HUNTING-INDUCED DEFAUNATION EFFECTS ON VERTEBRATE COMMUNITY, FOREST REGENERATION AND CARBON STORAGE IN BRAZILIAN AMAZONIA
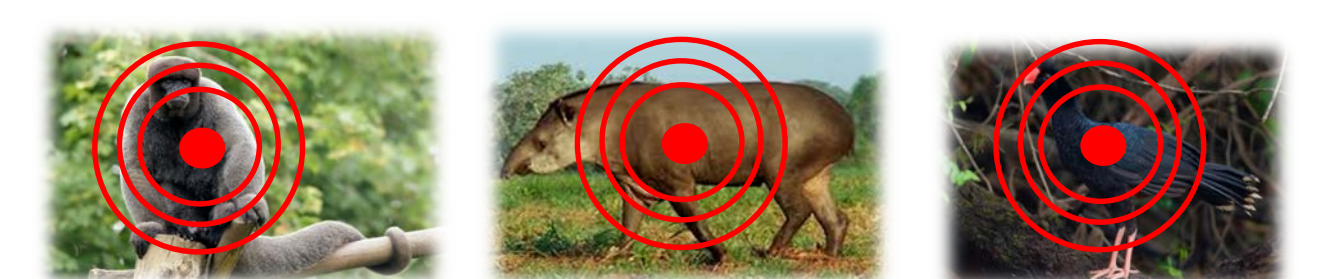
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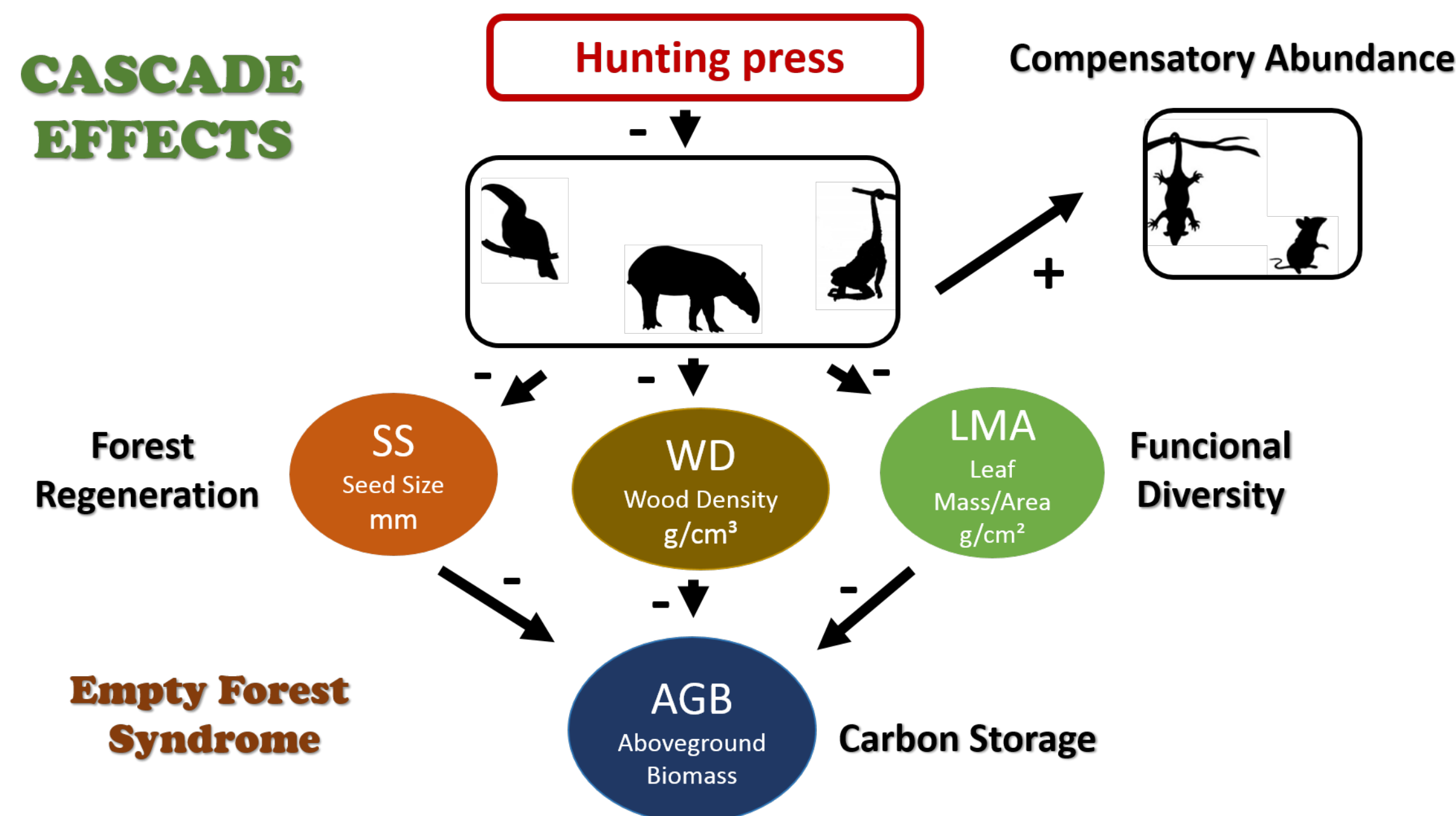*Email: andressa_scabin@ufrn.edu.br

