

Fascinating Little Flying Dragons

Of Sungai Imbak Forest Reserve, Sabah

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Rhinocypha humeralis basking in the noon sun.

Dragonflies are not only beautiful; they are charismatic. Their vibrant display of colours combined with their flight skills are unmatched in terms of precision and agility. They are the fastest flying insects in the world besides hawk moths.

Despite their name, they are not flies. They belong to the insect order Odonata, meaning 'toothed jaw'. The adults are carnivorous, feeding on smaller insects such as mosquitoes, gnats and flies. Hence, they are also known as 'Mosquito Hawks', and this

is a benefit to humans in controlling pest populations. The larvae prey on small fish, shrimps and other aquatic insects. Scientifically, dragonflies are divided into two groups: true dragonfly or Anisoptera, and damselfly or Zygoptera. The latter is delicate and slender, with its wings held closed over the abdomen when at rest.

A recent expedition to Sungai Imbak Forest Reserve in Sabah has uncovered some interesting and colourful dragonflies, many of which

are showcased here. Located in the heart of Sabah, Sungai Imbak Forest Reserve is classified as a virgin jungle reserve (VJR) class VI under the state's forest classification. It encompasses an area of 18,133 hectare, divided into two main blocks (I & II). Block I forms part of the renowned Imbak Canyon Conservation Area, comprising mainly mixed dipterocarp forest while Block II is subdivided into four units, comprising mainly ultramafic forest. Unlike Imbak Canyon, not much of the ultramafic forest of

Block II and its surrounding areas have been explored. Hence, under the Heart of Borneo programme of the Sabah Forestry Department, a scientific expedition was organised to explore the biodiversity of Blocks IIa & IIb, with participation from Universiti Malaysia Sabah and Sabah Parks.

Within a four-day survey, nearly 30 species of dragonflies were recorded. They were found mainly along the river of Sg. Imbak, its tributaries as well as small forest streams, ponds and marshy areas. Comparatively, damselflies are more striking in colour but they are often not noticed because of their much smaller size.

Of interest are the spectacular 'jewels' or damselflies from the family Chlorocyphidae. Among them is the brilliant *Rhinocypha aurofulgens* with striking blue abdomen and a tinge of yellow on the thorax, endemic to Borneo. This damselfly was seen foraging at the more exposed area along the stream. When perching under the sunlight on twigs, its reflective copper-coloured wings are extremely striking. *Rhinocypha humeralis* is somewhat similar to *R. aurofulgens* but without the yellow tinge and the wings are darkly marked distally without reflective patches. This species is present throughout lowland Borneo and Palawan. The Bornean endemic *Rhinocypha cognata* is a less glamorous species, predominantly black with a deep blue colour on the upperside of the male abdomen. *Heliocypha biseriata* is a colourful Bornean endemic damselfly, inhabiting exposed small rocky streams. Its greatest adornment is on its hindwings with extensive parallel windows shot with iridescent purple and green.



Rhinocypha humeralis (Borneo & Palawan)



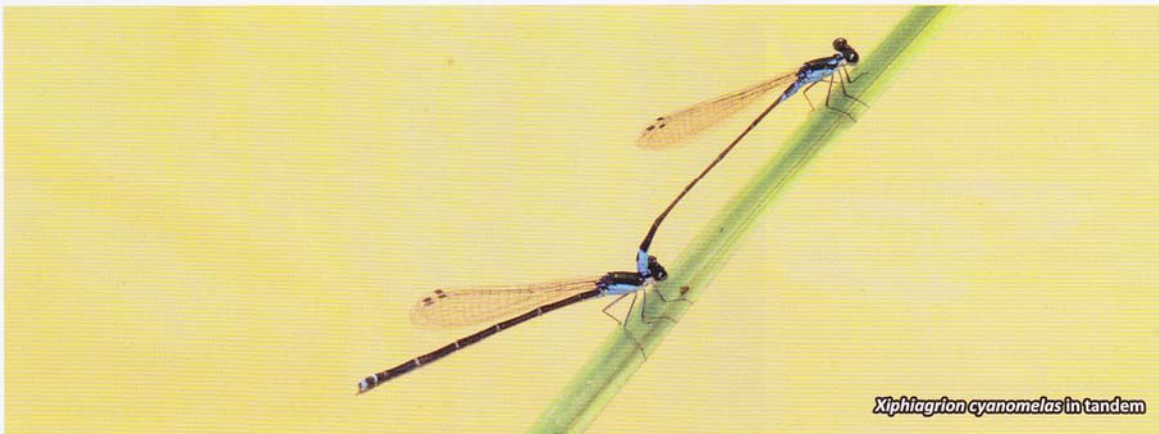
Bornean endemic *Rhinocypha cognata*



Bornean endemic *Rhinocypha aurofulgens*



Bornean endemic *Heliocypha biseriata*



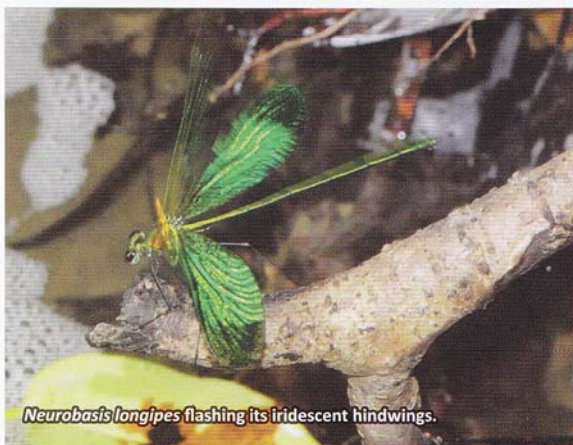
'Pond Damsels' (Coenagrionidae) are among the smallest damselflies. They have a relatively light build with fairly narrow hyaline wings. One species was recorded during the survey, namely *Xiphiagrion cyanomelas* from an open pond beside the forest.

