

BIOLOGICAL OBSERVATIONS ON THE ASIAN SOFT-SHELL TURTLE IN SARAWAK, MALAYSIAN BORNEO, WITH NOTES ON THE BIOLOGY AND CONSERVATION OF OTHER NON-MARINE TURTLES

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Introduction

Borneo, the planet's third largest island, is located in the Malay Archipelago and is considered a centre of high global biodiversity. The island itself is under the jurisdiction of three countries - Indonesia, Malaysia, and Brunei Darussalam. Sarawak (Figure 1) is one of the two Malaysian states located on the island, the other being Sabah. It is the largest state in Malaysia, comprising 124,450 km² of various forest types, urban and rural areas, and logged forest, all intersected by a lattice-work of rivers and tributaries. Sarawak's capital city is Kuching, which literally means 'cat' in the Malay language and is situated on the banks of the Sarawak River in the western part of the State.

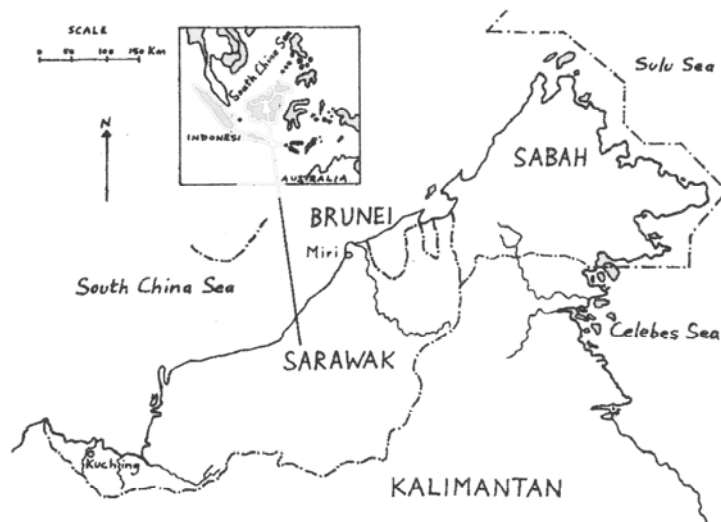


Figure 1. Map of northern Borneo, showing location of Sarawak and adjacent regions. Inset: locator map of south-east Asia.

Native non-marine turtle species previously noted from Sarawak include two soft-shelled species (Family: Trionichidae): the Asian soft-shell turtle (*Amyda cartilaginea*) and the Malayan soft-shell turtle (*Dogania subplana*). Hard-shelled turtles known from Sarawak include seven species from the family Bataguridae: the painted terrapin (*Callagur borneoensis*), Malayan box turtle (*Cuora amboinensis*), Asian leaf turtle (*Cyclemys dentata*), spiny hill turtle (*Heosemys spinosa*), Malayan flat-shelled turtle (*Notochelys platynota*), Asian giant turtle (*Orlitia borneensis*), and the black pond turtle (*Siebenrockiella crassicolis*); and one species from the family Testudinidae, the Asian brown tortoise (*Manouria emys*). Two non-native turtle species are known to be established in some parts of Sarawak. These are the Chinese soft-shell turtle (*Pelodiscus sinensis*) and the red-eared slider (*Trachemys scripta*). All native species are protected in Sarawak. Commercial trade of reptiles in the State has been banned since 1998 (Sarawak Government Gazette, 1998). Upon entry into Malaysia in 1963, Sarawak was granted special rights and powers, not provided for the states within Peninsular Malaysia, to enact legislation autonomously (Sarawak Government Gazette, 1998, Sharma & Tisen 2000). The Wildlife Protection Ordinance was created in 1998. *O. borneensis* and *C. borneoensis* are listed as 'Totally Protected', and *M. emys*, *A. cartilaginea*, and *D. subplana* are listed as 'Protected'. See Table 1 for a complete list of Sarawak and International protections regarding these turtle species.

Most of the native freshwater turtles and tortoises* found in Sarawak are listed by the World Conservation Union (IUCN) (www.iucnredlist.org). The IUCN is the world's largest conservation network, consisting of scientific experts and policy makers from more than 62 countries and 800 non-governmental organizations (NGOs). The IUCN keep a record of those species most in need of conservation attention through their 'Red List'. Listed as critically endangered is *C. borneoensis*. Listed as endangered are *H. spinosa*, *M. emys* and *O. borneensis*. Classified as vulnerable are *A. cartilaginea*, *C. amboinensis* and *N. platynota*. Classified as Lower Risk is *C. dentata*. Lastly, *D. subplana* and *S. crassicolis* have not been listed by the IUCN.

Malaysia is a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), an international agreement between 169 countries. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. The species covered by CITES are listed in three Appendices,