

Research Activity Report
Supported by “Leading Graduate Program in Primatology and Wildlife Science”
 (Please be sure to submit this report after the trip that supported by PWS.)

	2021.12.23
Affiliation/Position	Wildlife Research Center/M1; PWS/L1
Name	Kana Arai 新井花奈

1. Country/location of visit
Kyoto, Japan, Kyoto City Zoo
2. Research project
Animal Welfare Course
3. Date (departing from/returning to Japan)
2021.12.12 ~ 2021.12.14 (3 days)
4. Main host researcher and affiliation
Dr. Yumi Yamanashi (Principal Researcher at 京都市動物園生き物・学び・研究センター)
5. Progress and results of your research/activity (You can attach extra pages if needed)
Please insert one or more pictures (to be publicly released). Below each picture, please provide a brief description.
This practical course aimed to teach fellow students the hard work that happens behind the scenes at Kyoto City Zoo. Most importantly, showing us the impacts and values that animal enrichment have in zoos by experiencing it hands-on.
<u>Schedule Outline:</u>
12/12 Orientation
12/13 Behavioral observation through scan sampling – before enrichment Making an artificial rock for the penguins Plowing the ground for the flamingoes Putting sand in the gorilla house.
12/14 Behavioral observation through scan sampling – after enrichment Finishing up the artificial rock for the penguins
Sunday 12/12 Before undergoing all activities, Yamanashi-san gave us an orientation about the various types of animal enrichment practiced at Kyoto City Zoo. Such as the efforts being made towards elephant enrichment by allowing the elephants to be freely released to the main ground during the night and not chained up in their indoor rooms. She explained that for most individuals, stress levels might have decreased because during the night most individuals spent 40% of their nighttime at the main ground. However, Yamanashi-san emphasized that even when animal enrichment is done at zoos, it is shown that there is still a huge gap/differences in enrichments given between different species. Therefore, to reduce this unevenness, it is suggested that daily efforts towards this are needed. We also had a briefing on the different types of behavioral observation, mainly on scan sampling. We were then broken into pairs and a group of three, to look at different animals: flamingoes, jaguars, mandrills, and gorillas. The aim of this behavioral observation was to see if behaviors changed before and after enrichment. I chose to look at the behavior of gorillas.
Monday 12/13 Each group went ahead and observed their target animals in the morning for 30 minutes. Behavioral observations were done through 1-minute scan sampling: writing down an individual’s behavior every minute. My pair and I observed four different individuals of gorilla for 30 minutes. Results from the behavioral observation can be seen below (Fig. 3). After behavioral observations, we were broken up into groups again to either make artificial rock for the penguins or to make feeders and a hammock for the gorillas using a firehose. Our group made the artificial rock, where we first created the base and shape of the rock using wired mesh (Fig. 1). Under the wired mesh, a lot of newspaper was placed underneath to keep the shape. Once the shape was sorted, a mixture of sand and cement was put all over, until the wired

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mesh was covered fully. Covering the whole area was difficult than expected because the mixture would not stick properly and kept falling apart. This was then left to dry.

During the afternoon, we ploughed the flamingo ground (Fig. 1). This is a form of enrichment as well because if the ground is too hard it puts so much stress on the flamingo's feet and legs. Thus, ploughing the ground helps to give them a softer ground, putting much less stress on their legs. Around 10 people ploughed the ground at the same time so our work was done very quickly in 15 minutes. However, ploughing the ground was harder than I expected because although digging was easy, it was not easy to smoothen out the lump of soil. The staff in charge of the flamingoes mentioned that the flamingoes, for some reason preferred a smoother, fluffier ground compared to a lumpy ground. She also mentioned that a lumpy ground would also be dangerous as they might trip.

After that, we helped with putting the sand into the gorilla house. We were encountered with two mountains of sand; fine and coarse sand that needed to be put inside. The sand was transported inside using a wheelbarrow. Some of us stayed outside to put the sand into the wheelbarrow using a shovel, while some of us transported the wheelbarrow full of sand out and into the gorilla house. Out of all the work done at the zoo, this was probably the hardest work. After a while, many other staffs came to help us. I was surprised by their speedy work and their strength, as one scoop of sand from a student was twice the amount when it came to the staff. In the end, all the sand was put into the gorilla house after working for 1~2 hours.



Fig. 1. Left: The making of the artificial rock for the penguins; putting sand and cement mixture onto the wired mesh. Right: Ploughing the ground for the flamingo house.

Tuesday 12/14

Like the day before, we started with behavioral observations. However, this time we focused on how the enrichments (i.e., feeders, gorilla hammock, gorilla sand) have affected their behaviors. We were able to see that Momotaro, one of the gorilla individuals used the feeder but, unfortunately, it was not at the moment of the 1-minute point of each scan sampling. Results from the behavioral observations can be seen below (Fig. 3).

