

Environmental Factors & Well Being in Captive Pottos (*Perodicticus potto*) at the Cincinnati Zoo



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INTRODUCTION

The potto (*Perodicticus potto*) is a nocturnal non-human primate (Suborder: Strepsirhini) that lives in tropical forests in the Congo basin and ranges east to countries of the Rift Valley. They are difficult to study in the wild and are not abundant in captive collections. The Cincinnati Zoo has a total of 8 individuals in their primate collection (see Figure 1). This project sought to examine two Cincinnati zoo exhibits that housed a total of 4 subjects. The goal was to characterize the environmental complexity of the two exhibits and produce activity budgets for the 4 subjects.



Figure 1. Nigel sniffs vegetation.

Behavior	Description
Eat	Ingest food directly or by bringing food to mouth with hand
Drink	Place mouth directly on container or place hand in container and then bring hand to mouth
Stand	Remain stationary in a quadrupedal stance with head upright
Sit	Remain stationary with hind quarters on substrate and head erect
Hang	Hanging with one or two limbs
Locomote	Move on four limbs in any horizontal direction
Rest	Immobile posture with head lowered and tucked towards chest
Climb	Movement in any direction on any vertical surface
Rear	Stand upright on two hind legs
Explore Object	Locomote around substrate or on other supplemental material, sniffing, and inspecting
Sniff	Bring nose to object, or substrate, or conspecific
Self-Groom	Use toothcomb or grooming claw on individual's own fur
Rub Arms	Use one or both forelimbs to rub against individual's face or snout
Urine Mark	Lower hind quarters to ground and urinate while stationary or moving
Self-Lick	Use tongue to deposit saliva onto forearms
Social Behaviors	
Follow	Move behind other individual while maintaining visual focus on it
Genital Inspection	Put nose near genitalia of other individual; may sniff or lick
Contact	Individual touches other individual's body, but continues locomoting
Displacement	Individual approaches another individual and second individual departs area
Social Explore	Sniff body of another individual other than genitalia

Table 1. Ethogram (after Luhrs, 2015)

METHODS

Behavioral data were collected using an ethogram based largely on the research of Luhrs, (2015) who studied wild pottos in Uganda (see Table 1). A focal animal sampling rule with a 30 second instantaneous recording rule was used to locate the subject in an enclosure and record a behavior pattern. A total of 17 hours of data were collected – 7 hours at Night Hunters and 10 hours at Jungle Trails East. Due to availability of subjects and visibility of subjects within a given enclosure, subjects had differing amounts of total scans. Per cent of total scans per subject was used to create individual activity budgets (Patterson, 2001). Changes to the exhibit contents (e.g., a new food bowl, or change of location of a food bowl) were also noted.

REFERENCES

Luhrs, A. 2015. Occupancy modeling and positional behavior of nocturnal primate populations in Kibale National Park, Uganda. MSc Thesis, Oxford Brooks University, 2015; Patterson, J.D. 2001. Primate Behavior, 2nd ed. Waveland Press.

ACKNOWLEDGMENTS

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RESULTS

The two exhibits, Night Hunters and Jungle Trails, differed in shape and dimensions – wedge-shape and rectangular, respectively, with Jungle Trails being approximately twice as large (see Figure 2a/b). For data analyses ethogram categories were collapsed into: Social Explore, Stationary, Mobile, Consumption, Nonsocial Other, Social Other, and Out of Sight.

The four subjects showed individual variation (see Figure 3), however, it is clear that the pottos housed in Night Hunters were more active. The behavioral pattern that predominates for all subjects in both enclosures is “Rest”, subsumed in “Stationary” (Fig. 3); on average in Jungle Trails the pottos rested 69.5%; in Night Hunters they rested 27.5%.

