

GENERAL NOTES

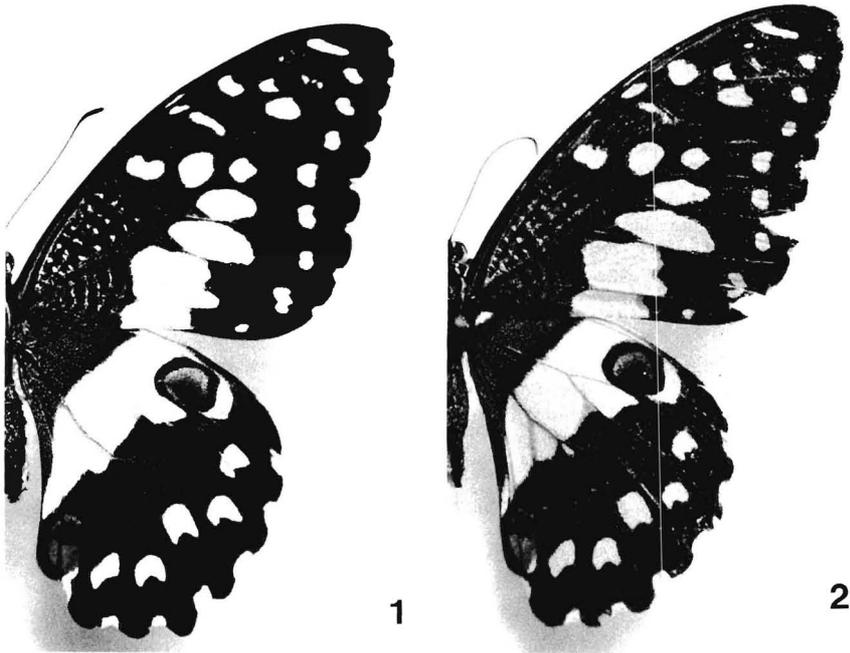
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ESTABLISHMENT OF *PAPILIO DEMOLEUS* L. (PAPILIONIDAE) IN JAVA

Additional key words: distribution, Indonesia, Sunda Islands, Malay Archipelago.

Until the 1970s, *Papilio demoleus* L. was known from southern Asia, Australia and New Guinea, but not from most islands of the Malay Archipelago, except the Lesser Sunda Islands (Corbet & Pendlebury 1978). However, the species has expanded its range and become common in the Philippines (ssp. *libanius* Fruhstorfer from Taiwan) and Sumatra (ssp. *malayanus* Wallace from the Malay Peninsula) (Tsukada & Nishiyama 1980). In 1988 Kato (1989) collected a female *P. demoleus malayanus* in West Java, and reported it as the first record of the species in Java. Moonen (1991) pointed out that three earlier Java records existed for this species—two from East Java during the 1890s (race unclear, see Moonen 1991 for details), and one from West Java in 1914 (ssp. *malayanus*)—but he also mentioned that an established population of *P. demoleus* had never been found in Java.

However, to our knowledge, at least since 1990 *P. demoleus* has been rather common in West Java (at Ujung Kulon, Carita, Pelabuhan Ratu, Sukabumi, Cikampek and Garut). We also have observed this species in Central Java (at Kebumen, Kartasura and Surakarta)



FIGS. 1–2. *Papilio demoleus malayanus* collected in Java: 1, male (Bogor, W. Java, 2 March 1991); 2, female (Kediri, E. Java, 4 January 1992).

and East Java (at Ngawi, Nganjuk, Kediri and Ponorogo) from 1991 to 1994. Therefore, we consider the species has already become established and spread on the Island of Java. We have collected a number of Javanese specimens and deposited these in the Museum Zoologicum Bogoriense. The data for these specimens are as follows: WEST JAVA: ♂, Kebun Raya Bogor, 5 Sep 1990; ♀, Baranangsiang, Bogor, 25 Dec 1990; ♀, Kebun Raya Bogor, 24 Feb 1991 (em.); 2♀, Kebun Raya Bogor, 26 Feb 1991 (em.); 2♂ ♀, Pagilaran, Bogor, 2 Mar 1991; ♀, Cimanglid, Bogor, 26 Mar 1991 (em.); 2♀, Cimanglid, Bogor, 10 Apr 1991 (em.); ♂, Cimanglid, Bogor, 11 Apr 1991 (em.); ♂, Kebun Raya Bogor, 18 Apr 1991 (em.); ♀, Sukaluyu, Bogor, 5 Mar 1992; ♂, Bogor City, 21 Mar 1992; ♂, Curug Nangka, 13 February 1994; ♀, Pasir Mulya, Bogor, 7 March 1994. EAST JAVA: ♂ ♀, Wates, Kediri, 27 Mar 1992; ♀, Ngancar, Kediri, 4 Jan 1994; ♂, Ngawi, 26 Jan 1994. All the above specimens were identified as *P. demoleus malayanus* (Fig. 1–2). This suggests that the founder of the Javanese population invaded from the west, probably from Sumatra where the same race is now common (Tsukada & Nishiyama 1980). Kato's (1989) record may represent an early member of the present population.

Two males and six females from Bogor were bred from eggs or larvae found on *Citrus hystrix* DC., *C. aurantifolia* Swingle and *C. amblyocarpa* Ochs (Rutaceae). These species are commonly planted in home gardens in Java, and, as far as in West Java, the immatures of *P. demoleus* are frequently found on them. We have also seen a larva feeding on *C. grandis* Osbeck in Bogor. The Javanese population of *P. demoleus* is thus supported by cultivated *Citrus* spp. as in other Asian regions (e.g., Corbet & Pendlebury 1978), not by leguminous hosts as in Australia (Common & Waterhouse 1981). The aforementioned breeding yielded a number of pupal parasitoids, including *Brachymeria* sp. and *Eulophidae* sp. (Hymenoptera).

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