INTRODUCTION

HUNTING

Key Ecosystem Services

Seed Dispesal

CASCADE EFFECTS

Hunting press → Compensatory Abundance

Forest Regeneration

SS Seed Size mm

WD Wood Density g/cm³

LMA Leaf Mass/Area g/cm² — Funcional Diversity

**AGB** Aboveground Biomass — Carbon Storage

Empty Forest Syndrome

OBJECTIVES

This project aims to examine the effects of hunting-induced defaunation on vertebrate community, forest regeneration and carbon stocks in high-diversity forests of central-western Amazonia

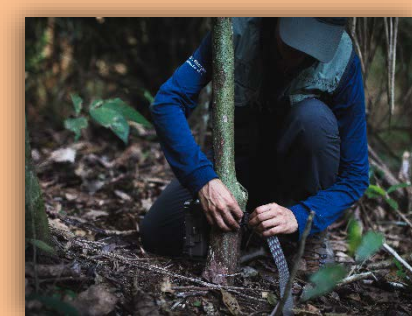As key working hypotheses to be tested, overhunted forests for over a century will:

(1) have lower prevalence of tree species with functional traits linked to seed dispersal by large vertebrates

(2) show higher compensatory abundance of small-mammal seed predators

(3) sustain lower aboveground biomass and carbon stocks because of lower tree basal-area density of heavy-wooded tree species.

