

## Spying on the Emergence of Night Hunters

By Leadprathom K. &  
Puan C.L.  
([chongleong@putra.upm.edu.my](mailto:chongleong@putra.upm.edu.my))

Distributed in the Sunda region, the Collared Scops Owl (*Otus bakkamoena*, Strigidae) is one of the 20 owl species recorded in Malaysia. Inhabiting urban areas, plantations, wooded parks, gardens and forested areas, this owl is more commonly heard than seen.

In an attempt to study the nesting behaviour of this secretive, nocturnal occupant of tree hollows, observations were made on one of 23 nests identified within mature tree stands in the Chantaburi province, Thailand.

Three glossy white eggs had been laid in a cavity of a fissured-barked tree, the nest filled with woody and leafy debris and located several meters above ground. Just about a day before hatching, strange sounds were heard from within the tree hole. The chicks were trying to break the shell with their egg tooth while uttering soft calls. The newly-hatched chicks were wet and covered with soft white feathers which turned fluffy when dried.

An adult, presumably a female, stayed with the brood during the day and this continued until the chicks were about 12 days old. With great care not to alarm the brood, we took measurements of the cavity depth and diameter and other habitat variables.

When darkness fell, the father owl called to alert the breaking of the day's fast. Shortly afterwards he appeared with food in his mouth. Males of the Collared Scops Owl search out and deliver food every night while the females rarely fly from their nests. Indeed, they wait patiently at the entrance for food to be passed on. In the tree hole, prey such as insects and geckos are fed to the chicks and these are swallowed whole.

The mother owl and a chick  
in the tree cavity. ▶



▲ An adult Collared Scops Owl.



▲ A newly-hatched chick.



▲ One day old chick is fluffier.



Continue on page 8 >



# Conservation of the Rajah Brooke's Birdwing, one of Malaysia's Natural Wonders

By Phon, C.-K.  
([phonchooikhim@frim.gov.my](mailto:phonchooikhim@frim.gov.my))  
& Kirton, L.G.

The Rajah Brooke's Birdwing is a well-known ecotourism icon of Malaysia. It is a large, striking butterfly with metallic green markings and a touch of iridescent azure blue set against black wings. Its striking features and "puddling" behaviour have long attracted people to this beautiful insect. Only males of the race *albescens* puddle where they aggregate at moist places along forest paths and river banks to drink water from which nutrients are obtained.

In spite of its fame, there is little information on the biology and ecology of the Rajah Brooke's Birdwing. This forest dwelling butterfly has been said to be declining in numbers, but the exact status of the populations is unknown. The two major factors that are believed to place great pressure on populations are habitat loss and an extraordinarily high demand for this butterfly by collectors and commercial dealers. Habitat loss due to timber exploitation, and conversion of extensive areas of natural forest for agriculture and development, reduce the habitat as well as host- and nectar-plants of this and many other butterfly species. For instance, the habitat of subspecies *trogon* (see box) is rapidly depleting in the lowlands of Johor.

Efforts to conserve and protect this beautiful butterfly are urgently needed, especially since it is an ecotourism attraction that contributes to the country's revenue. FRIM's Entomology Branch plans to undertake studies, such as monitoring of the



▲ Males of the Rajah Brooke's Birdwing (*albescens*) puddling on moist sand along a river.

population in selected sites and studies on the prospects of farming by indigenous people. It is hoped that these studies will contribute towards the conservation of this iconic creature.





▲ Three butterflies killed by stone-throwing visitors at Kuala Woh, Tapah. Public apathy and disregard for nature hamper conservation efforts.



▲ Insects, including the Rajah Brooke's Birdwing, on sale at a roadside market stall in Hong Kong.

