

A new species of *Myndus* (Fulgoromorpha, Cixiidae) from coconut palms in New Caledonia.

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A new cixiid *Myndus chazeaui* sp. nov. is described from New Caledonia. Its morphology and ethology place this species close to *M. taffini* BONFILS, which is known as the vector of foliar decay of coconut palms in Vanuatu. Field observations on coconut palms show that *M. chazeaui* finds a probable protection against predators by standing in the hollow formed at the leaflet insertion under the silken retreat of a little gnaphosid spider: *Clubiona* sp. Presence of the derbid species *Basileocephalus kirbyi* (PERROUD & MONTROUZIER), in greater number on yellow fronds of coconuts is also reported.

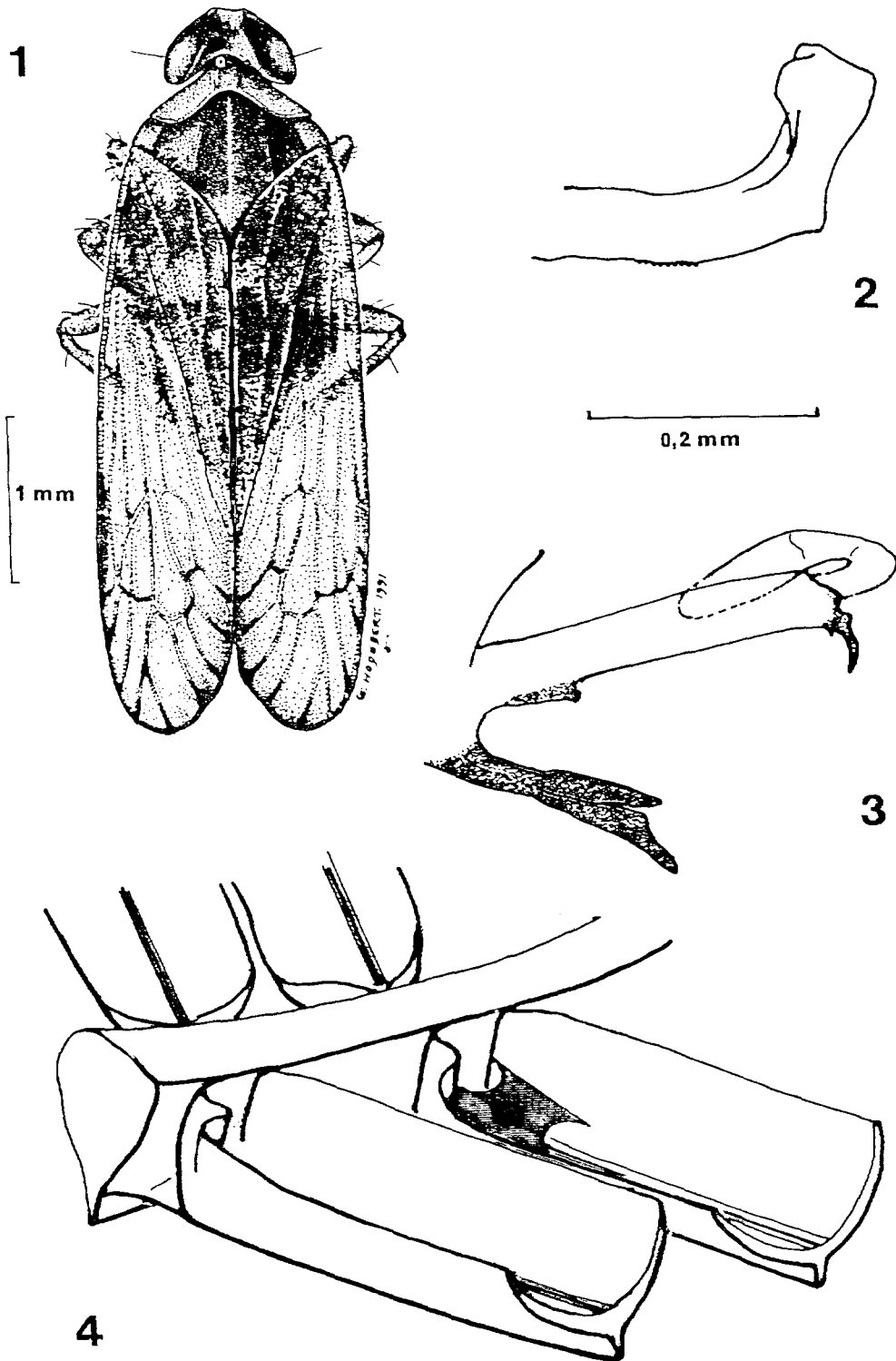
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INTRODUCTION

