Chapter 6

GENUS *PONDOCORIS* HEISS & JACOBS.

New records of specimens described earlier as *Dundocoris latebrosus* Hoberlandt and comparison with additional material of other *Dundocoris* species has revealed that *D. latebrosus* has distinctive characters which separate it from all other apterous Carventinae. The genus *Pondocoris* was therefore proposed by Heiss & Jacobs (1989).

6.1 *Pondocoris* Heiss & Jacobs.

Type species: *Dundocoris latebrosus* Hoberlandt 1959.

Etymology: From Pondoland (now in the Eastern Cape), the type locality of the type species.

Apterous, body elongate, oval, incrustate, shining and granular beneath the incrustation, granules with short, stiff bristles.

Head: Longer than its width across eyes, genae finger-like, produced beyond clypeus, divergent, not touching in front of clypeus. The latter with a prominent round tubercle anterodorsally. Antenniferous spines well developed, divergent. Postocular tubercles present. Eyes globular. Head constricted behind postocular tubercles to neck region. Antennae distinctly longer than width of head, first segment thickest, extending beyond apex of genae, second shorter and more slender, club shaped, third longest and cylindrical, slightly enlarged apically, fourth segment short, fusiform, conical apex pilose. Rostrum arising from a slit-like atrium, rostral groove deep and closed posteriorly.

Thorax. Pronotum trapezoidal, more than three times as wide as long with a very distinct, elevated ring-like collar, which bears 2(1+1) smaller tubercles dorsolaterally and 2(1+1) large prominent rounded tubercles laterally. Lateral lobes with dense granulation, deeply incised before collar, anterolateral angles subrectangular, posterolateral lobes rounded, projecting laterally, lateral margins upturned, concave. Lateral propleural margin visible from above expanding into small rounded lobes anteriorly and posteriorly, separated from pronotal margin by a distinct sulcus. Disk formed by 2(1+1) smooth plates, which are separated medially by a deep longitudinal groove which may reach the collar ring. Posterior margin convex, separated from mesonotum by a deep sulcus.

Mesonotum wider but shorter than pronotum, comprising 2(1+1) subrectangular plates which are separated by a sulcus from metanotum, and an elevated longitudinal median ridge which projects posteriorly over metanotum and half of fused MTg 1 and 2. This ridge bears a median sulcus and is split posteriorly into two ridges ending in a row of granules directed laterally. Lateral lobes granulate, margins slightly concave, tubercular mesonotal margin visible from above. Disk smooth with 2(1+1) comma-shaped elevations laterad of median ridge, separated from the latter by a deep groove.

Metanotum fused with MTg 1 and 2, forming a hexagonal plate. Anterolateral lobes granulate, its lateral margins also slightly concave, tuberculate margin of metapleuron visible from above. Disk with 2 (1 + 1) smooth comma-shaped elevations anteriorly, with coarse granulation and longitudinal rugosities posteriorly. MTg 2 demarcated by irregular transverse rows of tubercles laterad of a wedge-like median elevation which reaches from posterior margin into the cleft median ridge. This elevated wedge-like sclerite is enlarged at base and longitudinally sulcate on posterior 2/3. Basolateral angles with 2 (1 + 1) short ridges delimiting the sublateral glabrous impressions.

Abdomen. Tergal disk formed by fused MTg 3 to 6 with convex lateral margins and depressed glabrous impressions delimited by elevated ridges. Disk elevated along median line which is highest on MTg 4. Dorsal external laterotergites with subparallel lateral margins, slightly enlarging posteriorly. DELTg 1 to 3 fused but marked by a notch on the narrow visible rim of ventral laterotergites, extending anteriorly to lateral lobes of metanotum. Posteroexterior angles of DELTg 3 to 7 increasingly protruding. Surface and lateral margins granular. MTg 7 in female with a transverse carina posteriorly. Paratergites 8 directed backward, conical, not reaching apex of tricuspidate tergite 9. MTg 7 in male raised medially for the reception of the pygophore. Paratergites 8 triangular, reaching level of posterior margin of DELTg 7.

Genitalia: Male genital structures. Visible portion of pygophore pyriform, with rugose surface, dorsally with a cleft median ridge which ends posteriorly in an oval pit with prominent carinate borders (Figs. 121-126). Parameres with anterolateral reflexed rounded lobe and a basal lateral projection, inner face with long setae (Figs. 101-120).

Venter. Pro-, meso- and metasterna flattened at middle, delimited by sutures. Male metasternum with 2(1+1) sublateral, rounded, prominent tubercles on anterior half which bear a small operculate opening subapically (Fig. 135-141, 144), their function not yet investigated. Pro-, meso- and metapleura with large suboval areas laterad of coxae, dorsally demarcated by a deep sulcate cleft and ventrally by a deep somewhat irregular furrow. Obtuse fingerlike setae which are thickened at their apices are present dorsally of both these clefts (Figs. 142-143). These areas are most probably evaporative surfaces and are unique to *Pondocoris* in the Carventinae. Sternites 1 to 3 fused, 4 to 7 separated by deep sulci. Spiracles 2 to 4 ventral, 5 to 7 lateral and visible from above, 8 subterminal.

Legs. Slender, trochanters fused with cylindrical femora, only on hind femora marked by a thin suture. Claws with two bristle-like parempodia and long, thin pseudopulvilli.

Discussion: The genus resembles *Dundocoris* Hoberlandt only superficially and can easily be separated by the elongate subparallel body outline; the presence and shape of the uninterrupted median ridge extending from mesonotum to MTg 2; the metanotum fused with MTg 1 and 2; the two conspicuous tubercles on metasternum; and by the peculiar pilose areas on the thoracic pleura, which are not known in other Carventinae.

Specimens of *Pondocoris* can be divided into two distinct morphological species. Cytogenetical studies have, however, shown that four different chromosome numbers are present in *Pondocoris latebrosus* (Hoberlandt).

All populations sampled are homogeneous regarding chromosome number and three of the four "cytoforms" seem to be associated with particular geographical areas as follows:

1. the 22XY populations occur from Umtamvuma forest at Port Edward southwards to Dwesa forest near the southern border of the former Transkei.

2. the 12XY populations occur in the coastal dune forests of northern Kwazulu-Natal from Maphelana near St. Lucia northwards to Manzengwenya.
3. the 10XY populations have been found in the central Kwazulu-Natal coastal forests from Umhlanga Rocks southwards to Scottburgh.

The 14XY populations are the exception as they seem to occur at isolated spots, usually montane forests, over a very large area. They are very common in the Dhlinsa and Ngoye forests in northern Kwazulu-Natal, but have also been found in the coastal forest at Umdoni Park near Scottburgh in central Kwazulu-Natal and more than 400 km southwest from there in the montane forest at Hogsback in the Eastern Cape.

The chances that viable and fertile offspring will be produced if for example the 22XY and 14XY forms are crossed is slim as many meiotic abnormalities would probably occur. Strictly according to the biological species concept these cytoforms should be regarded as good species which will leave us with a sibling species complex. I am not a proponent of the biological species concept and after careful consideration I have decided to describe these cytoforms as subspecies, as a better alternative does not presently exist. I shall defend and explain this decision more fully in Chapter 12.

Pondocoris latebrosus was described from a single male from "Pondoland" (now part of the Eastern Cape) by Hoberlandt (1959). From this fact as well as certain morphological traits I am convinced that the holotype belongs to the 22XY cytoform which will accordingly be described as the nominate subspecies. *Pondocoris latebrosus* is redescribed to bring the description in line with the others in this work and to facilitate the description of the other subspecies.

6.1.1 Redescription of *Pondocoris latebrosus* (Hoberlandt) (Figs. 93-126, 135-143).

Dundocoris latebrosus Hoberlandt 1959:91
Pondocoris latebrosus (Hoberlandt) Heiss & Jacobs 1989:48

Length ♂ 4,4 - 5,8 mm; ♀ 5,2 - 7,0 mm.
Width ♂ 1,7 - 2,6 mm; ♀ 2,2 - 3,4 mm.

Apterous. Body coated with a pale yellowish brown incrustation, resulting in a general brownish grey appearance of uncleaned specimens. The following description is based on specimens with the incrustation removed.

Head: Longer (not including neck area) than its width across the eyes. Genae usually slightly diverging anteriorly. Clypeus with a prominent subapical tubercle. Antennae 1,5-1,7 times as long as width across eyes, first segment thickest, slightly curved and tapering towards base, extending beyond apex of genae by less than half but more than a third of its length; second segment slightly curved basally, gradually thickened towards apex; third segment longest and thinnest, pedicellate; fourth segment fusiform, with a short pedicel, conical apex pilose; relative lengths of segments: 9,25:6:10:7,5.

Postocular tubercles usually not reaching to level of outer margins of the eyes. Neck slightly constricted just behind the head.

Thorax: Dorsum. Pronotum 2,8-3,0 times as wide as long (including collar). Lateral lobes prominent, elevated and reflexed, densely granulate, lateral margins strongly concave, produced anteriad to level of collar or beyond. Disk smooth and shining with some irregular excavations, mainly posterolaterally. Hind margin of pronotum reinforced with a transverse bar-like thickening which ends adjacent to median groove in 2(1+1) toothlike nodules.

Mesonotal disk with 2(1+1) smooth, comma-shaped areas laterad of median ridge, remainder irregularly excavated. Lateral lobes granulate and lateral margins straight or slightly concave, slightly converging anteriad. Median ridge fairly narrow, separated from disk by a longitudinal furrow which is crossed at posterior margin by a transverse row of nodules; median ridge split by a prominent longitudinal suture along its total length.

Metanotum completely fused with MTg 1 and 2, only sculpture indicates the relative positions of the different tergites. Metanotal disk with 2(1+1) smooth comma-shaped elevations anteriorly, lateral of median ridge, rest irregularly excavated but a transverse row of tubercles posteriorly indicates its border with MTg 1. Lateral lobes granulate and lateral margins straight or slightly concave, semiparallel. Median ridge fused with that of mesonotum, although a transverse (usually incomplete) suture may often indicate the border; the median ridge extends posteriorly on MTg 1 before it swerves laterally and continues as a transverse row of tubercles at the posterior margin of MTg 1.

MTg 2 with sublateral ridges prominent and usually with a wedge-like elevation medially which penetrates anteriorly between the split median ridge. The wedge-like elevation is enlarged at its base and longitudinally sulcate on its posterior two-thirds. In the subspecies *decimus* the wedge-like elevation is replaced by a slender median longitudinal bar which penetrates the split median ridge, flanked by 2(1+1) longitudinal ridges on MTg 2.

Venter: Collar present ventrally of lateral tubercles only as a very narrow rim on anterior margin. Prosternum with an inverted T-shaped elevation, bearing a longitudinal depression. Mesosternum with a large oval, finely rastrate area that is strongly depressed. Metanotum of female also with a finely rastrate, depressed oval area, that of male with an elongate oval, finely rastrate, depressed area, laterally delimited by 2(1+1) large, oval, strongly elevated, shining protuberances which usually bear a prominent tubercle with an operculate opening. (Only in *Pondocoris latebrosus decimus* the tubercle on the protuberance is absent). In the females only a small tubercle situated more laterally, anterior to the metacoxa, is usually present.

Legs: Trochanter of hind legs demarcated by a thin suture, completely fused with femur in other legs.

Abdomen: Dorsum. Tergal disk only slightly elevated along median line. Carinae separating glabrous impressions prominent. Surface between carinae and impressions areolate, especially along margins of carinae. Posterior nodulate transverse ridge on MTg 7 of females well developed but may be interrupted medially.

Venter: Intersegmental sutures 3/4, 4/5 5/6 and 6/7 complete, reaching lateral margins of body. Spiracle 2 ventral, 3 + 4 sublateral, placed between 1 and 2 spiracle widths from margin, 5-7 lateral and visible from above, 8 subterminal on paratergites.

Genitalia: Visible part of pygophore (Figs 121-126) broadly oval with a rugose surface, dorsally with 2(1+1) subtriangular ridges separated by a cleft which ends ventrally just dorsal of an oval pit with prominent carinate borders. Dorsally (the part usually obscured by MTg 7) as in Figs 122, 124 & 126. Parameres as in Figs 101 to 120.

Chromosome number: 2n(♂) = 10XY, 12XY, 14XY, or 22XY depending on the subspecies.

Habitat and distribution: Coastal and montane evergreen forests of Kwazulu-Natal and the Eastern Cape. (Fig. 87).

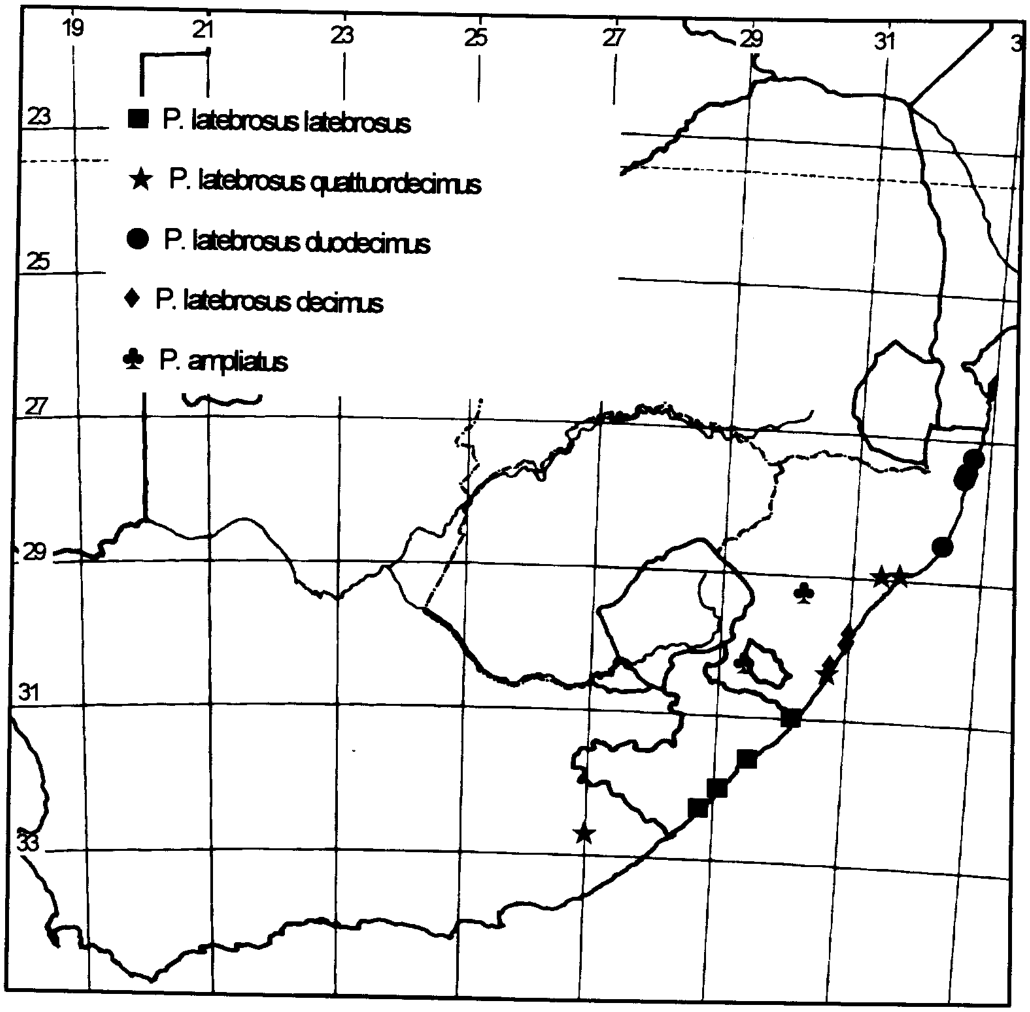


Figure 87. Distribution map of *Pondocoris* species and subspecies.

Discussion *Pondocoris latebrosus* can be distinguished from *Pondocoris ampliatus*, the only other species known in the genus, as discussed under the latter species. As mentioned before the four cytoforms of *Pondocoris latebrosus* are described as subspecies and they are very difficult to distinguish from one another without cytogenetical preparations. In each of them the chromosome number seems to be constant and no hybrid forms have been found.

6.1.1.1 *Pondocoris latebrosus latebrosus* (Hoberlandt) (Figs 93, 97, 101-105, 121-122, 135-138, 142-143).

Length ♂ 4,5 - 5,8 mm; ♀ 5,3 - 7,0 mm.

Width ♂ 1,9 -2,6 mm; ♀ 2,2 - 3,4 mm.

Diagnostic measurements are given in Table 6.1. The nominate subspecies is very similar to both *duodecimus* and *quattuordecimus* but can be distinguished from both by having its tergal disk distinctly wider than long (about 1,05 times as wide as long). It also has a stouter body form than the above-mentioned two subspecies, the males being about 2,3 times as wide as long and the females about 2,1 times. The males give the impression that the abdomen is widest over the posterior margin of the fifth segment but when measured this distance proves to be equal to the distance over the posterior margin of the fourth segment. In *duodecimus* and quattuordecimus, however, the abdomen is the wider over the posterior margin of the fourth segment than over the fifth segment.

Table 6.1. Measurements (in mm) of *Pondocoris latebrosus latebrosus* (Hoberlandt).

STRUCTURE		MALES				FEMALES			
		N[♦]	Mean	SD	Range[$]	N[♦]	Mean	SD	Range[$]
Total	length	20	5.23	0.381	4.52-5.78	20	6.08	0.459	5.33-6.94
	width	20	2.29	0.169	1.91-2.54	20	2.87	0.226	2.21-3.34
Head	length	20	1.00	0.051	0.87-1.09	20	1.09	0.065	0.99-1.24
	width	20	0.89	0.033	0.80-0.95	20	0.96	0.044	0.89-1.05
Pronotum	length	20	0.59	0.057	0.44-0.66	20	0.65	0.070	0.52-0.79
	width	20	1.66	0.126	1.32-1.86	20	1.92	0.138	1.61-2.20
Tergal disk	length	20	1.39	0.099	1.15-1.56	20	1.76	0.131	1.48-2.01
	width	20	1.49	0.106	1.27-1.68	20	1.84	0.136	1.50-2.15
Antennal segments	I	20	0.42	0.018	0.38-0.45	20	0.44	0.019	0.41-0.48
	II	20	0.27	0.013	0.24-0.31	20	0.29	0.015	0.26-0.33
	III	20	0.45	0.035	0.40-0.53	20	0.48	0.035	0.41-0.54
	IV	20	0.31	0.012	0.29-0.34	20	0.32	0.018	0.29-0.36

$ May include measurements of specimens other than those used for statistical analysis.
♦ Five individuals from each of the following localities: Port St. Johns, Dwesa forest, Mpame forest and Umtamvuma forest.

Although *decimus* also has the tergal disk wider than long it can easily be distinguished from *latebrosus* by lacking the wedge-like elevation on MTg 2, by not having a tubercle on the elevations of the metasternum in the males, and by being smaller.

There is a difference in the average size of individuals in different populations of the nominate subspecies: those from Umtamvuma forest at Post Edward seem to be larger than those from other localities.

Chromosome number: 2n(♂) = 22XY.

Habitat and distribution: Coastal forests at Port Edward, the southern border of Kwazulu-Natal and in the Eastern Cape.

MATERIAL EXAMINED: **SOUTH AFRICA: Kwazulu-Natal**. 74♂♂ 40♀♀: Umtamvuma forest, nr. Port Edward, 31°03'S 30°11'E, 28.i.1983, D.H. Jacobs (DHJS); **Eastern Cape**. 65♂♂ 48♀♀: Mount Thesiger Nature Reserve, Port St. Johns, 31°37'S 29°31'E, 4-5.xii.1981, D.H. Jacobs (DHJS); 50♂♂ 42♀♀: Port St. Johns, Transkei, 31°38'S 29°32'E, 2-6.xii.1981, D.H. Jacobs (DHJS); 2♀♀: Ntsubane forest, 31°27'S 29°44'E, 25.xi.1987, E-Y: 2537, fungi & forest litter, leg. Endrödy-Younga (TMSA); 48♂♂ 78♀♀: Mpame forest, Transkei, 32°05'S 29°02'E, 12.xii.1981, D.H. Jacobs (DHJS); 32♂♂ 89♀♀ Dwesa forest, Transkei, 32°18'S 28°50'E, 10-13.xii.1981, D.H. Jacobs (DHJS).

