Effect of forest restoration on the habitat preference of the Ocelot (*Leopardus pardalis*) in Cloudbridge Nature Reserve

Internship Cloudbridge Nature Reserve

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Figure 1: Photograph by Banjamin Luke, personal communication, 2023. Used with permission.

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Abstract

Tropical montane forests are biodiversity hotspots that are increasingly shaped by restoration efforts. Medium-sized predators such as the ocelot (*Leopardus pardalis*) can serve as important indicators of ecosystem recovery due to their sensitivity to habitat structure and prey availability. This study investigates how forest restoration influences the habitat preferences of ocelots in Cloudbridge Nature Reserve, a privately protected area in the Talamanca Mountains of Costa Rica.

Using camera traps placed at nine locations across three forest types (planted, natural regrowth, and old-growth), ocelot activity was monitored between January and May 2025. Vegetation structure, canopy cover, elevation, human activity and prey abundance were measured through a combination of field methods and image analysis. A total of 24 independent ocelot detections were recorded.

The results indicate that canopy cover is the most significant predictor of ocelot presence ($p = 0.013$), with denser canopy correlating with higher detection rates. Forest type showed a non-significant trend, with natural regrowth hosting more detections than old-growth or planted forest. Prey diversity, measured via the Shannon Diversity Index, was positively associated with ocelot activity but not statistically significant. Human activity showed a weak positive correlation, likely due to shared trail use.

These findings suggest that ocelots prefer structurally complex habitats, especially those with dense canopy and diverse prey communities. Natural regeneration appears to create suitable habitat conditions for this species, highlighting its potential for effective forest recovery. Low-impact human presence may be compatible with ocelot conservation if carefully managed.

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Introduction

Costa Rica is one of the most biodiverse countries in the world. Despite covering only 0.03% of the Earth's land surface, it harbours nearly 5% of global biodiversity: approximately half a million species. However, in the 1960s and 1970s it faced some of the highest global deforestation rates (Stan & Sanchez-Azofeifa, 2019; Rosero-Bixby & Palloni, 1998). Prior to 1940, forests covered around 75% of the country; by 1987, nearly half had been lost (Ilott-Baudon, 2023). Deforestation threatens both biodiversity and the human communities that depend on forest ecosystems (Wang et al., 2019). Since then, the country has made significant progress in forest conservation, successfully increasing its forest cover from around 25% in the mid-1990s to over 60% by 2020 (Navarro, 2024). They have implemented extensive conservation policies; over 28% of its land is protected through national parks and reserves (Ilott-Baudon, 2023).

Wild cats are particularly vulnerable to habitat loss due to their large home range requirements and strict carnivorous diets. As predators, they help regulate prey populations and maintain ecosystem balance. Medium-sized Neotropical cats such as the ocelot (*Leopardus pardalis*) play a key ecological role, yet remain understudied in many regions (Wang et al., 2019).

Ocelots are solitary, medium-sized, primarily nocturnal felids ranging from southern Texas to northern Argentina. Ocelots are primarily nocturnal predators, a behaviour likely tied to the activity patterns of their prey (Abreu et al., 2008). They are opportunistic hunters that predominantly consume small-bodied mammals under 1 kg but may also take larger prey when available (Abreu et al., 2008; Murray & Gardner, 1997). Although they are capable of hunting in trees, ocelots are more efficient on the ground, where they are most frequently recorded hunting (Murray & Gardner, 1997; Griffiths et al., 2020). Prey size appears to be a more important determinant than prey abundance in their diet, larger prey can be taken, but they occur less frequently in dietary records (Murray & Gardner, 1997).

Their diet is broad and includes rodents, opossums, coatis, cottontail rabbits, three-toed sloths, porcupines, nutrias, lesser anteaters, bats, land tortoises, iguanas, frogs, small turtles, fish and various colubrid snakes (Murray & Gardner, 1997; Aliaga-Rossel et al., 2006; Bianchi & Mendes, 2007). Larger prey items such as red brocket deer, collared peccaries, pacas, agoutis, armadillos, tamanduas, and primates are also occasionally consumed (Aliaga-Rossel et al., 2006; Bianchi & Mendes, 2007). Additionally, ocelots are known to take birds like guans, tinamous, and domestic poultry and they may ingest insects, arthropods and plant material, especially grass, which is commonly found in their digestive tracts (Murray & Gardner, 1997).

Ocelots show broad habitat tolerance, inhabiting rainforests, floodplains, open areas and even human-altered landscapes. They have been observed at elevations up to 1,200 meters, often staying close to dense vegetation (Rocha et al., 2016; Wang et al., 2019).

Historically, ocelots were heavily hunted for their fur; however, international trade bans improved their conservation status from Vulnerable to Least Concern (Rocha et al., 2016; IUCN, 2024). Nevertheless, habitat loss and fragmentation remain significant threats to their long-term survival (Bolze et al., 2021; Wang et al., 2019).

Their home ranges vary from 1.8 to 38.8 km^2, with males occupying larger areas than females. Population density ranges widely from 3 to over 90 individuals per 100 km^2, depending on habitat quality and prey availability (Rocha et al., 2016). Though common compared to larger felids, their elusive behaviour has limited research efforts (Bolze et al., 2021). However, since 2000, the increasing use of camera traps has enhanced research efforts (Wang et al., 2019).

The abundance of wild cats, including the ocelot, is shaped by multiple ecological and environmental factors such as rainfall patterns, resource availability, interspecies competition and breeding conditions. In montane forests the onset of the rainy season in May stimulates plant growth, which benefits frugivorous species and triggers a general increase in trophic activity. These seasonal changes can alter predator-prey dynamics, including those involving ocelots. In addition to seasonal variation, elevation plays a significant role in shaping ocelot behaviour. Areas above 1,800 meters often host more felid activity, likely due to a combination of cooler temperatures, denser vegetation, and reduced human disturbance. Within these environments, predators tend to choose low-energy hunting routes and favour locations with higher prey density (Bevilacqua, 2023).

However, in smaller or fragmented landscapes, human presence and disturbance may also play a role in shaping predator movement and habitat selection. This highlights the complexity of interpreting wildlife responses to environmental variation. The relationship between variables such as vegetation structure, prey abundance, climate, and human activity remains the subject of ongoing debate (Bevilacqua, 2023). As Bevilacqua (2023) emphasizes, a nuanced understanding of these ecological dynamics is essential for the effective conservation of threatened species, particularly in ecosystems undergoing rapid environmental change.

This research will be conducted at Cloudbridge Nature Reserve, a private conservation area in the Talamanca Mountains, Pérez Zeledón, Costa Rica, with elevations from 1,550 to 2,600 meters (Cloudbridge, n.d.-a). The area includes three forest types: old-growth, natural regrowth and planted forest and it covers roughly 200 hectares (Cloudbridge, n.d.-a; Ilott-Baudon, 2023). Since its establishment, much of the land that was previously used for pasture and cultivation, along with some primary forest areas, has been purchased for the purpose of reforestation and cloud forest conservation (Frehner, 2018). The reserve lies along the western border of the Chirripó National Park which is part of the largest protected area in Central America, La Amistad International Park, reaching all the way to Panama (Cloudbridge Nature Reserve, n.d.-b).

This study uses the ocelot as a representative species to explore how forest restoration influences habitat preferences. Because predators often select low-energy hunting paths, the camera traps were deployed on the trails throughout Cloudbridge Nature Reserve in different forest areas. Variables such as vegetation cover, canopy cover, prey availability and human activity will be considered.

To effectively assess where and under what conditions ocelots are present, it is essential to apply methods that account for their elusive nature and varied behaviour. Estimating densities for solitary and elusive carnivores like the ocelot, presents significant challenges. When using camera traps, it is important to recognize that detection is not perfect. Just because an animal does not appear on camera does not necessarily mean it was absent from the area. The probability of detecting a species or an individual can vary depending on the species, the camera's location, the time of day, and environmental conditions. This imperfect detection can lead to biased conclusions (Rovero et al., 2013). However, camera trapping has proven to be one of the most reliable methods (Rocha et al., 2016). It is especially useful for generating standardized data, as it allows researchers to maintain consistent sampling efforts and replicate study designs across various locations and time periods. Because they limit human involvement to steps such as setup, maintenance, and identifying captured images, camera traps reduce potential observer bias and errors. The recorded material can be reviewed independently by multiple researchers, which further supports data reliability. Compared to many traditional field sampling techniques, camera traps offer a higher degree of consistency. They can also operate day and night with relatively low maintenance needs (O’Connell, 2011). The use of camera traps has greatly expanded our understanding of species behaviour and interactions. Their growing popularity is also linked to their simplicity, efficiency, and the declining cost of purchase and upkeep, making them an increasingly attractive option for ecological research (O’Connell, 2011).

In the context of this study, camera traps offer a non-invasive and standardized way to monitor ocelot activity across different forest types within the reserve. By deploying them consistently along various trails, it becomes possible to collect comparative data on where and under what environmental conditions ocelots are most frequently detected. Ultimately, this study aims to clarify how forest restoration, through both natural regrowth and active reforestation, shapes ocelot habitat preferences within a tropical montane landscape. Understanding how this species responds to different stages of forest recovery can inform future conservation strategies and improve habitat management practices within Cloudbridge Nature Reserve.

Objectives

The general objective of this research is to investigate how forest restoration affects the habitat preferences of the ocelot (*Leopardus pardalis*) in Cloudbridge Nature Reserve.

Because of the complexity of the relationship between environmental variables and mammal abundance, multiple environmental factors will be considered. To achieve this, the following specific objectives will be pursued:

1. **Compare Detection Frequencies:** Compare the detection frequencies of ocelots in the different forest types (old-growth, natural regrowth and planted).
2. **Examine Habitat Preferences:** Assess the relationship between vegetation density/canopy cover, elevation and ocelot presence in the different forest types.
3. **Identify Key Variables:** Examine the influence of prey availability and human disturbance on ocelot occurrence in the different forest types.

Hypothesis

It is expected that forest restoration influences ocelot habitat preferences, with higher detection frequencies anticipated in old-growth forests due to more favourable ecological conditions such as denser vegetation, greater canopy cover, higher prey availability, and reduced human disturbance. The specific hypotheses for each variable are as follows:

- **Elevation**
  Ocelot detections will be more common at higher elevations within the study area, where human disturbance is lower and habitat conditions are more suitable. High elevations also contain the best-preserved old-growth forest.
- **Canopy Cover**
  Ocelots will be more frequently detected in areas with higher canopy cover, as this provides greater shade, shelter, and concealment.
- **Vegetation Density**
  Ocelot presence will increase with higher vegetation density, especially in the low (0-0,5m) and mid (0,5–2 m) layers.
- **Forest Type**
  Ocelots will be detected most frequently in old-growth forest, followed by natural regrowth and least frequently in planted forest.
- **Prey Abundance**
  Ocelot detection frequency will be positively associated with prey abundance at camera trap locations.
- **Human Presence**
  Ocelot detection frequency will be negatively associated with human presence, as ocelots are likely to avoid areas with higher levels of human activity.

Methodology

This study investigated how forest characteristics influence ocelot presence using a combination of camera trap data and habitat variables. Data were collected between January and June 2025, with fieldwork conducted from April 14th to June 28th. While not identical, The vegetation cover methodology was adapted from the approach used by Bevilacqua (2023), with adjustments made for the specific research on ocelots and the data available for this study. The study assessed the influence of various variables. The factors considered and the methods used to measure them are as follows:

Elevation

Elevation was recorded at each camera trap location using a handheld GPS device, which provides the altitude in meters above sea level.

Canopy cover

Canopy cover was estimated at each camera trap location using the Canopy Cover mobile application. A photograph was taken looking directly upward from the camera placement site to capture the canopy overhead. The application calculates the percentage of canopy cover based on the proportion of sky visible in the photograph.

Vegetation density

Vegetation density
The vegetation cover method was based on the Daubenmire approach (Daubenmire, 1959). However, instead of estimating the percentage cover of individual plant species within a plot, this study estimated vegetation cover by height class. Sampling plots were placed on both sides of the trail, directly in front of each camera trap. Each plot measured 5 meter in width and 5 meters in length. Vegetation was divided into the following layers: ground layer (leaf litter, mosses), low vegetation (0–0.5 meters), mid vegetation (0.5–2 meters), and high vegetation (>2 meters). For each layer, the percentage of ground area covered by vegetation within that height class was visually estimated in 5% increments. The mean of the two plot estimates was used to represent vegetation cover at each camera site.

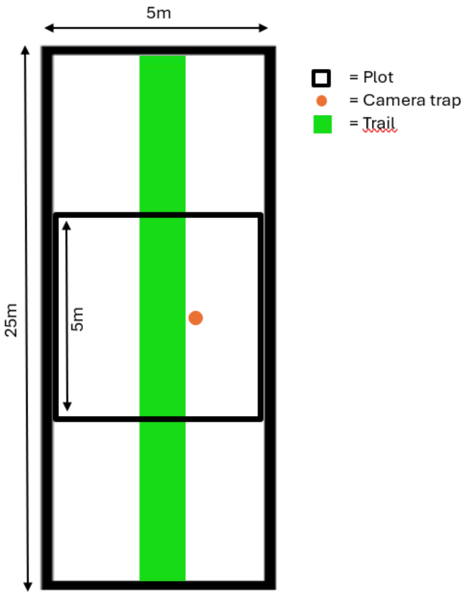


Figure 2: Vegetation plots at the camera trap sites

Tree density
Additionally, a 25-meter transect was established from each camera trap location. The DBH (Diameter at Breast Height) was measured for all trees exceeding 1 meter in height, within a 2-meter width on either side of the transect. This data were used to estimate tree density and size distribution.

