



World Congress of Herpetology Newsletter

December 2021, Volume 2, Issue 2



ISSN 2708-597X

www.worldcongressofherpetology.org



Herpetology 2024: Which Croc?



Written by **Indraneil Das¹** & **Anthony K. Pine**



¹*Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia. E-mail: idas@unimas.my*

This is the third part of a series of articles describing herpetological species and field excursions possible for those planning on attending the World Congress of Herpetology in Kuching, Sarawak, Borneo in 2024. Here, we describe the crocodile species known from Borneo.

Two species are well documented for the island- the Saltwater or Indo-Pacific Crocodile, *Crocodylus porosus* and the Tomistoma, also called the False or Malayan Gharial, *Tomistoma schlegelii*. Reports of an additional two crocodiles on the island are also available, unsurprisingly, from the more remote regions, including the Siamese Crocodile, *Crocodylus siamensis* and another rumoured species, described during the early Dutch Expeditions to the island, and named *Crocodylus raninus*.

The most abundant of these is the ‘Salty’, that can be sighted with the least effort as

one takes a tourist cruise along some of Sarawak’s larger rivers, especially the Kuching Wetlands National Park or Bako National Park, and particularly around the meandering rivers off Santubong. A healthy population of the species survives around the mangroves and backwaters of the campus of Universiti Malaysia Sarawak, and smaller individuals are occasionally observed basking on the adjacent golf course! However, casual visitors not willing to risk life or limb can opt to visit the famous Jong’s Crocodile Farm, located beyond the town of Siburan, around 30-minutes drive out of Kuching.

Johnson Jong himself is a larger-than-life man, with a deep interest in crocodiles and author of a couple of popular books on the same. Both the Saltwater Crocodile and the Tomistoma breed at this facility, which also houses other wildlife



Fig. 1. Saltwater Crocodile, *Crocodylus porosus*.

species, and has a not-to-be-missed feeding schedules for crocodiles (as well as the Neotropical *Arapaimas*).

Crocodile habitats on Borneo are diverse, comprising mangroves and estuaries, large inland rivers, and freshwater and peat swamps. Steep stretches upriver, where rapids form, appear to largely (but not invariably) restrict the ranges upriver, and several isolated populations are known to occur in the mid-levels of mountains in Sarawak. Recent research by our team at UNIMAS focused on aquatic habitat use by crocodilians. To better understand where crocodilians were most frequently found within their environment, this project employed a wide array of data collection methods, including vessel-based spotlights surveys, captures and side-scan sonar mapping of river areas, with support from the National Geographical Society. In total, there were 573 Saltwater Crocodiles and 54 *Tomistoma* sighted during eyeshine surveys spanning across four major river areas.

Side-scan sonar was employed primarily to better understand aquatic habitat types, with the resulting side-scan sonar mosaics providing the first real opportunities to visualise and quantify habitat features beneath the waterline. Such opportunities were paramount towards accurately describing habitat within the many variations of turbid, tidal and lotic river areas that would otherwise be too difficult or dangerous to survey using other methods. A total of over 78.5 km of river length was mapped via side-scan sonar, equalling a total of 3,827 km of river area being fully mapped. The resultant maps offered useful looks at river profiles, habitat complexity and habitat structures similar in a way to how topographic maps



Fig. 2. Malayan False Gharial, *Tomistoma schlegelii*.

