

Diversity and Origin of Mammal Collection in Mini Zoo in Sleman, Yogyakarta Special Region

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ABSTRACT

The mini zoo that became a local tourist spot manifests the ex-situ conservation of mammal species. Animal welfare principles play an important role in long-term sustainability during the animal care and management period. Mini zoos in Sleman, Yogyakarta Special Region were assumed that their diversity and source of mammal collection are slightly different than big zoos. Therefore, that information needs to be studied. This research aims to discover the diversity and origin of mammal species in mini zoos in Sleman. The research was conducted through direct observation and interviewing the visitors, manager, & animal keeper. The mini zoos that studied are Agro Wisata Bhumi Merapi, Jogja Exotarium Education Center, & Kampung Satwa Kedung Banteng. The obtained data were later tabulated, analyzed descriptive-qualitatively, and studied with literature. The results showed that 3-12 mammal species and rabbits are the most popular in those mini zoos. Mammals collection is obtained by purchasing, granting, private ownership, and independent husbandry.

Keywords: Diversity, Mammal, Mini zoo, Origin.

1. INTRODUCTION

The utilization of mammals has been carried out since thousands of years ago with the primary purpose of food. Over time, humans discovered that mammals could be utilized for other purposes, as an example is for trade commodities and tourism [3]. Mammal conservation efforts can be done within (in-situ) or outside (ex-situ) their habitat. The mini zoo is an ex-situ conservation that nurtures wild to domesticated mammals. Regulation of the Minister of Forestry of the Republic of Indonesia Number P.31/Menhut-II/2012 about Conservation Institution [13] contains the primary function of a conservation institution, including a zoo, as a controlled wildlife breeding center by constantly maintaining their genetic purity. According to Regulation of the Minister of Forestry of the Republic of Indonesia Number P.31/Menhut-II/2012 [13], the differences between the zoo and animal parks are the land area used for raising animals and the number of taxa that is being kept. The zoo is animal husbandry for at least three classes on an area of 15 hectares, and

visitors do not use vehicles. Meanwhile, an animal park is animal husbandry for at least two classes on at least 2 hectares. The mini zoo is more like an animal park from the number of taxa and land area. For example, some mini zoo in Indonesia like Mini Zoo Jogja Exotarium Education Center has an area of up to 9 hectares [10], Jember Mini Zoo has a 7 hectares area [15], and Bogor Mini Zoo has 2 hectares area [6].

Until now, mini zoos are widely increasing as tourist attractions and families' education, especially for children. It can be seen from the growing number of newly opened mini zoos in Indonesia like Jember Mini Zoo and Bogor Mini Zoo [6] [8]. Some mini zoos even offer facilities like feeding and taking photos together with animals. Examples of mini zoos can be seen in Table 1.

Yogyakarta Special Region, especially Sleman, has many tourist attractions for locals and out-of-town residents. One of those is a mini zoo that raises animals, particularly mammals. Mammals can be one of the major attractions in ex-situ facilities because of their

Table 1. Mini zoos in Indonesia and their prime mammals's attraction

No	Mini zoo's name	Location	Mammals attraction
1.	Jember Mini Zoo	Kaliwates, Jember Regency, East Java	Dairy cows, ponies, rabbits [15]
2.	Cimory on the Valley	Bergas, Semarang, Central Java	Dairy cows (Friesian Holsteiner, Ayrshire, Guernsey), rabbits, goats, sheep, horses [1] [8]
3.	Scientia Square Park	Kelapa Dua, Tangerang, Banten	Alpacas, horses, rabbits, buffalo [14]

large body size compared to other taxa, which can be more visible to visitors [2]. Knowing their diversity and origin can be useful to track and control animal trading especially wild animals. Different definitions with zoos bring out the assumption that there are differences in mammals' diversity and source. This research will be doing those observations in three mini zoos in Sleman.

2. MATERIAL AND METHODS

2.1. Research Location Survey

The survey was done from February until March 2020. Mini zoos that used as observation object are Agro Wisata Bhumi Merapi, Mini Zoo Jogja Exotarium Education Center, and Kampung Satwa Kedung Banteng. Those three are selected because they are quite famous as a tourist spot in Sleman and have an adequate collection of mammals. Survey activities in the form of visits were conducted to find out what mammal species those mini zoos have.

2.2. Data Collection

Data collection started from September 2020 until March 2021 through interviews and observation. The interview was done by asking the visitors, mini zoos' manager, and animal keeper. The interview with visitors was about their favorite mammals in the mini zoo where they are being interviewed. It is important because it can be one of the reasons for the mini zoo manager to choose what species to display. Meanwhile, an interview with mini zoos' managers and animal keepers was about mammal collection's diversity and origin. The observation was conducted at mammal cages to identify each species.

2.3. Data Analysis

Data obtained then tabulated and added to tables. After that, the data was analyzed descriptive-qualitatively using references from books and journals.

3. RESULT AND DISCUSSION

3.1. Mammal Diversity in Mini Zoos

In Table 2, it can be known that there are differences in the total of mammal species in the three mini zoos.

The highest number at Bhumi Merapi (BM) is 12 species. Meanwhile, the number of mammal species at Jogja Exotarium (JE) is 11, and Kampung Satwa (KS) is 3 species. According to their manager, Kampung Satwa has the lowest number of mammal species because they first focused on reptiles collection. After that, they will add more mammals gradually.