STUDY AREA
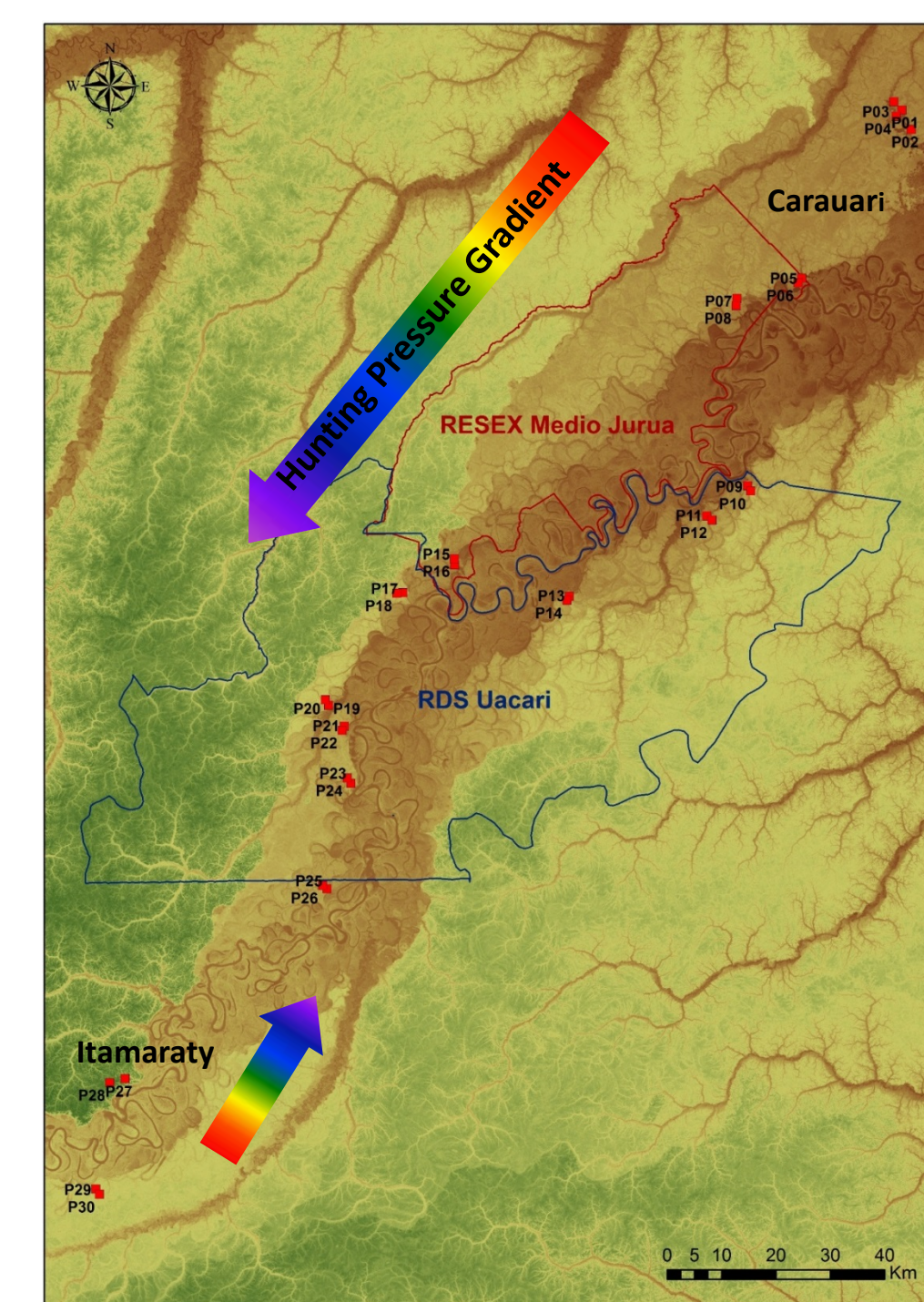
30 sites

METHODS

COMPENSATORY ABUNDANCE

Camera Trapping

camtrapR → Processing Data

SAMPLE UNIT

● Canopy CT
● Understory CT

CARBON STORAGE

DBH | Tree Heights | Wood Core Collection | Wood Density | LMA
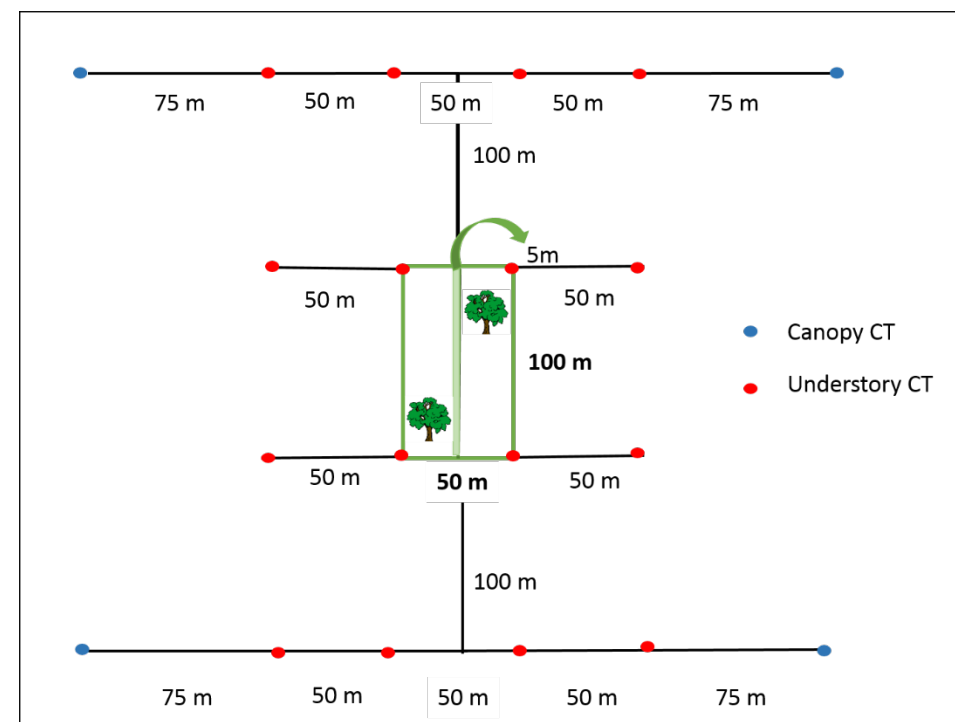
FOREST REGENERATION

Sapling : 1 cm < DBH < 5cm
Tree : DBH > 10 cm

Sapling tag and Mensurement

Sapling and Tree Identification

Seed Size Database
On going

PRELIMINARY RESULTS

FAUNA SPECIES LIST

Saimiri macrodon

Sapajus macrocephalus

Potos flavus

Saguinus mystax

Species binomial	English name
Mammals	
Didelphimorphia	
Caluromys lanatus	Brown-eared Woolly Opossum
Didelphis marsupialis	Commom Opossum
Glironia venusta	Bushy-tailed Opossum
Metachirus nudicaudatus	Guianan Brown Four-eyed Opossum
Philander spp.	Gray Four-eyed Opossum
Pilosa	
Bradypus spp.	Sloth
Choloepus spp.	Two-toed Sloth
Myrmecophaga tridactyla	Giant Anteater
Tamandua tetradactyla	Southern Tamandua
