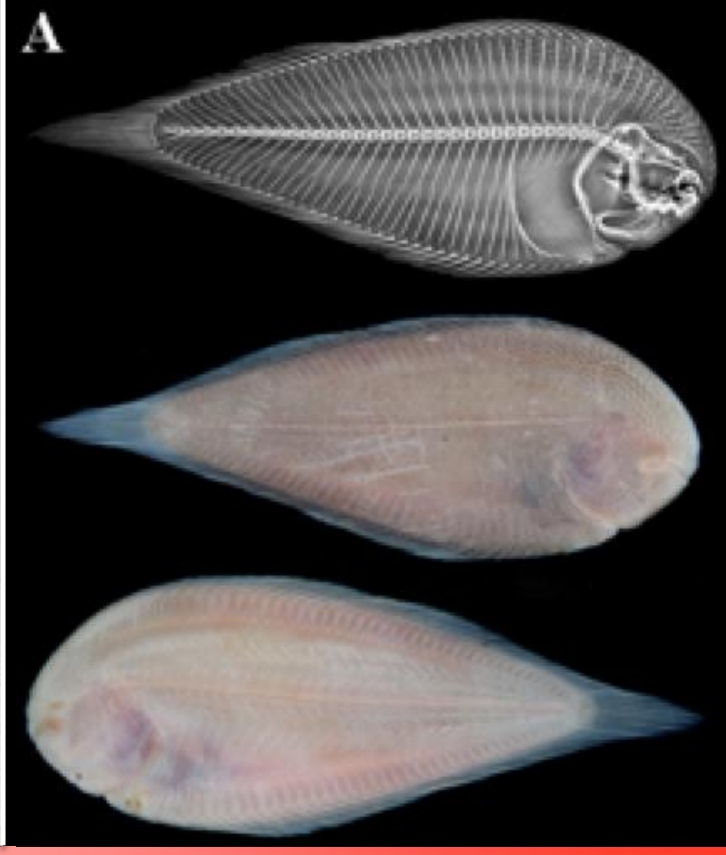

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UNIVERSITI MALAYSIA SARAWAK

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QUARTERLY UPDATES FROM THE INSTITUTE OF BIODIVERSITY AND ENVIRONMENTAL CONSERVATION

IBEC BULLETIN 2020 Vol. 1 No. 3 – September

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Editorial Board

Please submit all materials for inclusion to the Editor.

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Front cover, from top left, clock wise, a ring lady from Padawan (photo Indraneil Das), x-ray image of *Typhlachirus lipophthalmus* (photo Tan Heok Hui), blooming of *Durio kutejensis* (photo Ng Win Seng), *Gonocephalus bornensis* (photo Wayneson Tay).

RESEARCH ACTIVITIES DURING COVID-19

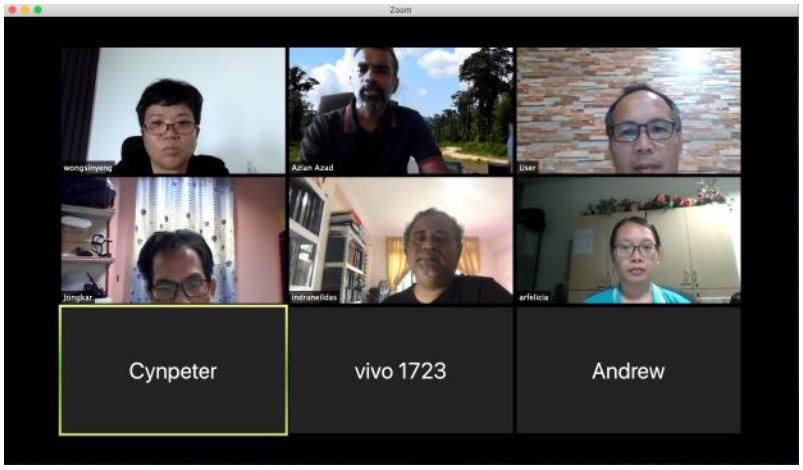
By
Wong Sin Yeng

The implementation of 2020 Malaysia Movement Control Order (MCO) on 18th March 2020 has shifted the way which many researchers operate. The departure from the norm of research work prior to Covid-19 has resulted in an extremely productive and creative period for many researchers. There has been a burst of online seminar series, online meetings, online discussion, etc. which is extremely beneficial especially for young researchers as the learning platforms are now no longer limited to those who could afford to travel but available at their fingertips.

