

**Revision of the New Caledonian genus *Nobarnus* (Hemiptera: Tingidae)
with description of three new species**

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Abstract. Three new species of Tingidae (Tinginae: Tingini) belonging to the New Caledonian endemic genus *Nobarnus* Distant are described: *N. albiceps*, *N. nigriceps* and *N. pilosus*. *N. signatus* (Distant) and *N. typicus* Distant are redescribed and the status of the genus is discussed and enlarged to accommodate the new species. A table of the main characters distinguishing species and a key to species are given.

INTRODUCTION

Tingidae from New Caledonia were collected and described during occasional field expeditions. Seven New Caledonian species, all of them endemics, have been described, namely: *Agaotingis australis* (Montrouzier), *Corinthius typicus* Distant, *Epimixia nigriceps* (Signoret), *Nobarnus signatus* (Distant), *N. typicus* Distant, *Paracopium caledonicum* Drake and *Physatocheila irregularis* Montrouzier; the genus *Nobarnus* Distant and *Corinthius* Distant being endemic. The description of *Nobarnus* Distant, 1920 was based upon a single specimen of *N. typicus*. Later, China (1926) transferred *Compseuta signata* Distant to *Nobarnus*.

Canopy arthropods were sampled in two primary forests, sclerophyll/mesophyll and dense evergreen, during 1992 and 1993. The Tingidae collected have been identified and comprise yet two new species of *Dicysta* (Guilbert, 1997a), a new species of *Tingis* and a new species of *Physatocheila* (Guilbert, 1997b). The genus *Nobarnus* is revised here together with the description of three new species, and a redescription of *N. signatus* (Distant) and *N. typicus* Distant.

MATERIAL AND METHODS

All species described here were collected in the canopy by insecticide fogging. A fast-killing pyrethrum-based fog is dispersed upward into the trees. Collecting trays made of 1 m² white plastic sheets are randomly placed under the trees. The whole sample surface covered around 140 m². The arthropods, which had dropped onto the sheets for 2 h after fogging, were collected, stored in 70% alcohol and then mounted on card. The specimens of *Nobarnus* were collected in three sites in New Caledonia: Rivière Bleue dense evergreen forest on deep slope (patch 7, altitude: 170 m), 21.vii.1992, Rivière Bleue dense evergreen forest on alluvium (patch 6, altitude: 160 m), 16.vii.1992, and Mont Nondoué sclerophyll/mesophyll forest (commune of Païta, altitude: 110 m), 03.vii.1992. These sites were described by Bonnet de Larbogne et al. (1991) and Jaffré et al. (1993). The types of *Nobarnus signatus* (Distant, 1920) and *N. typicus* Distant, 1920 from the Natural History Museum, London were examined. Types of the new species were deposited at the Muséum national d'Histoire naturelle (MNHN) at Paris and at the Natural History Museum (BMNH) at London.

Genus *Nobarnus* Distant, 1920

TYPE SPECIES: *N. typicus* Distant 1920: p. 156.

DIAGNOSIS. Head short; antennae slender, finely pilose, first segment slightly shorter than fourth, second the shortest and third the longest; legs slender. Pronotum wide, tricarinate, the carinae straight; paranota narrow, hyaline, with a row of areolae at most; hemelytra broad, widened strongly at base; costal area wide, with 4 to 8 areolae widthwise at its widest part, subcostal and discoidal areas with 4–5 rows of areolae, sutural area with 3–4 rows; sutural, subcostal and discoidal areas with areolae smaller where these areas cover the body when the hemelytra are at rest.

COMMENTS. Distant (1920) did not include description of the ventral face neither of the bucculae. Also, it has not been seen in the carded type specimens. In the newly described species, the bucculae bear two or three rows of small areolae. In Distant's description, "the costal area is non-ampliate, but narrow, the areolets small", whereas it is ampliate for all specimens examined. Distant (1920) considered *Nobarnus* as closely related to *Compseuta* Stål. It may be separated from *Compseuta* by the base of hemelytra, which is sharply rounded, and by the pronotum which is reduced laterally and concave behind the eyes in *Nobarnus*. In addition, *Compseuta* is almost restricted to Africa and only one species occurs in the Australasian region. Also, *Nobarnus* is closely related to the Australasian genus *Mecopharsa*, by its wide costal area and its long fourth antennal segment. However, the costal area is wider in *Nobarnus* than in *Mecopharsa* and the paranota are reflexed upwardly in *Mecopharsa*, but not in *Nobarnus*.

DESCRIPTION OF NEW SPECIES

Nobarnus nigriceps sp. n.

DESCRIPTION. Length: 3.54 mm, width: 2.46 mm. Habitus as in Fig. 1.