After observations, we finished up making the artificial rock for the penguins. After the cement mixture dried from the previous day, we added another type of cement without the sand to smoothen it out. This was then left to dry (Fig. 2). Creating the artificial rock for the penguins was difficult said than done because the cement would not stick properly as expected, and the weight of the cement slowly changed the shape of the rock. In the end, the shape of the rock was not how we expected, but hopefully, the penguins will enjoy it. Whilst we were finishing the rock up, some of us were creating “Horohorohoihoi” for the pheasants.



Fig. 2. Final look of the artificial rock for the penguins.

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Effect of animal enrichment towards the gorillas

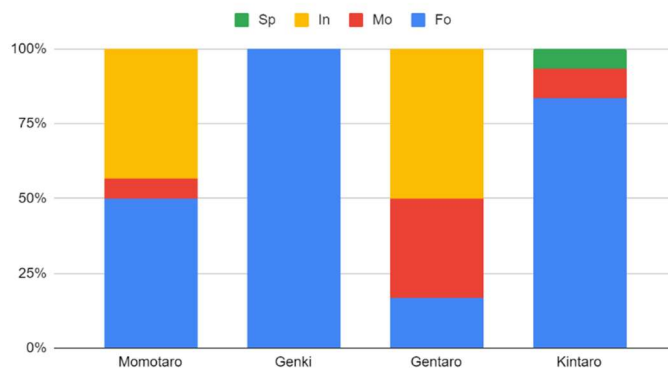
Before enrichment

For most of the individuals, it was seen that feeding was the most seen behavior (Fig. 3). However, this might be because a few minutes after the scan sampling started, the staff placed feeding (i.e., grass) on top of the house, and all the individuals started feeding. Before the feeding, individuals were either resting or moving. Genki was eating the whole time on the ground, while the other three individuals were seen eating above.

After enrichment

For gorillas, these were the type of enrichment that was added: feeder, hammock, sand. After the enrichment, it was seen that almost all of the individuals were feeding for most, during the 30 minutes (Fig. 3). However, this might be because as soon as we started scan sampling, the staff placed their feedings on top of their house and Momotaro, Gentaro and Kintaro started feeding from above (Fig. 4), whilst Genki fed below. Most of the attention was on the food visible and not on the food in between the feeders. Unfortunately, no attention was given to the sand. However, Momotaro had touched the feeder a few times out of interest, although this was unfortunately not noted in the below figure because it was beyond the minute during the scan sampling.

Before enrichment



Sp: Playtime alone
 In: Resting
 Mo: Moving/Transport
 Fo: Feeding

After enrichment

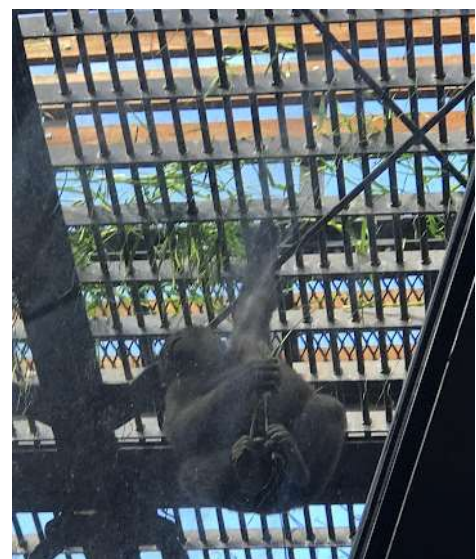
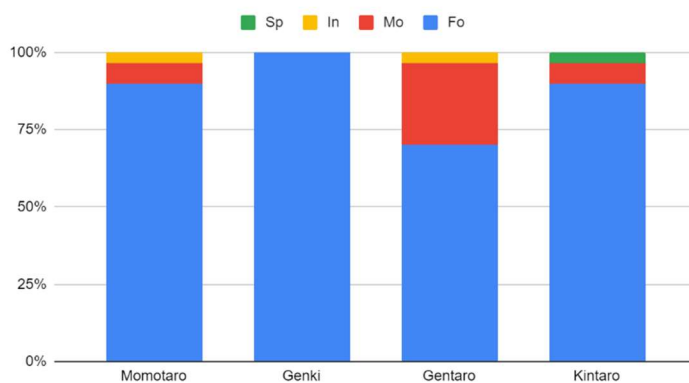


Fig. 4 Kintaro hanging from above to feed.

Fig. 3 Results from each gorilla individual’s behavioral observations for 30 minutes

Although an individual took interest in the feeder, most of the time, all the individual’s attention were on the food given to the staff. Therefore, it was difficult to tell if the enrichment worked or not, in the short span of 30 minutes. It would have been nice if we could have seen their behavior without giving them food during the scan sampling, and on a longer time scale. However, in the long run, this form of enrichment will surely be of advantage to them.

*Please have your mentor check your report before submitting it to [report@pws.wrc.kyoto-u.ac.jp].

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6. Others
I would like to thank Yamanashi-san and the staffs at Kyoto City Zoo for teaching us a valuable lesson on animal enrichment and for letting us experience what happens behind the scenes. I would also like to thank Hirata-sensei for planning this once in a life time experience at Kyoto City Zoo.