

Notes on the Distribution and Economic Importance of the Papuan Tip-wilt Bug, *Amblypelta lutescens papuensis* Brown. (Heteroptera : Coreidae)

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*In this paper data on the distribution and host plants of the "Papuan Tip-wilt Bug" ¹ (*Amblypelta lutescens papuensis*), the Papuan subspecies of *A. lutescens* Dist., are presented. Observations on the feeding habits and damage to economic plants are described and three different egg parasites of the insect are recorded.*

VERY little was known about the genus *Amblypelta* Stal. in the Territory of Papua and New Guinea before the year 1958. In 1958 E. S. Brown (Commonwealth Institute of Entomology, London) published two papers on the genus, one on the taxonomy (Brown 1958) and one on the feeding habits and host plants (Brown 1958a). Of 12 species recorded in Brown's genus revision, six occur in the Territory of Papua and New Guinea. Some of these are indigenous species, the others are described earlier from other countries and they have subspecies in Papua and New Guinea. These are: *Amblypelta lutescens papuensis* Brown, *A. ardleyi* Brown, *A. theobromae* Brown, *A. cocophaga cocophaga* China, *A. costalis szentivanyi* Brown and *A. gallegonis bougainvillensis* Brown. All except *Amblypelta cocophaga cocophaga* China were described in Brown's above-mentioned paper as new species or new subspecies (Brown 1958).

Amblypelta lutescens papuensis Brown (Fig. 1) is a purely Papuan insect. It has never been found in the Territory of New Guinea. The name form (*A. lutescens lutescens* Dist.) was recorded by Brown (1958) from various parts of Queensland, the Northern Territory of Australia, Murray Island, Banks Island (Torres Strait), Kai Island, Timor and Wetter Islands. Host plants of *Amblypelta lutescens lutescens* (Dist.) recorded by Brown (1958a) are: *Ananas comosus* (pineapple), *Annona squamosa* (custard apple), *Carica papaya* (papaw), *Cal-*

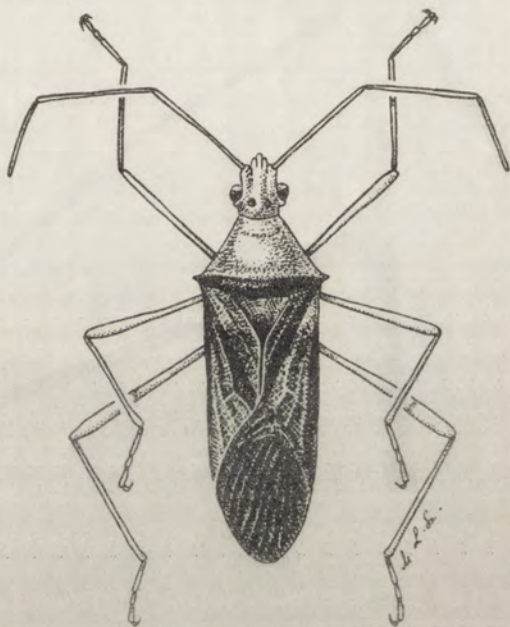


FIG. 1.—Papuan Tip-wilt Bug (*Amblypelta lutescens papuensis* Brown) (x 2½).

pidia brunoiana, *Citrus* sp., *Cocos nucifera* (coconut), *Ficus* sp., *Gossypium* sp. (cotton), *Guoia semiglauc*, *Macadamia ternifolia* (Queensland nut), *Mangifera indica* (mango), *Manihot utilissima* (cassava, quoted as *M. esculenta*), *Melia dubia* (white cedar), *Musa paradisiaca* (banana), *Passiflora edulis* (passion-

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¹ This common name is proposed for *Amblypelta lutescens papuensis* Brown since the Papuan subspecies is more important as a pest of the stems, causing tip-wilt, than as a pest of fruits, as is the case with the name form (*Amblypelta lutescens lutescens* Dist.) from Australia, which is known as the "Fruit-spotting Bug".

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PLATE 1.

(Photo : R. T. Simon Thomas.)

fruit), *P. quadrangularis* (grenadilla), *P. suberosa* (corky passionfruit), *P. subpellata* (white passion flower), *Peltophorum pterocarpum*, *Plumeria* sp. (frangipani) and *Xanthium strumarium*, representing not less than 18 plant families. Brimblecombe (1948, p. 206) records *Pisonia brunoniana*, *Peltophorum pterocarpum* (quoted as *P. ferrugineum*), *Guoia semiglauc*, "white cedar", "rough leaf fig" and "orange box wood" as indigenous host plants of *Amblypelta lutescens lutescens* (Dist.) in Queensland.

