Conference Paper

The Morphology External Organs of The Body of Bandicoot Echymipera Kalubu

Ursula P. Maker[1], Chairun Nisa[2], and Srihadi Agung Priyono[2]

[1]Departement of Biology, Papua University, Indonesia
[2]Departement of Anatomy, Fisiology and Farmacology, Bogor Agricultural University, Indonesia

Abstract

Study on the morphology of external organs of the body of peroryctids is less available. Bandicoot (*Echymipera kalubu*) is one of marsupial in peroryctids and is endemic species in Papua. The morphological characteristic of the external organs of five adults bandicootS (*E. kalubu*) with the body weight of 1,16 ± 0,29 kg and 38,2 ± 4,76 cm of body length were studied macroscopically. The external organs of the body of bandicoot were identified the eye, nose, limb and reproductive systems. The nose of the *E. kalubu* had tactile hairs on the trunk and the cheek under the eye. The ear of the *E. kalubu* had tragus. The forelimb which were shorter of the hind limb. The hind limb unique where only consisting of four toes and having five claws. The tail of the *E. kalubu* there was long but there were also species are not having tail. Uniqueness was also in the external organs of reproductive systems which there is only scortum, that out the abdomen of the body. The penis not found around skortum. The condition reproductive system of male *E. kalubu* like cloaca in poultry. The penis only will look when there was coitus. In a female has sac with the nipple.

Keywords: Bandicoot, Echymipera kalubu, marsupialia, external organs

Corresponding Author:
Ursula P. Maker; email:
maker_ursula@yahoo.com

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1. Introduction

Bandicoot (*Echymipera kalubu*) is one species endemic on the island of Papua (the province of papua, west papua, and the country Papua New Guinea). Bandicoots are the group pouched mammals having uniqueness namely the placenta similar to eutharian called with the placenta corioalantois (pough et al. 2005). The placenta corioalantois of a duct long connecting the lining of the uterus parent to an embryo. The placenta is also having the function of in being help bind the embryo in when the embryo be moving toward to the sacs their parents to under go development (Petocz, 1994). In addition male bandicoot having only one sewer the end of good for digestive system and reproductive similar to a cloaca. Bandicoot most be easily identified based on forms hooves the syndactylous (Feldhamer et al. 1999).

The bandicoots are nocturnal, solitary and omnivorous having a lot of feed. It is proven by many information about the kind type that feed. In his natural habitat bandicoot take some kind of insecta and invertebrates like an earthworm, spider, conch, and caterpillar wood (Anderson et al. 1988). Besides bandicoots were ingesting small vertebrates, and parts of plants as fruits, the grain, roots, and tree trunks that worn out and leftovers from people. In Papua bandicoots hunted directly in nature to be

consumed as protein. Based on the aspect of color, smell and a flavor of bandicoot favored by the community especially the Papuan. In addition the public trust that part of the body as hair, bone, and the bandicoot from 12 days have efficacy (Warsono 2009).

As a endemic from Papua, bandicoot was weak known in the general community in Papua. Information biology a baseline of the species bandicoot *Echymiper kalubu* in Papua very limited, this can be seen from the less publication about bandicoot *E. kalubu*. Up to now, information on the morphology external organs in drawings was still lacking. Hence research was clearly necessary.

The purpose and benefits of this research was to visualize through figure of morphological characteristics bandicoot E. *kalubu* in macroscopis. Benefits of this research was to furnish basic information with the biology *E. kalubu* of a photograph particularly on morphology the external organs of the body, so they could be used as a medium their experiences in the class.

2. Methods

Materials and research methodology carried out in biology laboratory, the faculty math and science nature, Papua University. Time research on February until August 2012. This research use of five the adult *E. kalubu*. Research methodology the number of noose with which to mounted as many as five different points that carried out at dusk (06 pm) using the bait of ripe fruit such as bananas. A noose back checks performed on the middle of the night or nearly morning (12 am – 05 am).

Bandicoot was caught next identified later incorporated into a cage in a living state to adaptation. After adaptation for three days, the bandicoot to anaesthetist with combinations of ketamine 50mg per kilograms of weigt body with xylasine 10 mg per kilograms to intramuscular injection in through a muscle of the thigh. After fainting then bandicoots had done observation. Observation makroscopis consisting of observation morphological characteristics outside of the body.

The observation morphological characteristics outside of the body were the hair color, traits and the form of bodies as well as sex. Observation the external organs of the body among other: of organs surrounding regions there were head of the eye, the nose and the ears, the forelimb, the tail, and organs reproduction. The measurement of the body and outside observation morphology referring to identification flannery (1995) as well as some modifications. The measurement of using a ribbon meters, sliding calliper and thread. Measurement by a unit of centimetres sides (cm), there were: long the head of the body (pkt) measured from the end of the structure of the snout to the base of the tail; long the tail (pe) measured from the cranial of the tail until the caudal of the tail, not including hair that exceeds the tail; the long of ears (pt) measured from the base of the ear to the tip of an ear without hair; wide ears (it) measured at the width of the ear; long the forelimb covering the length of the forearm / the radius of the ulna (plb) measured at the base of the elbow to wrist and long the sole.