Forest type

Forest type was determined at the start of the project using existing records from Cloudbridge Nature Reserve. Based on these records, each camera trap location was classified as being situated in one of three forest types: planted forest, natural regrowth forest, or old-growth forest. In some cases, camera transects may pass through areas where different forest types gradually transition into one another. In these cases, the classification was based on the dominant forest type surrounding the camera location.

Prey observation abundance

As mentioned before, ocelots have a broad and opportunistic diet. Based on literature (see Introduction), the following species were considered potential preys when analysing prey presence: Chiriqui Quail-Dove, Collared Peccary, Red-tailed Squirrel, Rodent or Shrew, Spotted Wood-Quail, White-Nosed Coati, Dice's Cottontail rabbit, Paca, Black Guan, Central American Agouti, Collared Trogon, Common Opossum, Emerald Toucanet, Grey Four-Eyed Opossum, Highland Tinamou, Kinkajou, Lesson's Motmot, Long-tailed Weasel, Nine-Banded Armadillo, Northern Tamandua, Rodent, Variegated Squirrel, and White-faced Capuchin.

Prey observation abundance was measured by reviewing the camera trap footage and counting the number of times potential prey species are detected. Each observation was recorded and categorized by species to identify which types of prey are present at each camera location. To avoid overcounting, repeated detections of the same individuals within a five-minute interval were considered a single observation.

Human presence

Human presence was measured by counting the number of people recorded passing in front of each camera trap. This includes both tourists visiting the reserve and researchers working on site. To avoid overcounting, repeated detections of the same individuals within a five-minute interval were considered a single observation.

Camera traps

Camera traps were placed in different forest types across Cloudbridge Nature reserve to monitor ocelot presence and activity. The 10 camera traps were mounted on trees at approximately 1 meter above ground level, depending on the slope of the trail and the height of the tree. The aim was to position each camera at the eye level of medium-sized wild cats to optimize the detection of mammals. Each camera was set to high resolution and programmed to record only videos, with a 10-second interval between recordings. All camera traps were checked biweekly to assess battery status, replace SD cards, and ensure that the settings were still correct. Figures 1 and 2 show the locations of the camera traps, highlighted in yellow. However, camera D1 did not collect any data due to technical issues, so only nine cameras were included in this study.

The video footage collected was analysed within the same week of retrieval by two researchers. One person played the footage on a laptop, while the second person recorded the species observed, the number of individuals and the corresponding video file information on paper. If the same species was recorded on multiple videos within a 5-minute timeframe, it was counted as a single detection, taking into account the number of distinct individuals and counting accordingly.

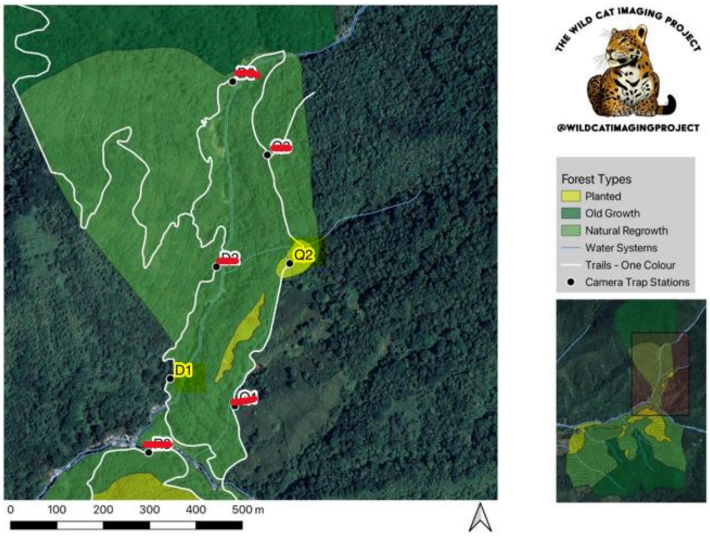


Figure 3: Camera trap placement Cloudbridge Nature Reserve North view

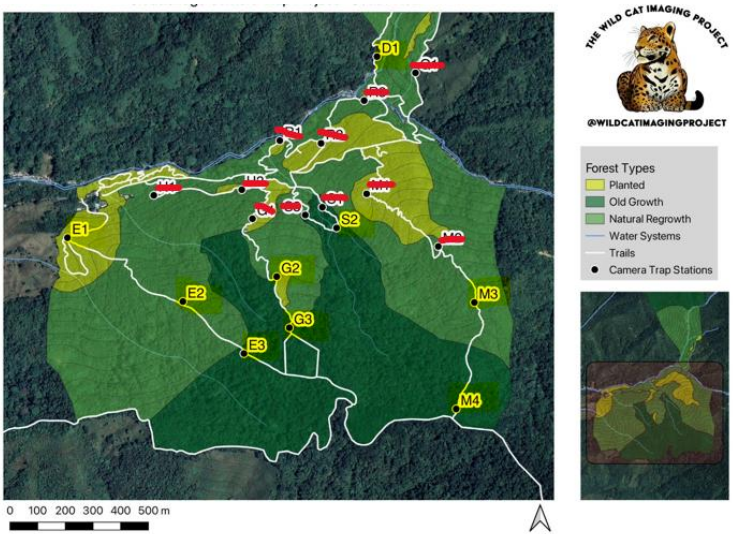


Figure 4: Camera trap placement Cloudbridge Nature Reserve South view

Statistical analysis

After sorting out the data, they were entered into the main database. All identified species, including *Homo sapiens*, were recorded with their corresponding date, time, and camera ID. Additional camera-specific information was linked to each entry (see Appendix A for the database). Detections of felid species were also entered into a separate Cats Database, which includes all Ocelot sightings at the study site since 2017 (see Appendix B).

Additional datasets were compiled for use in analysis. These included:

- A Canopy Cover dataset
- A Tree DBH (Diameter at Breast Height) dataset (see Appendix C)
- A Vegetation Density dataset
- A Camera Information dataset (including elevation, forest type, and location details)

The main camera trap database was filtered to create specific subsets for analysis:

- Ocelot Database
- People Database
- Prey Database

This was done in Excel by filtering the table based on species. As a result, the following databases were used in the study:

1. Full camera trap database
2. People database
3. Prey database
4. Cats database (including historical data)
5. Canopy cover database
6. Tree DBH database
7. Vegetation density data
8. Camera metadata (elevation, forest type, etc.)

Data from these databases were used to create visualizations in Excel and perform more complex statistical analyses in RStudio version 4.5.1. Using RStudio bar charts and linear regression plots were generated by comparing two databases or two variables/species.

To evaluate relationships and patterns in the data, several statistical analyses were conducted using RStudio. P-values were calculated to determine the statistical significance of observed relationships between variables. A p-value below 0.05 was considered statistically significant. R-squared values (R^2) were used to assess how well the independent variable explained the variation in the dependent variable. Higher R^2 values indicate better model fit. ANOVA tests (Analysis of Variance) were used to compare the mean number of detections across groups (e.g., different trails or habitat types) to see if group membership had a significant effect. The Shannon Diversity Index was calculated to measure prey diversity per trail, accounting for both species richness and evenness.

Results

This chapter presents the findings of the field research conducted at Cloudbridge Nature Reserve on the habitat preferences of the ocelot (*Leopardus pardalis*). The results are organized according to the main environmental variables measured per camera trap location, including forest type, elevation, canopy cover, and average DBH per m^2. Table 1 summarizes environmental characteristics at each camera location, including forest type, elevation, canopy cover, and DBH (Diameter at Breast Height) per square meter.

Table 1: Environmental characteristics per camera trap location

	E1	*E2*	*E3*	*G2*	*G3*	*Q2*	*M3*	*M4*	*S2*
Forest type	Planted	Natural Regrowth	Old Growth	Natural Regrowth	Old Growth	Planted	Old Growth	Old Growth	Old Growth
Elevation (meters)	1610	1800	1920	1850	1890	1800	2000	2120	1770
Canopy cover	65%	75%	60%	35%	60%	55%	60%	80%	70%
DBH per m^2	2,55	10,04	9,38	3,66	6,79	7,96	10,86	4,57	4,08

Elevation

As seen in Table 1 the camera located at the highest elevation was M4 (2,120 meters), while the lowest was E1 (1,610 meters). To further explore whether elevation influences ocelot activity, Figure 5 presents a linear regression analysis based on elevation ranges grouped in 100-meter intervals (i.e., 1,500–1,600 m, 1,600–1,700 m, 1,700–1,800 m, 1,800–1,900 m, 1,900–2,000 m, 2,000–2,100 m, and 2,100–2,200 m).

The graph shows a general trend of decreasing ocelot detections with increasing elevation. However, the regression analysis produced an R-squared value of only 0.034, indicating that elevation explained just 3.4% of the variation in ocelot activity. Furthermore, the p-value of 0.692 confirms that this relationship was not statistically significant. These results suggest that, within the elevation range observed in this study there is no meaningful linear relationship between elevation and ocelot detections across the camera trap locations.

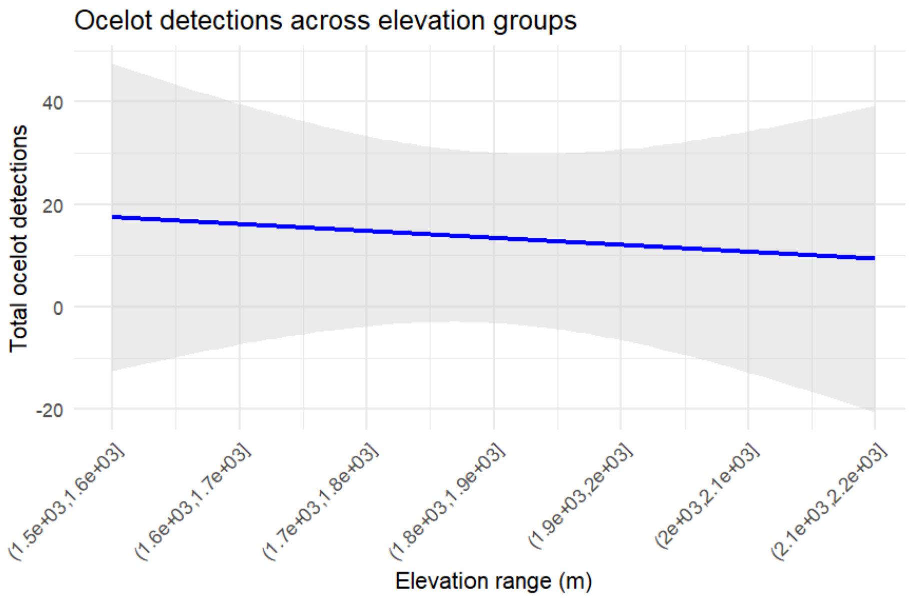


Figure 5: Ocelot detections across elevation groups

Canopy cover

As shown in Table 1, canopy cover across the camera trap sites ranged from 35% at G2 (natural regrowth) to 80% at M4 (old-growth forest), with the highest values generally corresponding to old-growth locations. Notably, three of the old-growth sites, E3, G3, and M3, had a consistent canopy cover of 60%, suggesting a relatively uniform overstorey structure within that forest type.

To assess whether canopy cover influences ocelot activity, Figure 6 presents a linear regression analysis examining the relationship between canopy cover and the number of ocelot detections. The results reveal a strong and statistically significant positive relationship ($p = 0.013$), with canopy cover explaining approximately 90.4% of the variation in ocelot detections ($R^2 = 0.904$). This indicates an excellent model fit.

Together, these findings suggest that areas with higher canopy cover are strongly associated with increased ocelot activity, reinforcing the idea that dense forest cover is an important component of suitable habitat for this species.

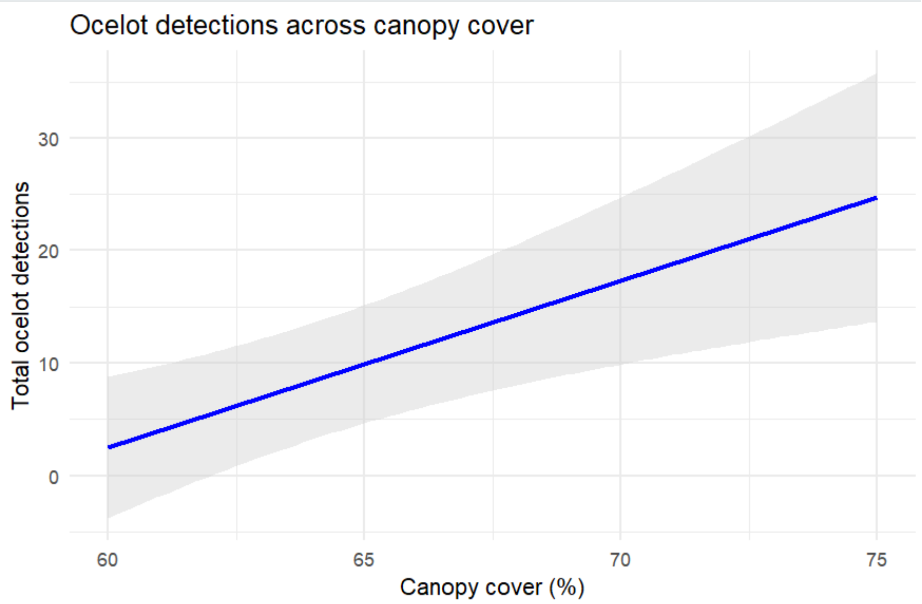


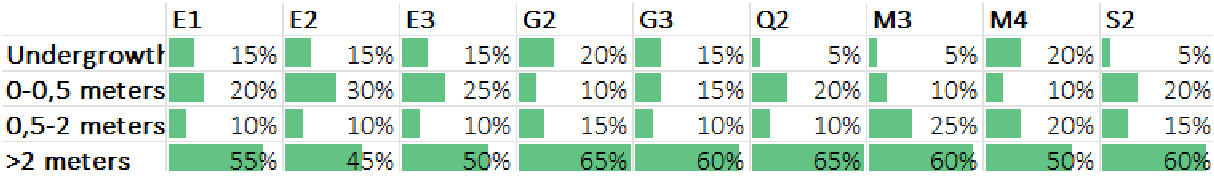
Figure 6: Ocelot detections across canopy cover

Vegetation density

Vegetation cover

Figure 7 illustrates the vertical distribution of vegetation across camera locations, divided into four height categories: undergrowth, 0–0.5 meters, 0.5–2 meters, and above 2 meters. The majority of vegetation was found in the >2 meters category, especially at G2, Q2, and M3, where values reached 65%, suggesting dense upper canopy layers. In contrast, lower vegetation layers such as 0–0.5 meters and 0.5–2 meters were more prominent at sites like E3 and M3, indicating more complex vertical structure closer to the ground.

