Artikel: The identification of twenty species of the genus Nasutitermes (Isoptera : Termitidae) from French Guiana and the new morphological characters

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The identification of twenty species of the genus *Nasutitermes* (Isoptera: Termitidae) from French Guiana and the new morphological characters

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New morphological characters based on the structures of the cervicothorax in soldiers of *Nasutitermes* are presented and used in a key for identification of twenty species of *Nasutitermes* of the French Guiana.

De nouveaux caractères morphologiques basés sur les structures du cervicothorax des soldats *Nasutitermes* sont présentés et utilisés dans une clé d'identification de 20 espèces de *Nasutitermes* de Guyane Française.

Key words:Isoptera, Termitidae, Nasutitermitinae, *Nasutitermes*, taxonomy, new morphological characters, French Guiana.

INTRODUCTION

With more than 60 described species, the genus *Nasutitermes* Dudley, 1890 is the most diverse of the Neotropical termite fauna (Araujo 1977; Constantino 1998; Ensaf 2003). There is an incredible confusion in the taxonomy of this genus. Very close species have been described on the basis of weakly discriminating characters, subject to great interspecific variations, such as the body dimensions or colour. Several species are poorly known and would need revision. Some species are based on soldiers' morphology but others of adult castes. There would be a tremendous work of revision of the type material that is spread in institutes all over the World. For many entomologists, it is difficult to separate the different species of this genus, particularly in the field. The taxonomy of the nasute termites is currently based on the head structures (density, distribution of setae, etc.) and relative dimensions of the head and legs, not always easy to examine. We propose a new set of morphological characters, based on the structures of the cervicothorax to key 20 morphotypes corresponding to different putative species from the French Guiana.

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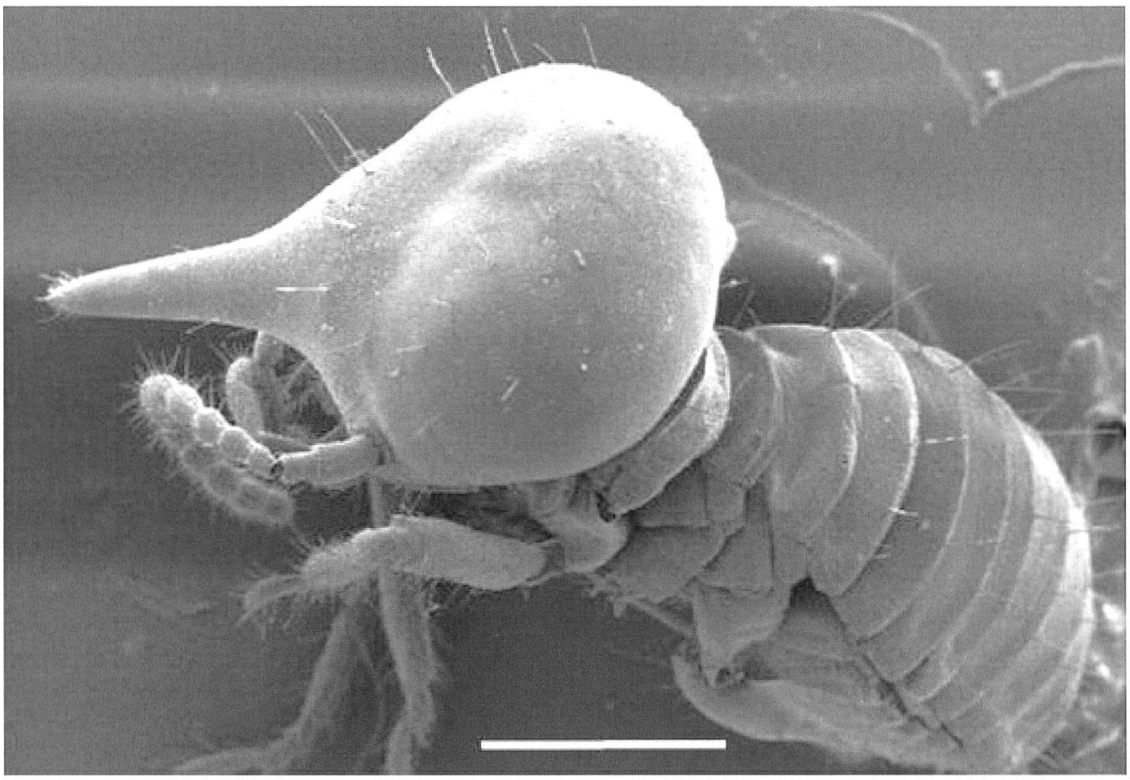

Fig. 1. Lateral view of the general habitus of *Nasutitermes* guyanae (scale bar represents 500 µm).

THE MORPHOLOGICAL CHARACTERS

The cervicothorax of the nasute termites is the elevated dorsal part of prothorax immediately behind the head (see Figs 1-2, 4). The dorsal margin of the cervicothorax bears long sparce setae that have probably a function of mechanoreceptors (Ensaf, under study) (Fig. 3). The antero-dorsal part of the cervicothorax bears numerous small sensillae, having a probable function of chemioreceptors (Figs 4, 6) (Ensaf, 2003, in prep.). The main dimensions of this structures are given in Figs 4-5. The cervicothoraces differ in the size and general shape, presence or absence of dorsal lobes, of a median vertical furrow, and of an horizontal furrow at base, and in number and position of the long setae and of the sensillae.

Group 1: species with cervicothorax bilobed (Figs 7-13)

Nasutitermes surinamensis (Holmgren, 1910) (Fig. 7)

Material. Soldiers collected by F. Geay from Bas- Carsevenne, South of French Guyana, in part contested by Brazil at the end of 19th century, Ampa state, Brazil, collected in 1899, by M. Harry and V. Roy from Counami (Site T1CC, 07 March 2003), by A. Mercier at Sâul (site 4, 9 septembre 2003), by Ensaf from Petit Saut (site RTA/AE/17, 27 March 2004), identification of soldiers after Ensaf et al. (2003).

Description of cervicothorax. Average length of AB = 132.43 µm (á = 1.62), A'B' = 365.56 µm (á = 2), A"B" = 443.90 µm (á = 4), HH' = 175 µm (á = 5); ratio A"B"/HH' = 2.27 (á = 0.07); average number of sensillae = 58 (á = 2); several

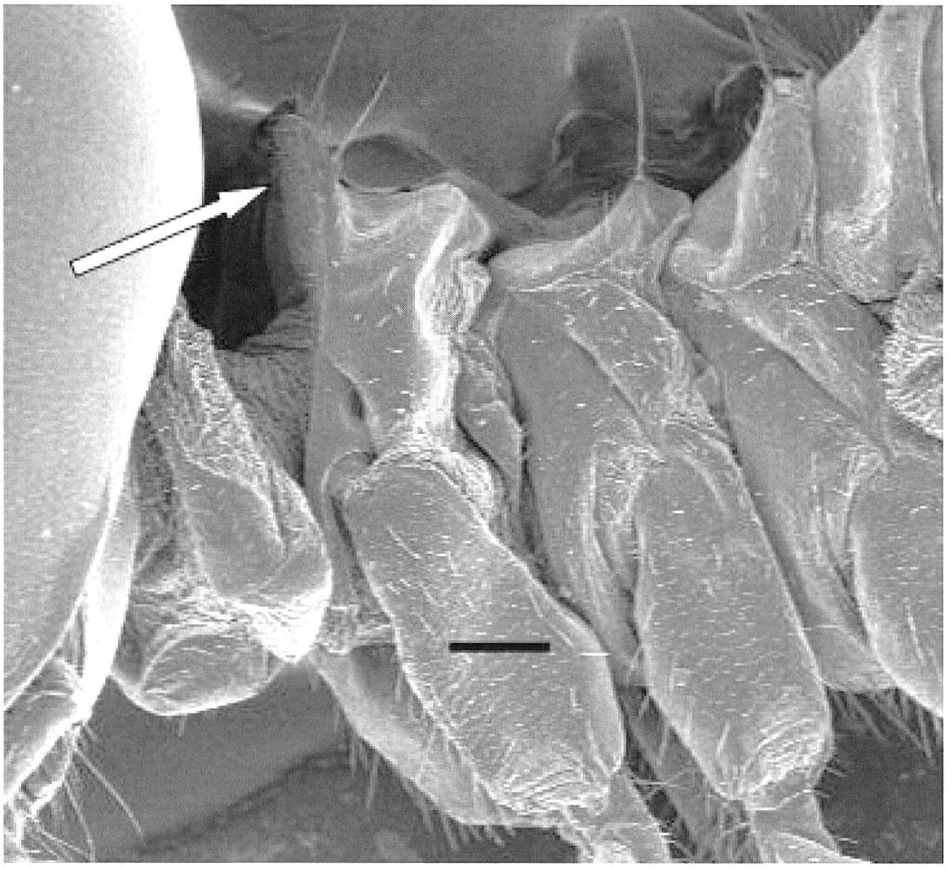

Fig. 2. Lateral view of cervicothorax of *Nasutitermes* sp., indicated by the arrow (scale bar represents 100 µm).

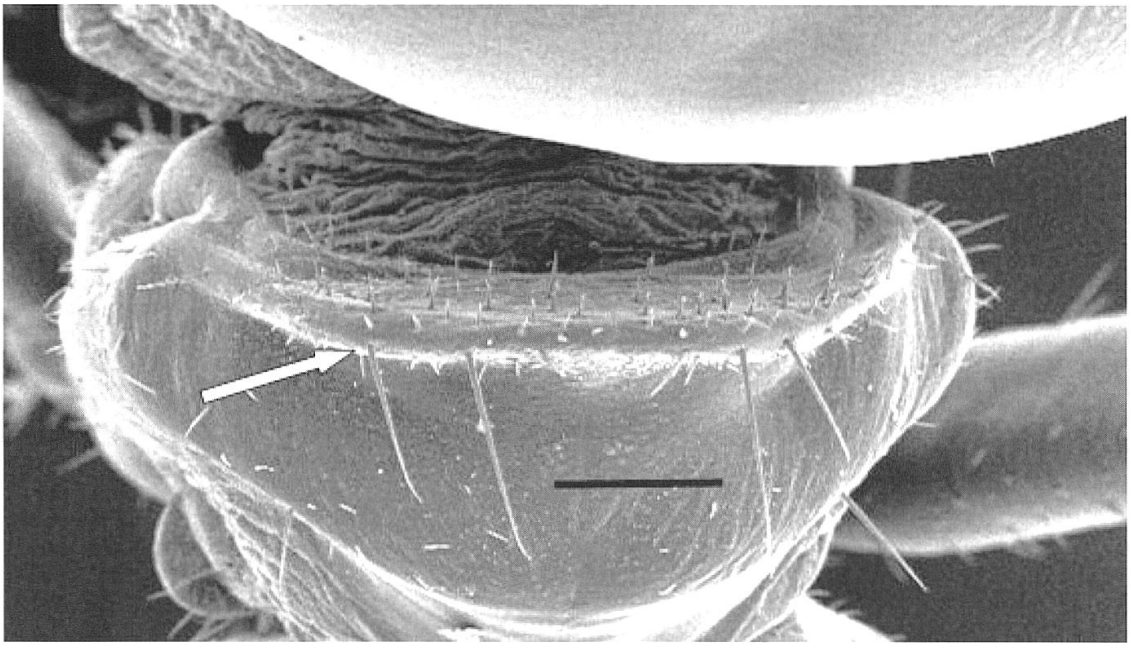

Fig. 3. Dorsal view of cervicothorax of *Nasutitermes* sp., long setae of the margin indicated by the arrow (scale bar represents 100 µm).

