

## PHASMIDS AND COCKROACHES AS PREY OF SPIDERS AND MANTIDS

by P.E. Bragg (8737)

8 Cornwall Avenue, Beeston Rylands, Notts NG9 1NL.

While in Kinabalu National Park, Sabah, in July 1990, I accompanied Mr C.L. Chan to collect phasmids near the Park Head headquarters. On the second night, at about 11pm, I found a spider eating a large female nymph of *Asceles margaritatus* Redtenbacher (Plate C, Fig. 1). This appears to be only the third recorded incidence of a phasmid falling prey to a spider in the wild. A few nights later a similar situation was encountered but this time it involved a spider and an unidentified species of cockroach (Plate C, Fig. 2). The photographs were both taken using a SLR camera fitted with a 50mm lens. Illumination was provided by a flash unit which was held at the side of the camera. The exposures were made with the aperture set at  $f16$  and taken from a range of 35cm.

One night in August 1989 on Mt Serapi, Sarawak, a male *Carausius abbreviatus* (Brunner) was found with only half an abdomen. Clearly something had eaten the end of the abdomen and then the phasmid had escaped. The cause of the missing abdomen is unknown, however the damage done is consistent with a situation which I have seen on a number of occasions in captivity. A preying mantis catching a phasmid by the tail and starting to eat it without having hold of the rest of the body often results in the phasmid escaping although the injury to the phasmid will prove to be fatal within a few hours.

There are very few records of natural predators of phasmids. This is no doubt due to their being largely nocturnal; their excellent camouflage protects them during the daytime so, presumably, their main predators are also nocturnal. There appears to be only one record of a mantis eating a phasmid in the wild (Paine 1968). A recent investigation into phasmids as prey of spiders (Nentwig, 1990) concluded that they are very palatable to spiders but also reported that there are only two records of spiders eating phasmids in the wild (Robinson & Robinson, 1973; Robinson & Lubin, 1979). Swaine states that a spider has been recorded as a predator of *Graeffea crouani* (Le Guillou) but does not give his source or say whether this occurred in captivity or in the wild (Swaine, 1969).

I have found that in captive conditions, phasmids are eaten by spiders, lizards, preying mantids, axolotls, newts, scorpions and frogs. There are also published records of them being eaten by various other animals in captive conditions. Even species which produce a smell when disturbed, such as *Sipyloidea sipyilus* (Westwood), are readily eaten. The main problem for the predator is seeing its prey; if the phasmid remains

stationary after being placed in the cage then it usually remains safe. In the wild most species of phasmids do not usually move in the daytime and should therefore be safe from all but a lucky find by diurnal predators.

A similar situation exists for cockroaches; many are more active at night and their predators should therefore be nocturnal. During the daytime many cockroaches tend to hide under bark, leaves, etc and are not very likely to be found and eaten. However, as cockroaches tend to be much more numerous than phasmids and some species are found in buildings, there are many records of cockroach predators.

#### REFERENCES

- Nentwig, W. (1990). Stick insects (Phasmids) as prey of spiders: size, palatability and defence mechanisms in feeding tests. *Oecologia*, **82**: 446-449.
- Paine, R.W. (1968). Investigations for the biological control in the Fiji of the Coconut stick-insect *Graeffea crouanii* (Le Guillou). *Bull. Ent. Res.*, **57**: 567-604 (see page 568).
- Robinson, M.H. & Lubin, Y.D. (1979). Specialists and generalists: The ecology and behaviour of some web-building spiders from Papua New Guinea. *Pacific Insects*, **21**: 133-164.
- Robinson, M.H. & Robinson, B. (1973). Ecology and Behaviour of the Giant wood spider *Nephila maculata* (Fabricus) in New Guinea. *Smiths Contr. Zool.*, **149**: 1-76.
- Swaine, G. (1969). The Coconut stick insect *Graeffea crouani* (Le Guillou). *Oleagineux*, **24**(2): 75-77.



Fig. 3. Spider eating *Asceles margaritatus*

PLATE C.



Fig. 4. Spider eating a cockroach

PLATE C.