Undergrowth was generally sparse, with most sites reporting ≤15%, except for G2 (20%), suggesting relatively open forest floors. Overall, these patterns reflect varying degrees of forest maturity and stratification, which could influence species presence and activity. Natural regrowth sites (E1, G2, G3) exhibited relatively high vegetation cover in both the upper (>2 m) and lower layers, reflecting structurally diverse environments.
In contrast, old-growth sites (E2, E3, M3, S2) were dominated by dense canopy cover in the >2 m layer, with relatively sparse understorey and low vegetation, consistent with mature forest structure. Planted forest sites (Q2, M4) displayed high canopy cover but limited vegetation in the lower strata, reflecting a more uniform vertical profile typical of plantation-style reforestation.
These findings suggest that vegetation cover distribution closely corresponds with forest type classification, supporting its use as an ecological proxy for habitat structure in this study.



	E1	E2	E3	G2	G3	Q2	M3	M4	S2
Undergrowt	15%	15%	15%	20%	15%	5%	5%	20%	5%
0-0,5 meters	20%	30%	25%	10%	15%	20%	10%	10%	20%
0,5-2 meters	10%	10%	10%	15%	10%	10%	25%	20%	15%
>2 meters	55%	45%	50%	65%	60%	65%	60%	50%	60%

Figure 7: Vegetation cover shown per camera trap location

The bar chart in Figure 8 shows the total number of ocelot detections grouped by vegetation structure. To simplify interpretation, the original four vegetation height classes from the table (>2 m, 0.5–2 m, 0–0.5 m, and undergrowth) were reclassified into broader categories: high, medium, low, and undergrowth.

Ocelot detections were highest in areas with predominantly low vegetation, with a total of 8 detections, suggesting that ocelots may prefer areas with more open or lower vegetation structure, possibly for easier movement or better visibility while hunting. The other categories each accounted for 4 detections, indicating a more even, but lower level of activity in those areas.

However, the overall regression model was not statistically significant, with F(3, 16) = 0.82 and p = 0.501, indicating that vegetation structure did not significantly predict ocelot detections. The model explained approximately 13.3% of the variance in ocelot activity ($R^2 = 0.13$), but the negative adjusted R^2 (–0.03) suggests a poor model fit. None of the vegetation categories (low, medium, or undergrowth) had a significant individual effect compared to high vegetation.

These findings suggest that within this dataset, ocelot detection frequency does not vary meaningfully across different vegetation structure types.

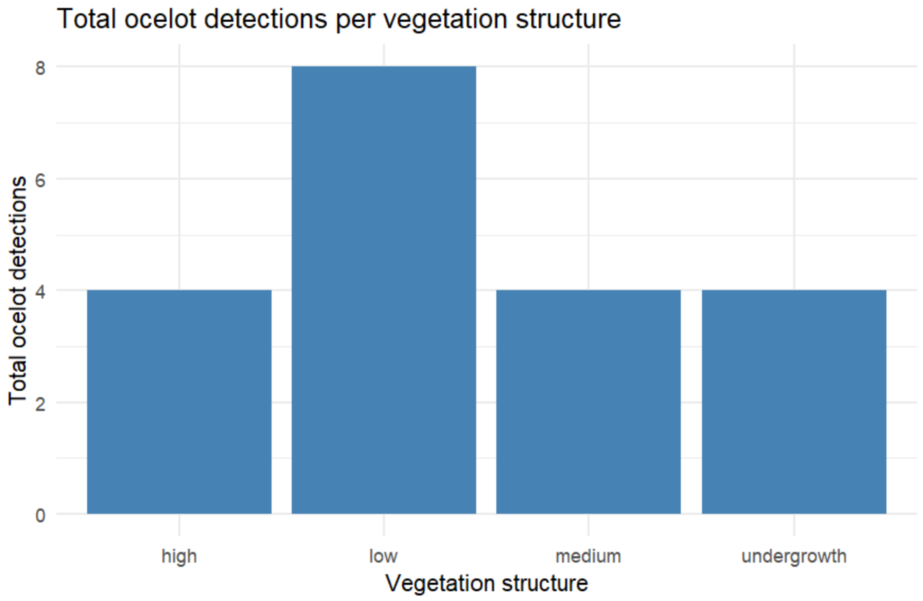


Figure 8: Ocelot detections per vegetation structure

Tree DBH (Diameter at Breast Height)

As shown in Table 1, DBH per square meter (DBH/m^2) varied notably across forest types. The highest value was recorded at M3 (10.86), an old-growth site, followed closely by E2 (10.04), located in natural regrowth forest. In contrast, the lowest DBH/m^2 was observed at E1 (2.55), a planted forest, highlighting the structural differences between mature and reforested areas.

To explore whether DBH per m^2 influences ocelot activity, Figure 9 presents a linear regression analysis examining its relationship with the total number of ocelot detections. While the graph indicates a slight upward trend in detections with increasing DBH/m^2, the relationship was not statistically significant ($p = 0.654$), and the model explained only 7.6% of the variance in ocelot activity ($R^2 = 0.076$), suggesting a weak and unreliable fit.

These results indicate that, within the context of this study, DBH per m^2 is not a meaningful predictor of ocelot presence, and its influence, if any, on habitat preference appears minimal compared to other structural variables such as canopy cover.

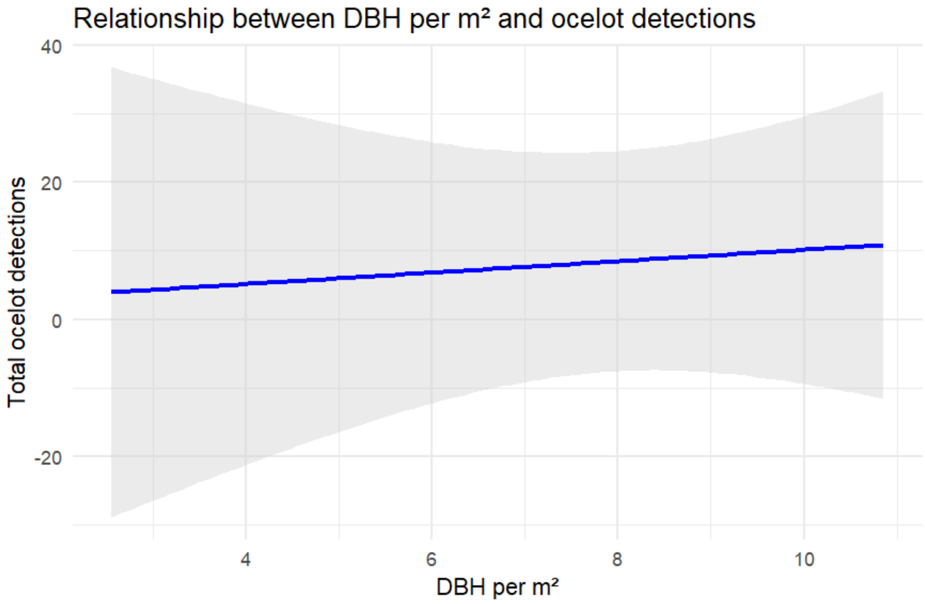


Figure 9: Correlation between tree DBH and ocelot detections

Forest type

As shown in Table 1, two camera traps were placed in planted forest, two in natural regrowth, and five in old-growth forest. This distribution allowed for a comparison of ocelot activity across different stages of forest development.

Figure 10 illustrates the total number of ocelot detections across these three habitat types. Natural regrowth areas recorded the highest number of detections, followed by old-growth forest and, lastly, planted forest. A one-way ANOVA revealed a trend toward significance (F(2, 113) = 2.42, p = 0.0939), suggesting that habitat type may influence ocelot presence, although the result did not reach the conventional threshold for statistical significance. The model explained approximately 4.1% of the variance in ocelot detections ($R^2 = 0.041$), indicating a weak overall effect.

These findings imply that forest type might play a role in shaping ocelot habitat use, with natural regrowth showing the most favourable conditions within this study. However, additional data would be needed to confirm the strength and consistency of this relationship.

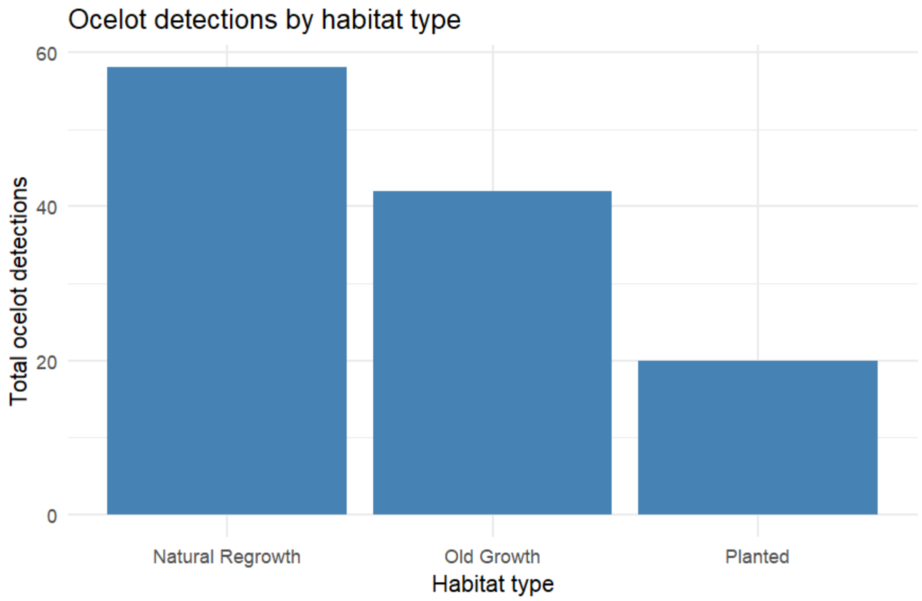


Figure 10: Ocelot detections by habitat type

Prey observation abundance

For the prey observation analyses, the species were divided into two groups: prey species that were observed more than 50 times in total across all cameras, and species that were observed fewer than 50 times.

Figure 11 shows the prey detections per trail for species with more than 50 observations. It illustrates that the collared peccary was by far the most frequently detected species, with a total of 1466 detections, mainly at the Jilguero Trail (1006 times), followed by the Gavilan Trail (441 times). The White-Nosed Coati was also frequently observed at the Jilguero Trail, with 176 detections.

Figure 12 presents the prey detections per trail for species with fewer than 50 observations. It shows that the Variegated Squirrel was recorded 21 times at the Jilguero Trail and not at any of the other trails. The Black Guan was also observed relatively often, with 17 detections at the Jilguero Trail and 15 at the Gavilan Trail.

