Asian Journal of Conservation Biology, December 2012. Vol. 1 No. 2, pp. 73-76 AJCB-SC000X

The Body Size and Some Field Notes of Painted Terrapin (*Batagur borneoensis*) in District of Aceh Tamiang, Indonesia

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(Accepted December 1, 2012)

ABSTRACT

From total 21 individuals of Painted Terrapin (*Batagur borneoensis*) found – accidentally caught and field survey – it can be concluded that female is heavier, wider and longer curve carapace than male. Male is experiencing s*exual dichromatism* during six months or from April to September. The movement of Painted Terrapin is related to tides and they are inhabit in rivers stream that has water salinity level is 0 and high density of Berembang (*Sonneratia sp*).

Key words. *Batagur borneoensis*, body size, ecology

INTRODUCTION

Indonesia is a country that rich of freshwater turtles species in the world. It has 32 species of freshwater turtles and spread from Sumatra to Papua. Of the 32 species, only five species are already protected by law, they are *Orlitia borneensis, Batagur affinis, Carettochelys insculpta, Chelodina novaeguineae, Elseya novaeguineae*. Meanwhile, one of the freshwater turtles listed as critically endangered by IUCN, Painted Terrapin (*Batagur borneoensis*) is still in the consideration for protection in Indonesia. In international context, Painted Terrapin currently are still proposed to be listed in CITES Appendix II plus zero quota for trade.

Painted Terrapin (*Batagur borneoensis*) is a species of freshwater turtles are threatened with extinction at the global level (TCC, 2012). Despite the breeding efforts of this species have been successful in some places/captivity (Hudson, 2003). One of them is the Bronx Zoo and some factors that influence it has been reviewed and discussed by Blanco (Blanco et al, 1991). Nevertheless, very few attempts to study and to conserve this species systematically in their habitat, with the exception were breeding efforts in Malaysia and several studies conducted Moll (1978, 1985, 1987) which focused on Malaysia, Hudson (2003), Praschag (2007), Duli (2009) in Malaysia, Guntoro (2012) in Sumatra. While efforts to study and to conserve in habitat in Indonesia is very minimal. *Ex-situ* conservation efforts in Indonesia alone have been implementing by the author. This paper presents the field findings of *Batagur borneoensis*.

METHODS

Specimens were originated from incidental caught by fishermen and beach patrol during April 2012 to a survey conducted on May 2012. For the survey conducted on May 2012, the survey was carried out by laying the traps at fourteen locations in large and small rivers and estuaries area. These locations were expected to be a place where Painted terrapin can be trapped easily. The trap for survey on May 2012 were made of iron and, having a length 1.2 meters, 60 cm high and 80 cm wide.

The traps were layed between 400 meters to 7 kilometers in distance from the nesting beach of Painted Terrapin. The distance between one trap to another trap were varies according local information. These locations were places where people often found and hunted Painted few years ago when the species had high price in market. The trap locations are shown in Picture 1.

Location of trap and incidental caught was measured of its salinity level, GPS coordinate, measured the depth of the river, dominant vegetations and other animals were found. We also measured it's carapace length and width (curve), weight, sex and attached a tag numbered. Specimens have been marked then released at the place where they were captured.

Location

The study was conducted in Protected Mangrove Forest in east coast of Aceh, precisely in the Sub-district Seruway and Bendahara, District of Aceh Tamiang. These areas were previously not included in the map of the distribution of Painted Terrapin described by Iverson (1996, downloaded from www.asianturtlenetwork.org). Although the mangrove forest area is covering about 24,000 thousand hectares, but they are threatened by

Picture 1. Locations of Trapping

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land conversion activities for oil palm plantations, fish farms. Currently only about 35 percent of the total 24,000 hectares are remaining in healthy condition (Analisa daily, 2012).

In this area, there are three main nesting beaches of Painted Terrapin. They are Beach Pusong Cium, Beach Kuala Genting and Beach Kuala Berango (Guntoro, 2010, 2012). However, based on historical records, Beach Kuala Genting and Beach Pusong Cium are more often found nests than Beach Kuala Berango (Guntoro, 2010).