Amblypelta lutescens papuensis Brown has not been recorded from as many host plants. Brown recorded it from *Hevea brasiliensis* (rubber), *Manihot utilissima* (cassava, mentioned as *M. esculenta*), *Phaseolus mungo* (mungo bean) and "*Uremia lobata*". Further host plant records in Papua are *Abroma augusta* (devil's cotton), *Carica papaya* (papaw), *Ipomoea batatas* (sweet

potato), *Mangifera indica* (mango), *Plumeria acutifolia* (frangipani) and *Sechium edule* (choko) (Szent-Ivany, 1958, pp. 424, 425).

Since the publication of the senior author's paper, it has been found that *Amblypelta lutescens papuensis* Brown is able to cause similar damage to *Cocos nucifera* to that of *Amblypelta cocophaga*, a serious pest of coconuts in the British Solomon Islands, the result of the injury being premature fall of nuts. Nutfall apparently caused by this species was observed in three districts of Papua, namely in the Gulf District (Peto village area), the Central District (Aroa and Baubauguina Estates) and in the Milne Bay District (Doini, Puni Puni and Sewaitaitai Plantations). Live adults of *Amblypelta lutescens papuensis* Brown placed in breeding jars with parts of coconut inflorescence were observed feeding on "button nuts" by E. Cleland, G. S. Dun, J. L. Gressitt and the senior author at Aroa Estate in September-October, 1958. After a few hours the nuts, attacked in the jars, began



PLATE 2.

(Photo : R. T. Simon Thomas.)



PLATE 3.

(Photo : J. J. H. Szent-Ivany.)

to show the typical scars of *Amblypelta* damage, as shown in the publications of Brown (1959), Plate II, Fig. 1 and Phillips (1940), Plate XIII, Fig. 2. B. E. Fairfax-Ross, B. G. Griffiths and the junior author observed *Amblypelta lutescens papuensis* feeding at Baubauguina Estate on the nuts of dwarf coconut palms about five feet above the ground. (April, 1959.) There is a marked correlation between certain ant species (particularly *Anoplolepis longipes* Jerd. and *Oecophylla smaragdina* F.) and the damage by *Amblypelta lutescens papuensis* in coconut plantations. Observations on this by the entomologists of the Department of Agriculture (Port Moresby) and particularly by the junior author, are in progress.²

At the time when E. S. Brown visited Papua (1956), very little was known of the injury caused by *Amblypelta lutescens papuensis* to rubber (*Hevea brasiliensis*). In his paper Brown (1958a) reports : " In certain cases, however, little or no damage results from feeding on shoots ; this was the case in New Guinea with *A. lutescens papuensis* Brown (Brown 1958, p.

519) and *A. costalis szentivanyi* on rubber." The first observations were made by Mr. A. Himson, Mrs. P. Himson and the senior author in the nurseries of Bisianumu Rubber Experiment Station (Sogeri Subdistrict of the Central District of Papua) in August, 1957. Adults and nymphs of *Amblypelta lutescens papuensis* were observed feeding on the stems of rubber seedlings and buddings, a few inches under the growing point, the symptoms of injury being peculiar longitudinal scars and severe tip-wilt.

The symptoms of damage on the young, fresh, green *Hevea* buddings and seedlings are different from the injury found on older ones, which have formed a more compact woody cortex. As a result of *Amblypelta* attack, longitudinal grooves appear on the tender, green upper portion of the young stems. (Plate 1.) This is followed by tip-wilt. The leaves on the branches, near the growing point begin to wilt and droop, they fall and some of the branches die. (Plates 2-4.) The buddings and seedlings usually survive, but they suffer a serious setback to growth, especially if the same budding is repeatedly injured.

Reddish brown longitudinal scars, pointed on both ends, with a dark spot or a short groove in their centre, are the first signs of *Amblypelta*

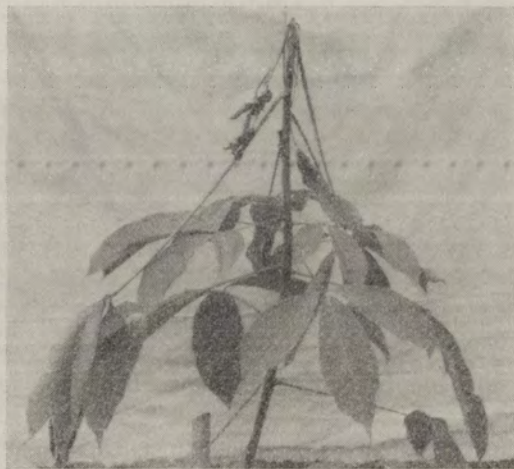


PLATE 4.

