Mammal Occupancy & Activity in Guyana

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Forests in Guyana

- Guyana has 94% of its total land covered by forest (FAO, 2020).
- Guyana's forests remain largely intact and undisturbed (Guyana Forestry Commission, 2007).

Study areas peoples

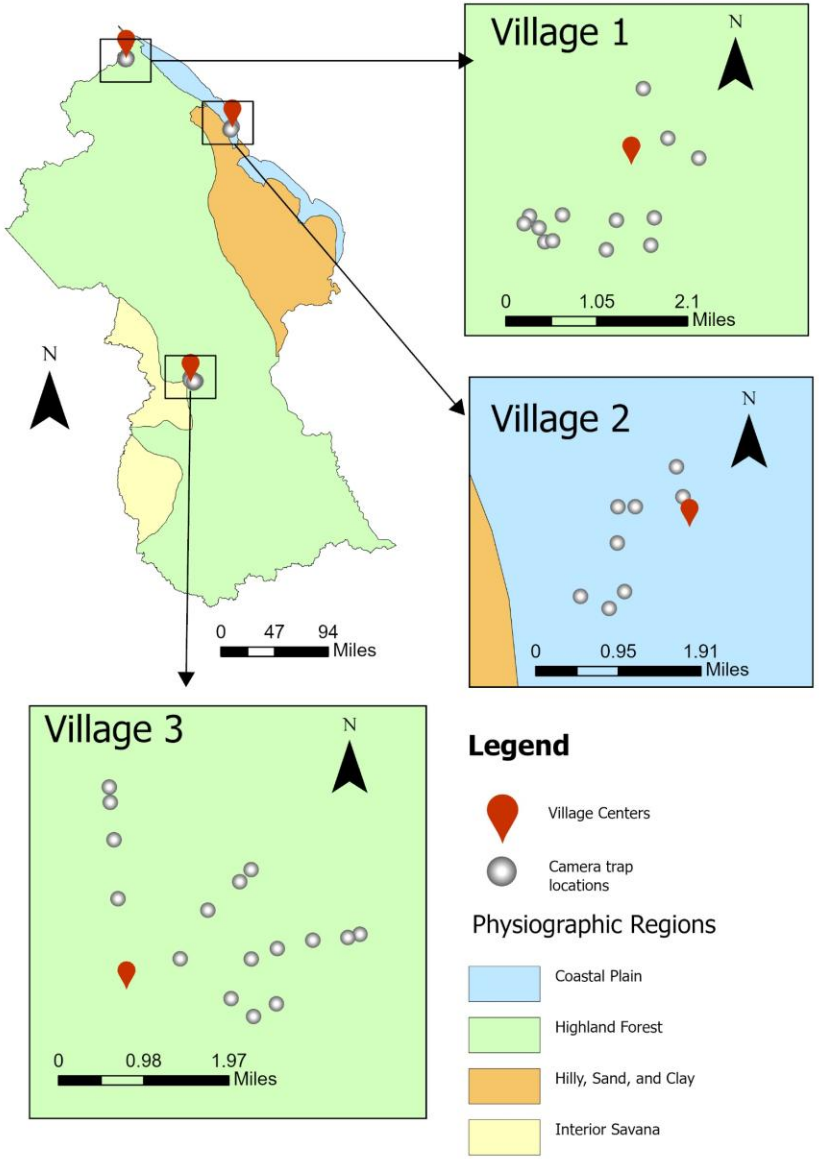
- The rainforests are central to the lives of Guyana’s nine Indigenous groups, also referred to as Amerindians, the pre-colonial inhabitants of the region.
- The Indigenous groups practice traditional lifestyles such as subsistence farming, hunting, and fishing.
- The subsistence farming method practiced by indigenous groups, referred to as swidden agriculture (Cummings et al., 2017; Arwida et al., 2024).
- Intensification from shortened fallow periods has raised concerns over habitat degradation and biodiversity loss (Henley, 2011; Li et al., 2014; Finch et al., 2022).
- Guyana’s interior, rich in timber and minerals, drives extraction and road expansion, increasing human access. (Guyana Lands and Surveys Commission, 2013; Pierre et al., 2020).