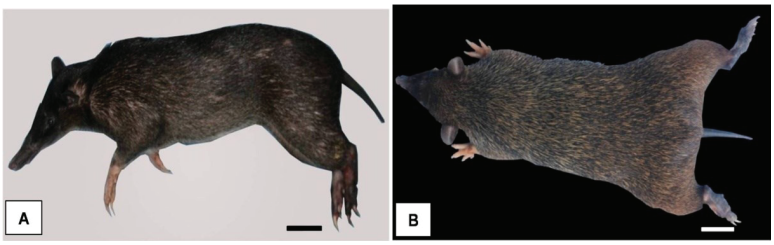

Figure 1: The morphology of *Echymipera kalubu*; male (A) and female (B). Bar = 2 cm.

Figure 2: The morphology chest white of bandicoot (A) and red breasted bandicoot (B). Bar = 2 cm.

Measured on the trunks the elbow until wrist and long feet future (ptd) measured from the base wrist to the crown of the middle finger not including claws; and long the hind limb which includes a long shank / tibia-fibula (pb) measured by the knees until wrist and long feet back. Weight of the body (bb) weighed by using weight hanging with scales maximum of 10 kg. Next done shooting a camera DSLR Canon 1100 to show picture morphology outside the body. The result of the observation macroanatomy analyzed a sort of descriptive and compared with the data in other animals presented in the form of a figure.

3. Results

The results of fifth individual *E.kalubu* consisting of three male and two female. A measure of weight the average *E. kalubu* found was 1,16 kg with a total length of the head and body of was 38 cm (Figure 1).

A characteristic pattern of color of a body *E. kalubu* found on the head dusky-colored. Of hair color on the head with the other parts there are limits a clear tint of especially the ventral part of the neck with the cheek which are brighter. Form a head narrow and tapering toward the nose long. *Echymipera kalubu* had features specific where the hair textured tougher resembling quills spread in along the back to the extent the neck with a variation of color blackish with yellow brownish. While the ventral part of hair brown young and dark brown blackish with the ends of the hair colored more pale. A measure of length the hair dorsal longer than the ventral part of the shorter. There was no difference color of a body clear between male and female.

Based on variations of hair color *E. kalubu* grouped into bandicoot chest white and bandicoot red breasted. Bandicootchest white means a pattern of hair color in the area ventral white compared with red bandicoot chest ventral part of reddish brown hair (Figure 2).

Figure 3: The tail of bandicoot *Echymipera kalubu* (Bar = 2 cm).

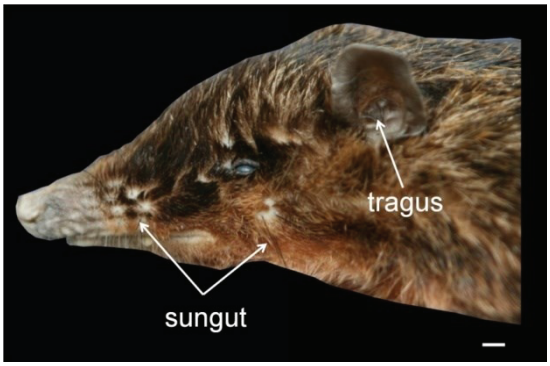

Figure 4: The nose and the ear of bandicoot *Echymipera kalubu*. Bar = 1 cm.

A measure of length tail *E. kalubu* is 5.4 ± 2,72 cm. The part of a tail overgrown with by a smooth hair and rarely. In this research, of five individuals found the one individual that not having a tail and size of the tail longest found was nine cm (Figure 3). Of the individuals are only sampled, there are one individual that not having a tail and some have a tail with maximum length 9 cm.

Characteristic morphology the nasal region, in the nose piece there were tactile hairs were found at the cranial the right and left and was also in the cheek region of the the right and left. The end of the nose *E. kalubu* always in a moist state and wet.

The morphology of ears from bandicoot *E. kalubu* had the form of erect with the rounded ends, and had tragus (Figure 4).

Results the size of the forelegs and hind legs shows differences in sized up forelimb shorter compared with hind limb. Long feet future was 3,16 ± 0.67 cm while the lengths feet back 5.8 ± 0.76 cm. In the forelimb there were five finger separate and only three toes namely thumb to two, three and four in the middle of overgrown with talons (Figure 5). For observation, claws is used to help food for to clean or scratch his body.

The morphology of forefoot and hindfoot bandicoot *E. kalubu* on the dorsal covered by a hair short fine, only a part claws not. Feet gray to black. The difference between hind foot and feet future lies in the second and third united by the skin, only the end of its claws separate. And there were two claw on one finger, or of the so-called in finger sindaktil (Figure 6). The forefoot well short in comparison with hindfoot.

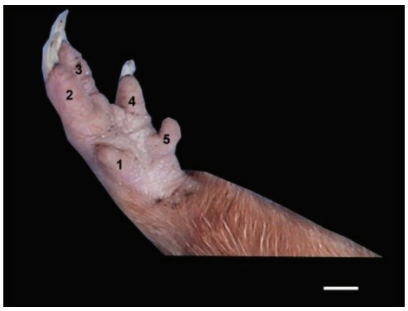

Figure 5: The morphology of the left forefoot of bandicoot *E. kalubu.* Bar = 0,5 cm.