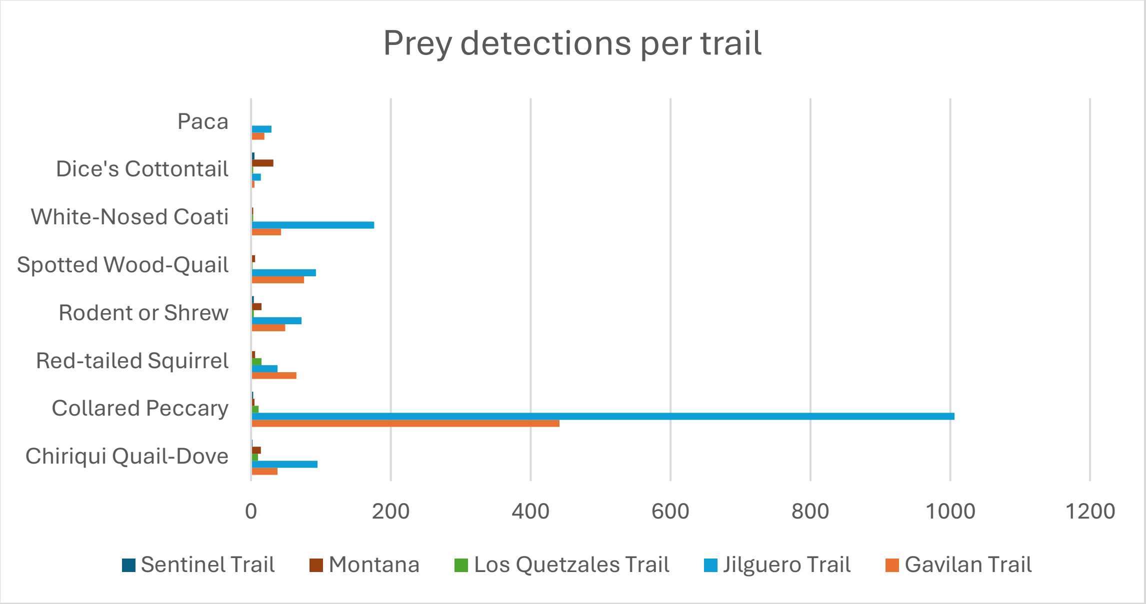


Figure 11: Prey detections per trail with more than 50 observations

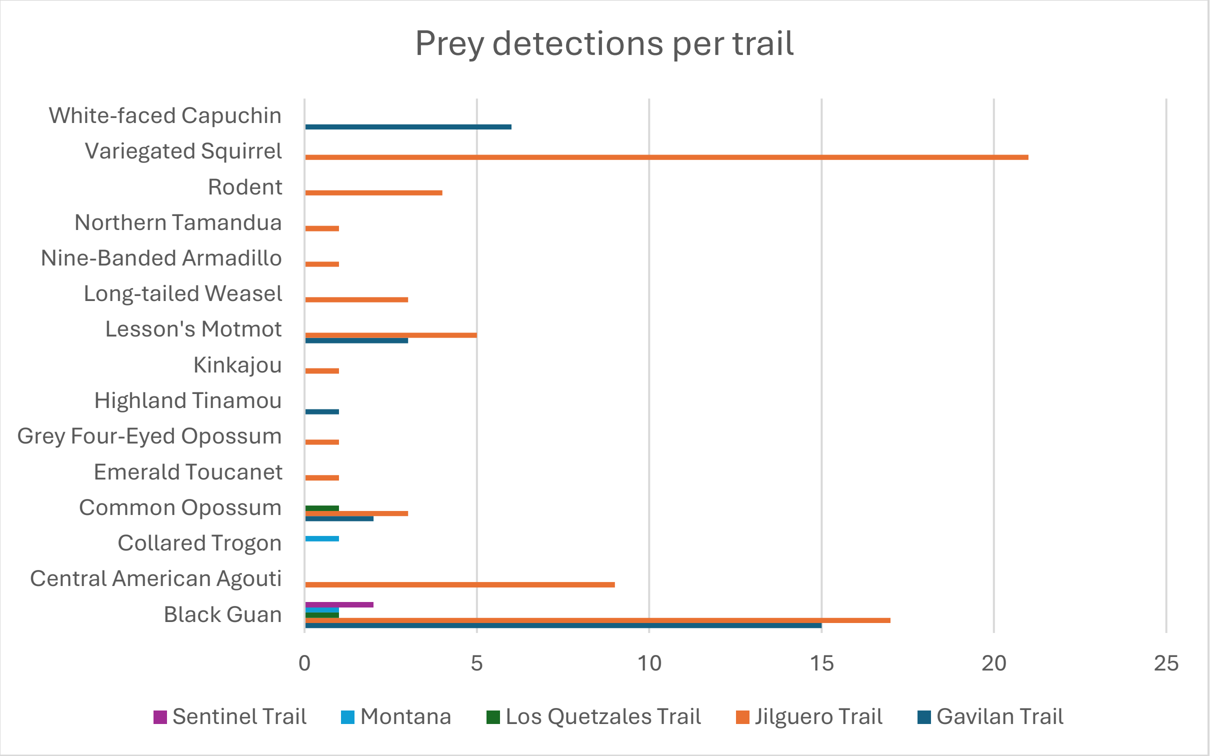


Figure 2: Prey detections per trail with less than 50 observations

To assess whether prey availability correlates with ocelot activity, a linear regression was performed using total prey detections per trail as the predictor. The model revealed a positive relationship, with a slope coefficient of 0.0104, indicating that ocelot detections tend to increase slightly with higher prey detections. However, this relationship was not statistically significant (p = 0.146), likely due to the limited sample size (n = 3 after removing missing data). The model explained a high proportion of variance (R^2 = 0.95), but these results should be interpreted with caution given the extremely small degrees of freedom (df = 1).

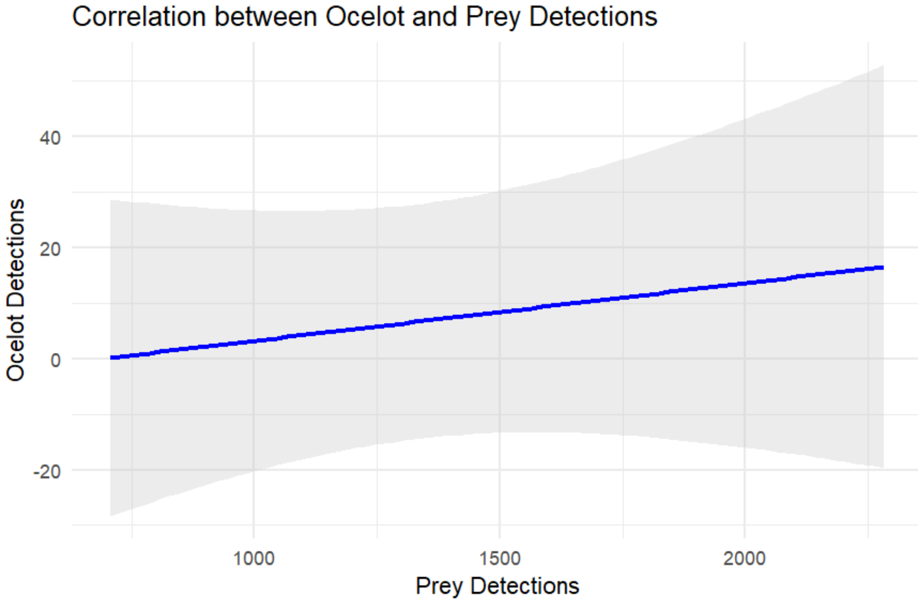


Figure 13: Correlation between ocelot and prey detections

Figure 13 visualizes this correlation, while Appendix D provides additional graphs showing prey species composition per camera location. These graphs illustrate both the variety and the frequency of prey detections per trail. Across all camera sites, the collared peccary (*Pecari tajacu*) stands out as the most frequently observed species, particularly at Jilguero (E1) and Gavilan (E2), where it was detected in notably high numbers. Other commonly observed species include the white-nosed coati, various rodent species, and the variegated squirrel, although their presence varied considerably between locations.

The graphs highlight the strong variation in prey presence per camera, which may reflect habitat differences, trail usage, or natural prey distribution. While some cameras recorded a broad range of prey species (e.g., G3 and E3), others had fewer species present, such as M4 and G2.

To statistically examine whether prey abundance varied across trail locations, a one-way ANOVA was conducted. The results showed a statistically significant effect of trail location on prey counts, F(4, 2265) = 4.11, p = 0.0026. This indicates that the number of prey detections is not evenly distributed across the trails and suggests that certain locations may support higher prey activity or abundance than others.

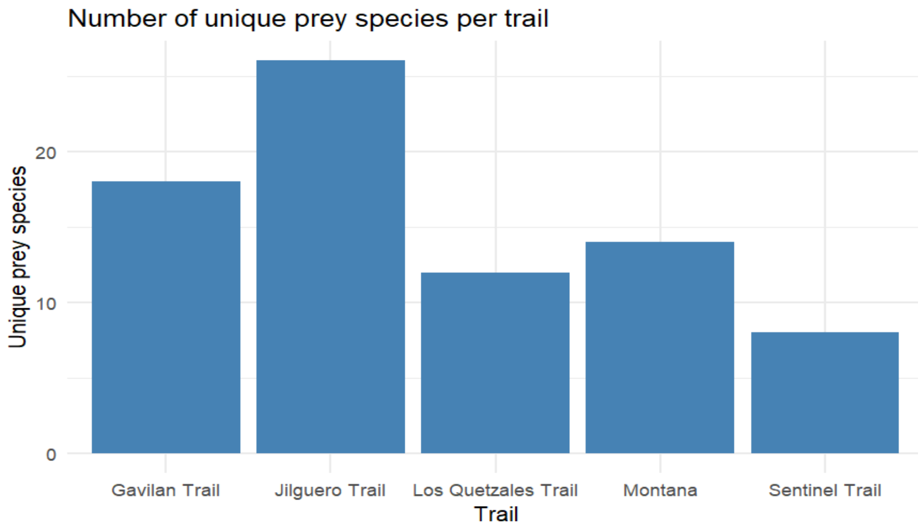


Figure 24: Number of unique prey species per trail

To examine whether the number of different prey species (species richness) varied between trails (see Figure 14), a one-way ANOVA was conducted. The analysis showed some variation in species richness across trails, with *Jilguero Trail* having the highest number of unique prey species (26) and *Sentinel Trail* the lowest (8). However, due to the small sample size (only five trails), the statistical test had limited power and results should be interpreted with caution. The ANOVA output showed a total sum of squares of 187.2 and a mean square of 46.8 for the effect of trail, but no p-value could be calculated without residual degrees of freedom. Therefore, the differences are reported descriptively rather than statistically confirmed.

To provide a more nuanced view of prey diversity, the Shannon Diversity Index was calculated per trail (Figure 15, Table 2). It looks at how many different species there are (*richness*) and how evenly the individuals are spread across those species (*evenness*) (Magurran, 2013). This index was calculated to assess prey diversity per trail, accounting for both species richness and evenness. Figure 11 shows that the Gavilan Trail (1.77) and Jilguero Trail (1.76) showed the highest diversity, suggesting a relatively even distribution among multiple prey species. In contrast, Sentinel Trail (0.52) and Los Quetzales Trail (0.53) had the lowest diversity, indicating that prey species were either fewer or dominated by one or two species.

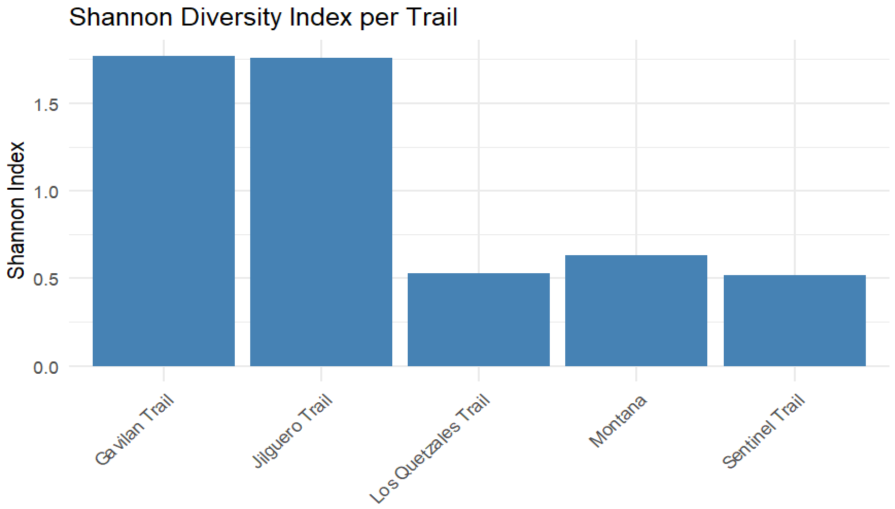


Figure 35: Shannon diversity index per trail

Table 2: Shannon diversity index numbers shown per trail

Trail	Shannon-index
Gavilan Trail	1.77
Jilguero Trail	1.76
Los Quetzales Trail	0.53
Montana	0.63

To explore whether specific prey species might be particularly influential in shaping ocelot presence, additional regressions were conducted for several focal species.

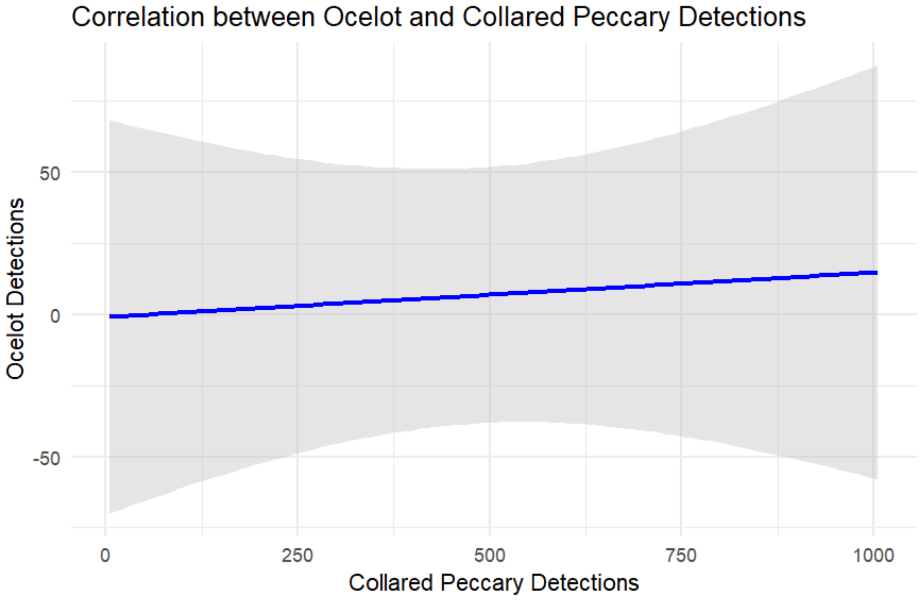


Figure 16: Correlation between the Ocelot and the Collared Peccary detections

In Figure 16, a linear regression was conducted to examine the relationship between the number of ocelot detections and collared peccary detections across different trails. The model showed a positive trend (Estimate = 0.0156), suggesting that more peccary detections might be associated with a higher number of ocelot detections. However, this relationship was not statistically significant (p = 0.322), and the confidence in the result is limited due to the very small sample size (only 3 data points). The model explained approximately 76.6% of the variation in ocelot detections (R^2 = 0.766), but this should be interpreted with caution given the degrees of freedom (df = 1). Further data would be needed to draw reliable conclusions.