Head, last antennal segment, hind tarsi, and calli black, antennae, legs and body brown, pronotum pale or white with brown spots at its apex between the carinae, hemelytra pale, with white hyaline areolae and brown spots at the first third of costal area and in the region of the curvature of the subcostal vein, principal veins brown.

Head short, pilose with the exception of two occipital spots. Antennae finely pilose, long, with first segment half as long as that third, second segment short and fourth as long as the third; segment measurements (in mm): I: 0.51; II: 0.15; III: 1; IV: 0.96. Sulcus wide and widened posteriorly. Rostrum not extending beyond metasternum. Bucculae closed in front, large and biseriate.

Pronotum extending to base of eyes, moderately large, punctured, with three slightly elevated carinae, lateral carinae not extending to calli, paranota narrow, straight, pilose, neither punctured nor areolate.

Hemelytra large, extending far beyond the body, flat, wide and sharply widened from base, tips curved, slightly overlapping at rest, hyaline; costal and sutural area with small areolae on the anterior third and large areolae on the two posterior thirds; sutural area with 4 rows of areolae; discoidal and subcostal areas with 5 rows, costal area with 6–7 areolae widthwise at its widest part.

Male genitalia (Figs 2, 3): Phallus without phaneres; parameres wide, strongly curved and not pilose on the external ridge.

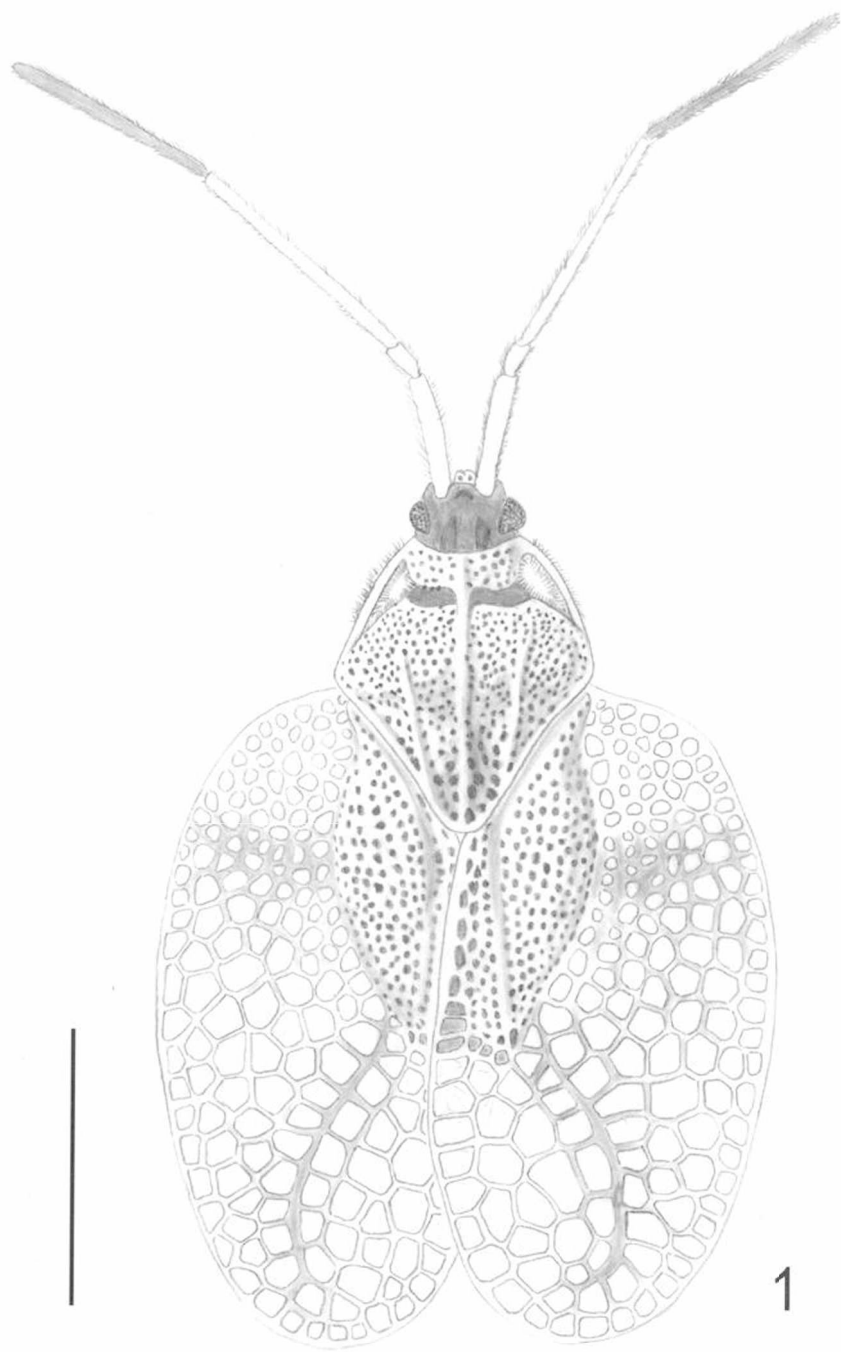
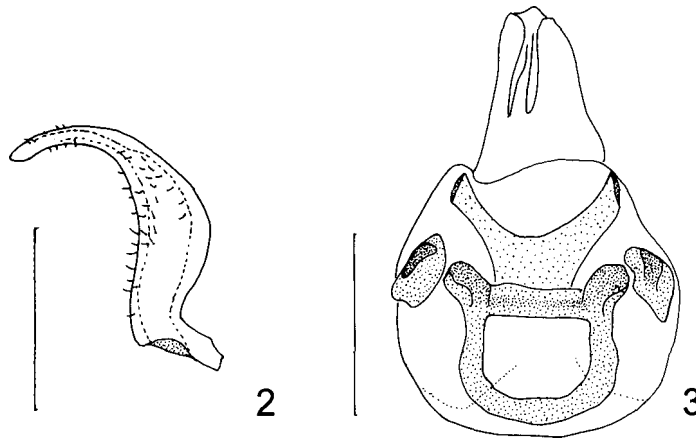


