



## OBSERVATIONS ON MIGRATION IN CERTAIN AUSTRALIAN LEPIDOPTERA

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In Australia several species of Lepidoptera are known to have migratory habits. WILLIAMS (1930) lists the following.

*Catopsilia pomona pomona* Fabr.  
*C. crocale* Cramer  
*C. pyranthe pythias* Waterhouse &  
Lyell  
*Appias paulina ega* Boisduval  
*Anaphaeis java teutonia* Fabr.  
*Delias nigrina* Fabr.  
*D. harpalyce* Donovan

*Terias smilax* Donovan  
*Danaus plexippus* L.  
*D. chrysippus petilia* Stoll.  
*D. hamata hamata* Macleay  
*D. affinis affinis* Fabr.  
*Acraea andromacha* Fabr.  
*Vanessa cardui kershawi* McCoy  
*Badamia exclamationis* Fabr.

The author had an opportunity to make a few observations on migration of Lepidoptera which may prove to be of some value for other students. These observations were made in the area between Ingham and Tully in north-eastern Queensland (17—18° S.L.) in the years 1960—1961. The rainy season in those years was unusually dry.

Towards the middle of March, 1961, *Badamia exclamationis* Fabr., a Hesperid well known for its migratory habits, appeared in increasing numbers, flying constantly in a north-north-westerly direction. The migration reached its peak in the second half of April; a rough count yielded a total of 85—100 specimens per minute crossing a stretch of approximately 80 yards of the main road, about one mile from the sea shore between Ingham and Tully. Very few were seen feeding at this site, but on the same day and again later in the month, in areas near rain forests overgrown with *Lantana* many thousands of specimens were seen feeding at flowers or drinking from moist sandy river banks, while many others were resting on the underside of leaves. At Ingham several specimens were caught in a light trap, suggesting that they were still active after nightfall. By the end of April their numbers had decreased considerably, and from then on, only odd specimens were seen, feeding actively but not migrating. No specimens were seen mating or ovipositing and no larvae were found. Of a few specimens caught in June, females were somewhat predominant. It is not known, whether these specimens, which were slightly worn, were hibernating.

The butterfly *Danaus hamata* Macleay was also abundant in the same area of



north-eastern Queensland. This species has a wide distribution in the Indo-Malayan and Australian regions where it is represented by several races. From mid-February odd specimens were seen flying consistently in a north-north-westerly direction. Their number increased slowly but steadily, and their flight reached a peak by mid-April. Rough counts made in April yielded a total of 55 to 65 specimens per minute passing over a stretch of about 70 yards of road near Ingham. On several occasions specimens were also taken in a light trap. A few specimens of *Euploea eichhorni* Staudinger and *E. corinna corinna* Macleay, were included in these flights.

At Forest Beach, 12 miles east of Ingham, these butterflies were seen flying towards the land from high over the sea, but on reaching the shore they dropped to near ground level where many were found resting on scrubs and mangroves. Little or no feeding was observed. At Mission Beach, 17 miles northeast of Tully where rain forest grows near the beach, thousands of specimens were found in the late afternoon clustering on small twigs, generally in clearings of the rain forest sheltered from the wind. In the morning large numbers were observed feeding on *Lantana* flowers and others were gathered around puddles on the road.

As the season advanced, the number of migrating specimens decreased slowly, although as late as June odd specimens were still flying in a north-north-westerly direction. When migration was in progress, neither mating nor oviposition was observed nor were any larvae found.

The first report about migratory flights of Australian butterflies comes from Captain COOK, who mentions that at Thirsty Sound, on the East Coast of New South Wales, he found an incredible number of butterflies "so that for the space of three or four acres the air was so crowded with them that millions were to be seen in every direction at the same time that every branch and twig was covered with others that were not upon the wing". In "Survey of the Coasts of Australia", Captain KING reports that at Cape Cleveland as well as at other places where he landed, "the air was crowded with a species of butterfly, a great many of which were taken", and which he thought to belong to the same species recorded by Captain COOK in Thirsty Sound. He further reports that this species was described by Macleay as *Euploea hamata*. (Both reports are mentioned by McKEOWN, 1944).

In the second half of June, at Forest Beach near Ingham, many thousands of Danaid butterflies were found clustering on dry branches of the "paper-bark tree", *Melaleuca leucodendron*, which grows in and around swamps, about half a mile from the sea shore. The dry conditions had caused the swamps to dry up, making observations easy. Other specimens were found sheltering on the underside of dry *Pandanus* and other leaves. Most specimens were *Danaus hamata*, the majority of which were females, but there was a small percentage of two other species: *Euploea eichhorni* Staud. and *Hypolimnas bolina nerina* Fabr. During the warmer hours of the day many butterflies could be disturbed by walking beneath the trees, but *Hypolimnas bolina* remained inactive resting head downwards and antennae folded between the wings. As soon as the disturbed Danaidae started to fly they were attacked by birds, identified as the masked wood-swallow (*Artamus personatus*), which caught the butterflies in a swooping flight, consuming the bodies but drop-



ping the wings. Large quantities of wings on the ground suggested that many butterflies had been destroyed by the birds. When a bird missed its prey, the butterfly dropped to the ground, usually remained motionless for several minutes and then escaped by slowly walking along the ground to take shelter in grass. Those which flew up again were often caught. FRYER (1913) and WILLIAMS (1927) recorded similar bird attacks on migrating *Danaus hamata septentrionis* and on *Euploea* species, by the drongo, *Dicrurus leucopygialis* and by a wood-swallow *Artamus fuscus*, in Ceylon. A well-known theory suggests that the representatives of the family Danaidae which usually are slow fliers, besides being conspicuously marked, would be distasteful to birds. It seems likely now that Danaidae are distasteful only to some species of birds or that they lose their distasteful properties while hibernating. Other Lepidoptera were collected in the same area by beating dry *Pandanus* leaves, which form dense, tent-like shelters around the trunks. Two species of Nymphalidae, *Hypolimnas bolina nerina* Fabr. and *H. alimena lamina* Fruhst. and one of Pieridae, *Catopsilia pomona* Fabr., were found in small numbers scattered throughout the area.

When disturbed the Nymphalids were quite inactive, generally dropping to the ground where they either remained motionless or sometimes flew a short distance. *Catopsilia* butterflies also flew only briefly before taking cover again. In these species both sexes were present. None was seen feeding or flying, unless disturbed, and their inactivity suggests that they were hibernating.

#### LITERATURE

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