



# The Social Behaviors of the Cincinnati Zoo Bonobos



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## Introduction

The social behaviors and relationships of the Cincinnati Zoo & Botanical Garden's bonobos were analyzed to reveal information about the relationship quality and social hierarchy of the troop. Bonobos naturally have a matriarchal society, so the females lead the troop, and the social rank of the males depends on their relationships with the females. In wild bonobo troops, males that have a mother in the troop are higher in the social hierarchy and females who have any offspring in the troop have a more solidified social position. The main goal of this animal behavior project was to collect social behavior data and build a social hierarchy pyramid for the female subjects and the male subjects.

### Female Subjects:

Zanga (23), Nora Jan (9), Kesi (17), Lana (43), Kenge (12), and Gilda (16)

### Male Subjects:

Bo (7), Vergil (28), and Vim (26)

No observations were done behind-the-scenes.

## Methods

### Subjects

Some of the relationships between the Bonobos appeared to have an impact on the data, so it is important to note which Bonobos in the troop are related. Zanga is mother to Bo, Lana is mother to Kesi and grandmother to Amali, and Bo, Vim, and Vergil are stepbrothers.

### Observation Techniques

The bonobos were observed via Zoo Monitor from June 26, 2022, until August 1, 2022, with an instantaneous scan sampling method. Observations were organized into 20-min sessions, and behaviors were recorded at 1-min intervals for a total of 1,680 intervals and 28 hours of observation. Three time blocks were chosen for observations, including 9am-11am, 11am-3pm, and 3pm-5pm. At the start of each observation, temperature (F), time