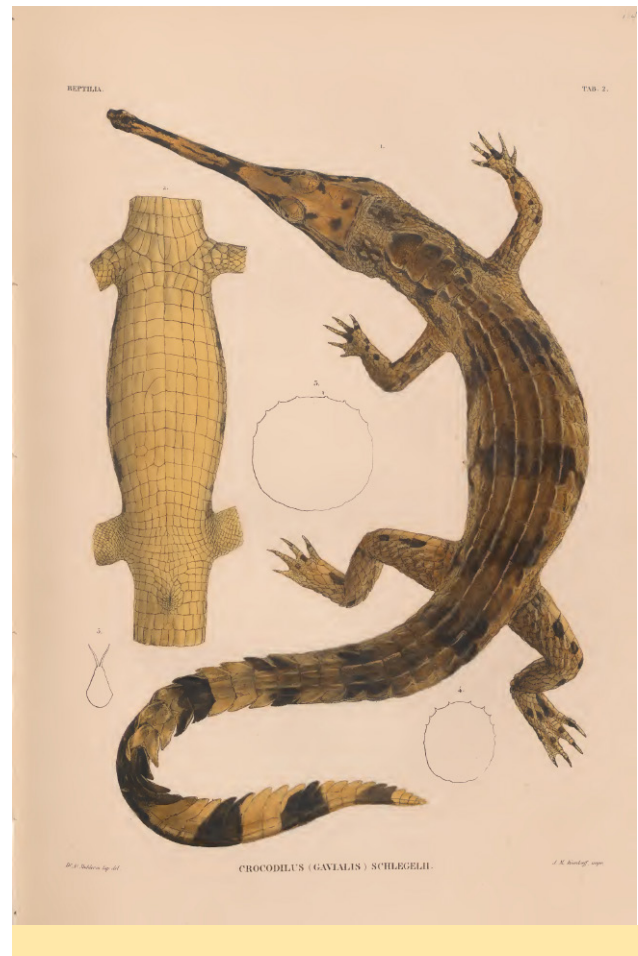


Fig. 3. A plate from Müller and Schlegel (1844)'s account from the 'Verhandelingen over de natuurlijke geschiedenis der Nederlandsche overzeesche bezittingen, door de leden der Natuurkundige Commissie in Indië en andere Schrijvers' (translation: 'Treatises on the Natural History of the Dutch Overseas Possessions, by the Members of the Physics Commission in the Indies and other Writers'), published from Leiden, and depicting the *Tomistoma*.

might help us better understand and describe the many unique forms and features found on land. From the study, our team was able to identify differences in habitat usage by species, offering better opportunities to identify and rationalise efforts for

future research, management and conservation efforts. For instance, *Crocodylus porosus* in our study areas were mostly found in homogeneous river areas, where associated aquatic habitat was clay/silt, and less frequently, in areas of bank vegetation, decaying vegetation, sedimentary rock or anthropogenic matter. On the other hand, the Tomistoma was most often linked to densely-vegetated, complex and restricted habitat areas within the uppermost reaches of rivers and peat swamps, associated primarily with decaying vegetation as typify peat swamp habitats, rather than with clay/silt or live bank vegetation. Even in rivers where both species persist in Sarawak, such differences in habitat use appears to limit range overlap between species, something that would be interesting to further understand.

Human-wildlife conflict appears to be over-represented in the media locally, although the deep kinship between the indigenous tribes (chiefly, the Ibans) and crocodilians may explain the lack of a tradition of crocodile hunting. Indeed, the wanton killing of crocodiles are taboo, Iban tribesmen narrating various lore associated with these animals in their defence. Nonetheless, when certain large crocodilian are observed around heavily frequented waterways (such as bathing and washing sites), efforts are made, locally and by the government, to ensnare and remove them. One such story centres around a large crocodile of the Batang Lupar, nicknamed 'Bujang Senang'.

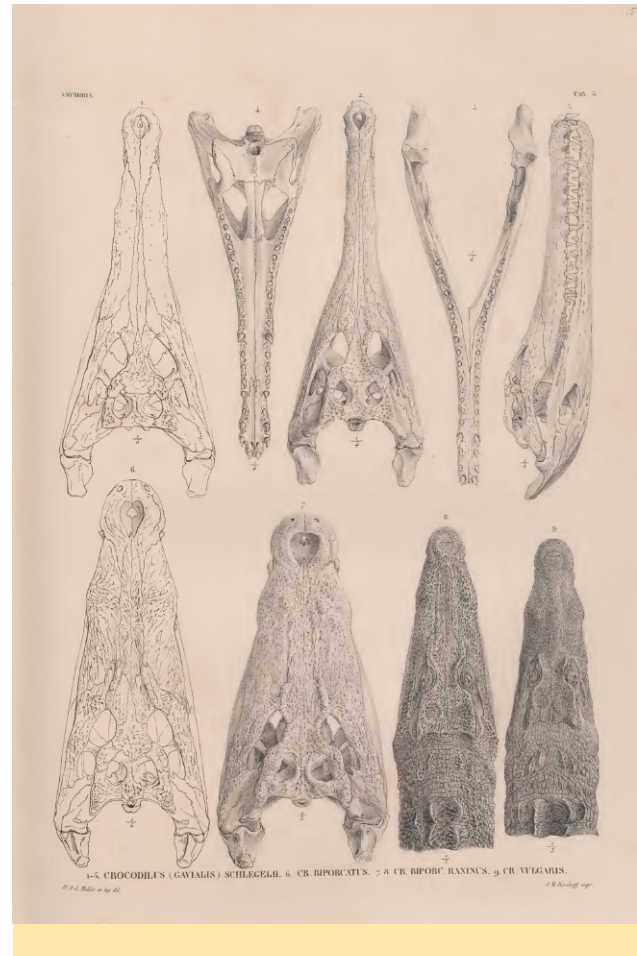


Fig. 4. Another plate from the said work, illustrating the crocodiles of Borneo, including a purported new species (Figure 7), referred at the time as *Crocodylus biporcatus raninus*. Considered synonymous with *Crocodylus porosus* by some authors, accounts from 1990 and 1992 present evidence of its distinct identity as *Crocodylus raninus*, and a recent author proposed the same as sister species to the New Guinean *Crocodylus novaeguineae*.

