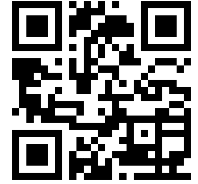


## Study of Timor Deer Behavior at the Exit Conservation Location of Cakura Village, Takalar Regency



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**ABSTRACT:** The study of the behavior of the Timor deer was carried out at an ex-situ conservation site in Cakura Village, Takalar Regency. This study aims to determine the daily activities of Timor deer which are conserved in semi-open captivity by applying the Talaparusi system, with the method of focal animal sampling. This research was conducted in May 2022. Observations were carried out for 14 days (2 weeks). The results of this study indicate that differences in the time period of the morning, afternoon and evening affect the duration of daily activities carried out by both male and female Timor deer. The activities observed included resting activities, ingesting activities, playing activities, grooming activities. Observations on the behavior of the Timor deer in captivity showed that the activities of the Timor deer were dominated by resting activities of 53.99%. Then, followed by eating or ingesting activities by 22.13%. Furthermore, playing activities are in third position with a percentage of 17.17%. The least activity carried out was self-cleaning or grooming by 6.69%.

This study also describes the difference in the duration or time required for male Timor deer and female Timor deer in carrying out the observed activities.

**KEYWORDS:** timor deer, conservation, pertamina, cervus timorensis, cakura village.

### INTRODUCTION

The Timor deer (*Cervus timorensis*) is one of Indonesia's endemic animals whose population continues to decline. Based on the total population and distribution, the International Union for Conservation of Nature's Red List or better known as the IUCN Red defines the Timor deer as a vulnerable species. In addition, based on the Minister of Environment and Forestry Regulation (PERMEN) of the Republic of Indonesia number 106 of 2018, the Timor deer is designated as a protected animal.

As an effort to increase awareness of protected animals, in 2020 the Timor deer (*rusa timorensis*) became one of the icons of the National Puspa and Animals Love Day (HCPSN). National Puspa and Animal Love Day (HCPSN) itself is an activity held with the aim of commemorating environmental day and increasing awareness and conservation of flora and fauna. HCPSN is commemorated every 5 November in accordance with Presidential Decree (Keppres) No. 4 of 1993 which was signed by President Soeharto.

Based on IUCN Redlist data, since 2008 the Timor deer has been categorized as vulnerable, compared to 1996 the Timor deer has a lower risk status. The decline in the population of the Timor deer above resulted in a change in the status of the number of species. This change in status is caused by the total original population of Timor deer in the area, which is estimated to be less than 10,000 mature individuals, and is estimated to have declined over three generations due to habitat loss and community hunting (IUCN, 2015). This is due to the lack of awareness of the local community who still see deer as a liar animal that can be hunted freely and their habitat has land rights due to the conversion of forest functions.

The decline in the Timor deer population in the wild makes the Timor deer conservation an absolute must. One form of conservation is ex-situ conservation in the form of captivity. Captive breeding is the maintenance and breeding of wild animals with the aim of ensuring the maintenance and development of their sustainable use, both as animal consumption, tourism, as well as for educational and scientific purposes (Fitriyanty et al., 2014). The requirements for captivity for Timor deer are by choosing land overgrown with grass, available trees as shade, water pools, and the enclosure area being given a guardrail (iron or concrete) (Garsetiasih, 2002). One of the breeding sites in Takalar Regency, South Sulawesi Province is located in Cakura Village which involves the local community.

The Timor Deer Captive in Cakura Village is a captivity that implements the Talaparusi system, which is an integrated and sustainable people-based deer management system. Talaparusi is run with the 3K principles, namely Partnership, Sustainability,

## Study of Timor Deer Behavior at the Exit Conservation Location of Cakura Village, Takalar Regency

Welfare. The partnership in question is the collaboration between the South Sulawesi Natural Resources Conservation Center, the community who are members of the Timor deer breeder group, and the stakeholder involved in this is PT Pertamina Patra Niaga Integrated Terminal Makassar. On the sustainability aspect, it is realized as a Talaparusi program and its resource support. Meanwhile, the welfare aspect is the health of the forest area, the welfare of animals and the welfare of the community.

