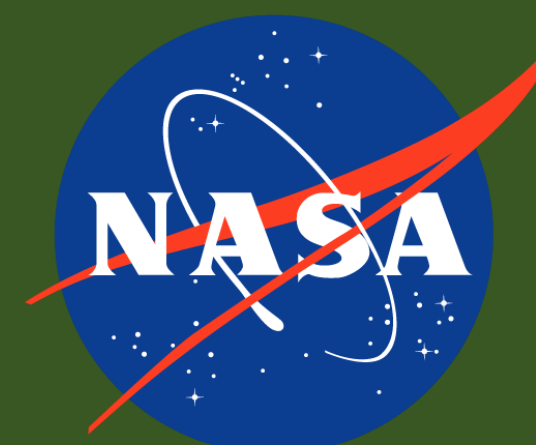


Average LAD ~ Distance from Trail  
Kruskal Wallace p-value= 0.07,  
n=600

We can use lidar to quantify how endangered African forest elephants are impacting canopy structure



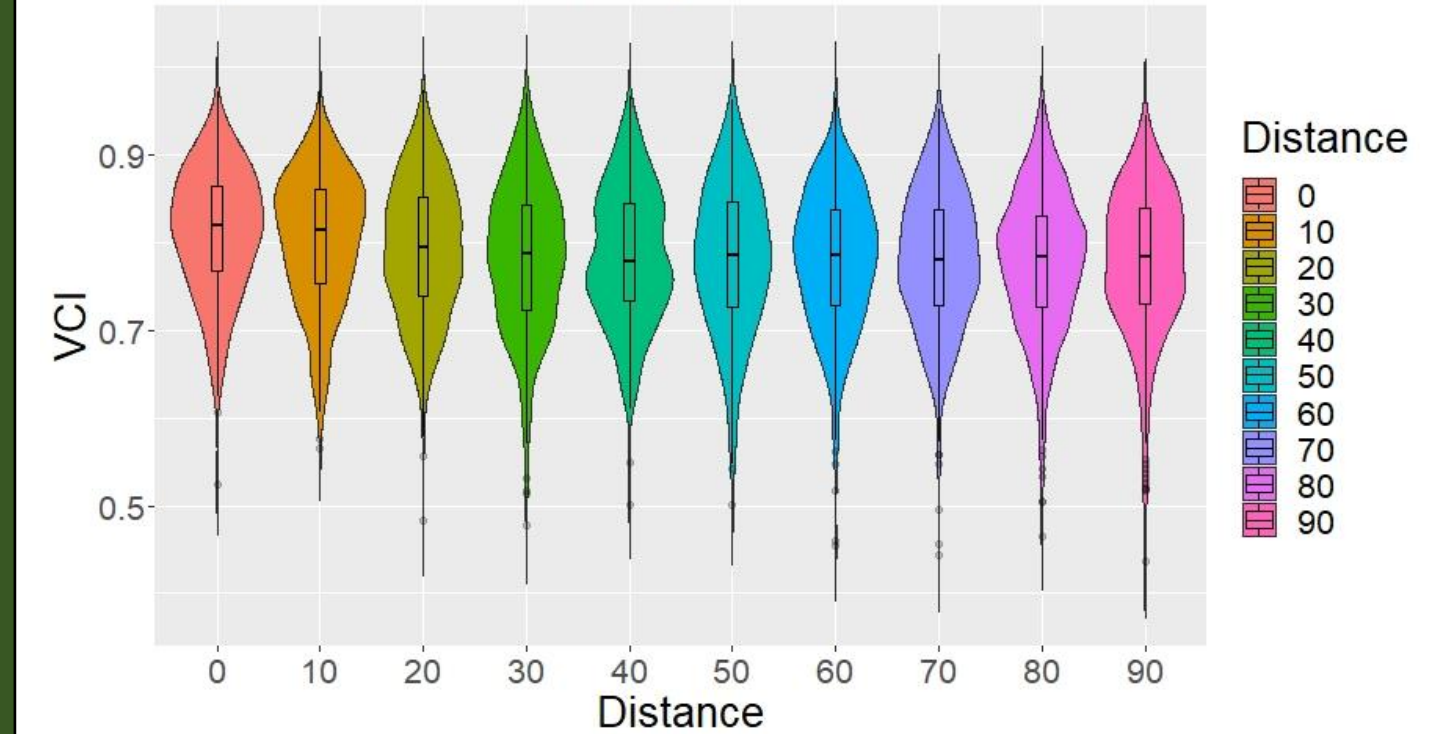
Credit: Hogg (WCS)