Cingulata	
Dasypus kappleri	Greater Long-nosed Armadillo
Dasypus novencinctus	Nine-banded Armadillo
Priodontes maximus	Giant Armadillo
Perissodactyla	
Tapirus terrestris	Brazilian Tapir
Artiodactyla	
Mazama americana	Red Brocket Deer
Mazama nemoriva	Grey Brocket Deer
Pecari tajacu	Collared Peccary
Primates	
Aotus spp.	Night Monkey
Alouatta seniculus	Colombian Red Howler Monkey
Ateles chameck	Black-faced Black Spider Monkey
Lagothrix cana	Woolly Monkey
Cebuella pygmaea	Pygmy Marmoset
Saguinus fuscicolis	Spix's Saddleback Tamarin
Saguinus mystax avilapiresi	Moustached Tamarin
Saguinus mystax mystax	Moustached Tamarin
Cebus unicolor	Spix's White-fronted Capuchin
Sapajus macrocephalus	Larged-headed Capuchin
Saimiri boliviensis	Bolivian Squirrel Monkey
Saimiri macrodon	Ecuadorian Squirrel Monkey
Cacajao calvus calvus	Bald Uacari
Callicebus cupreus	Red Titi Monkey
Callicebus torquatus	White-collared Titi Monkey
Pithecia albicans	Buffy Saki
Pithecia monachus	Monk Saki

