Some notes on *Dinophasma guttigera* (Westwood) from Borneo.

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Introduction

Dinophasma guttigera appears to be a common species in some parts of Sarawak, I have found it on each of my four phasmid collecting trips. Initial attempts to rear this species in captivity failed because a suitable foodplant could not be found in the UK. This problem has now been overcome and this species is now being successfully reared.

Classification

This species belongs to the small subfamily Aschiphasmatinae, in the family Pseudophasmatidae. There are less than 50 described species in the subfamily which is split into six genera. The subfamily appears to be restricted to south east Asia. The genus *Dinophasma* is only recorded from Borneo and contains three described species all of which have wingless females and winged males. The females of this genus are easily distinguished from other members of the subfamily by the presence of a large upright spine on the mesonotum. *D. guttigera* has been mentioned in the literature on several occasions since its description by Westwood in 1859.

Phasma guttigerum, Westwood, 1859: 35, pl. 27.6.
Datames (?) guttigerus (Westwood), Kirby, 1904: 400.
Dina guttigera (Westwood), Redtenbacher, 1906: 87.
Dina guttigera (Westwood), Günther, 1935: 7.
Dina guttigera (Westwood), Günther, 1943: 151.

Westwood placed this species (and three others) in the genus *Phasma* because he was unsure where it belonged: "The following insects differ so materially from all other apterous species, that I am uncertain (in the absence of males of each) whether they should be referred to other groups of the Apterophasmina, or be raised to the rank of separate genera. In this uncertainty I prefer leaving them under the old generic name *Phasma*" (Westwood 1859: 34). Redtenbacher (1906: 86) created the genus *Dina* for this and two new species, however the name *Dina* was already in use for a group of worms and Uvarov (1940: 173) proposed *Dinophasma* to replace Redtenbacher's name. Günther's use of *Dina* in 1943 is no doubt due to both his and Uvarov's papers being published during the second world war.

Figure 1. Female *Dinophasma guttigera*, side view.

Distribution in Borneo

Westwood's single female specimen, now in Oxford University Museum, is from "Sarawak (Borneo)" and was collected by D. Wallace. Günther records the species from the Pajau River (1935: 7) and Mahakam (1943: 151). I have found this species in several areas of the western end of Sarawak: Mt Serapi, Mt Santubong, kampung Bengoh and in an area of swamp forest at

Simunjan. The highest altitude at which I have found this species is 580m on Mt Serapi.

The adults

Both sexes have similar coloration. With the exception of the antennae, the whole of the insect has a base colour of dark brown which is overlaid by numerous light brown and brownish-yellow blotches and smears. The antennae are light brown in colour. The male is fully winged and capable of good flight, in contrast there is no sign of wings in the female (Fig 2). The female is larger than the male and has a large upright spine at the back of the mesonotum; the metanotum and each abdominal segment has a raised hump on the hind edge (Fig. 1)