(Photo : J. J. H. Szent-Ivany.)

² At a later date the junior author intends to write a comprehensive paper on the ant and *Amblypelta* complex in plantations and on the biology, ecology and economic importance of all species of the genus *Amblypelta* Stal. in the Territory of Papua and New Guinea.



PLATE 5.

(Photo : J. J. H. Szent-Ivany.)

lutescens injury on older buddings. (Plate 5.) These look very similar to the scars found on the bases of young coconuts (under the calyx) in an *Amblypelta* nut-fall area. Later the scars grow bigger, their colour turns dirty whitish grey, keeping the original reddish brown colour on their rims. If there is a large number of them on the cortex, the surface of the stem becomes knotty and distorted. (Plates 6, 7.) On one of the severely damaged buddings at Bisanumu Nursery, latex was exuding near the growing point. (Plate 8.) A portion of the stem of a rubber seedling with a feeding adult of *Amblypelta lutescens papuensis* Brown is shown in Plate 9.

How serious and widespread the damage by *Amblypelta* to *Hevea brasiliensis* can be is shown by the observation of the senior author in August, 1957. In a small nursery block 111 of the 140 stubbed buddings had typical *Amblypelta* injury and specimens of *Amblypelta lutescens papuensis* were found on 85 buddings. In a block of 100 acres of young rubber in the Central District of Papua nearly every seedling was attacked by *Amblypelta lutescens papuensis* in May, 1958. The height of the seedlings was five to seven feet. These two and other observations showed that *Amblypelta lutescens papuensis* Brown does not occur in pockets as cacao mirids ("capsids") do, but they are fairly evenly distributed in the plantations. This applies also to *Amblypelta theobromae* Brown in the Northern District of Papua.

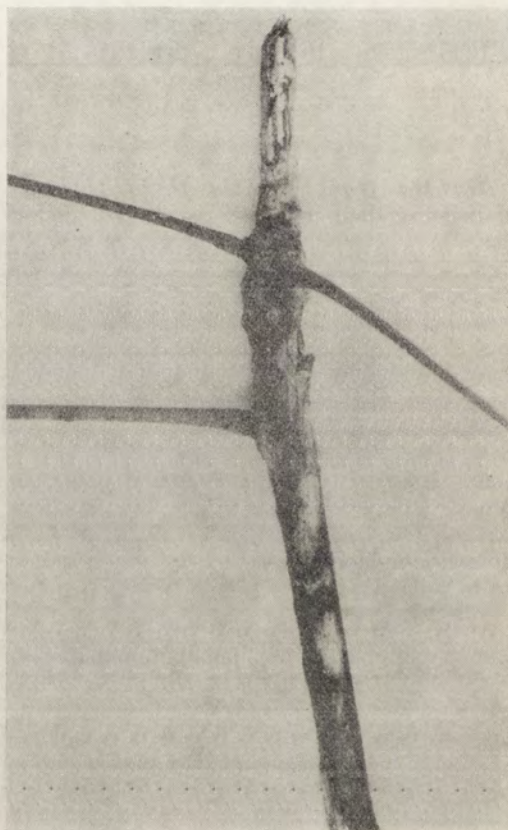


PLATE 6.

(Photo : R. T. Simon Thomas.)

Fortunately, *Amblypelta lutescens papuensis* is susceptible to chlorinated hydrocarbon insecticides, particularly Dieldrin, in the form of 0.2-0.3 per cent. emulsion sprays, and rubber seedlings are usually not attacked when they exceed six to seven feet in height. Thus chemical control can be achieved by hand-operated and portable power-spraying machines.

In addition to the injury to the earlier recorded garden plants (frangipani, papaw, choko) (Szent-Ivany, 1959), *Ipomoea carnea* and *Abelmoschus manihot* (aibika, "native cabbage") were recently found severely attacked by *Amblypelta lutescens papuensis* Brown in a garden in the Port Moresby suburb of Boroko. In the case of *A. manihot* the injury was caused by adults and all instar neanides to the top four to six inches of the stem. The symptoms of the damage are somewhat similar to those caused by the Papuan Tip-wilt Bug on papaw: irregular scars and cracks on the stem. (Brown, 1958a, p. 547.)