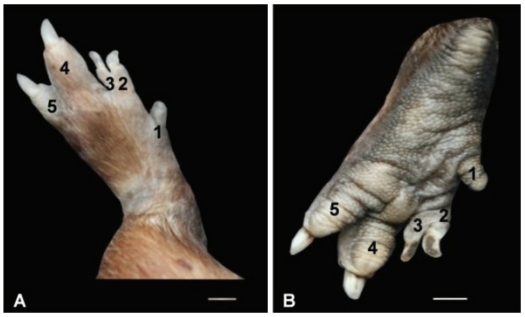

Figure 6: The morphology of hindlimb *E. Kalubu;* dorsal (A), ventral (B). The Syndactylous second and third digits. Bar = 0,5 cm.

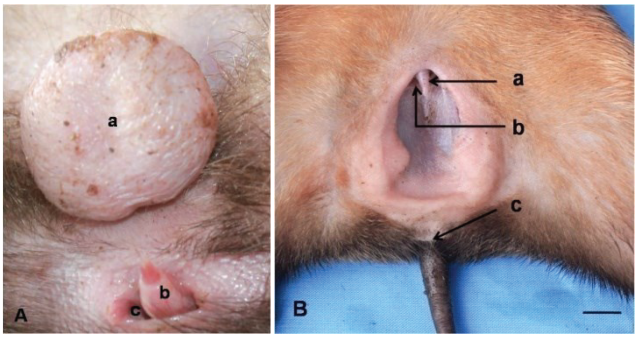

Figure 7: The External Organs Reproductions of *E. kalubu*; male (A), a : testis, b : penis, c : cloaca,and female (B), a : one of teats in the pouch, b : The pouch, c : cloaca. Bar = 1 cm.

The eksternal organs of reproductive system of *E. kalubu* to distinguish sex type can actually appear to be clear, the male had two testicles encased skortum that hangs outside the abdomen of body, and located in the caudal ventral side near the anus. The male had a penis was inside the body, when occurring ejaculation, then the penis shall go out through the anus. Channel the penis attaches to the ventral part of the digestive tract. So channel reproductive and digestive tract rises on one channel, the end of this channel like to a cloaca of poultry (Figure 7).

Only bandicoot female had a sac. The sac were located at the caudal ventral part of near the anus. The sac the form of the elastic wide cranial toward in a body cavity. In this study, the sample was found to have six teats in the pocket and her forming a bow. Same as male, famale had one channel the end of the channel reproduction and the digestive tract ended up at one.

4. Discussion

There was a difference the size of the body against heavy the body between male bandicoot with a female bandicoot. Namely adult male heavier and was higher than female bandicoot (Figure 1). They would the result of the observation and measurement of there was a difference the size of the body against heavy the body between bandikut male with a female, which adult male heavier and was higher than female bandicoot.

A characteristic pattern of color of a body *E. kalubu* found to research is equal to found also by Warsono (2009) and Tethool (2010) namely of hair color brownish and black, the top (dorsal started to regional the snout (cranial until chart caudal dusky-colored, namely the combination of black and yellow on the tip of hair. Variation of hair color *E. kalubu* sampled in a this research, by locals Papuan has clasificated in the chest white bandicoot and the red-breasted bandicoot. A variation of color the chest white bandicoot and the red-breasted bandicoot also found by warsono (2009) and Tethool (2010). The chest white bandicoot was means pattern of hair color in the area ventral white compared the chest red with bandicoot ventral part, hair reddish-brown.

The size of the tail is not a characteristic of the species *E. kalubu* as written by flannery (1995) that *E. kalubu* some have tail long or short or even not having a tail. The tragus in bandicoot similar as possessed by some species of bat insectivorous. Tragus to functions in assist with the echolocation as a means of orientation a substitute for the eye small ones (Suyanto 2001). So that in thought tragus in bandikut also serves assist with the echolocation as a means of orientation remember bandicoot also having small eyes.

The difference size expected related to its function, forelimb with five thumb and three claws that develops functions more to scratch the body to clean body and help function hind legs. According to Warsono (2009) claws in the forelegs also has a role in protect ourselves and digs nests. While hind legs greater size and having four toes and four claws, more active in search for food, making nests and protect ourselves.Of the individuals are only sampled, there are one individual that not having a tail and some have a tail with maximum length 9 cm. But size tail is not a characteristic of the species *E. kalubu* as written by flannery (1995) that *E. kalubu* some have tail long or short or even not having a tail.

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5. Conclusions

The external organs of the body of bandicoot *Echymipera kalubu* had many uniqueness not shared in mammals generally, namely the hind limb consisting of four the with growing five claws. On the reproductive system of male testes wrapped skortum indirectly sticking diabdomen and not found the penis around skortum. The penis inside the with the digestive tract so similar cloaca. The females have uniqueness with the sac opens into under layers of the skin abodemen body with a nipples. The tail is not the external organs which should be owned by individuals, because some individuals has not tails.

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