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### Zoo Project: Behavioral Research of the Philadelphia Zoo Gorillas

#### Introduction

The ape species *Gorilla gorilla* was selected for research in this particular study. The following gorillas described were those present at the time of observation:

- Motuba - 32-year-old Silverback male; alpha/leader; laid-back; father of Amani and Ajabu
- Honi - 23-year-old female; laid-back; mother of Amani (and another young male not present during time of observation)
- Kira - 18-year-old female; high-strung, aggressive; mother of Ajabu
- Amani - 1-year-old female; inquisitive, playful, and highly energetic; daughter of Motuba and Honi
- Ajabu -- “Miracle” 6-month-old baby of Kira and Motuba; inquisitive; highly dependent (on mom)

#### Ad Libitum

Start time: 1:12 p.m. 11/20/17

End time: 2:12 p.m. 11/20/17

1:12 p.m. - Honi makes an aggressive shooping motion towards glass, stands up, and knuckle-walks away (avoidance). Amani charges glass and follows Honi. Motuba rests.

1:13 p.m. - Kira stands, knuckle walks. Ajabu follows close, is scooped up, and cradled by Kira.

1:14 p.m. - Kira nurses Ajabu. Amani pokes/touches ropes, plays with objects in exhibit.

1:15 p.m. - Honi approaches glass. Kira approaches glass, cradling Ajabu. Kira puts Ajabu down.

1:16 p.m. - Kira scoops up Ajabu; Ajabu clings to Kira's arm. Amani climbs and swings around exhibit.

1:17 p.m. - Amani swings and hangs by one hand. Honi watches.

1:18 p.m. - Amani approaches glass and beats chest. Amani begins to climb, falls/drops, gets up and continues to climb.

1:19 p.m. - Kira rubs face. Honi changes resting position from sitting up to leaning.

1:20 p.m. - Motuba scratches self and continues to rest. Amani climbs, hangs, and jumps from wall protrusion. Amani knuckle-walks across exhibit.

1:21 p.m. - Amani chews (on what appears to be an orange peel) and eats leaves. Amani plays with rope and begins chewing on it.

1:22 p.m. - Kira changes position from sitting up to leaning. Motuba scratches self. Amani: climbs ropes and bars, sits on trunk, slides down trunk, bites rope, and swings around on bars and rope.

1:23 p.m. Amani jumps down from wall protrusion. Honi knuckle-walks towards Amani (approaches). Amani slides down bars and falls off wall protrusion. Honi picks up leaves, climbs bars, and knuckle-walks across branch.

1:24 p.m. - Amani sits and eats hay. Honi looks out window/surveys area. Honi knuckle-walks, climbs bars, sits on a platform, and scratches self.

1:25 p.m. - Honi drops leaves. Everyone is at rest.

1:26 p.m. - Motuba: scratches self, rolls over, sits up, and folds hands. Kira: rubs face, surveys area, cradles Ajabu, and climbs bars. Kira: sits on a platform, lays down, cuddles Ajabu, eats and chews on hay.

1:27 p.m. - Motuba surveys area; proceeds to scratch self. Amani descends/climbs down bars.

1:29 p.m. - Amani: licks hand, screams, lays down, touches (inquisitively/playfully) her own hands and feet, rolls over, proceeds to knuckle-walk, and lays down.

1:30 p.m. - Amani: sits up, knuckle-walks, stomps (appears to throw a fit), stretches, grabs hay and chews. Everyone else is at rest.

1:31 p.m. - Amani: climbs and hands from bars, chews/picks at/investigates food. Females sleep while Motuba lays awake.

1:32 p.m. - Amani: climbs up bars, spits out hay, slides down rope, swings on rope, climbs up/ascends bars, and cuddles with mom. Everyone is at rest.

1:33 p.m. - Motuba: surveys area, stares fixed upon glass, and scratches foot. Honi stirs from sleep and wakes up.

1:34 p.m. - Motuba: sits up, knuckle-walks, digs a small burrow in hay, sits down in burrow, scratches chest, surveys area.

1:35 p.m. - Honi returns to sleep. Motuba leans on bars and scratches chest.

1:36 p.m. - Motuba: shuts eyes momentarily, opens eyes, surveys area.

1:37 p.m. - Motuba surveys area. Everyone else is still at rest.

1:40 p.m. - Motuba falls asleep. Everyone is at rest.