| Species binomial	English name
Mammals	
Carnivora	
Atelocynos microstis	Short Eared dog
Speothos venaticus	Bush Dog
Leopardus pardalis	Ocelot
Leopardus wiedii	Margay
Panthera onca	Jaguar
Puma concolor	Puma
Puma yaguaorundi	Jaguarundi
Eira barbara	Tayra
Galictis vitatta	Greater Grison
Potos flavus	Kinkajou
Nasua nasua	South American Coati
Procyon cancrivorus	Crab-eating Raccoon
Potos flavus	Kinkajou
Rodentia	
Cuniculus paca	Lowland Paca
Dasyprocta spp	Agouti
Myoprocto spp	Acouchy
Proechimys spp	Spiny Rat
Coendou spp.	Porcupine
Sciurus ignitus	Bolivian Squirrel
Sciurus spadiceus	South American Red Squirrel
Guerlinguetus sp.	Squirrel
Uroscirus igniventris	Northern Amazon Red Squirrel
Uroscirus spadiceus	Southern Amazon Red Squirrel
Birds	
Tinamiformes	
Tinamus guttatus	White-Throated Tinamou
Tinamus major	Large Tinamou
Crypturellus spp	Small Tinamou
Galliformes	
Penelope jacquacu	Spix's Guan
Pauxi tuberosa	Razor-billed Currasow
Odontophorus stellata	Wood Quail
Piciformes	
Ramphastos tucanus	White-throated Toucan
Pteroglossus beauharnaesii	Curl-Crested Aracari
Pteroglossus mariae	Brown-Mandibled Aracari
Selenidera reinwardtii	Golden-collared Toucanet
Gruiformes	
Psophia leucoptera	Trumpeter

Tinamus major

Pauxi tuberosa

Ramphastos tucanus
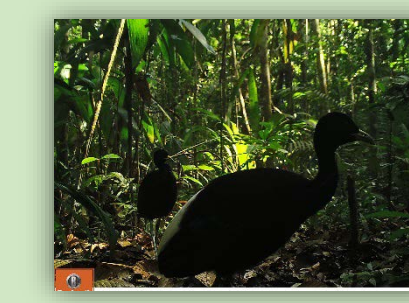
Psophia leucoptera

COMPENSATORY ABUNDANCE

Distance of Carauari city

Tapirus terrestris

Pecari tajacu

Proechimys spp.