6.1.1.2 *Pondocoris latebrosus decimus* subspec. nov. (Figs 96, 100, 116-120, 138-139).

Length: ♂ 4,4 - 5,0 mm; ♀ 5,2 - 6,0 mm.
Width: ♂ 1,9 - 2,3 mm; ♀ 2,3 - 3,0 mm.

Diagnostic measurements are given in Table 6.2. *Pondocoris latebrosus decimus* is the subspecies which is easiest to recognize morphologically. It differs from all other subspecies by having the wedge-like elevation on MTg 2 replaced by a single longitudinal median, elongate fusiform bar, flanked by two parallel longitudinal ridges, and in the males, by the absence of the tubercles on the protuberances of the metasternum. It can also be distinguished from *duodecimus* and *quattuordecimus* by being more broadly oval in general facies (males about 2.25 times as long as wide and females 2,08 times) and having the tergal disk distinctly wider than long (about 1,06 times as wide as long).

Table 6.2. Measurements (in mm) of *Pondocoris latebrosus decimus* subspec. nov.

STRUCTURE		MALES					FEMALES				
		HT*	N♦	Mean	SD	Range	AT#	N♦	Mean	SD	Range
Total	length	4.71	10	4.74	0.142	4.41-4.93	5.50	10	5.57	0.216	5.24-5.94
	width	2.06	10	2.10	0.078	1.97-2.24	2.61	10	2.68	0.147	2.35-2.92
Head	length	0.83	10	0.85	0.023	0.81-0.89	0.93	10	0.94	0.027	0.90-0.99
	width	0.80	10	0.81	0.021	0.78-0.86	0.88	10	0.88	0.037	0.82-0.95
Pronotum	length	0.55	10	0.55	0.028	0.51-0.62	0.60	10	0.62	0.029	0.55-0.67
	width	1.55	10	1.56	0.057	1.47-1.69	1.77	10	1.77	0.055	1.63-1.85
Tergal disk	length	1.26	10	1.30	0.052	1.19-1.38	1.60	10	1.62	0.047	1.53-1.70
	width	1.35	10	1.38	0.046	1.30-1.47	1.66	10	1.71	0.082	1.52-1.85
Antennal segments	I	0.37	10	0.37	0.011	0.34-0.39	0.39	10	0.38	0.017	0.35-0.42
	II	0.24	10	0.25	0.011	0.23-0.27	0.25	10	0.26	0.013	0.24-0.29
	III	0.39	10	0.40	0.017	0.38-0.44	0.41	10	0.44	0.023	0.40-0.48
	IV	0.30	10	0.29	0.013	0.27-0.32	0.30	10	0.32	0.013	0.30-0.35

*** HT = holotype. # AT = allotype.**
♦ 3♂♂,5♀♀ from Stainbank Nature Reserve and 7♂♂,5♀♀ from Umhlanga Rocks Nature Reserve.

Chromosome number: 2n(♂) = 10XY.

Habitat and distribution: So far it has only been collected in the coastal evergreen forests of central Kwazulu-Natal, from Scottburgh in the south to Umhlanga Rocks in the north (Fig. 87).

Etymology: decem (L) = ten, referring to the chromosome number of the subspecies.

MATERIAL EXAMINED: **SOUTH AFRICA, Kwazulu-Natal**. ♂ holotype: Umhlanga Rocks Nature Reserve, nr. Durban, 29°42′S 31°04′E, 11.ix.1991, D.H. Jacobs (TMSA); ♀ allotype: ditto (TMSA); 36 paratypes as follows: 9♂♂ 9♀♀: Same data as holotype (DHJS, TMSA); 1♀: nr. Durban, 29°45′S 31°04′E, 4.iv.1980, D.H. Jacobs (DHJS); 5♂♂ 11♀♀: Stainbank Nature Reserve, Durban, 29°55′S 30°56′E, 2.xi.1989, D.H. Jacobs (DHJS, TMSA); 1♀: nr. Scottburgh, 30°15′S 30°46′E, 25.i.1983, D.H. Jacobs (DHJS).

6.1.1.3 *Pondocoris latebrosus duodecimus* subspec. nov. (Figs 95, 99, 111-115, 125-126, 137, 140-141).

Length: ♂ 4,5 - 5,3 mm; ♀ 5,6 - 6,3 mm.

Width: ♂ 1,7 - 2,2 mm; ♀ 2,4 - 3,0 mm.

Diagnostic measurements are given in Table 6.3. The differences of *duodecimus* with the previous two subspecies have been discussed under them. Although I have spent a long time comparing series of *duodecimus* and quattuordecimus I could find no clearcut and reliable morphological differences between them. The antennae of *duodecimus* in relation to the width of head seem on average to be shorter (1,56x in males and 1,50x in females versus 1,71x and 1,64x respectively), the antenniferous lobes seem to be shorter, DELTg 7 seems to be less produced and the tubercles on the metasterna of the males seem to be larger. However, there are many individual exceptions to this and it would only be helpful in identification if long series are available. The only reliable way of distinguishing between these subspecies at present is their different chromosome number and they also seem to be allopatric so that locality renders a good indication of identity.

Table 6.3. Measurements (in mm) of *Pondocoris latebrosus duodecimus* subspec. nov.

STRUCTURE		MALES					FEMALES				
		HT*	N♦	Mean	SD	Range$	AT#	N♦	Mean	SD	Range$
Total	length	5.01	12	4.95	0.154	4.52-5.28	6.15	11	5.96	0.195	5.62-6.25
	width	1.98	12	2.01	0.078	1.79-2.14	2.69	11	2.69	0.132	2.41-2.96
Head	length	0.95	12	0.94	0.039	0.85-1.03	1.08	11	1.05	0.032	0.98-1.11
	width	0.83	12	0.83	0.027	0.77-0.90	0.94	11	0.93	0.034	0.86-0.99
Pronotum	length	0.54	12	0.54	0.029	0.45-0.59	0.62	11	0.61	0.032	0.56-0.66
	width	1.51	12	1.51	0.054	1.38-1.61	1.79	11	1.76	0.072	1,65-1.86
Tergal disk	length	1.32	12	1.35	0.048	1.22-1.48	1.81	11	1.77	0.085	1.68-1.90
	width	1.28	12	1.34	0.065	1.20-1.44	1.80	11	1.74	0.068	1.63-1.86
Antennal segments	I	0.38	12	0.37	0.012	0.33-0.39	0.41	11	0.41	0.013	0.38-0.45
	II	0.25	12	0.25	0.008	0.23-0.27	0.27	11	0.26	0.008	0.24-0.28
	III	0.39	12	0.40	0.020	0.35-0.44	0.42	11	0.44	0.018	0.39-0.50
	IV	0.29	12	0.28	0.015	0.25-0.31	0.29	11	0.29	0.010	0.27-0.32

*** HT = holotype. # AT = allotype.**
$ May include measurements of specimens other than those used for statistical analysis.
♦ 4♂♂,4♀♀ from Manzengwenya, 4♂♂,4♀♀ from Lake Sibayi and 4♂♂,3♀♀ from Sordwana Bay.

Chromosome number: 2n(♂) = 12XY.

Habitat and distribution: Coastal forest in Northern Kwazulu-Natal from Maphelana just south of St. Lucia northwards to Manzengwenya forest (Fig. 87).

Etymology: Duodecem (L) = twelve, referring to the chromosome number of the subspecies.

MATERIAL EXAMINED: **SOUTH AFRICA: Kwazulu-Natal**. ♂ holotype: Manzengwenya, Kwazulu, 27°16′S 32°46′E, 3-7.xii.1980, D.H. Jacobs (TMSA); ♀ allotype: ditto (TMSA); 92 paratypes as follows: 3♂♂ 3♀♀: Manzengwenya forest, 27°13′S 32°47°E, 7.xii.1980, D.H. Jacobs (DHJS); 32♂♂ 22♀♀: Same data as holotype (TMSA, DHJS); 11♂♂ 5♀♀: Lake Sibayi, Kwazulu, 27°25′S 32°43′E, 5.xii.1980, D.H. Jacobs (DHJS, TMSA); 6♂♂ 3♀♀: Sordwana Bay, Natal, 27°32′S 32°40′E, 23.vii.1977, D.H. Jacobs (DHJS, TMSA); 4♂♂ 3♀♀: nr. Maphelana, Natal, 28°26′S 32°25′E, 10.xii.1980, D.H. Jacobs (DHJS, TMSA).

6.1.1.4 *Pondocoris latebrosus quattuordecimus* subspec. nov. (Figs 94, 98, 106-110, 123-124, 136).

Length: ♂ 4,7 - 5,8 mm; ♀ 5,5 - 7,0 mm.
Width: ♂ 1,9 - 2,5 mm; ♀ 2,3 - 3,1 mm.

Table 6.4. Measurements (in mm) of *Pondocoris latebrosus quattuordecimus* subspec. nov.

STRUCTURE		MALES					FEMALES				
		HT*	N♦	Mean	SD	Range$	AT#	N♦	Mean	SD	Range$
Total	length	5.44	10	5.36	0.254	4.71-5.76	6.34	10	6.40	0.348	5.59-6.92
	width	2.21	10	2.19	0.133	1.92-2.44	2.97	10	2.85	0.153	2.39-3.09
Head	length	1.06	10	1.04	0.040	0.96-1.11	1.21	10	1.16	0.067	0.92-1.25
	width	0.88	10	0.88	0.037	0.82-0.96	1.02	10	0.98	0.043	0.82-1.03
Pronotum	length	0.57	10	0.58	0.037	0.49-0.66	0.66	10	0.64	0.028	0.56-0.69
	width	1.69	10	1.67	0.086	1.46-1.80	1.95	10	1.90	0.109	1.66-2.06
Tergal disk	length	1.45	10	1.43	0.089	1.27-1.59	1.90	10	1.86	0.102	1.65-2.04
	width	1.38	10	1.39	0.073	1.24-1.51	1.86	10	1.80	0.093	1.60-1.98
Antennal segments	I	0.44	10	0.43	0.015	0.39-0.45	0.48	10	0.47	0.032	0.38-0.53
	II	0.29	10	0.29	0.008	0.27-0.31	0.32	10	0.30	0.023	0.25-0.33
	III	0.48	10	0.47	0.020	0.43-0.51	0.51	10	0.50	0.024	0.41-0.54
	IV	0.32	10	0.32	0.010	0.29-0.34	0.34	10	0.34	0.013	0.28-0.36

* HT = holotype. # AT = allotype.
$ May include measurements of specimens other than those used for statistical analysis.
♦ Five individuals from each of the following localities: Dhlinsa forest and Ngoye forest.

Diagnostic measurements are given in Table 6.4. Refer to the previous subspecies for differences with them.

Chromosome number: 2n(♂) = 14XY.

Habitat and distribution: Where the previous subspecies seems to be restricted to a particular geographic area, *quattuordecimus* seems to occur at selected spots, often montane forests, over a very large area from Hogsback in the Eastern Cape to Ngoye forest in northern Kwazulu-Natal (Fig. 87).

Etymology: Quattuordecem (L) = fourteen, referring to the chromosome number of the subspecies.

MATERIAL EXAMINED: **SOUTH AFRICA, Kwazulu-Natal**. ♂ holotype: Dhlinsa forest, Eshowe, 28°54'S 31°27'E, 12.iv.1980, D.H. Jacobs (TMSA); ♀ allotype: ditto (TMSA); 278 paratypes as follows: 84♂♂ 32♀♀: Ngoye Forest Reserve, nr. Empangeni, 28°50'S 31°43'E, 11-12.xii.1980, D.H. Jacobs (DHJS, TMSA); 10♂♂ 4♀♀: ditto, 22.viii.1985, (DHJS, TMSA); 59♂♂ 75♀♀: Same data as holotype (DHJS, TMSA); 1♂ 1♀: ditto, 21.viii.1985 (DHJS); 2♂♂ 9♀♀: Umdoni Park, nr. Scottburgh, 30°24'S 30°41'E, 27.i.1983, D.H. Jacobs (DHJS); **Eastern Cape**. 1♀: Schwarzwald forest, nr. Hogsback, 32°39'S 27°00'E, 16.xii.1981, D.H. Jacobs (DHJS).

6.1.2 *Pondocoris ampliatus* spec. nov. (Figs 127-134, 144).

Length: ♂ 5,1 - 5,5 mm; ♀ 5,5 - 6,4 mm.

Width: ♂ 2,3 - 2,7 mm; ♀ 2,8 - 3,2 mm.

Diagnostic measurements are given in Table 6.5. Apterous. Ovate body coated with a pale yellowish brown incrustation, resulting in a general brownish grey appearance. The following description is based on specimens with the incrustation removed.

Table 6.5. Measurements (in mm) of *Pondocoris ampliatus* spec. nov.

STRUCTURE		MALES					FEMALES				
		HT*	N♦	Mean	SD	Range	AT#	N♦	Mean	SD	Range
Total	length	5.38	10	5.34	0.080	5.18-5.45	6.16	10	6.13	0.213	5.59-6.40
	width	2.49	10	2.55	0.084	2.38-2.64	3.02	10	3.04	0.100	2.85-3.19
Head	length	1.00	10	1.03	0.042	0.96-1.11	1.09	10	1.09	0.035	1.02-1.14
	width	0.90	10	0.92	0.027	0.88-0.97	0.97	10	0.97	0.026	0.92-1.01
Pronotum	length	0.62	10	0.62	0.018	0.58-0.65	0.62	10	0.63	0.029	0.57-0.67
	width	1.66	10	1.70	0.041	1.63-1.78	1.91	10	1.86	0.064	1.71-1.92
Tergal disk	length	1.39	10	1.39	0.043	1.32-1.44	1.78	10	1.78	0.070	1.61-1.87
	width	1.68	10	1.66	0.050	1.58-1.73	2.01	10	1.97	0.068	1.79-2.04
Antennal segments	I	0.44	10	0.45	0.011	0.43-0.47	0.46	10	0.45	0.013	0.43-0.48
	II	0.33	10	0.33	0.024	0.28-0.36	0.36	10	0.35	0.015	0.32-0.37
	III	0.42	10	0.43	0.012	0.40-0.46	0.45	10	0.44	0.019	0.39-0.46
	IV	0.33	10	0.33	0.009	0.31-0.35	0.34	10	0.33	0.007	0.32-0.35

*** HT = holotype. # AT = allotype.**
♦ 7♂♂,10♀♀ from Shaws Wood farm, 2♂♂ from Sneezewood forest and 1♂ from Ehlatini farm.

Head: About 1,1 times as long (not including neck area) as width across eyes. Genae stout, straight or diverging anteriorly. Clypeus with a prominent subapical tubercle. Antenniferous lobes short, directed anterolaterally. Antennae 1,6-1,7 times as long as width across eyes; first segment thickest and subequal in length or very slightly longer than the third segment, slightly curved and tapering towards base; second segment slightly curved basally, gradually thickening towards apex, slightly longer than segment four; third segment thinnest, slightly and evenly thickening towards apex, pedicellate; fourth segment fusiform, with a short pedicel, conical apex pilose; relative lengths of segments: 10,3:7,8:10:7,5. Postocular tubercles small, not reaching to level of outer margins of eyes. Neck slightly constricted just behind the head.

Thorax: Dorsum. Pronotum 2,75-3 times as wide as long. Lateral lobes elevated and reflexed, densely granulate, produced anteromesad to level of collar, or slightly beyond, lateral margins concave. Disk smooth and shining, with uneven surface. Longitudinal median groove narrow and usually shallow.

Mesonotum shorter and wider than pronotum. Disk with 2(1+1) comma-shaped smooth areas lateral of median ridge, remainder irregularly excavated. Lateral lobes granulate, lateral margins straight, converging anteriad. Median ridge separated from disk by longitudinal furrow which is posteriorly crossed by a transverse row of nodules; median ridge split by a prominent median suture or furrow along its total length, deeper and wider than that of the previous species.

Metanotum completely fused with MTg 1 and 2 and even sculpture does not usually indicate the position of the different tergites Lateral lobes granulate, lateral margins straight, converging anteriad. Disk with 2(1+1) comma- or S-shaped smooth elevations anteriorly, rest irregularly excavated. Median ridge more or less fused with that of mesonotum, although dorsally and laterally it sometimes seems to be built up by a series of irregular longitudinal elongate elevations. The ridge curves laterad just posterior of the metanotum and fade into a transverse, irregularly nodulate, elevated part which presumably represents MTg 1. Medially on MTg 2 a longitudinal furrow is present which is flanked by elevated areas. This median furrow is continuous with the median sulcus of the median ridge of the meso- and metanotum, forming a straight prominent furrow which stretches from the anterior margin of the mesonotum to the posterior margin of MTg 2. In the vicinity of MTg 1 a bar-like elevation is usually present medially in the furrow, fading posteriorly in females but usually reaching the posterior margin of MTg 2 in males. (In some specimens this bar may be split by a median longitudinal fossula). Sublateral ridges on MTg 2 triangular, usually not prominent.

Venter. As in the previous species except that the longitudinal depression on the T-shaped elevation of the prosternum is not well defined and the tubercles on the metasternal protuberances of the male are very small or absent, somewhat reminiscent of the situation in *Pondocoris latebrosus decimus*.

Legs: Trochanters of all legs demarcated by a suture.

Abdomen: Dorsum. Tergal disk distinctly broader than long (1,2x in males, 1,1 in females), moderately elevated along median line. Carinae separating glabrous impressions prominent. Surface between carinae and impressions areolate, especially along margins of carinae. DELTg 1+2+3 and 4 in males strongly sloping lateroventrally (or, in dried specimens, the part posterior to the tergal disk is strongly upturned), DELTg 5 posteriorly widened and protuberant resulting that the abdomen is widest over posterior margin of tergite 5 and that lateral margin of body is concave. Lateral margin of the body of females convex, DELTg 1+2+3 and 4 not exceptionally sloping and abdomen widest across posterior part of tergite 4. Posterior nodulate transverse ridge on MTg 7 of female usually interrupted medially, anteriorly of this ridge 2(1+1) prominent elevations are usually present.

Venter. All intersegmental sutures complete, reaching lateral margin of body. Spiracle 2 ventral, 3-4 sublateral, placed between 1 and 2 spiracle widths from lateral margin; 5 just off the lateral margin and usually visible from above in females but not in males; 6-7 lateral and visible from above, 8 subterminal on paragites.

Genitalia: Pygophore as in Figs 133-134. Parameres as in Figs 129 to 132.

Chromosome number: 2n(♂) = 10XY.

Habitat and distribution: Inland montane evergreen forests in Kwazulu-Natal and the Eastern Cape (Fig 87).

Discussion: The males of *Pondocoris ampliatus* can easily be distinguished from the previous species by having either DELTg 1+2+3 & 4 sloping lateroventrally, resulting that the lateral margin of the body in concave (usually in fresh or alcohol preserved specimens), or having the abdomen behind the tergal disk strongly turned up (usually in dried mounted specimens); the carinate margin of the caudal pit on the pygophore is also more elongate oval, the tubercle on the metasternal protuberances is very small or obsolete and spiracle 5 is usually not clearly visible from above. Both sexes can be distinguished by the relative lengths of the antennal segments where segment 1 is subequal or longer than 3 and 2 is longer than 4, the prominent median longitudinal furrow on the tergum stretching back to the posterior margin of MTg 2 (thus lacking the wedge-like elevation on Mtg 2), the broadly ovate form of the body which is on average less than 2,1x as long as wide in males and less than 2,02 times in females and the posterior external angle of DELTg 3-6 which is much more produced. The only subspecies of *Pondocoris latebrosus* with which it may be confused is *decimus* but apart from differences mentioned above it has the median bar on MTg 1 and 2 not as prominent and it is larger and more rugged.