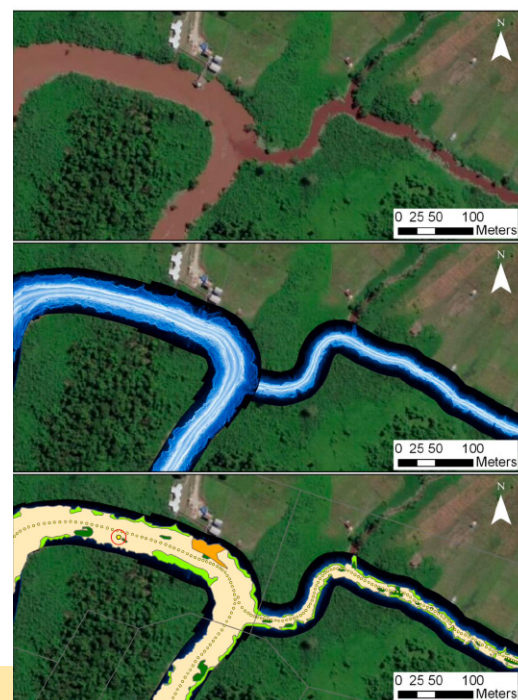


Fig. 5. Maps of a crocodile habitat along a stretch of river, including satellite imagery (top); side-scan sonar mosaic (middle) and classified habitat layers and depth profile (bottom).

After a number of attacks, the bachelor of Batang Lupar (as the name translates) was trapped and dispatched. The skull now resides at the Jong's Crocodile Farm, amidst panels bearing gory newspaper articles on crocodilian attacks in Sarawak, and the epic tale of Bujang Senang is the topic of a sensational book.

The next instalment, in the next issue of the Newsletter in June 2022, will cover the Bornean saurofaunas, including the best sites for seeing those in your bucket list.

Till then, stay safe and watch this space for further updates.



Fig. 6. Anthony Pine releasing an adult *Tomistoma*. Photo: Jason Teo Jia Hong.



Fig. 7. A wild yearling *Tomistoma schlegelii*.