Here, we list a series of activities in which our staff and/or students participated over the period.

1. Discussion on Helmeted hornbill forensic project in Sarawak between University of Hong Kong, Malaysian Nature Society and IUCN Hornbill Specialist Group. May 7, 2020.

2. IBEC Academic Meeting. Bil 02/2020. May 10, 2020. 10.30am.

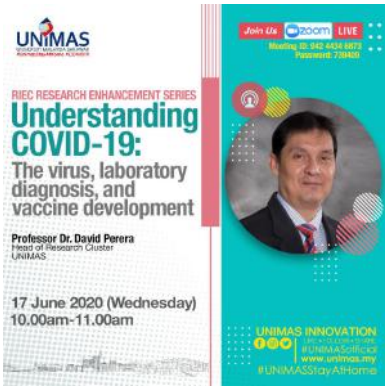


3. "Birds of the East Coast" organized in conjunction with the World Migratory Bird Day. Date: May 9, 2020. Time: 10.00 - 11.00 AM.

4. "Research in natural sciences" by Prof. Dr Kasing Ak Apun. Date: May 15, 2020. Time: 10.00 - 11.00 AM.

5. "World Turtle Day Open House: Session 3" moderated by Dr Nicholas Pilcher. Date: May 26, 2020. Time: 03.00 - 05.00 PM.

6. "World See Turtle Day 2020: MySeaTurtle, MyHeritage" moderated by Siva Prakash. Date: June 13, 2020. Time: 02.00 - 04.00 PM.

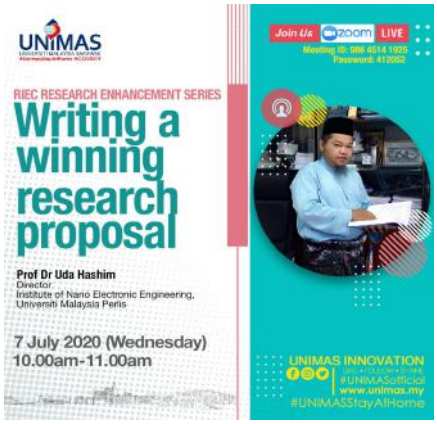


7. "RIEC Research Enhancement Series: Understanding Covid-19: The virus, laboratory diagnosis, and vaccine development" by Prof. Dr David Perera. Date: June 17, 2020. Time: 10.00 - 11.00 AM.

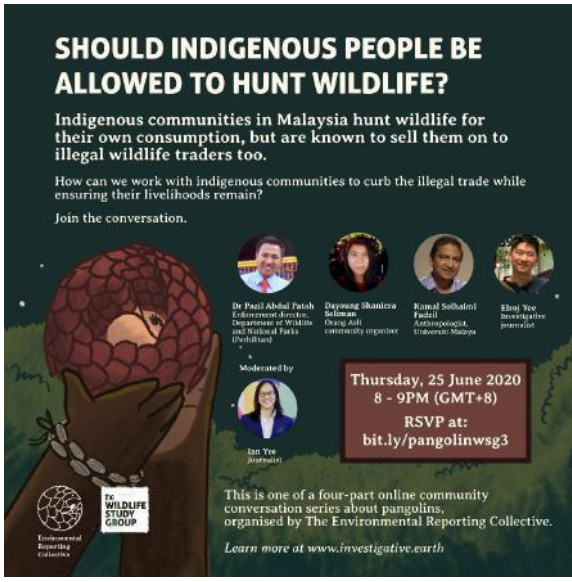
8. "Borneo Ocean Talks (Special Series) Sambutan Hari Penyu Sedunia 2020: Sesi Kedua: Cabaran dalam pemuliharaan penyu di Borneo" moderated by Dr Juanita Joseph. Date: June 18, 2020. Time: 02.00 - 03.30 PM.

9. "RIEC Research Enhancement Series: A commercialization success story-lessons learnt" by Dr Yeong Che Fai. Date: June 24, 2020. Time: 10.00 - 11.00 AM.

10. "RIEC Research Enhancement Series: Building a scholarly-productive research group" by Prof. Datuk Ts Dr Ahmad Fauzi Ismail. Date: July 1, 2020. Time: 10.00 - 11.00 AM.



11. "RIEC Research Enhancement Series: Writing a wining research proposal" by Prof. Dr Uda Hashim. Date: July 7, 2020. Time: 10.00 - 11.00 AM.