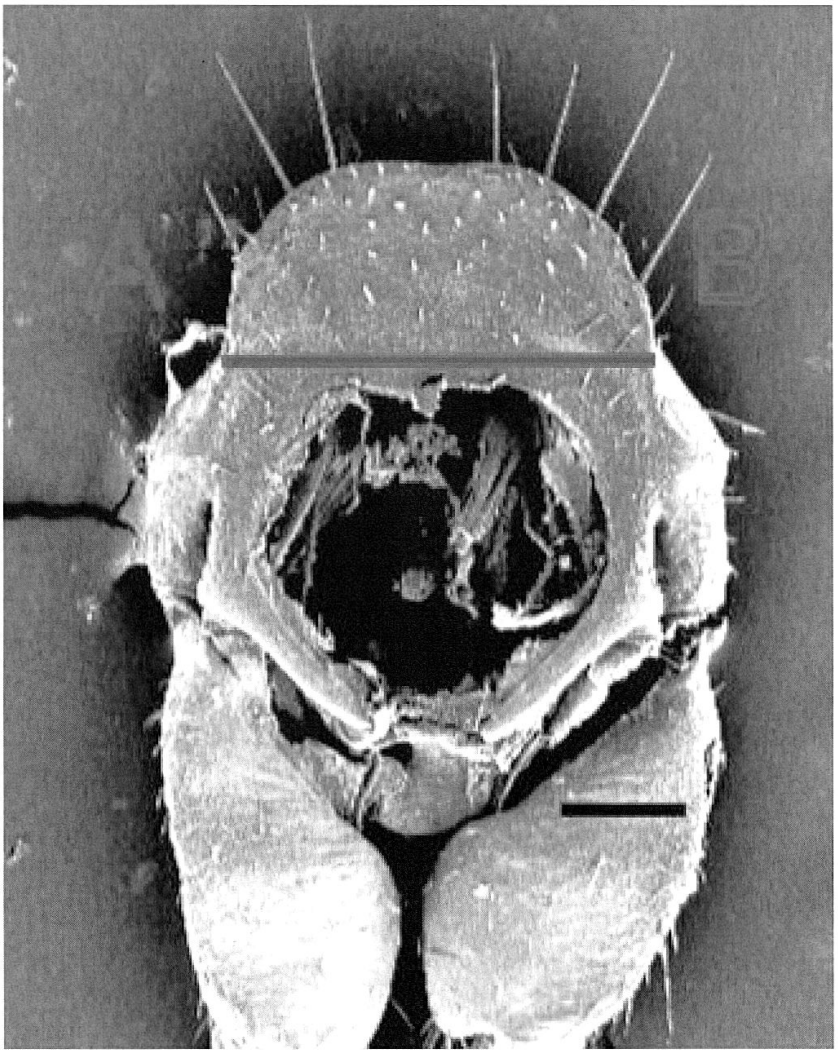

Fig. 4. Anterior view of cervicothorax of *Nasutitermes* sp., the head removed, showing the small sensillae on dorsal part, A"B" is the width at base of dorsal part of cervicothorax (scale bar represents 100 µm).

sensillae distributed all over cervicothorax; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax strongly bilobed; median vertical furrow well visible; basal horizontal furrow strong.

Nasutitermes intermedius Banks, 1919 (Fig. 8)

Material. Soldiers collected by R.G. Davice and P. Eggleton from St. Eugène, and by A. Ensaf from Petit Saut (site RTA/AE/17, 27 March 2004), identification of soldiers after Banks (1919).

Description of cervicothorax. Average length of AB = 138 µm (á = 1.78), A'B' = 318 µm (á = 2.35), A"B" = 397 µm (á = 4.53), HH' = 158 µm (á = 3.40); ratio A"B"/HH' = 2.50 (á = 0.03); average number of sensillae = 57 (á = 1); several sensillae distributed all over cervicothorax; rather numerous long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, slightly bilobed; median vertical furrow visible; basal horizontal furrow weakly visible.

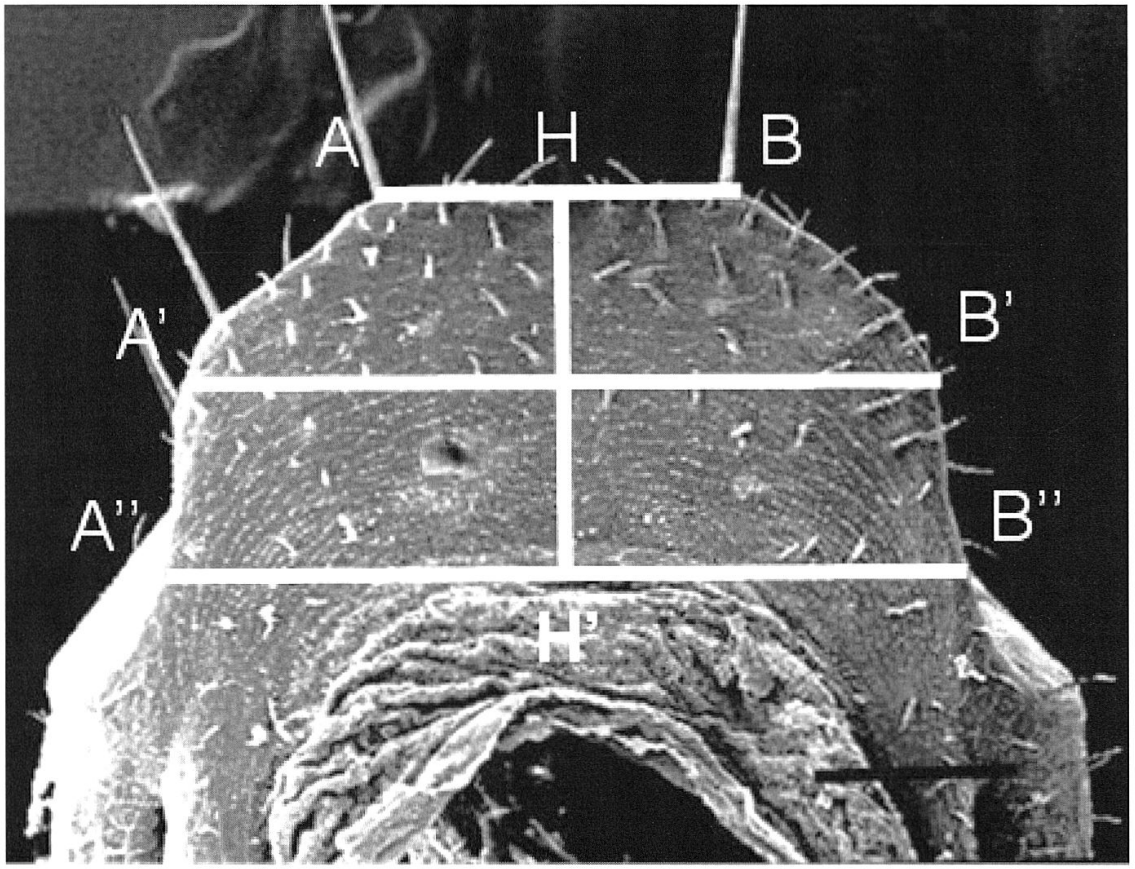

Fig. 5. Detail of dorsal part of anterior side of cervicothorax of *N. guyanae*, A'B' width at mid-height, AB width at top, HH' height at middle (scale bar represents 100 µm).

Nasutitermes costalis (Holmgren, 1910) (Fig. 9)

Material. Soldiers collected by Amel Bendib at Antécume Pata, along the Maroni river (21 December 2001, in a mature, high, green forest, situated along the higher part of the Maroni river, on fluvial alluvial), by Mercier at Lamana (sites RTA3/AA10, RTA5/H11, RTA5/H10, 17 September 2003), by M. Harry and V. Roy at Île de Salut (site IDS8, 16 March 2003), and by Ensaf at St-Laurent de Maroni (25 march 2004, REA/AE/SE/1), identification of soldiers after Ensaf et al. (2003).

Description of cervicothorax. Average length of AB = 101.50 µm (á = 0.2.25), A'B' = 281,50 µm (á = 2.25), A"B" = 341,40 µm (á = 2.40), HH' = 171.20 µm (á = 2.82), ratio A"B"/HH' = 2.56 (á = 0.0.60); average number of sensillae = 52 (á = 2); numerous rather long sensillae, distributed all over cervicothorax; very few long setae along outer part of dorsal margin; dorsal margin of cervicothorax rounded, bilobed; median vertical furrow very strong; basal horizontal furrow absent.

Nasutitermes acangussu Bandeira & Fontes, 1979 (Fig. 10)

Material. Soldiers collected by M. Harry and V. Roy from Elahé, (GTN1, 12 march 2003) and A. Ensaf in St Laurent du Maroni (site RTA/AE/SE/1, march 2004), identification of soldiers after Banderia and Fontes (1979).

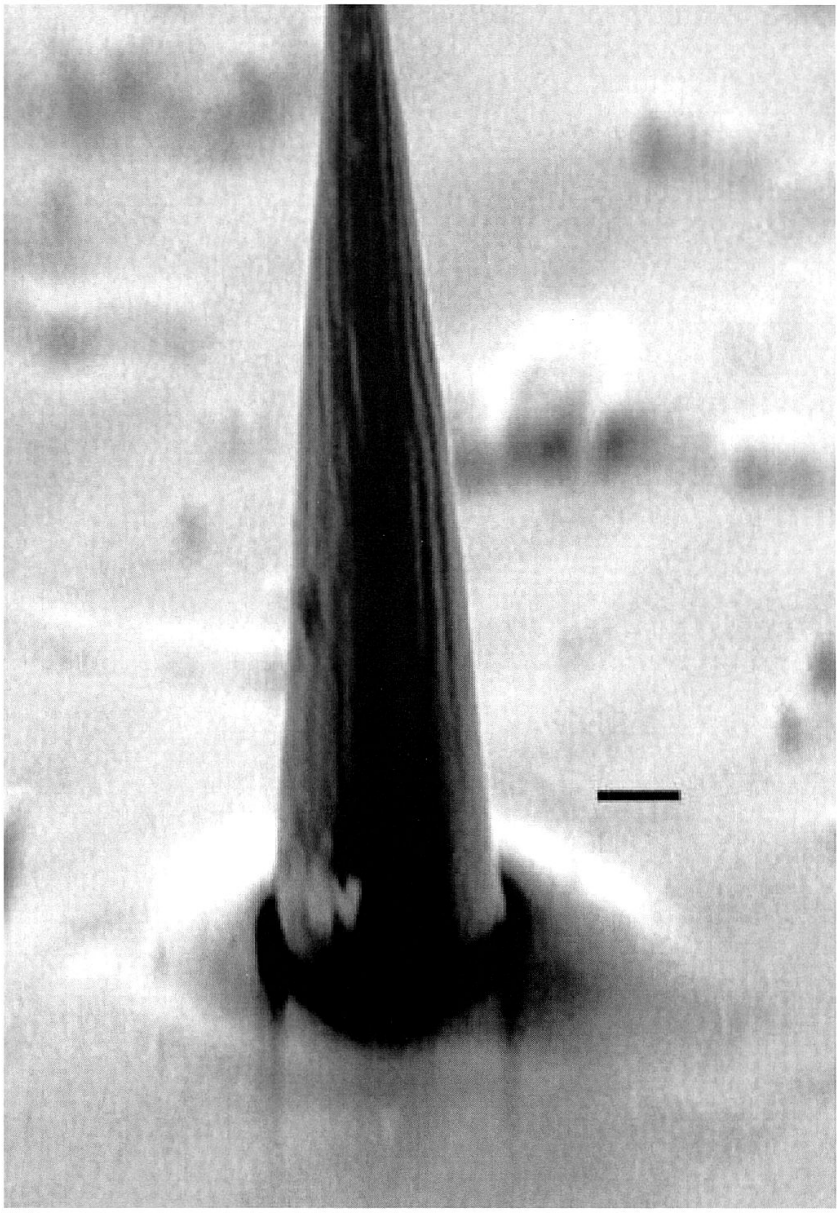

Fig. 6. Small sensilla with a probable chemioreceptor function (scale bar represents 1 µm).

Description of cervicothorax. Average lengths of AB = 243.50 µm (á = 7.76), A'B' = 451 µm (á = 4.40), A"B" = 486 µm (á = 4.28), HH' = 214.43 µm (á = 4.67), and ratio A"B"/HH' = 2.39 (á = 0.36); average number of sensillae = 73 (á = 3); sensillae short, regularly disposed in dorsal part of cervicothorax, and distinctly less numerous in ventral part; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax distinctly bilobed; median vertical furrow absent; basal horizontal furrow present, but weakly indicated.

Nasutitermes acajutlae (Holmgren, 1910) (Fig. 11)

Material. Soldiers collected by M. Harry and V. Roy from Îles du Salut (site IDS3, 10 March 2003), and A. Mercier from Îles de Salut (21 August 2003), identification of soldiers after Holmgren (1910).