NEXT STEPS

FOREST REGENERATION

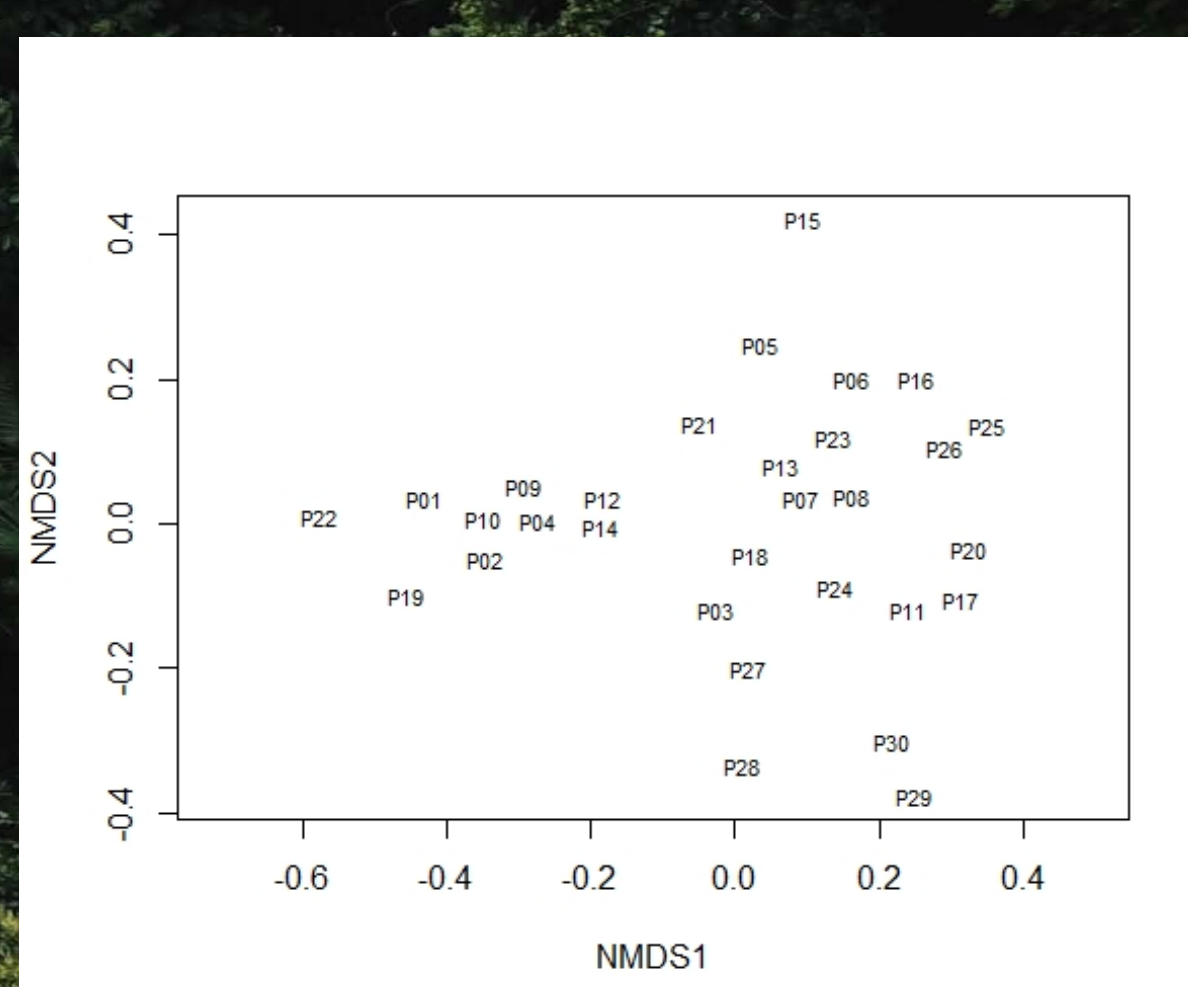**First view of sapling composition at the 30 sample units**

- **13,356 plants sampled:**
  - 2,587 palms
  - 5,981 saplings
  - 4,788 trees
- **929 species from botany families**
- **500 tree height mensured**
- **~700 wood core collected**

Ordination by NMDS using bray-curtis distance for saplings composition at the 30 sample sites on médio Juruá hunting gradient (stress=0.20)

🌿 The database construction is in progress with the camera trapping survey being analysed and laboratory activities being carried out at the National Institute of Amazonian Research (INPA/Brazil) to obtain plants traits: wood density and LMA. With the wood density data will be possible estimate aboveground biomass (AGB) for each one of the sample sites.

🌿 Using a combination between the camera trapping survey of this project and a database of vertebrates abundance based in linear transects census will be possible to generate a defaunation index for our 30 sites in the hunting pressure gradient.

🌿 A first view of our camera traps records indicates a lower abundance of some larger vertebrates in areas with greater hunting pressure close to urban centres. In this location there seems to be an increase in spiny rats, which suggests initial evidence of defaunation cascade effects. This tendency will be further analysed.

🌿 The exploratory ordination of the saplings composition did not show changes in sites with different hunting pressure. However, using our future seed size database we will able to analyse if there is a directional prevalence change of species dispersed by large vertebrates.

> "The most insiduous kind of extiction is the extinction of ecological interactions"
> Daniel H. Janzen 1974

During the internship at East Anglia University, with Professor Carlos Peres we are going to:
(a) obtain a defaunation index for each one of the 30 sites along the hunting pressure gradient;
(b) Elaborate seed size database based on our tree composition data;
(c) Test statistically the hypotheses proposed in this projects → singular project

The present work will provide theoretical tools for hunting management in the Amazon, pointing out the importance of maintaining ecological interactions for forest regeneration, carbon storage and consequently for conservation valuation.

FIND MORE ABOUT

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