12. "Should Indigenous People be allowed to hunt wildlife" moderated by Ian Yee. Date: June 25, 2020. Time: 08.00 - 09.00 PM.

13. "Climate change adaptation and mitigation for local community" moderated by Assoc. Prof. Ts Dr Ejria Saleh. Date: July 2, 2020. Time: 09.00 - 11.00 AM.

14. "The ecology and conservation status of Sun bear in Malaysia" moderated by Wong Siew Te. Date: July 2, 2020. Time: 09.00 PM.

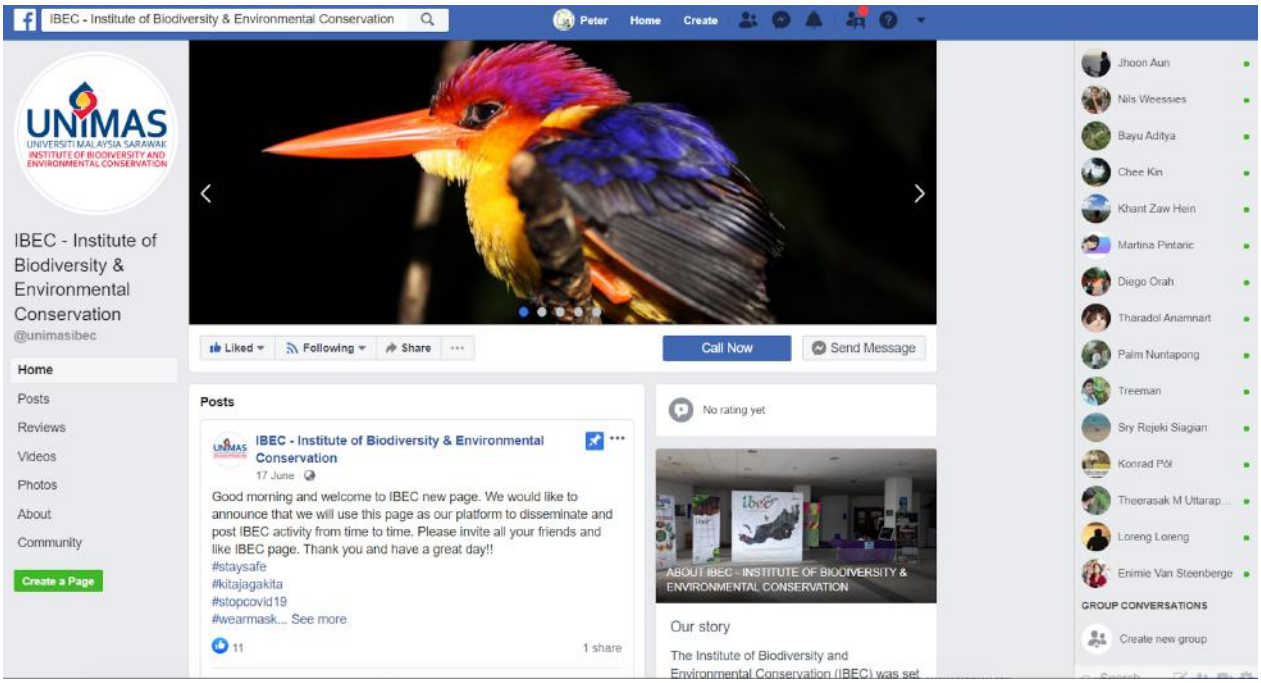
15. "IBEC postgraduate proposal defence" moderated by Dr Samuel Lihan. Date: July 2, 2020. Time: 02.00 – 04:00 PM.

16. "MNS TAPIR TALK SERIES IS BACK! Current status of biodiversity in Malaysia" moderated by Prof. Dr Ahmad Ismail. Date: July 14, 2020. Time: 10.00 AM – 12:00 PM.

IBEC NEW FACEBOOK PAGE

By
Siti Maimunah binti Ibrahim

Pn Siti Maimunah binti Ibrahim has created a new Facebook page on 17th June 2020 as one of the platforms to disseminate and post IBEC activities from time to time. Please invite all your friends and like IBEC page!