MATERIAL EXAMINED: **SOUTH AFRICA, Kwazulu-Natal**. ♂ holotype: Shaws Wood Farm, Karkloof, 29°19′S 30°18′E, 1.ii.1983, D.H. Jacobs (TMSA); ♀ allotype: ditto (TMSA); 45 paratypes as follows: 1♂: Ehlantini Farm, Karkloof, 29°19′S 30°17′E, 1.ii.1983, D.H. Jacobs (DHJS, TMSA). **Eastern Cape**. 5♂♂ 5♀♀: Sneezewood forest, nr. Umzimkulu, 30°15′S 29°27′E, 1.xii.1981, D.H. Jacobs (DHJS).

Table 6.6. Locality and numbers of individuals of *Pondocoris* taxa cytogenetically studied.

Locality	Co-ordinates	Date collected	No. of individuals cytogenetically studied
Pondocoris latebrosus latebrosus			
Umtamvuma forest, nr. Port Edward	31°03′S 30°11′E	28/i/1983	12
Mount Thesiger Nature Reserve, nr. Port St. Johns, Transkei	31°37′S 29°31′E	4-5/xii/1981	4
nr. Port St. Johns, Transkei	31°38′S 29°32′E	2-6/xii/1981	7
Mpame forest, Transkei	32°05′S 29°02′E	12/xii/1981	5
Dwesa forest, Transkei	32°18′S 28°50′E	10-13/xii/1981	6
Pondocoris latebrosus quattuordecimus			
Ngoye forest, nr. Empangeni	28°50′S 31°43′E	11-12/xii/1980	5
Dhlinza forest, Eshowe	28°54′S 31°27′E	12/iv/1980	8
Tugela river mouth	29°14′S 31°39′E	7/iv/1980	1
Umdoni Park, nr. Scottburgh	30°24′S 30°41′E	27/i/1983	4
Schwarzwald forest, nr. Hogsback	32°39′S 27°00′E	16/xii/1981	1
Pondocoris latebrosus duodecimus			
Manzengwenya, Kwazulu	27°13′S 32°47′E	7/xii/1980	2
Manzengwenya forest, Kwazulu	27°16′S 32°46′E	3-7/xii/1980	12
Lake Sibayi, Kwazulu	27°25′S 32°43′E	5/xii/1980	3
nr. Maphelana, Natal	28°26′S 32°25′E	10/xii/1980	4
Pondocoris latebrosus decimus			
nr. Durban	29°45′S 31°04′E	4/iv/1980	1
Stainbank Nature Reserve, Durban	29°55′S 30°56′E	2/xi/1989	4
nr. Scottburgh	30°15′S 30°46′E	25/i/1983	2
Pondocoris ampliatus			
Shaws Wood farm, Karkloof	29°19′S 30°18′E	1/ii/1983	10
Sneezewood forest, nr. Umzimkulu	30°15′S 29°27′E	1/xii/1981	3

6.2 Cytogenetics of the genus Pondocoris..

The localities and number of individuals of *Pondocoris* taxa that were cytogenetically studied are presented in Table 6.6. The course of meiosis is similar to that of *Adamanotus uncotibialis* and a true diffuse stage is present.

6.2.1 *Pondocoris latebrosus* (Figs 88-91, 145-152).

The four subspecies of *P. latebrosus* have different chromosome numbers, ranging from 2n = 10XY to 2n = 22XY. It is evident from the different chromosome numbers as well as the size distribution of the chromosomes that extensive karyotype evolution took place in this species and, as will be discussed later, the phylogenetic relationship between the subspecies is not clear.

6.2.1.1 *Pondocoris latebrosus latebrosus* (Figs 88, 145-146).

The chromosome number of *P. latebrosus latebrosus* is 2n = 22XY. The true and relative chromosome areas for *P. latebrosus latebrosus* are presented in Table 6.7 and an idiogram in Fig. 88. Two of the ten autosomes is markedly larger than the other eight which form a gradual size series. The larger sex chromosome (presumably the X) is slightly smaller than the largest autosome while the Y-chromosome is slightly larger than the third largest autosome.

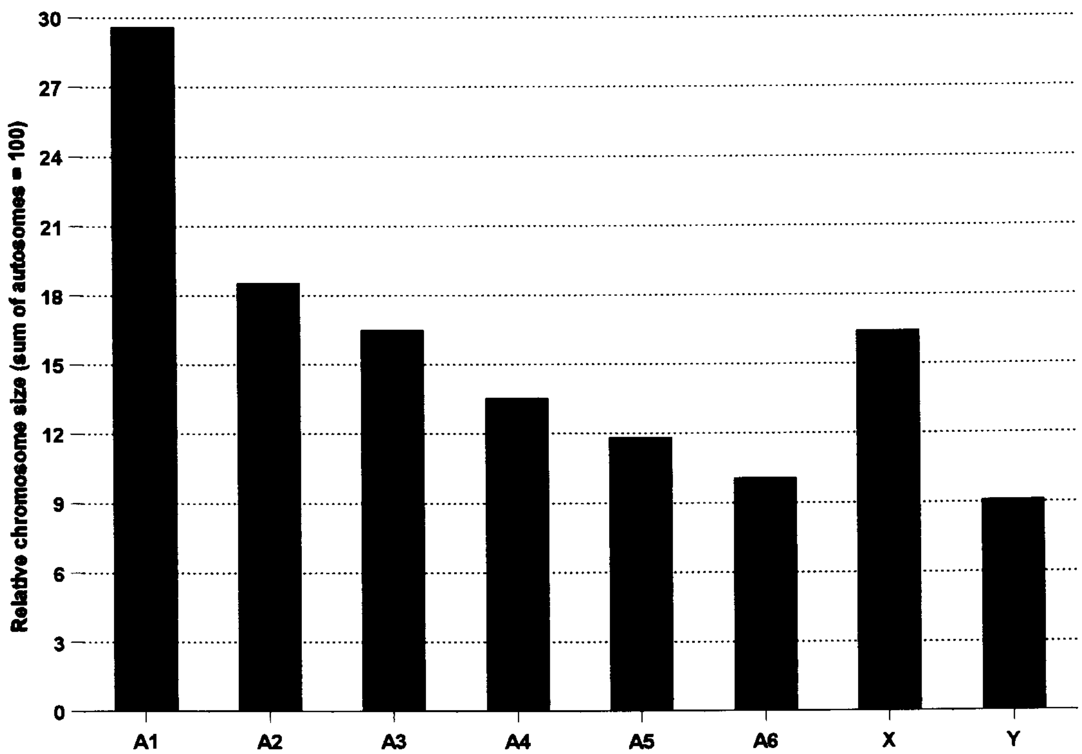


Figure 89. Idiogram of *Pondocoris latebrosus quattuordecimus*.

Table 6.7: True and relative chromosome areas of *P. latebrosus latebrosus*.

True chromosome areas (μm^2) and standard deviation.				Relative chromosome areas (% of total area of autosomes) and standard deviation.		
Chromosome	Port St. Johns	Dwesa forest	TOTAL	Port St. Johns	Dwesa forest	TOTAL
Individuals	3	2	5	3	2	5
Cells	11	7	18	11	7	18
A1	2.96(±0.49)	3.18(±0.50)	3.05(±0.49)	16.54(±0.68)	16.78(±0.93)	16.63(±0.77)
A2	2.28(±0.37)	2.54(±0.34)	2.38(±0.37)	12.76(±1.05)	13.47(±0.84)	13.03(±1.01)
A3	1.98(±0.25)	2.06(±0.37)	2.01(±0.30)	11.13(±0.49)	10.83(±0.54)	11.01(±0.52)
A4	1.83(±0.26)	1.96(±0.40)	1.88(±0.32)	10.28(±0.35)	10.27(±0.62)	10.27(±0.46)
A5	1.73(±0.20)	1.82(±0.33)	1.76(±0.25)	9.72(±0.51)	9.55(±0.37)	9.66(±0.46)
A6	1.60(±0.22)	1.71(±0.29)	1.64(±0.25)	8.97(±0.49)	9.01(±0.22)	8.98(±0.40)
A7	1.48(±0.21)	1.58(±0.30)	1.52(±0.25)	8.29(±0.30)	8.27(±0.37)	8.28(±0.32)
A8	1.43(±0.21)	1.51(±0.28)	1.46(±0.23)	8.02(±0.39)	7.94(±0.45)	7.99(±0.40)
A9	1.34(±0.18)	1.39(±0.19)	1.36(±0.18)	7.50(±0.36)	7.38(±0.51)	7.45(±0.42)
A10	1.22(±0.19)	1.24(±0.24)	1.23(±0.20)	6.80(±0.23)	6.50(±0.50)	6.68(±0.38)
X	2.67(±0.39)	2.84(±0.53)	2.74(±0.44)	14.97(±0.61)	14.97(±0.96)	14.97(±0.73)
Y	1.98(±0.26)	2.22(±0.39)	2.07(±0.33)	11.19(±1.44)	11.66(±0.53)	11.37(±1.17)
Autosomes	17.86(±2.43)	18.98(±3.09)	18.30(±2.68)			
All chromosomes	22.51(±2.94)	24.04(±3.97)	23.11(±3.35)			

6.2.1.2 *Pondocoris latebrosus quattuordecimus* (Figs 89, 147-149).

The chromosome number of *P. latebrosus quattuordecimus* is 2n = 14XY. The true and relative chromosome areas for *P. latebrosus quattuordecimus* are presented in Table 6.8 and an idiogram in Fig. 89.

One of the autosomes is markedly larger than the other 5 which form a gradual series.

Slight differences in the karyotype are present between the different localities, but the total pattern remain the same. For example: the five smaller autosomes form a more gradual series in the Dhlinsa forest and Umdoni Park populations while the larger two of these chromosomes is distinctly larger than the other three in the Ngoye and Schwarzwald populations (Figs 147-149). When interpreting the idiograms the reader should keep in mind that the size difference between two chromosomes that are more or less of equal size are usually amplified in the idiogram because of reversal in the order of chromosomes that is unavoidable in compiling these idiograms.

The X-chromosome is about the same size as the third largest autosome while the Y-chromosome is usually the smallest the smallest chromosome (except in the case of the specimens from Dhlinsa forest). As will be pointed out repeatedly and discussed later, large size differences in the sex chromosomes is common between localities and even between individuals from the same locality.

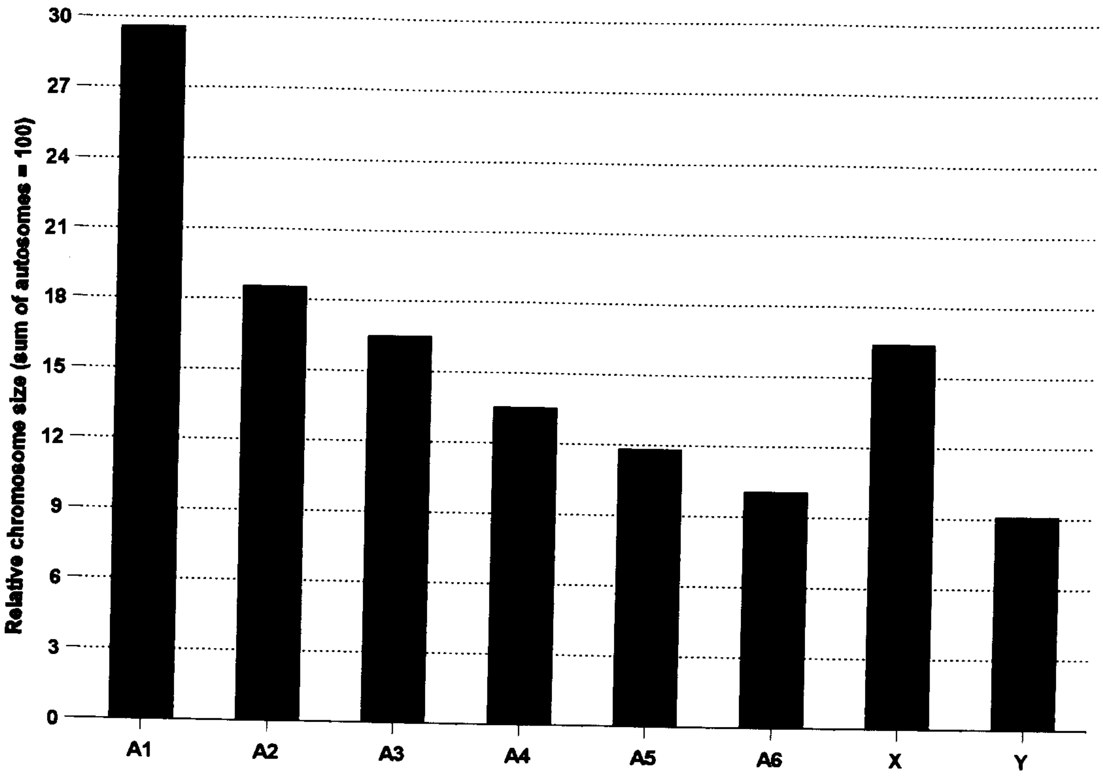


Figure 89. Idiogram of *Pondocoris latebrosus quattuordecimus*.

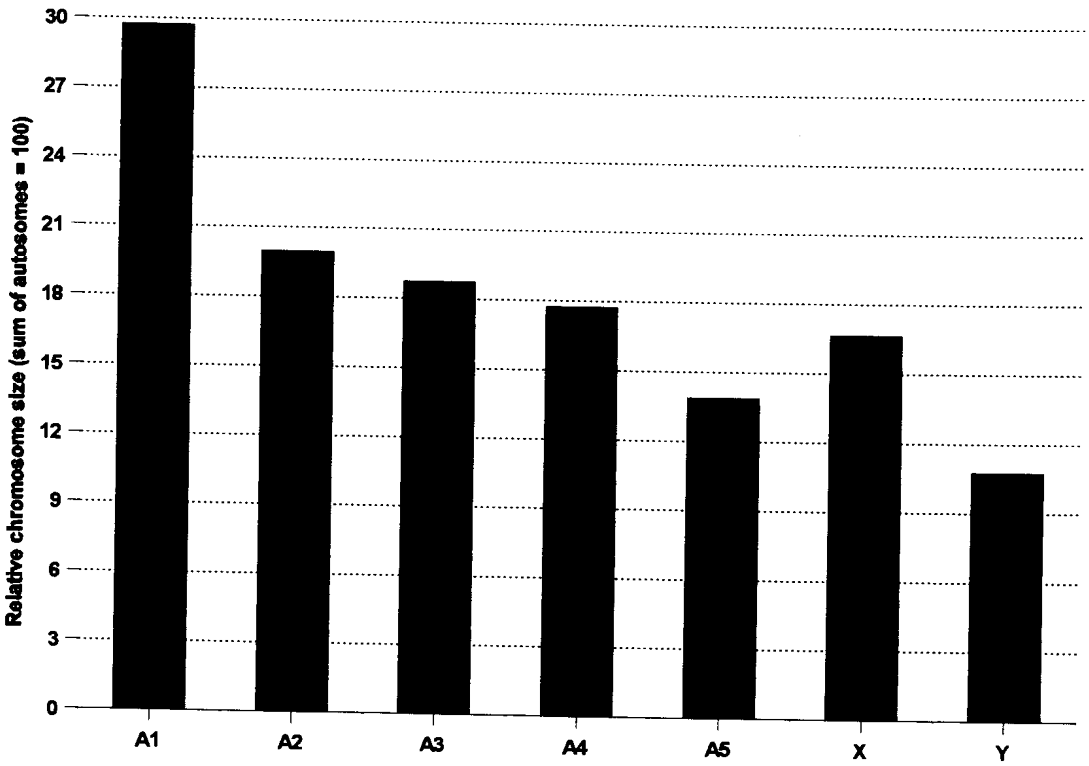


Figure 90. Idiogram of *Pondocoris latebrosus duodecimus*.

Table 6.9. True and relative chromosome areas of *P. latebrosus duodecimus*.

Relative chromosome areas (μm²) and standard deviation.				
Chromosome	**Manzengwenya forest**	**Maphelana**	**Lake Sibayi**	**TOTAL**
Individuals	3	3	1	7
Cells	13	10	4	27
A1	5.89(±1.27)	5.55(±0.78)	6.98(±0.80)	5.92(±1.12)
A2	3.91(±0.71)	3.67(±0.56)	5.01(±0.67)	3.99(±0.77)
A3	3.69(±0.72)	3.38(±0.45)	4.88(±0.61)	3.75(±0.78)
A4	3.51(±0.76)	3.15(±0.56)	4.79(±0.62)	3.57(±0.85)
A5	2.68(±0.51)	2.63(±0.39)	3.40(±0.50)	2.77(±0.52)
X	3.21(±0.49)	2.96(±0.40)	4.62(±0.60)	3.33(±0.72)
Y	2.04(±0.36)	1.87(±0.40)	3.34(±0.45)	2.17(±0.62)
Autosomes	19.68(±3.88)	18.37(±2.63)	25.05(±3.04)	19.99(±3.92)
All chromosomes	24.94(±4.62)	23.21(±3.38)	33.00(±4.05)	25.49(±5.15)
Relative chromosome areas (% of total area of autosomes) and standard deviation.				
A1	29.88(±1.50)	30.25(±1.58)	27.92(±1.65)	29.73(±1.68)
A2	19.94(±0.80)	19.98(±0.58)	19.98(±0.52)	19.96(±0.67)
A3	18.73(±0.67)	18.41(±0.61)	19.47(±0.42)	18.73(±0.69)
A4	17.80(±0.98)	17.06(±1.07)	19.11(±0.54)	17.72(±1.16)
A5	13.64(±0.62)	14.30(±0.65)	13.52(±0.52)	13.87(±0.69)
X	16.50(±1.57)	16.15(±0.91)	18.42(±0.68)	16.65(±1.44)
Y	10.45(±1.13)	10.10(±1.00)	13.30(±0.55)	10.74(±1.48)

6.6.1.3 ***Pondocoris latebrosus duodecimus*** (Figs 90, 151-152).

The chromosome number of *P. latebrosus duodecimus* is 2n = 12XY. The true and relative chromosome areas for this species are presented in Table 6.9 and an idiogram in Fig. 90. The largest autosome is markedly larger than the other four while the smallest one is distinctly smaller than the intermediate three which form a gradual series. The X-chromosome is somewhat smaller than the second smallest autosome while the Y-chromosome is the smallest chromosome in the complement.

6.2.1.4 ***Pondocoris latebrosus decimus*** (Figs 91, 150, 153-154).

The chromosome number of *P. latebrosus decimus* is 2n = 10XY. The true and relative chromosome areas for this subspecies are presented in Table 6.10 and an idiogram in Fig. 91. The four autosomes form a gradual series while both sex chromosomes are smaller than the smallest autosome. The Y-chromosome is distinctly smaller than the X-chromosome. The Y-chromosome in the specimen from Durban is markedly smaller than in the Scottburgh specimen.

Table 6.10. True and relative chromosome areas of *P. latebrosus decimus*.