Unlike other damselflies, the 'Flatwings' (Megapodagrionidae) spread their wings flat when at rest. Only one species was recorded. The Bornean endemic *Rhinagrion elopuræ* was spotted perched on a climber at a stream inside the forest. Its abdomen is brick-red with a bright blue flash while the thorax has yellowish green markings. This species is restricted to Sabah.



The 'Satinwings' (Euphaeidae) are medium-sized damselflies with stout and relatively short bodies. Two species were recorded in this survey, namely *Euphaea subcostalis* and *Euphaea impar*. The former was encountered along forest streams as well as larger rivers with vegetation along the banks. The male of *E. subcostalis* has brilliant blue-green metallic patches on the hindwing while the male of *E. impar* is bright blue on the sides of the thorax and broad dark patch at the tip of the hindwing.



*Vestalis* sp.*Neurobasis longipes* (female)*Neurobasis longipes* flashing its iridescent hindwings.*Neurobasis longipes* (male)

Calopterygidae or the 'Demoiselles' are among the most interesting damselflies encountered in the reserve because of their larger size and impressive metallic green body. *Neurobasis longipes* is undoubtedly a spectacular species to witness in nature. The male flutters tirelessly up and down the forest stream and occasionally, the iridescent green hindwings flash, and can be seen even from a distance. The female is also has a bright metallic green body, but the wings are clear, tinted a light yellowish brown. At least a few species from the genus *Vestalis* occur in the reserve. They are quite common in this forest but require examination under the microscope for reliable identification.

Of all the true dragonflies (Anisoptera), Libellulidae is the largest family which includes 'Skimmers' and their relatives. During the survey, at least 15 species were recorded. The largest species is *Camacinia gigantea*, commonly known as 'Sultan'. It has a hindwing length of up to 48 mm. This dragonfly was found at an open pond on the fringe of the forest. The male is dark red in colour, including the wing except for the distal one-third. It is superficially quite similar to the males of *Neurothemis terminata* and *Neurothemis ramburii* (both recorded in the reserve) but their sizes are almost twice smaller than the Sultan. Other male dragonflies with striking red bodies but clear wings sighted during the survey

were *Orthetrum testaceum*, *Orthetrum chrysis* and *Tramea transmarina*. *Orthetrum pruinosum* is another species with a red abdomen. However, it can be easily distinguished from others because the thorax and basal segments of the abdomen are deep pruinose blue. *Orthetrum glaucum* is a common blue dragonfly with a powdery light blue body with a dark spot at the base of the wings. *Trithemis festiva* is another blue dragonfly sighted, with navy blue on the body and some yellowish markings on the abdomen. *Orthetrum sabina* was spotted at the forest fringe. It is easily recognised because of its distinctive pale yellowish green markings on the body. *Pantala flavescens* is a predominantly yellowish dragonfly, sighted at an open area of the forest.



Orthetrum pruinosum (Crimson-tailed Marsh Hawk)



Neurothemis ramburii (Red Percher)



Trithemis festiva (Indigo Dropwing)



Tramea transmarina (Saddlebag Glider)



Orthetrum glaucum (Common Blue Skimmer)



Orthetrum testaceum (Scarlet Skimmer)



Camacinia gigantea (Sultan)



Orthetrum chrysis (Spine-tufted Skimmer)



Pantala flavescens (Wandering Glider)



Orthetrum sabina (Variegated Green Skimmer)



Rhyothemis triangularis (Sapphire Flutterer)



Rhyothemis regia regia

Three species of *Rhyothemis* were recorded. They have short abdomen and broad hindwing, often found fluttering in the open area under the hot sun. *Rhyothemis triangularis* is a beautiful species, with a deep, metallic blue colour at the basal part of the wings. *Rhyothemis phyllis* is also an interesting species, with distinctive brown and yellow bars at the base of the hindwing, resembling a bee. The third species is *Rhyothemis regia regia*, with dark blue patches on the wings. This species is a new record for Borneo. Prior to this, there was

no formal publication on this record except for some photographs by Joe Pan a few years ago from Ulu Segama, Lahad Datu which was featured in Asia Dragonfly Net.

It is not only remarkable but also a joy to have been able to record such interesting dragonflies within a short period of our time at Sg. Imbak. This, we believe, should be an important reason to conserve Sungai Imbak Forest Reserve so that our future generations can enjoy the fascination and beauty of these little flying dragons. 🐉

Acknowledgements

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References

- Choong, C.Y. (2011). Dragonflies (Insecta: Odonata) of Imbak Canyon Conservation Area. In A. Latiff & W. Sinun (eds.), *Imbak Canyon Conservation Area, Sabah – Geology, Biodiversity and Socio-economic Environment*. Academy of Sciences Malaysia & Yayasan Sabah. Pp. 153-158.
- Orr, A.G. (2003). *A guide to the dragonflies of Borneo*. Natural History Publications (Borneo), Kota Kinabalu, Sabah. 195 pp.
- Orr, A.G. (2005). *Dragonflies of Peninsular Malaysia and Singapore*. Natural History Publications (Borneo), Kota Kinabalu, Sabah. 125 pp.
- Tang, H.B., L.K. Wang & M. Hamalainen (2010). *A photographic guide to the dragonflies of Singapore*. The Raffles Museum of Biodiversity Research, Singapore. 222 pp.