

Browns

SATYRINAE

The 2,400 or so species in the nine recognized tribes of browns (subfamily Satyrinae) were once divided among four separate subfamilies. They include butterflies as seemingly different as the huge morphos and owls of tropical American forests and the hardy, subtly patterned graylings of alpine scree. Though some are brilliantly colorful and iridescent, most satyrines, are, as their name implies, largely brown. Rounded eyespots mark the wings of many species, particularly on the underside.

Satyrines may have evolved as feeders on palm leaves, and the caterpillars of tropical butterflies such as the Palm King (*Amathusia phidippus*) of Southeast Asia still feed on palms today. However, at some point what became the major lineage in the subfamily switched from palms to grasses and sedges. That change led to the evolution of many more species in the tropics and allowed the browns to follow their new food plants well into the colder reaches of the temperate zone.

Palm Kings and Others

Amathusiini

Members of the tropical Asian and Australasian tribe Amathusiini are mostly large, broad-winged butterflies of the forest floor. They keep close to the ground, fly mostly at dusk or after dark, and can be very difficult to detect as they rest in the leaf litter. Amathusiines feed on fallen fruits and tree sap and do not visit flowers.

Foanis conens, Kheau
Sri Nakarin National
Park, Thailand

The Common Faun (*Foanis conens*) of India and Southeast Asia is the best known of the 14 species in its genus. One of the smaller and less colorful amathusiines, it has a wingspan of 5.5-10.6 cm (2-2.6 in). Its bright reddish brown upper wings are usually visible only if the butterfly is startled into flight. Common Fauns feed on fallen fruit, often with other butterflies, and lay their eggs on wild bananas (*Musa* spp.).



30 Butterfly Diversity



Tetnaris ceryps, Ise, Papua New Guinea

The Silky Owl (*Gnophoscatops*) of New Guinea is a large, variable and spectacular butterfly. Up to 9.5 cm (3.7 in) across, it has strongly rounded hindwings and impressive eyespots. It keeps to the forest understory but, unlike most amathusiines, is active by day. Silky Owl caterpillars feed in large groups on wild bananas, betel palms (*Areca* spp.) and cabbage trees (*Cordyline* spp.), among others. Adults are attracted to cycads and feed on their juices. Cycad juices are rich in toxins, and the adults' coloring may be a warning to predators.

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information. The caption for the pierid *Dismorphia medora*, for example, notes the diversity of dismorphiines, their mimetic relationships, and their role in inspiring the theory of Batesian mimicry. Here are both commonplace butterflies such as *Dryas iulia*, as well as more rarely seen forest jewels such as *Asterope leprieuri*.

Chapters 7 to 10 return once more to some of the themes from the introduction, but here these ideas are treated by means of images and their associated, informative captions. Butterfly wing morphology and the origins of color patterns, mating behavior, immature stages, adult butterfly feeding behavior, and interactions of butterflies with predators and parasitoids, are some of the topics covered and masterfully illustrated. Chapter 11 is entitled 'Myriads of Moths', and is intended as a very brief 'taste of the overwhelming majority of Lepidoptera'. Once more the images and captions are excellent - exquisite images of saturniid moths are accompanied by text explaining how the long tails of luna moths distract predatory bats, a study published only 8 months ago (Barber *et al.*, 2015). Hawkmoths, day-flying moths, micro-moths, and gaudy moth caterpillars, all feature brightly.

I enjoyed this book very much. The authors comment that "We need to know more and do better.... We need to create space for butterflies." Hopefully this book will encourage people to go out and find out more about these intriguing insects; or at least minimally, make space on their coffee-table for this marvellous book, *Butterflies*.

LITERATURE CITED

- Barber, J. R., Leavella, B. C., Keener, A. L., Breinholt, J. W., Chadwell, B. A., McClure, C. J. W., Hill, G. M., Kawahara, A. Y. 2015. Moth tails divert bat attack: Evolution of acoustic deflection. *Proceedings of the National Academy of Sciences* 112: 2812-2816, doi: 10.1073/pnas.1421926112.

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