Short Communication

Determining the Colugo Sexes by Gliding Motion Photographs

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ABSTRACT

The Colugo is a nocturnal arboreal mammal that inhabits the tropical rainforest in South East Asia. Photographs of the Colugo in gliding motion were taken using Digital SLR camera with the aid of speed light and flashlight to determine the Colugo sexes. These photographs technique could be used to determine the Colugo sexes without the need to capture the animal. It may also be a useful technique to determine the sexes of other gliding mammals and help in assisting the conservation effort of the mammal species.

Keywords: Colugo, Dermoptera, Galeopterus variegatus, gliding motion, photograph method, sexes

INTRODUCTION

Colugo (Galeopterus variegatus) is a nocturnal arboreal mammal from the Order Dermoptera (Stafford, 2005). G. variegatus is widely distributed in the tropical rainforest in South East Asia within various habitats, while Cynocephalus volans is strictly found in the southern parts of the Philippines (Stafford, 2005). Previous studies revealed that the Colugo does not retreat when detected by human unless if it is directly disturbed (Dzulhelmi, 2011). Capturing the Colugo, using the capturing techniques described by Wischusen and Richmond (1989) have been used for field studies (Wischusen, 1990; Byrnes et al., 2011) and can directly determine the Colugo sexes. However, capturing the animal alive and unharmed is rather challenging (Wischusen, 1990; Byrnes et al., 2011).

Meanwhile, field research had also been conducted without capturing the Colugo. This includes the study on the population estimation (Lim, 2004; Agoramoothy et
al., 2006; Lim & Ng, 2010), diet preferences (Lim, 2004; Agoramoorthy et al., 2006; Dzulhelmi & Abdullah, 2009b), activity patterns (Dzulhelmi & Abdullah, 2009a; Byrnes et al., 2011) and roosting sites (Dzulhelmi, 2011). This research constrains have posed some degree of difficulties, especially in sex determination, which may affect the outcomes and the analyses of the study. For example, although Agoramoorthy et al. (2006) determined the sexes of the Colugo through his field survey, they did not mention any specific method (e.g. fur colouration) used to determine the male and female Colugo. Previously, Chasen and Kloss (1929) determined the Colugo sexes by fur colouration. Dzulhelmi and Abdullah (2009a) also distinguished the Colugo individuals based on fur colouration and carried infant (if any).

However, Lim (2004) stated that fur colouration might not be reliable to determine the Colugo sexes. Besides determining the Colugo sexes by fur colouration, there is no other available technique to determine the Colugo sexes without capturing it. Due to this constraint, Lim (2004) issued a need for a reliable tool to investigate the sexes of the Colugo without the need for capturing these animals. The present paper presents the use of Digital SLR camera to determine the Colugo sexes by photographing the Colugos ventral view while in gliding motion.

RESULTS AND DISCUSSION
This technique successfully captured the Colugo in a gliding motion and both were from the Bako National Park (<10 photographs) and Pulau Langkawi, respectively (<20 photographs). The photo evidence identified that the Colugos comprised of a male, female, and a female carrying an infant (Figures 1-3). The Colugo glides at an average of 4-29 times per night which is less than 1% of its total activity (Byrnes et al., 2011). The habitat structure and the Colugo population were the crucial factors for obtaining the photographs of the
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Fig. 1: The presence of testicles can be visibly observed and identified on a male Colugo

Fig. 2: The absence of the testicles can be observed and this is identified as a female Colugo

Fig. 3: An infant can be evidently noticed on the female Colugo and this differentiated between the two female Colugo individuals (Fig. 2)

Fig.1-3: The male (Fig. 1), female (Fig. 2) and female with an infant (Fig. 3) Colugos in a gliding motion.

Colugo in gliding motion. Others such as the photographic techniques, assistance, time, locations and weather should also be taken into consideration.

To date, the population and the ratio of the male to female Colugos are still unknown. As the ratio of the male and female Colugo in a particular area is one male to four or five females (1:4) (personal observation), prediction on the Colugo population could be made. Thus, for field survey (e.g. line transects survey), identifying the male Colugo would be a priority.

A combination of the field observations with the aid of Digital SLR camera would facilitate in the future research for the Dermopteran. The images of the Colugo ventral view during gliding could be a very useful and reliable tool to determine the Colugo sexes, while the presence of the carried infant would also assist in individual identification without the need to capture and mark the Colugo. The photographs may also enhance the understanding on the existence of the territorial behaviour portrayed between the male Colugos and also to verify the postulation that the male
Colugo takes over the maternal nature of carrying infant. This photograph technique could enhance the study of other gliding mammals such as the Colugo and the Flying Squirrel in other part of the tropical rainforest and therefore could assist the wildlife management in the conservation effort on these species.

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REFERENCES