	True chromosome areas (μm^2) and standard deviation.			Relative chromosome areas (% of total area of autosomes) and standard deviation.		
Chromosome	**Durban**	**Scottburgh**	**TOTAL**	**Durban**	**Scottburgh**	**TOTAL**
Individuals	1	1	2	1	1	1
Cells	6	7	13	6	7	13
A1	6.28(±0.37)	5.28(±0.88)	5.74(±0.84)	29.67(±0.72)	30.41(±1.11)	30.07(±0.99)
A2	5.97(±0.58)	4.75(±0.77)	5.31(±0.92)	28.20(±1.49)	27.35(±0.64)	27.74(±1.15)
A3	4.92(±0.42)	4.01(±0.67)	4.43(±0.72)	23.24(±1.36)	23.05(±0.77)	23.14(±1.04)
A4	3.99(±0.37)	3.33(±0.56)	3.64(±0.57)	18.89(±1.46)	19.19(±1.13)	19.05(±1.25)
X	3.63(±0.35)	2.94(±0.42)	3.26(±0.52)	17.13(±0.74)	17.00(±1.10)	17.06(±0.91)
Y	1.61(±0.19)	1.77(±0.29)	1.70(±0.25)	7.63(±0.80)	10.18(±0.81)	9.00(±1.53)
Autosomes	21.16(±1.36)	17.36(±2.81)	19.11(±2.93)			
All chromosomes	26.40(±1.78)	22.07(±3.46)	24.07(±3.52)			

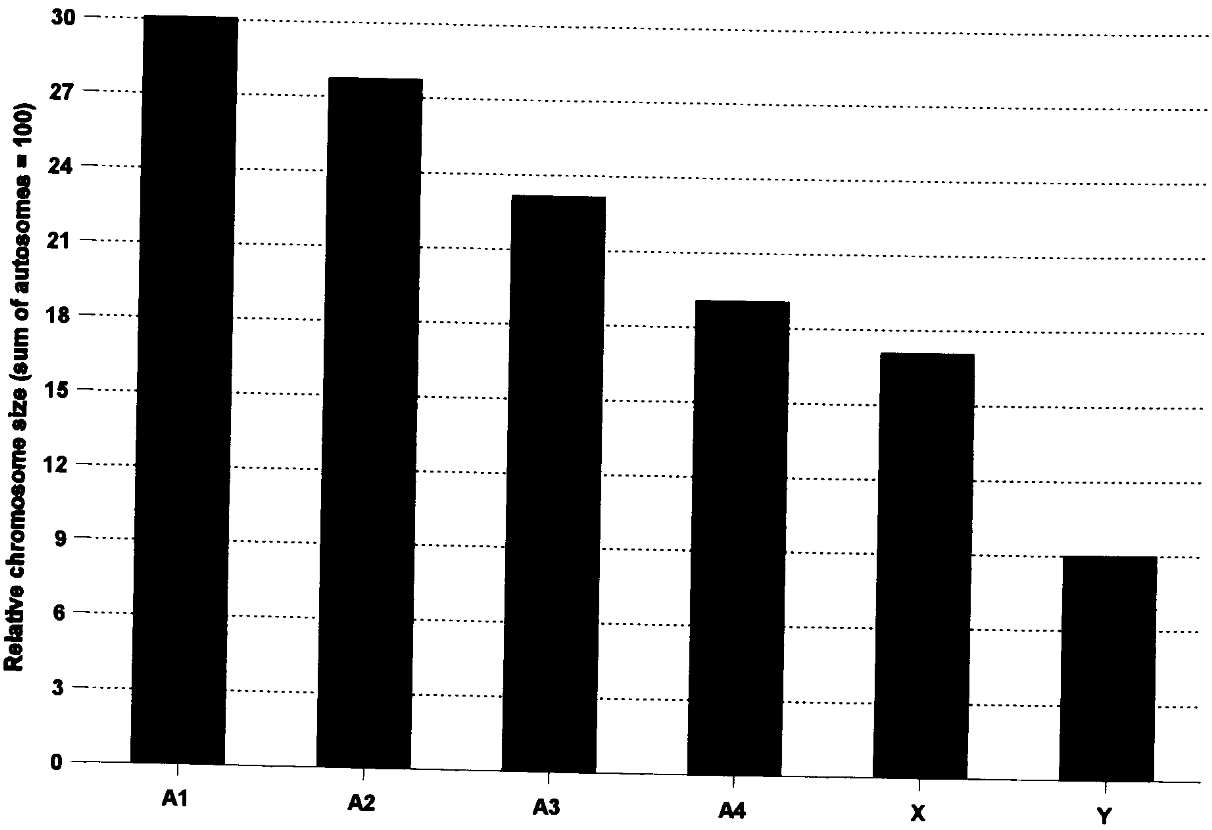


Figure 91. Idiogram of *Pondocoris latebrosus decimus*.

6.2.2 ***Pondocoris ampliatus*** (Figs 92, 155-156).

The chromosome number of P. ampliatus is 2n = 10XY. The true and relative chromosome areas for this species are presented in Table 6.11 and an idiogram in Fig. 92. The karyotype of this species is quite different from that of *P. latebrosus decimus* which has the same chromosome number. Two of the four autosomes are markedly larger than the other two while the X- and Y-chromosomes are the smallest two in the complement.

Table 6.11. True and relative chromosome areas of *P. ampliatus*.

	True chromosome areas (μm^2) and standard deviation.			Relative chromosome areas (% of total area of autosomes) and standard deviation.		
Chromosome	Karkloof	Sneezewood forest	TOTAL	Karkloof	Sneezewood forest	TOTAL
Individuals	3	1	4	3	1	4
Cells	12	4	16	12	4	16
A1	5.24(±0.74)	5.06(±1.00)	5.19(±0.78)	36.04(±1.57)	36.32(±0.80)	36.11(±1.39)
A2	4.34(±0.49)	3.95(±0.81)	4.24(±0.58)	29.93(±1.38)	28.33(±0.73)	29.53(±1.42)
A3	2.65(±0.43)	2.66(±0.35)	2.65(±0.40)	18.18(±0.94)	19.30(±1.45)	18.46(±1.15)
A4	2.30(±0.29)	2.24(±0.46)	2.28(±0.32)	15.85(±0.86)	16.05(±0.70)	15.90(±0.81)
X	2.06(±0.27)	2.01(±0.30)	2.04(±0.27)	14.23(±1.81)	14.55(±1.50)	14.31(±1.69)
Y	1.29(±0.20)	1.53(±0.19)	1.35(±0.22)	8.93(±1.13)	11.18(±1.51)	9.49(±1.55)
Autosomes	14.53(±1.83)	13.90(±2.60)	14.37(±1.97)			
All chromosomes	17.87(±2.13)	17.44(±2.96)	17.76(±2.26)			

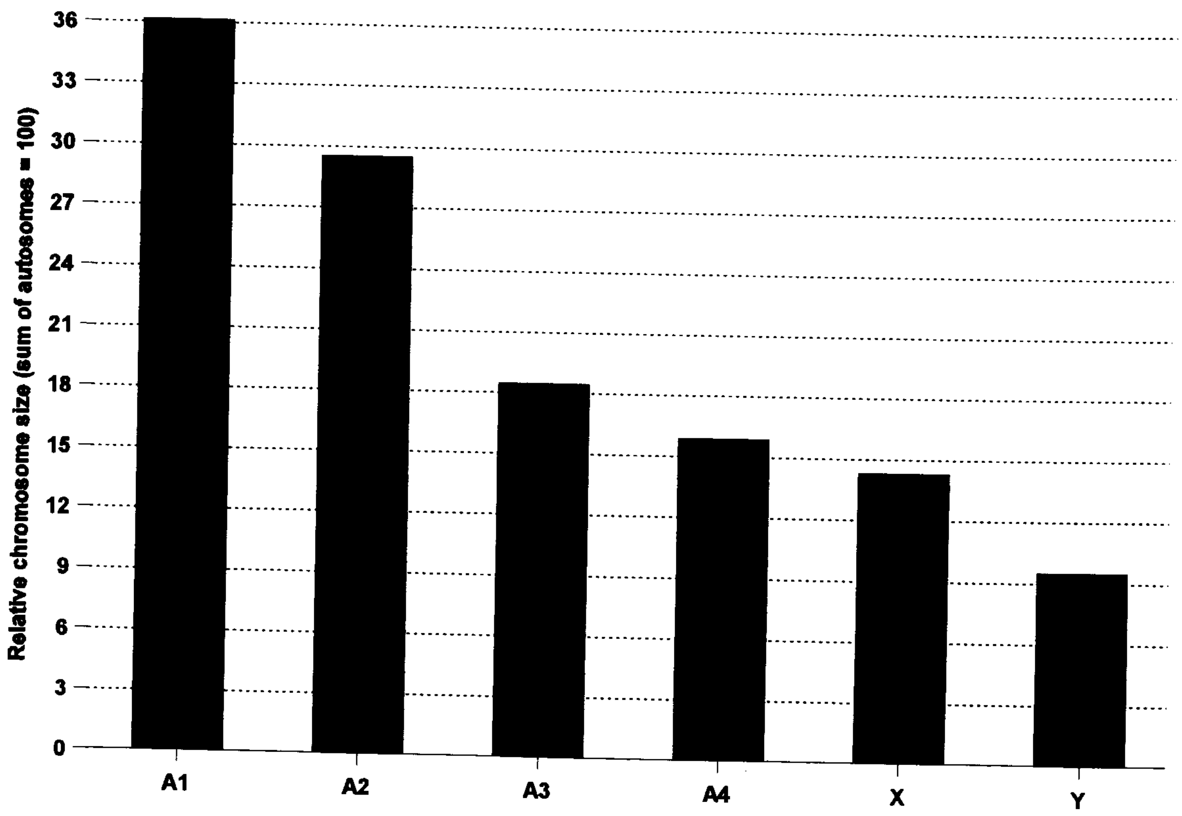


Figure 92. Idiogram of *Pondocoris ampliatus*.

6.2.3 Discussion:

Although the five taxa of Pondocoris belong to only two species, karyotype evolution has been extensive in this genus. *P. latebrosus quattuordecimus* exhibit the primitive chromosome number of 2n = 14XY but its karyotype is actually derived with the large autosome probably originated from the fusion of two smaller ones (also refer to 12.1.1 and 12.1.5). This would imply that an intermediate 16XY karyotype probably existed which could have arisen from the primitive 14XY by the fission of a autosome (probably the largest autosome in order to explain the chromosome size distribution in *P. latebrosus quattuordecimus*) or from an ancestor with a higher chromosome number.

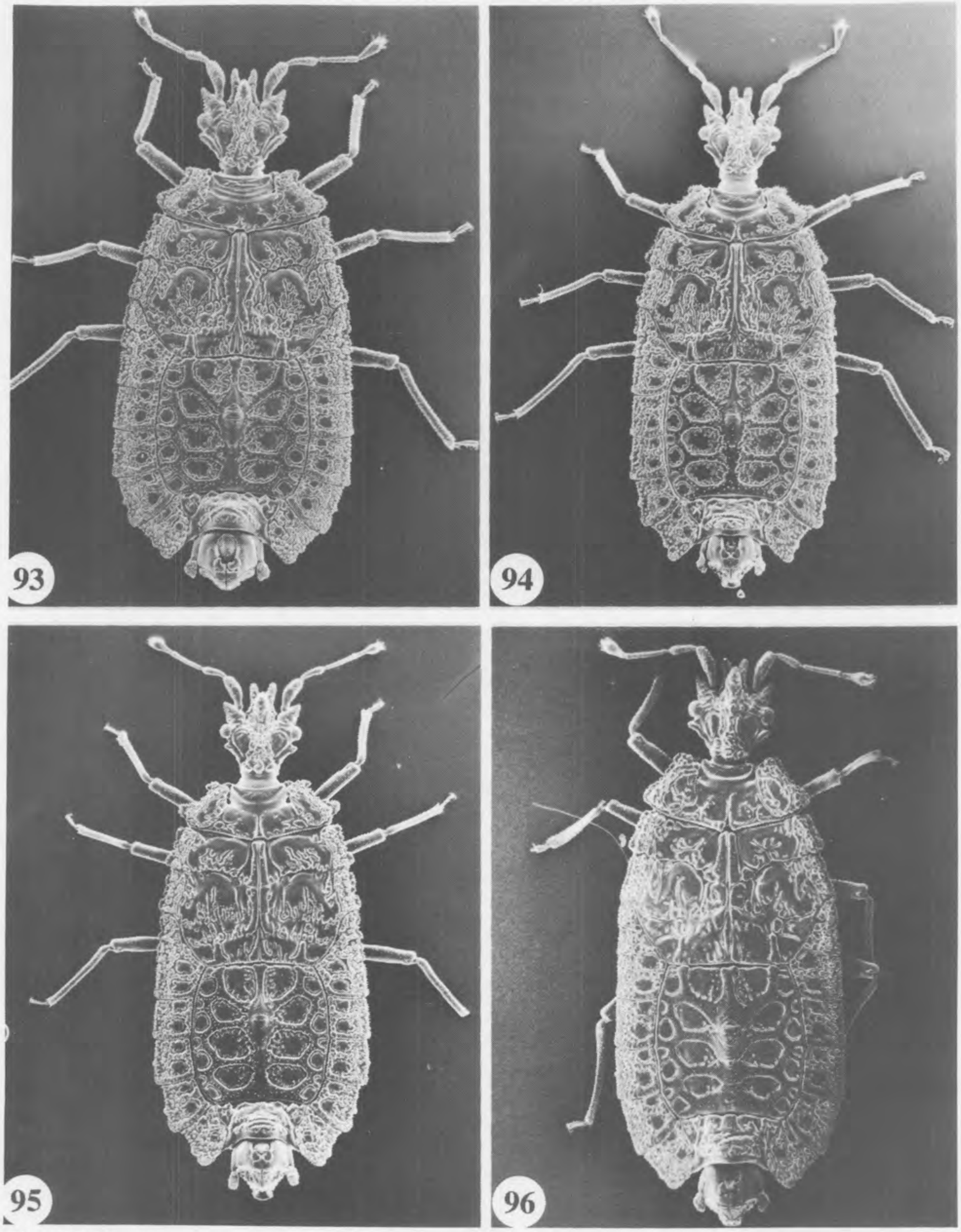
The karyotype of *P. latebrosus decimus* could have originated by fusion of autosomes A3 + A5 and A4 + A6 of *quattuordecimus*.

From the size distribution of the chromosomes of *P. ampliatus* it seems unlikely that it originated from *quattuordecimus* or *duodecimus*, but more probably from the postulated primitive 14XY karyotype by two fusions.

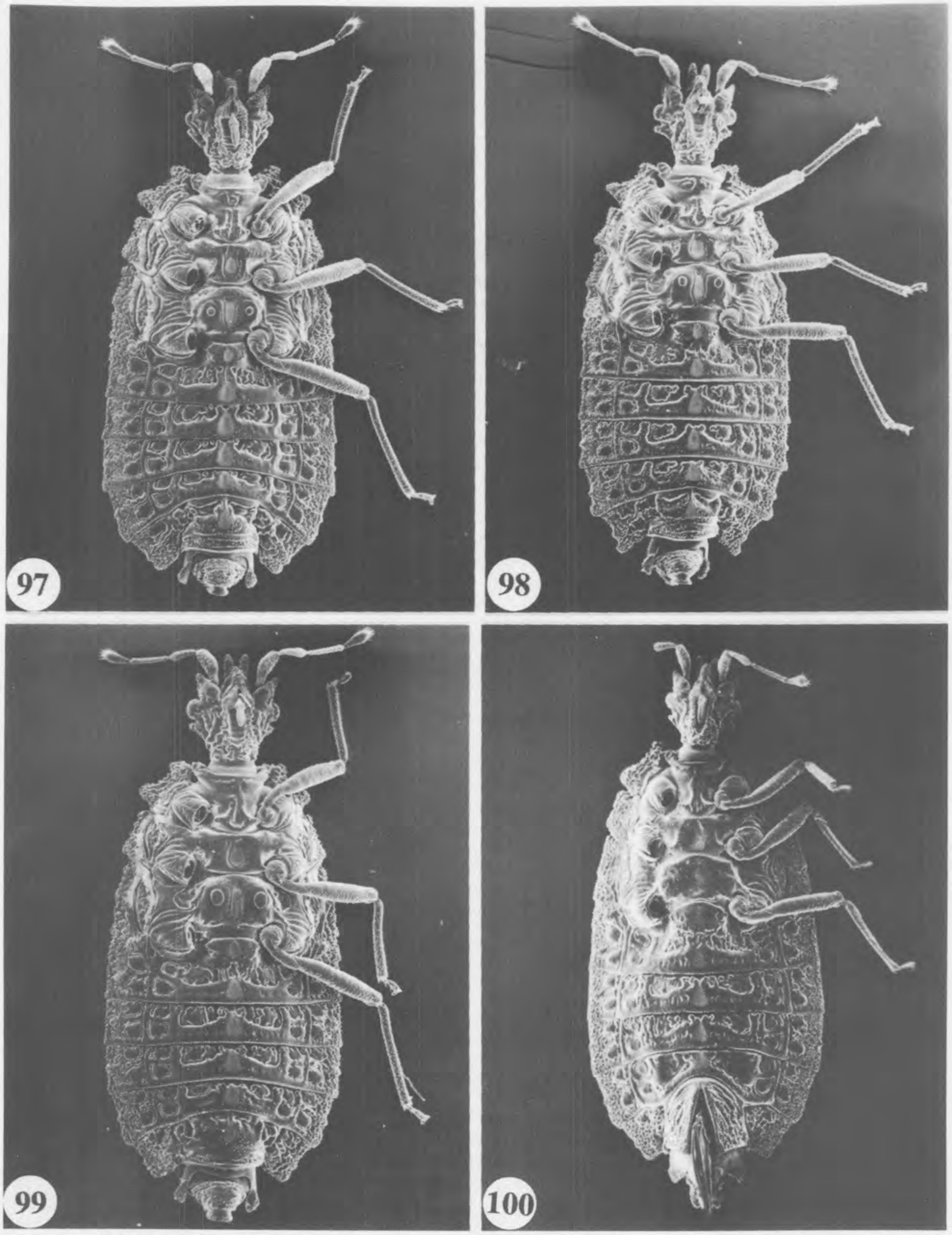
The origin of the karyotypes of *duodecimus* and *latebrosus* is more difficult to envisage. Although *duodecimus* has a large autosome which could have originated by the fusion of two autosomes of the primitive 14XY karyotype, the size distribution of its chromosomes does not fit into the scheme that can explain the origin of *quattuordecimus, decimus* and *ampliatus* from the same primitive 14XY karyotype. This implies that more than mere fusions and fissions took place in the karyotype evolution of these taxa or that more fusions and fissions took place or that the ancestral chromosome number for the genus is higher. The 22XY karyotype of *latebrosus* supports the latter view as it could possible have originated by 4 fissions from a 14XY karyotype or in one step by pseudoploidy from a 12XY karyotype or by pseudoploidy followed by two fusions of a 14XY karyotype. The unequal size of the two larger chromosomes in the *latebrosus* karyotype support the latter of these possibilities as they would have been expected to be of equal size if they originated by chromatid autonomy alone. (There have been many arguments against pseudoploidy and the whole issue will be discussed in 12.1.2)

The genus *Pondocoris* seems to be characterized by a low chromosome number and relatively small sex chromosomes. There is usually also a marked difference in the size of the X- and Y-chromosomes. The exception to all the above is *P. latebrosus latebrosus* with 2n = 22XY and the sex chromosome larger than most autosomes.

