

Observations on the Influence of Seasonality, Lunar Cycles, and Weather Condition on Freshwater Turtle Activity in Sarawak, East Malaysia (Borneo)

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Abstract.- Freshwater turtles were surveyed at two sites in Sarawak: Loagan Bunut National Park and Balai Ringin. Capture results were tested against environmental factors such as lunar phase, weather and seasonality to examine differences in activity level. Proportionally, soft-shelled turtles were most active during the full moon (29.0%) and the last quarter lunar phase (29.4%). Hard-shelled turtles were active during the full moon 50.0% of the time. Both soft-shelled and hard-shelled turtles were more active during overcast periods (53.0% and 66.0%, respectively). Seasonality did not seem to affect soft-shelled turtle activity, while hard-shelled turtles were active 50.0% of the time during the dry South-west Monsoon from June to September.

Keywords.- Testudines, Malaysia, Borneo, capture success, environmental factors.

Introduction

Southeast Asia has a highly diverse freshwater turtle fauna due to a combination of factors, including the presence of major mountain massifs, some of the largest archipelago systems in the world, large tracts of lowland forests, streams and rivers, high precipitation and tropical climate (Iverson, 1992; Lovich, 1994). Due to their cryptic nature and the presence of intense hunting in the recent past, however, these enigmatic species have been difficult to study. Consequently, there is a paucity of published information regarding the current status and basic ecology of the Southeast Asian fauna, including those populations endemic to Borneo. As part of a larger study on the ecology of *Amyda cartilaginea* (described in Jensen, 2006), the activity of freshwater turtles in Borneo in relation to environmental factors, such as lunar phase, precipitation, and seasonality, were assessed.

Materials and Methods

The primary study area was Loagan Bunut National Park (03° 44'–03° 00' N, 114° 09'–114° 17' E) in northern Sarawak, which is within a three hour drive to the town of Miri. Field work was concentrated at the Park, but two visits were also made to Balai Ringin (01° 03' 00" N, 110° 45' 00" E), a fishing village about two hours driving distance from Kuching. Both sites are located within peat swamp forests (Fig. 1).

Loagan Bunut National Park contains the only freshwater floodplain lake in Sarawak (Sayer, 1991), encompassing 650 ha² at its maximum diameter. The lake is completely dry during prolonged droughts. Annually, the lake completely dries between three and six times, typically in February, May, and June.

A variety of techniques were attempted to assess the most effective method for capturing *Amyda cartilaginea*. One method employed was the use of hoop traps according to techniques described by Frazer et al. (1990), Legler (1960), and Vogt (1980). Native hoop traps called 'bubu' were ineffective in trapping turtles. Another local fishing device called a 'selambau' caught a single turtle in Balai Ringin.



Figure 1. Locations of Balai Ringin and Loagan Bunut National Park in Sarawak, East Malaysia.