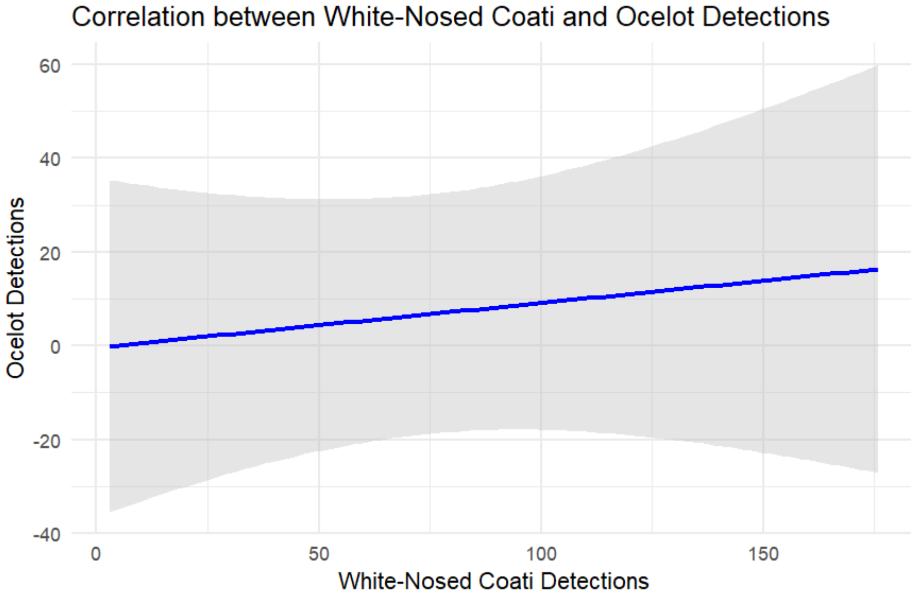


Figure 47: Correlation between the White-Nosed Coati and Ocelot detections

In Figure 17, a linear regression was conducted to examine the relationship between the number of White-Nosed Coati detections and Ocelot detections across trails. The model showed a positive relationship, with a regression coefficient of 0.095 (± 0.027). This suggests that a higher number of coati detections may be associated with more ocelot detections. However, the relationship was not statistically significant (p = 0.177), likely due to the small sample size (n = 3). The model explained approximately 92% of the variation in ocelot detections (R^2 = 0.924), but further data would be needed to confirm this trend.

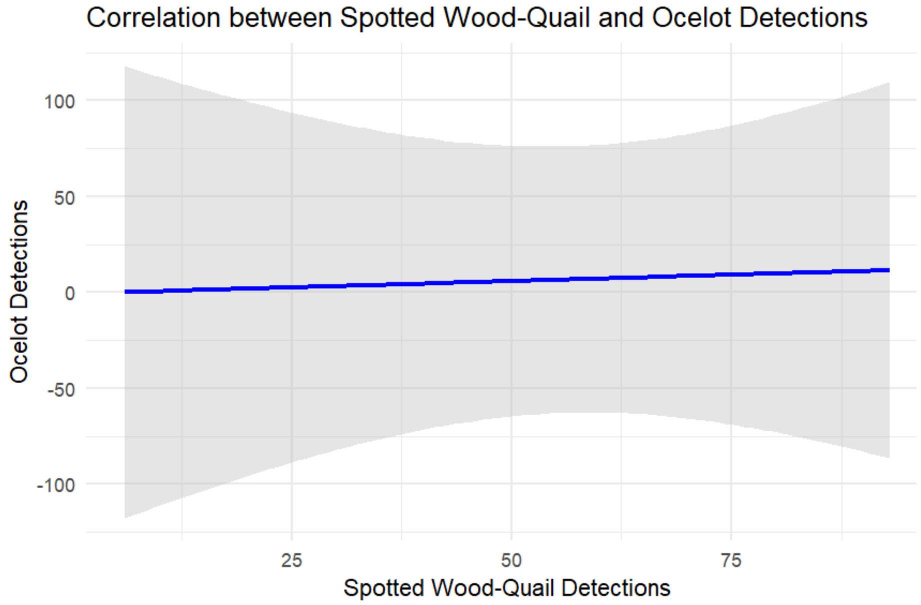


Figure 58: Correlation between the Spotted Wood-Quail and Ocelot detections

In Figure 18, a linear regression was performed to assess the relationship between *Spotted Wood-Quail* detections and *Ocelot* detections across trails. The model showed a weak and non-significant relationship (R^2 = 0.44, p = 0.538), with an intercept of -0.77 and a slope of 0.13. This suggests that variations in *Spotted Wood-Quail* detections do not significantly explain the variation in *Ocelot* detections in this dataset.

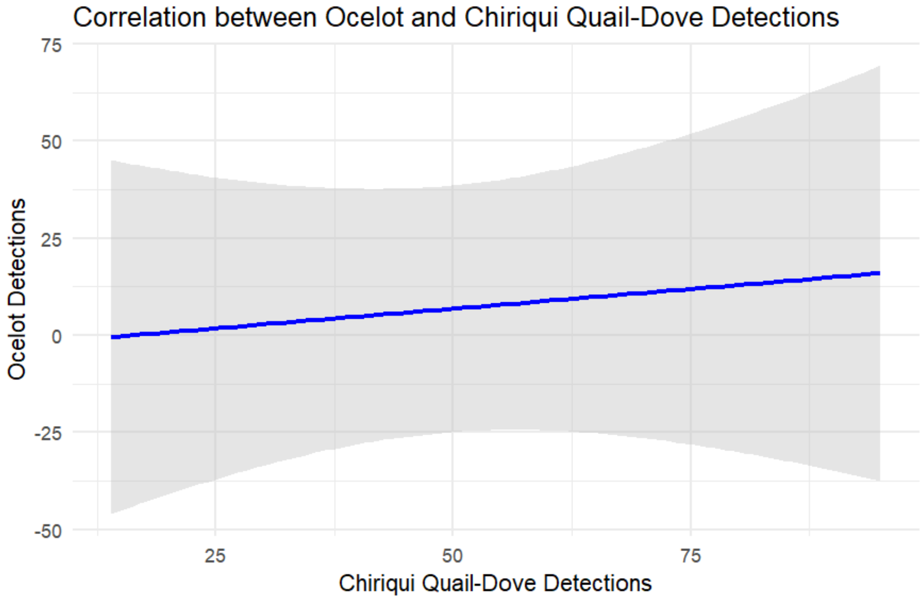


Figure 69: Correlation between Ocelot and Chiriqui Quail-Dove detections

In Figure 19, a linear regression analysis was conducted to examine the relationship between *Chiriqui Quail-Dove* detections and *ocelot* detections across different trail locations. The model showed a positive association, with a regression coefficient of 0.2025, indicating that each additional dove detection was associated with an increase of approximately 0.20 ocelot detections.

The model explained a substantial proportion of the variance ($R^2 = 0.88$), though the result was not statistically significant ($p = 0.222$). The small sample size (df = 1) likely limits the statistical power of this analysis. Nonetheless, the high R^2 suggests a potentially meaningful trend that could warrant further investigation with more data.

Human presence

Figure 20 presents the number of human detections per camera from January to May 2025. Cameras M3 and Q2 recorded the highest levels of human activity, each with nearly 500 detections. In contrast, G2 showed almost no human presence. Moderate levels of human detections were observed at cameras E2, G3, and E3, while other locations such as E1, S2, and M4 registered relatively low activity. These patterns may reflect differences in trail usage and accessibility, which could influence both human-wildlife interactions and the behaviour of species such as the ocelot.

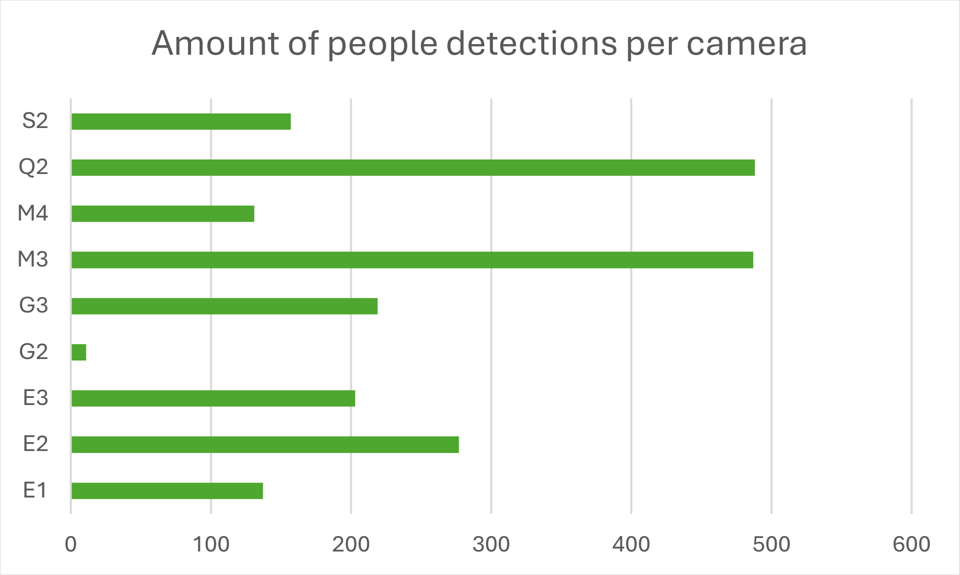


Figure 207: Human detections per trail

To explore whether human presence influences ocelot activity, a linear regression was conducted (Figure 21). The model showed a positive, but non-significant, association between people and ocelot detections ($\beta = 0.019$, $p = 0.332$). The intercept was -3.89, suggesting a negative baseline when no people were detected. The model explained approximately 31% of the variation in ocelot detections ($R^2 = 0.31$), though the adjusted R^2 (0.08) and p-value indicate that this relationship is not statistically significant. Overall, no strong evidence was found that human presence is a clear predictor of ocelot activity in this dataset.

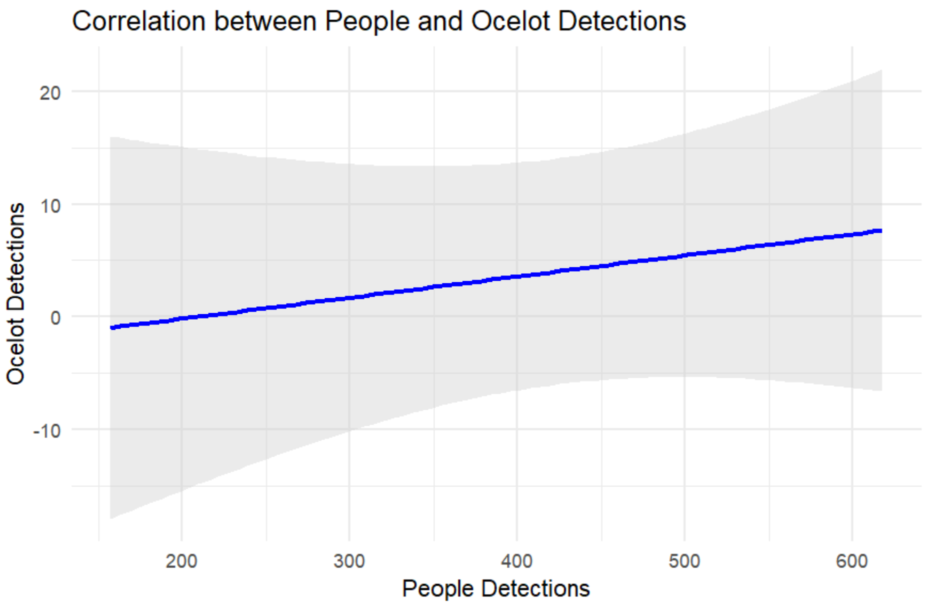


Figure 21: Correlation between people and Ocelot detections

Ocelot detections

Figure 22 shows the number of ocelot detections per year from 2016 to 2025. The data reveal an overall upward trend in detections over time, with some fluctuations. Ocelot detections increased steadily from 2016 to 2018, followed by a slight drop in 2019. From 2020 onward, there was a notable rise, peaking in 2021 with 21 detections. After a slight decline in 2022 and 2023, detections reached their highest point in 2024 (24), before dropping again in 2025. These fluctuations could reflect changes in monitoring effort, environmental conditions, or actual shifts in ocelot activity or abundance. Nevertheless, the general increase since 2016 may indicate a positive trend in ocelot presence within the monitored area.

Figure 23 displays the number of ocelot detections per trail between 2017 and 2025. The Jilguero Trail stands out with the highest number of detections (55), followed by the Gavilán Trail (20), Rio Trail (13), and Montana Trail (11). Other trails, such as Don Victor Trail, Jilguero Loop, Sentinel Trail, and Los Quetzales Trail, had relatively few detections, ranging from 2 to 10.