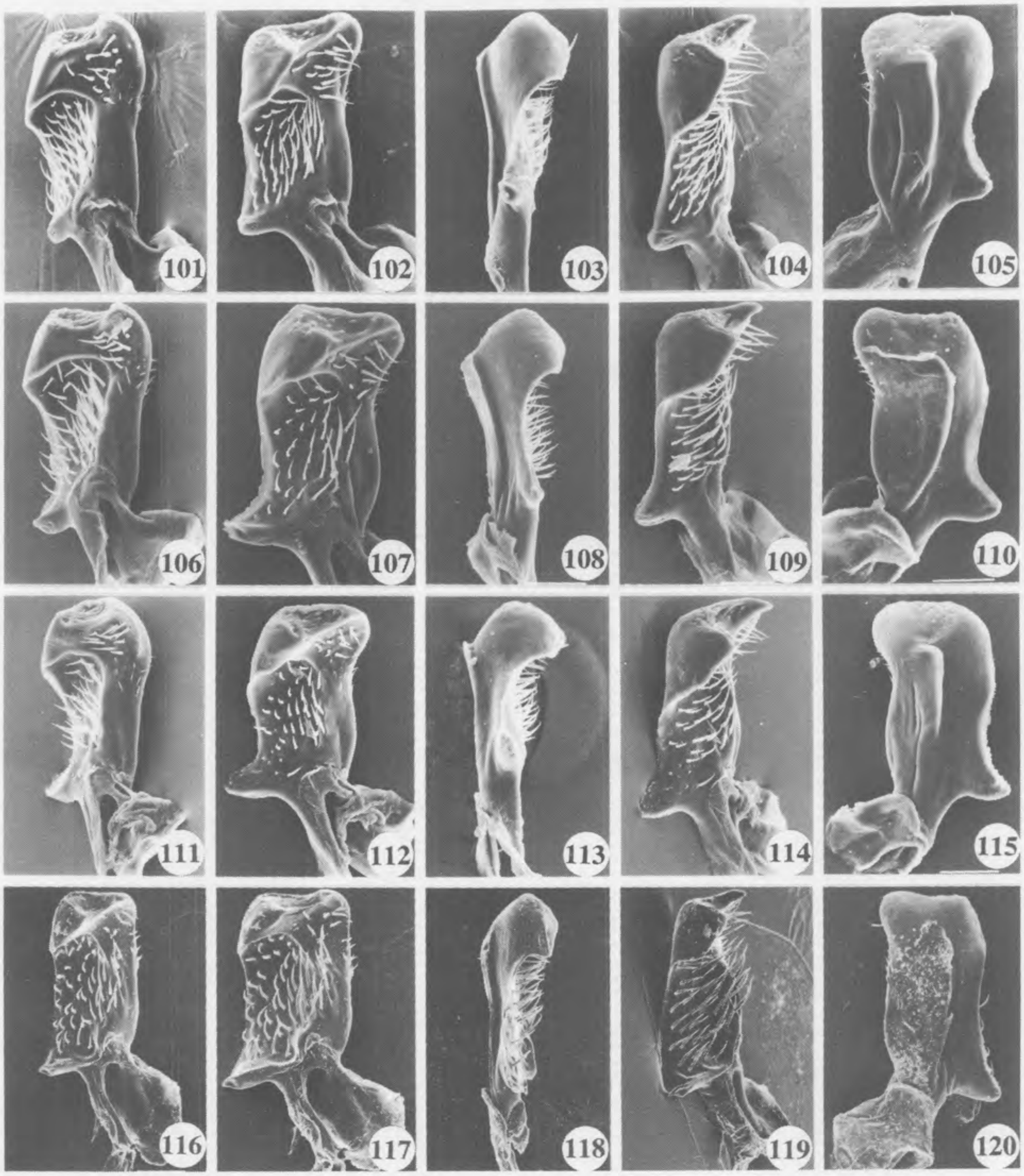
Karyotype evolution has outpaced morphological evolution in *Pondocoris* and this has led to some interesting problems in the classification of these taxa. Strictly according to the Biological Species Concept (BSC) the four subspecies of *P. latebrosus* should all have been described as separate species as it is not likely that these "chromosomal races" or "cytoforms" would be reproductively compatible as previously stated. The BSC has several weaknesses and I don't accept it unconditionally. I shall discuss this briefly and motivate and defend taxonomic decisions I took in 12.1.4.



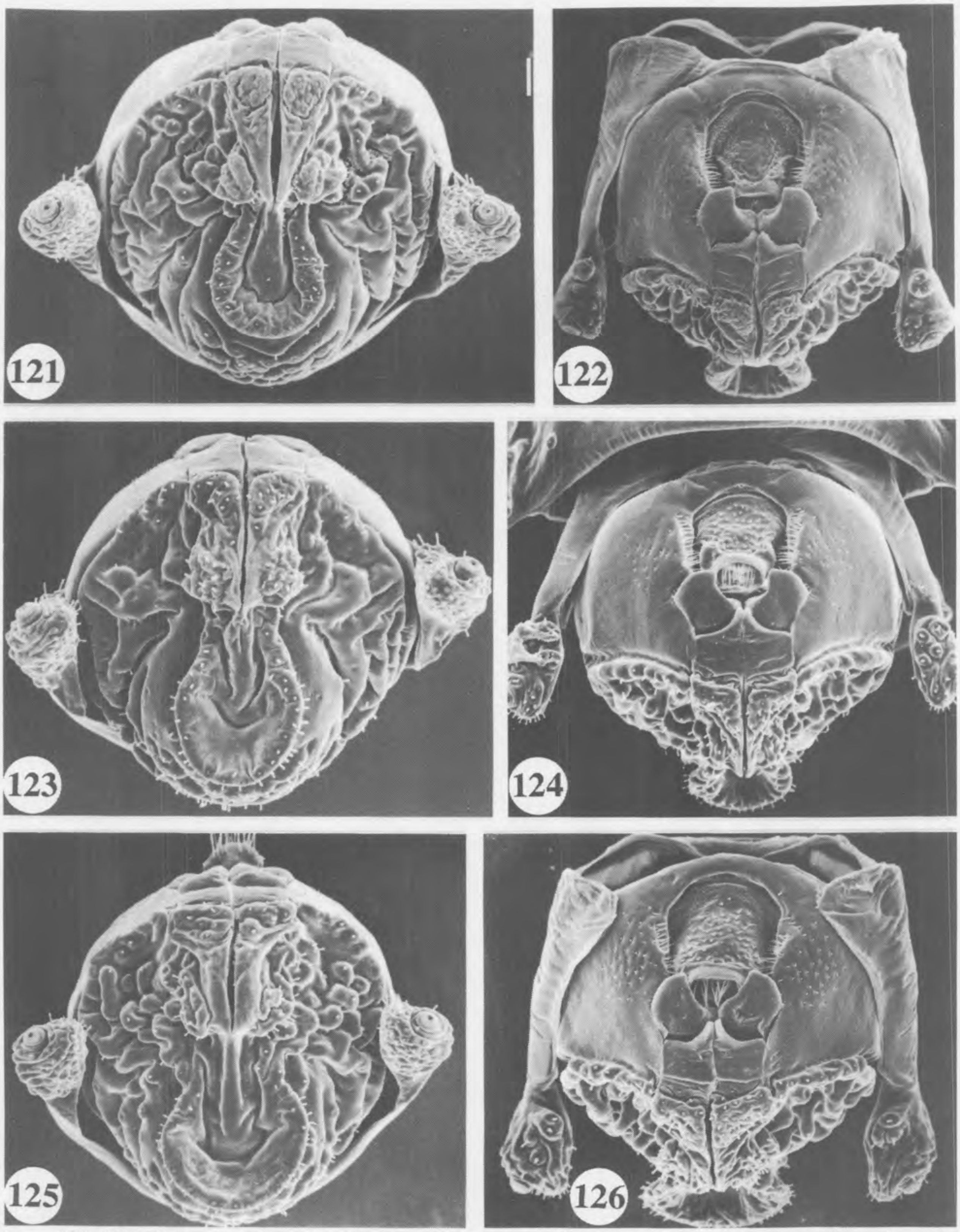
Figs 93-96. Scanning electron photomicrographs of the dorsal aspects of the subspecies of *Pondocoris latebrosus* (Hoberlandt). 93. *P. latebrosus latebrosus* (Hoberlandt), male. 94. *P. latebrosus quattuordecimus* **subspec. nov.**, male paratype. 95. *P. latebrosus duodecimus* **subspec. nov.**, male paratype. 96. *P. latebrosus decimus* **subspec. nov.**, male paratype.



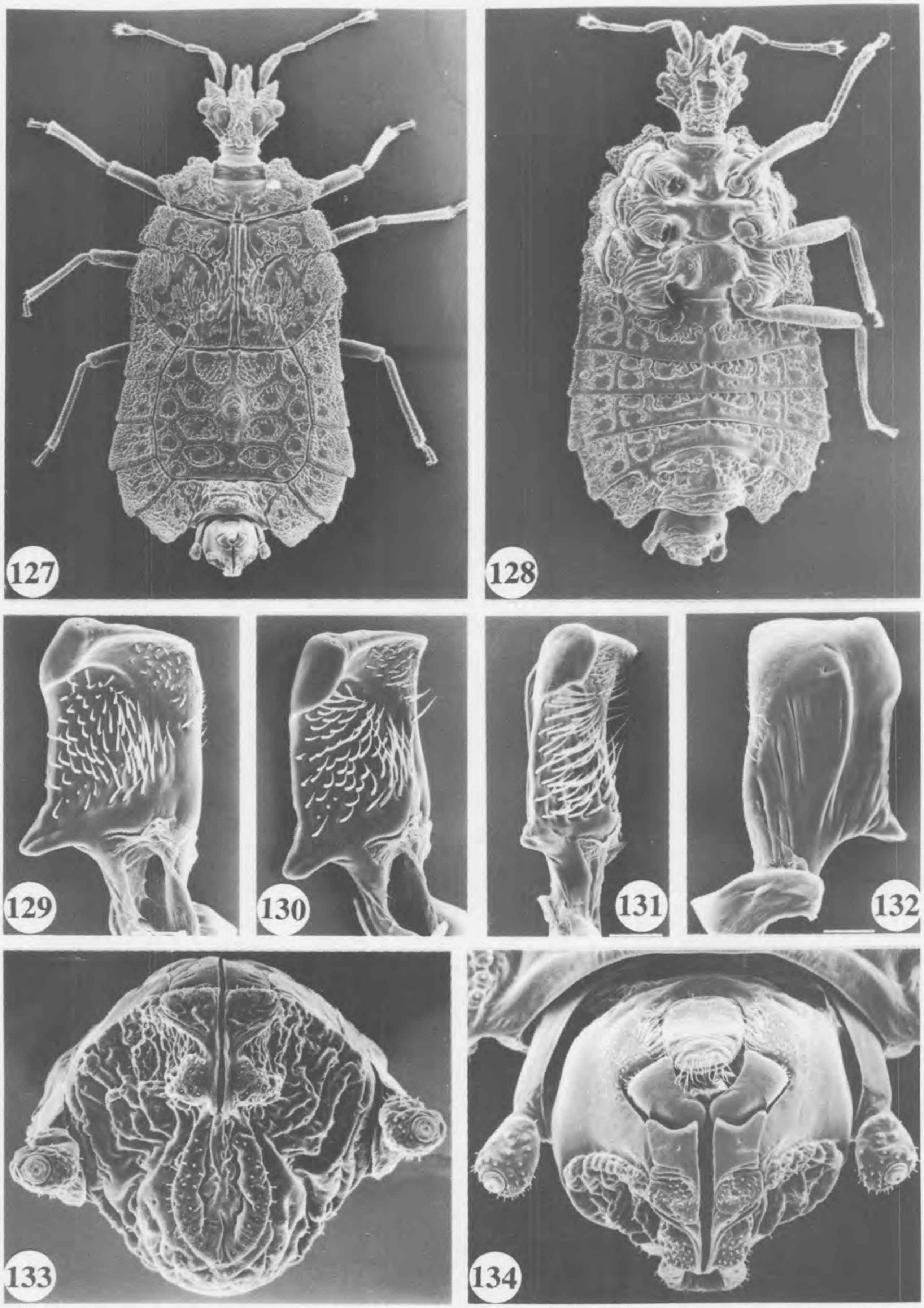
Figs 97-100. Scanning electron photomicrographs of the ventral aspects of the subspecies of *Pondocoris latebrosus* (Hoberlandt). 97. *P. latebrosus latebrosus* (Hoberlandt), male. 98. *P. latebrosus quattuordecimus* **subspec. nov.**, male paratype. 99. *P. latebrosus duodecimus* **subspec. nov.**, male paratype. 100. *P. latebrosus decimus* **subspec. nov.**, female paratype.



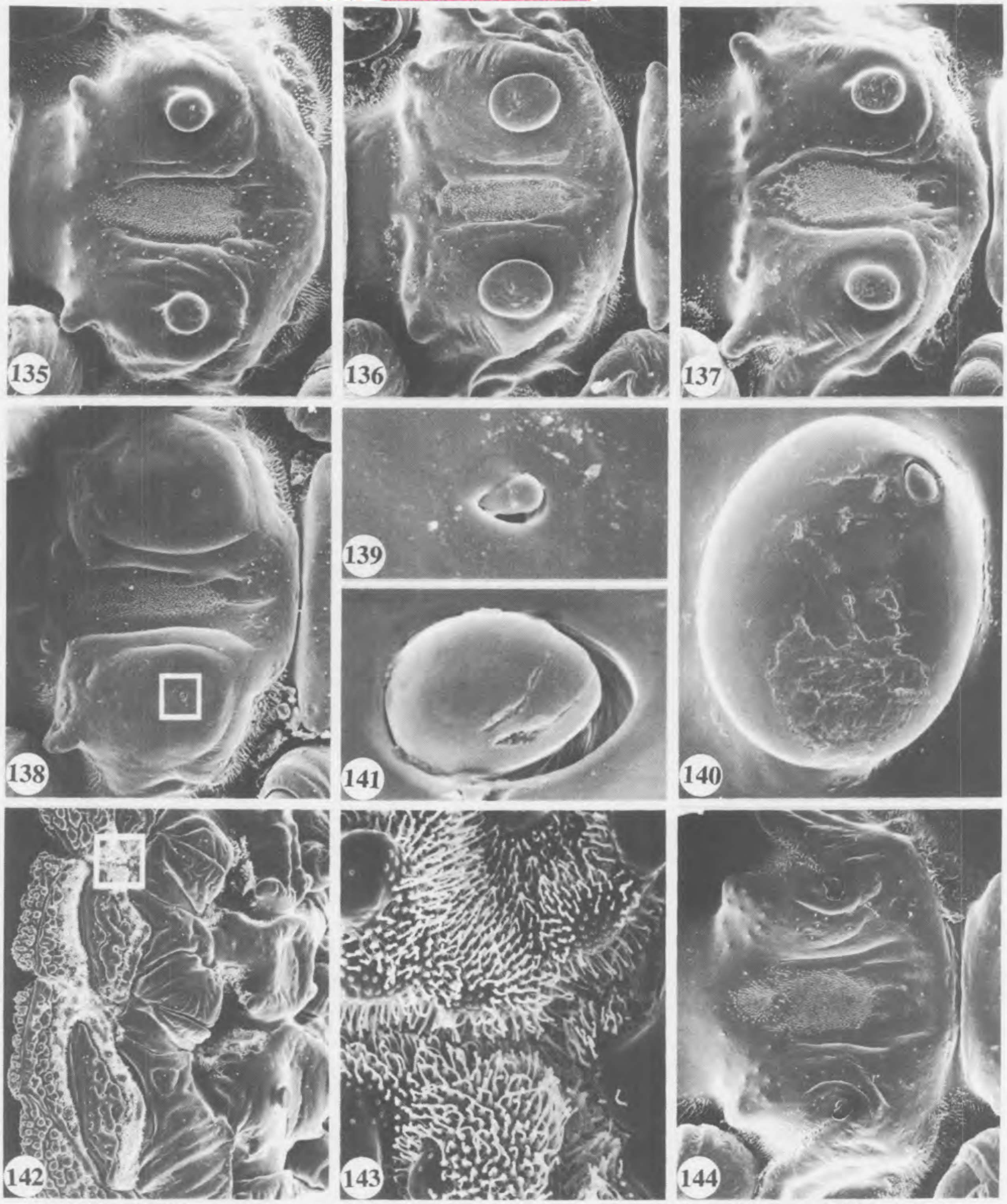
Figs 101-120. Scanning electron photomicrographs of different aspects of the left parameres of the subspecies of *Pondocoris latebrosus* (Hoberlandt). 101-105. *P. latebrosus latebrosus* (Hoberlandt). 106-110. *P. latebrosus quattuordecimus* **subspec. nov.** 111-115. *P. latebrosus duodecimus* **subspec. nov.** 116-120. *P. latebrosus decimus* **subspec. nov.**



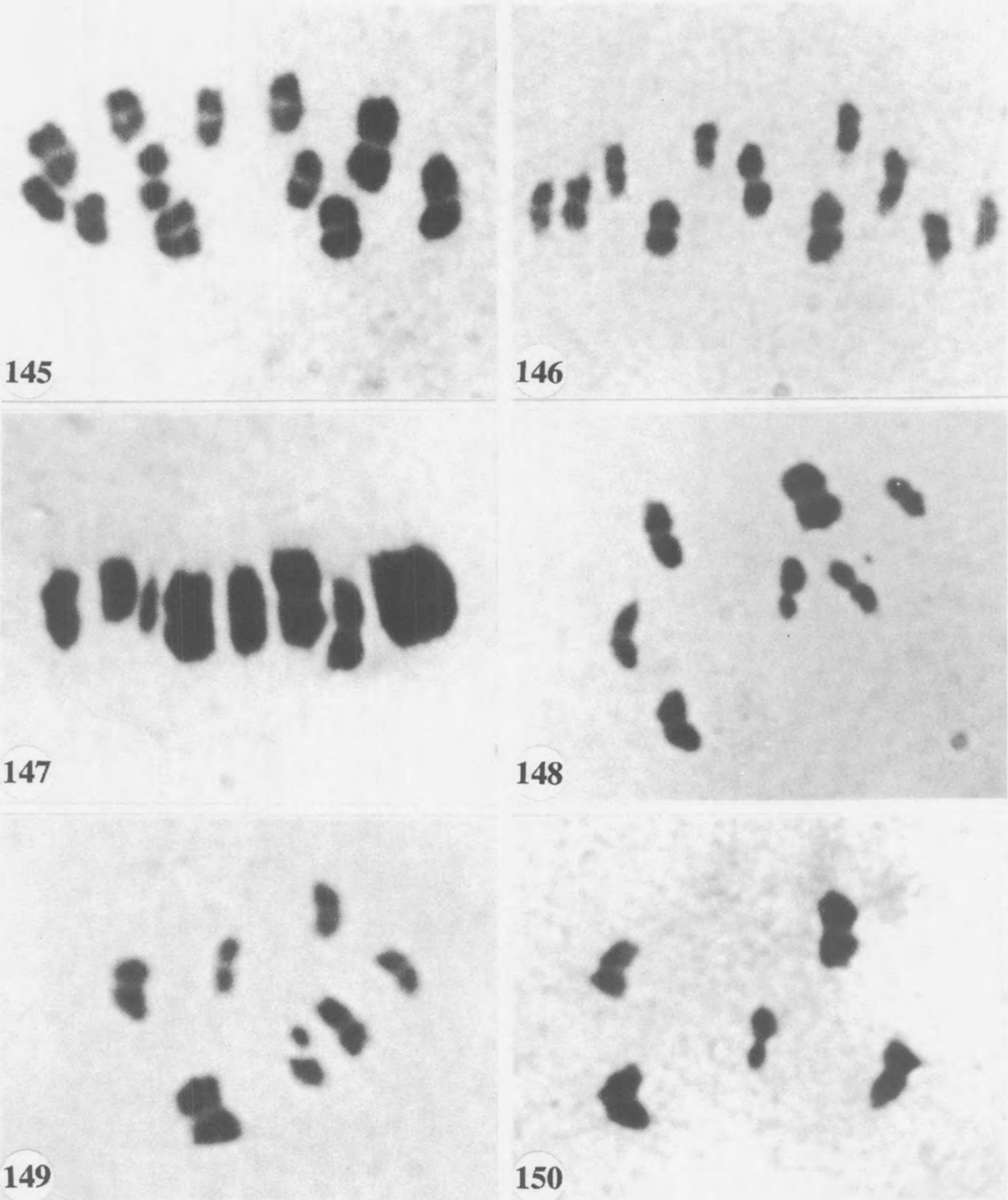
Figs 121-126. Scanning electron photomicrographs of the pygophores of some subspecies of *Pondocoris latebrosus* (Hoberlandt). 121-122. *P. latebrosus latebrosus* (Hoberlandt). 121. Caudal aspect. 122. Dorsal aspect. 123-124. *P. latebrosus quattuordecimus* **subspec. nov.** 123. Caudal aspect. 124. Dorsal aspect. 125-126. *P. latebrosus duodecimus* **subspec. nov.** 125. Caudal aspect. 126. Dorsal aspect.