Fig. 1. *Nobarnus nigriceps* sp. n., habitus. Scale: 1 mm.



Figs 2–3: *Nobarnus nigriceps* sp. n., male genitalia. 2 – paramere; 3 – phallus. Scale: 0.1 mm.

TYPE MATERIAL: Holotype ♂ (MNHN) and 3 paratypes (2♂ and 1♀, MNHN and BMNH), New Caledonia, Rivière Bleue (P7, 170 m), 21.vii.1992; 2 paratypes (2♂) (MNHN), Rivière Bleue (P6, 160 m), 16.vii.1992 (J. Chazeau, E. Guilbert and L. Bonnet de Larbogne lgt.).

ETYMOLOGY: The name refers to the colour of the head which contrasts with the pale colour of the rest of the body.

COMMENTS. This species can be distinguished by its black head, and its white and glabrous body.

Nobarnus albiceps sp. n.

DESCRIPTION. Length: 2.77 mm, width: 2 mm. Habitus as in Fig. 4.

Head white or pale, with a darker occipital spot, last antennal segment and hind tarsi black, calli pale brown, antennae and legs pale, body brown, pronotum pale or white, with brown spots between anterior extremities of the lateral carinae, hemelytra pale, with hyaline cells and brown spots at the first third of the costal area, principal veins brown.

Head short, glabrous. Antennae long, finely pilose, with first antennal segment 0.5 times as long as the fourth, second segment short and apical almost as long as third; segment measurements (in mm): I: 0.33; II: 0.14; III: 0.74; IV: 0.66. Sulcus wide and widened backwards. Rostrum not extending to metasternum. Bucculae closed in front and triseriate.

Pronotum not reaching base of eyes, moderately wide, punctured, with three slightly elevated carinae, lateral carinae not extending to calli, paranota narrow, straight, pilose, neither punctured nor areolate.

Hemelytra large, extending far beyond the body, flat, wide and sharply widened at base, tips curved, slightly overlapping at rest, hyaline; costal and sutural areas with small areolae on the first third and large areolae on the two other thirds; sutural area with 3–4 rows of areolae; discoidal and subcostal areas with 5 rows, costal area with 4–5 areolae transversally at the widest point.