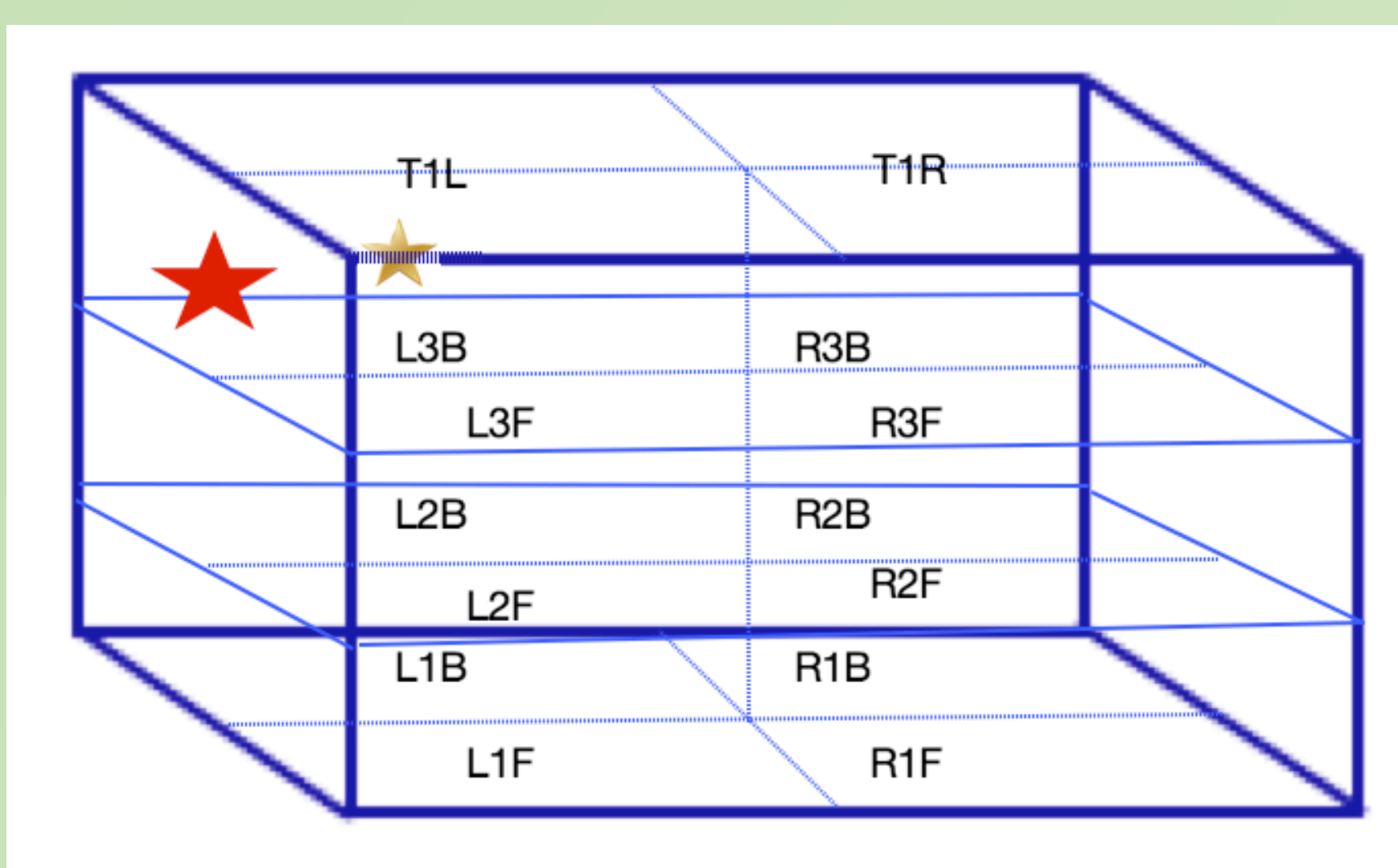


Figure 2a. Jungle Trails exhibit - spatial divisions. Red star indicates Nigel's favorite location which was a Y-shaped branch. Gold star indicates Kara's favorite location on a red lamp.