Several species of *Myndus* (Fulgoromorpha, Cixiidae) have been found on coconuts (WILSON, 1987, 1988) but only two species are known as pests in different parts of the world (WILSON & O'BRIEN, 1987). One, *M. crudus* VAN DUZEE, 1907, has been implicated as a vector of lethal yellowing disease of coconuts and other palms in the Caribbean, Florida and Texas (HOWARD, 1987). Another, *M. taffini* BONFILS, 1982, is known as the vector of the foliar decay of coconuts in Vanuatu since the work of JULIA (1982). This generally fatal wilt, named F.D.M.T. (foliar decay by *Myndus taffini*), is limited to Vanuatu where it affects only introduced coconut varieties and has never appeared on the native variety³.

South to New Guinea, several other *Myndus* species occur in the different islands groups which form an eastern arc to the Coral sea including: Solomon Islands, Vanuatu and New Caledonia (fig. 5). Those species were recently revised by WILSON (1988), including a redescription of *M. taffini*. All have been collected from coconut palms: *M. macfarlanei* WILSON, 1988 in Santa Cruz Islands, *M. (Colvanalia) mavors* FENNAH, 1970 in Solomon Islands. In New Caledonia (FENNAH, 1969), only one species is known: *M. (Colvanalia) rumina* FENNAH, 1969, but we know little about its biology. A second species is newly described here which has been caught in large numbers on coconut palms near Hienghène, in the north-east of New Caledonia.

³F.D.M.T. is characterised (JULIA, 1982) by yellowing followed by withering and breakage of the medium leaves then the upper ones. The lower leaves and bunches develop normally until a very advanced stage of the disease. This disease is caused by the Coconut foliar decay virus (RANGLES & al., 1986, BRUNT & al. 1990): the american lethal yellowing is more probably caused by a mycoplasma-like organism (MLO) (HOWARD, 1987).



Figs. 1-3. *Myndus chazeaui* sp. nov., male.: 1, habitus; 2, aedeagus, lateral view; 3, left gonostyli, lateral view.

Fig. 4. Semi-diagrammatic view of the hollow leaflet insertion showing the web of the daytime retreat of the spider *Clubiona* sp. *M. chazeaui* (black point) is found there when no spider is inside.

DESCRIPTION

Myndus chazeaui sp. nov. (figs 1-3)

General coloration sordid yellow with mesonotum little darker between the two lateral carinae; mesonotum darker, brown in females. Tegmina hyaline; in males veins yellowish with some darker markings at apices (fig. 1); in females spots pattern much more extensive and darker. Abdomen brown in females, yellowish in males.

Vertex little longer than broad; base broader than apex. Lateral carinae slightly converging then parallel after the transverse carina present but rather obscure. Median carina of frons extending almost to the clypeal suture. Clypeus tricarinate. Metatibio-tarsal formula 6/9/6.

Male genitalia: anal segment and pygofer strongly asymmetric. Right lateral margin of the pygofer produced into a rounded lobe; medioventral process triangular. Ventral process of periandrium forked at apex, in lateral view the dorsal tooth surpassing the basal part of the ventral one (fig. 3); dorsally a second little process, truncated at apex. At the apex of periandrium two spiny processes, the left one shorter; the right one unpaired. Gonostyli in lateral view curving at 90°, slightly widening to apex and strongly externally angled postero-ventrally (fig. 2).

Remarks and diagnosis.

