Observation of infant body weight and physiological conditions of Siamang (Symphalangus syndactylus) in ex situ conservation

Tetty Barunawati Siagian1,*, Desi Qisti Mawada 1,2, Aidell Fitri2
1 Study Program of Veterinary Paramedic, School of Vocational, IPB University, Bogor
2 Animal Sanctuary Trust Indonesia, Bogor

**ABSTRACT:** The purpose of this study was to describe the infant body weight and physiological parameters of a Siamang (Symphalangus syndactylus) treated at an ex situ conservation station. This study used an infant Siamang, which was estimated to be ± 3 months old. Body weight parameters were determined based on weekly weight gain for one month. The physiological parameters measured were the heart rate, pulse rate, respiration rate, and rectal temperature. Physiological parameters were measured in the morning and evening for 14 d. The results showed that the average heart rate of infant in the morning was 202±11.5 BPM and in the afternoon was 184±14.9 BPM, the average pulse rate in the morning was 189±8.5 BPM and the afternoon was 174±7.8 BPM, the average respiration rate in the morning was 58±6.8 breaths per minutes and in the afternoon was 60±6.3 breaths per minutes, and the average rectal temperature in the morning was 37.1°C and 37.6°C in the afternoon. The body weight and physiology of the infant were good.

**Keywords:** body weight, physiology, infant, siamang, ex situ conservation

**INTRODUCTION**

Siamang (Symphalangus syndactylus) is an endangered and protected endemic animal in Indonesia. Siamang occupies a tropical forest. Siamang female mothers care for their young together with wild males (Supriatna & Wahyono 2000). Siamang mothers are often hunted and traded. As a result, the siamang lost its mother and became an orphan. Infants require human intervention to survive outside their habitat (Lappan 2008). The infant is cared for, and its growth is monitored during ex situ conservation. Care and monitoring of infant growth includes feeding and physical examinations. Providing food for infant growth. A physical examination was performed to determine the physiological condition of the infant. Information regarding infant growth performance and physiological status of siamang is still minimal and usually uses the physiological status of human babies. Information on the physiological status can help determine the health status of infant siamangs. This study aimed to determine infant body weights and physiological conditions in the Animal Sanctuary Trust Indonesia (ASTI) in Bogor, West Java, Indonesia.

**MATERIALS AND METHODS**

This study included a male infant, siamang, aged ± 3 months. The infant weighed ±950 g. This research was conducted at the ASTI in Bogor, West Java, Indonesia. Weight monitoring was performed by weighing the infants once per week using an analogue scale. Examination of the physiological status of the infant was carried out twice a day, namely in the morning (AM) at 08.00-09.00 WIB and in the afternoon (PM) at 15.00-16.00 WIB. The examination was performed over a period of 14 days. The physiological data collected included heart rate, pulse rate, respiration rate, and rectal temperature. The heart rate was measured using a stethoscope. Pulse rate was measured using the thumb and forefinger placed on the medial area of the femur. The respiration rate was determined by observing the rise and fall of the infant’s chest. The rectal temperature was measured at the anus using a digital thermometer. Body weight and physiological status data were analysed qualitatively and quantitatively.

**RESULTS AND DISCUSSION**

The results of measuring the infant weight (Table 1) showed that there was an increase in body weight of 30 g per week, except that in the 4th week, there was a significant weight gain of 70 g. This increase in body weight correlates with infant growth.

<table>
<thead>
<tr>
<th>Week</th>
<th>Body weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.020</td>
</tr>
<tr>
<td>2</td>
<td>1.050</td>
</tr>
<tr>
<td>3</td>
<td>1.080</td>
</tr>
<tr>
<td>4</td>
<td>1.150</td>
</tr>
</tbody>
</table>

The increase in body weight of the infant was due to routine feeding. Infant siamang are given 16 g of instant baby food per day.
porridge with a rate of 2 times a day, namely in the morning and afternoon. Formula milk or goat milk was given every 2-3 h at a rate of 5-7 times a day, 10 ml/g body weight (Yana 2015). Hard food can be consumed by infants at 12 weeks of age (Gage 2002).

As shown in Table 2, the average heart rate of the infants was 202 BPM, with a range of 184-220 BPM in the morning and 184 BPM, with a range of 172-208 BPM in the afternoon. The heart rate of infants is higher than that of long-tailed babies (163 BPM) (Nakayama et al. 2020). The average pulse rate in the morning was 189 ×/min, with a range of 176-200 ×/min and in the afternoon, 174 ×/min, with a range of 160-192 ×/min. The pulse rate was lower than the heart rate because it is a manifestation of the heart. The heart and pulse rates are higher in the morning than in the afternoon owing to the higher activity in the morning and the influence of environmental heat (Sari et al. 2016). The infant activity was higher in the afternoon than in the morning.

The average respiration rate of infants in the morning was 58 ×/min, with a range of 44-60 ×/min and in the afternoon, it was 60 ×/min, with a range of 56-76 ×/min. The respiration rate of infants is higher than that of Macaca fascicularis (30-54 ×/min) (Mangkoewidjojo 1988), but when compared with human babies (45-60 ×/min), it is still within the normal range (Fleisher et al. 2002). The respiration rate of infants was slightly higher in the afternoon owing to environmental humidity. Environmental humidity in the afternoon is higher than that during the day, resulting in increased respiration for sufficient oxygen uptake (Suprayogik et al. 2017).

The average rectal temperature of infants in the morning is 37.1°C, with a range of 36.6-37.8°C and in the afternoon, 37.5°C, with a range of 37.5-37.6°C. The body temperatures of the infants in the morning and evening were not significantly different. Rectal temperature checks in the afternoon were only carried out until the 4th day with the aim of minimizing stress on the infant. The body temperature of infants is higher than that of baby orangutans, namely 36.0-36.5°C (Dharmalingam 2015).

### CONCLUSION
Observations of an infant being cared for by humans in an ex situ conservation area showed an increase in body weight of 30 g/week. The physiological parameters of the gibbon baby were in good condition, with an average heart rate of 202 BPM in the morning and 184 BPM in the afternoon, pulse rate of 174 BPM in the morning and 189 BPM in the afternoon, respiratory rate of 58 BPM in the morning and 60 BPM in the afternoon, and rectal temperature of 37.1 in the morning and 37.5 °C in the afternoon.

### AUTHOR INFORMATION

Author for Correspondence

*TBS: tettyvirus@gmail.com

Study Program of Veterinary Paramedic, School of Vocational, IPB University. Jl. Kumbang No.14. RT.02/RW.06, Babakan, Kecamatan Bogor Tengah, Kota Bogor, 16128, West Java of INDONESIA.

### REFERENCES