As for the breeding, the Timor deer breeding in Cakura village applies semi-open breeding by utilizing the land or yard of local residents' houses.

The change in the habitat of the Timor deer from the wild to semi-open captivity has resulted in several changes, including the nature of the Timor deer which is active at night (noncturnal) now tends to be more active during the day (diurnal).

This study aims to determine the daily activities of Timor deer which are conserved in semi-open captivity by applying the Talaparusi system. The benefits of this study are to provide data related to information on the daily behavior of Timor deer to breeders and prospective breeders as well as to provide input on good and efficient Timor deer breeding conditions in supporting the increase in the Timor deer population. In addition, knowledge, especially the daily behavior of Timor Leste deer, feeding behavior and knowledge of the feed preferred by deer is needed to support the success of captive efforts (Sita & Aunurohim, 2013).

### SUBJECTS AND METHODS

The type of research used is quantitative research with an observational descriptive approach. This research was focused on the Timor deer conservation area CSR PT Pertamina Patra Niaga Integrated Terminal Makassar, namely in Cakura Village, Takalar Regency, South Sulawesi on 23 May – 5 June 2022. Observations on the daily behavior of the Timor deer were carried out in 1 Timor deer conservation cage inhabited by a pair Timor deer and a young Timor deer. The tools used in this study include watches, smartphones, digital cameras, stationery, and laptops.

Behavioral variables observed included eating (ingesting), resting (resting), playing (playing) and grooming (grooming). For the pattern of time use, the variables measured include the time allocation needed for each type of activity or activity using the focal animal sampling method. Observations were made every 07.00 WITA and ended at 18.00 WITA. Observations were divided into three times groups, namely morning (07.00 – 10.00), afternoon (10.00 – 14.00), and afternoon (15.00 – 18.00). Each observation period was recorded continuously for all the activities of the Timor deer seen with an observation interval of 10 minutes then a 5 minutes rest and so on until the end of the observation.

#### Habituation

Habituation is the process of observing observers or researchers such as observing deer which is the object of research easier to do. Furthermore, the individual does this by giving the Timor deer a name as a distinguishing mark based on its physical characteristics such as body size and body shape. This process is carried out before the research data is taken.

#### Focal Animal Sampling

*Focal animal sampling* is a way of observing animal behavior by recording their daily behavior based on predetermined time intervals (Sofyan I, Setiawan A, 2018).

This is in line with Martin and Bateson (1993), observing the behavior of a particular individual or focus individuals who are first seen in an event. This method is used to observe individual focus continuously. The observer observed the behavior of the individual Timor deer which had been designated as the object of research for 14 days. In other words, focal animal sampling is used to observe individuals directly at the captive location for a time interval of 10 minutes, so that the duration of the behavior that appears during the observation is obtained.

### DISCUSSION

The deer in Cakura Village, Takalar Regency is a type of Timor deer (*Cervus timorensis*). The physical characteristics of this deer are having a concave forehead, short limbs, an adult deer weighing 60 to 100 kg, and black fur.

As for the classification of the Timor deer, it can be seen in table 1 regarding the taxonomy of the Timor deer.

## Study of Timor Deer Behavior at the Exit Conservation Location of Cakura Village, Takalar Regency

**Table 1. Timor deer taxonomy**

<b>Kingdom</b>	<b>Animalia</b>
<b>Phylum</b>	Chordata
<b>Class</b>	Mamalia
<b>Order</b>	Cetartiodactyla
<b>Family</b>	Cervidae

Deer conservation is carried out by implementing semi-open captivity that utilizes local land or yards. Based on the observations that have been made, the Timor deer has a low level of aggressiveness, making it easy to collect data.