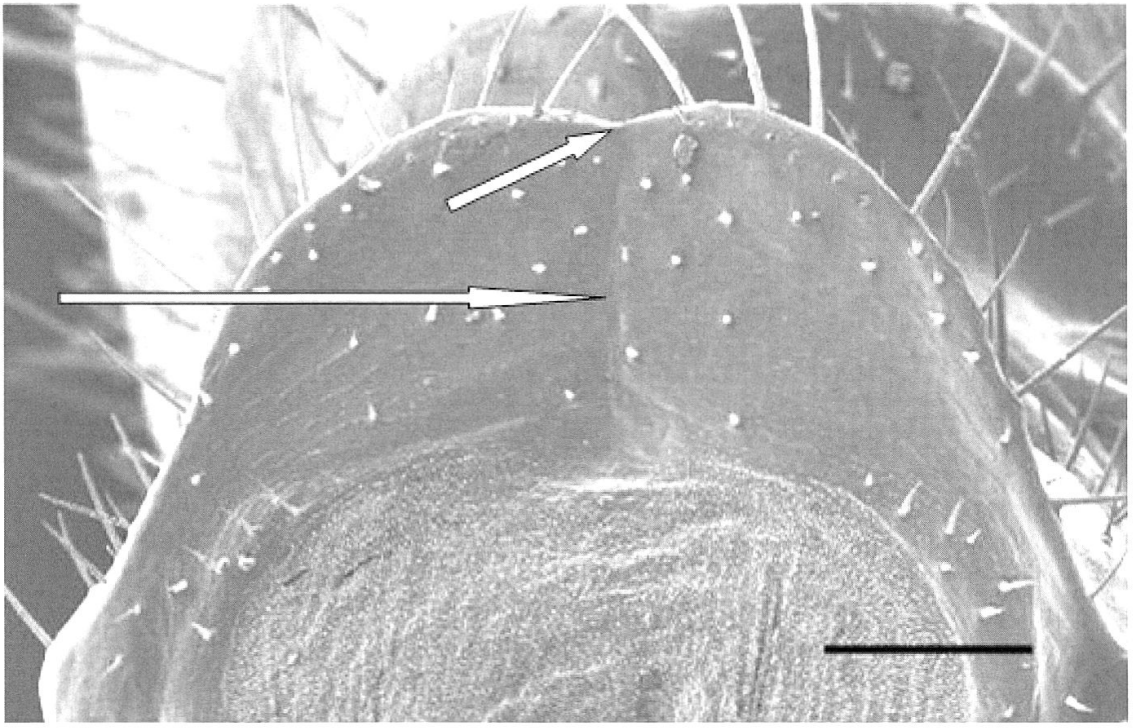

Fig. 7. Cervicothorax of *Nasutitermes surinamensis*, small arrow indicates the depression between the two lobes, large arrow indicates the median vertical furrow (scale bar represents 100 µm).

Description of cervicothorax. Average length of AB = 270.5 µm (á = 5.22), A'B' = 429.5 µm (á = 5.32), A"B" = 476.77 µm (á = 5.27), HH' = 218.5 µm (á = 5.5), and ratio A"B"/HH' = 2.17 (á = 0.05); average number of sensillae = 46 (á =

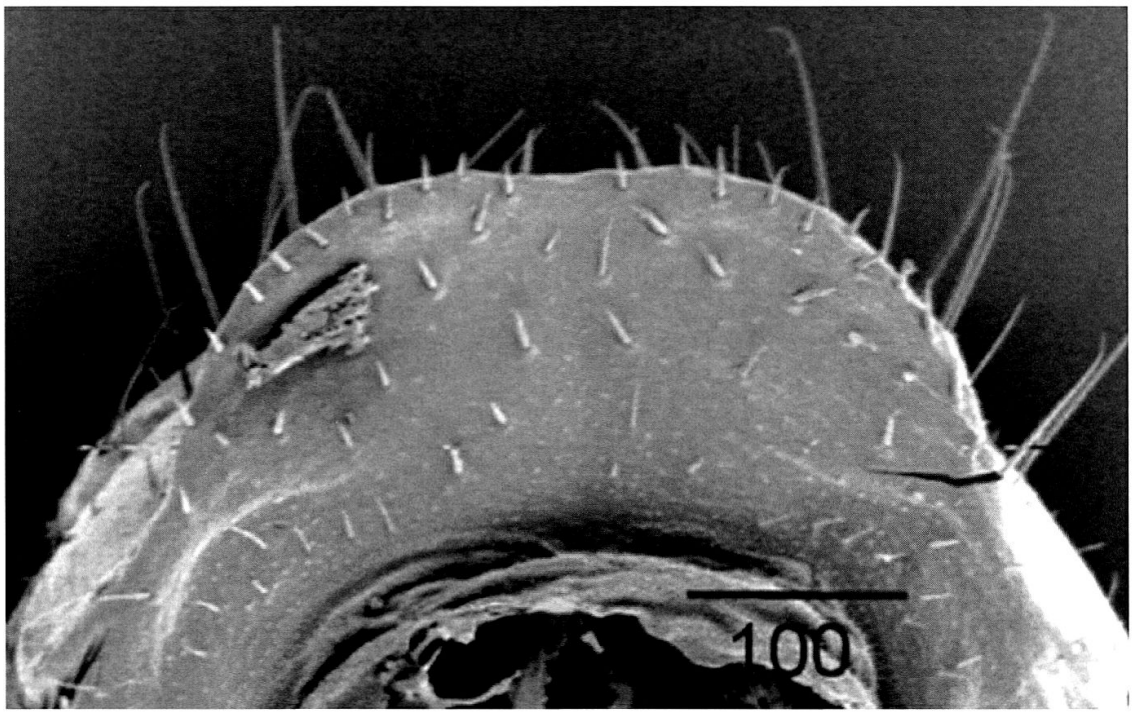

Fig. 8. Cervicothorax of *Nasutitermes intermedius* (scale bar represents 100 µm).

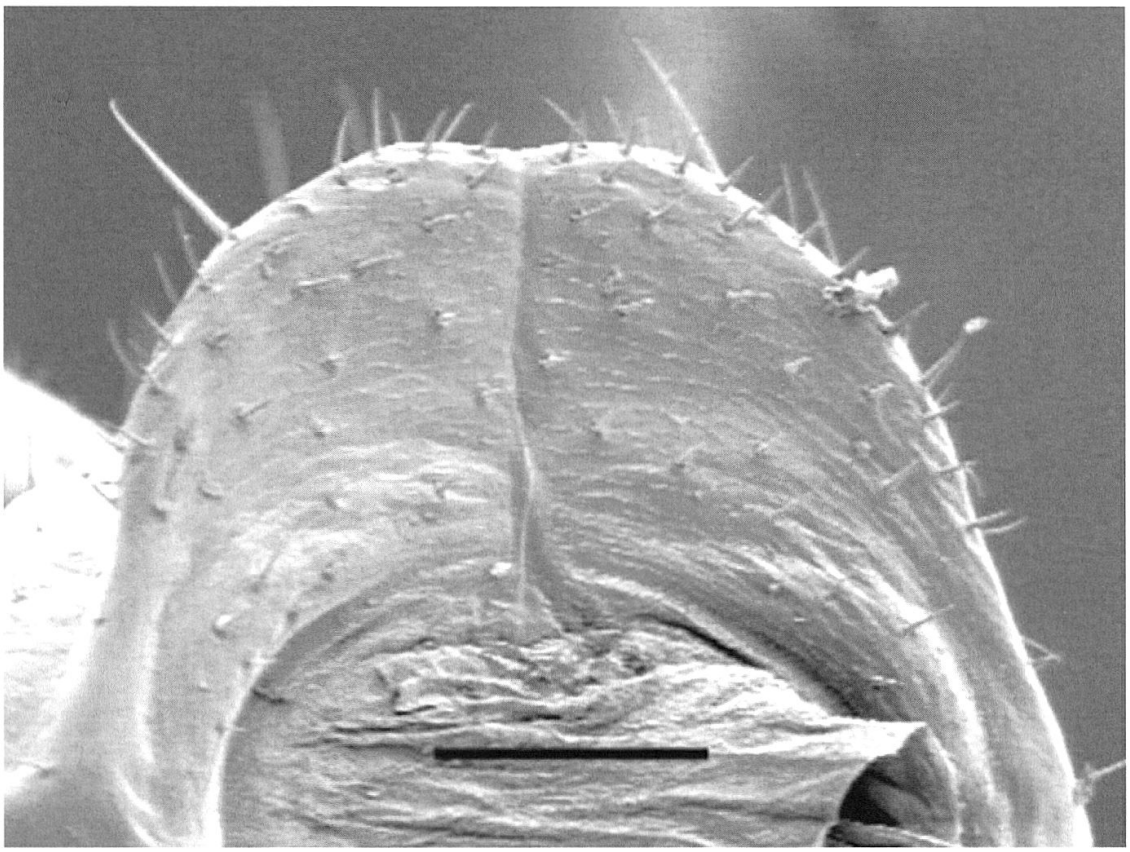

Fig. 9. Cervicothorax of *Nasutitermes costalis* (scale bar represents 100 µm).

1); sensillae rather long, distributed all over cervicothorax, but less numerous in ventral part; numerous long setae along outer part of dorsal margin; dorsal margin of cervicothorax distinctly bilobed; median vertical furrow absent; basal horizontal furrow absent.

Nasutitermes wheeleri Emerson, 1925 (Fig. 12)

Material. Soldiers collected by A. Ensaf at Montagne de Singe (site RTA/AE/24, 28 March 2004), identification of soldiers after Emerson (1925).

Description of cervicothorax. Average length of AB = 203.50 µm (á = 9.50), A'B' = 448.60 µm (á = 3.50), A"B" = 448.60 µm (á = 11.66), HH' = 202 µm (á = 7.10); ratio A"B"/HH' = 2.49 (á = 0.07); average number of sensillae = 63 (á = 2); few sensillae distributed all over cervicothorax; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax bilobed; median vertical furrow weakly visible; basal horizontal furrow visible.

Nasutitermes nigriceps (Haldeman, 1853) (Fig. 13)

Material. Soldiers collected at Petit Saut by M. Harry and V. Roy (site RNA 14, 17 July 2003), by A. Mercier (site RTA/AE/17, 27 March 04), identification of soldiers after Haldeman (1853), Light (1933), and Thorne et al. (1994).

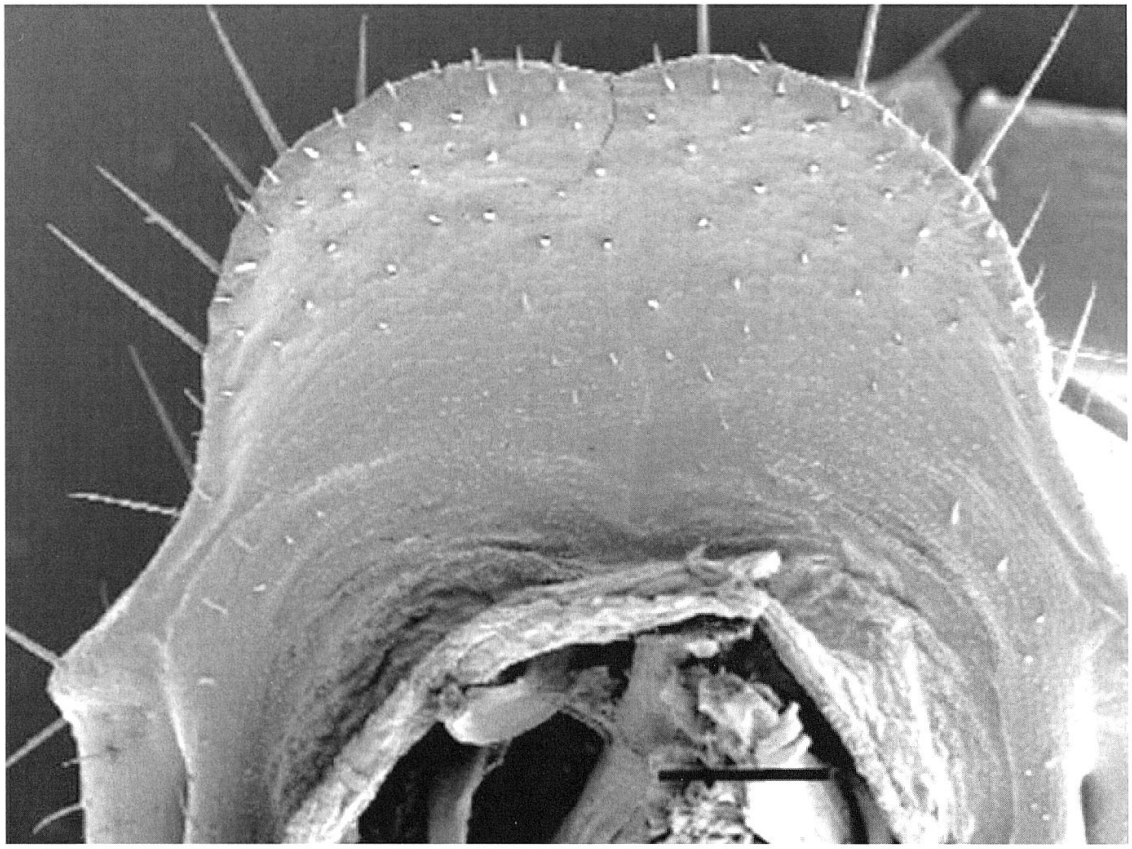

Fig. 10. Cervicothorax of *Nasutitermes acangussu* (scale bar represents 100 µm).