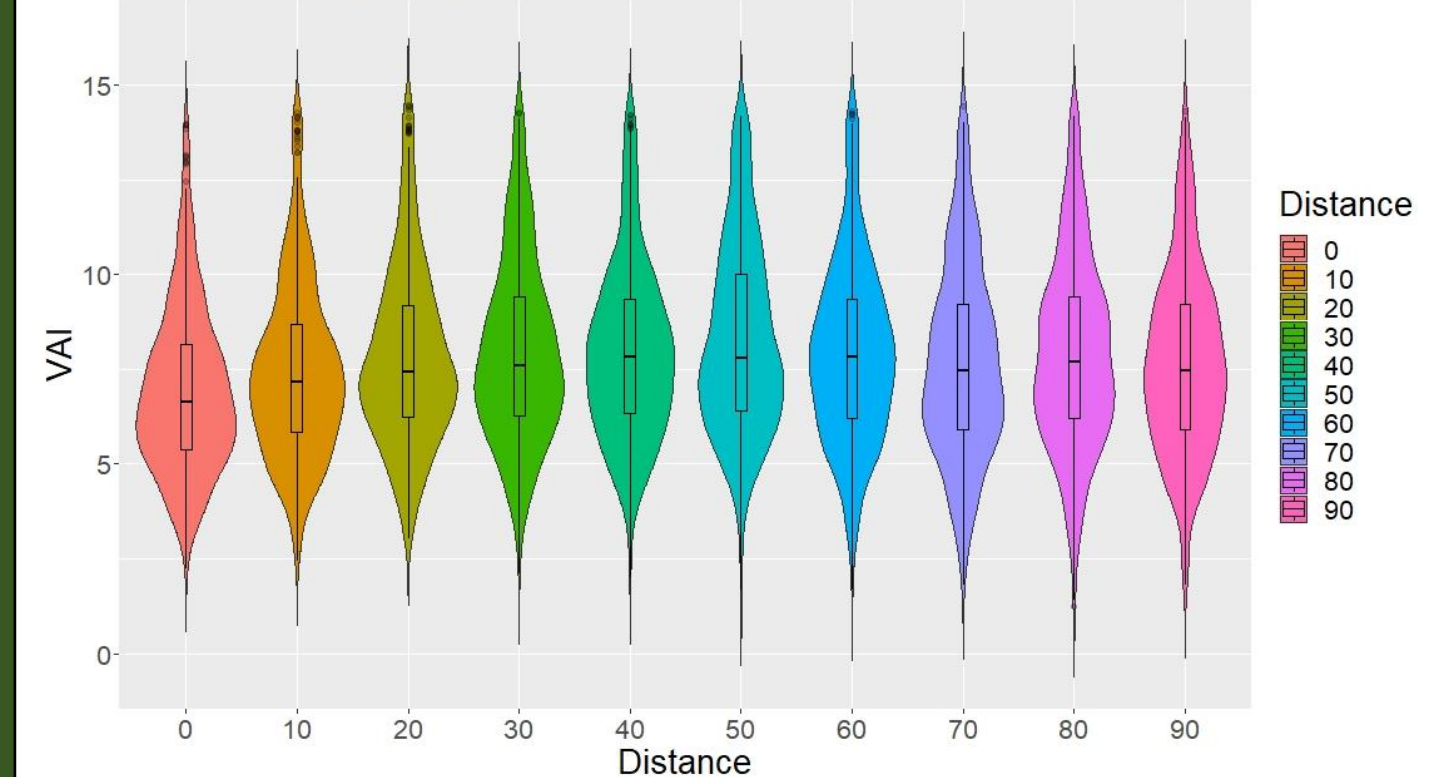
How do African forest elephants impact canopy structure? Using lidar to investigate elephants' ecological role in Gabon.