### Facts:

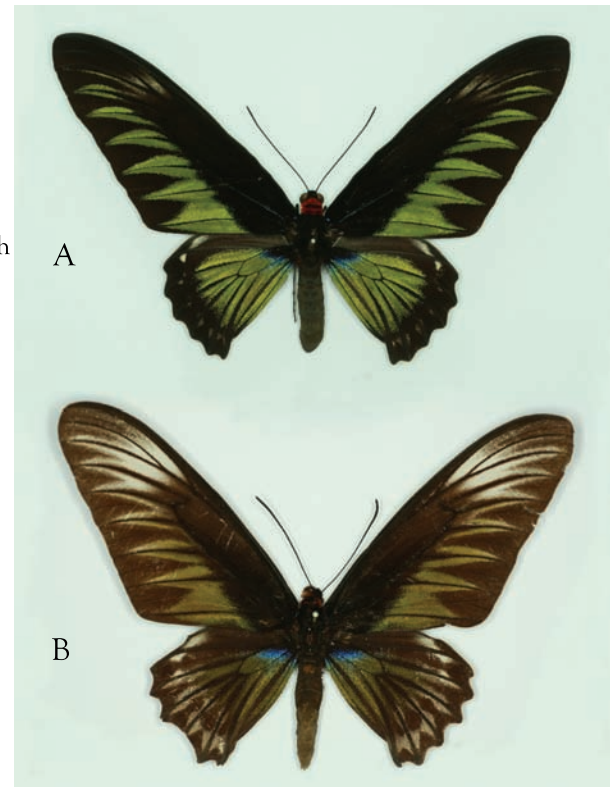
There are three subspecies or races:

1. *Trogonoptera brookiana albescens* occurs in the western foothills and highlands of Perak, Pahang and Selangor;
2. *T. brookiana trogon* occurs in the lowlands of south-eastern Johor, north-eastern Pahang and Terengganu. It also occurs in Sumatra, but in the Peninsula it is sometimes considered a distinct subspecies, *mollumar*;
3. *T. brookiana brookiana* occurs in East Malaysia.

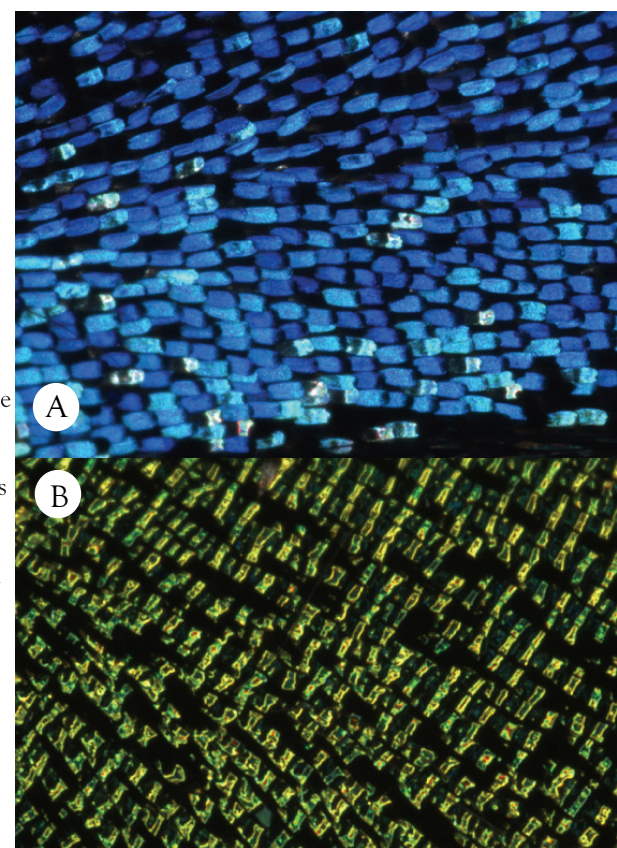
### How they are differentiated:

- The females of *brookiana* and *albescens* differ from the female of *trogon* in having prominent white markings at the tips of the forewings and along the outer edges of the green markings.
- The female of *albescens* differs from the female of *brookiana* in having better developed green metallic areas against a darker ground colour.
- The males of the three subspecies do not differ much.

▶ Differences in the females of the Rajah Brooke's Birdwing races *trogon* (A) and *albescens* (B).



▶ Wing scales of the Rajah Brooke's Birdwing as seen under a microscope ( $\times 60$ ). The scales produce colours by structural characteristics that interfere with light, producing an iridescent azure blue colour (A) or a metallic green colour (B).