Role of mammals

Guyana's rainforest is home to a rich diversity of mammals, with 256 species recorded to date (Mammal Diversity Database, 2025).

- Monkeys and tapirs disperse seeds that aid **forest regeneration** (Fragoso et al., 2013; Link & Di Fiore, 2006; Levi & Peres, 2013);
- Peccaries and giant armadillos **alter their surroundings** through burrow excavation (Altrichter et al., 2012; Desbiez & Kluyber, 2013; Fontes et al., 2020).
- Large predators require only a few individuals to **regulate prey populations** (Carbone & Gittleman, 2002; González & Miller, 2002; Pierre et al., 2020).

Source: Forest First Colombia (CC BY-NC), via iNaturalist



Study Area

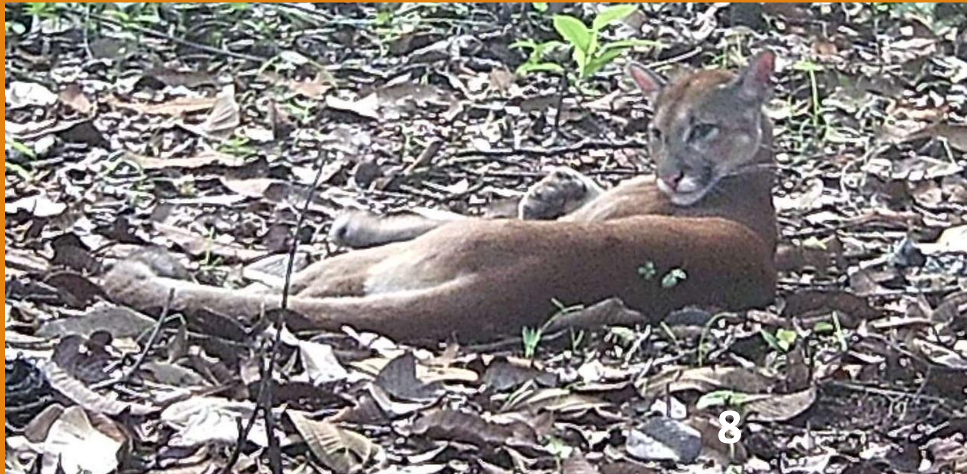
- Village 1: Mix of commercial agriculture + traditional swidden cassava cultivation.
- Village 2: High human influences — commercial pineapple, logging, and gold mining.
- Village 3: Low influences — traditional swidden cassava farming for subsistence.

Camera trap setup

- This study uses camera-trap data collected between December 2022 and March 2024.
- Animal species were manually identified from the camera trap images
- A new sighting was counted when 30 minutes passed between two photos of the same species at the same camera (Sollmann, 2018; O'Brien et al., 2003; Kelly & Holub, 2008).

- Mammalian species recorded using camera traps:
- (A) *Panthera onca*,
- (B) *Puma concolor*,
- (C) *Leopardus pardalis*,
- (D) *Eira barbara*,
- (E) *Tapirus terrestris*,
- (F) *Myrmecophaga tridactyla*,
- (G) *Pecari tajacu*,
- (H) *Mazama americana*,
- (I) *Dasyprocta leporina*,
- (J) *Cuniculus paca*, and
- (K) *Dasypus kappleri*.

What is the status of mammals' activity and presence across the study sites?