ICHTHYOLOGICAL EXPLORATION IN BORNEO – AN UPDATE FROM SARAWAK

By
Jongkar Grinang and Tan Heok Hui

Ichthyological exploration in Borneo had begun as early as more than 170 years ago. The island is central for diversification of freshwater fish in Southeast Asia as result of geological events, stable climate and biotic interrelation. A total of 111 species have been described between 1842–1860 by Pieter Bleeker (a well-known medical doctor and ichthyologist from the Netherlands based in Batavia [present day Jakarta]), the number of species of freshwater fish in Borneo is now expected to be more than 450 considering an accelerated rate of species discovery in the past 20 years. In particular, species richness of freshwater fish from the three political boundaries in Borneo (Sabah and Sarawak of Malaysia, Brunei Darussalam, and Kalimantan [comprising four major provinces] of Indonesia) is far from conclusive but numerically being expected around 166, 260, 125 and 330, respectively. Some old descriptions still require taxonomic revision and verification of type locality, the information among which are necessary for accurate species inventory and conservation. Here, we briefly present recent findings of taxonomic works on freshwater fish in Sarawak, a continuous collaboration effort between Universiti Malaysia Sarawak, and National University of Singapore towards fish conservation in Borneo.

A rare sightless sole fish from Batang Sadong basin, Serian

The sightless sole fish (locally known as *ikan sebelah*), *Typhlachirus lipophthalmus*, was originally described from Sarawak seas by Karoli in 1882 (**Figures A & D**). It is a rare fish. The recent finding is the second known specimen from Sarawak confirming its existence after its first record in 140 years ago. *Typhlachirus* was thought to be monospecific until Evseenko & Bolshakov (2018) revised the genus and showed three species, namely *T. caecus* known from Central Sumatra, and *T. elongatus* known from the Mekong Delta in Vietnam. The absence of eyes indicates that this fish lives in soft bottom sediment with turbid waters, where vision is not important or possible. The finding is being published in *Ichthyological Exploration of Freshwaters*.

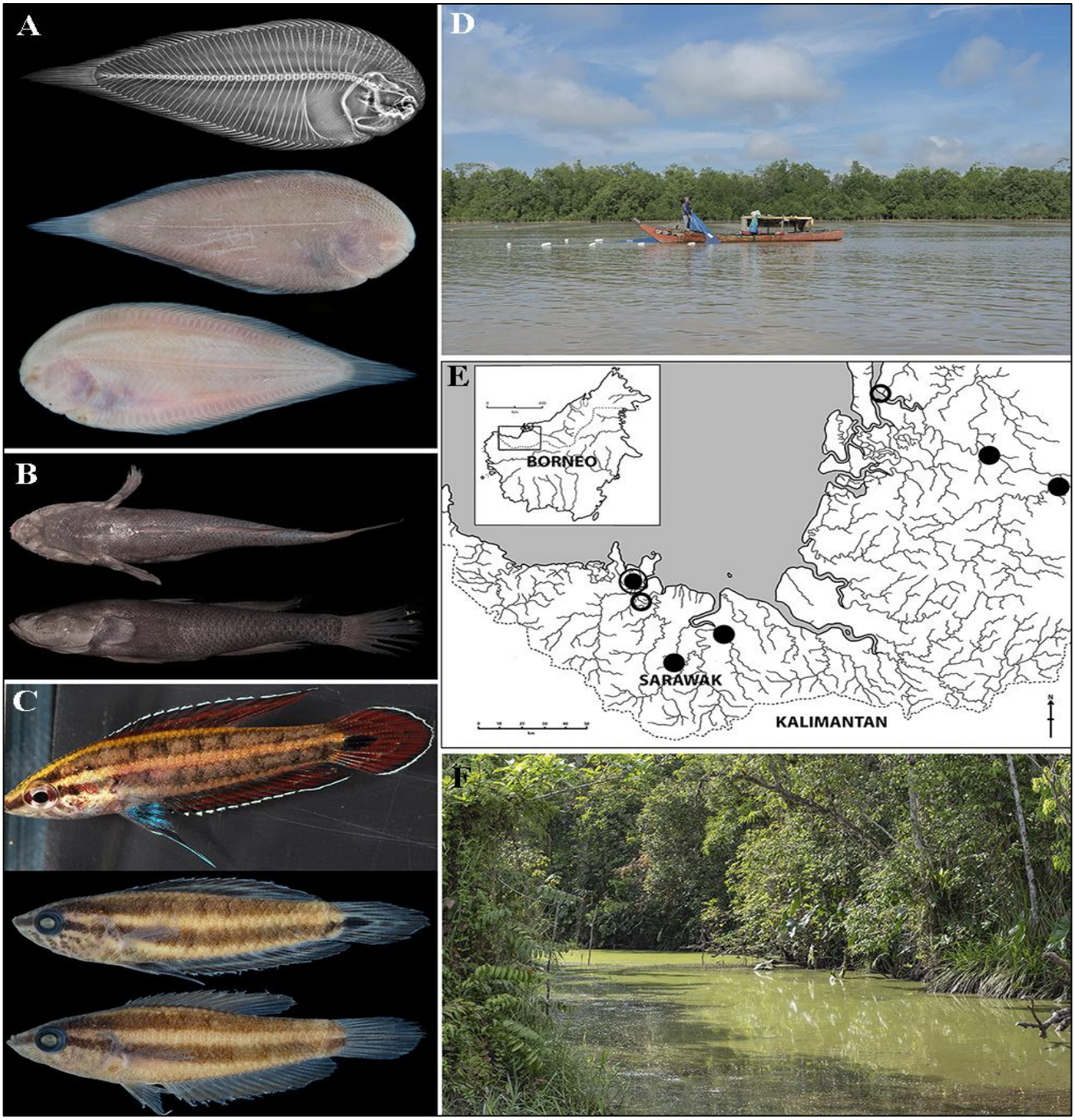
A rare gudgeon fish from Batang Sadong basin, Serian