1:41 p.m. - Motuba wakes up and sits up.

1:42 p.m. - Motuba chews on, rips up, and eats leaves. Motuba surveys area and scratches self.

1:43 p.m. - Motuba surveys area.

1:44 p.m. - Motuba: raises arm/stretchers and scratches back, drops head.

1:45 p.m. - Motuba: lifts head to survey area, chews leaves, and scratches self.

1:46 p.m. - Motuba yawns.

1:49 p.m. - Motuba shuts eyes and "smiles" (stretches facial muscles).

1:50 p.m. - Motuba: opens eyes, touches chest lightly, closes eyes/sleeps, opens eyes/wakes up, and surveys area.

1:51 p.m. - Motuba surveys area and rests head back down.

1:53 p.m. - Motuba scratches self and rests/shuts eyes.

1:55 p.m. - Kira stirs and stretches.

1:56 p.m. - Motuba rubs face. Kira grooms own fur and examines particles/dirt.

1:57 p.m. - Motuba: pouts, surveys area, and proceeds to rest.

1:58 p.m. - Motuba: stirs from rest, adjusts position slightly, sits up, and surveys area.

1:59 p.m. - Kira continues to groom self and eats particles she finds in fur. Honi stirs from sleep, wakes up, and sits up.

2:00 p.m. - Honi surveys area. Motuba scratches self, grooms self, and chews on hay.

2:01 p.m. - Motuba: licks lips, knuckle-walks, approaches glass, picks at food, grabs hay scraps and knuckle-walks away from glass.

2:02 p.m. - Honi licks hand. Motuba: approaches glass, eats hay, chews on hay, and surveys area.

2:03 p.m. - Kira strokes Ajabu softly and grooms him.

2:04 p.m. - Kira cradles Ajabu and nurses him.

2:05 p.m. - Motuba: scratches chest, licks lips, and drops head.  
 2:07 p.m. - Honi licks hand. Ajabu and Amani sleep. Motuba yawns.  
 2:08 p.m. - Motuba surveys area and drops head. All are at rest.  
 2:09 p.m. - Motuba licks lips and picks at ears/grooms. Kira lays down and licks hands.  
 2:10 p.m. - Motuba yawns. Kira sleeps.  
 2:11 p.m. - Motuba scratches self. All are still at rest.  
 2:12 p.m. - Motuba gets up, knuckle-walks, pees, and rests.

### Ethogram

Behavior	Code	Definition
Knuckle-walk	KW	main mode of transportation; involves walking on all four limbs, placing pressure upon the knuckles in particular
Follow	FO	moving in the same direction/location as another animal who is in motion
Approach	AP	moving towards an animal who is essentially stationary
Charge	CH	aggressively rushing towards another animal
Avoid	AV	keeping distance from another animal
Cradle	CR	resting an infant in the bend of the arm; creating a safe resting spot for an infant using only one's own body
Nurse	NR	breastfeeding an infant
Scoop	SP	picking up an item/infant in one swift and sudden motion
Swing	SW	using the upper body/arms to dangle, rock back and forth, or move across any height above ground level
Chest Beat	CB	a display of aggression which involves forcefully hitting own chest with fists
Drop	DP	letting go suddenly while hanging/swinging
Climb	CL	using upper body/arms to change one's vertical position; lifting oneself up
Position Change	PC	switching from one body arrangement to another (laying to sitting, sitting to standing, etc.)
Scratch	SH	using finger nails to scrape against skin in a relieving manner
Jump	JU	launching self upward using only (or mostly) the lower body and feet
Eat	EA	grinding and object with teeth followed by ingestion
Play	PL	behavior which excites the individual without having any other clear purpose
Survey	SV	looking around; studying/observing environment
Grab	GB	using hands (or feet) to grasp and object
Lick	LK	using tongue to wet a surface
Scream	SM	expelling noise from mouth in an aggressive manner
Groom	GR	using hands (and/or mouth) to pick impurities out of own or another's fur

Examine	EX	to stare at inquisitively for long periods of time; orienting an object or another animal within clear visual range reviewing from many angles
Sleep	SL	to close one's eyes; resting
Cuddle	CU	orienting one's body close to another
Dig	DG	using hands (and arms) to push debris aside
Kick	KI	forcefully projecting one's foot onto another surface
Touch	TU	Using hands (or feet) to provide contact with another surface; poking

Throughout the duration of the study, a wide variety of behaviors were exhibited. In a mere hour's time, the gorillas were highly active due to the presence and activity of the youngest members. There was scarcely a time when even the slightest action was not occurring. From high levels of maternal investment, to inquisitive play, to clear indicators of aggression, many behaviors typical to this species were noted. To construct a more complete ethogram a slight extension of observation time would suffice. Overall, the quality of the ethogram is excellent considering the small window of observation time.