Description of cervicothorax. Average length of AB = 201.50 µm (á = 5.25), A'B' = 330.50 µm (á = 9.07), A"B" = 397 µm (á = 7.8), HH' = 186 µm (á = 4.74); ratio A"B"/HH' = 2.14 (á = 0.07); average number of sensillae = 58 (á = 2); several sensillae distributed all over cervicothorax; rather numerous long setae along outer part of dorsal margin; dorsal margin of cervicothorax distinctly bilobed; median vertical furrow weakly visible; basal horizontal furrow visible.

Group 2: cervicothorax flat or nearly flat, not bilobed (Figs 14-18)

Nasutitermes brevipilus Emerson, 1925 (Fig. 14)

Material. Soldiers collected by R.G. Davice and P.Eggleton at St. Eugène (site RTA/AE/17), and Ensaf at Petit Saut (27 March 04), identification of soldiers after Emerson (1925).

Description of cervicothorax. Average length of AB = 122 µm (á = 4.58), A'B' = 245 µm (á = 6.32), A"B" = 345 µm (á = 5.92), HH' = 111.50 µm (á = 13.67); ratio A"B"/HH' = 3.1 (á = 0.06); average number of sensillae = 43 (á = 2.28); few short sensillae, distributed all over cervicothorax, distinctly less numerous in ventral part; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, not bilobed; median vertical furrow absent; basal horizontal furrow very weak.

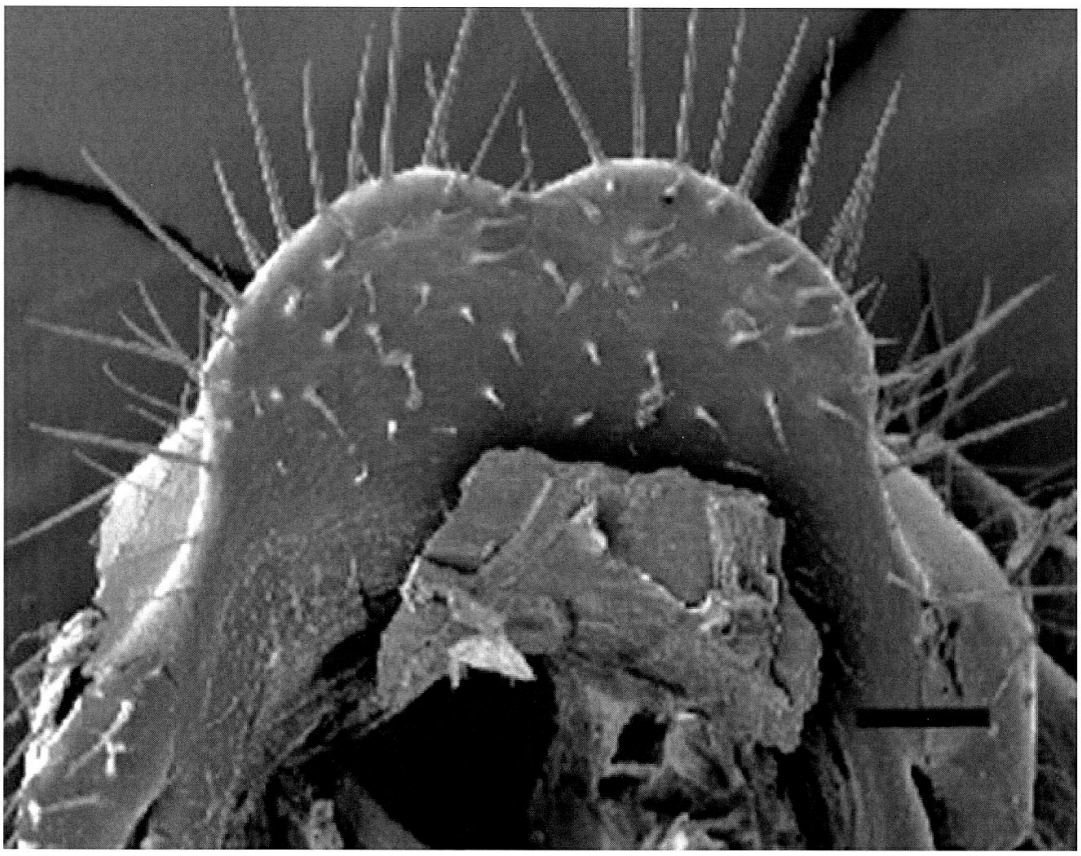

Fig. 11. Cervicothorax of *Nasutitermes acajutlae* (scale bar represents 100 µm).

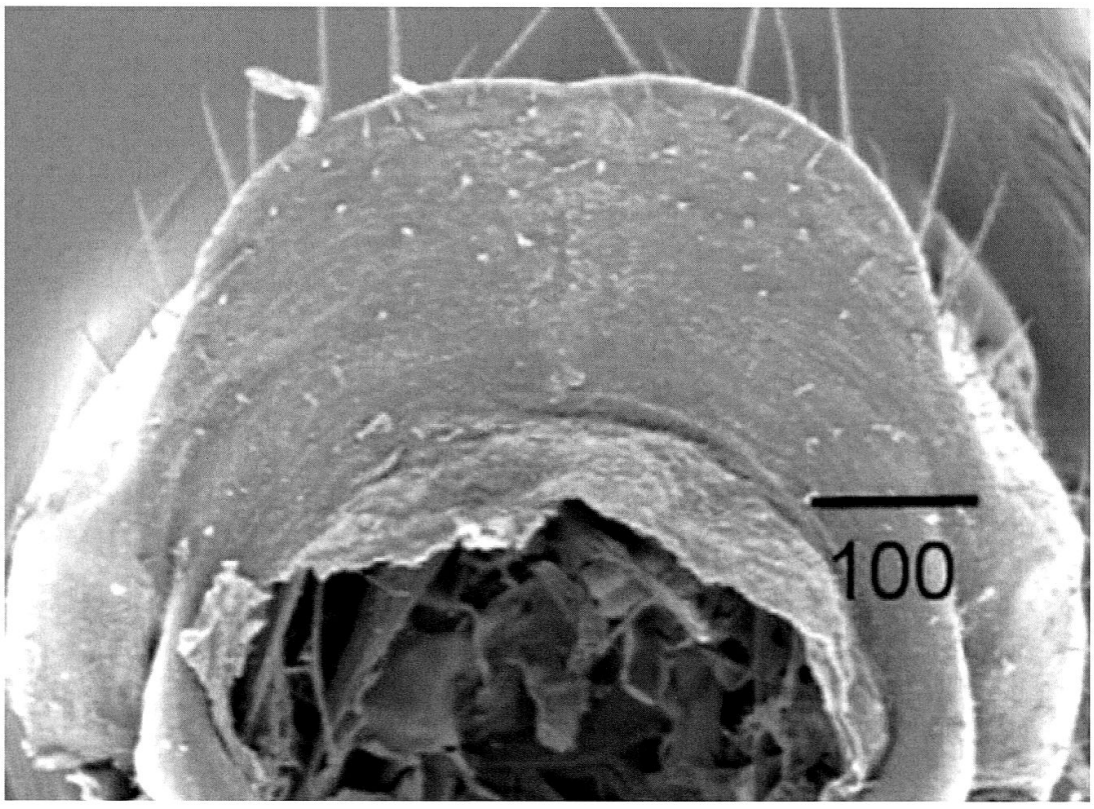

Fig. 12. Cervicothorax of *Nasutitermes wheeleri* (scale bar represents 100 µm).

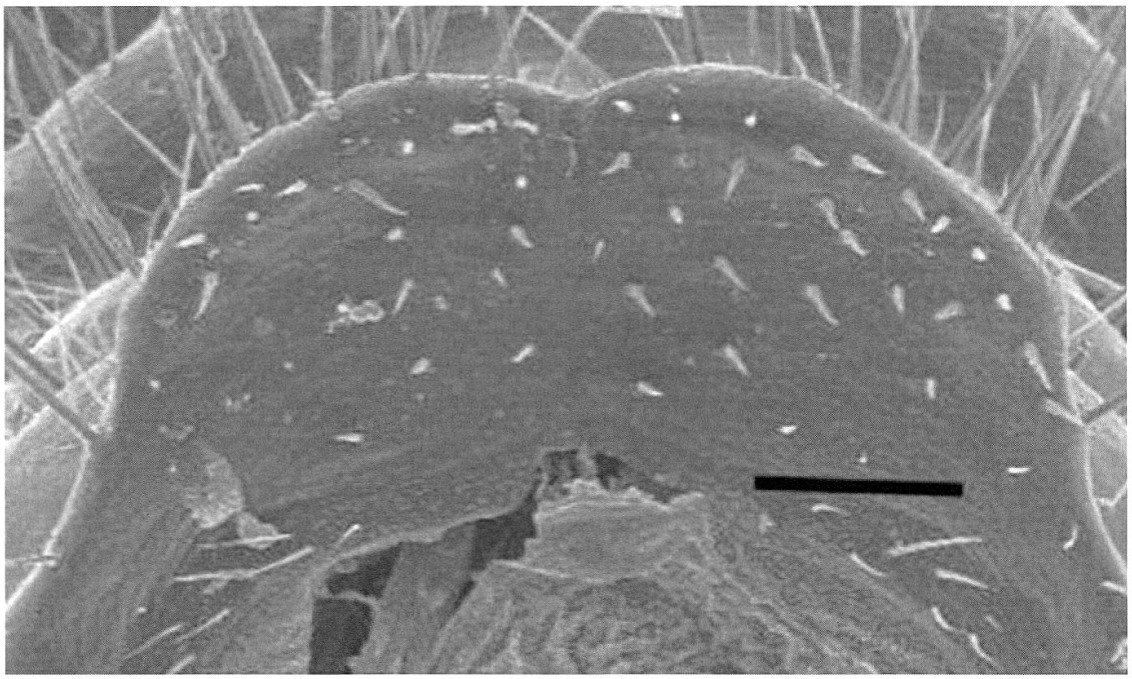

Fig. 13. Cervicothorax of *Nasutitermes nigriceps* (scale bar represents 100 µm).

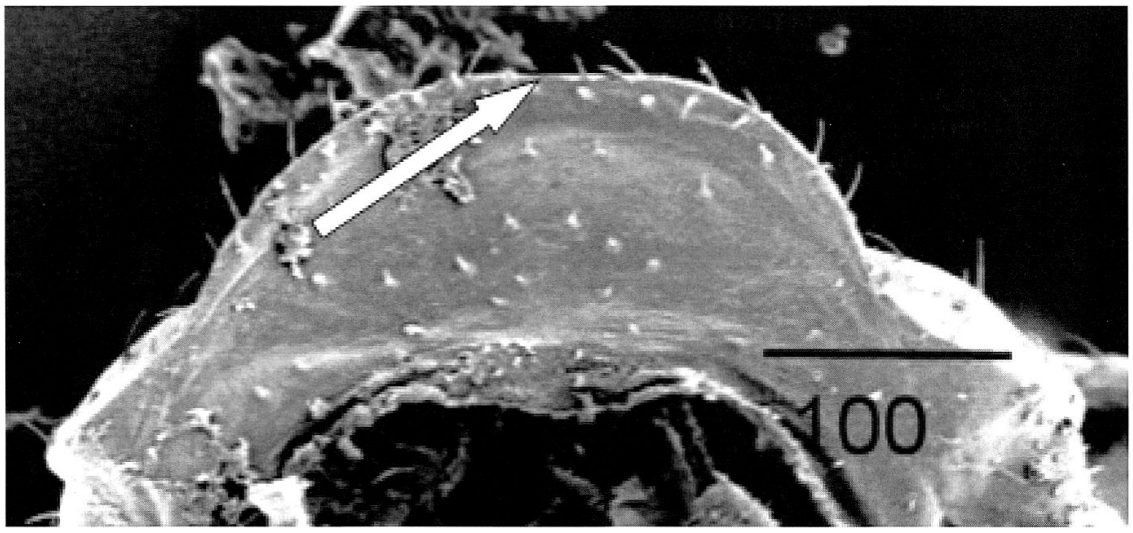

Fig. 14. Cervicothorax of *Nasutitermes brevipilus*, arrow indicates the flat dorsal margin (scale bar represents 100 µm).