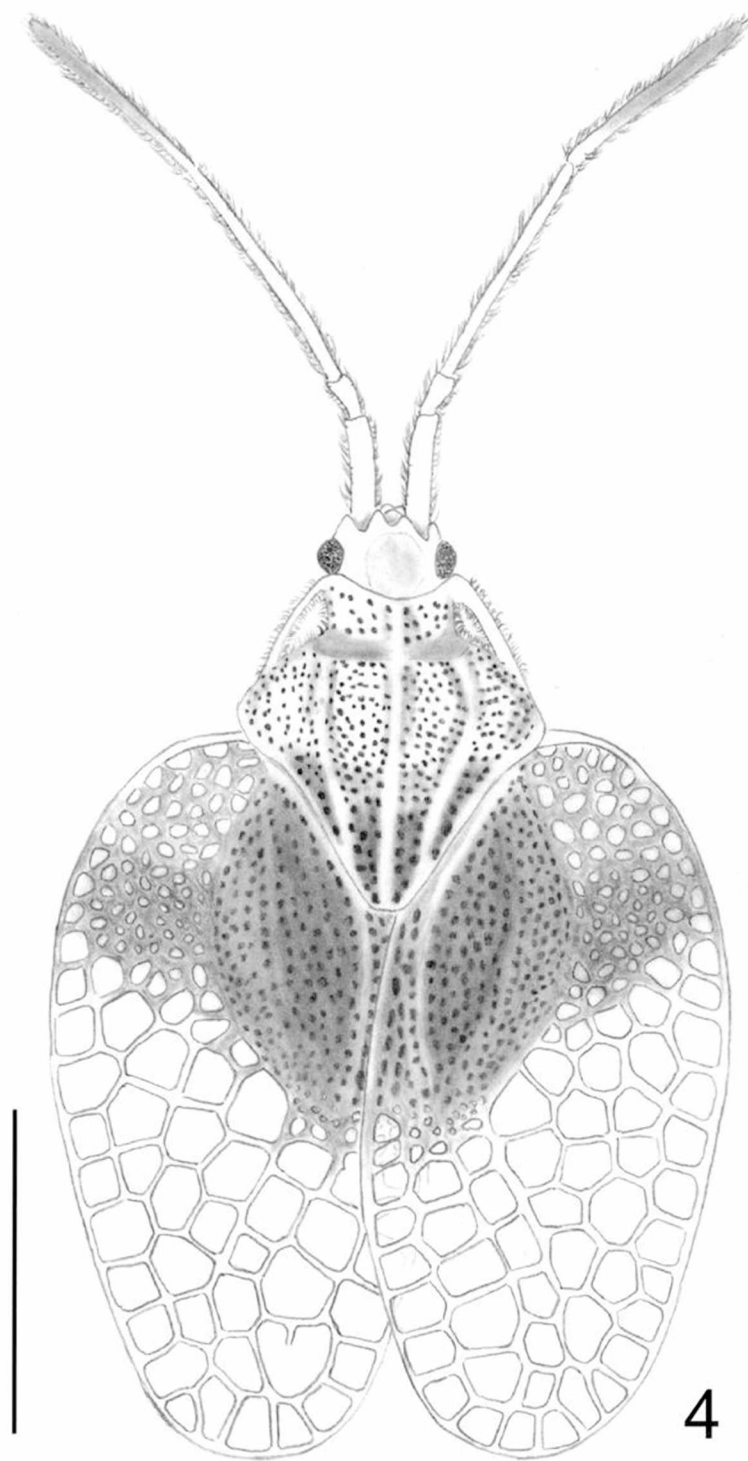
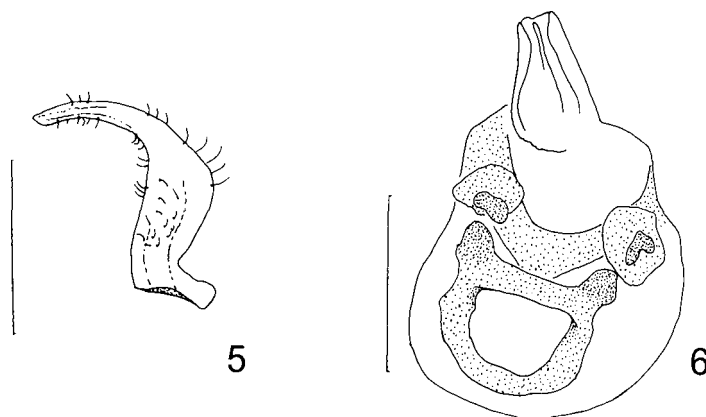


Fig. 4. *Nobarnus albiceps* sp. n., habitus. Scale: 1 mm.



Figs 5–6: *Nobarnus albiceps* sp. n., male genitalia. 5 – paramere; 6 – phallus. Scale: 0.1 mm

Male genitalia (Figs 5, 6): Phallus without phaneres; parameres wide, strongly curved and pilose on the external ridge.

TYPE MATERIAL: Holotype ♀ (MNHN) and 10 paratypes (6♂ and 4♀, MNHN and BMNH), New Caledonia, Mont Nondoué (110 m), commune of Païta, 03.vii.1992 (J. Chazeau, E. Guilbert and L. Bonnet de Larbogne lgt.).

ETYMOLOGY: The name refers to the colour of the head which is white.

COMMENTS. This species may be distinguished by its small size and its bucculae bearing two rows of areolae.

Nobarnus pilosus sp. n.

DESCRIPTION. Length: 3.54 mm, width: 2.22 mm. Habitus as in Fig. 7.

Head, pronotum, last antennal segment and hind tarsi brown to black; hemelytra brown to black at places covering the body at rest. Sometimes with pronotum light brown or pale with brown spots; hemelytra pale to ochraceous with brown spots on the anterior third of the costal area, and the subcostal vein ochraceous; legs and antennae brown ochraceous. Body brown or black.

Head short, densely pilose, with an occipital pair of spines with the appearance of two pale horns, curved toward the centre, and with two pairs of pale processes at each side of the antennae. Bucculae wide, biseriata, closed in front. Rostrum short, extending to metasternum. Sulcus widened backwards. Antennae pilose, long but not as long as the body; first and fourth segment subequal, second shortest and third longest; segment measurements (in mm): I: 0.49; II: 0.29; III: 0.90; IV: 0.59.