Doughty, C., Burns, P., Abraham, A., Jantz, P., Abernethy, K., Makaga, L., Saatchi, S.

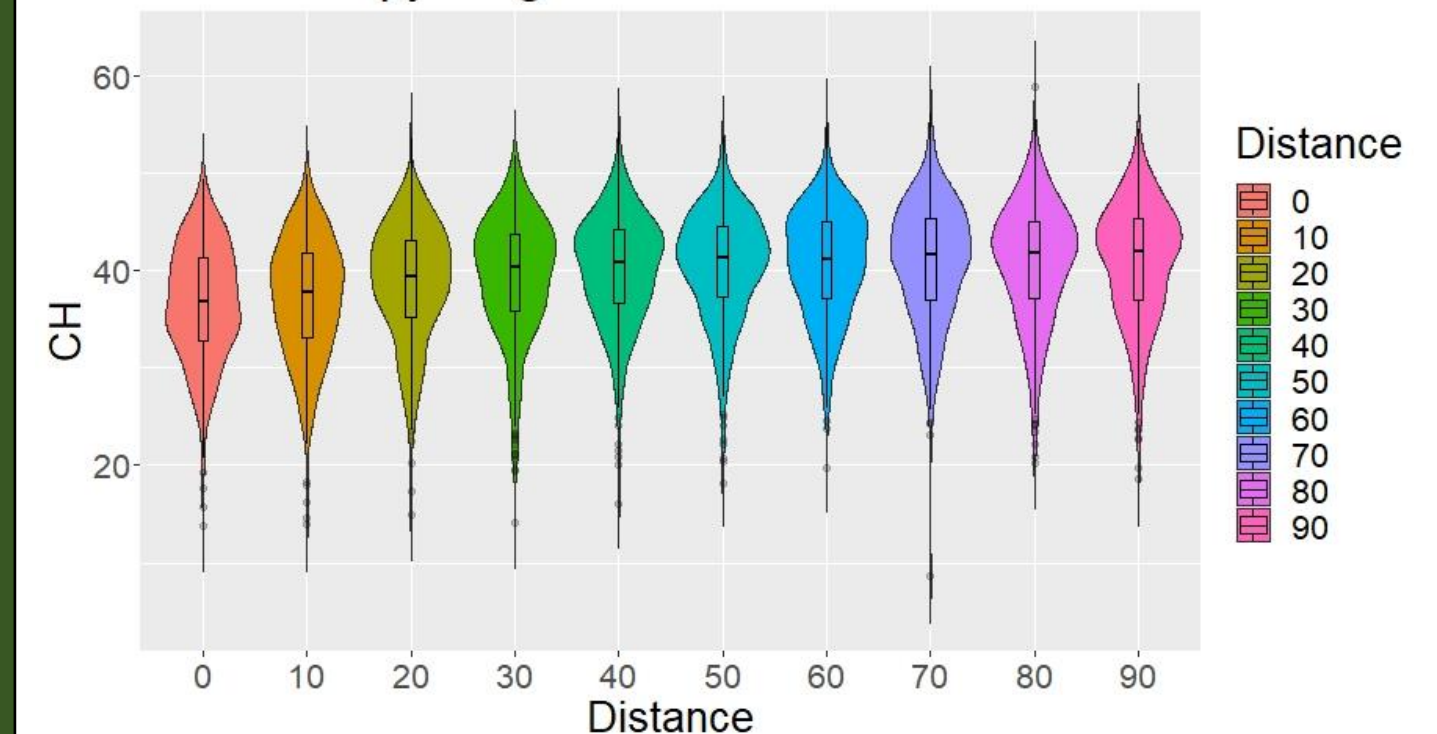
Average Vertical Complexity Index for Boulevard Trails



Average Vegetation Area Index for Boulevard Trails



Canopy Height of All Boulevard Trails



Structural Complexity Metrics ~  
Distance from Trail: Kruskal Wallace  
p-values < 0.01