Based on the table, most of the collections are domesticated animals. According to Décory (2019) [5], domesticated animals are already adapted to live with humans and their environment, also having good welfare in husbandry facilities. This term is sometimes mixed with tame animals, which "forced" to live with humans. The difference is that domesticated animals show domesticated characteristics & changes in behavior, morphology/physiology, and genetics. Meanwhile, tame animals only show behavioral changes and can be turned into domesticated animals if they meet the previous requirements.

Domesticated animals dominated the mammal collection can be caused by visitors' demography. Based on observation, they consist of families who still have a small child and want to introduce the animal world to their kids. Therefore, some mammal attractions have facilities like taking photos and feeding animals directly. Direct interaction between visitors and animals will make the animal more active so that would increase visitors' interest in a zoo [2] [7]. This is also supported by the result of the researcher's interview with visitors, that from those three mini zoos, rabbit is the most popular mammal species, leading the votes by 59,14%. Almost all those mini zoos have facilities to play with and feed on rabbits. Following behind is a goat with total votes 54,48% and civets with 44,44%

3.2. Mammal Collection Origin

The source of the mammal collection at Bhumi Merapi (BM) is dominated by purchasing from breeder and captivity, same with Jogja Exotarium (JE). Then, independent husbandry follows to be the second-highest. Generally, livestock like sheep and goats are from this type of sourcing. They were also purchased, but after that, they nurtured it until the population is high. Meanwhile, at Kampung Satwa (KS), all

mammals are from their respective owner, in this case, is the villagers. Their mini zoo concept is a village that keeps animals, so each house raises at least one species. Lastly, the only mammal whose source is from granting is the Timor deer (*Rusa timorensis*). This is the form of cooperation between Gembira Loka Zoo and Bhumi Merapi. In Table 2, it also can divide those mammal species into native and alien species. Species considered native species are civets, Javan mongoose, plantain squirrel, and Timor deer. Thus, alien species are Bengal cat, domestic European polecat, goat, sheep, rabbit, horse, cow, and sugar glider.

Almost all alien species are domesticated animals except sugar gliders. Décory (2019) [5], suggests that sugar gliders can go into the tame animals' category. In America, sugar glider made to be pet from Indonesia is exported from Sorong, was from captivity and captured from their habitat [4]. Native species are almost the

same, with civets and Timor deer being tame animals and the rest being domestic wild animals. This term is also adapted from Décory (2019) [5], meaning that the animals never domesticated or those fleeing from husbandry facilities were then captured. Domestic here refers to the condition under human control, regardless of whether the animal is wild or tame. So, there is a difference between domestic and domesticated.

Back to native species, civets in Indonesia are usually captured from their habitat [9]. Some people who love civets have succeeded in breeding them in captivity, so the ex-situ population increased. Meanwhile, Timor deer are protected under Government Regulation Number 7 Year 1999 about Preservation of Wild Plants and Animals [11] because its population in their habitat is decreasing. To prevent that, Timor deer are allowed to be bred under Government Regulation Number 8 Year 1999 about Utilization of Wild Plants

Table 2. Mammal collection and sources in Agro Wisata Bhumi Merapi (BM), Mini Zoo Jogja Exotarium Education Center (JE), and Kampung Satwa Kedung Banteng (KS)

Animal Species	Bhumi Merapi		Jogja Exotarium Education Center		Kampung Satwa Kedung Banteng	
	Existence	Source*	Existence	Source*	Existence	Source*
Bengal cat (<i>Felis catus x Prionailurus bengalensis</i>)	✓	1	-	-	-	-
Domestic European polecat (<i>Mustela putorius furo</i>)	✓	1	✓	1	-	-
Goat (<i>Capra hircus</i>)	✓	4	✓	4	-	-
Sheep (<i>Ovis aries</i>)	✓	4	✓	4	-	-
Rabbit (<i>Oryctolagus cuniculus</i>)	✓	4	✓	1	-	-
Horse (<i>Equus caballus</i>)	✓	1, 2	✓	1	-	-
Cow (<i>Bos taurus</i>)	-	-	-	-	✓	3
Masked palm civet (<i>Paguma larvata leucomystax</i>)	✓	3	✓	1	✓	3
Asian palm civet (<i>Paradoxorus hermaphroditus</i>)	✓	3	✓	1	✓	3
Small-toothed palm civet (<i>Arctogalidia trivirgata</i>)	-	-	✓	1	-	-
Lombok palm civet (<i>Paradoxorus hermaphroditus rindjanicus</i>)	-	-	✓	1	-	-
Bali palm civet (<i>Paradoxorus hermaphroditus baliensis</i>)	-	-	✓	1	-	-
Sugar glider (<i>Petaurus breviceps</i>)	✓	1	✓	1	-	-
Javan mongoose (<i>Herpestes javanicus</i>)	✓	1	-	-	-	-
Plantain squirrel (<i>Callosciurus notatus</i>)	✓	1	-	-	-	-
Timor deer (<i>Rusa timorensis</i>)	✓	2	-	-	-	-
Total mammal species	12		11		3	

*i.e. 1: Purchasing; 2: Granting; 3: Private ownership; 4: Independent husbandry

and Animals [12]. On the other hand, according to the animal keepers, domestic wild animals like the Javan mongoose and plantain squirrel were captured from their habitat. People who catch them rarely breed them for commercial purposes because they are usually killed as a pest. However, because of the increasing trend of keeping small mammals as pets, people started to raise and sell them.

Bhumi Merapi, Jogja Exotarium, and Kampung Satwa have 3-12 species in their mammals collection and the most popular mammal species is rabbit. Those species are collected from purchasing, granting, private ownership, and independent husbandry.

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