block, gender pairing, and habitat (Indoor, Outdoor) were recorded. The behaviors scored followed the definitions found in the social behavior ethogram and after each behavior was scored location within habitat was also recorded. Each observation was done according to gender pairings of two males (2.0), two females (0.2), or one male and one female (1.1).

## Ethogram

- I created an ethogram of all the possible behaviors the bonobos would perform during my observation sessions. Below is a sample

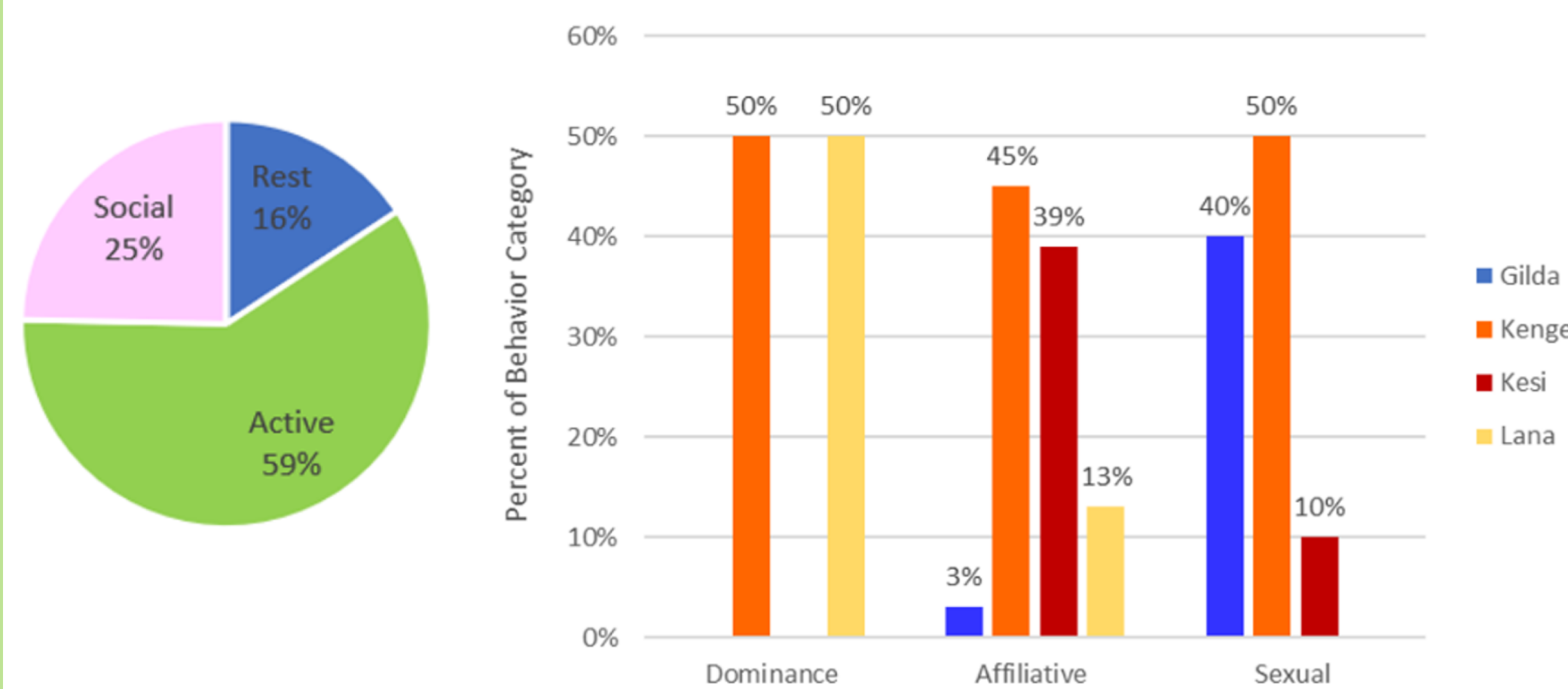
Behavior	Definition	Category
Active	Animal performing locomotion in branches or on ground, feed/drink, object manipulation, non-repetitive self-groom, visitor/keeper interaction, self-maintenance behaviors, urination/defecation, sniffing. Any behavior that is not Rest and that is not a social behavior.	Active
Rest	Animal is sitting, lying, or hanging and is not performing any other behavior.	Rest
Beg	Animal extends arm or leg to an individual that possesses food, a toy, or any other object of value as actor or recipient.	Affiliative
Share	Animal is actor or recipient in consciously allowing another individual to take any sharable object without protest, such as food or wood wool, that is under the control of the owner. Sharable object can be in owner's mouth, hand, lap, or in proximity.	Affiliative
Watch	Animal gazes intently at what another conspecific is doing. If the receiver's face is within 12in of focal animal's face, then score as Peer.	Affiliative
Affiliative Touch	Animal touches the body of the receiver with hand or fingers as actor or recipient, in a relaxed and non-aggressive manner. Can also include a lateral or full embrace with the placement of one or both arms around another individual.	Affiliative