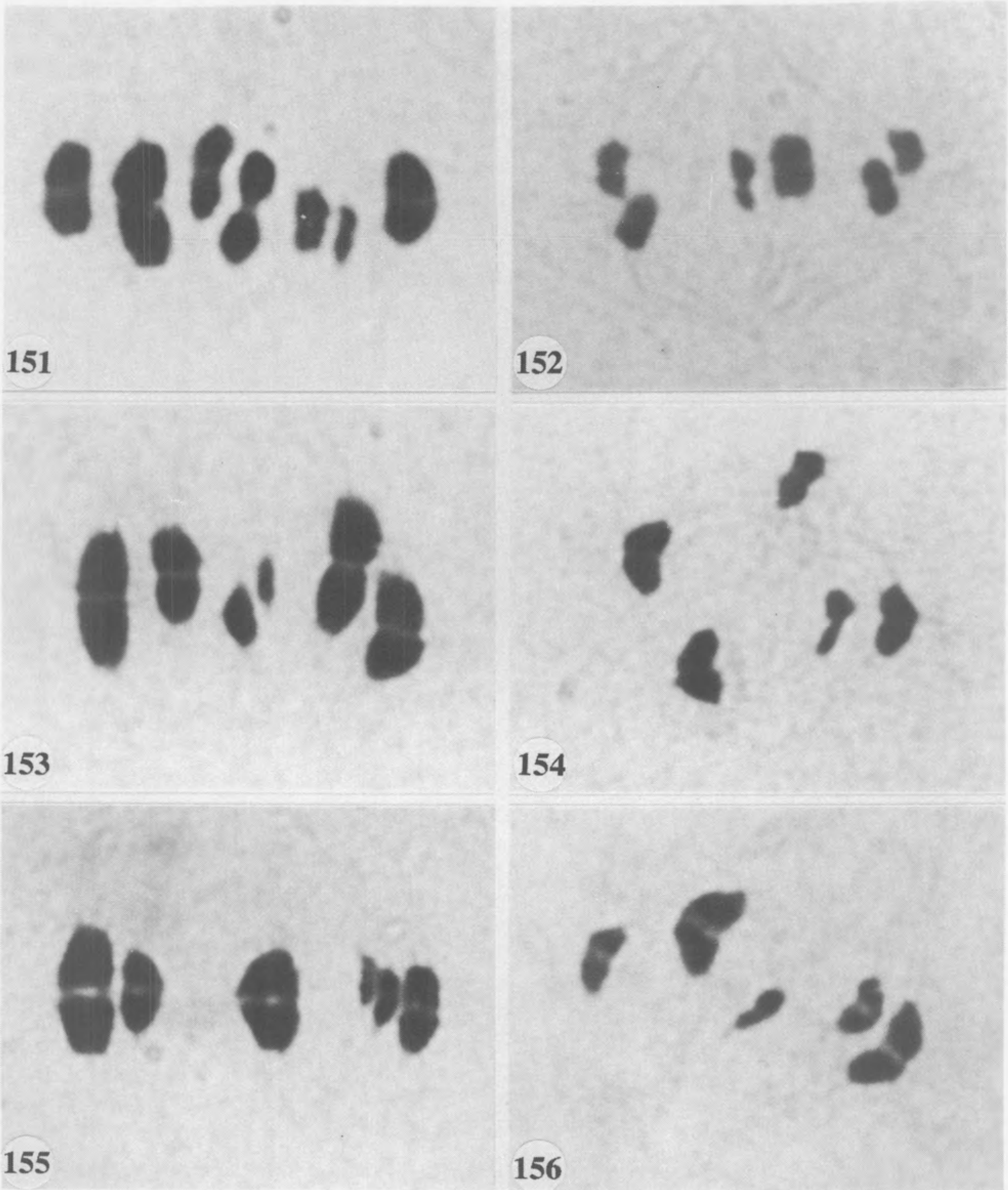
Figs 127-134. Scanning electron photomicrographs of *Pondocoris ampliatus* **spec. nov.** 127. Male paratype, dorsal aspect. 128. Male paratype, ventral aspect. 129-132. Different aspects of the left paramere (scale bar = 50 μm). 133-134. Pygophore. 133. Caudal aspect. 134. Dorsal aspect.



Figs 135-144. Scanning electron photomicrographs illustrating morphological features of *Pondocoris* species. 135-138. Metasterna of males of the subspecies of *Pondocoris latebrosus* (Hoberlandt) showing the protuberances and associated tubercles. 135. *P. latebrosus latebrosus* (Hoberlandt). 136. *P. latebrosus quattuordecimus* **subspec. nov.** 137. *P. latebrosus duodecimus* **subspec. nov.** 138. *P. latebrosus decimus* **subspec. nov.** 139. Enlargement of indicated area of Fig. 138 showing the operculate opening. 140. Metasternal tubercle of *P. latebrosus quattuordecimus* **subspec. nov.** showing the operculate opening (enlargement of Fig. 137). 141. Same, showing detail of operculate opening. 142. Lateroventral aspect of the male of *P. latebrosus latebrosus* (Hoberlandt) showing the evaporative areas. 143. Enlargement of the indicated area of Fig. 142 showing the capitate hairs on the surface of the evaporative area. 144. Metasternum of the male of *P. ampliatus* **spec. nov.** showing the protuberances and operculate opening.



Figs 145-150. Meiotic stages of *Pondocoris* taxa. 145-146. *P. latebrosus latebrosus*. 145. Metaphase I. 146. Metaphase II. 147-149. *P. latebrosus quattuordecimus*. 147. Metaphase I. 148-149. Metaphase II. 150. *P. latebrosus decimus*, metaphase II.



Figs 151-156. Meiotic stages of *Pondocoris* taxa. 151-152. *P. latebrosus duodecimus*. 151. Metaphase I. 152. Metaphase II. 153-154. *P. latebrosus decimus*. 153. Metaphase I. 154. Metaphase II. 155-156. *P. ampliatus*. 155. Metaphase I. 156. Metaphase II.

Chapter 7

GENUS *TRICHOCARVENTUS* HEISS & JACOBS

7.1 ***Trichocarventus*** **Heiss & Jacobs**, Figs 161-176.

Trichocarventus Heiss & Jacobs, 1989 p. 50.

Type species: *Trichocarventus klapperichi* Heiss & Jacobs.

Etymology: From greek trichotos, meaning pilose.

Apterous. Body oval, coated with incrustation, beneath shining, surface including appendages and eyes covered with erect pilosity.

Head: Distinctly shorter than width across eyes, genae straight, produced beyond clypeus. Antenniferous spines acute, divergent. Eyes stylate. Postocular tubercles developed, ridge-like, strongly converging posteriorly to constricted collar. At base of head 2(1+1) prominent elevated sublateral tubercles. Antennae slender, distinctly longer than width of head; first segment stout, thickened, second shorter and cylindrical, third longest, cylindrical, fourth fusiform, conical apex pilose. Rostrum shorter than head, arising from a slit-like atrium. Rostral groove deep, closed posteriorly.

Thorax: Pronotum considerably wider than long, collar ring-like with 2(1+1) prominent tubercles laterally and 2(1+1) small tubercles dorsolaterally. Lateral lobes granulate, with 2(1+1) prominent tubercles laterally, deeply incised before collar, anterolateral angles subrectangular, posterolateral lobes rounded, projecting laterally, lateral margin concave. Disk with a longitudinal groove.

Mesonotum as long as pronotum but wider, at middle with an elevated triangular ridge which extends anteriorly into a cleft of gaping pronotal groove, its apex rounded, medially with a longitudinal sulcus. Lateral lobes granular, projecting, lateral margins converging anteriorly. Mesonotum is separated from metanotum by a transverse sulcus.

Metanotum shorter than mesonotum but wider, with an elevated subrectangular median ridge, also bearing a longitudinal sulcus, lateral margins straight, converging anteriorly. Metanotum separated from MTg 1 by a sulcus. MTg 1 forming 2(1+1) elevated transversal ridges, which meet at middle and are curved anteriorly. It is separated from depressed, strongly transversal Mtg 2 by a deep cleft. MTg 2 with an elongate median elevation, which is also longitudinally sulcate and 2(1+1) sublateral longitudinal elevations.

Legs: Slender, trochanters fused with femora, claws with two bristle-like parempodia and thin, long pseudopulvilli.

Abdomen: Tergal disk formed by fused MTg 3 to 6 with slightly convex lateral margins and depressed glabrous impressions. Disk slightly elevated along median line. DELTg 1 to 3 fused, anteriorly reaching posterolateral angle of metanotum. Posteroexterior angles of DELTg 4 to 7 with small but increasing rounded lobes, originating from reflexed ventral laterotergites.

MTg 7 in female with a transversal elevated ridge before posterior margin. Paratergites 8 conical, produced posteriorly, as long as tricuspidate tergite 9. MTg 7 in male strongly raised medially for the reception of the pygophore. Paratergites 8 slender, reaching apex of pygophore.

Ventral side: Pro-, meso- and metasterna flattened at middle and delimited by sutures. Sternites 1 to 3 fused, 4 to 7 separate. Spiracles 2 ventral, far from lateral margin, 3 and 4 ventral, close to margin, 5 to 7 lateral and visible from above, 8 subterminal.

Male genital structures: visible part of pygophore pyriform, surface rugose, dorsally with a split elevated median ridge which forms posteriorly a small oval pit with carinate borders (Figs 167-168, 175-176). Parameres with an anterolateral reflexed rounded lobe, inner face with long setae (Figs 163-166, 171-174).

Discussion: *Trichocarventus* superficially seems related to *Pondocoris,* resembling it in general shape of body and pronotum, but in fact is closer to *Dundocoris,* sharing the same pattern of median thoracal ridges. From both genera it is at once distinguished by its transverse head, stylate eyes and conspicuous hairy surface. It furthermore lacks the metasternal tubercles of *Pondocoris*.

7.1.1 ***Trichocarventus klapperichi*** **Heiss & Jacobs**, Figs 161-168.

Trichocarventus klapperichi Heiss & Jacobs, 1989 p. 51 (Or. descr.).

Body elongate with subparallel sides, covered on dorsal and ventral surface with long, erect pilosity. Colour reddish-brown, darker are the anterolateral angles of DELTg 2 to 7, lateral half of MTg 2, MTg 7 and 8 and tergite 9 in female, MTg 7 and pygophore in male; the median elevation of tergal disk is yellowish on posterior half.

Head: Length including neck/width across eyes 1,02/1,12; anterior process of genae straight, producing well beyond apex of clypeus, reaching 2/3 of antennal segment 1, its apices rounded. Antenniferous spines diverging anteriorly, apices acute. Eyes granular, stalked, strongly produced laterally. Postocular tubercles forming a rounded lobe, by far not reaching lateral margin of eyes, posteriorly carinate and strongly converging. Vertex with a longitudinal elevation flanked by 2(1+1) granulate carinae, laterad of them with 2(1+1) round impressions and 2(1+1) prominent tubercles posteriorly. Antennae 1,51 times as long as width across eyes, length of segments 1 to 4 = 0,47:0,32:0,55:0,35; first segment thickest, slightly curved and tapering towards base, second shorter and thinner, third longest and thin, fourth fusiform, its conical apex pilose. Rostrum short, not reaching posterior margin of head, arising from a slit-like atrium. Rostral groove wide, closed posteriorly, its lateral borders granulate.

Thorax: Pronotum length/width across posterior lobe 0,57/1,95 with a well developed ring-like collar, which bears 2(1+1) smaller tubercles dorsolaterally and 2(1+1) strong projecting ones laterally on a lower level. Collar thickened between dorsolateral tubercles. Lateral lobes slightly upturned, surface densely granular, incised before collar anteriorly, then angularly produced, lateral margin concave, posterolateral angle produced and rounded. Disk depressed and smooth with a longitudinal groove medially, which separates also the transversal ridge behind collar. Posterior margin feebly sinuate, marked by a transversal carina.

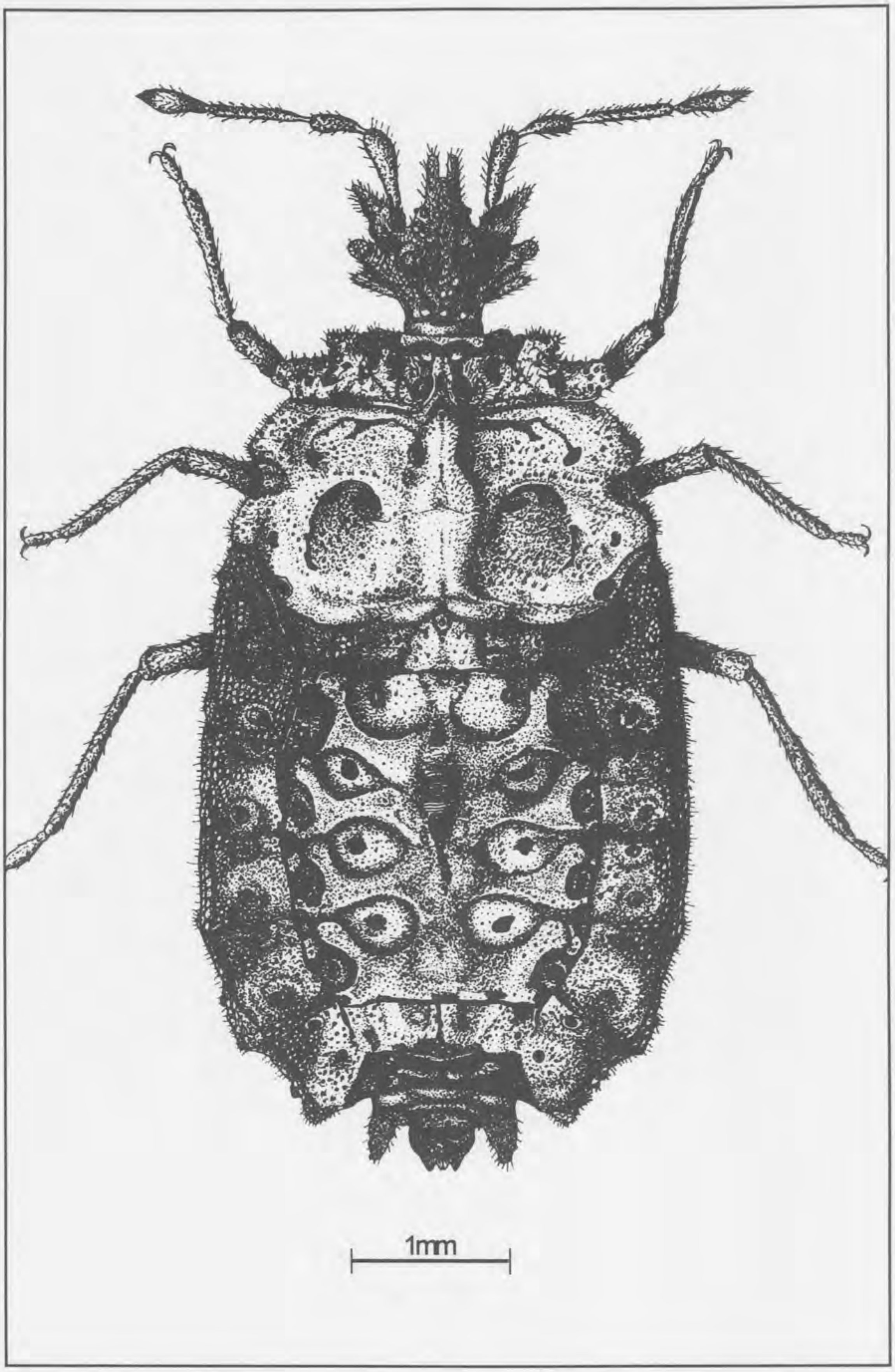


Figure 157. Dorsal view of *Trichocarventus klapperichi* Heiss & Jacobs.

Mesonotum length/width 0,55/1,80, slightly reflexed and lobately produced laterally, roundedly produced posteriorly with a triangular median elevation bearing a longitudinal sulcus. Lateral lobes subrectangular, densely granular, lateral margins converging anteriorly. Disk less granular with 2(1+1) smooth rounded plates. Mesonotum separated from metanotum by a distinct transversal groove which is projected backwards medially.

Metanotum shorter medially, but longer laterally than mesonotum, length/width 0,32/2,30, lateral lobes thickened but not produced and densely granular, lateral margins straight, converging anteriorly. Posterior margin delimited by a bisinuate sulcus which separates metanotum from MTg 1. Median subrectangular elevation with a longitudinal sulcus, surface roughly granular. Disk comprising 2(1+1) rounded plates laterad of median elevation, its surface smooth anteriorly and roughly granulate on posterior 2/3.

MTg 1 forming an elevated bisinuate transversal ridge with a shallow median groove, separated from MTg 2 by a deep groove. MTg 2 depressed with a median groove and 2(1+1) short ridges flanking the groove and 2(1+1) longitudinal ridges on posterolateral angles.

Abdomen: Tergal plate formed by fused MTg 3 to 6 with convex lateral margins, glabrous impressions deep, surface granular, the submedian ones separated by Y-shaped carinae; feebly elevated along median line. DELTg 1 to 3 fused and converging anteriorly, DELTg 4 to 7 subrectangular, 7 angularly produced posteriorly. Posteroexterior angles of all segments marked by small rounded lobes which increase in size posteriorly and represent the reflexed ventral laterotergites. Surface rugose.

MTg 7 in male raised medially with 2(1+1) prominent tubercles anterolaterally. Pygophore pyriform with rugose surface, dorsally with a cleft ridge which forms a pit with carinate borders posteriorly. (Figs 167-168). Parameres as Figs 163-166. paratergites 8 slender reaching apex of pygophore.

MTg 7 in female only slightly elevated, smooth anteriorly, with a transverse carina before posterior margin. Paratergites 8 projecting as conical lobes with acute apices, reaching apex of trilobate tergite 9.

Ventral side. Pro-, meso- and metasternum flattened at middle, separated by sulci. Sternites 1 to 2 fused. Spiracles 2 ventral, far from lateral margin, 3 and 4 ventral and close to margin, 5 to 7 lateral and visible from above, 8 subterminal.

Legs: Slender with long erect hairs, trochanters fused. Claws with bristle-like parempodia and long pseudopulvilli.

Chromosome number: 2n(♂) = 28XY.

Measurements: length of holotype ♂ 5,25; width of abdomen across tergite 4 2,50; female similar to male but larger, length 5,5 to 6,7 mm, male paratypes vary in size from 4,3 to 5,3 mm.