Nasutitermes similis Emerson 1935 (Fig. 15)

Material. Soldiers collected by J.M. Betsch station St. Eugène (site Guy/Pt-St-104, at Petit Saut dam, in an equatorial forest, collected under dead wood, extracted from a berlese trap, 13 November 1999, by R.E.Garrouste at Nouragues (site T3, 25 April 2002), and by A. Ensaf from Amana (site RTA/AE/15, 26 March 2004), identification of soldiers after Ensaf *et al.* (2003).

Description of cervicothorax. Average length of AB = 99 µm (á = 4), A'B' = 378 µm (á = 4), A"B" = 398 µm (á = 4), HH' = 175 µm (á = 5); ratio A"B"/HH' =

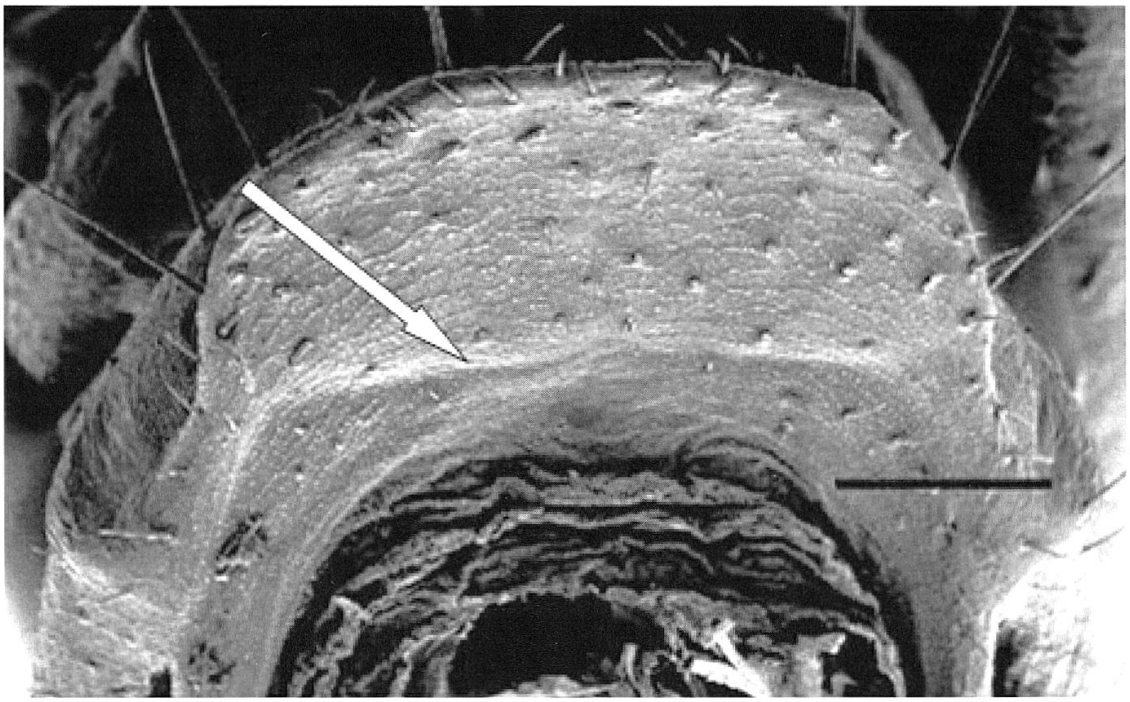

Fig. 15. Cervicothorax of *Nasutitermes similis*, arrow indicates horizontal furrow (scale bar represents 100 µm).

2.27 (á = 0.07); average number of sensillae = 58 (á = 2); several sensillae distributed all over cervicothorax; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, not bilobed; median vertical furrow weakly visible; basal horizontal furrow strong.

Nasutitermes guayanae (Holmgren, 1910) (Fig. 16)

Material. Soldiers collected by J.M. Betsch "route de Paul Isnard" , PK 38 (alt. 50 m), region of St Laurent du Maroni, North-West of French Guyana, in a mature forest on ferrallitic soil, extracted from a berlese trap, 29 February 1992, by Ensaf from Nourague (site Ta/01), 25 April 2002, and from St Laurent du (site RTA/AE/ST/1), 25 March 04, and by M. Harry and V. Roy Patagaïe (site P94P), 05 March 2003, and Route de St. Elie (site S2CO, 07 March 2003), identification of soldiers after Ensaf et al. (2003).

Description of cervicothorax. Average length of AB = 186.50 µm (á = 0.65), A'B' = 331 µm (á = 4), A"B" = 428 µm (á = 3.88), HH' = 203 µm (á = 4.38); ratio A"B"/HH' = 2.11 (á =0.48); average number of sensillae = 76 (á = 3); numerous sensillae distributed all over cervicothorax; very few long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, not bilobed; median vertical furrow absent; basal horizontal furrow absent.

Nasutitermes guayanae columbicus (Holmgren, 1910) (Fig. 17)

Material. Soldiers collected by J.M. Betsch from North-West of St. Eugène Station (Petit Saut dam), (Site Pt-St. 46, zone of marling, in transect ZM5 between island two and island 21, grey forest, alt.1

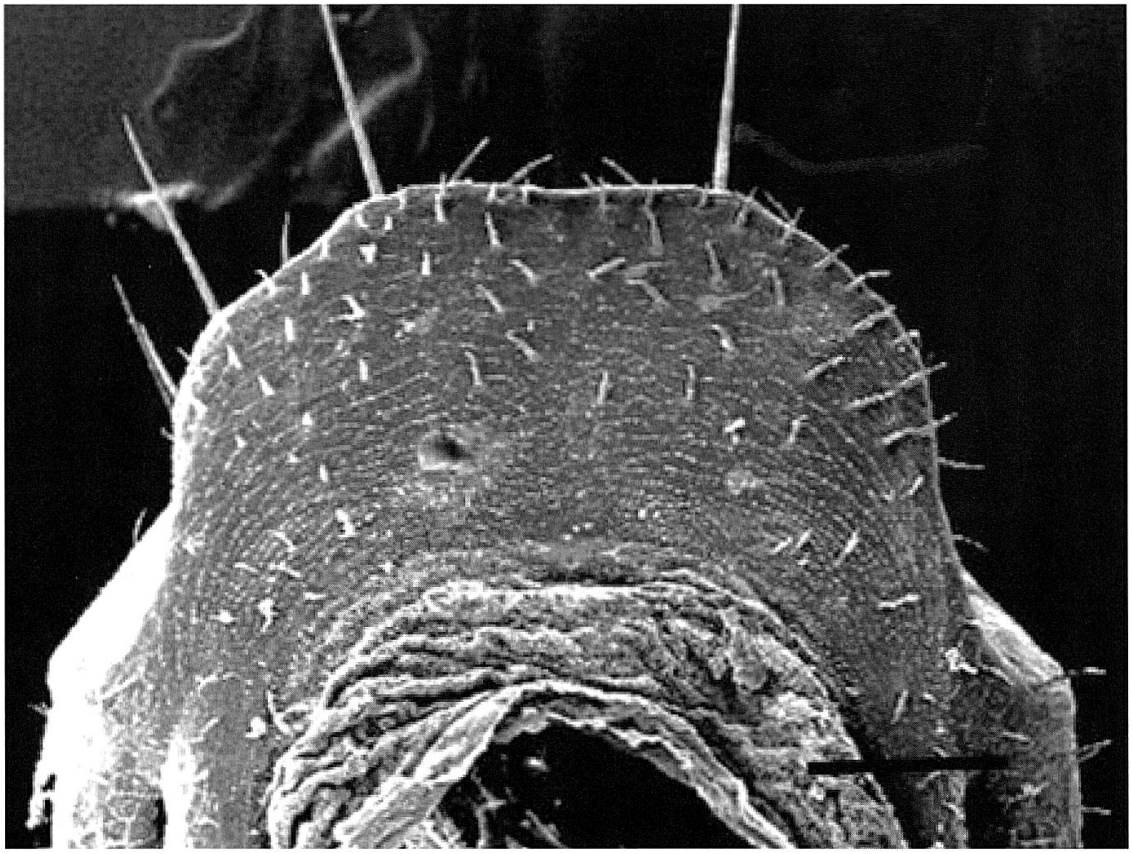

Fig. 16. Cervicothorax of *Nasutitermes guayanae* (scale bar represents 100 µm).

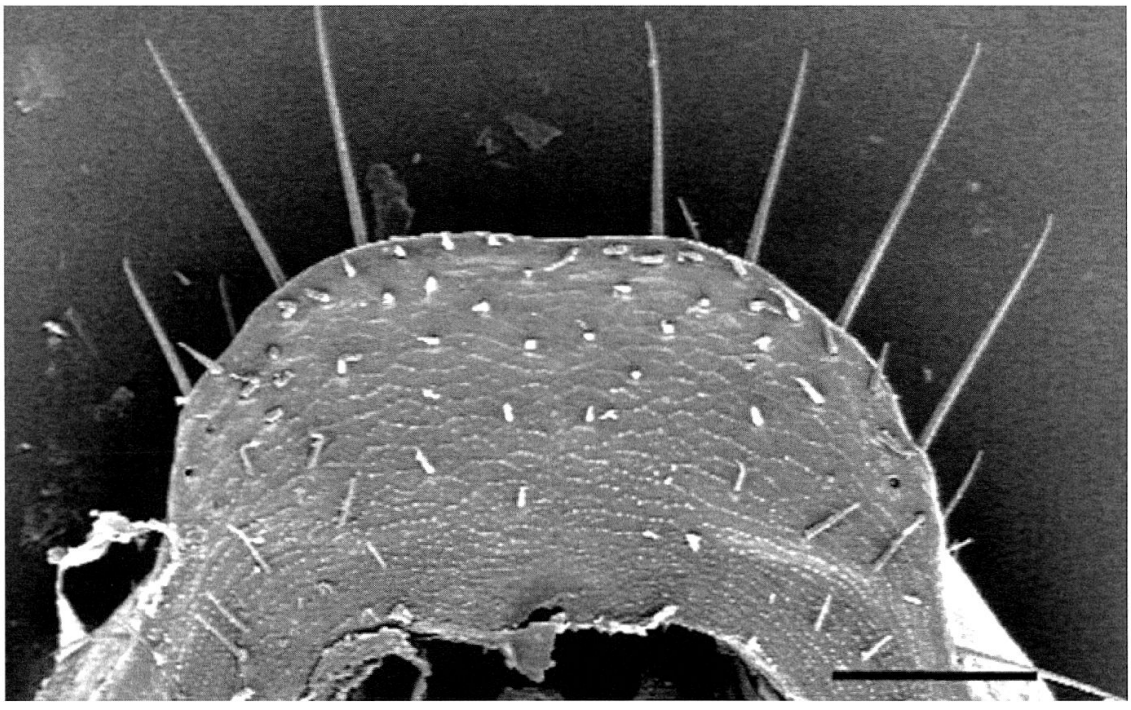

Fig. 17. Cervicothorax of *Nasutitermes guayanae columbicus* (scale bar represents 100 µm).

m below maximal level of lake, at a linear distance of 5 m outside of forest, under dead trunk laying on sediment emerging during the end of the dry season, 24 November 1997), and by A. Ensaf from Petit Saut (site RTA/AE/17, 27 March 2004), identification of soldiers after Ensaf et al. (2003).

Description of cervicothorax. Average length of AB = 121 µm (á = 1), A'B' = 364 µm (á = 3.77), A"B" = 396 µm (á = 5), HH' = 185 µm (á = 4.90); ratio A"B"/HH' = 2.15 (á = 0.03); average number of sensillae = 54 (á = 3); few sensillae distributed all over cervicothorax; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, not bilobed; median vertical furrow absent; basal horizontal furrow weakly indicated.

Nasutitermes coxipoensis (Holmgren, 1910) (Fig. 18)

Material. Soldiers collected by M. Harry and V. Roy at Bellevue (Site T31SB, 04 March 03), and by Mercier at Sâul (07 September 03), identification of soldiers after Holmgren (1910).