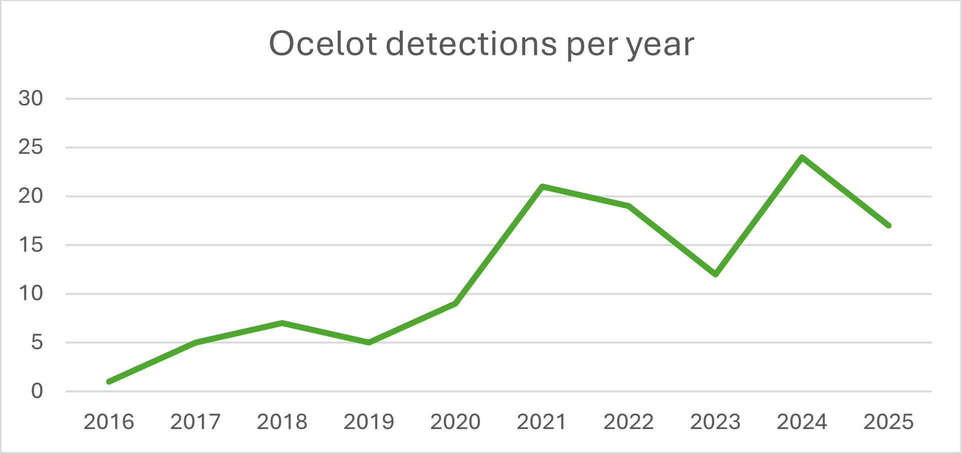


Figure 82: Ocelot detections from 2016 to 2025 so far

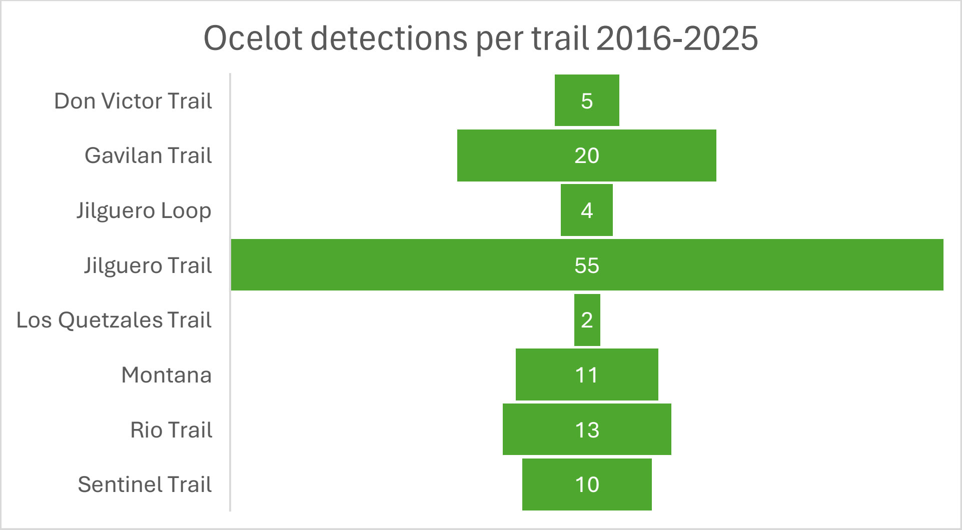


Figure 93: Ocelot detections per trail from 2016 to 2025 so far

Discussion

Dense canopy cover likely provides greater cover and concealment for ocelots, which is consistent with Lombardi et al. (2022), who reported higher ocelot encounter probabilities in areas with greater canopy cover. Lambert et al. (2005) also found greater prey abundance under closed canopies, suggesting that dense forest cover may indirectly increase habitat suitability for ocelots through increased prey availability.

Natural regrowth forest may offer favourable habitat conditions because of its structural complexity. In contrast, planted forests may have a more uniform vegetation structure, which could make them less suitable for ocelots.

Although elevation, average DBH per square meter and vegetation height are often considered important habitat characteristics in mountainous environments, these variables may be secondary to canopy structure within the Cloudbridge forest system. Habitat use by ocelots is generally influenced by a combination of environmental variables, with the relative importance of each factor varying between landscapes and ecosystems (Wang et al., 2019).Additionally, the relatively small elevation range across the study sites may not have been sufficient to detect a clear altitudinal preference. This interpretation is consistent with Lombardi et al. (2022), who highlighted vegetation structure and canopy cover as important components of suitable ocelot habitat.

Prey availability is known to be an important factor influencing the distribution of predators, including ocelots. Although no statistically significant relationship was found, the observed pattern suggests that prey abundance and diversity may still play a role in habitat selection. Ocelots are known to show opportunistic feeding habits and their behaviour is associated with the activity of their prey (Abreu et al., 2008). This may help explain why ocelots were more frequently detected in areas with greater prey diversity, as these areas could provide increased foraging opportunities.

Human activity within Cloudbridge mainly consisted of researchers and staff conducting monitoring activities rather than high-impact activities such as frequent tourism. Shared trail use could be a possible explanation, as ocelots are primarily active during the night (Abreu et al., 2008), whereas human activity mainly occurs during the day. This could allow ocelots to avoid direct encounters while still using these accessible routes. A recent study conducted in Peru found that felids were detected more frequently on human trails than on wildlife trails (Zwicker et al., 2025). These findings suggest that shared trail use may explain the observed pattern in Cloudbridge.

Limitations

Several limitations should be considered when interpreting the results of this study. First, imperfect detection likely influenced the findings. Camera traps do not capture every animal that is present, which may lead to biased estimates of both ocelot and prey activity. Additionally, human error during the processing and classification of videos or when entering data into the database, may have affected the accuracy of the dataset. Unfortunately, there was not enough time to perform a full data check of all videos and entries, which could have helped to identify and correct possible mistakes.

Additionally, elevation and forest type were closely associated across sites, for instance, old-growth forest was generally found at higher elevations. This overlap made it difficult to isolate the individual effects of elevation and forest type on ocelot detections and prey distribution. A further limitation was the unequal number of cameras placed in each forest type, with two cameras located in planted forest, two in natural regrowth, and five in old-growth forest. This unbalanced distribution complicates statistical comparisons between forest types, as greater sampling effort in old-growth areas may have inflated detection rates for both ocelots and prey.

Moreover, no analysis was conducted to assess whether specific prey species were more frequently detected in certain forest types, elevations, or canopy cover levels. As a result, the potential influence of habitat characteristics on prey distribution, and indirectly on ocelot activity, remains unknown. This limits the ability to determine whether ocelots preferentially use areas with higher prey abundance due to habitat structure or prey availability itself.

Technical issues also impacted data quality. Some cameras malfunctioned, recorded inconsistently or were replaced or repositioned during the study period, leading to uneven sampling effort across sites. As a result, variation in detection rates may reflect inconsistencies in camera operation rather than true ecological patterns. This raises the question of whether analyses should be conducted per trail or per camera, since trails differed in the number of cameras they contained, and each camera had a different operational period.

The camera on the Don Victor Trail (D1) was excluded due to technical failure and missing data, resulting in the use of only nine cameras instead of the originally planned ten. Furthermore, some ocelot detections were derived from the Cats Database, which includes a broader selection of cameras, some of which were older or positioned in slightly different locations than the nine used in the main analysis. It is also important to note that camera traps are not equally effective in detecting all prey species, particularly smaller or more elusive animals. The cameras were primarily set up to capture medium- to large-sized mammals, with a focus on felids, which may have introduced bias into the prey detection data.

Lastly, some trails, such as Jilguero and Gavilán, are not open to the public and are used exclusively for research purposes. While this distinction is important for assessing human disturbance, the limited and uneven data from the trails make it difficult to draw firm conclusions about the impact of human presence on ocelot behaviour.

Conclusion

This study showed that canopy cover is an important habitat characteristic associated with ocelot presence in Cloudbridge Nature Reserve, highlighting the importance of structurally complex forest habitats. Forest type also appeared to influence habitat use, with natural regrowth forests likely providing favourable conditions due to their vegetation structure. In contrast, elevation, DBH and vegetation height did not appear to have a clear influence on ocelot habitat use within the study area, possibly because their effects are secondary to other habitat characteristics. Although prey availability was not significantly associated with ocelot presence, the observed patterns suggest that prey diversity may contribute to habitat suitability by providing greater foraging opportunities. Similarly, human activity did not appear to strongly limit ocelot habitat use, likely because disturbance within the reserve is relatively low and mainly associated with research activities.

Overall, the findings suggest that ocelot habitat use in Cloudbridge is influenced by a combination of environmental characteristics rather than a single habitat variable. Maintaining structurally diverse forest habitats with high canopy cover and healthy prey communities is therefore likely to support suitable habitat for ocelots within the reserve. Further research with a larger sample size, longer monitoring period and a more balanced sampling design is needed to better understand the relative importance of these habitat variables.

Recommendations

Although this study provides valuable insights into ocelot habitat preferences in a restored tropical montane forest, several limitations, such as a small sample size, uneven camera distribution and limited prey analyses, highlight opportunities for improvement in future research. In addition, to further strengthen conservation outcomes and ecological understanding at Cloudbridge and similar reserves, a number of practical recommendations can be made based on the findings of this study.

First, it is recommended to promote natural regeneration alongside planted reforestation, as natural regrowth areas appeared to provide more favourable conditions for ocelots over time. These areas often support higher canopy cover and prey diversity, both of which were positively associated with ocelot presence. In reforestation efforts, it is important to select tree species carefully. While Cloudbridge already prioritizes native species, the findings of this study reinforce the importance of choosing species that are characteristic of the local cloud forest and capable of contributing to long-term canopy closure. Ensuring that planted forests develop structural complexity similar to that of old-growth systems will directly improve their suitability for wildlife, including carnivores such as the ocelot.

Second, the spatial and temporal scale of camera trapping should be expanded to improve statistical reliability. Increasing the number of cameras, particularly in planted forest and early-stage regrowth areas, and maintaining them across different seasons would enhance data reliability and better capture seasonal variation in ocelot behaviour and prey availability. In addition, incorporating finer-scale habitat variables, such as understory density and proximity to water sources, would allow for a more detailed understanding of habitat selection. Long-term monitoring could also reveal how changes in forest structure over time influence ocelot space use.

A fourth recommendation is to implement standardized prey monitoring methods, which would strengthen the interpretation of predator–prey relationships. This may include longer camera deployments, baited stations, or alternative prey detection techniques to complement the existing camera trap data.

Lastly, it is advised to maintain low-impact human use and continue monitoring its effects. Although this study found no strong evidence that current human activity negatively affects ocelot presence, ongoing surveillance is necessary to ensure that research, education and tourism remain compatible with wildlife conservation.

By linking ocelot presence to specific forest characteristics, this study supports Cloudbridge’s broader mission of restoring degraded land into biologically rich cloud forest. The findings demonstrate that such efforts can benefit not only plant diversity and ecosystem structure but also support the recovery of sensitive carnivore species in regenerating habitats.

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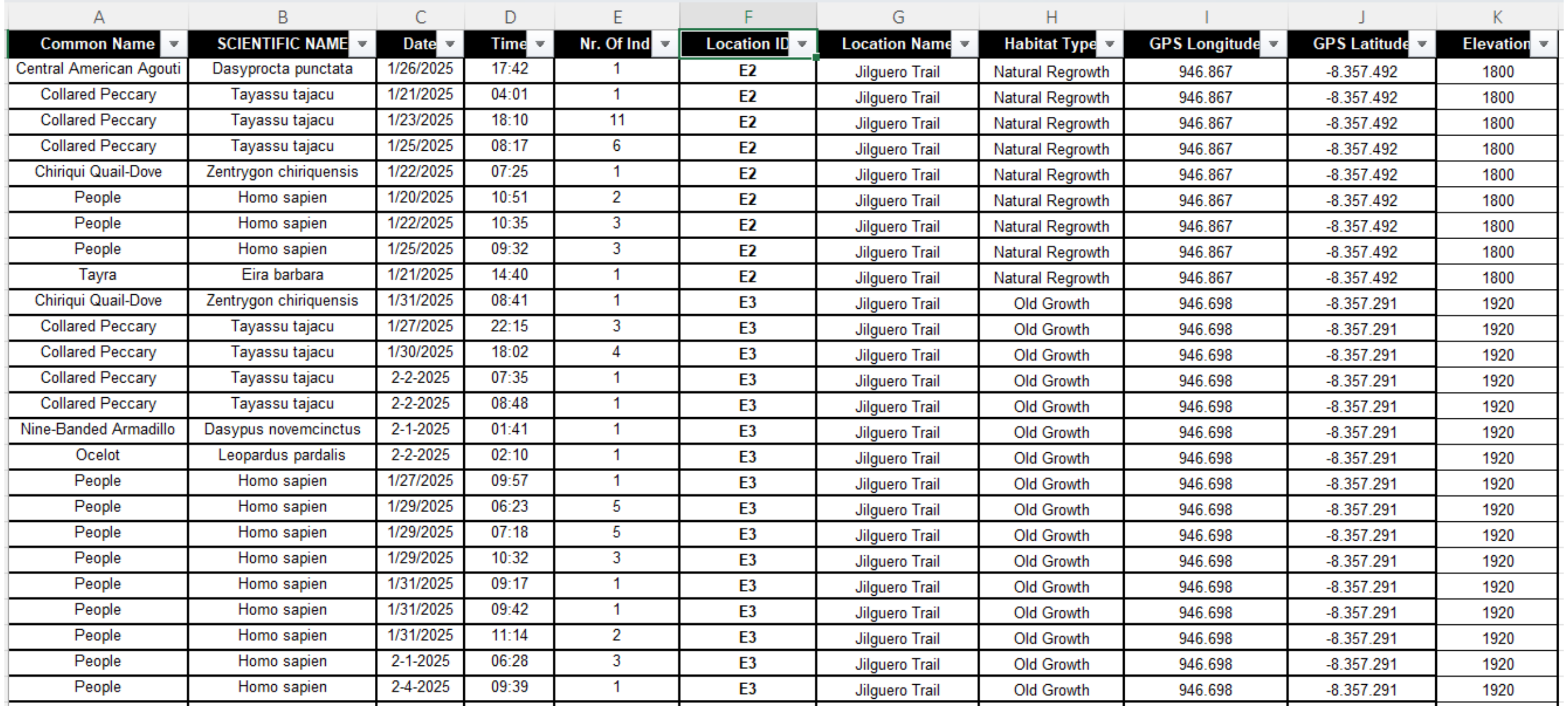
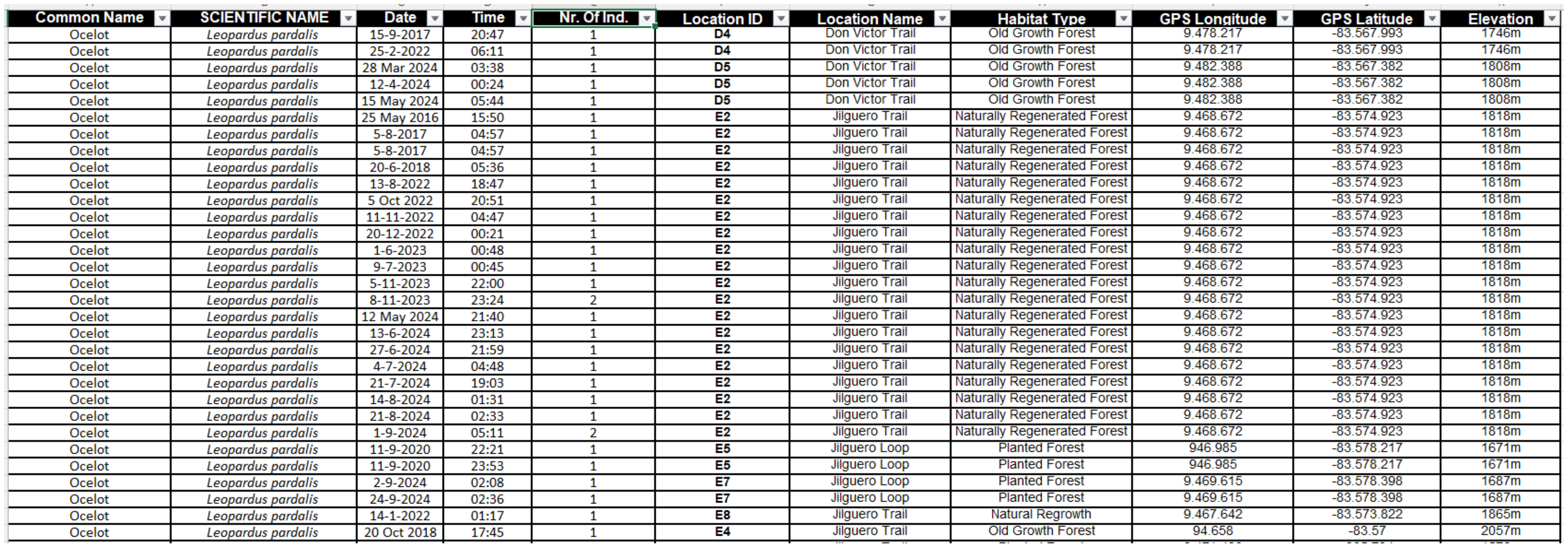
Appendix