# The fireflies of Kuala Selangor

## Conservation of *berembang* alone **Won't** save them.

By Nada, B. ([nada@frim.gov.my](mailto:nada@frim.gov.my)); Kirton, L.G. & Norma-Rashid, Y.

There are almost two thousand species of fireflies around the globe. Of these, one species, *Pteroptyx tener*, has made Malaysia its home and the small coastal town of Kuala Selangor famous. As the sun sets, the adult fireflies begin flashing on trees growing along the riverbanks

of the Sungai Selangor, most often *Sonneratia caseolaris* (Sonneratiaceae), locally known as *berembang*. The display is made more spectacular by the almost perfect flash synchrony and the hundreds of fireflies that aggregate on each tree.

The riverbank landscape is characterised primarily by sago palms (*Metroxylon sagu*), nibong (*Oncosperma tigillarium*), figs (*Ficus* spp.) and betel nut palms (*Areca catechu*). It is here that the firefly spends more than half of its lifetime as a larva, feeding on small mangrove snails, mainly *Cyclotropis carinata* (Assimineidae). Once the adult females have mated, they fly from the *berembang* trees to more inland natural vegetation and lay eggs in between cracks and crevices of the ground and among moss and decaying plant material. After 15 to 20 days, the larva hatches and undergoes several moults before finally pupating. The pupal period is spent in a mud hole and lasts for 9 to 12 days. Once the transformation to adult firefly is completed, the newly emerged adult crawls out of its underground chamber and flies towards the trees lining the riverbank to begin its mating rituals. The total life span of the firefly is thought to be around 4 to 7 months.

▲ Nightly ritual of the fireflies – the synchronous flashing on *berembang* trees along the Selangor River.



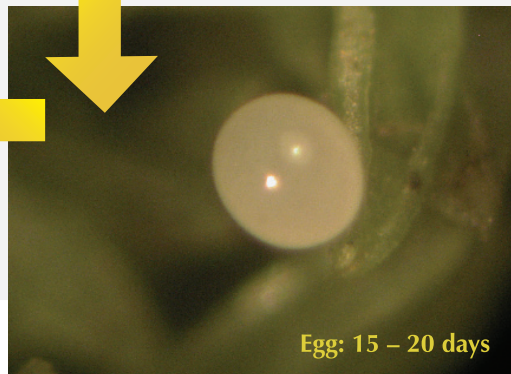
Pupa: 9 – 12 days



Adult: 3 – 4 weeks



Larva feeding on snail: 2 – 3 months



Egg: 15 – 20 days

◀ The lifecycle of the firefly.



The firefly larvae and the snails that they prey on have been found to be abundant in sago forests but very scarce in oil palm estates and village orchards. Therefore, contrary to what was previously thought, the larvae are not able to survive well in orchards and oil palm plantations. The microclimatic conditions in a representative sago stand were very different from that of an oil palm estate and orchard – the sago stand had a significantly lower air temperature and illuminance and higher relative humidity compared to the oil palm estate and orchard. The sago stand also had the highest carbon dioxide level, indicating a high decomposition rate of organic material occurs in areas with natural riverside vegetation.



▲ An example of a suitable breeding habitat for *Pteroptyx tener*.

is decimated, sparing only a fringe of berembang at the river's edge. The need to preserve the breeding habitats of the firefly far outweighs the need to maintain the display trees. Ironically, however, when the issue of conservation is discussed, the importance of conserving its breeding habitat is almost always overshadowed by the perceived need to conserve or replant the display trees of the adult fireflies. Any effort to effectively conserve the firefly population in Kuala Selangor must include conserving the natural inland vegetation along the river.

## The Fate of *Pteroptyx tener*

By Khoo, V. ([veronica@frim.gov.my](mailto:veronica@frim.gov.my)),  
Kirton, L.G. & Nada, B.

The quiet and tranquil town of Kuala Selangor becomes abuzz during the night as people gather to witness what fireflies have to offer. However, the spectacular displays have, over the decades, decreased in intensity, as villagers and visitors alike can attest. A major factor contributing to the decrease is habitat loss due to land clearing for agriculture, although other factors such as river pollution, salinity intrusion and erosion also play a part.