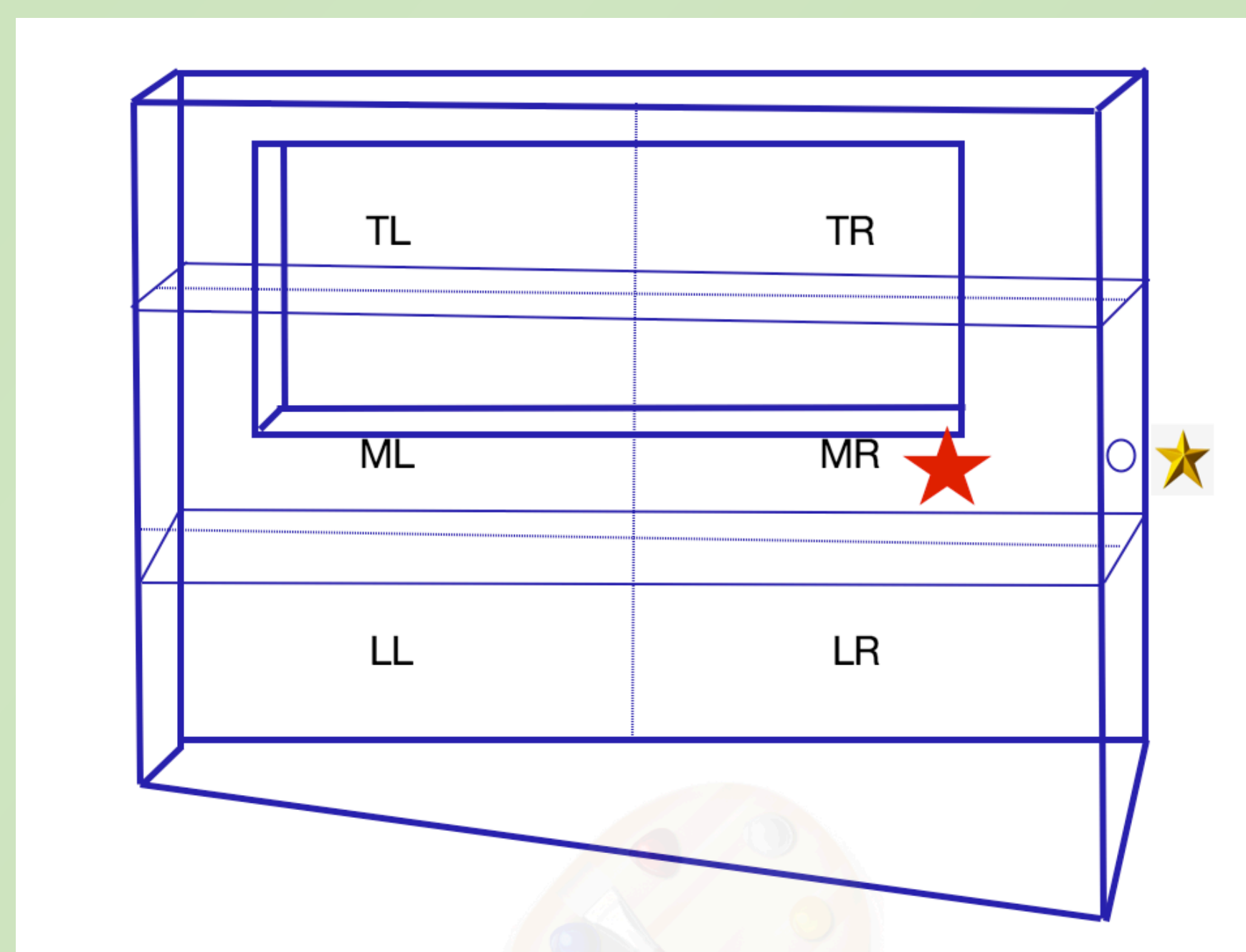


Figure 2b : Night Hunters – spatial divisions. Red star indicates Gabe's favorite location, a series of aligned twigs. Gold star indicates Jazira's favorite location, a PVC tube that connected to an off-exhibit cage.