Pronotum wide, slightly convex, pilose and punctured, with three carinae; central carina reaching the anterior margin of the pronotum. Paranota wide and straight, not reflexed, with a row of areolae.

Hemelytra long, extending far toward the posterior, sharply widened at base, hyaline on costal area and on the posterior part of sutural area, with small areolae on the places covering the body at rest and also on the anterior third of costal area, and large areolae on the

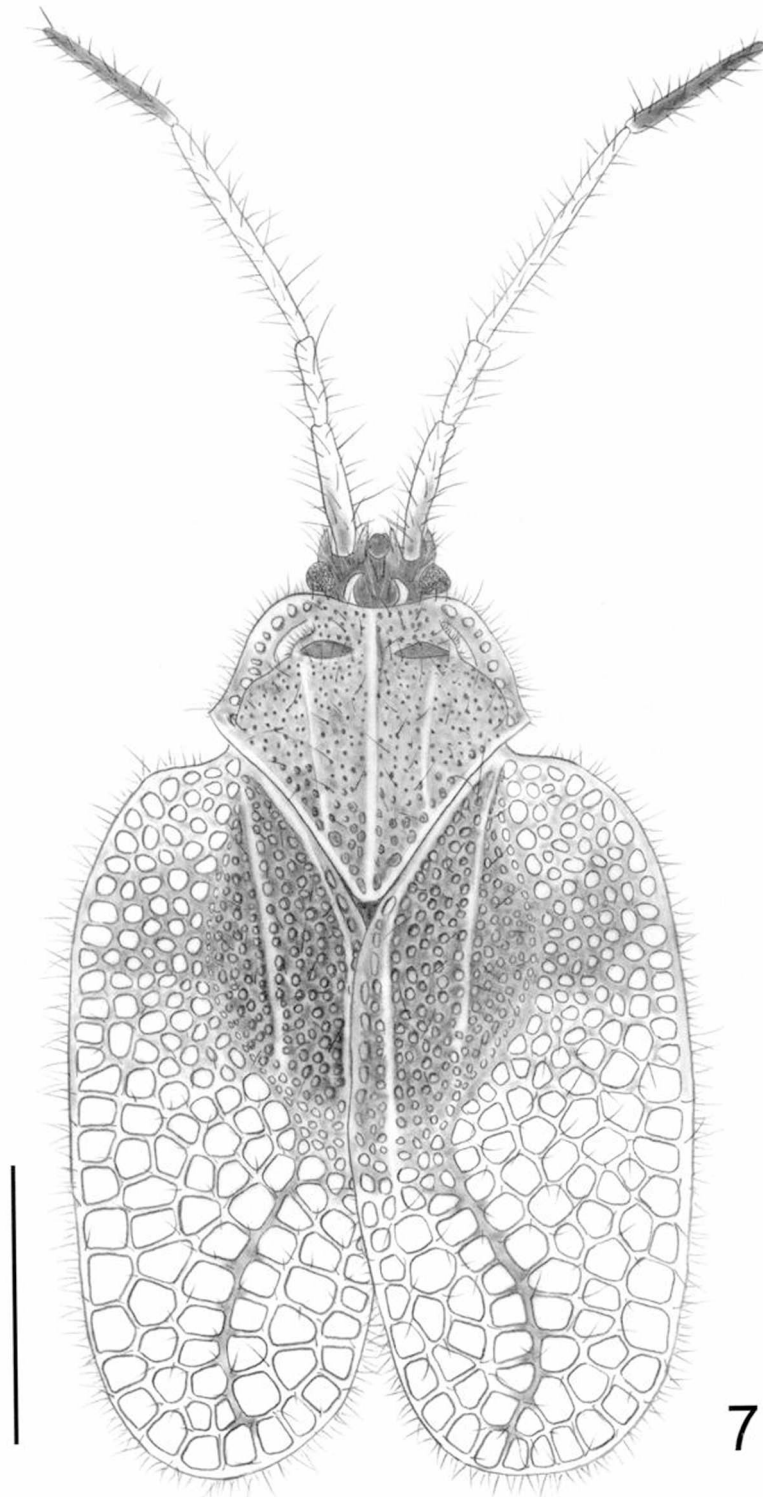
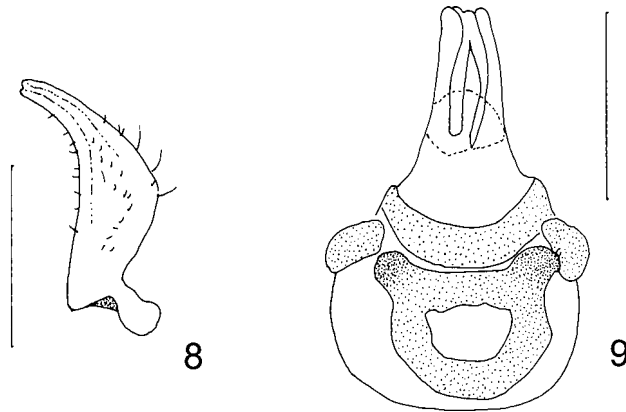


Fig. 7. *Nobarnus pilosus* sp. n., habitus. Scale: 1 mm.