Land clearing is detrimental to the firefly population because the early stages of the firefly live in the natural riverside vegetation consisting primarily of sago, nibong, nipah palms and figs. They develop on the forest floor of the riverside vegetation where it is moist, occasionally inundated by water and well shaded.

In February 2006, the Malaysian Department of Irrigation and Drainage funded FRIM to develop a monitoring programme for the firefly population. FRIM uses a non-destructive method based on digital night photography, and it was through these images that land clearing in the natural vegetation behind the thin strips of berembang trees was detected. Habitat loss was first detected in late 2007, and increased gradually throughout 2008. Towards the end of 2008, land clearing became extensive with four out of seven monitored sites affected. In 2009, land clearing took place opposite the Kampung Kuantan Firefly Park jetty. As recently as May, land behind two more monitoring sites had being cleared. That leaves just one site untouched. This problem may be just the tip of the iceberg since FRIM monitors a mere 1.6 km of the approximately 10 km stretch of river inhabited by the fireflies.



▲ The charred remains of the vegetation.



The alarming rate of land clearing was communicated to the Kuala Selangor District Council. Several meetings and site visits took place, primarily organized by the Selangor Waters Management Authority (LUAS). A major complication is the problem of multiple land owners of the land in the area.

Currently, sections of the Sungai Selangor and its banks in the District of Kuala Selangor have been gazetted as a protection zone under the Selangor Waters Management Authority Enactment 1999. Under this enactment, private land owners are not allowed to clear natural vegetation from protection zones. However, enforcing the prohibition of vegetation clearing on private land is difficult. The enactment also does not give the state the right to rehabilitate land that is privately owned. For effective conservation of the fireflies, the land will still need to be reacquired by the State. This gazette is, however, a necessary first step towards protecting the habitat of the fireflies.



(a)



(b)

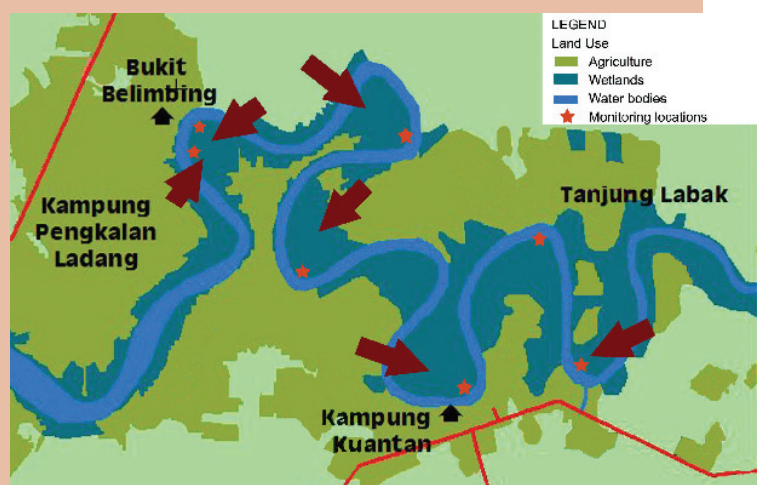
▲ Images of Site 3a taken in (a) September 2006 and (b) May 2007. Vegetation loss can be seen behind the berembang trees.



▲ Habitat destruction opposite the Kampung Kuantan visitor centre jetty. The visitor centre can be seen across the river (circled in red).



▲ Valuable nibong palms being bulldozed and burnt.



▲ Map indicating the areas affected by land clearing (red arrows). Six out of seven monitoring locations have been affected. Map adapted from Federal Department of Town and Country Planning (TCPD) Peninsular Malaysia (2006)



## Some Rare Finds From

# Gunung Inas

And

# Gunung Jerai (Kedah).....

By Ong, P.T. ([ongpohteck@frim.gov.my](mailto:ongpohteck@frim.gov.my)),  
Aidil, M. & Hairul, M.

A recent trip to Gunung Inas and Gunung Jerai resulted in the following unexpected finds.

*Begonia sibthorpioides* Ridl. (Begoniaceae).