Figure 4: Gabe exhibiting locomotion on substrates in Night Hunters

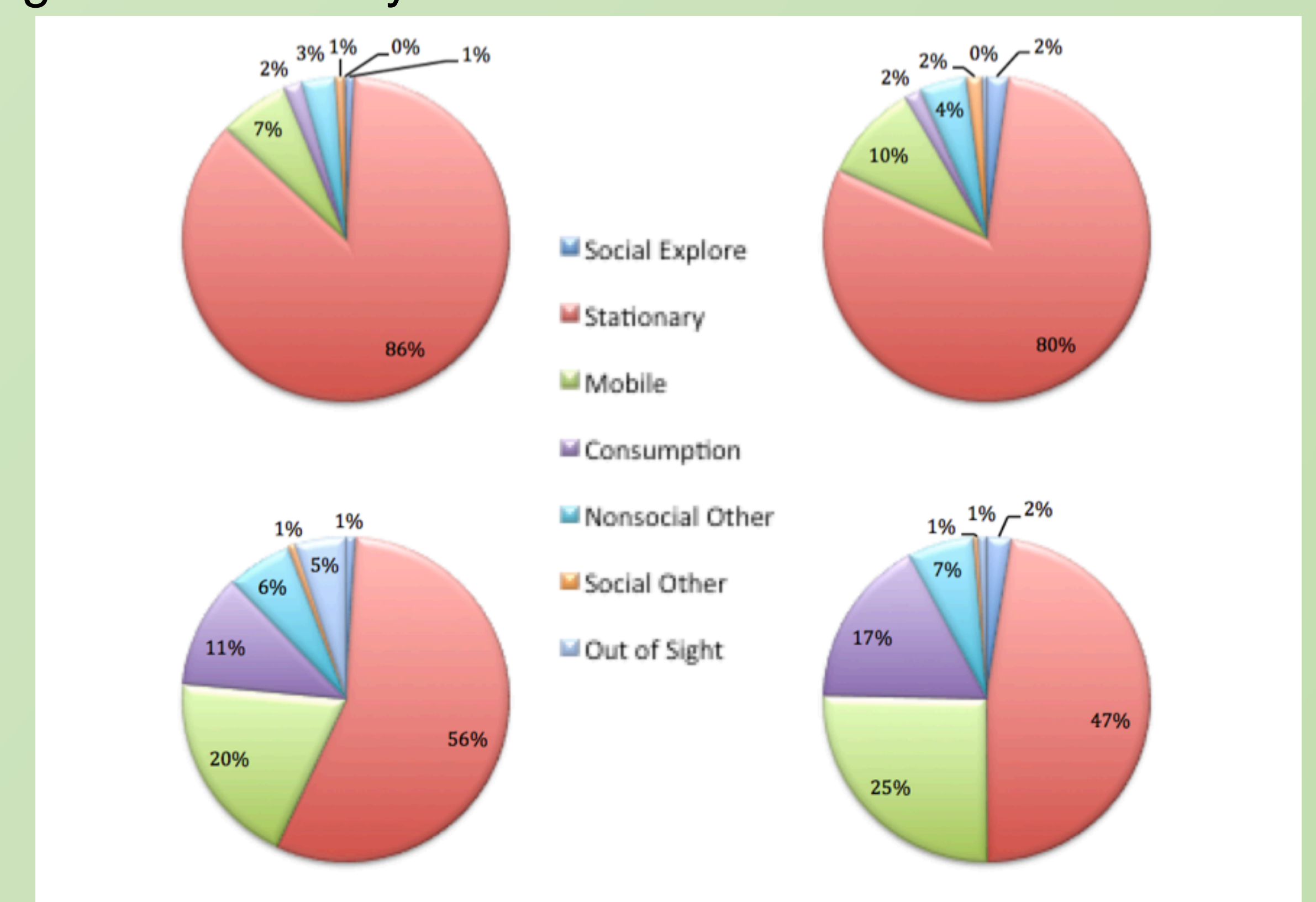


Figure 3: Activity budgets for four subjects (Kara-upper left, Nigel- upper right, Gabe- lower left, and Jazira – lower right) collapsed into: Social Explore, Stationary, Mobile, Consumption, Nonsocial Other, Social Other, and Out of Sight.

DISCUSSION

Taking into account the total activity budgets of the subjects and their overall stationary positions, it can be seen that each of the pottos is spending the majority of their time resting, sitting, or standing (three groups of “Stationary”) in the two exhibits. However, the two pottos in Jungle Trails, Kara and Nigel, are spending a significantly longer time being stationary than the two pottos, Jazira and Gabe, in Night Hunters.

This difference is surprising because the Night Hunters exhibit is much smaller than Jungle Trails (see figure 2a/b). It may well be that the differences in activity are due to individual differences in the pottos themselves. In both exhibits the pottos had a favored location where they spent the most time (see figure 2a/b). Ad lib notes indicate that the pottos in Night Hunters were more exploratory- e.g. manipulating enrichment objects. And although it is not a common behavior in wild pottos, Gabe sometimes travelled to the floor of the exhibit showing surprising behavioral flexibility.

An examination of location data (not illustrated here), shows that more of the exhibit was traversed by the pottos in Night Hunters as compared to those in Jungle Trails.

Further research into spatial use and enclosure architecture should be investigated to improve the pottos' psychological well-being in both enclosures.