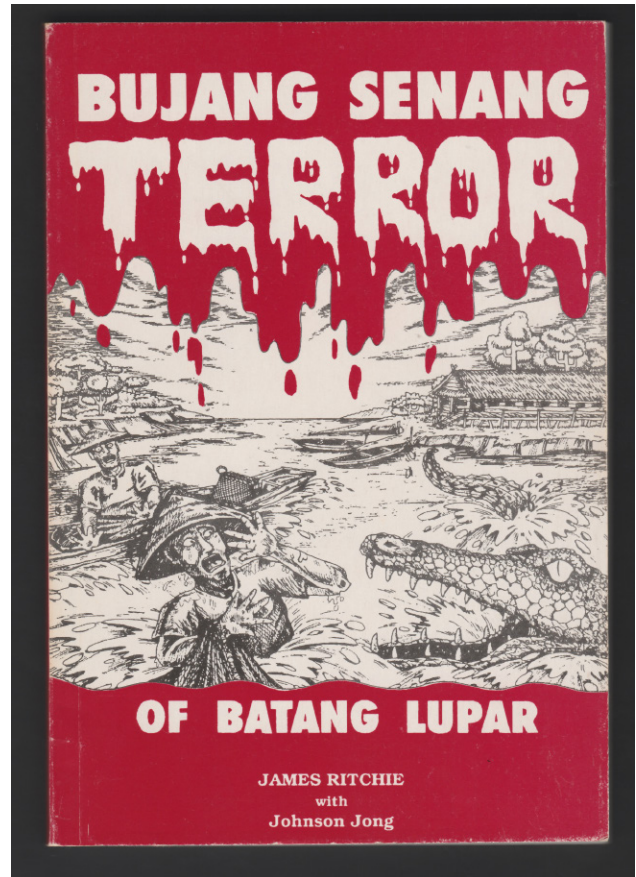
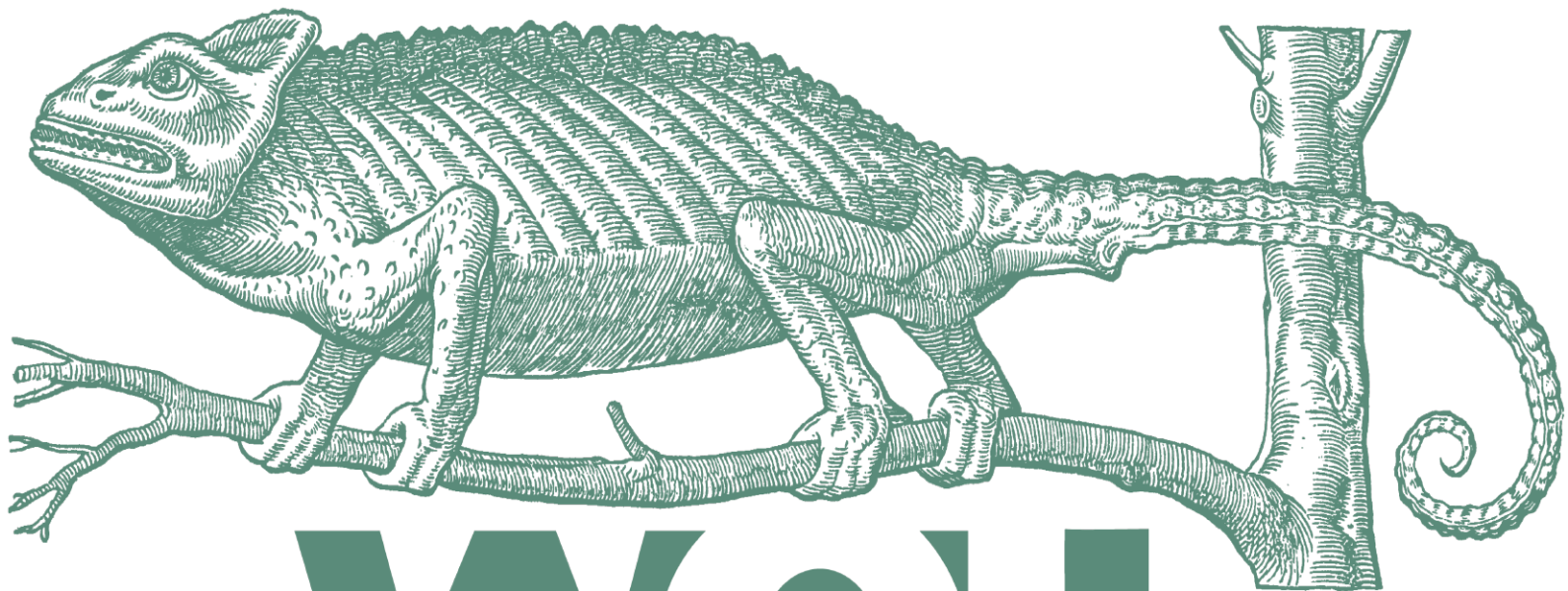


Fig. 8. Front cover of a popular book from Sarawak, recounting the tale of Bujang Senang, the giant Saltwater Crocodile that was held responsible for the loss of numerous human lives in the 1980s.



Fig. 9. Johnson Jong with the skull of Bujang Senang.



WCH

World Congress of Herpetology

The World Congress of Herpetology (WCH) is an International Scientific Nonprofit Organization that is also a Scientific Member of the International Union of Biological Sciences (IUBS). The mission of the World Congress of Herpetology is to promote herpetological research, education, and conservation, by facilitating communication between individuals, societies, and other organisations engaged in the study of amphibians and reptiles.

The aim of the WCH newsletter is to provide a means of communication during the period between WCH congresses that are typically held every three to five years. We want it to be a means of communication between the WCH Executive Committee (EC), the International Herpetological Committee (IHC), and the global herpetological community, and a place to feature ongoing actions being taken to study amphibians and reptiles by individuals and herpetological societies globally. It will be published bi-annually in June and December.

Editorial board for newsletter 2021 2(2)

Editor in chief:

JUDIT VÖRÖS, Secretary General

Assistant Editors:

RICHARD GRIFFITHS, Secretary General Elect

INDRANEIL DAS, Conference Chair

RICKY SPENCER, Webmaster

JULIA RILEY, IHC Member

TRENT GARNER, IHC Member

AMAEL BORZÉE, IHC Member

ANDREW CRAWFORD, IHC Member

ALEJANDRA ZAMORA, IHC Member

CATHARINA KARLSSON, IHC Member

ANTHONY HERREL, IHC Member

Design, illustration and layout:

VIKTÓRIA SZÓKE, Budapest, Hungary

✉ worldcongressofherpetology@gmail.com

🏠 worldcongressofherpetology.org

📘 Word Congress of Herpetology

🐦 @WCHerp