A few natural enemies of *Amblypelta lutescens papuensis* were found, all of them being egg parasites. The first egg parasites found by E. Cleland, F. J. Simmonds and the senior author at Aroa Plantation (eggs laid on the leaves of *Manihot utilissima*) represented a species of the genus *Hadronotus* (Hymenoptera: Scelionidae). (Simmonds, 1960a, p. 50.) Many more specimens of this species were bred from the eggs found on the lower and upper surface of the leaves of *Ipomoea carnea* by the senior author at Boroko (Port Moresby). Four eggs produced the eupelmid *Anastatus* sp. A third species, the encyrtid *Oenocyrtus* sp., was bred from eggs collected by J. Cronan, the senior and junior authors on leaves of *Hevea* seedlings in a nursery at Mororo Estate (Sogeri Subdistrict, Central District of Papua). None of these parasites proved to be efficient in controlling *Amblypelta lutescens papuensis* or in keeping their population density below a level when they are of no economic importance. Even in the ornamental garden at Boroko where a relatively large percentage of *Amblypelta* eggs was parasitized (by *Hadronotus* sp. and *Anastatus* sp.) *Ipomoea carnea* (an ornamental often

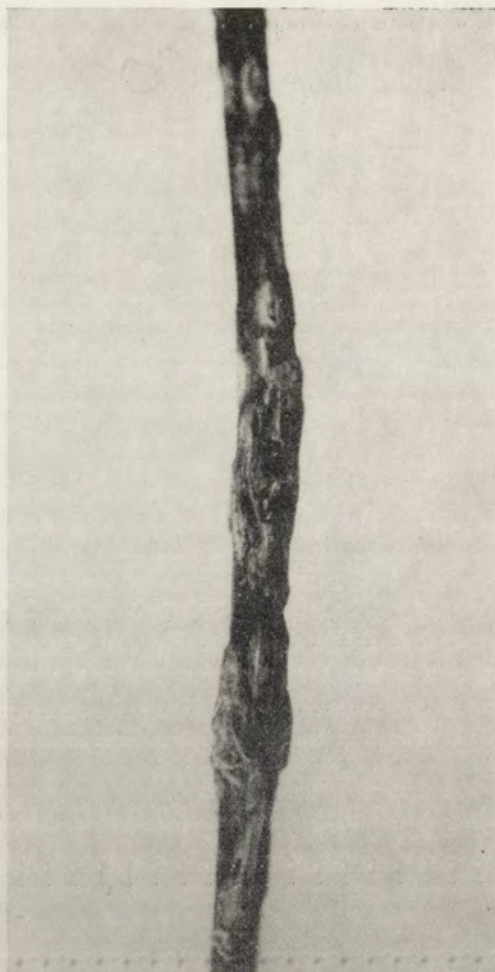


PLATE 7.

(Photo: R. T. Simon Thomas.)

planted as "hedge-plant" in Port Moresby home gardens) was severely damaged by *Amblypelta*.

The following is a complete list of localities where *Amblypelta lutescens papuensis* Brown was found in the Territory of Papua, the geographical names being listed in alphabetical order within the districts:³

Gulf District: Cupola Estate (Sz.I.), Karaita Village, Kerema, Murua Agricultural Station, Peto'i Village. (Sz.I.)

³ Localities earlier recorded by E. S. Brown (1958)—"B". Those by Szent-Ivany (1959)—"Sz.I.".

Central District : Aroa Estate (Sz.I.), Baubau-guina Estate, Bisianumu Rubber Experiment Station (B., Sz.I.), Brown River (25 miles north of Port Moresby) (B., Sz.I.), Daradai Plantation (Sz.I.), Doa Estate (Sz.I.), 14-mile Farm, Itikinumu Plantation (this is the plantation where *Amblypelta lutescens papuensis* damage was observed first by Mr. B. E. Fairfax-Ross and Mr. J. Grimmer, but at that time there was no evidence that the injury was caused by the Papuan Tip-Wilt Bug), Kanosia Estate, Laloki Quarantine and Plant Introduction Station (Sz.I.), Lolorua Estate (Sz.I.), Maraboi Estate, Ninoa Estate, Port Moresby (Boroko, Konedobu) (Sz.I.), Subitana Estate, Veimaui Plantation.

Milne Bay District : Kuiaro (near Samarai) (B.).

Northern District : Mount Lamington, 1,400-1,500 ft. (B.).

The specimens taken at the above-mentioned localities were collected by E. S. Brown, W. E. Casey, A. Catley, E. Cleland, W. Cottrell-Dormer, J. Cronan, G. S. Dun, B. E. Fairfax-Ross, B. G. Griffiths, A. Himson, E. Kanjiri, C.

T. McNamara, F. Mollinger, F. X. Ryan, F. J. Simmonds, J. J. H. Szent-Ivany, M. L. Szent-Ivany and W. A. Van den Berk.



PLATE 9.

(Photo : R. T. Simon Thomas.)



PLATE 8.

(Photo : J. J. H. Szent-Ivany.)

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