Chapter 1: analytical framework

- Independent detections
- Presence-absence data
- Detection Times

Relative Abundance Index (RAI)
= (Number of independent records)/(Number of days camera was active) ×100

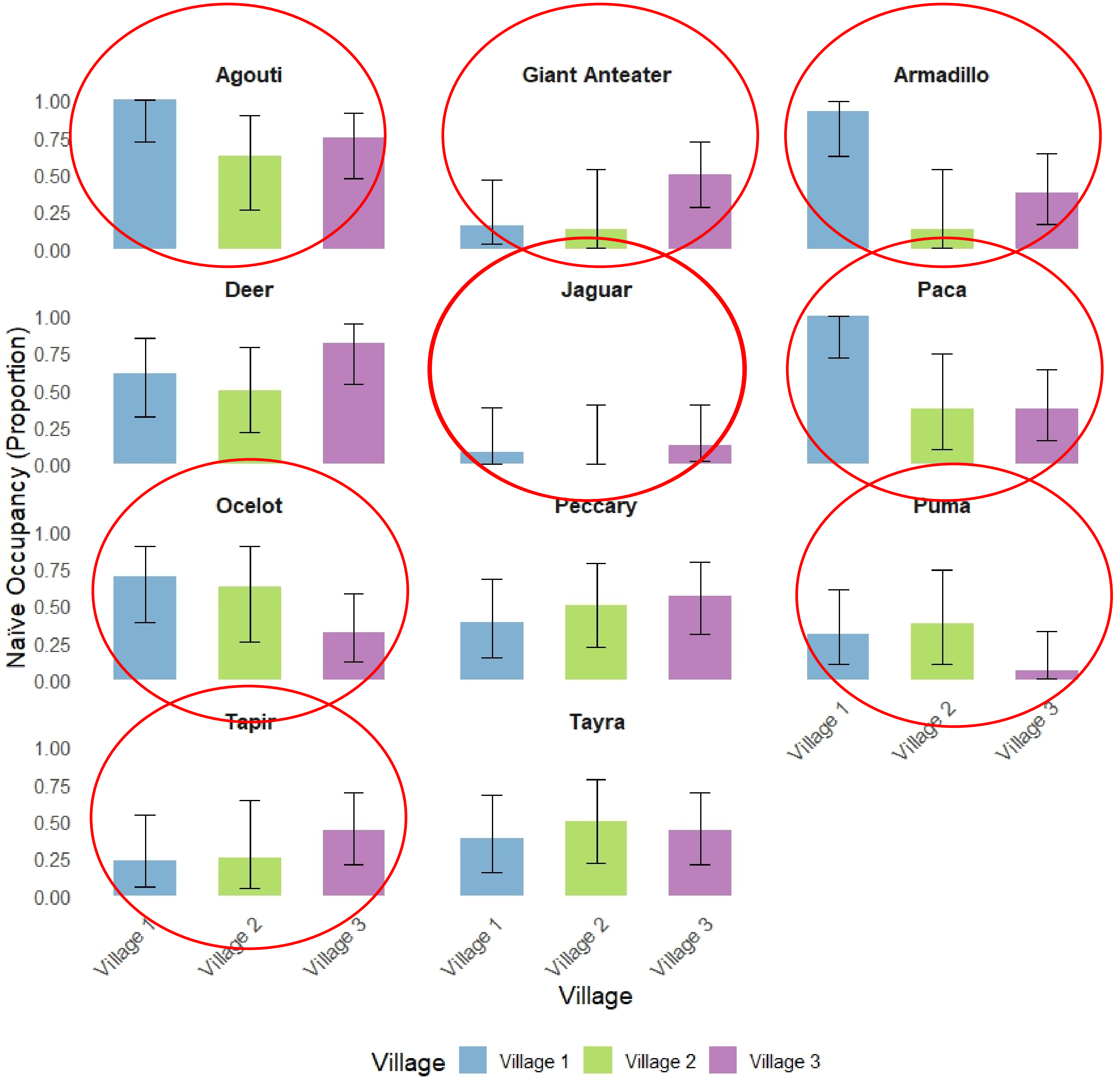
Naïve occupancy (Ψ) = (Number of sites the species was deetcted)/(Total number of sites surveyed)

- Standardized the sampling period for 40 days per site
- Calculated 95% confidence intervals

