

Human-Crocodile Conflicts in Sarawak, Malaysian Borneo: An analysis of crocodile attacks from 2000 until 2020

Mohd Izwan Zulaini Abdul Gani^{1,2}, Ruhana Hassan¹, Oswald Braken Tisen², Rambli Ahmad²

¹Faculty of Resource Science and Technology, Universiti Malaysia Sarawak,
94300 Kota Samarahan, Sarawak, Malaysia

²Sarawak Forestry Corporation,
Lot 218, KCLD, Jalan Tapang, Kota Sentosa,
93250 Kuching, Sarawak, Malaysia

Received: June 8, 2021. Revised: December 23, 2021. Accepted: January 17, 2022. Published: January 27, 2022

Abstract—Crocodiles have caused a relatively high number of fatalities towards local people in Sarawak, a Malaysian state in Borneo. However, they have important cultural values and are well respected by the riverine communities in the state. The objective of this study is to determine the patterns of human-crocodile conflict in Sarawak which could help in managing the problems between crocodile and human. Information on crocodile attacks were collected from multiple sources including records kept by local authority, media or CrocBITE database. Over a 21 years period (year 2000-2020), the record attacks (n=164) showed a balance between fatal and non-fatal cases. Most common victims in Sarawak were male (86.6%) and adults from the age of 31 to 40 years old (20.7%). The attacks occurred more during the daylight (59.4%), with the peak time for crocodile attacks was approximately between 1800 to 2359 hours (33.3%). Crocodile attacks occur slightly more during the wet season, from October to March (54.0%), with the highest one recorded in March (16.8%). Fishing (26.2%) and bathing (22.0%) in the rivers possess the highest risk of crocodile attack, suggesting that crocodiles are more likely to attack when the victim is in the water. The findings imply that crocodiles' attack pattern in Sarawak is associated with the people's activities pattern. There is a need to update the database on crocodile attacks in Sarawak on -real time basis as this will facilitate the relevant agencies in formulating the strategies to reduce the number of crocodile attacks and ensuring the safety of the riverine communities.

Keywords— Human-crocodile conflict, attack records, mitigation.

I. INTRODUCTION

Malaysia consists of three regions, the peninsular region and the two states namely Sabah and Sarawak which are located in the island of Borneo. Crocodiles in Peninsular Malaysia can be found in various areas, particularly in Rembau-Linggi Estuary and Setui-Chalok-Bari River Basin (RB) [1],[2]. Meanwhile in Sabah, crocodiles inhabit Kinabatangan River Basin and its associated wetland [3], Klias River [4], Segama River [5] and Kawang River [6].

Sarawak supports the largest population of crocodiles in Malaysia. The saltwater crocodile (*Crocodylus porosus*) can be found in all major river basins in Sarawak including large river systems, mangroves, estuaries and inland freshwater swamps [7]. This species also can be found in non-tidal freshwater sections in the upper region of the rivers, several hundred kilometers from sea [8]. The Malayan Gharials (*Tomistoma schlegellii*) also can be found in Sarawak, but they are difficult to sight in the wild. There are reports stating that this species can be found in the upper tributaries of Sadong River, Samarahan River, Baram River, Logan Bunut Lake and a few other peat swamp areas [8],[9].

Crocodiles have been long living in rivers of Sarawak and this can be proven by the presence of 'Baya Tanah', crocodile's effigies that can be found in several locations across the state including in Engkilili, Kanowit and Kapit. The earthen crocodile replicas are believed to be about 50 to 200 years old [10]. This "Baya Tanah" played an important role in the lives of native Iban farmers in the past, who held 'mali umai' ceremony (ritual at paddy farms) either in October or November each year. The main purpose for the construction of the "Baya Tanah" is to protect the paddy farms against pests, rodents and locusts. Crocodiles are regarded as special animals by the Ibans, especially for those who are still practicing traditional beliefs. It is believed that the spirit of crocodile will rise and devour all the pests in the paddy field after the 'mali