A. The main database



Common Name	SCIENTIFIC NAME	Date	Time	Nr. Of Ind	Location ID	Location Name	Habitat Type	GPS Longitude	GPS Latitude	Elevation
Central American Agouti	Dasyprocta punctata	1/26/2025	17:42	1	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
Collared Peccary	Tayassu tajacu	1/21/2025	04:01	1	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
Collared Peccary	Tayassu tajacu	1/23/2025	18:10	11	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
Collared Peccary	Tayassu tajacu	1/25/2025	08:17	6	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
Chiriqui Quail-Dove	Zentrygon chiriquensis	1/22/2025	07:25	1	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
People	Homo sapien	1/20/2025	10:51	2	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
People	Homo sapien	1/22/2025	10:35	3	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
People	Homo sapien	1/25/2025	09:32	3	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
Tayra	Eira barbara	1/21/2025	14:40	1	E2	Jilguero Trail	Natural Regrowth	946.867	-8.357.492	1800
Chiriqui Quail-Dove	Zentrygon chiriquensis	1/31/2025	08:41	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
Collared Peccary	Tayassu tajacu	1/27/2025	22:15	3	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
Collared Peccary	Tayassu tajacu	1/30/2025	18:02	4	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
Collared Peccary	Tayassu tajacu	2-2-2025	07:35	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
Collared Peccary	Tayassu tajacu	2-2-2025	08:48	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
Nine-Banded Armadillo	Dasypus novemcinctus	2-1-2025	01:41	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
Ocelot	Leopardus pardalis	2-2-2025	02:10	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	1/27/2025	09:57	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	1/29/2025	06:23	5	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	1/29/2025	07:18	5	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	1/29/2025	10:32	3	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	1/31/2025	09:17	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	1/31/2025	09:42	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	1/31/2025	11:14	2	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	2-1-2025	06:28	3	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920
People	Homo sapien	2-4-2025	09:39	1	E3	Jilguero Trail	Old Growth	946.698	-8.357.291	1920

B. Cat database



Common Name	SCIENTIFIC NAME	Date	Time	Nr. Of Ind.	Location ID	Location Name	Habitat Type	GPS Longitude	GPS Latitude	Elevation
Ocelot	*Leopardus pardalis*	15-9-2017	20:47	1	**D4**	Don Victor Trail	Old Growth Forest	9.478.217	-83.567.993	1746m
Ocelot	*Leopardus pardalis*	25-2-2022	06:11	1	**D4**	Don Victor Trail	Old Growth Forest	9.478.217	-83.567.993	1746m
Ocelot	*Leopardus pardalis*	28 Mar 2024	03:38	1	**D5**	Don Victor Trail	Old Growth Forest	9.482.388	-83.567.382	1808m
Ocelot	*Leopardus pardalis*	12-4-2024	00:24	1	**D5**	Don Victor Trail	Old Growth Forest	9.482.388	-83.567.382	1808m
Ocelot	*Leopardus pardalis*	15 May 2024	05:44	1	**D5**	Don Victor Trail	Old Growth Forest	9.482.388	-83.567.382	1808m
Ocelot	*Leopardus pardalis*	25 May 2016	15:50	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	5-8-2017	04:57	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	5-8-2017	04:57	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	20-6-2018	05:36	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	13-8-2022	18:47	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	5 Oct 2022	20:51	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	11-11-2022	04:47	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	20-12-2022	00:21	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	1-6-2023	00:48	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	9-7-2023	00:45	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	5-11-2023	22:00	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	8-11-2023	23:24	2	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	12 May 2024	21:40	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	13-6-2024	23:13	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	27-6-2024	21:59	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	4-7-2024	04:48	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	21-7-2024	19:03	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	14-8-2024	01:31	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	21-8-2024	02:33	1	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	1-9-2024	05:11	2	**E2**	Jilguero Trail	Naturally Regenerated Forest	9.468.672	-83.574.923	1818m
Ocelot	*Leopardus pardalis*	11-9-2020	22:21	1	**E5**	Jilguero Loop	Planted Forest	946.985	-83.578.217	1671m
Ocelot	*Leopardus pardalis*	11-9-2020	23:53	1	**E5**	Jilguero Loop	Planted Forest	946.985	-83.578.217	1671m
Ocelot	*Leopardus pardalis*	2-9-2024	02:08	1	**E7**	Jilguero Loop	Planted Forest	9.469.615	-83.578.398	1687m
Ocelot	*Leopardus pardalis*	24-9-2024	02:36	1	**E7**	Jilguero Loop	Planted Forest	9.469.615	-83.578.398	1687m
Ocelot	*Leopardus pardalis*	14-1-2022	01:17	1	**E8**	Jilguero Trail	Natural Regrowth	9.467.642	-83.573.822	1865m
Ocelot	*Leopardus pardalis*	20 Oct 2018	17:45	1	**E4**	Jilguero Trail	Old Growth Forest	94.658	-83.57	2057m

C. DBH measurements per camera trap location

E1	E2	E3	G2	G3	Q2	M3	M4	S2
3	21,8	11,1	5,9	50,4	1,1	15,4	7,3	11,8
1,5	11,8	18,5	2,8	9,6	15,9	7,2	9,1	15
1,4	5,2	5,3	2,2	14,5	5	4,3	3,4	2,1
1,1	1,7	17,3	4,3	14,7	7,1	7,5	6,9	1,9
0,8	1,3	3,4	7,9	3,3	1	30,1	5,6	2,3
5	1,3	2,4	4,3	9,1	1,2	11,3	4,8	6,8
3,7	4	4,9	7,3	13	1,3	14,8	11	1,3
2,1	3,5	2,3	3,3	2,8	2,8	4,9	9,8	2,6
4	12,7	4,1	5,6	3,4	5	28,1	6,7	1,2
7,2	17,1	3,2	5,9	15,6	1	29,4	6	1,8
2,8	5,1	14,6	2,5	14,2	7,4	6,2	9,1	4,1
0,6	17,4	2,7	14,2	11,1	7,2	25	4	24,2
1	35,8	37	8,5	3,1	11,6	25	7,2	2,1
3,9	4,2	5,8	6,4	52,4	10,6	4,9	8,1	22,5
2	17,6	13,6	6,9	10,4	5,9	14,5	12,5	1,8
8,8	6,8	4,4	6,3	7,3	5,7	19	20,6	10,9
7,6	40,8	4,5	4,9	6,7	0,9	56,4	11,6	12,2
2,9	6,2	12,7	7,4	13,9	7,1	15,1	10,5	3,4
0,8	4	4,5	6,4	19,1	2,3	10,8	23,4	18,4
28,5	1,5	3,8	2	2,3	1	11,1	2,1	2,2
2,6	1,9	6,2	2,9	9,3	0,9	10,4	2,4	1,8
2,8	4,2	3,5	6,6	2,4	2,2	4,2	12,6	3,5
6	15	2,7	8,3	12,1	24,5	4,7	4,1	1,8
2,9	3,2	12,6	8,1	30,6	21,2	13,4	3,5	1,4
1,7	1,7	13,2	10,6	10,6	34,9	8,4	5,3	7,7
1,1	1,6	2,5	9	14,1	1,5	5,8	4,5	12,6
2,1	2,4	6,5	7,4	6,7	1	9,8	5,3	7,7
1,7	8	13,1	5,9	19,6	1,9	20	2,1	4,8
2,7	10,8	2,5	4,2	57	6	10,9	2,3	11,6
2,3	8	12,1	4,1	13,4	1,1	4,9	2,3	27,1
12,1	6,2	29,8	3,6	21,3	3,5	2,9	27,2	0,9
4,5	3	7,5	1,9	8,1	1,3	69	3,3	13,2
6,7	12	3,5	3,2	10,9	7	4,8	12	1,1
4,4	18,5	34,4	5,9	7,8	2	3,4	4,6	0,7
33,2	8,9	2,6	7	11,6	3,5	7	22,7	4,7
1,5	27,8	11,9	1,5	20,6	2	14,9	11,3	0,7
23,9	2,3	9,2	31,1	1,8	15	14	8	0,9
5,9	5	2,4	3,1	30,4	10,7	2,9	13,3	1,6
3,5	2,5	5,8	3,1	8,9	17,1	10	16,7	1,2
4,9	1,3	2,9	2,9	13,5	6	6,2	2,5	0,8
2	9	5,9	3,6	3,9	4,3	7,6	1,3	2,2
13,5	16,6	2,6	4	17,1	3,2	2,1	7,9	6,5
1,2	22,8	4,4	2,9	5,2	1,7	7,3	6	1,3
1	2	2,3	2,6	8,2	0,8	2,6	22,6	1,1
4,1	5,1	11,3	1,4	40,5	8,1	7,5	14,2	12,9
2,4	46,3	2,6	7,1	13,1	7	12,3	11,7	4,9
2,3	2,2	7,1	4,2	3,3	4,5	5,1	17,2	2,4
2	6,7	3	3,8		2,3	11,2	7,8	13,5
2,6	2,8	8,6	5,9		2,1	1,6	12,8	6,2
3,2	5,9	2	6,1		1,4	6,2	1,1	12,8
5,7	2,9	11,4	2,4		15,5	5,7	4,3	4,4

	5,3	7,1	6,4		5,8	2,2	4,3	13,6
	1,5	14,6	1,7		4	8		72
	9,5	3,2	2,2		1,8	2,4		
	14,5	2,8	3,6		23,8	20,1		
	7,9	17,2	4,8		3,7	25		
	20,3	3	2,6		6	6,5		
	4	11	4,4		4,7	4,2		
	1,9	3,6	6,4		4,4	7		
	6	6,3	2,7		5,7	15,8		
	15	5,4	2,1		5	13,6		
	7,5	6,7	22,8		3,7	12,7		
	4,6	41,6	1,9		2,4	4,8		
	1,9	10,3	2,1		2,7	9,9		
	12	11,1	1,9		2,8	4,9		
	10,7	5,2	11,4		4,2	16,1		
	13	2,4			3,7	40,5		
	26,8	2,6			1,5	8,2		
	22,4	7,5			14,3	5		
	12,8	3,1			4,9	5,4		
	23,4	4,4			5,1	17,5		
	4,7	5,1			1	8		
	23	6,6			0,8	23,3		
	40,5	15,8			17,4	99,1		
	11	9,7			1,8	19,8		
	6,6	5,7			11,7	2		
	9,5	11,8			14,4	2,5		
	21,6	3,5			3	0,8		
	35	31,7			5,7	3,7		
	14	5,4			4,6	2,5		
	7,7	5,9			2	2		
	2,6	6,8			4,3	31		
	5,8	12,3			3,3	23,5		
	4,5	3,1			19,3			
	5,8	4,7			5,4			
	5,3	8,5			5,7			
	3,8	5,6			2,8			
	30,5	17,4			2,7			
	2,2	7,5			5			
	3	84,6			0,7			
	2,5	2			1,3			
	1,5	4			16			
	31,4	3			12,9			
	12,7	7,3			3			
	11,6	15,3			1			
		5,9			1,2			
		4,4			2			

		2,8			5,1			
		12,9			0,7			
		5,2			2,2			
		2,9			18,7			
		2,3			1,5			
		9,8			1,4			
		3,7			1,6			
		2,1			3,2			
		10,9			9,6			
					6,1			
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					12,7			