M. chazeaui has features of both *M. mavors* and *M. taffini*. The male has the general coloration of *M. taffini*, but the female is closer to *M. mavors*. The structure of the male genitalia allows separation of *M. chazeaui* from the others. The most obvious character is the dorsal tooth of the ventral process of the periandrium which passes beyond the base of the ventral tooth: it only reaches the base in *M. taffini*. The little dorsal process is rounded in *M. taffini*, while it is truncated in *M. chazeaui*. As in *M. mavors* there are only two spines at the apex of the periandrium.

Material examined.

Holotype ♂: Muséum Paris, Nouvelle Calédonie, Massif du Panié: Tao; sur palmes de *Cocos nucifera*. 12.XII.1990, Th. Bourgoïn Rec. / Mission Mont Panié - 1990, ORSTOM - MNHN - MAE, M. BAYLAC, Th. BOURGOÏN, D. BICKEL, L. BORNET DE LARBOGNE, J. CHAZEAU & R. RAVEN / MNHN-HF-91-1. Deposited in Museum national d'Histoire naturelle - Paris.

Paratypes. 23♂♂, 17♀♀, same data and deposit as holotype except 2♂♂, 2♀♀, deposited in The Natural History Museum, London.

FIELD OBSERVATIONS AND BIOLOGY

During a recent stay in New Caledonia, large concentrations of *M. chazeaui* were observed on coconut palms at Tao, near Hienghène. 30-50 adults were counted on several lower fronds of different coconuts alongside the beach. Many specimens of mites, coccoids, aleurodids and some specimens (1-3/fronds) of the derbid *Basileocephalus kirbyi* (PERROUD & MONTROUZIER, 1864) were also observed. Upper fronds were not examined. *M. chazeaui* generally rests in the hollow formed at the leaflet insertion, as previously mentioned by JULIA (1982) for *M. taffini*. However, many specimens were also seen in different parts of the leaflet, sometimes feeding.

It is worthwhile to note that a great number of these leaflet hollows were partly closed by a little rectangular web of 2 cm long. This silken retreat is open at each