RESULTS

The dominant vegetation is *Sonneratia sp.*, *Rhizophora apiculatta*, *Rhizophora mucronata*, *Avicenia sp*., *Nipa fruticans*. While the animals are encountered lizard (*Varanus sp.*), Great hornbill (*Buceros bicornis*), Eagle (*Haliastur indus*), *Centropus sinensis*, *Halcyon chloris*, *Halcyon coromanda*, Thomas Leaf Monkey, Buff-rumped Woodpecker (*Meiglyptes tristis*), Starling (*Acridotheres javanicus)*, Wild boar (*Sus scrofa*), Seagulls, Mangrove crab (*Schyla serrata)*, Tiger shrimp (*Penaeus sp.*), Mantis shrimp (*Harpiosquilla raphidea*) Snapper (*Lutjanidae*), Grouper (*Chromileptes altivelis)*, *Paraplotosus sp.*, *Periophthalmus sp.*, *Portunus, Scianidae*, *Macro nemurus* (Guntoro, 2012).

Picture 2. Typical habitat of Painted Terrapin

Based on nesting patrol observation had been conducted since October 2009 until the last survey on May 2012, total found 21 individuals of Painted Terrapin, 11 females and 10 males. Whereas if only look at the survey on May 2012, only found 11 individuals, which 6 individuals were females and 5 males.

Picture 3. Male (below left) and Female (Above right) *Morphometric data.*

From total 21 individuals were found during the period from October 2009 until May 2012, the average shell length was 43.4 cm where the females curve carapace is longer than males. Average carapace length of females is 48.1 cm while males only 38.2 cm.

Table 1. Morphometric Data of Specimens found

	Weight (kg)	Width curve (cm)	Length curve (cm)
Average (male & female)	10,9	39,0	43,4
Average male	8,0	33,6	38,2
Average female	13,6	44,0	48,1
STDEV	5,0	9,6	9,6

N = 21
Female = 11
Male = 10

The average carapace width (curve) is 39.0 cm which females have a wider curve carapace than males. The average carapace width of females is 44.0 cm, while males only 33.6 cm. Similarly to weight, that females is heavier than males. The average weight for 21 individuals is 10.9 kg. The average weight is 8.0 kg for males, while female is 13.6 kg. Female body mass size is larger than males most likely due to that the female has a "womb" for storing eggs before nesting on the beach.

The relationship among the three indicators of body mass - length, width, weight - is positive and linear if we see the figures. As shown by figure 1, figure 2 and figure 3 that the coordinates between the axis X and Y have a linear and positive slope.

Ecology

Painted terrapin spend the majority of their lives in rivers that have water salinity 0. The specimens, both male and female, were found during the period of the findings has indicate that the location of the findings are rivers that have water salinity 0. In survey was conducted on May 2012, also tried to laying the traps in a location that is still affected by salinity levels of 10% - is about 1.4 miles from the nesting beach - up to 30% - is about 0.6 miles from the mouth of the river - but the traps failed to captured any

specimens. Specimens were found in locations with salinity 0, at location within distance 2.1 mile - the location number 4 shown on the map - up to 4.7 mile - the location number 7 on the map – from mouth of the river. This area is dominated by *Berembang* (*Sonneratia sp.*) and *Nipah* (*Nipa fruticans*). In this area has high density of riverine vegetation, Painted Terrapin sometime is basking.