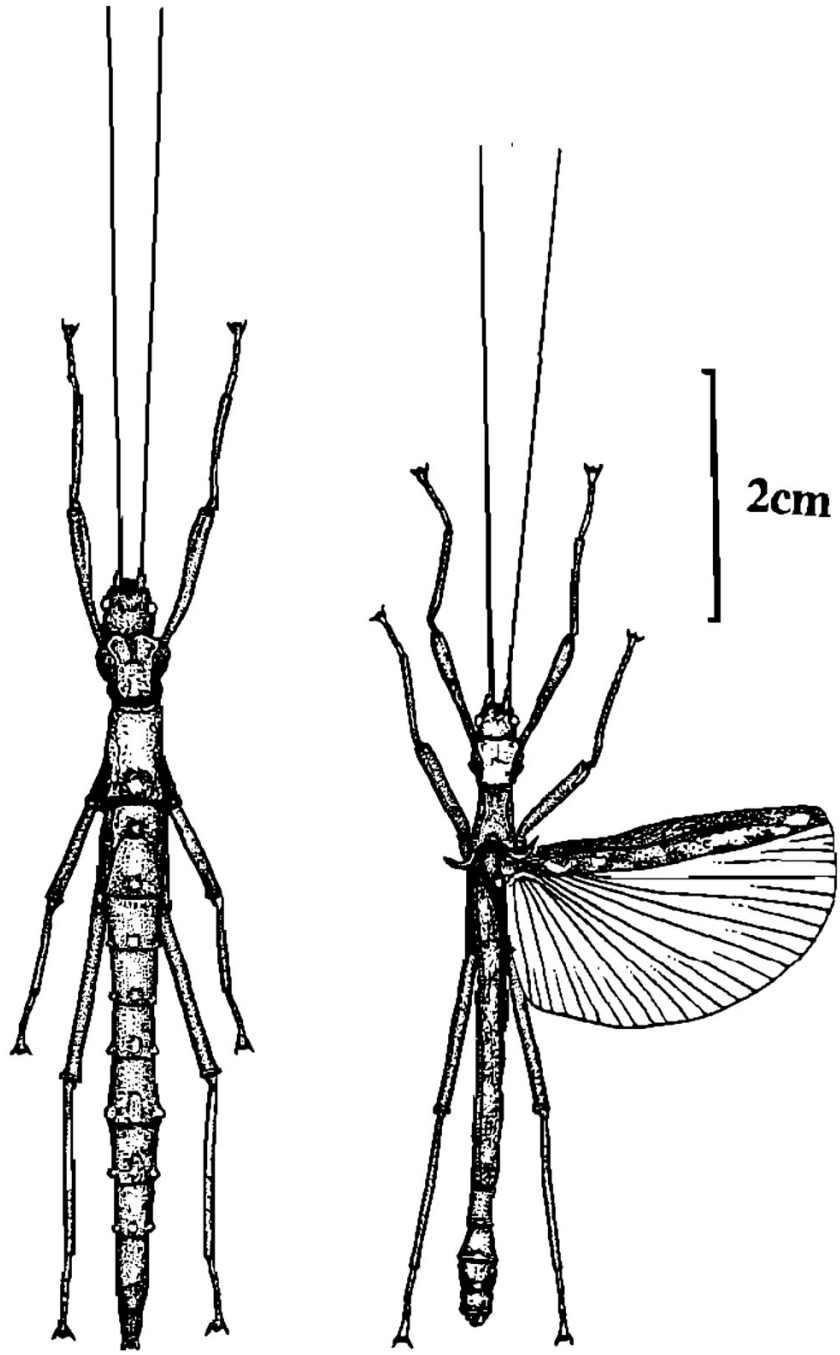

Figure 2. Female and male *D. guttigera*.

Foodplants

Almost all of the 26 specimens of this species which I have collected were found on *Melastoma* sp., the other specimens, usually males, were all on plants close to *Melastoma* bushes. This plant, which is sometimes called Singapore Rhododendron, is a common shrub in secondary forest and on roadsides in northern Borneo and is the foodplant of this species in Sarawak. Several specimens of what I believe to be an undescribed species of *Dinophasma* were found on this plant in Sabah. This suggests that this genus has a strong preference for *Melastoma*. In the UK several attempts to culture the species failed despite trying a wide variety of foodplants. However in September 1992 I returned home with two females which fed on fuchsia (*Fuchsia* sp.).

The egg (Fig. 3)

The capsule is a laterally flattened disk which is slightly higher at the opercular end. The capsule

is a uniform mid brown and covered in fine hairs (Fig. 3); the rim of the micropylar plate and operculum are yellowish brown. The operculum is oval and lacks a capitulum. The micropylar plate is a narrow band which extends around the rim of the egg, starting and ending at the operculum. The micropyle is difficult to see externally but is directly opposite the operculum (which I have indicated by an arrow on Fig. 3); at this point the micropylar plate is slightly wider. The standard terminology used for phasmid eggs defines the dorsal surface as that on which the micropylar plate is found. However in the case of this egg (and the eggs of *Orthomeria*, *Presbistus* and *Aschiphasma* which I have examined), the plate extends around the egg so that the dorsal surface is unclear. I have treated the edge of the egg with the micropyle as the dorsal surface and the length of the egg as the longest axis.

