

A NOTE ON THE LARVAL FOOD PLANTS OF *GRAPHIUM WEISKEI* (RIBBE) (LEPIDOPTERA: PAPILIONIDAE) IN PAPUA NEW GUINEA

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Abstract

Two species of plants, *Dryododaphne crassa* Schodde (Monimiaceae) and *Cryptocarya* sp. (Lauraceae), are recorded as potential larval food plants for *Graphium weiskei* (Ribbe), based on ovipositing females in the Kegsugl area, Simbu Province, Papua New Guinea, in upper montane moss forest during June 1999.

Introduction

Graphium weiskei (Ribbe, 1900) (Figs 1-2) is distributed throughout mainland New Guinea, occurring as far west as the Arfak Mountains in Irian Jaya (Indonesia), to Goodenough I. in the D'Entrecasteaux Islands of Papua New Guinea (Parsons 1998). It most commonly occurs in mid to upper montane primary forest at altitudes between 1,200 and 2,000 m, although it has been recorded at altitudes well below and above this range. The species is well known for its unique and extraordinary colours of pink, mauve and turquoise. For this reason, high quality specimens are in strong demand for the overseas butterfly trade and currently sell at 1.5 Kina per specimen (Insect Farming and Trading Agency [IFTA]).

Surprisingly little is known of the larval food plants and the early stages have not been described formally. Indeed, all specimens exported by IFTA are obtained as wild-caught adults (through a network of local collectors) and not through captive breeding and harvesting of the immature stages. Haugum and Samson (1980) noted that a female had been observed to oviposit on a 'species of *Sassafras* (Lauraceae)' at Wau and that oviposition also was observed on a small, unidentified tree at Erume. Parsons (1998) considered that the 'small, unidentified tree' represented a species of *Cinnamomum* (Lauraceae) but did not provide evidence for this conclusion. The genus '*Sassafras*' does not exist; however, the name '*sassafras*' is used frequently as the common name for *Doryphora sassafras* Endl., a species which belongs in the Monimiaceae, not Lauraceae. Hence, there is considerable doubt over the identity of the larval food plants in Papua New Guinea.

The following observations, although based on oviposition records only, are documented here because of the general paucity of reliable information. The species listed are considered to represent likely food plants and, hopefully, will stimulate further searching and rearing of the immature stages (and eventual documentation of the life history), leading to the sustainable farming of this exquisite butterfly.

Observations

During June 1999, while stationed for eight days collecting in the Kegsugl area of Simbu Province, Papua New Guinea, two separate observations were made of ovipositing females of *G. weiskei weiskei* in upper montane moss forest.

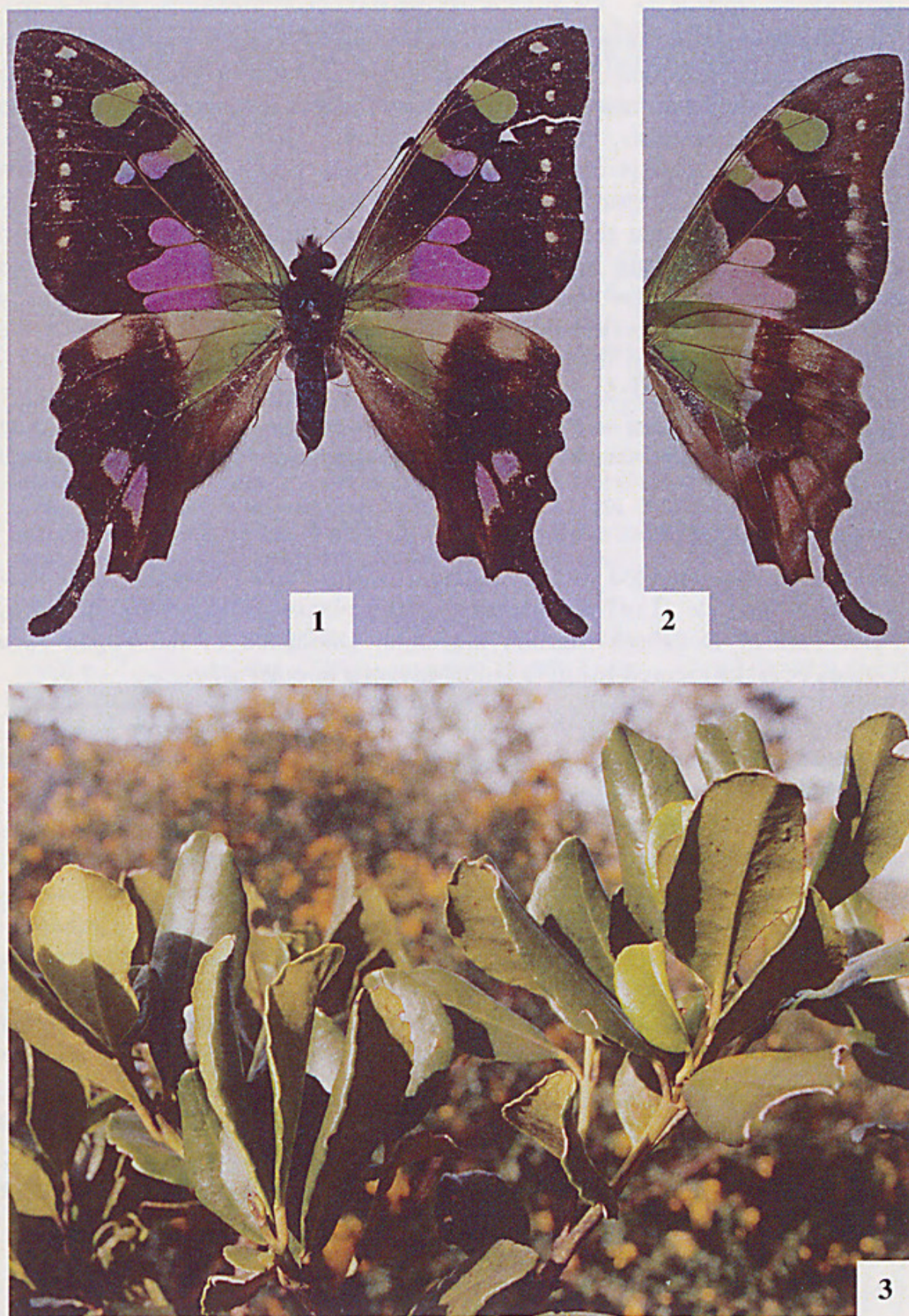
The first observation was made at 1350 h on 4 June, near the Lake Pindi Yaundo Lodge, about 3 km north of Kegsugl, at an altitude of approximately 2,800 m. A female was observed at about eye level (using binoculars, 10x25 magnification) to spend several minutes circling around and settling in the canopy of a large (ca 30 m in height) *Dryododaphne crassa* Schodde (Monimiaceae) (Fig. 3), growing on a steep slope above a watercourse. The female was seen to eventually settle on the underside of a branch about 2-3 m from the top of the tree. Once settled she then curled and extended her abdomen in a characteristic ovipositing manner and laid an egg on the bark, before flying off to 'inspect' other areas of the tree. Further observations of oviposition and the egg were not possible due to the density of the vegetation and the height of the tree. However, it is probable that other eggs were being laid, given the intensity with which the female was searching the tree and frequently settling.

