Correlations between Animal Activity and Zoo Visitor Attention

Focusing on Western Lowland Gorillas

Antoinette Rivera

Cleveland Metroparks Zoo

Miami University

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Abstract

Zoos that have staff located around exhibits available to answer visitor's questions and provide customer service has been shown to improve zoo visitor understanding of the animals and engagement of visitors in the conservation messages of the institution. Cleveland Metroparks Zoo has staff from various departments located on zoo grounds to aid in this respect. The question asked is if more people will be watching an inactive animal versus an active animal, in this case, Western Lowland Gorillas, taking into account that there is no staff located around the exhibit. Times of observation were based on low attendance days during the times where visitor attention span is the longest. Observations conducted supported the prediction that more people will watch an active gorilla and even more will watch multiple active animals. These results solidify that interpretation and staff should be on hand for visitors while enrichment with the animals is going on because more people are going to be reached with a conservation message. This information will be used to argue for gorilla enrichment activities for teen volunteers.

Introduction

According to Anderson et al, the goals of modern zoos are conservation, research, education and recreation (2003). The purpose of this study is to determine an appropriate time to have the most people and their attention held to do enrichment with Western Lowland Gorillas, *Gorilla gorilla gorilla,* to cover conservation issues such as Coltan mining in Africa and the bush meat trade, two major issues affecting gorillas in Africa (Wildlife, 2012). At Cleveland Metroparks Zoo, there are many staff members on hand to talk with guests at various places and times during the day. Interpreters, teen volunteers, adult service and docent volunteers and education specialists can be found throughout the park with animal skulls and pelts or giving a presentation about enrichment for certain animals. With staff located around the zoo to answer questions and give assistance, zoo visitors will spend more time at those locations (Anderson, 2003). Visitors coming to the zoo already view the animals as "happy, exciting and attractive to look at" meaning they have a more positive outlook of animals found within zoos already, as educators in conservation we just need to build upon that outlook (Nakamichi, 2007).

Having staff around an exhibit speaking with the public helps convey conservation issues and biological information about the animal in the exhibit. Visitor interest and behaviors have been measured comparing exhibits with staff and exhibits without. Researchers have found that visitors, on average, doubled their stay time from when there is no staff to when there is a training session with keepers and interpreters. They also found that the higher the activity of the animals, in this case otters, the more positive the visitors felt towards the animal (Anderson, 2003). The positive impact of zoos on visitor attitudes has been measured and is associated with positive feelings in children between the ages of 10-15 (Olukole, 2008). Findings also surmised that the zoo animals themselves engaged children emotionally over the other visitor age groupings and that 80% of adults surveyed said, "that the zoo environment reminds them of the need for the conservation of natural resources" (Olukole, 2008). If this is the case, then more staff should be available at peak times to foster these positive attitudes and behaviors.

A peak time when visitors' interest is held longer occurs between the hours of 10am and 1pm (Davey, 2006). Visitor viewing time is an average of two times longer if an animal is active and a larger bodied species and that people who were in closer proximity to the animal had a higher chance of stopping at the exhibit (Bitgood, 1988).

All of these positive correlations of viewing time and animal attributes apply to the Western Lowland Gorillas at Cleveland Metroparks Zoo and their open exhibit viewing space, making them a good model to discuss in this study. The research question being discussed is if zoo visitors will be viewing the Western Lowland Gorillas more if they are active or inactive? Based on the above study results, my prediction is that more visitors will be at the Western Lowland Gorilla exhibit when the animals are active. The results of this study will give a basis for the maximum conservation message reach during enrichment activities. If more people are near an exhibit giving attention to active animals then staff demonstrations and enrichments with a conservation messages can reach more people.

Methods

An ethogram of Western Lowland Gorilla activity and the number of visitors viewing them was completed in July of 2012. Days and times of observations were randomly chosen by writing them down on paper and having a third party choose the 4 days that would be recorded. Mondays were avoided because of free admission and high visitor attendance. Times were chosen based on the results of a study conducted of visitor attention time spent at an exhibit. Davey found that visitor attention spans were longer at the 10am hour and decreased over time. The optimum time visitors will spend at an exhibit can be found between the hours of 10am and 1pm (2006).

The two adult male Western Lowland Gorillas were located in their exhibit at Cleveland Metroparks Zoo. They were located in their outdoor range where people would be under an overhang or along a fence railing. A spot was chosen where the people and gorillas could be observed based on animal location within the exhibit.

Observations that were recorded included how many adults and children were standing at the exhibit along the railing or viewing window and the activity or inactivity of both male gorillas. Observations were recorded on the minute for 30 minute intervals based on the time sampling scoring method defined as Scan Sampling (Kleiman, 2010). At the end of each minute, on the minute, a scan of the visitors present and gorilla activity levels were recorded. Observations were made using adults and children to aid in the counting process. Any youth visually between the ages of 13-16 or unaccompanied by an adult were counted as adults. Outdoors, sunglasses were worn to minimize the chance of the visitors noticing they were being

counted. The gorilla is considered "Active" if it is moving around or sitting and manipulating head, mouth, eyes or arms. They were marked "Inactive" if laying down or sleeping. Observations were quantified by adding the number of people together when at least 1 gorilla was active, when both were active and when neither of the gorillas were active.