## Results

The overall activity budget of the Bonobos was examined to compare the time spent participating in social behaviors versus active and rest behaviors. It was found that the focal subjects spent the most (45%) time performing active behaviors and the least time (21%) performing rest behaviors. There were 27 social behaviors on my ethogram and 15 of them were observed, giving social behaviors an overall 30% for time subjects were seen engaging in a social behavior. Of that 30%, the most common social behavior observed was Social Grooming.

Data was collected for about five weeks, with five observations done on the first day of Week 6. The Bonobos were divided into three groups each week, so activity budget and social behaviors performed during those weeks were broken down by those groups. There were occurrences when some groups did not change as the week changed and when groups were rearranged in the middle of a week. This resulted in 11 groups to analyze. Each group was named by the eldest male or eldest female in that group. Below is data analyses of Lana's Group in Weeks 4 and 5.

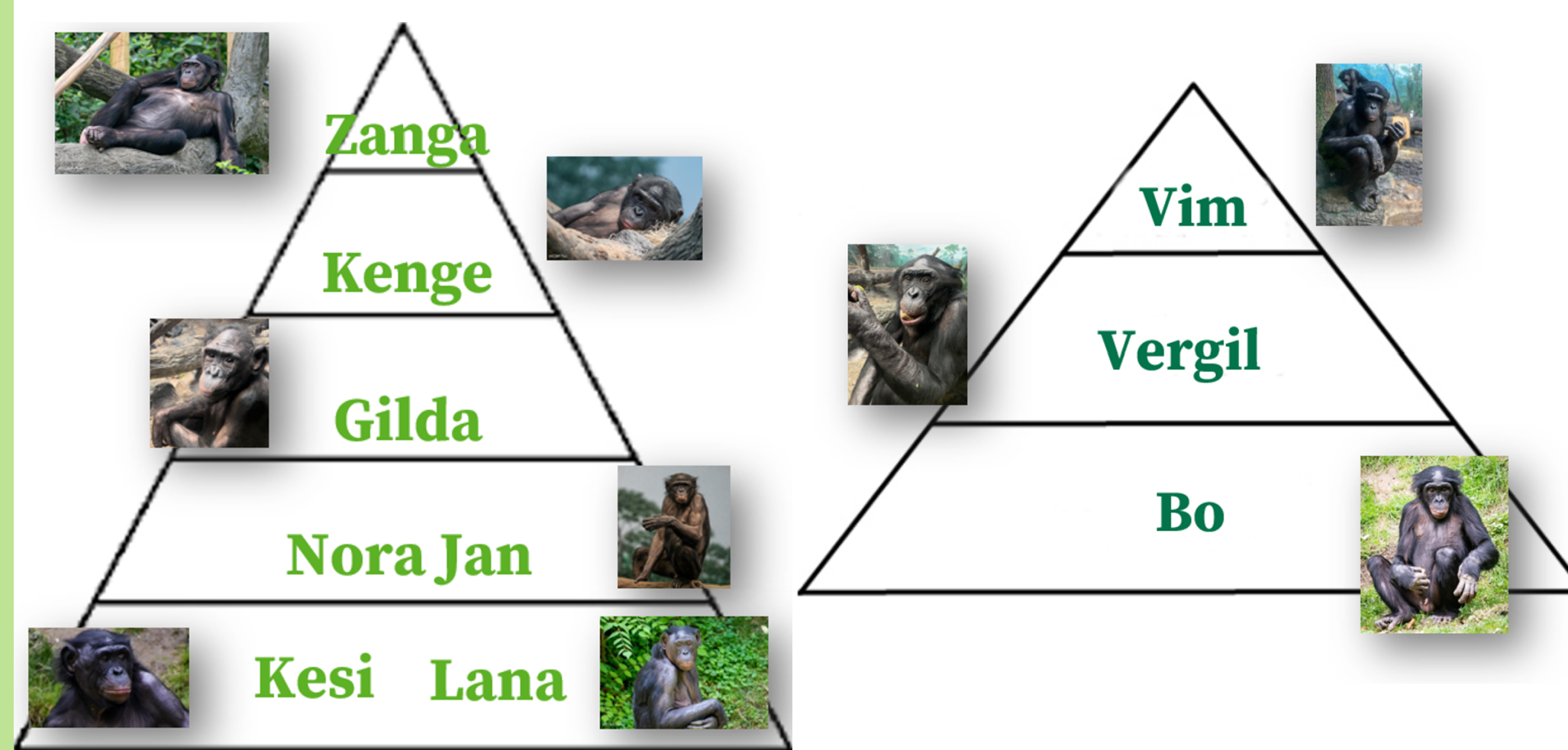
- The individuals in this group were Lana, Kesi, Amali, Kenge, and Gilda.
- Activity budget was divided into 16% Rest, 59% Active, and 25% Social behaviors.
- Three out of the possible seven behavior categories were seen: Dominance, Affiliative, and Sexual.



- Each focal subject was analyzed individually using the approximate 5 weeks of data collection.
- The following table shows the behavior categories that Lana was participating in, her role/s in the behavior, and her social partner/s.

