Unusual incidence of dwarf butterflies following protracted rains in Southern Queensland

UNUSUAL INCIDENCE OF DWARF BUTTERFLIES FOLLOWING PROTRACTED RAINS IN SOUTHERN QUEENSLAND

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Abstract

In April 2010, unusually large proportions of small individuals were recorded in the following butterfly species: *Papilio aegeus*, *Tirumala hamata* and *Hypolimnas bolina*. This trend was not evident in *Euploea core*. Starvation following earlier population surges may explain this trend.

Observations

Following exceptionally heavy rains over southern Queensland in the first three months of 2010, very large numbers of butterflies of many species were present in the Sunshine Coast Area and elsewhere. From the beginning of April, I noticed an unusual number of small individuals in certain species

To quantify this effect, from 21.iv.2010-26.iv.2010, I collected samples of three species: *Papilio aegeus* Donovan, 1805, *Tirumala hamata* Moore 1880 and *Hypolimnas bolina* (Linnaeus, 1758). During the sampling period virtually every individual which appeared in my garden at Caloundra was captured. The forewing length was measured, the sex noted, and the butterfly was normally marked and released, with some spectacular dwarves being retained. A spectacuar dwarf male *T. hamata* is shown for comparision beside a specimen of average size (Fig. 1).

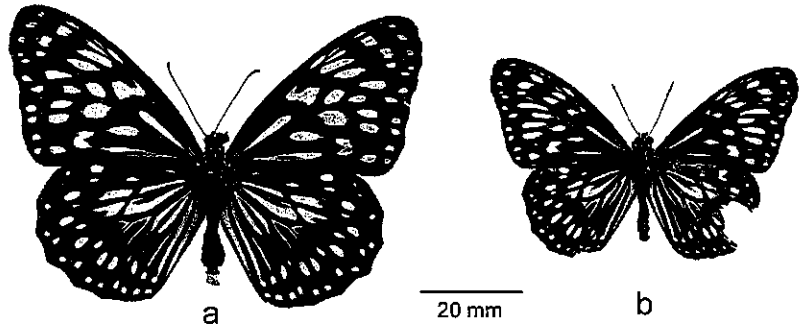

Fig. 1. Comparison of (a) average sized (fw = 47 mm) and (b) extreme dwarf (fw = 33 mm) of *Tirumala hamata*. The latter shows unusual signs of birdstrike.

The wing measurements were compared with those figured by Braby (2000), generally considered to represent average sizes for respective species. Results for males are shown in Table 1. Females were fewer in the sample but showed similar trends. Sample means were significantly smaller (exact probability, $p<0.01$) than the parametric average based on Braby (2000), mainly as a result of unusual numbers of very small individuals.

Table 1. Forwing length (fw) statistics for species sampled compared with 'parametric' measurements calculated from Braby (2000).

Species	number sampled	mean fw ±standard deviation	minimum fw length	average fw, from Braby (2000)
Papilio aegeus	16	49.5 ±4.6 mm	43 mm	55 mm
Tirumala hamata	30	41.8 ±3.5 mm	33 mm	47 mm
Hypolimnas bolina	12	39.4 ±3.1 mm	35 mm	44 mm

The effect was most strongly marked in *T. hamata* which showed a particularly wide spread of sizes (Fig. 2). The size distribution is clearly skewed to the right, with a long tail of representing a few very small individuals. These may have arisen from starvation or malnutrition as host plants became depleted, following population explosions earlier in the year after the first of a series of protracted rainy spells. Several cases of defoliation of small *Citrus* plants in the garden by *P. aegeus* larva supported this hypothesis. By contrast, *Euploea core* (Cramer, 1780), which was also very abundant, showed no such obvious trend during the sampling period, but the following week it was notable that most individuals of this species, and also those of *E. tulliolus* (Fabricius, 1793) were also small.

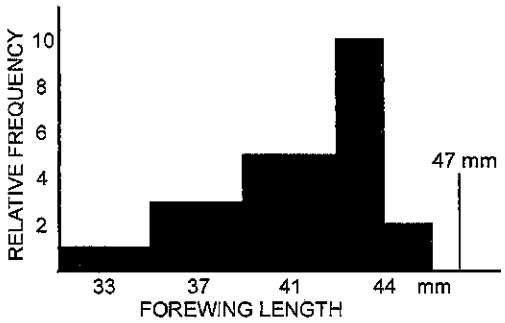

Fig. 2. Frequency distribution of forewing length in male *Tirumala hamata* sampled.

Reference

BRABY, M.F. 2000. *Butterflies of Australia, their identification, biology and distribution.* CSIRO Publishing, Collingwood, Victoria; xx + 976 pp.