Figs 8–9: *Nobarnus pilosus* sp. n, male genitalia. 8 – paramere; 9 – phallus. Scale: 0.1 mm

other parts, with long scattered white hairs all over the body; sutural area triseriate; discoidal and subcostal areas with 4–5 rows, costal area with 7 areolae widthwise at the widest part.

Male genitalia (Figs 8, 9): Phallus without phaneres; parameres wide, not strongly curved and pilose on the external ridge.

TYPE MATERIAL: Holotype ♂ (MNHN) and 4 paratypes (2♂ and 2♀, MNHN and BMNH), New Caledonia, Rivière Bleue (P7, 170 m), 21.vii.1992 (J. Chazeau, E. Guilbert and L. Bonnet de Larbogne lgt.).

ETYMOLOGY: The name refers to the dense pilosity of the specimens.

COMMENTS. This species may be distinguished by the length of the second antennal segment which is twice the length of the other species. It also differs from *N. albiceps* and *N. nigriceps* by the parameres wider, shorter and less curved. It is similar to *Nobarnus signatus* (Distant, 1920), which is redescribed here to clarify the difference between these two species.

SPECIES REDESCRIPTION

Nobarnus signatus (Distant, 1920)

Compseuta signata Distant, 1920: 156.

Nobarnus signatus: China, 1926: 228.

REDESCRIPTION. Length: 3.71 mm, width: 2.55 mm. Habitus as in Fig. 10.

Colour as described by Distant (1920), i.e., head, hind tarsi and last antennal segment black, pronotum ochraceous with two brown spots anteriorly between carinae. Hemelytra ochraceous with brown spots at the basal third. Antennae and legs ochraceous. Body black.

Head short, densely pilose, without spines. Antennae densely pilose, second segment shortest, third longest, first and fourth subequal; segment measurements: I: 0.65; II: 0.09; III: 1.16; IV: 0.83. Bucculae closed in front; rostrum short. Legs pilose. Body beneath observed imperfectly due to mounting technique.

Pronotum large, punctured, tricarinate, densely pilose, narrowed at base; paranota narrow, straight, with a row of areolae. Carinae straight, not elevated but clearly marked.

Hemelytra broad, sharply widened at base; costal area wide, with eight areolae at widest part, subcostal and discoidal areas quadriseriate, sutural area triseriate. All areas with small areolae except for apical two-thirds of the costal area which have large areolae.