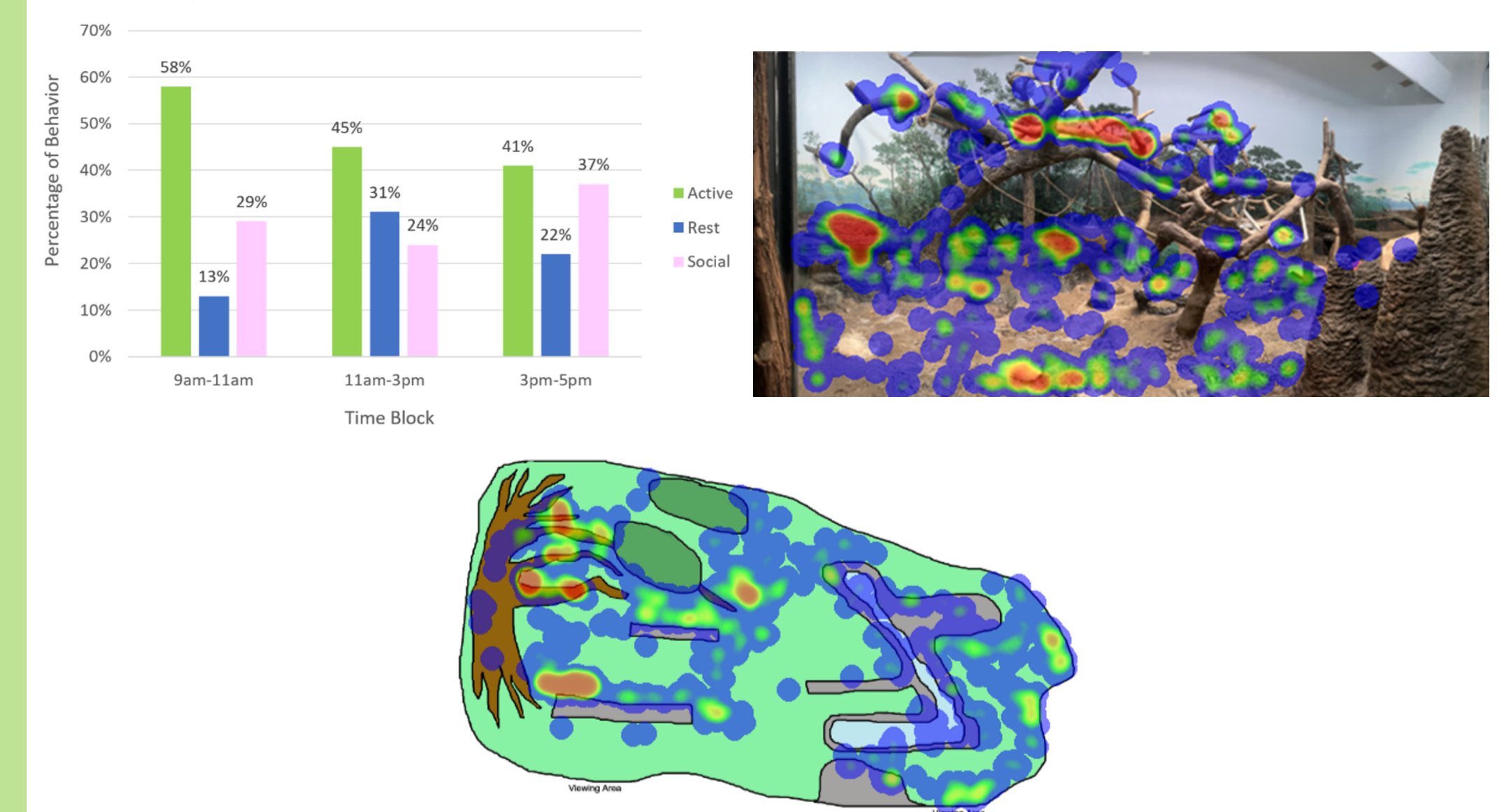
Social Partner	Behavior	Recipient	Actor	Both
Kesi	Dominance		50%	
	Affiliative	80%	50%	86%
Amali	Affiliative		16%	
Vergil	Affiliative		29%	
Kenge	Dominance		50%	
	Affiliative	20%	5%	14%
Gilda	Sexual			100%

- From the analyses, a female and male social pyramid representing the troop's social hierarchy was configured.
- Females and males were separated due to the natural matriarchal society structure present in bonobo troops.



## Additional Findings

- A behavior by time-of-day graph and heat maps of both the indoor and outdoor habitats were created.
- Analyses shows that the troop's active behaviors decrease as the day goes on, social behaviors are at their highest percentage at the end of the day, and rest behaviors peak midday.
- The heat maps show that this group of bonobos use most of their habitat space and spend a lot of time on the tree branches.



## Conclusion

- This research project puts data behind the idea that the social behaviors of bonobos can reveal the strong and weak relationships between the individuals in the troop and lead to the construction of a social hierarchy pyramid.
- The most common behavior that the bonobos carry out to maintain and strengthen their relationships is that of social grooming.
- Breaking down the social categories in which each individual participated, their role in those behaviors, and with which individuals they were participating, revealed various relationships and social rankings.
- Despite the many social behaviors seen, most of the behaviors that the bonobos carry out are active behaviors.
- It would be very beneficial to the continued understanding of the activity budget of the troop, to break down the active behaviors, like how the social behaviors were broken down in the ethogram
- A future study could focus on the troop's time spent utilizing different forms of enrichment and how providing enrichment in their exhibits at novel times could affect their activity.

## Literature Cited

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