D. Prey species per camera location

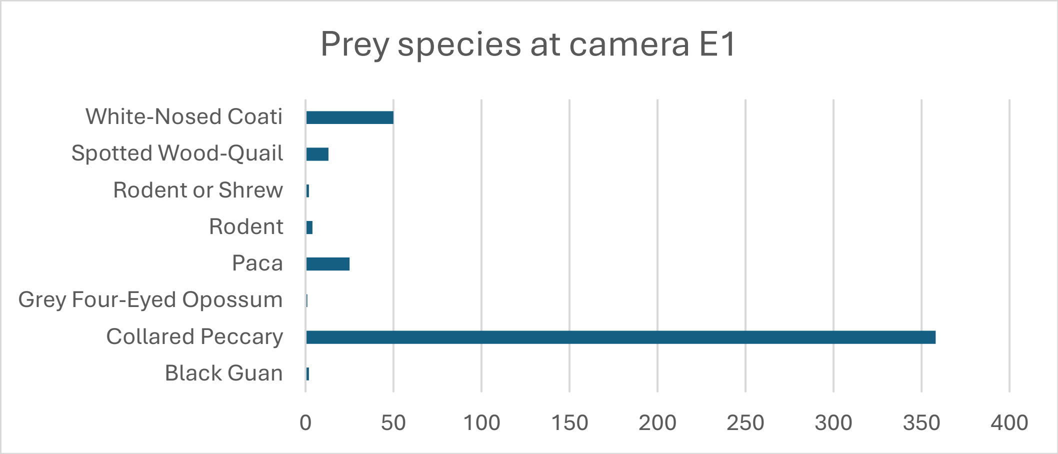

Figure 10: Prey species observed at camera E1

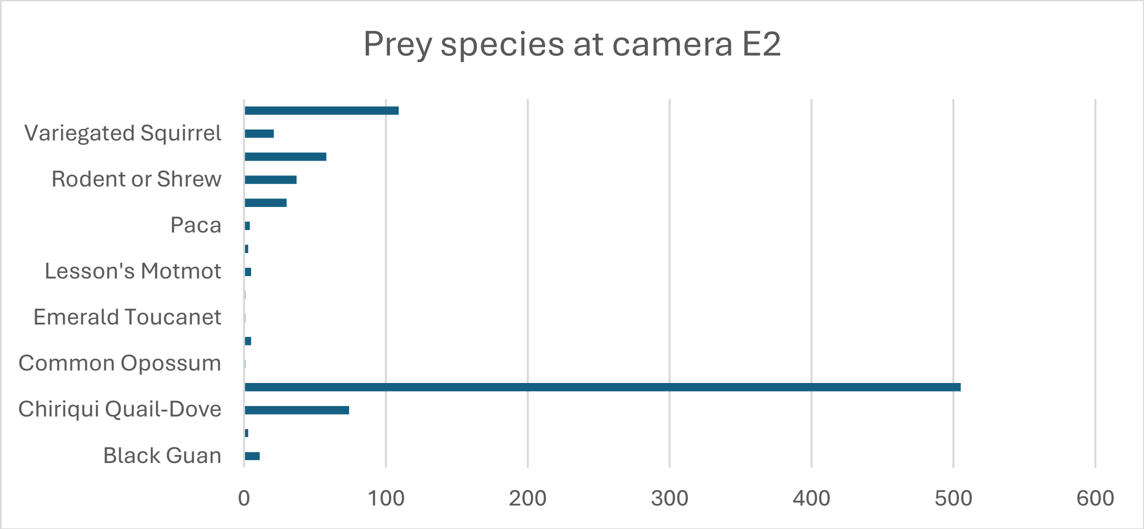

Figure 11: Prey species observed at camera E2

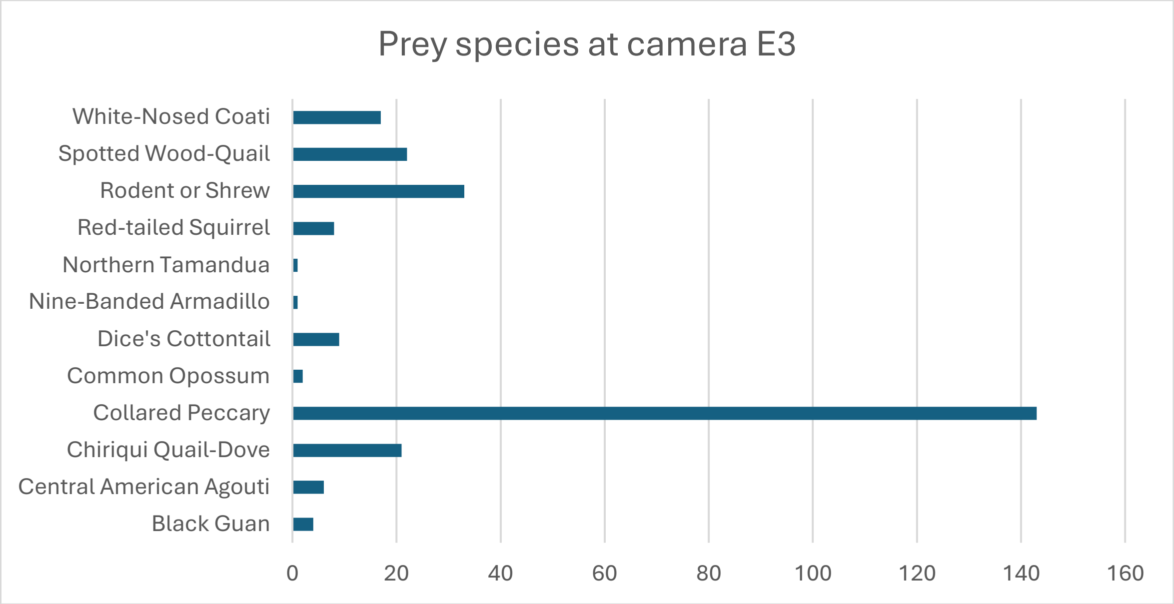

Figure 12: Prey species observed at camera E3

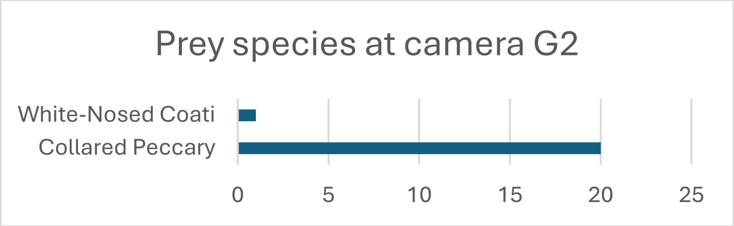

Figure 26: Prey species observed at camera G2

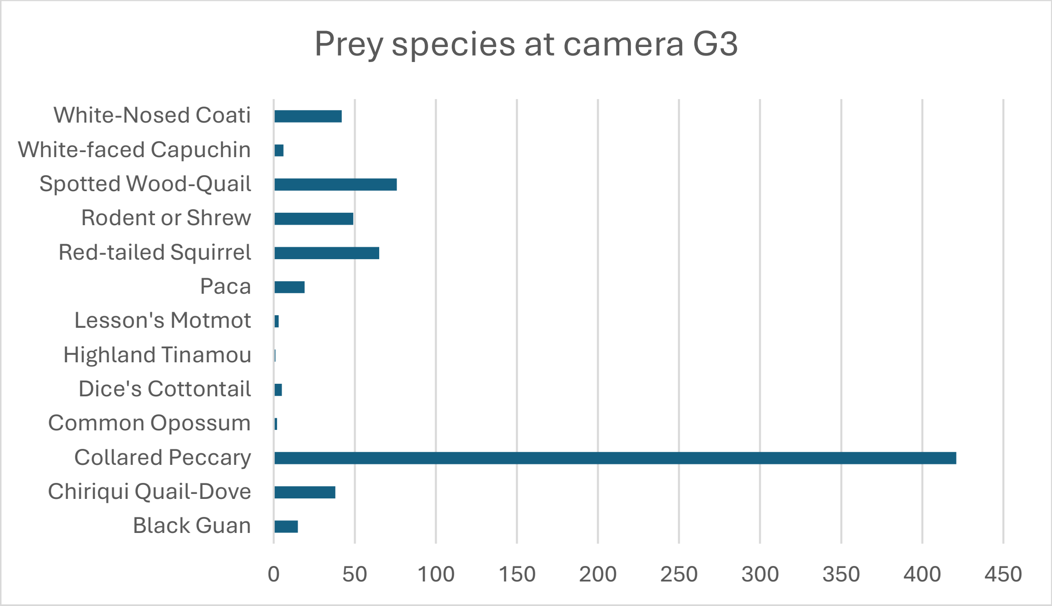

Figure 13: Prey species observed at camera G3

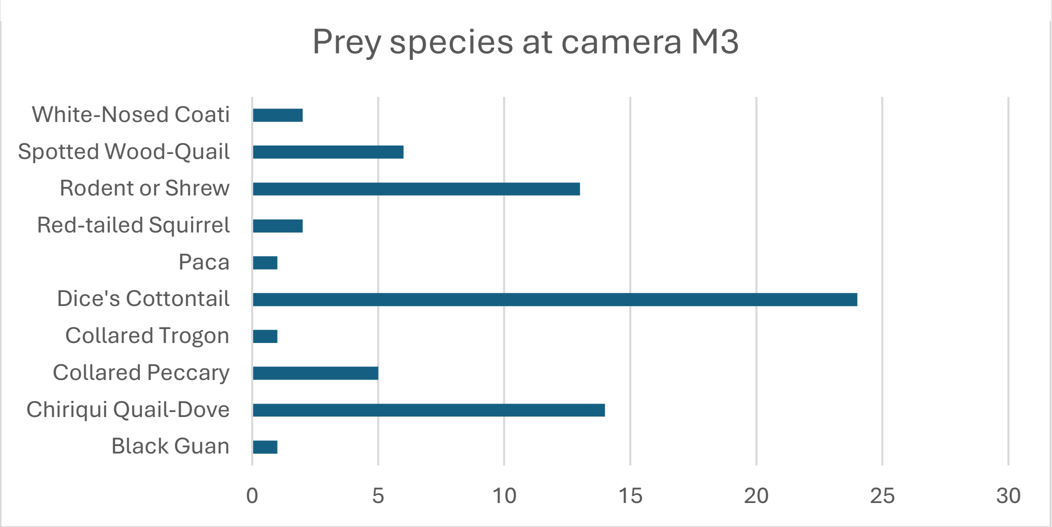

Figure 28: Prey species observed at camera M3

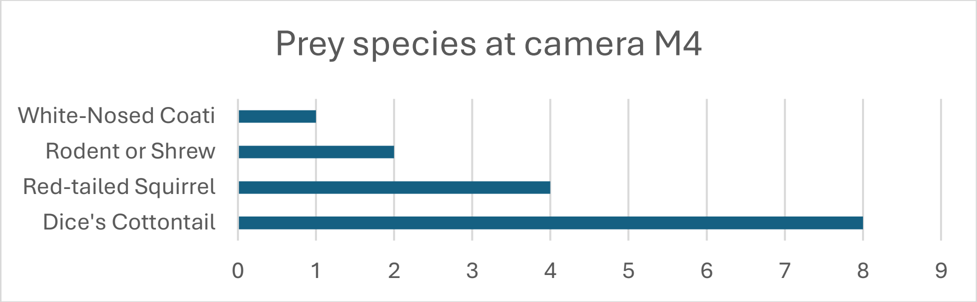

Figure 14: Prey species observed at camera M4

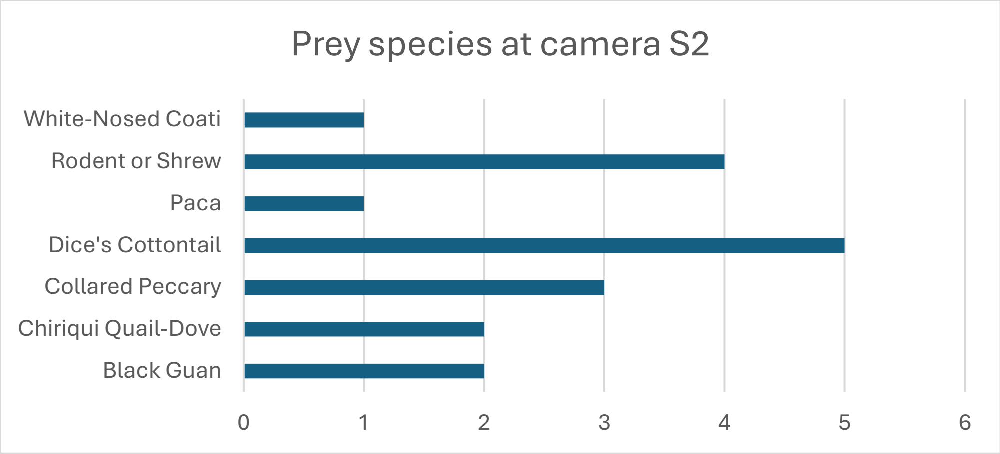

Figure 15: Prey species observed at camera S2

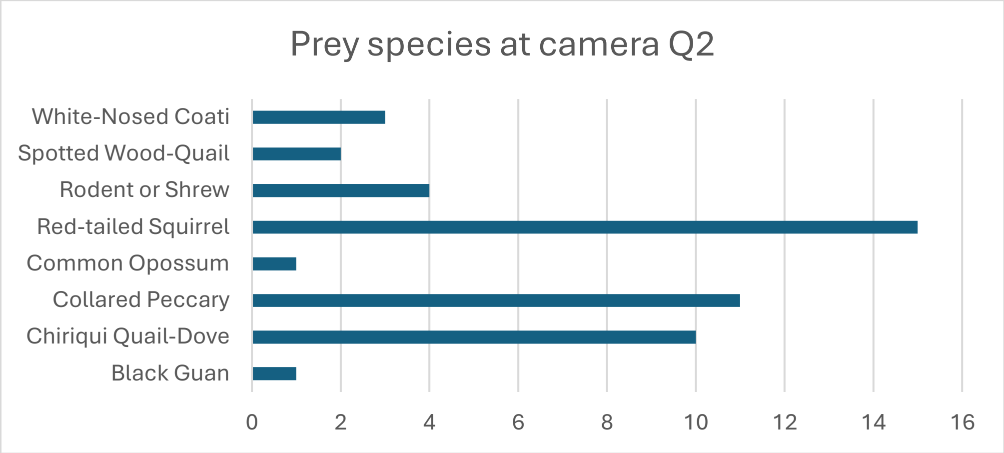

Figure 16: Prey species observed at camera Q2