Description of cervicothorax. Average length of AB = 130.3 µm (á = 3.95), A'B' = 402.5 µm (á = 6.80), A"B" = 459.92 µm (á = 4.67), HH' = 189.05 µm (á = 3.55); ratio A"B"/HH' = 2.22 (á = 0.05); average number of sensillae = 58 (á = 2);

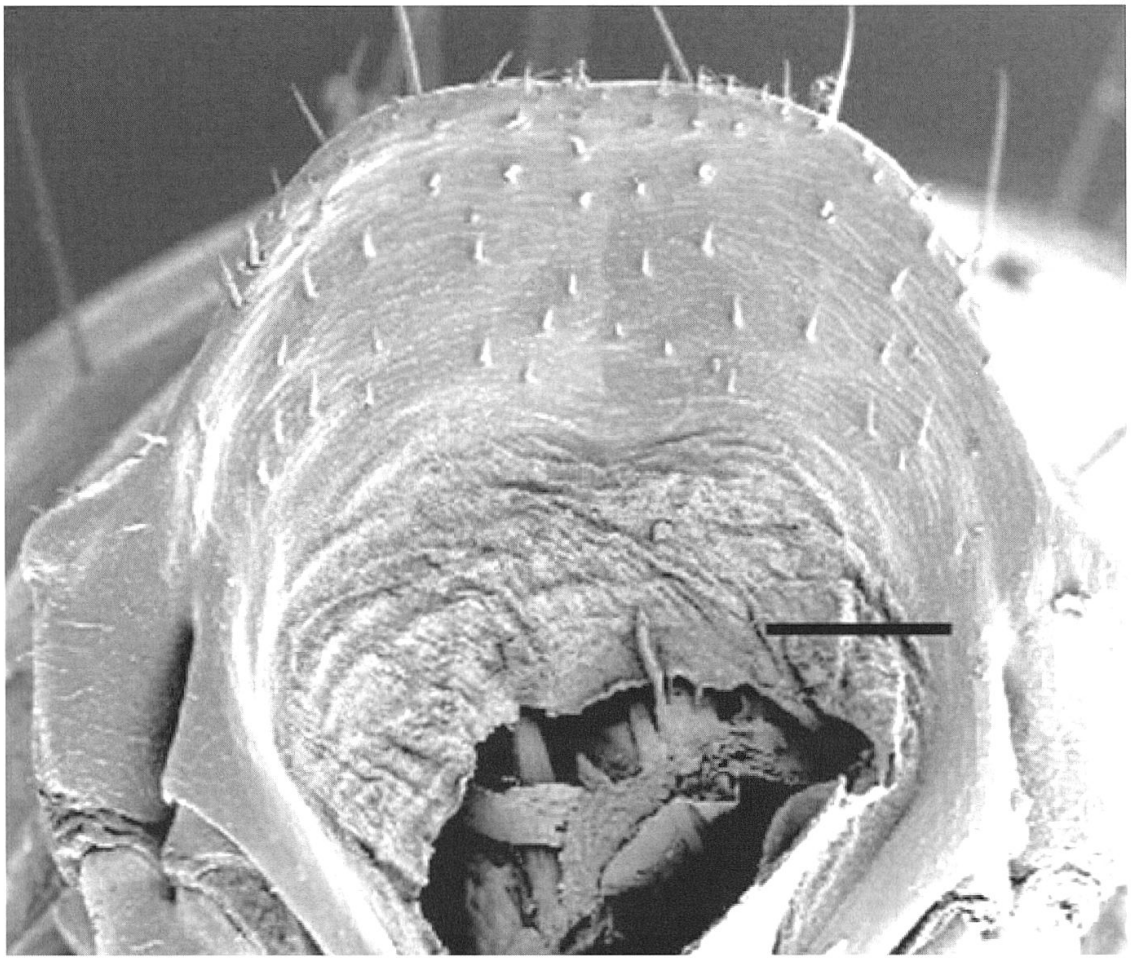

Fig. 18. Cervicothorax of *Nasutitermes coxipoensis* (scale bar represents 100 µm).

numerous short sensillae, distributed all over cervicothorax; very few long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, not bilobed; median vertical furrow present and distinct; basal horizontal furrow visible.

Group 3: cervicothorax rounded, not bilobed (Figs 19-25)

Nasutitermes sp. 1 (Fig. 19)

Material. Soldiers collected by A. Mercier at Lamana (site RTA3/A4, 16 agust 2003), by A. Ensaf at Lamana (site RTA/AE/4, 24 March 2004), and by M. Harry and V. Roy at Cacao (site DC1/H, 10 March 2003).

Description of cervicothorax. Average length of AB = 82 µm (á = 2.45), A'B' = 317.50 µm (á = 0.30), A"B" = 406.50 µm (á = 5.5), HH' = 167.90 µm (á = 3.29); ratio A"B"/HH' = 2.42 (á = 0.41); average number of sensillae = 49 (á = 2); few

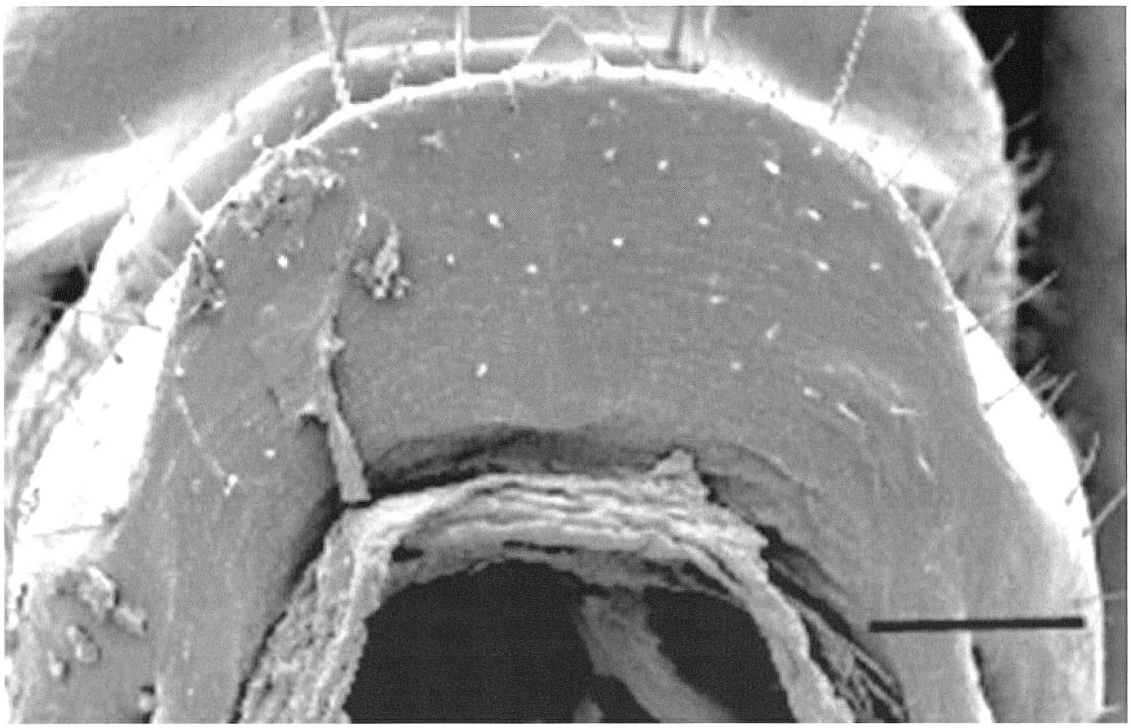

Fig. 19. Cervicothorax of *Nasutitermes* sp. 1 (scale bar represents 100 µm).

sensillae distributed all over cervicothorax; several long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, not bilobed; median vertical furrow visible; basal horizontal furrow strong.

Nasutitermes octopilis Banks, 1918 (Fig. 20)

Material. Soldiers collected by J.M. Betsch from the region of St Laurent du Maroni (site Guy 92/37, PK five on secondry road towards Javouhey, in a mature forest on white sand, collected under the bark

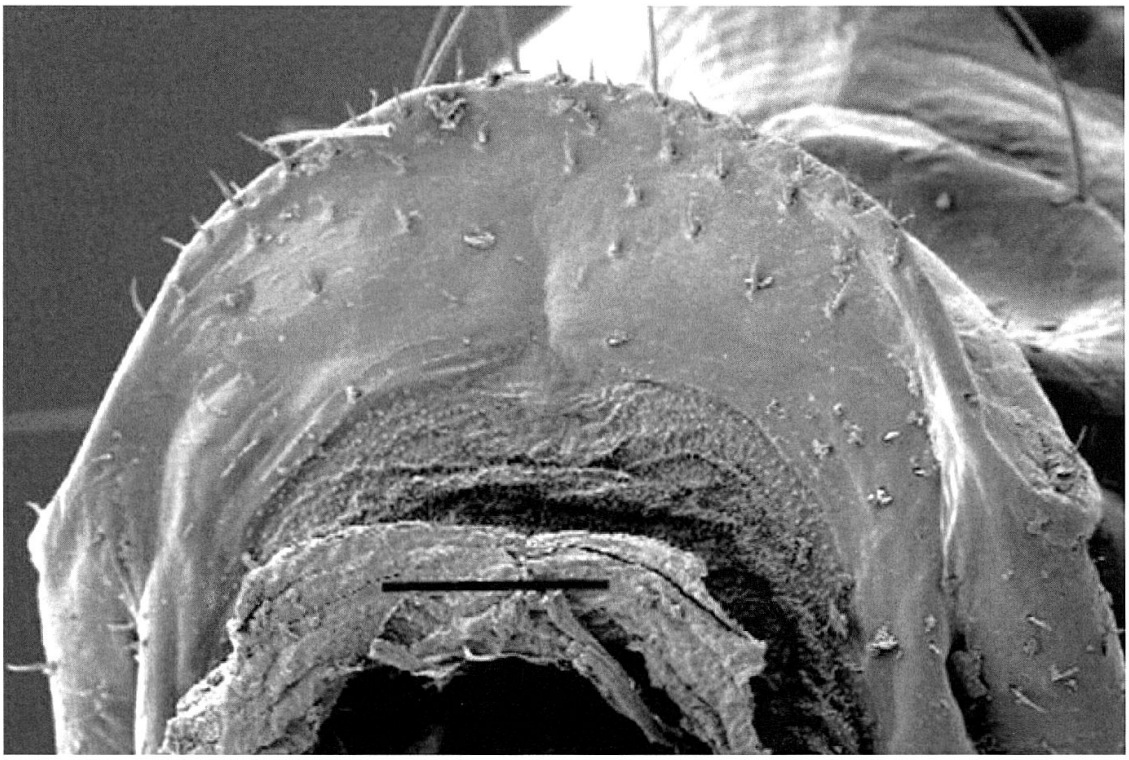

Fig. 20. Cervicothorax of *Nasutitermes octopilis* (scale bar represents 100 µm).

of the dead but not fallen tree, 28 February 1992, by M. Harry and V. Roy from Counami (site L10-80, 06 March 2003), and by A. Ensaf in a secondary forest between Mana and St. Laurent du Maroni, 25 March 2004 (site RTA/AE/SE/1), identification of soldiers after Ensaf et al. (2003).