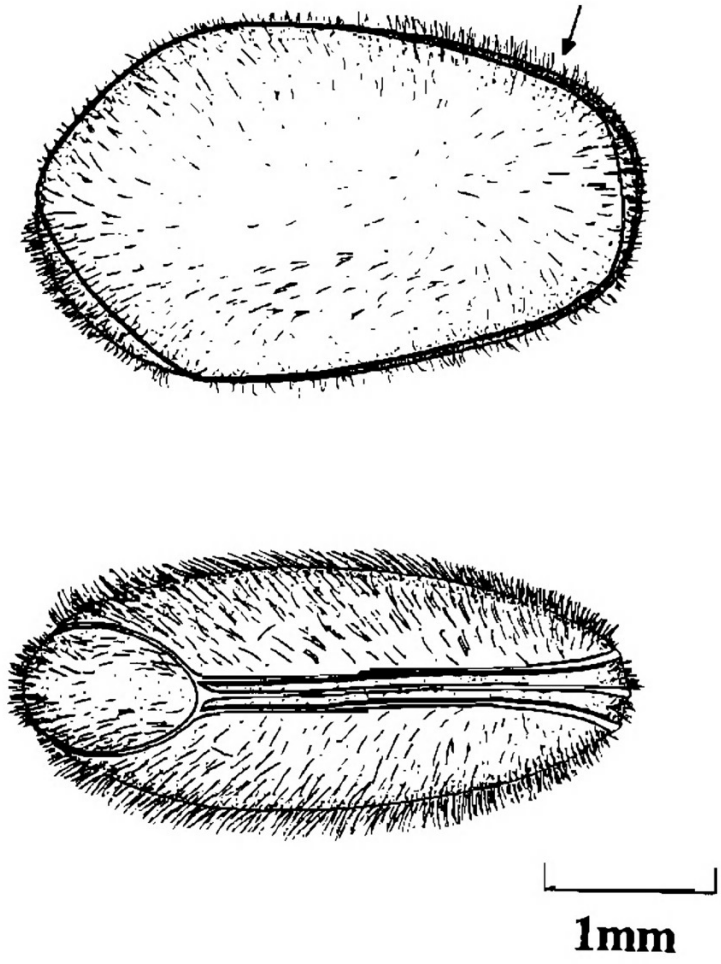

Figure 3. Lateral & ventral views of the egg.

Typical measurements are length 3.4mm, height 2.2mm and width 1.6mm. The mass of 23 newly laid eggs was found to range from 7.45-5.61mg with a mean of 6.85mg and a standard deviation of 0.45.

Eggs laid in July 1992 were incubated at ambient temperatures in Sarawak for the first 30 days then at ambient temperatures in the UK. The first egg hatched after 84 days.

Rearing

Almost 200 eggs were laid by eight specimens collected during July and August 1992. Eggs, in batches of 50, were distributed to three other members of the PSG. More than 50% of my eggs hatched when incubated at room temperature in high humidity, in agreement with my previous experience with this species. Nymphs were reared in a small plastic box and one or two fresh fuchsia leaves were put into the box each day. When I went away for ten days at Christmas they were transferred to a potted fuchsia in a small cage. When I returned, the plant and nymphs had all died. Paul Jennings reported several of his 50 eggs hatching and one male was reared to adult. Ian Abercrombie only had two eggs hatch but raised both, a male and a female to adult. It is hoped that a sustainable culture will result from these. Ian reported that the first insect became adult at the end of March 1993. This means they take 7-8 months, from the eggs being laid, to become adult. Now that a foodplant suitable for both nymphs and adults is known, it has not been too difficult to establish this species in culture. Ian has given away several lots of eggs and nymphs of this species to members of the PSG and *D. guttigera* has been added to the PSG species list, as

culture 150 (Bragg 1993).

Behaviour

Specimens which I have found in the wild have always been found at night, resting on the foodplant, or a nearby plant. Defensive behaviour falls into three stages. Stage one, the insect lowers its body and lies flat on the leaf or stem, making no attempt to move off. Stage two is triggered by persistent close disturbance, touch, or by insect repellant on the collector's hands. In stage two the insect jumps backwards, falling to the ground, or clinging to a lower branch in a repeat of stage one. Males will often fly off once they have jumped backwards. Stage three occurs if the insect is picked up and held firmly in the fingers; fluid is sprayed from at least two places on each side of the thorax. I have only observed stage three on three occasions, the third time in captivity, in each cases the insect was a female. My usual collecting technique is to let the insect drop into a plastic bag rather than picking up the insect, this probably explains why I have not seen this behaviour more frequently. On one occasion, in the wild, I was able to photograph the insect concerned, there were four white globules of fluid on the thorax, the liquid does not seem to be ejected any distance. Careful sniffing of the liquid produces a strong, sharp burning sensation in the nose, this is slightly reminiscent of the effect of sniffing concentrated ammonia solution!

Acknowledgement

I am grateful for permission to the illustration of the egg which was drawn by Vernon Bayliss as part of his third year undergraduate project at Aberystwyth University.

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