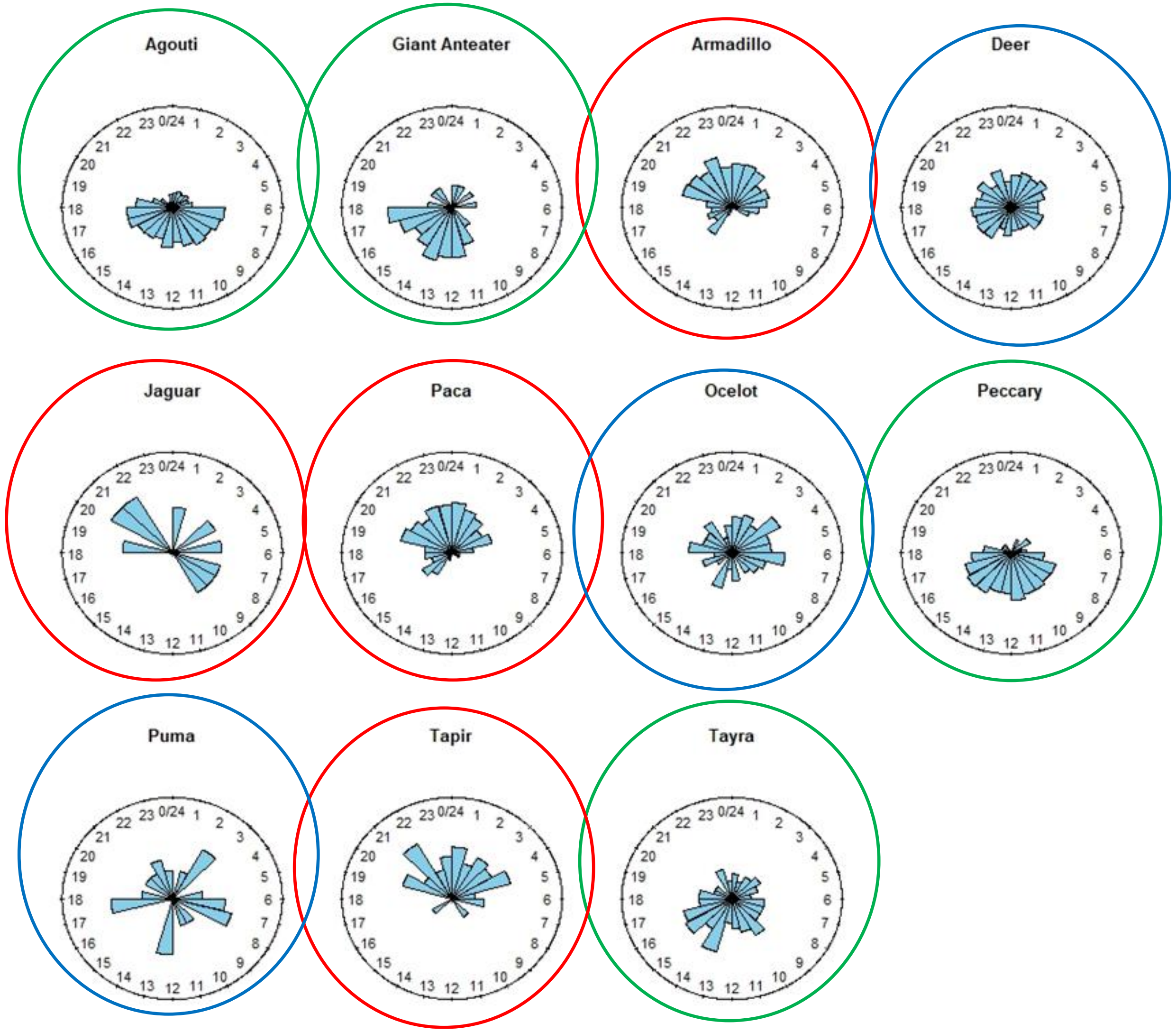
- **Proportion of detections during daylight hours** (06:30 AM and 06:30 PM)
- Time converted to radians and visualized using **rose diagrams**