From an expedition to Sarawak around 1865, Marquis Giacomo Doria, a noble man from Italy had sent fish specimens to Albert Günther (ichthyologist based at the British Museum in London) and one of the results is the description of an unusual fish, called the bearded gudgeon, *Pogoneleotris heterolepis* (**Figure B**). Since its discovery (based on a single specimen), little was known of the habitat and distribution of the fish. Several collections were made to fish markets in Kuching and Serian between early 1980s and 2017 resulted a total of 15 fresh specimens preserved. In addition, field survey to its habitat permits for detailed descriptions of its ecology, diets, and distribution in Sarawak (**Figure E**). The gudgeon fish is uncommon, inhabits soft muddy-silty bottoms of rivers with tidal influence. It has greatly reduced eyes oriented dorsally and show specialized branched flaps on snout like a beard – a truly unique fish. This finding was published in the *Ichthyological Exploration of Freshwaters*.

A new species of Licorice Gourami from Batang Kayan basin, Lundu

Back in late 1980s, Allan Brown and his spouse, Barbara Brown conducted a survey on family Belontiidae (presently valid as Osphronemidae) at accessible freshwater habitats along 3000 km stretch from Miri to Lundu, Sarawak. One of the labyrinth fish that they could not identify was a Licorice Gourami, *Parosphromenus* species, caught from Sungei Stunggang in Lundu. No specimen was preserved, and the identity of the fish remained unknown for a long time. Between September 1996 and March 2010, a series of revisits to the site was made by the second author and his counterparts from Sarawak, with a total of 31 fresh specimens were preserved. The fresh specimens allowed for detailed examination and comparison with species within the genus, which conclude the labyrinth fish from Sg. Stunggang as new species, *P. barbarae,* named after Barbara Brown (**Figure C**). Unfortunately, a recent survey to the type locality in March 2020 by the first author found no further specimens from the habitat. The absence of the fish from the type locality might have been due to polluted water from land use activities (**Figure F**). The continue existence of the fish at the type locality is in question, while populations at other potential habitats in the Batang Kayan basin need to be confirmed. This finding was published in *Vertebrate Zoology*.

Note: Our research activities are partly funded by grant from Malaysian Palm Oil Board. The second author is an Honorary Research Associate of Institute of Biodiversity and Environmental Conservation.



A. Images of *Typhlachirus lipophthalmus,* showing right side (top and middle) and left side (bottom); the top image is an x-ray. **Figure B**. Live colour of bearded gudgeon*, Pogoneleotris heterolepis*. **Figure C**. Images of new species of Licorice Gourami both in live and preserved; the preserved male is 24.2 mm SL (top) and preserved female is 24.0 mm SL (bottom). **Figure D**. Image of Batang Sadong showing its importance as fishing ground for the local. **Figure E**. Map showing known distribution of bearded gudgeon in Borneo. **Figure F**. Image showing Sungei Stunggang, type locality of Licorice Gourami at present which being greenish water is an indicator of polluted habitats.