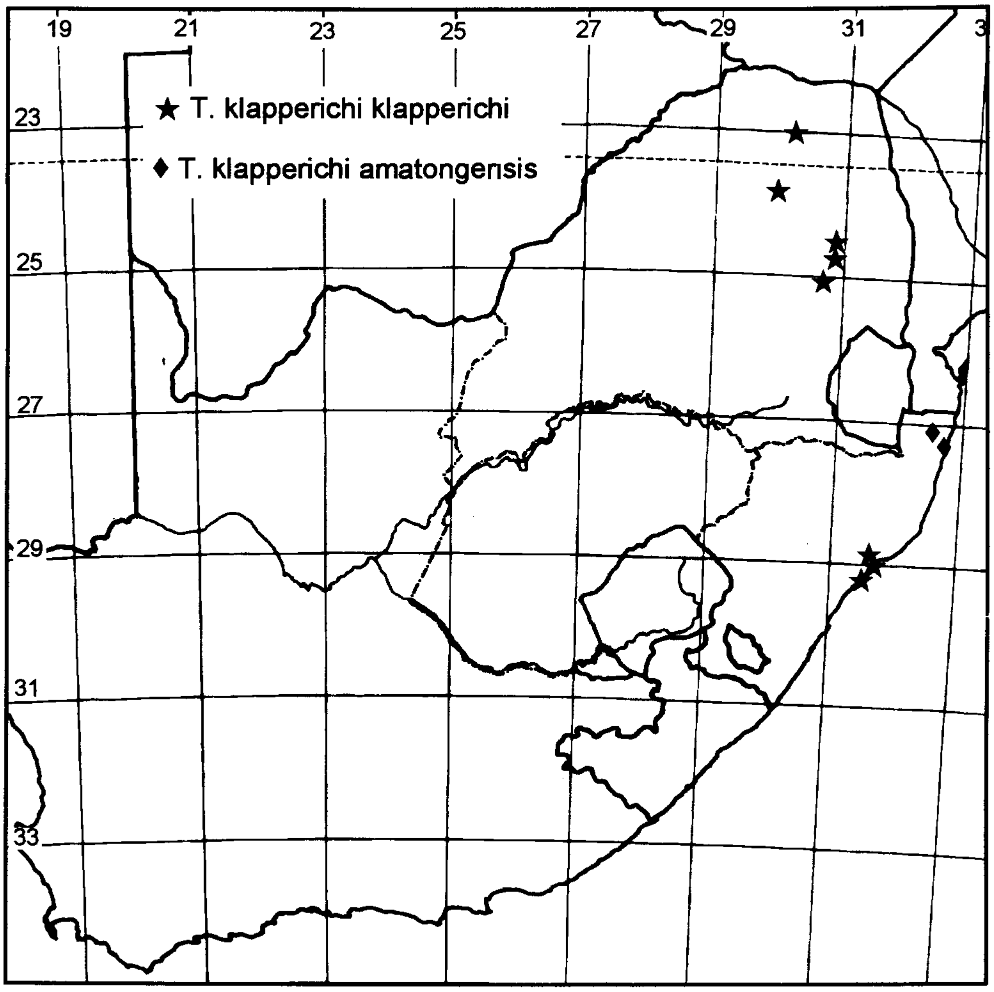


Figure 158. Distribution of the subspecies of *Trichocarventus klapperichi* Heiss & Jacobs.

MATERIAL EXAMINED: **SOUTH AFRICA. Kwazulu-Natal.** ♂ holotype: Natal, Ngoye Forest Reserve, nr. Mtunzini, 28°50′S, 31°43′E, viii.1985 (BMNH); paratypes: 2♂♂ 2♀♀: collected with holotype (EHIA); 2♂♂ 1♀: Natal, St. Lucia, 25.x.1980, leg. Klapperich (EHIA); **Northern Province**. 19♂♂ 37♀♀: Transvaal, Hanglip Forest, Louis Trichardt, 23°00′S, 30°16′E, 7-9.v.1978, D.H. Jacobs (DHJS); 1♂ 2♀♀: Transvaal, Woodbush Forest, 23°50′S 30°00′E, 9.v.1978, D.H. Jacobs (DHJS); 6♂♂ 14♀♀: Transvaal, Magoebaskloof, nr. Tzaneen, 23°52′S 30°00′E, 9.xi.1980, D.H. Jacobs (DHJS); **Mpumalanga**. 17♂♂ 17♀♀: Transvaal, Mariepskop Forest, nr. Hoedspruit, 24°33′S 30°54′E, 6.x.1981, Liebenberg & Jacobs (DHJS); 2♂♂ 2♀♀: Transvaal, Mariepskop Forest ZA.8, viii.1960, humus, no collector given (TMSA); 6♂♂ 2♀♀: Transvaal, Blyderivierspoort Nature Reserve, 24°39′S 30°54′E, 28-30.i.1989, D.H. Jacobs (DHJS); 1♂ 2♀♀: Transvaal, Welgevonden Forest, nr. Hoedspruit, 24°43′S 30°56′E, 8.x.1981, Liebenberg & Jacobs (DHJS); 3♂♂: Transvaal, Mac-Mac Falls, nr. Sabie, x.1983, C.H. Scholtz (DHJS); 1♂: Transvaal, Bridal Veil Falls, nr. Sabie, 25°05′S 30°44′E, 5.xi.1988, D.H. Jacobs (DHJS); **Kwazulu-Natal**. 17♂♂ 14♀♀: Natal, Ngoye Forest, nr. Empangeni, 28°50′S 31°43′E, 11-12.xii.1980, D.H. Jacobs (DHJS); 3♂♂ 2♀♀: Natal, Umlalazi Nature

Reserve, nr. Mtunzini, 28°58′S 31°46′E, 21-23.viii.1985, D.H. Jacobs (DHJS); 1♀: Tugela River mouth, 29°14′S 31°39′E, 7.iv.1980, D.H. Jacobs (DHJS).

Table 7.1. Measurements (in mm) of
***Trichocarventus klapperichi amatongensis* subspec. nov.**

STRUCTURE		MALES					FEMALES				
		HT*	N♦	Mean	SD	Range	AT#	N♦	Mean	SD	Range$
Total	length	4.91	7	4.87	0.168	4.64-5.19	5.76	10	5.79	0.241	5.39-6.15
	width	2.17	7	2.21	0.045	2.16-2.29	2.64	10	2.71	0.068	2.60-2.84
Head	length	0.85	7	0.88	0.016	0.84-0.91	0.99	10	0.98	0.036	0.93-1.03
	width	0.99	7	1.01	0.017	0.98-1.04	1.08	10	1.08	0.041	1.03-1.14
Pronotum	length	0.50	7	0.50	0.015	0.47-0.53	0.56	10	0.57	0.031	0.50-0.63
	width	1.70	7	1.72	0.042	1.67-1.79	1.92	10	1.90	0.086	1.77-2.02
Tergal disk	length	1.33	7	1.34	0.035	1.31-1.42	1.79	10	1.81	0.087	1.69-1.96
	width	1.44	7	1.46	0.035	1.42-1.52	1.83	10	1.83	0.092	1.71-1.99
Antennal segments	I	0.39	7	0.41	0.009	0.39-0.42	0.44	10	0.44	0.019	0.41-0.47
	II	0.27	7	0.27	0.010	0.26-0.29	0.27	10	0.28	0.011	0.26-0.31
	III	0.43	7	0.41	0.016	0.38-0.44	0.46	10	0.46	0.025	0.40-0.49
	IV	0.30	7	0.31	0.009	0.29-0.33	0.34	10	0.33	0.019	0.28-0.35

*** HT = holotype. # AT = allotype.**
♦ 2♂♂ 3♀♀ from Sileza forest, 5♂♂ 4♀♀ from Sibayi Lake and 3♀♀ from Manzengwenya.

7.1.2 ***Trichocarventus klapperichi amatongensis* subspec. nov.**, Figs 169-176.

Length: ♂ 4,6 - 5,2 mm; ♀ 5,3 - 6,2 mm.

Width: ♂ 2,1 - 2,3 mm; ♀ 2,6 - 2,9 mm.

Diagnostic measurements are given in Table 7.1.

This subspecies is extremely similar to the nominate subspecies except for its different chromosome number of 2n(♂) = 24XY. On the average it is smaller and its third antennal segment is relatively shorter. This is not true for all specimens and, for example, specimens of the nominate subspecies from Umlalazi Nature Reserve seem to be smaller or subequal in size to *T. klapperichi amatongensis*. Although the third antennal segment of *amatongensis* is relatively shorter than that of the nominate subspecies, it is quite variable and individual exceptions occur frequently.

T. klapperichi amatongensis has so far only been collected in a limited area in the coastal forests of Zululand (northern Kwazulu-Natal) and it is likely that it has a very limited distribution in contrast to the nominate subspecies (Fig. 158).

Etymology: From Amatonga, an old name for the area where the subspecies occurs.

MATERIAL EXAMINED: **SOUTH AFRICA, Kwazulu-Natal.** ♂ holotype: Sileza forest, nr. Manzengwenya, 27°05′S 32°36′E, 7.xii.1980, Jacobs, Kündig & Filter (TMSA); ♀ allotype: ditto (TMSA); paratypes as follows: 3♂♂ 5♀♀: Same data as holotype (DHJS, TMSA); 1♂ 5♀♀:

Manzengwenya, Kwazulu, 27°16'S 32°46'E, 3-7.xii.1980, D.H. Jacobs (DHJS, TMSA); 5♂♂ 4♀♀: Lake Sibayi, Natal, 27°19'S 32°45'E, 21.vii.1977, D.H. Jacobs (DHJS, TMSA).

7.2 Cytogenetics of the genus Trichocarventus

The locality and number of individuals of *Trichocarventus klapperichi*, the only species in the genus, that were cytogenetically studied are presented in Table 7.2. The course of meioses is of the regular Carventid type.

Table 7.2. Locality and numbers of individuals of *Trichocarventus* taxa cytogenetically studied.

Locality	Co-ordinates	Date collected	No. of individuals cytogenetically studied
Trichocarventus klapperichi klapperichi			
Entabeni forest, nr. Louis Trichardt	23°00'S 30°16'E	7-9/xii/1978	2
Magoebaskloof, nr. Tzaneen	23°52'S 30°00'E	9/xi/1980	5
Mariepskop forest, nr. Hoedspruit	24°33'S 30°54'E	4-8/x/1981	11
Welgevonden forest, nr. Hoedspruit	24°43'S 30°56'E	8/x/1981	4
Ngoye forest, nr. Empangeni	28°50'S 31°43'E	11-12/xii/1980	5
Umlalazi Nature Reserve, nr. Mtunzini	28°58'S 31°46'E	21-23/viii/1985	2
Tugela River mouth	29°14'S 31°39'E	7/iv/1980	1
Trichocarventus klapperichi amatongiensis			
Sileza forest, nr. Manzengwenya	27°05'S 32°36'E	7/xii/1980	4
Manzengwenya, Kwazulu	27°16'S 32°46'E	3-7/xii/1980	2
Sibayi Lake, Kwazulu	27°19'S 32°45'E	21/vii/1977	4

7.2.1 *Trichocarventus klapperichi klapperichi* (Figs 159, 177-179).

The chromosome number of the nominate subspecies is 2n(♂) = 28XY. The true and relative chromosome areas for *T. klapperichi klapperichi* of different localities are presented in Table 7.3 and an idiogram in Fig. 159. Autosomes A1-A12 form a more or less gradual series although a slight step in the series seems to be present between A1 and A2 and a more pronounce one between A11 and A12. Autosomes A12 and A13 thus seem to be distinctly smaller than the rest of the complement. The sex chromosomes are by far the largest chromosomes in the complement - the X-chromosome is about twice and the Y-chromosome usually more than 1.5x as large as the largest autosome.

Table 7.3. True and relative chromosome areas of *T. klapperichi klapperichi*.

True chromosome areas (μm^2) and standard deviation.				
Chromosome	Magoebaskloof	Mariepskop	Ngoye forest	TOTAL
Individuals	3	3	2	8
Cells	9	10	7	26
A1	1.82(±0.13)	2.16(±0.27)	1.70(±0.18)	1.92(±0.28)
A2	1.68(±0.13)	1.91(±0.23)	1.56(±0.12)	1.74(±0.22)
A3	1.58(±0.14)	1.82(±0.18)	1.52(±0.13)	1.66(±0.20)
A4	1.53(±0.14)	1.76(±0.14)	1.47(±0.10)	1.60(±0.18)
A5	1.44(±0.12)	1.66(±0.17)	1.39(±0.10)	1.51(±0.18)
A6	1.41(±0.10)	1.60(±0.14)	1.37(±0.10)	1.47(±0.15)
A7	1.37(±0.10)	1.56(±0.13)	1.33(±0.11)	1.43(±0.15)
A8	1.34(±0.11)	1.51(±0.14)	1.30(±0.10)	1.39(±0.15)
A9	1.30(±0.10)	1.43(±0.12)	1.26(±0.13)	1.34(±0.14)
A10	1.24(±0.12)	1.40(±0.14)	1.17(±0.12)	1.28(±0.16)
A11	1.16(±0.15)	1.34(±0.13)	1.07(±0.12)	1.20(±0.17)
A12	0.97(±0.15)	1.08(±0.10)	0.91(±0.09)	1.00(±0.13)
A13	0.85(±0.11)	0.96(±0.10)	0.81(±0.07)	0.88(±0.11)
X	3.65(±0.25)	4.20(±0.65)	3.85(±0.44)	3.91(±0.53)
Y	3.37(±0.38)	3.24(±0.37)	2.67(±0.25)	3.13(±0.44)
Autosomes	17.70(±1.38)	20.19(±1.78)	16.86(±1.28)	18.43(±2.06)
All chromosomes	24.71(±1.91)	27.63(±2.66)	23.38(±1.82)	25.47(±2.80)
Relative chromosome areas (% of total area of autosomes) and standard deviation.				
A1	10.29(±0.66)	10.71(±0.65)	10.08(±0.55)	10.39(±0.66)
A2	9.52(±0.35)	9.46(±0.50)	9.28(±0.25)	9.43(±0.39)
A3	8.90(±0.39)	9.02(±0.26)	9.02(±0.31)	8.98(±0.31)
A4	8.67(±0.46)	8.74(±0.34)	8.70(±0.24)	8.70(±0.35)
A5	8.14(±0.27)	8.21(±0.32)	8.27(±0.15)	8.20(±0.26)
A6	7.98(±0.24)	7.91(±0.17)	8.11(±0.13)	7.99(±0.20)
A7	7.76(±0.20)	7.72(±0.29)	7.88(±0.12)	7.77(±0.23)
A8	7.54(±0.24)	7.49(±0.23)	7.70(±0.06)	7.57(±0.21)
A9	7.35(±0.20)	7.10(±0.27)	7.46(±0.43)	7.29(±0.33)
A10	7.02(±0.18)	6.92(±0.33)	6.93(±0.32)	6.96(±0.28)
A11	6.54(±0.45)	6.61(±0.28)	6.33(±0.50)	6.51(±0.41)
A12	5.48(±0.66)	5.33(±0.28)	5.39(±0.34)	5.40(±0.45)
A13	4.81(±0.45)	4.78(±0.40)	4.84(±0.44)	4.80(±0.41)
X	20.66(±1.19)	20.78(±1.94)	22.82(±1.57)	21.29(±1.82)
Y	19.03(±1.34)	16.06(±1.12	15.85(±1.21)	17.03(±1.89)

T. klapperichi klapperichi has a very wide and disjunct distribution, including isolated forested areas in the Northern Province, Mpumalanga and Kwazulu-Natal. Although some of the populations have been isolated for very long their karyotypes are extremely similar with only very slight and insignificant differences between them in the autosomes. The differences between the sex chromosomes (especially the Y-chromosome) of the different localities (Table 7.3) are more pronounced, following the general trend in many Heteroptera.

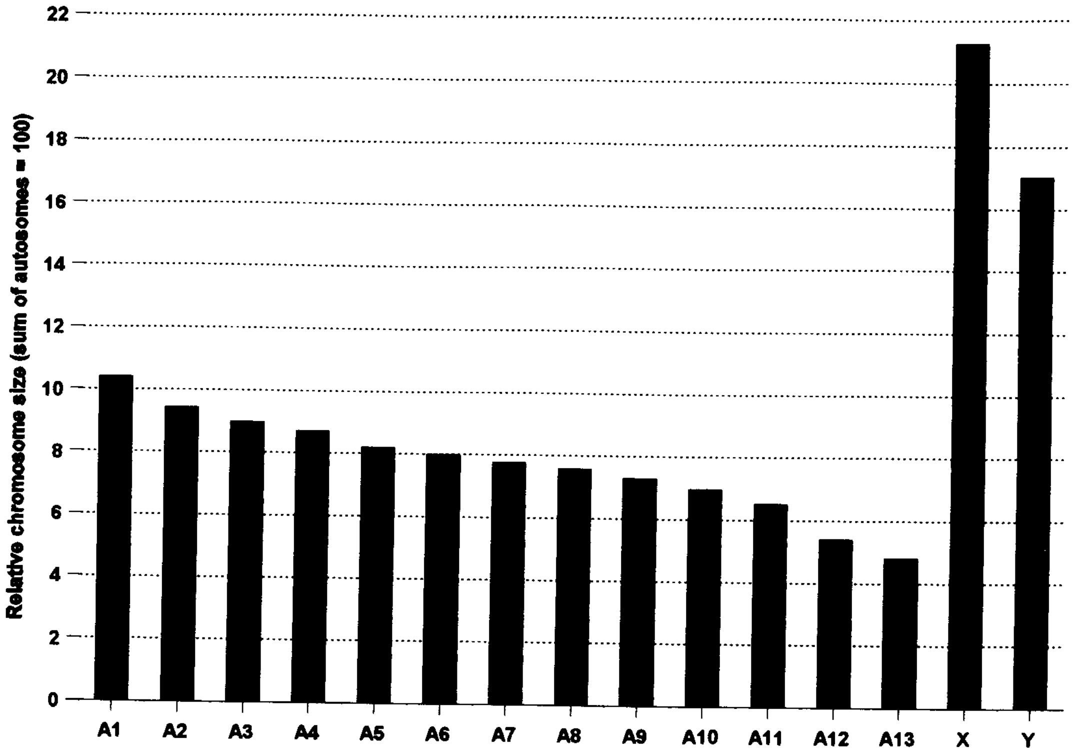


Figure 159. Idiogram of *Trichocarventus klapperichi klapperichi*.

7.2.2 ***Trichocarventus klapperichi amatongensis*** (Figs 160, 180-182).

The chromosome number of this subspecies, which is morphologically indistinguishable from the nominate subspecies, is 2n(♂) = 24XY. The true and relative chromosome areas for *T. klapperichi amatongensis* are presented in Table 7.4 and an idiogram in Fig 160. Two of the autosomes are distinctly larger than the rest. Autosomes A3-A11 form a more or less gradual series but as in the case of the nominate subspecies, the two smallest ones seem to be set apart by a small step in the series. The sex chromosomes are also very large, but because of the presence of the two large autosomes, the X-chromosomes is only subequal in size to the largest autosome while the Y-chromosome is smaller than these two autosomes but somewhat larger than the next one.

Table 7.4. True and relative chromosome areas of *T. klapperichi amatongensis*.