This extremely local species was last seen some 80 years ago on G. Jerai. Thought to be extinct, its rediscovery is a sigh of tremendous relief! It is an extremely rare plant, growing in the crevices of a single rock face along the cliffs of G. Jerai. It is called the "Shilling Begonia" because it has the smallest leaves of any Peninsular Malaysian *Begonia*. *Begonia sibthorpioides* is also found on the summit of G. Machinchang (Langkawi Island). Now that we know the species is extant, we will initiate appropriate measures to conserve the population. (a) male flower (b) female flower



(a)



(b)



*Habenaria rhodocheila* Hance (Orchidaceae) is a new record for Kedah. In Peninsular Malaysia, it was previously known only from Penang (Seidenfaden & Wood, 1992). The flower has a yellow-orange lip, similar to the one in Penang. It differs from those in Thailand, Indochina and China which vary from bright scarlet to purple-red.



*Cystorchis variegata* Bl. var. *purpurea* Ridl. is a new record for Kedah. In Peninsular Malaysia, this variety was previously recorded from Johor, Pahang and Pulau Tioman (Seidenfaden & Wood, 1992). It is distinguished from *Cystorchis variegata* Bl. var. *variegata* by the smaller plant size and dark purple leaves.



*Begonia thaipingensis* King. (Begoniaceae). We found this endemic species in a large population scrambling all over the slope by the trail to G. Bintang. This attractive *Begonia* is a new record for G. Inas. (a) male flower (b) female flower. ▶



Aidil, M.

▲ *Ridleyandra petiolata* (Ridl.) A.Weber (Gesneriaceae), This is the third collection made after 91 years and is photographed for the first time! The first collection was made from G. Inas in 1899 followed by a second collection in 1917. The flowers are poorly described.



◀ *Anoectochilus albolineatus* Par. & Reichb. f. (Orchidaceae) is commonly found in the mountain forests between 1,200–1,700 metres. Although very closely related to *A. geniculatus*, it can be distinguished by the shape of the lip and lobed spur, and has generally smaller flowers.

## Acknowledgements

Special appreciation to: Hj. Sabariah binti Ahmad and Mr. Annuar bin Ali of Kedah Forestry Department, Central District; Mr. Sohaimi bin Mohd. Kurdi of Kedah Forestry Department of Southern District; Mr. Ahmad bin Wizam, Mr. Mohd. Fauzi bin Azhar and Mr. Azhar bin Othman of the Kulim Forest Rangers Office. Dr. Ruth Kiew provided plant identification and valuable comments; Sam Yen Yen and Mariam Jutta assisted with the article.

## References

Seidenfaden, G. & Wood, J.J. 1992. The Orchids of Peninsular Malaysia and Singapore. Olsen & Olsen, Fredensborg, Denmark.  
Kiew, R. 2005. Begonias of Peninsular Malaysia. Natural History Publications (Borneo), Kota Kinabalu, Malaysia.  
Weber A. & Burt B.L. 1997. Revision of the genus *Ridleyandra* (Gesneriaceae). Beitr. Biol. Pflanzen 70: 225-273.



(Continue from page 1)

Provided food is sufficient, the owlets quickly accumulate body fat and muscle and begin to fledge, with visible bars around their body, in about 25 days. At this stage, food delivery is reduced and soon the fully-fledged chicks will be ready to leave the nest. They will live on adjacent trees but will not be completely independent as both parents will continue to feed them until they are able to hunt by themselves.

◀ A recently-emerged fledging chick.



The Editor: Conservation Malaysia Bulletin, Forest Research Institute Malaysia, 52109 Kepong, Selangor D.E. (attn: Dr. Lillian Chua lillian@frim.gov.my or Dr. Saw Leng Guan sawlg@frim.gov.my). Conservation Malaysia is distributed free of charge upon request. We welcome any contribution or feedback. Send contributions or address comments and queries to the editor. Past issues are available at <http://www.tfbc.frim.gov.my>. Funded by the Ministry of Plantation Industries and Commodities. Design by: Aslina Baharum (FRIM). Editorial team: Dr. Lee Su See, Dr. Laurence Kirton, Dr. L.G. Saw and Dr. Lillian Chua.