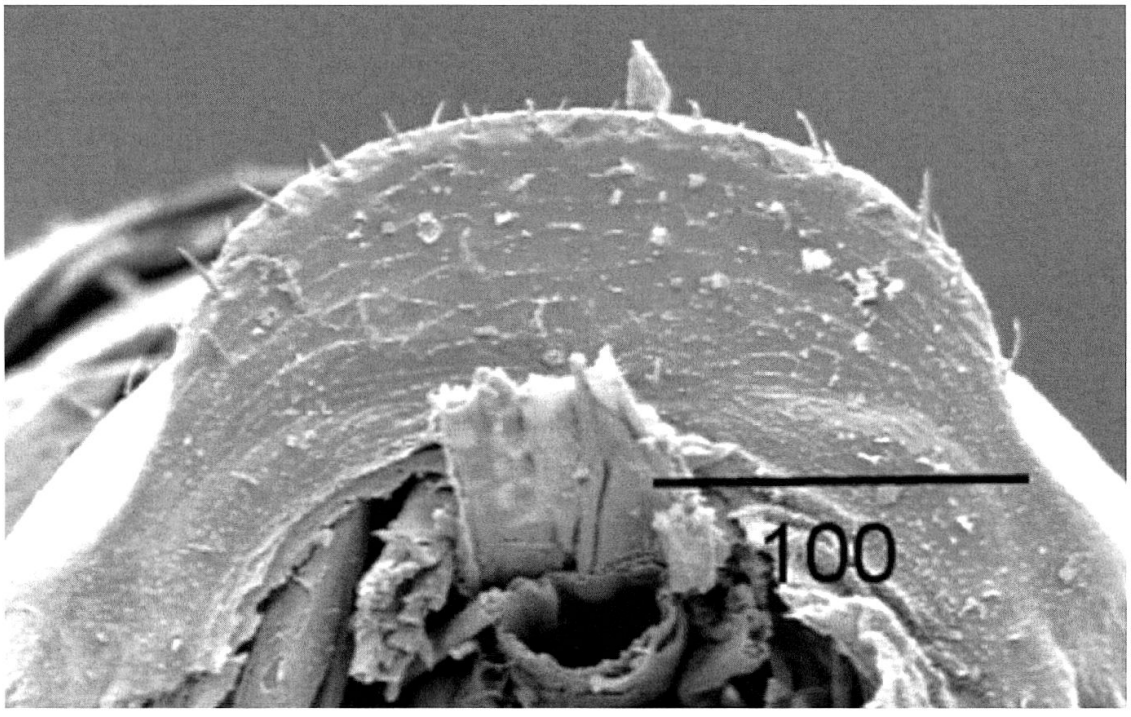

Fig. 21. Cervicothorax of *Nasutitermes gaigei* (scale bar represents 100 µm).

Description of cervicothorax. Average length of AB = 45 µm (á = 0.46), A'B' = 267 µm (á = 1.49), A"B" = 373 µm (á = 4), HH' = 124.50 µm (á = 4.19); ratio A"B"/HH' = 2.98 (á = 0.08); average number of sensillae = 52 (á = 2); several sensillae distributed in dorsal part of cervicothorax; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax rounded, not bilobed; median vertical furrow visible; basal horizontal furrow absent.

Nasutitermes gaigei Emerson, 1925 (Fig. 21)

Material. Soldiers collected by R.G. Davice and P. Eggleton from St. Eugene (site RTA/AE/15, 26 March 2004), and by Ensaf from Petit Saut and Mana (site RTA/AE/17, 27 March 2004), identification of soldiers after Emerson (1925).

Description of cervicothorax. Average length of AB = 42.40 µm (á = 2.50), A'B' = 203.50 µm (á = 3.99), A"B" = 226.60 µm (á = 3.88), HH' = 85.50 µm (á = 2.69); ratio A"B"/HH' = 2.64 (á = 0.07); average number of sensillae = 34 (á = 4); numerous sensillae on dorsal margin; no long setae along outer part of dorsal margin; dorsal margin of cervicothorax rounded, not bilobed; median vertical furrow absent; basal horizontal furrow visible.

Nasutitermes banksi Emerson, 1925 (Fig. 22)

Material. Soldiers collected by M. Harry and V. Roy from Counami (site L10 4C(4), 06 March 2003), by A. Mercier from Amana (site RTA4/E12), and by Ensaf from Amana (site RTA/AE/15, 26 March 04), identification of soldiers after Emerson (1925).

Description of cervicothorax. Average length of AB = 40.5 µm (á = 3.50), A'B' = 162.5 µm (á = 4.05), A"B" = 223.13 µm (á = 4.05), HH' = 81.42 µm (á = 3.95), ratio A"B"/HH' = 2.67 (á = 0.25); average number of sensillae = 37 (á = 2);

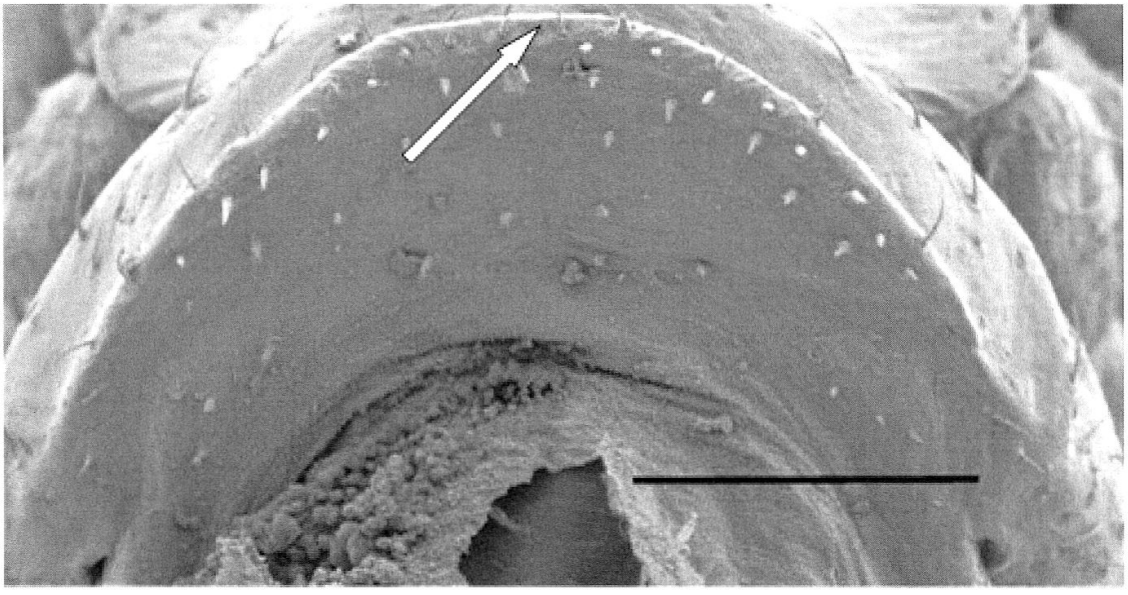

Fig. 22. Cervicothorax of *Nasutitermes banksi*, arrow indicates the rounded dorsal margin (scale bar represents 100 µm).

sensillae short, distributed in dorsal part of cervicothorax, distinctly less numerous in ventral part; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax rounded, not bilobed; median vertical furrow very weak or absent; basal horizontal furrow very weak.

Nasutitermes corniger (Motschulsky, 1855) (Fig. 23)

Material. Soldiers collected by Ensaf at St Laurent de Maroni (REA/AE/SE/1, 25 March 2004) and by A. Mercier at Lamana (site RTA5/D4, 15 September 2003), identification of soldiers after Holmgren (1910).

Description of cervicothorax. Average length of AB = 20.3 µm (á = 0.1.39), A'B' = 301 µm (á = 7/01), A"B" = 360 µm (á = 3.90), HH' = 169.5 µm (á = 2.70); ratio A"B"/HH' = 2.13 (á = 0.0.03); average number of sensillae = 58 (á = 2); numerous short sensillae, distributed all over cervicothorax; very few long setae along outer part of dorsal margin; dorsal margin of cervicothorax rounded, not bilobed; median vertical furrow present and distinct; basal horizontal furrow visible.

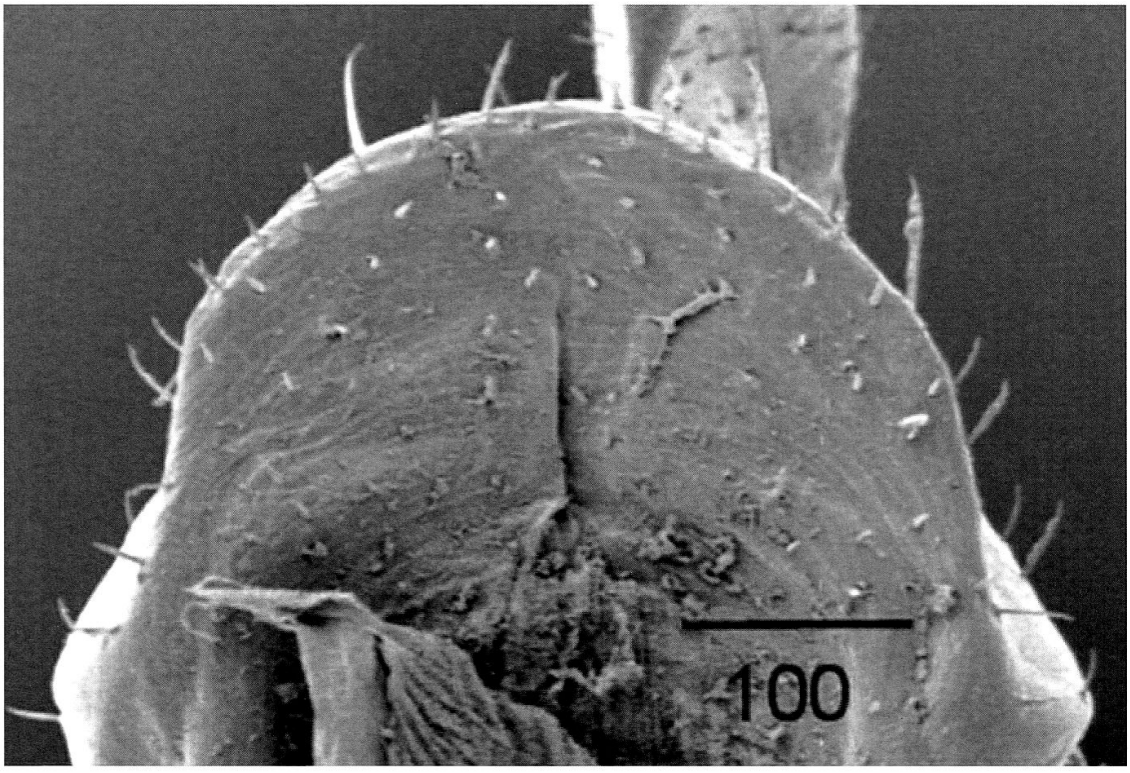

Fig. 23. Cervicothorax of *Nasutitermes corniger* (scale bar represents 100 µm).

Nasutitermes comstockae Emerson, 1925 (Fig. 24)

Material. Soldiers collected by Ensaf in the region of Amana (site RTA/AE/15, 26 March 04), and petit Saut (site RTA/AE/17), and by Mercier at Amana (Site RTA 4, 16 August 2003), and at petit Saut (site RTA/AE/17), identification of soldiers after Emerson (1925).

Description of cervicothorax. Average length of AB = 116.60 µm (á = 0.79), A'B' = 245 µm (á = 1.38), A"B" = 267.67 µm (á = 3.99), HH' = 107.74 µm (á = 4);

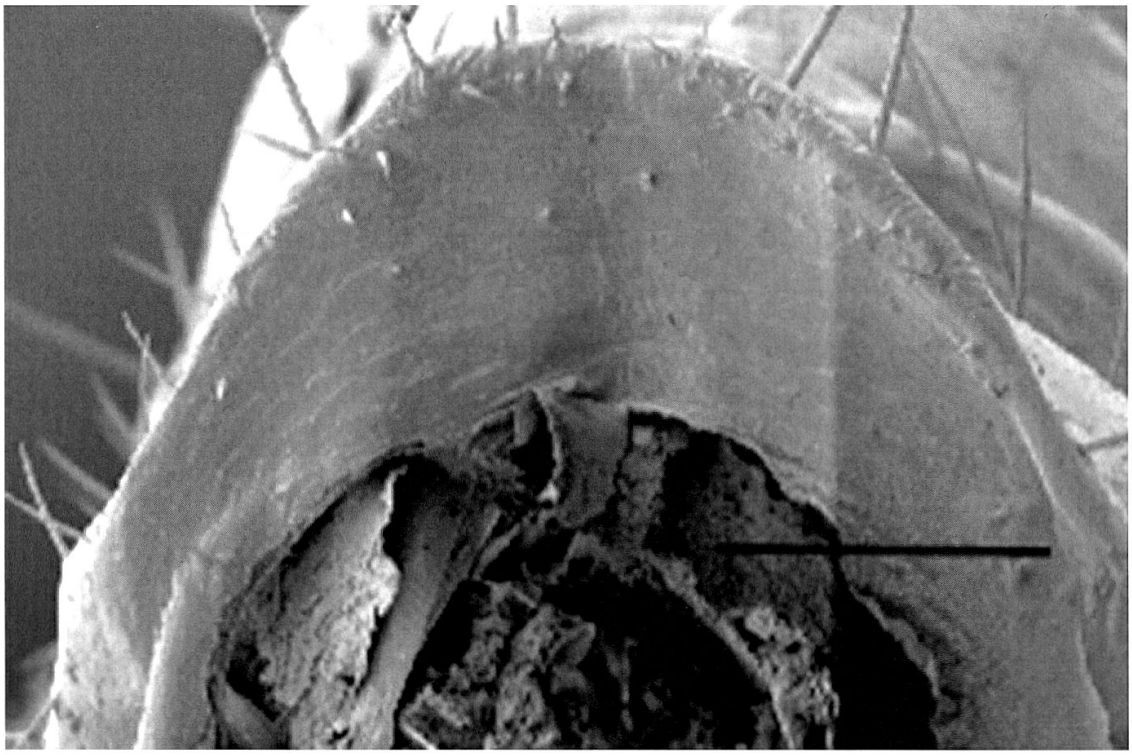

Fig. 24. Cervicothorax of *Nasutitermes comstockae* (scale bar represents 100 µm).

ratio A"B"/HH' = 2.49(á = 0.08); average number of sensillae = 29 (á = 1); very few short sensillae, distributed in dorsal part of cervicothorax; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax flat, not bilobed; median vertical furrow absent; basal horizontal furrow absent.