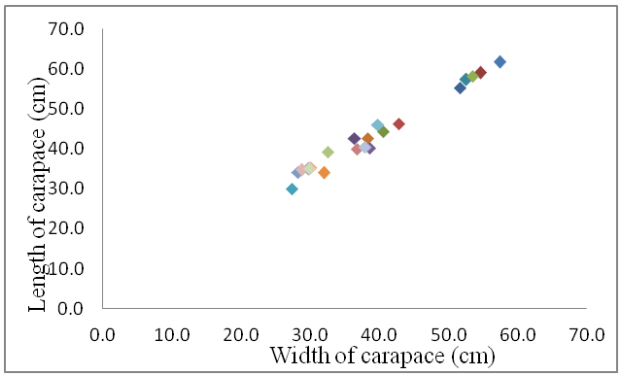

Figure 1. Length and Width of Carapace (in cm)

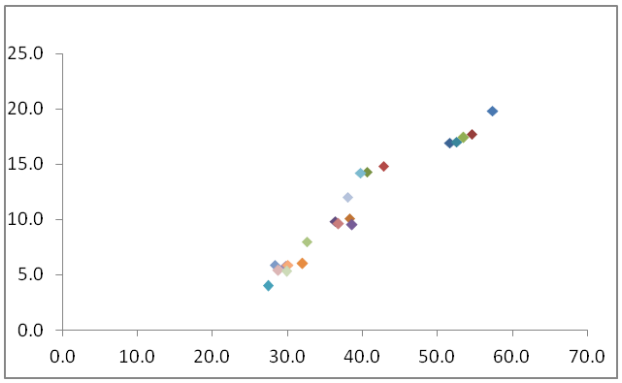

Figure 2. Width of Carapace in cm (x) and Weight in kg (y)

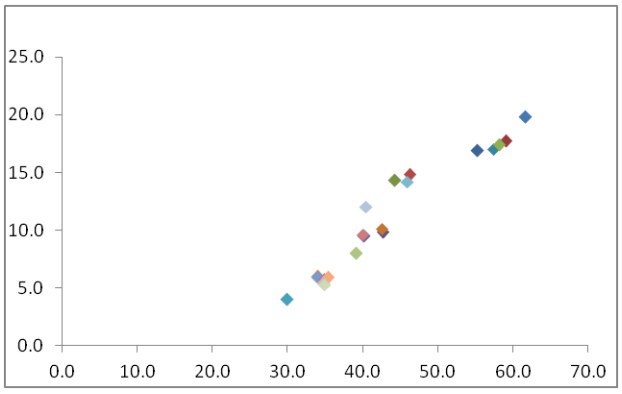

Figure 3. Length of Carapace in cm (x) and Weight in kg (y)

Movement of Painted Terrapin is likely to be affected by the movement of the river stream that affected by tides. In the survey was conducted in the first week on May 2012, when the high tide, traps were located in large and small rivers – high density of *Berembang* (*Sonneratia sp.*), but it was failed to caught any single specimen. In the second week of that survey, when the water is small tide (normal), the survey was repeated at the previous location and managed to catch the eleven specimens. Eight of the eleven were caught at small rivers that shallow, having a depth of 1-2 meters, and high density of riverbank vegetation, especially trees with fruit such as *Sonneratia s*p. This is confirmed the study by Moll (1978), Guntoro (2012).

Picture 4. Painted Terrapin basking (A.) and Differences at River Stream Affected by Salinity and Not Affected (B.)

Moreover, based on the specimens have been found during April 2009 to May 2012, it can be predicted that the mating season of Painted Terrapin is from April until September every year. Nevertheless, it is still unknown whether every male experiencing *sexual dichromatism* during 6 months fully or just few months in that period. It is also unknown, for example, how is mating behavior for male and female.

What is next

It is needed to carry out telemetry studies that can reveal all aspects of natural behavior of Painted Terrapin clearly, such as their movement, coverage area (range), how it relates to their diet and the tides, etc. Meanwhile, to investigate another behavior such as how their mating, genetics

issues are can be conducted in *ex-situ* conservation facilities that are currently being constructed by author.

ACKNOWLEDGEMENT

The author would like to thanks to Turtle Conservation Fund to provide grant support for field survey on May 2012, Turtles Survival Alliances for observation and nesting patrol in 2009, Board of Conservation of Natural Resources (BKSDA) Province of Aceh, Aceh Tamiang Forestry Office, Satucita Foundation, Mistar Kamsi for discussions regarded of field survey.

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