#### Focal Animal Sampling

The one-year-old female Amani was selected for focal animal sampling due to her highly energetic nature and range of activities exhibited. Out of all the gorillas present, she is the only one who is constantly in motion and only takes momentary breaks to nurse or be cradled by her mother.

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## Conclusion

One of our closest living relatives is dying, and the fault is ours alone. *Gorilla gorilla*, otherwise known as the Western Gorilla, is native to Western Africa but its numbers have been drastically dwindling due to human interference such as poaching and habitat loss. Within 20-25 years, the population has decreased between 50-60%. In 2007, this particular species was officially listed as critically endangered. Soon the only remnants of this species may exist only behind glass, but zoos such as the Philadelphia zoo play a pivotal role in bringing this species back from the brink.

Zoos place these magnificent creatures on display so that we may learn more about their behavior and tendencies, thus subsequently developing a deeper appreciation for these great apes. Upon further observations, we tend to connect with these gorillas, noting we are more alike than we may have previously been aware of. It is through these deep seeded admirations and connections that we may realize their extinction is a loss we cannot afford. The more we study these gorillas and advocate on their behalf, the better equipped we are to prevent the outcome of extinction.

Western gorillas tend to be laid-back in nature, partly due to their low energy diet. They often display aggression through vocalization, posture, and expressions rather they involve themselves in physical confrontation. Group size averages 9-10, typically with one silverback and many females as well as their young. Intragroup aggression occurs between competing females for breeding rights.

Overall, these gorillas do not tend to be territorial. They are however, especially protective of their young. Western gorillas devote a significant amount of time and energy into raising their offspring, so much that it prevents them from breeding for approximately four years. Once their offspring is weaned at 3-4 years ovulation occurs and the reproductive cycle continues. This is why it is vital for conservation efforts to work on their behalf; repopulation occurs slowly and makes it difficult for the species to make a full comeback.

The western gorillas at the Philadelphia zoo provide key insight into how their wild counterparts may behave which may benefit conservation efforts. The zoo has two groups of Western Gorillas: one contains bachelor males, and the other contains an alpha male, two females, and two infants, both well under 4 years of age. The latter is the group observed for this particular study.

Motuba is a 32-year-old alpha silverback. He has a laid-back nature yet appears to always be vigilant of his surroundings. Honi is a 23-year-old laid-back female and mother to Motuba's one-year-old daughter Amani. Amani is Honi's second offspring and while protective and watchful of her child, Honi tends to be more relaxed in her parenting. Amani tends to be highly energetic and playful, while possessing a certain inquisitive nature. 18-year-old Kira is a first time mother to Motuba's 6-month-old son Ajabu. As Ajabu is still heavily dependent on his mother, Kira tends to be more on guard and high-strung. This group lives in a small glass enclosure in the winter months, with multiple bars and ropes to swing from as well as platforms

to rest. In the summer months an outdoor grassland area is accessible.

Majority of the time Motuba could be found scratching himself and surveying his environment on the lookout for possible danger. He, out of all the gorillas present, was the least mobile. Honi and Kira spent much of the day sleeping and caring for their young. Ajabu could be found entirely throughout the study clinging to his mother. Amani meanwhile, utilized every ounce of energy in her tiny frame to swing around and more thoroughly examine her environment. She was the most active of the bunch, which merited her her own focal sampling. While a large variety of behaviors were recorded, they were only a sampling, a mere glimpse into a more complex world.

Following the observation of this group of gorillas, it is evident they coexist with little intragroup aggression. They are strong, caring mothers as depicted by Honi's watchful eye as well as Kira's constant intention focused on Ajabu in the form of nursing and cradling. They, like Motuba, are excellent protectors, always surveying their environment for possible threats to their family. Like Amani, they seek knowledge as well as time for play. In many ways they are just like us and they are worth protecting.