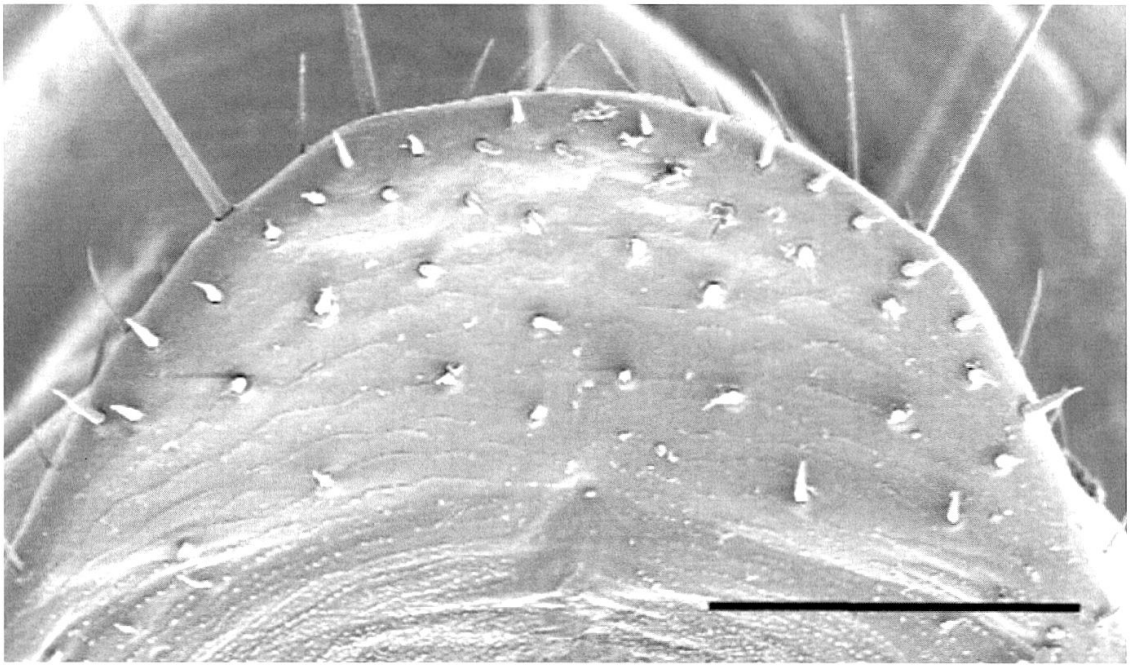

Fig. 25. Cervicothorax of *Nasutitermes ephratae* (scale bar represents 100 µm).

Nasutitermes ephratae (Holmgren, 1910) (Fig. 25)

Material. Soldiers collected by Y. Ponchel from a nest along the road Rn 1 between Kourou and Sinnamary (on a coastal savanna, 01 November 2000), by R.E. Garrouste from an inselberg (265 m high, 60 km west of Saül), by M. Harry and V. Roy from Elahé (site ED3-F1, 13 march 2003), and by Ensaf from Lamana (site RTA/AE/4, 24 March 2004), identification of soldiers after Ensaf et al. (2003).

Description of cervicothorax. Average length of AB = 22 µm (á = 0.77), A'B' = 230 µm (á = 0.1), A"B" = 303 µm (á = 4), HH' = 134.3 µm (á = 3.52); ratio A"B"/HH' = 2.51 (á = 0.27); average number of sensillae = 54 (á = 2); numerous rather long sensillae, distributed all over cervicothorax; very few long setae along outer part of dorsal margin; dorsal margin of cervicothorax rounded, not bilobed; median vertical furrow absent; basal horizontal furrow visible.

Group 4: cervicothorax triangular, not bilobed (Fig. 26)

Nasutitermes sp.2 (Fig. 26)

Material. Soldiers collected by M. Harry and V. Roy from Bellevue (site T29-5B, 04 March 2003), and by A. Ensaf from Montagne de Singe (site RTA/AE/24, 28 March 2004).

Description of cervicothorax. Average length of AB = 13.50 µm (á = 3.80), A'B' = 229.24 µm (á = 0.2.24), A"B" = 435 µm (á = 5), HH' = 187 µm (á = 4); ratio A"B"/HH' = 2.33 (á = 0.03); average number of sensillae = 46 (á = 2); few sensillae distributed all over cervicothorax; few long setae along outer part of dorsal margin; dorsal margin of cervicothorax triangular, not bilobed; median vertical furrow strong; basal horizontal furrow visible.

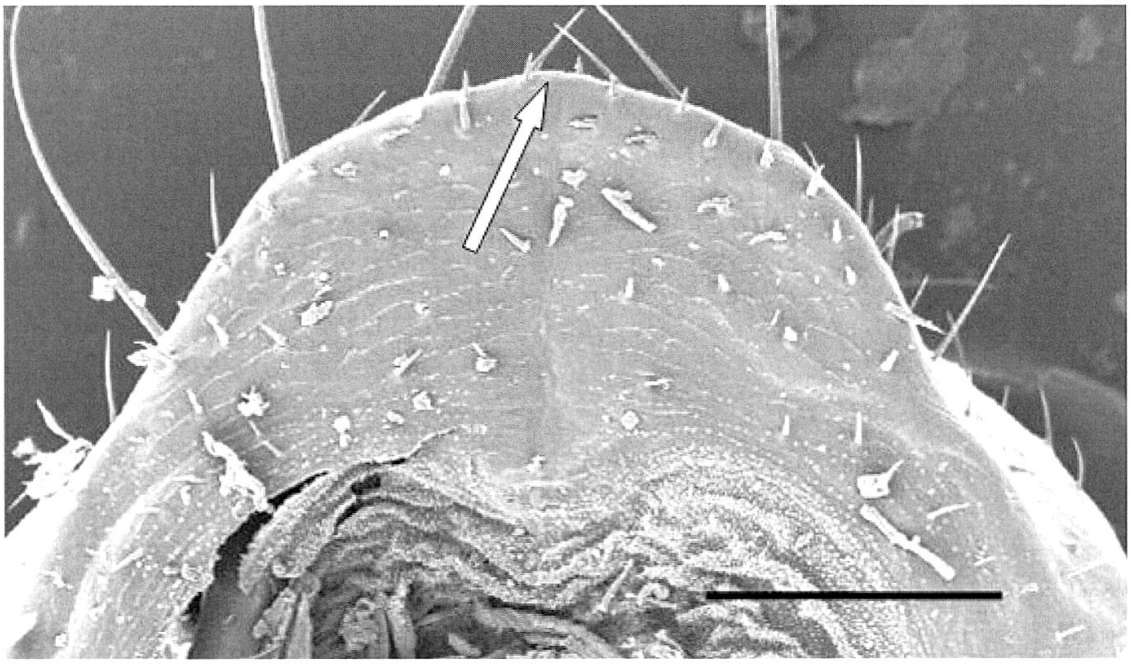

Fig. 26. Cervicothorax of *Nasutitermes* sp.2, arrow indicates the triangular dorsal margin (scale bar represents 100 µm).

DISCUSSION

Group number 1: species with cervicothorax bilobed

Nasutitermes surinamensis (Holmgren, 1910), *N. intermedius* Banks, 1919, *N. costalis* (Holmgren, 1910), *N. acangussu* Bandeira & Fontes, 1979, *N. acajutlae* (Holmgren, 1910), *N. wheeleri* Emerson, 1925, *N. nigriceps* (Haldeman, 1853).

Nasutitermes costalis can be differentiated from all other species of this group by its length AB ranging between 100 and 105 µm, with a mean 102 µm. *Nasutitermes acajutlae* can be differentiated from all other species of this group by AB ranging between 260 and 280 µm, with a mean 271 µm. *Nasutitermes acangussu* and *N. wheeleri* can be separated from all other species of this group by their A'B' ranging between 445 and 460 µm. *Nasutitermes acangussu* has a AB ranging between 230 and 250 µm with a mean value 244 µm, and more pronounced lobes than *N. wheeleri*, which has a AB ranging between 190 and 220 µm with a mean value 244 mm. *Nasutitermes nigriceps*, *N. intermedius*, and *N. surinamensis* separate from *N. acangussu* and *N. wheeleri* in their A'B' not surpassing 370 µm. Within this group of species, *N. nigriceps* separates from the two others in its large AB (mean value 202 µm, range 190-210 µm), and by its weak ratio A"B"/HH' (mean value 2.14, range 2.05-2.28). *Nasutitermes intermedius* and *N. surinamensis* have a weaker AB (respective mean values 138 and 132 µm, and ranges 136-140 µm and 130-133.33 µm). *Nasutitermes intermedius* has a weak median vertical furrow, unlike the strong one of *N. surinamensis*. Also, A'B' and HH' of *N. intermedius* are smaller than those of *N. surinamensis* (respective mean values A'B' 318 µm and 366 µm, and HH' 158 µm and 187.89 µm).

Group number 2: cervicothorax flat or nearly flat, not bilobed

Nasutitermes brevipilus Emerson, 1925, *N. similis* Emerson 1935, *N. guayanae columbicus* (Holmgren, 1910), *N. guayanae* (Holmgren, 1910), *N. coxipoensis* (Holmgren, 1910).

Nasutitermes similis has a strong horizontal furrow and a AB weaker than other species, i.e. ranging between 95-100 µm, mean value 99 µm. *Nasutitermes coxipoensis* has a large A'B' (range 390-415 µm, mean 402.5 µm) and a large A"B" (range 455-466.67 µm, mean 459.92 µm). *Nasutitermes guayanae* has a AB larger than those of *N. guayanae columbicus* and *N. brevipilus* (mean value 187 µm, range 185-187 µm, contra mean value 121 µm, range 120-122 µm for *N. guayanae columbicus*, and contra mean value 122 µm, range 115-130 µm for N. brevipilus). *Nasutitermes guayanae columbicus* has a larger HH' and a smaller ratio A"B"/HH' than *N. brevipilus* (respective mean values 185 µm and 2.15, and 111.5 µm and 3.1). Also, *N. brevipilus* has less sensillae than *N. guayanae columbicus*.

Group number 3: cervicothorax rounded, not bilobed

Nasutitermes sp.1, *N. octopilis* Banks, 1918, *N. gaigei* Emerson, 1925, *N. banksi* Emerson, 1925, *N. corniger* (Motschulsky, 1855), *N. comstockae* Emerson, 1925, *N. ephratae* (Holmgren, 1910).

Nasutitermes comstockae has a large AB (range 115-117 µm, mean 116.6 µm). It has less sensillae than *N.* sp. 1. *Nasutitermes* sp. 1 has large AB (mean 82 mm, nearly twice those of *N. octopilis*, *N. gaigei*, and *N. banksi*) and A"B" (mean 406 µm). *Nasutitermes octopilis* has more numerous sensillae than *N. gaigei* and *N.*

banksi (mean 52 instead of 34 and 37), and a larger A'B'. *Nasutitermes banksi* has a A'B' intermediate between those of *N. octo*pilis and *N. gaigei*. The cervicothorax of *N. banksi* is more regularly rounded than that, higher, of *N. gaigei*. *Nasutitermes ephratae* and *N. corniger* have smaller AB (mean 22 and 20 µm) than all other species of the group. A'B', A"B" and HH' are larger in *N. corniger* than in *N. ephratae*.

Group number 4: cervicothorax triangular, not bilobed

This group comprises *Nasutitermes* sp. 2 (Fig. 26).

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