Results and Discussion

Gorilla behaviors were noted during observations. The following behaviors were recorded when the gorilla was "Active": standing, walking, drinking water from the stream using a cupped hand, foraging, grooming self, copraphagy and chewing on food. During the "Inactive" behaviors, the gorillas were lying down or sitting and not moving arms, head, eyes or mouth.

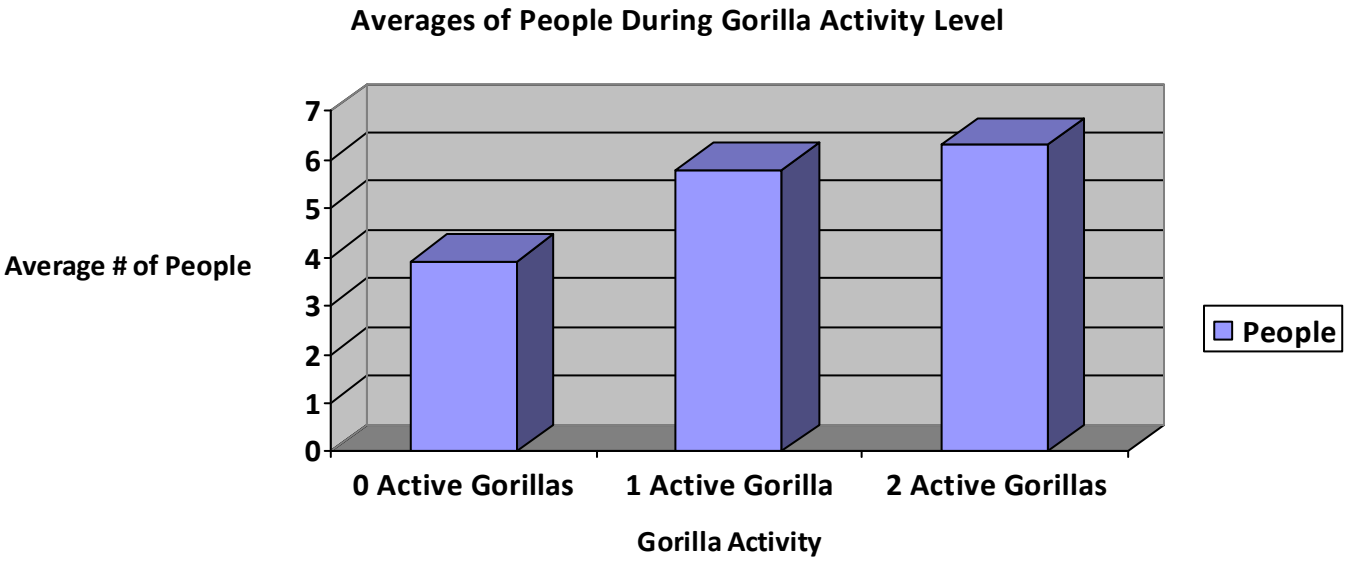

Figure 1. Averages of adults and children at each time period of gorilla activity. All days of observation are included in these averages.

Figure 1 shows the averages of people during different gorilla activity levels based on the 30 minute observations over a period of 4 days (See Appendix A). There were a small number of time points where one gorilla was not visible. Those time points were counted and averaged into the "1 Active Gorilla" category since the visible gorilla was "Active" during those time points. Averages were calculated and each day was included in the totals. There was an average of 3.9 people present when no gorillas were active. The average of people during 1 active gorilla was 5.8 and while both were active the average number of people was 6.3.

A t-test was conducted using the data collected as outlined in the graphs (appendix A) and the statistical significance was determined between the results in each category. A p-value of < 0.0001 was obtained meaning the results are statistically significant.

These results show that on average, more people will watch an active animal than an inactive animal supporting other researcher's results (Bitgood, 1988). Having both gorillas active at once allowed further comparison to solidify the upward trend in the number of people watching the animals. The variable of weather was taken into account which is why each day was averaged together. While observing it was noted that the gorillas seemed to engage in more active behaviors when less people were around. Active behaviors would be considered drinking from the stream that runs through the exhibit or moving from one spot to another. This study has shown that people will watch active animals more than inactive and that if there are more animals that are active even more people will watch at any given time. Using the data collected, there were more adults visiting this exhibit than children. The exhibit is a little removed from the main zoo path, perhaps the adult couples and groups are more willing to wander along pathways to find the exhibit than adult and children mixed groups.

Overall these results support the prediction stated earlier that more people will watch an active Gorilla than an inactive Gorilla. Based on previous research about how staff involvement with animal activity increase visitor knowledge, interest and viewing times, it is important to provide staff at the exhibit when animals are the most active and when visitors are the most interested (Anderson, 2003; Davey, 2006; Bitgood 1988). These results show that more people with stay and watch an active gorilla during the times people's attention will be held longer.