**Picture 1 Timor deer at the research site**

Picture 1 above, you can see a fawn taking cover behind its mother (adult female sires) and male sires adults are resting in the corner of the captive cage. The general conditions at the Timor deer conservation site in Cakura Village are usually active fawns but do not interfere with the research process.

The results of the study show that there are differences in the duration required for each daily activity of the Timor deer in the CSR conservation area of PT Pertamina Patra Niaga Integrated Terminal Makassar Cakura Village in each activity period, namely morning, afternoon, and evening. Most of the time allocation is used for resting activities by 53.99%, then eating activities by 22.13%, playing activities by 17.17%, and finally cleaning activities by 6.69%. For more details, see table 2 below.

**Table 2. Percentage of Timor deer activity**

No.	Types of Daily Activities	Total Time (Minutes)	Percentage (%)
1.	<i>resting</i>	250	53,99
2.	<i>ingesting</i>	102,5	22,13
3.	<i>Playing</i>	79,5	17,17
4.	<i>grooming</i>	31	6,69
	<b>Total</b>	<b>463</b>	<b>100</b>

## Study of Timor Deer Behavior at the Exit Conservation Location of Cakura Village, Takalar Regency

### Resting

The results showed that the rest activities carried out by the Timor deer occurred at all times of the study, namely in the morning, afternoon, and evening. Rest activity by Timor deer in captivity does not form a certain pattern because this activity occurs randomly either before eating, before eating, or after doing other activities. Resting activities are carried out by the Timor deer as an activity that intersects eating and playing activities.

Rest activities are carried out in several places, including under the baruga (semi-permanent building) which was deliberately built as a resting place and shelter by the Timor deer which is being conserved. In addition, rest is also done in the corners and on the sides of the captive cage after doing other activities.

This activity is also carried out as a step to take shelter and shelter from the hot sun during the day.

**Table 3. Timor deer rest activity duration**

Activities	Stag (Minutes)			Female deer (Minutes)		
	Morning	Afternoon	Afternoon	Morning	Afternoon	Afternoon
Resting	10	155	177	15	140	103

Table 3 shows that both male and female deer rest the most during the day, each of which is 155 minutes for male deer and 140 minutes for female deer. Meanwhile, the morning is the least time for the Timor deer to rest, which is 10 minutes for the stag and 15 minutes for the Timor deer. This is because in the morning the male and female deer are more active in other activities.



**Picture 2 A female Timor deer resting in Baruga**

### Ingesting

Food is needed as an energy supply, cell building material, growth, and protein synthesis processes in the body (Lelono, 2004). The eating activity of the Timor deer is carried out in a standing position and is not carried out in a sitting position and/or disturbed. There was no dominance between the male Timor deer and the female Timor deer at mealtime. The feed consumed is grass and corn as shown in the following table.

**Table 4. Type of feed given**

No.	Feed type	Presentation	Consumed part
1.	grass	Whole and Chopped	Whole grass (without roots)
2.	corn	In the form of seeds (chopped)	Corn kernels
3.	Bread	Given little by little	Whole piece of bread

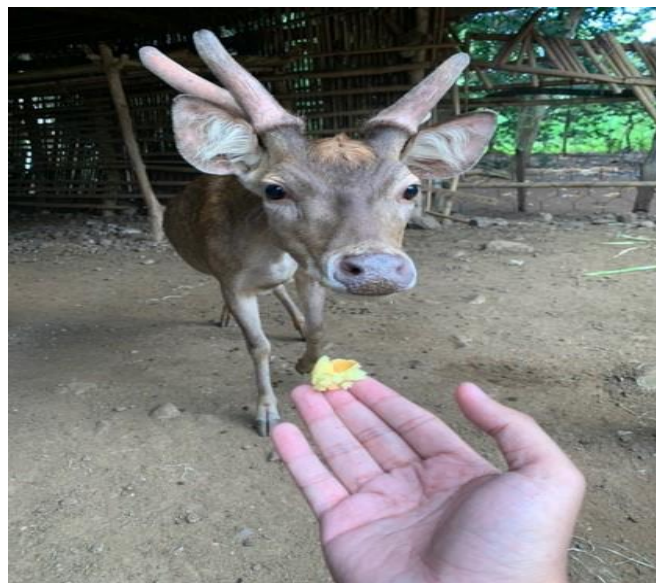


## Study of Timor Deer Behavior at the Exit Conservation Location of Cakura Village, Takalar Regency

Grass and corn are feeds that are routinely given to deer by breeders, but deer also eat grass that grows in captivity.