The second observation occurred at 1225 h on 7 June, in a gully about 3-4 km south-east of Kegsugl, at an altitude of approximately 2,700 m. A female was observed at close range to spend several minutes intensely searching, whilst in flight, the foliage of a shrub (ca 2 m in height) of *Cryptocarya* sp. (Lauraceae), growing on the edge of a watercourse. During this period, the female frequently settled and laid several eggs on the underside of older leaves in the lower half of the plant. All eggs were deposited singly and were typical of the genus *Graphium* Scopoli, being spherical, smooth and yellowish-green in colour. The female (Figs 1-2) was eventually netted and retained as a voucher specimen.

Voucher specimens of the two plants mentioned above are deposited in the Herbarium of the Papua New Guinea Forest Research Institute, Lae.

Discussion

Graphium weiskei belongs to a distinct taxonomic clade (the *weiskei* group), within the *sarpedon* group of subgenus *Graphium*. The *weiskei* group includes five other closely related species (Okano 1984, Hancock 1985, Parsons 1998, Müller and Tennent 1999). The life histories and larval food plants are unknown for four of these species: *G. batjanensis* Okano from Batjan [= Bacan], northern Maluku (Indonesia), *G. stresemanni* (Rothschild) from Ceram [= Seram], southern Maluku (Indonesia), *G. kosii* Müller & Tennent from New Ireland (Papua New Guinea) and *G. gelon* (Boisduval) from New Caledonia and the Loyalty Is.



Figs 1-3. (1-2) *Graphium weiskei*, adult female, upper and undersides; (3) *Dryododaphne crassa* (Monimiaceae), putative larval food plant of *G. weiskei* at Kegsugl (2,800 m), Simbu Province, Papua New Guinea.

The fifth species in the group is *G. macleayanum* (Leach), whose larvae, in Australia, are recorded feeding on a large number of plants belonging primarily to the Monimiaceae and Lauraceae, with a few species of Rutaceae and Winteraceae also being used (Common and Waterhouse 1981). *Doryphora sassafras* is commonly used in New South Wales and at least three species of *Cryptocarya* are recorded as host plants. It is therefore interesting to note that the putative food plants recorded for *G. weiskei* in eastern mainland Papua New Guinea also belong to the Monimiaceae and Lauraceae, two primitive and closely related families of plants. Since closely related species of butterflies frequently share similar larval food plants at the higher (and sometimes lower) taxonomic levels as a result of coevolution (Ehrlich and Raven 1965), it is considered very likely that *G. weiskei* larvae would feed on plants within the Monimiaceae and Lauraceae and that *Dryododaphne crassa* and *Cryptocarya* sp. almost certainly represent larval food plants.

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