SARAWAK TRAVEL PORTAL AND APPLICATION

By
By Pang Sing Tyan

IBEC staff and graduate students are collaborating with other institutes and faculties in UNIMAS, under the leadership of Prof. Dr Lo May Chiun, Research Innovation and Enterprise Centre, to develop the upcoming Sarawak Travel Portal and Application, in order to boost tourism in the state of Sarawak. This project is funded by Ministry of Tourism, Arts and Culture, Sarawak over an 18-month duration. IBEC focuses on capturing imagery and sound associated with the culture and nature of Sarawak, with its expertise in photography on one hand, and nature and culture on the other. Activities thus far included visiting the now-endangered Bidayuh Ring Ladies at Kampung Semban, Padawan and adrenaline pumping event, the Sarawak Regatta 2019 at the Kuching Waterfront. With a strong background in science being an advantage, the team lead the coverage of biodiversity, with visits to a number of Totally Protected Areas (TPAs) of Sarawak, including, Gunung Mulu National Park, Lambir Hills National Park and Piasau Nature Reserve. IBEC Research Associate, Chien C. Lee joined the team in the expedition to Gunung Mulu, capturing never-seen-before footages in video of the landscape and forests of Mulu, using drones.

Depicted here is one of the Ring Ladies from Padawan

POLLINATION STUDY OF NATIVE DURIOS

By
Ng Win Seng, M.Sc. Candidate

The King of Fruits, Durian (*Durio zibethinus*) is a highly important fruit crop in many countries in Southeast Asia and especially in Malaysia. The floral biology can be said to be well understood due to its economic viability and to an effort to find the best and most delicious Durian. The same cannot be said for other members of the genus *Durio* despite the fact there are at least eight other species which produce edible arils. Some of these are semi-cultivated in Borneo and are loved and enjoyed by the locals. However, these native Durios have not received the same attention in the international market the same way as the common Durian. In this study, the floral biology of two other edible *Durio* species, namely *D. graveolens* and *D. kutejensis,* as well as a close ally of *Durio* that does not produce edible fruit *Boschia griffithii* were investigated. This study will present results on the floral biology, breeding mechanisms and floral visitors of the three species. It is hope that we could gain a better understanding of these *Durio*s which could aid in commercializing these native species in the near future.

Native Durios: flowers, fruit, and seeds

COMPARATIVE ASPECTS OF THE ECOLOGY OF FOUR SYNTOPIC SPECIES OF ANGLE-HEADED LIZARDS, GENUS *GONOCEPHALUS* (REPTILIA: AGAMIDAE: DRACONINAE)

By
Wong Jye Wen, M.Sc. Candidate

Morphologically similar and closely-related species living in sympatry tend to have high niche overlap, by differing in one or more aspects of their ecology. This is assumed to reduce competition, increase feeding efficiency and thereby, increase carrying capacity of systems. Congeneric species that overlap in geographic distribution provides an excellent opportunity in tropical settings to study resource partitioning and the processes of coexistence. In the present study, I use *Gonocephalus* as a model organism to better understand this ecological phenomena.

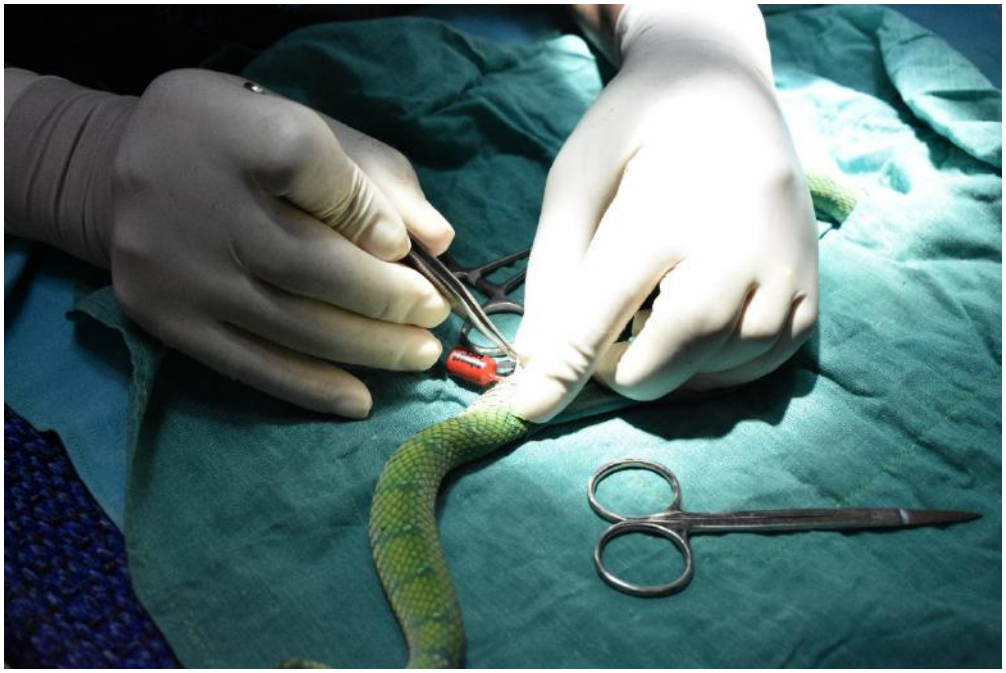
The four species of *Gonocephalus* recorded in the lowlands of Sarawak can be broadly similar, as they are somewhat similar in size and occupy the same macro- and microhabitats. However, it is unclear how, if indeed they do, partition resources. The study focuses on determining whether these syntopic species of *Gonocephalus* partition spatially and trophically, via examining their diet, habitat preference, thermal biology and home range at Kubah National Park to mitigate interspecific competition and permit coexistence.