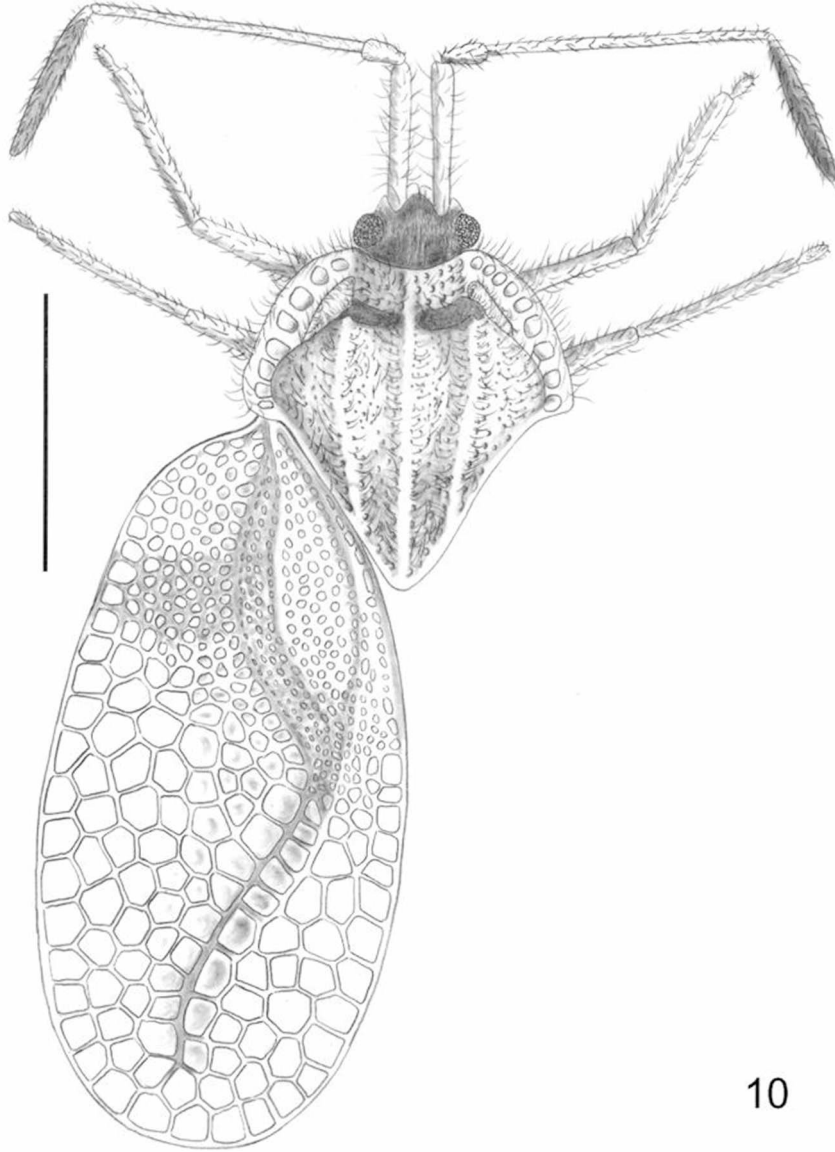


Fig. 10. *Nobarnus signatus* (Distant), habitus of the type (BMNH). Scale: 1 mm.

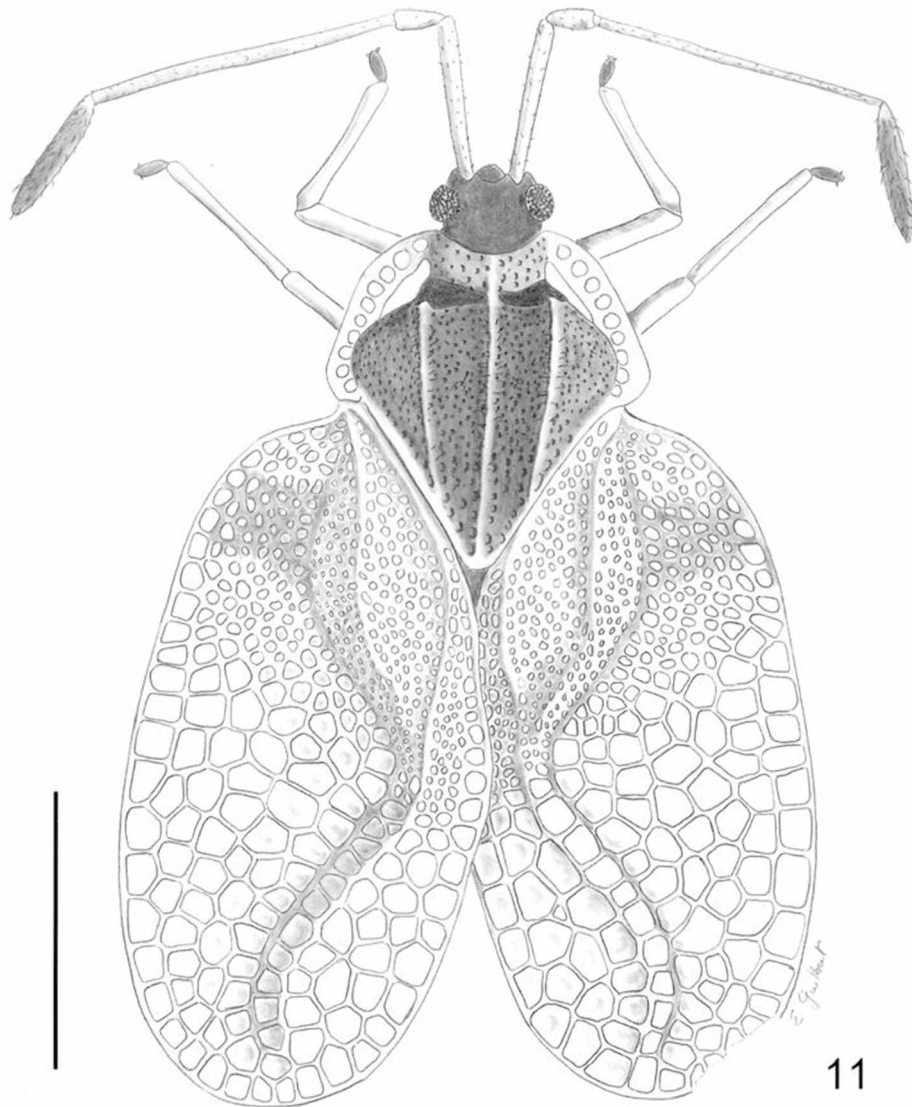


Fig. 11. *Nobarnus typicus* Distant, habitus of the type (BMNH). Scale: 1 mm.