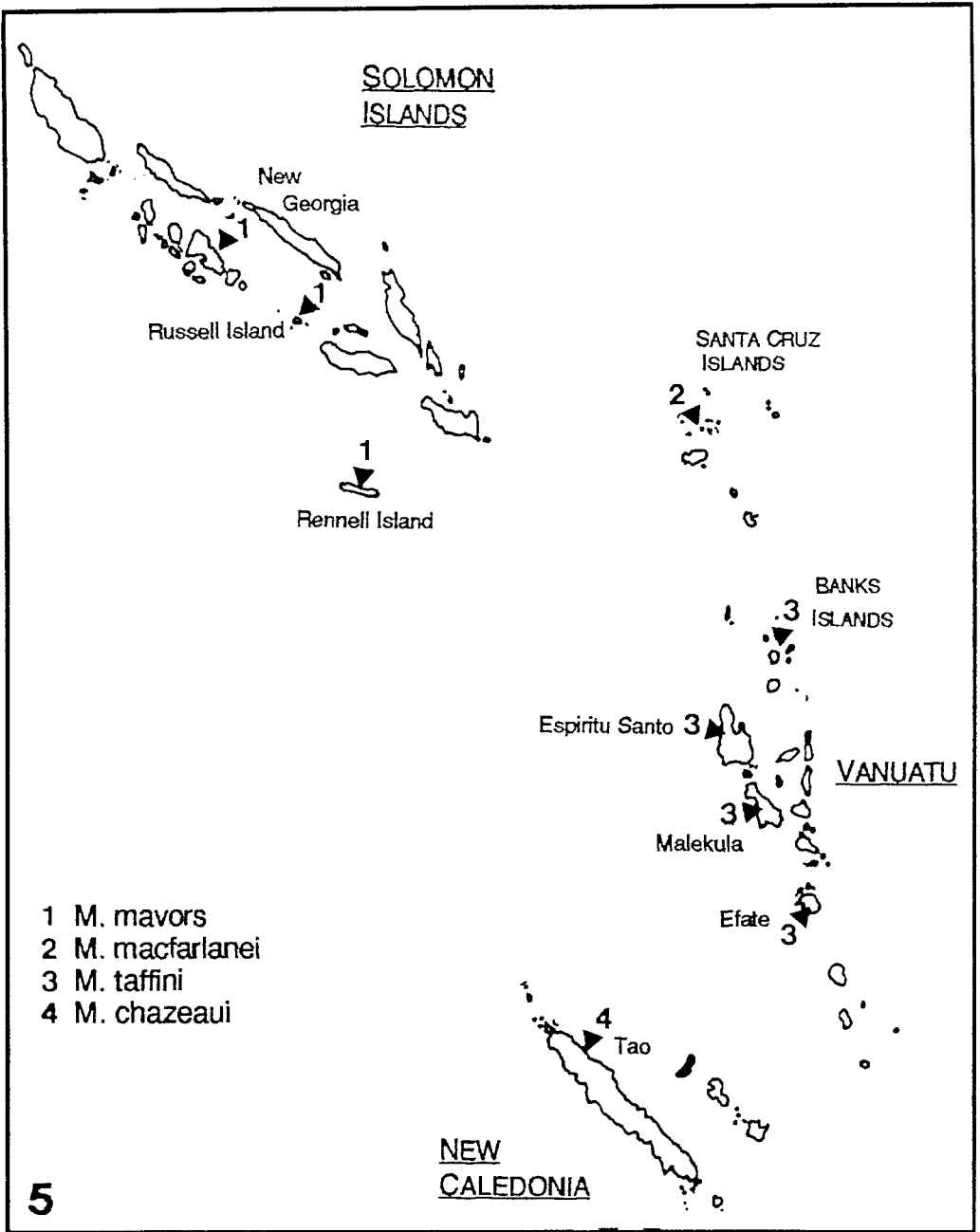


Fig. 5. Distribution of the *Myndus* species associated with coconut palms in the Solomon Islands, Vanuatu and New Caledonia.

extremity and small gnaphosid spiders: *Clubiona* sp., stand there during the day. It is unknown if these nocturnal habits spiders capture the cixiids at night. However, during day time, many of these retreats were occupied by cixiids which may have an effective protection against possible predators (fig. 4).

Some individuals of the host plant of the subterranean nymphs of *M. taffini*, *Hibiscus tiliaceus*, -which are visited by different ant species (JULIA, 1982)- were

growing close to the coconut plantations. Some adults of *M. chazeaui* were collected there, with numerous specimens of *Plestia* sp. (Ricaniidae).

Some individual coconut palms showed yellow fronds. On those palms *M. chazeaui* was present in much lower density, but the number of specimens of *B. kirbyi* was increasing to 10-15 per fronds. However, no proof is given that the yellowing is caused by any disease spread by *M. chazeaui* or even *B. kirbyi*.

CONCLUSIONS

As with other species of *Myndus* in this part of the world, *M. chazeaui* feeds on coconut palms but we don't know if they exclusively feed on coconut. Its biology may be similar to *M. taffini* as reported by JULIA (1982), which is the species found closest to New Caledonia: *M. taffini* is actually known from Esperitu Santo, Mallicolo and Efate islands (JULIA, 1982) and Banks Islands (WILSON, 1988) (fig. 5). In New Caledonia no localities other than Tao has been visited, but the great number of specimens observed seems to indicate that *M. chazeaui* has occurred in the island for a long time and that it may be established in other places also. However, no problems on palms have yet been reported from New Caledonia. Probably as with the Solomon Islands *M. mavors*, the Santa Cruz Islands *M. macfarlanei* and, norther, *M. maculosus* MUIR, 1923 in Philippines (Luzon) (ZELAZNY & PACUMBABA, 1982), *M. chazeaui* does not act as a disease vector.

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RÉSUMÉ

Un nouveau cixiide *Myndus chazeaui* sp. nov. est décrit de Nouvelle Calédonie. Ses caractéristiques morphologiques et éthologiques rapprochent cette nouvelle espèce de *M. taffini* BONFILS, reconnue comme vecteur du dépérissement foliaire des cocotiers au Vanuatu. Les observations de terrain sur cocotiers, montrent que *M. chazeaui* pourrait trouver refuge vis-à-vis d'éventuels prédateurs au creux de l'insertion des folioles, sous une loge de soie tissée par une petite araignée gnaphoside du genre *Clubiona*. La présence d'un nombre plus important d'individus du derbide *Basileocephalus kirbyi* (PERROUD & MONTROUZIER) sur des cocotiers aux feuilles jaunies est également signalée.