Radio telemetry was used in the study, where lizards were fitted with a temperature-sensitive radio transmitter. Shown here is a male *Gonocephalus bornensis*.

THERMOREGULATION AND ACTIVITY OF THE BORNEAN KEELED PIT VIPER, *TROPIDOLAEMUS SUBANNULATUS*

By
Veronica Anak Martin, M.Sc. Candidate

Ectothermic organisms being profoundly affected by ambient temperature, climate change and other related processes may be potential drivers of their endangerment and decline. The primary research question of my study is whether differences in habitat use, movement and thermoregulatory behaviour exist within a species demonstrating extreme sexual dimorphism (females being over twice the mass of males). The target species in this research is the Bornean Keeled Pit Viper, *Tropidolaemus subannulatus*, a common Bornean snake of medical importance. This study is being conducted in Kubah National Park, Sarawak, and employs radio-telemetry techniques, with temperature-sensitive transmitter surgically implanted in the snake's body cavity. By tracking them in the field, I hope to answer questions on these critical aspects of the species' life history and better understand the conservation requirements of a rainforest species.



A pre-calibrated radio transmitter being attached via surgical implant by a veterinarian into the coelomic cavity of a *Tropidolaemus subannulatus*.

ECTOPARASITE DIVERSITY AND INFESTATION RATE OF RODENTS AND TREESHREWS IN DIFFERENT HABITATS IN WESTERN SARAWAK, BORNEO

By
Teo Sieu Zhien, M.Sc. Candidate

Anthropogenic activities in Sarawak, Borneo have created various types of new potential habitats for the animals in the wild, which in turn may have conservation, socio-economic, and public health implications. Natural habitats have been lost or degraded, which may lead to local extinction and loss of ecosystem services that wildlife provided to the nature. Frequency of contact between wildlife and human also increased leading to higher risk of zoonotic diseases transmission, including through ectoparasites carried by rodents. Some of these rodent-associated ectoparasites particularly ticks, chiggers and fleas, are vectors of zoonotic diseases and can cause death to human. Therefore, this research was carried out to determine ectoparasite diversity and infestation rate on rodents and treeshrews trapped in forest, oil palm plantations, villages and urban areas. This research showed that conversion of forest into village and urban area resulted in the disappearance of four treeshrew and three squirrel species. However, synanthropic rodents, such as *Rattus rattus* (House Rat) adapted well to living in human-altered habitats recording high trapping success of 5.4% and 5.8% in villages and urban areas, respectively. It is a host that is parasitized by multiple species of ectoparasites (17 species) with high parasite load (5128 ectoparasites) comprising mainly mesostigmata mites (*Laelaps* spp., 1173 individuals) and trombiculid mites (Chigger spp., 3181 individuals). These ectoparasites are reported to bite human causing skin irritation and are also the primary vectors of scrub typhus in Asia-Pacific Region. The high density and infestation rate of this *R. rattus* in village and urban area may increase people's exposure to these ectoparasites and this may raise the risk to public health.

An individual of trapped *Sundamys muelleri* (Müller's Rat) is parasitized by ticks at its mouth part and both sides of pinna

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