Picture 3 Timor deer being fed corn



Picture 4. Timor deer being fed bread

The results of observations at the study site showed that eating activities reached 53.99% of the total time in one day. In this study, researchers also found differences in the time it took for male and female deer to do this feeding activity as shown in table 5 below.

Table 6 above shows that the playing activity of the male Timor deer is longer than the duration of the playing activity of the female Timor deer. Table 6 shows that the stags are most active in playing in the morning and the least in the afternoon. This is not the case with the female deer. Even though early morning is the most active time to play, the least playing time occurs during the day.

Table 5. Duration of Timor deer eating activities

Activity	Stag (Minutes)			Female Deer (Minutes)		
	Morning	Afternoon	Afternoon	Morning	Afternoon	Afternoon
Eat	40	15	40	50	20	40

### Playing

Playing activities generally occur at all times, namely in the morning, afternoon, and evening. The result showed that the longest playing activity by the Timor deer was in the morning. This applies to both male and female deer.

## Study of Timor Deer Behavior at the Exit Conservation Location of Cakura Village, Takalar Regency

Table 6. Duration of playing activities of Timor deer

Activity	Stag (Minutes)			Female Deer (Minutes)		
	Morning	Afternoon	Afternoon	Morning	Afternoon	Afternoon
Playing	40	30	15	37	15	22

The female Timor deer during the observation spent more time on resting activities and looking after the young of the deer. This happened because at the time of the study there were 2 months old Timor deer chicks placed in the same place as the Timor deer broodstock.



Picture 5 Timor deer playing in the afternoon

### Grooming

Self-cleaning or grooming activities are the least time-consuming activities. This activity includes hair licking. Grooming is not only for the individual deer but also as a form of parental love for the deer chicks. Like Sionora's opinion, which said that grooming behavior is a manifestation of the affection shown by parents to their children or to fellow species (Sionora, 2010).

In table 7 it can be seen that the most frequent self-cleaning or grooming activities occur in the morning and afternoon by both male and female Timor deer.

Table 7. Duration of self-cleaning Timor deer

Activity	Stag (Minutes)			Female Deer (Minutes)		
	Morning	Afternoon	Afternoon	Morning	Afternoon	Afternoon
Grooming	13	13	9	14	13	0

This activity is usually done by licking the hair on the deer's body parts such as the back, legs, and stomach. During observations, it is not uncommon for male deer to lick the body of a stag and a male deer to lick the body of a female deer. Self-cleaning or grooming activities at the study site are also in accordance with the results of Masyud et al., (2007) research.

Which states that grooming is usually carried out between a female parent and her young deer, between a male and a female or even done alone in between eating and resting activities.

### CONCLUSIONS

Differences in the time period of the morning and afternoon, and affect the duration of daily activities carried out by both male and female deer. The results of this study indicate that the difference in the morning time period affects the duration of daily activities carried out by both male and female deer. Observations on the behavior of the Timor deer in captivity showed that the activities of the Timor deer were dominated by resting activities of 53.99%. Then, followed by eating or ingesting activities by

## Study of Timor Deer Behavior at the Exit Conservation Location of Cakura Village, Takalar Regency

22.13%. Furthermore, playing activities are in the third position with a percentage of 17.17%. The least activity done is cleaning or grooming by 6.69%.

Further research related to the correlation between the size of the captive cage and the behavior of the Timor deer needs to be done so that it can complete the conclusions and results of this study. In addition, in future research, it is hoped that there will be a comparison cage location that can enrich the results of the study.

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