Conclusion

The purpose of these findings will aid in the creating and planning of gorilla enrichment with teen volunteers in the Zoo's Zoo Crew teen volunteer program. Based on previous studies of visitors and their interactions, behaviors and attitudes towards zoo animals, these results confirm the prediction that more visitors' attentions are held while the animals are active. This establishes when the most people would be able to be reached with a conservation message. Other studies have shown that zoo visitor attitudes are already positive towards animals within zoo's and that seeing exotic animals reminds them of their need for conservation of natural resources (Olukole, 2008). If animal activity levels and the availability of staff to speak with

guests will keep more people at the exhibit for a longer length of time, it is important to have a strong conservation message to convey to visitors.

Other studies that could add to the knowledge of zoo visitor behaviors would be to compare the number of people watching a larger group of primates, most likely apes to reduce any other variable, or of a non-primate species. Another variable that could be added to this study is the time component. Perhaps the time of day after the longest attention spans, after 1pm, might change not only the number of people but perhaps the group composition of the people visiting the exhibit.

It is also important to remember that children are important in consumerism and have more positive feelings towards animals at zoos. Children are also more emotionally engaged with the animals as well so if the conservation message could reach them along with the adults present we would create more sustainable individuals (Olukole, 2008).

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Appendix A

Date 6/30/12	1=Active 0=Inactive		# of People Present	
Time Started 12:01pm	Bebac	Mokolo	Adults	Children
1	1	0	18	8
2	1	0	12	5
3	1	0	9	2
4	1	0	7	4
5	0	0	9	0
6	0	0	4	3
7	0	0	16	7
8	0	0	1	8
9	1	0	7	2
10	1	0	5	2
11	1	0	3	0
12	1	0	7	1
13	1	0	11	0
14	1	0	10	2
15	1	0	3	3
16	1	0	2	0
17	1	0	7	6
18	1	0	7	6
19	1	0	8	9
20	1	0	9	2
21	1	0	5	2
22	1	1	3	0
23	1	1	7	6
24	1	1	5	5
25	1	1	4	0
26	1	1	4	0
27	1	1	7	2
28	1	1	11	5
29	1	1	13	8
30	1	1	8	4
Notes Weather: Sunny 85°F. Gorillas in outdoor exhibit				

Date 7/18/12	1=Active 0=Inactive		# of People Present	
Time Started 12:15pm	Bebac	Mokolo	Adults	Children
1	1	0	16	10
2	1	1	17	9
3	0	0	13	12
4	1	0	12	12
5	1	-	15	11
6	1	-	9	5
7	1	-	2	3
8	1	1	4	0
9	-	1	7	5
10	0	1	11	38
11	1	1	10	7
12	1	0	10	5
13	1	0	3	2
14	1	0	9	9
15	1	0	0	0
16	1	0	2	1
17	1	0	0	0
18	1	0	0	0
19	0	0	0	0
20	0	0	2	3
21	0	0	3	5
22	0	0	1	1
23	0	0	2	2
24	1	0	8	10
25	1	0	5	7
26	1	0	4	8
27	0	1	4	5
28	0	0	11	13
29	0	0	8	18
30	0	0	4	8
Notes: Sunny, High humidity 92°F. Gorillas in outdoor exhibit.				

Date 7/19/12	1=Active 0=Inactive		# of People Present	
Time Started 11:50am	Bebac	Mokolo	Adults	Children
1	0	0	2	0
2	0	0	4	2
3	0	0	0	0
4	0	0	4	2
5	1	0	2	2
6	0	0	2	2
7	0	1	3	0
8	0	0	4	0
9	0	0	2	0
10	0	0	3	1
11	1	0	6	1
12	1	0	6	1
13	1	0	8	7
14	1	0	7	12
15	1	0	7	6
16	1	1	8	5
17	1	1	5	1
18	1	1	0	2
19	1	1	3	1
20	1	1	3	1
21	1	1	5	3
22	1	1	3	2
23	1	1	5	16
24	1	1	5	16
25	1	1	0	0
26	1	1	0	0
27	1	1	1	2
28	1	1	1	2
29	1	1	5	6
30	1	1	6	5
Notes: Light rain, 78°F Gorillas in outdoor exhibit				

Date 7/24	1=Active 0=Inactive		# of People Present	
Time Started 11:40am	Bebac	Mokolo	Adults	Children
1	1	0	11	6
2	1	-	9	11
3	1	1	14	9
4	1	1	9	2
5	1	1	9	1
6	1	1	14	3
7	1	1	11	4
8	1	1	15	6
9	1	1	5	5
10	1	1	0	3
11	0	1	5	0
12	1	1	6	2
13	0	1	8	1
14	0	0	9	0
15	1	0	10	4
16	0	0	11	9
17	0	0	2	1
18	0	0	4	1
19	0	0	1	1
20	0	0	0	2
21	1	0	2	2
22	0	0	2	2
23	0	0	5	2
24	0	0	5	2
25	0	0	8	1
26	0	0	6	0
27	0	0	7	0
28	0	0	4	0
29	0	0	4	0
30	0	0	4	1
Notes: Mid 80°F with high humidity, slightly breezy Gorillas in outdoor exhibit				