MATERIAL EXAMINED: Holotype ♂ (BMNH), New Caledonia, Paompai.

COMMENTS. The right hemelytra of the type is missing and the genitalia have not been examined. This species may be distinguished from the other species except for *N. pilosus* by its densely pilose body. It differs from *N. pilosus* by the absence of cephalic spines.

Nobarnus typicus Distant, 1920

Nobarnus typicus Distant 1920: 156.

REDESCRIPTION. Length: 3.65 mm, width: 2.55 mm. Habitus as in Fig. 11.

Colour as described by Distant (1920), i.e., head, hind tarsi and last antennal segment black, pronotum black, paranota pale to ochraceous. Hemelytra ochraceous with brown spots at the basal third. Antennae and legs ochraceous. Body black.

Head short, not pilose, without spines. Antennae finely pilose, second segment shortest, third longest, first and fourth subequal; segment measurements: I: 0.56; II: 0.09; III: 1.16; IV: 0.74. Bucculae closed in front; rostrum short. Legs slightly pilose. Body beneath observed imperfectly due to mounting technique.

Pronotum large, punctured, tricarinate, slightly pubescent along the carinae, narrowed at base; paranota narrow, straight, with a row of areolae. Carinae straight, not elevated but clearly marked.

Hemelytra broad, sharply widened at base; costal area wide, with seven areolae width-wise at widest part, subcostal and discoidal areas with 5 rows, sutural area with 4 rows. All areas with small areolae except for apical two-thirds of the costal area which have large areolae.

MATERIAL EXAMINED: Holotype ♂ (BMNH), New Caledonia, Mont Arago.

COMMENTS. The tip of the right hemelytron of the type is damaged and the genitalia have not been examined. This species differs from *N. signatus* and *N. pilosus* by its lack of pilosity. It differs from *N. nigriceps* and *N. albiceps* by its pronotum having a row of areolae on the paranota.

DISCUSSION

A key for the identification of the species of *Nobarnus* is given below. A full comparison of some more important characters is given in Table 1.

TABLE 1. Comparison of main characters in *Nobarnus* species.

Character	<i>N. albiceps</i>	<i>N. nigriceps</i>	<i>N. typicus</i>	<i>N. signatus</i>	<i>N. pilosus</i>
Length (mm)	2.77	3.54	3.65	3.71	3.54
Width (mm)	2	2.46	2.55	2.55	2.22
Colour of:					
head	pale	dark	dark	dark	dark
pronotum	pale	pale	dark	pale	dark
hemelytra (part over the body)	dark	pale	pale	pale	dark
Cephalic spines	absent	absent	absent	absent	present
Bucculae	triseriate	biseriate	?	?	biseriate
Antennal segments length (mm)	0.33-0.14- 0.74-0.66	0.51-0.15- 1-0.96	0.56-0.09- 1.16-0.74	0.65-0.09- 1.16-0.83	0.49-0.29- 0.9-0.59
Row of areolae on paranota	absent	absent	present	present	present
Pilosity	absent	absent	absent	present	present
Areolae number on:					
costal area (widest part)	4 or 5	6 or 7	7	8	6 or 7
subcostal area	5	5	5	4	4 or 5
discoidal area	5	5	5	4	4 or 5
sutural area	3 or 4	4	4	3 or 4	3

Key to the species of *Nobarnus*

- 1 Length less than 3 mm and head pale *N. albiceps* sp. n.
- Length more than 3 mm and head dark 2
- 2 Densely pilose 3
- Almost glabrous 4
- 3 Head with a pair of spines *N. pilosus* sp.n.
- Head without a pair of spines *N. signatus* (Distant, 1920)
- 4 Paranota narrow without a row of areolae *N. nigriceps* sp. n.
- Paranota with a row of areolae *N. typicus* Distant, 1920

The three new species described above were collected in three different sites. *N. nigriceps* and *N. pilosus* come from a dense evergreen forest (Rivière Bleue forest). Four specimens of *N. nigriceps* come from patch 7, forest on slope, and two come from patch 6, forest on alluvium that was rarely flooded. All specimens of *N. pilosus* were found in forest on slopes. These patches, which are of different botanical composition, are described by Bonnet de Larbogne et al. (1991). *N. albiceps* was found in the mesophyll forest of Mont Nondoué. The botanical composition of these forests is different (Jaffré & Veillon, 1990; Jaffré et al., 1993), and the rainfall is much more abundant and more frequent at Rivière Bleue than at Païta (Guilbert et al., 1994; Guilbert, 1992). The genus appears to be confined in the rain forest canopy and appears not to occur in strictly dry forests. However, the biotope of *N. typicus* and *N. signatus* is unknown.

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