REFERENCES

- BONFILS, J. 1982. Description d'une espèce nouvelle de Cixiidae nuisible aux plantations de Cocotier (Homoptera, Fulgoromorpha). *Bull. Soc. ent. Fr.* 87: 381-384.
- BRUNT, A., CRABTREE K. & A. Gibbs 1990. *Viruses of tropical plants*. C.A.B. International, Wallingford, UK. 707 pp.
- FENNAH, R.G. 1969. Fulgoroidea (Homoptera) from New Caledonia and the Loyalty Islands. *Pac. Insects Monogr.*, 21: 1-116.
- FENNAH, R.G. 1970. Fulgoroidea (Homoptera) from Rennell and Bellona Islands. *The Natural History of Rennell Island, British Solomon Islands*, 6: 43-85.
- HOWARD, F.W. 1987. *Myndus crudus* (Homoptera: Cixiidae), a vector of lethal yellowing of palms. In: WILSON, M.R. & NAULT, L.R. (Eds). *Proceedings of 2nd International Workshop on Leafhoppers and Planthoppers of Economic importance*. Brigham Young University, Provo, Utah, USA. 28th July-1st August 1986. 368 pp. London. CAB Int. Inst. Ent., pp. 117-129.
- JULIA, J.F. 1982. *Myndus taffini* (Homoptera Cixiidae). vecteur du dépérissement foliaire des cocotiers au Vanuatu. *Oléagineux*. 37 (8-9): 409-414.
- MUIR, F. 1923. The genus *Myndus* in the Malay islands (Homoptera). *Philipp. J. Sci.* 22: 161-170.

- PERROUD, B.P. & MONTROUZIER, M. 1864. Essai sur la faune entomologique de Kanala (Nouvelle-Calédonie) et description de quelques espèces nouvelles ou peu connues. *Ann. Soc. Lin. Lyon, (N.S.)* 11: 46-256.
- RANDELS, J.W., JULIA J.F., CALVEZ C. & DOLLET, M. 1986. Association of single-stranded DNA with the foliar decay disease of coconut palm in Vanuatu. *Phytopathology* 76: 889-894.
- VAN DUZEE, E. 1907. Notes on Jamaican Hemiptera: a report on a collection of Hemiptera made on the Island of Jamaica in the spring of 1906. *Bull. Buffalo Soc. Nat. Sci.*, 8(5): 3-79.
- WILSON, M.R. 1987. The Auchenorrhyncha (Homoptera) associated with palms. In: WILSON, M.R. & NAULT, L.R. (Eds). *Proceedings of 2nd International Workshop on Leafhoppers and Planthoppers of Economic importance*. Brigham Young University, Provo, Utah, USA, 28th July-1st August 1986. 368 pp. London, CAB Int. Inst. Ent., pp. 327-342.
- WILSON, M.R., 1988. The genus *Myndus* (Hemiptera: Cixiidae) in the Solomon Islands and Vanuatu and its relation to foliar decay of coconut palms in Vanuatu. *Bull. ent. Res.* 78: 519-526.
- WILSON, M.R. & O'BRIEN, L.B. 1987. A survey of planthoppers pests of economically important plants (Homoptera: Fulgoroidea). In: WILSON, M.R. & NAULT, L.R. (Eds). *Proceedings of 2nd International Workshop on Leafhoppers and Planthoppers of Economic importance*. Brigham Young University, Provo, Utah, USA, 28th July-1st August 1986. 368 pp. London, CAB Int. Inst. Ent., pp. 343-360.
- ZELANY E.C. & PACUMBABA E. 1982. Phytophagous insects associated with cadang-cadang infected and healthy coconut palms in South-eastern Luzon, Philippines. *Ecol. Ent.* 7: 113-120.

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