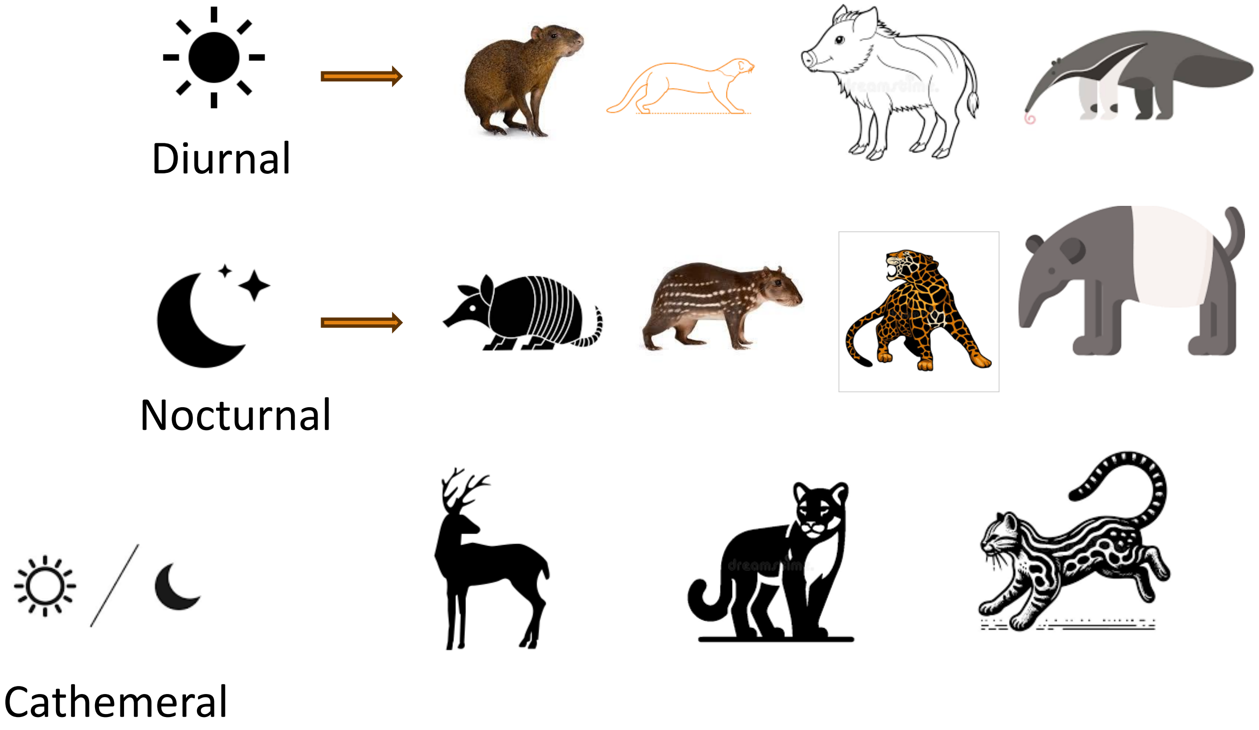
Result: Mammals' Occupancy Estimates

- Village 1 – most frequent species were agouti, armadillo and paca
- Village 3 – greater occupancy of anteater, jaguar and tapir.
- Low detected species: jaguar, puma and ocelot.
- Ocelot: lowest detection in Village 3, potentially avoiding large felids
- Jaguar not detected in Village 2; pumas persist under disturbance.



Results: Mammalian activity cycle





Key Takeaways

- Differences in mammals detection among sites may result from habitat variation or from differences in the duration of camera operation.
- Uncertainties prevailed in the occupancy estimates, but some general patterns emerged:
  1. Village 1 showed a greater presence of small mammals.
  2. Village 3 showed a greater presence of vulnerable and near threatened mammals.
- The occurrence of threatened and disturbance-sensitive species indicates that these forests hold high conservation value.

Acknowledgement

I want to thank the villagers in Guyana who supported the field data collection and helped us with their local knowledge in placing the cameras.

This research was supported by the National Science Foundation (NSF) under Grant No. BCS-2047940.

National Science Foundation

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