True chromosome areas (μm^2) and standard deviation.				Relative chromosome areas (% of total area of autosomes) and standard deviation.		
Chromosome	**Sileza forest**	**Manzengwenya**	**TOTAL**	**Sileza forest**	**Manzengwenya**	**TOTAL**
Individuals	3	1	4	3	1	4
Cells	9	5	14	9	5	14
A1	4.00(±0.29)	2.78(±0.14)	3.56(±0.65)	16.07(±0.89)	15.55(±0.61)	15.88(±0.82)
A2	3.76(±0.32)	2.62(±0.14)	3.35(±0.62)	15.07(±0.75)	14.68(±0.57)	14.93(±0.70)
A3	2.59(±0.18)	1.90(±0.14)	2.34(±0.38)	10.39(±0.48)	10.62(±0.71)	10.47(±0.55)
A4	2.36(±0.21)	1.71(±0.09)	2.13(±0.36)	9.47(±0.54)	9.58(±0.40)	9.51(±0.48)
A5	2.26(±0.19)	1.56(±0.05)	2.01(±0.38)	9.06(±0.65)	8.70(±0.22)	8.93(±0.56)
A6	2.06(±0.19)	1.48(±0.04)	1.85(±0.33)	8.27(±0.51)	8.29(±0.36)	8.28(±0.45)
A7	1.89(±0.17)	1.39(±0.05)	1.71(±0.28)	7.57(±0.30)	7.75(±0.34)	7.64(±0.32)
A8	1.78(±0.16)	1.30(±0.08)	1.61(±0.28)	7.15(±0.36)	7.27(±0.49)	7.19(±0.40)
A9	1.63(±0.17)	1.17(±0.11)	1.47(±0.27)	6.54(±0.40)	6.57(±0.61)	6.55(±0.46)
A10	1.37(±0.13)	1.01(±0.05)	1.24(±0.21)	5.47(±0.27)	5.62(±0.16)	5.52(±0.24)
A11	1.23(±0.10)	0.96(±0.07)	1.13(±0.16)	4.93(±0.27)	5.37(±0.28)	5.09(±0.34)
X	4.35(±0.29)	2.77(±0.18)	3.79(±0.82)	17.48(±0.49)	15.53(±1.10)	16.78(±1.21)
Y	2.98(±0.28)	2.00(±0.13)	2.63(±0.54)	11.94(±0.55)	11.20(±0.75)	11.68(±0.71)
Autosomes	24.92(±1.63)	17.88(±0.49)	22.40(±3.73)			
All chromosomes	32.25(±2.15)	22.65(±0.57)	28.82(±5.07)			

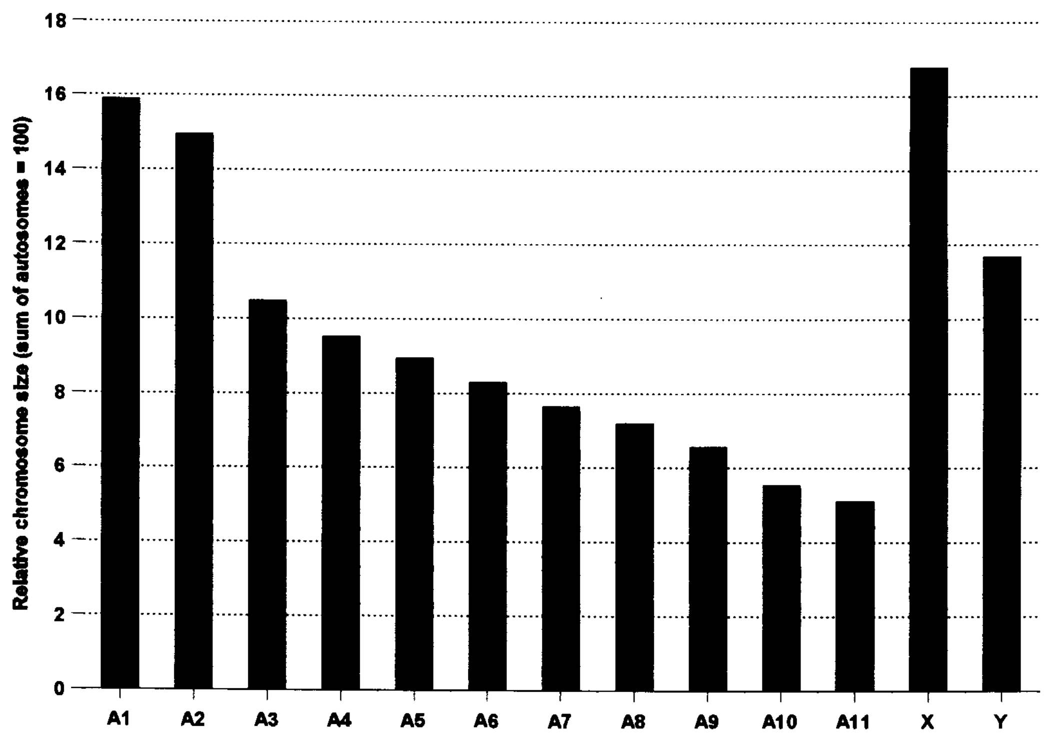
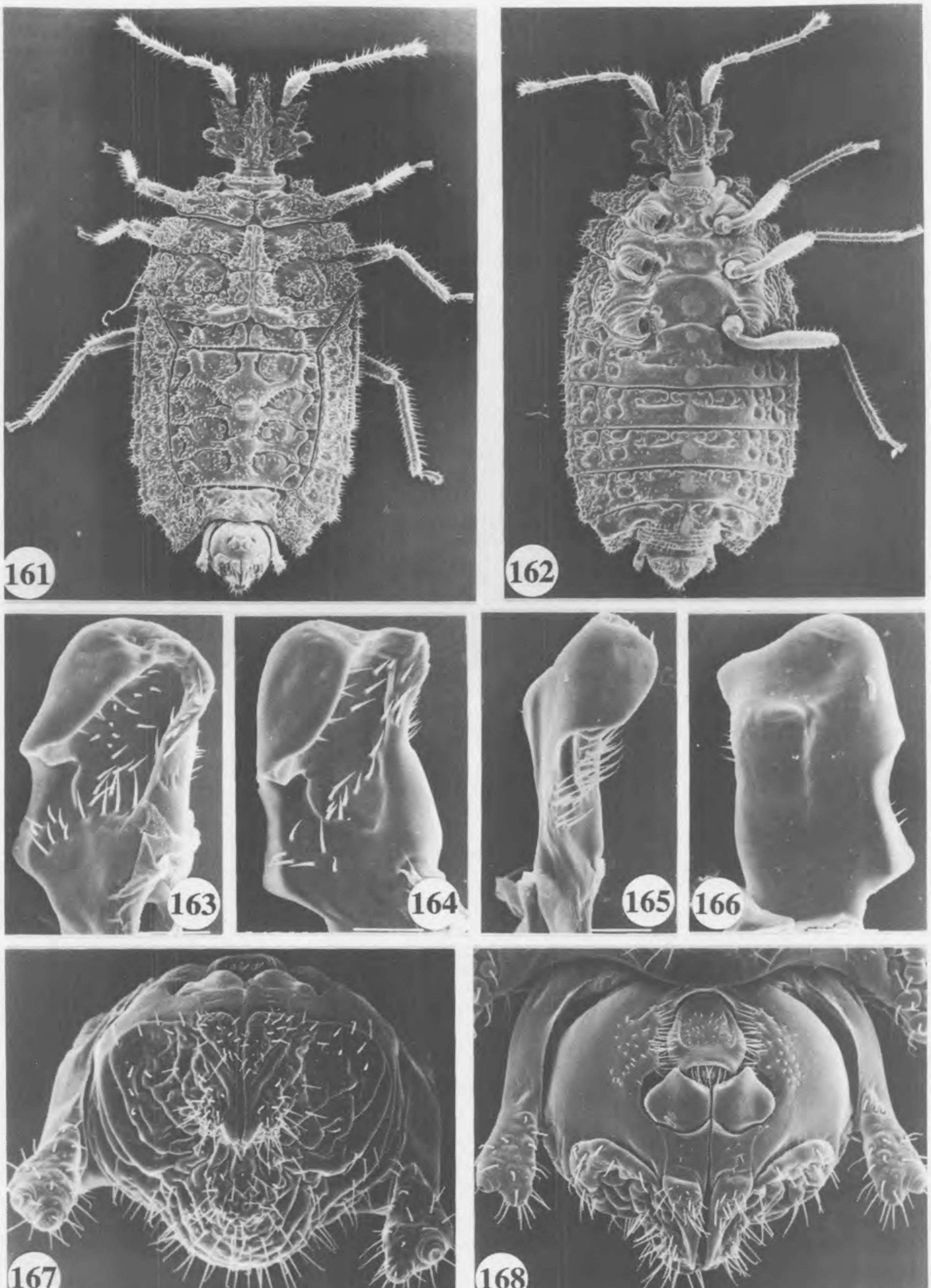


Figure 160. Idiogram of *Trichocarventus klapperichi amatongensis*.

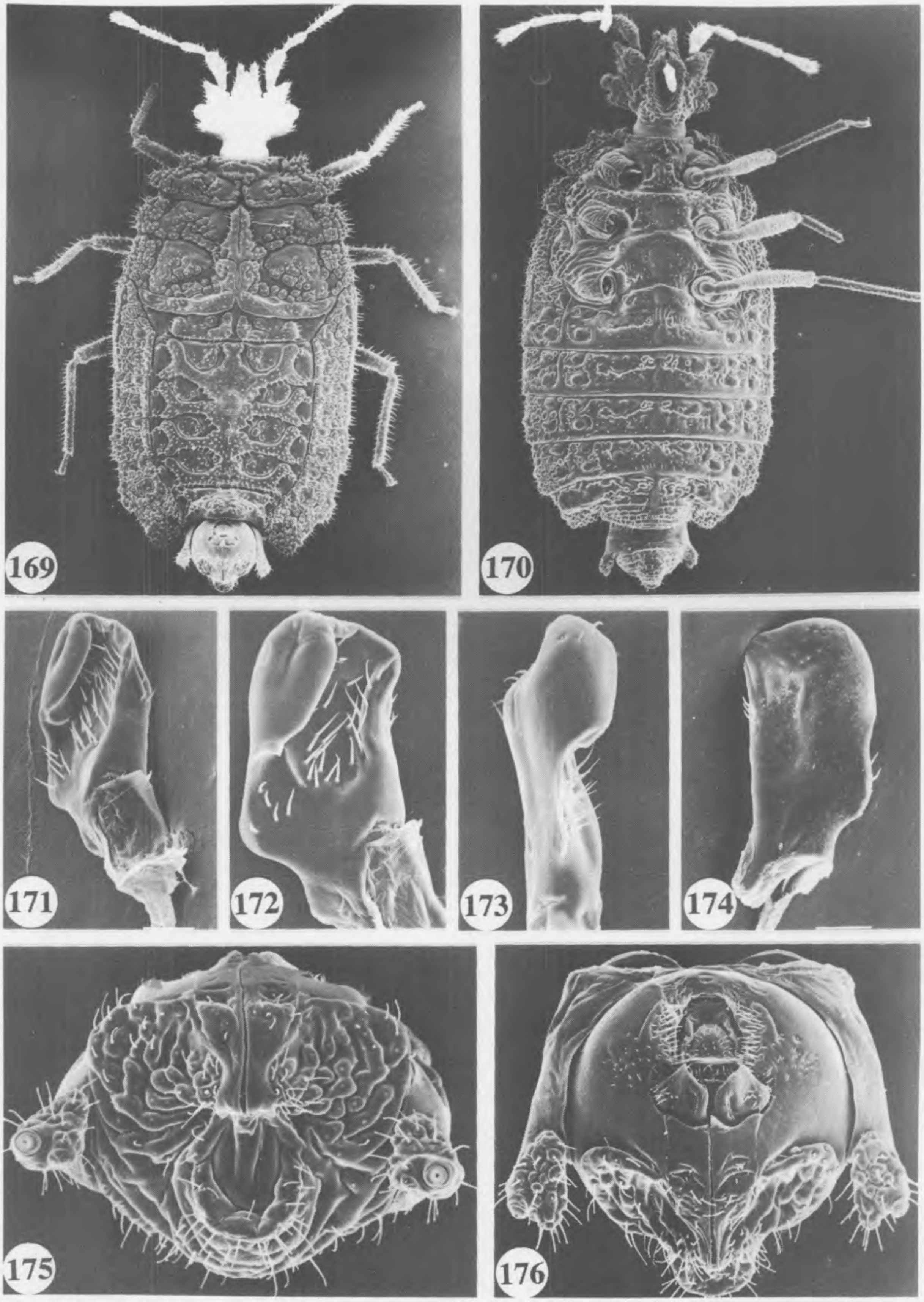
7.2.3 Discussion.

It is obvious that either *T. klapperichi amatongensis* originated from *T. klapperichi klapperichi* by two chromosome fusions or vice versa by two fissions. To my mind, the most likely steps in karyotype evolution from a hypothetical 14XY ancestor for these taxa would have been as follows:

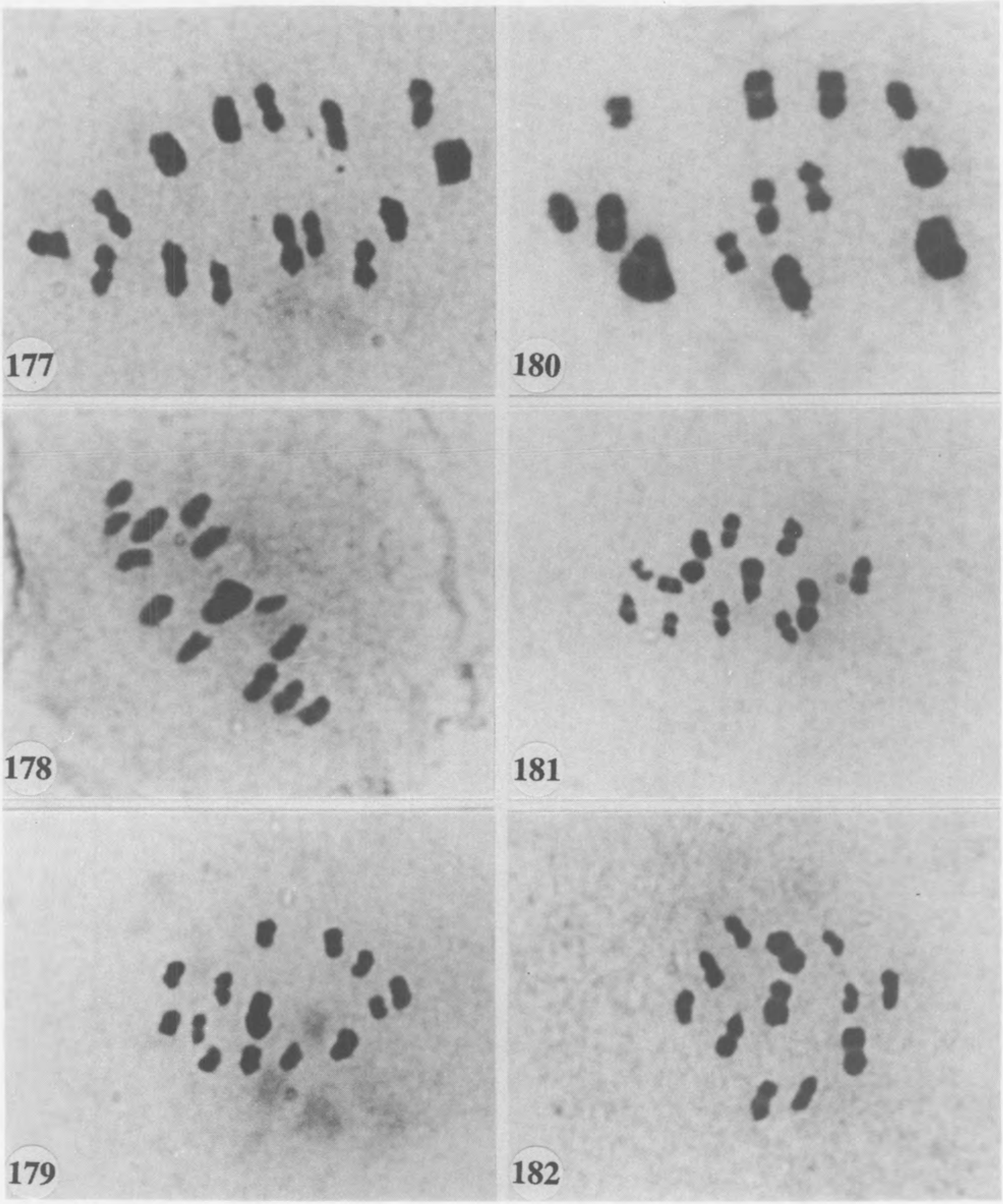
1. Pseudoploidy gave rise to a 26XY karyotype
2. Fission of one of the largest autosome led to the origin of the two smallest autosomes. This led to the 28XY karyotype of *T. klapperichi klapperichi*. The slight step between the largest and second largest autosome and the step setting apart the two smallest chromosomes support this hypothesis.
3. Two fusions, possibly autosomes A4+A8 and A6+A10 of *T. klapperichi klapperichi* led to the 24XY karyotype of *T. klapperichi amatongensis*.



Figs 161-168. Scanning electron photomicrographs of *Trichocarventus klapperichi klapperichi* Heiss & Jacobs. 161-162. Male paratype. 161. Dorsal aspect. 162. Ventral aspect. 163-166. Different aspects of the left paramere (scale bar = 50 μm). 167-168. Pygophore. 167. Caudal aspect. 168. Dorsal aspect.



Figs 169-176. Scanning electron photomicrographs of *Trichocarventus klapperichi amatongaensis* **subspec. nov.** 169-170. Male paratype. 169. Dorsal aspect. 170. Ventral aspect. 171-174. Different aspects of the left paramere (scale bar = 50 μm). 175-176. Pygophore. 175. Caudal aspect. 176. Dorsal aspect.



Figs 177-182. Meiotic stages in *Trichocarventus* taxa. 177-179. *T. klapperichi klapperichi*. 177. Metaphase I. 178-179. Metaphase II. 180-182. *T. klapperichi amatongaensis*. 180. Metaphase I. 181-182. Metaphase II.

Chapter 8

GENUS *MITERONOTUS* GEN. NOV.

8.1 *Miteronotus* gen. nov.

Type species: *Miteronotus labeosus* spec. nov.

Etymology: From greek miteros = pointed and notum = dorsal thoracal plate, referring to the pointed median ridge.

Apterous. Body elongate oval, incrustate, shining and granular beneath incrustation. The following description is based on cleaned individuals.

Head: Wider across eyes than length (excluding neck area). Genae produced beyond apex of clypeus. Subapical dorsal tubercle on clypeus absent. Antenniferous lobes well developed, diverging anteriorly. Ocelli absent. Postocular tubercles present. Antennae 4-segmented, first segment the longest and thickest, extending beyond apex of head, third segment always pedicellate, fourth segment fusiform, usually set on a short pedicel, conical apex pilose. Labium 3-segmented, only apical two segments visible externally, shorter than head, leaving head through a slit-like atrium. Labium not discernable. Rostral groove well developed, closed posteriorly.

Thorax: Dorsum. Pronotum 2-3x as wide as long. Collar very prominent with 2(1+1) large lateral tubercles and 2(1+1) smaller dorsolateral ones. Pronotum constricted behind the collar. Lateral lobes granulate, elevated and slightly reflexed so that propleural margins visible from above in most species. Disk formed by 2(1+1) smooth, shining plates which are medially separated by a deep and wide longitudinal furrow. A slight transverse elevation which may be confluent with the discal plates laterally, is present between the furrow and collar. Pronotum separated from mesonotum by a deep sulcus which is medially interrupted by the apex of the anteriorly produced median ridge of the mesonotum.

Mesonotum wider and shorter than pronotum, comprising 2(1+1) nearly rectangular plates laterally, separated by a median, usually smooth, anteriorly pointing ridge which is posteriorly fused with a broad median elevation of the metanotum. Lateral lobes granulate, slightly reflexed, rendering mesopleural margins usually visible from above. Disk entirely smooth in most species but irregular excavations may occur sublaterally.

Metanotum longer and slightly wider than mesonotum, laterally well delimited from mesonotum by a prominent and deep sulcus which ends in a deep pit adjacent to median ridge. On the median ridge the meso- and metanotum is usually completely fused which no indication of sulcus or line of demarcation. Lateral lobes granulate, slightly elevated and reflexed. Disk smooth to irregularly excavated, separated from the wide median ridge by a wide, fairly shallow groove; posteriorly it rises sharply submedially to form a transverse ridge where it meets MTg 1. Metanotum laterally separated from MTg 1 by a clear sulcus but mediad this sulcus become less prominent, sometimes obliterated; boundary over total distance, however, marked by a bisinuate, lightly coloured, less sclerotized line.

MTg 1 and 2 together forming a transverse trapeziform plate that slopes posteriad. For about its lateral half Mtg 1 forms a narrow transverse bar, widening laterally, well delimited from MTg 2 by a deep sulcus. MTg 1 and 2 are completely fused medially and no line of demarcation is visible but sculpture may in some species give indication of border between them. MTg 2 sublaterally usually with 2(1+1) longitudinal ridges, confluent with sublateral carinae on abdominal tergal disk and medially a longitudinal bar may be present (in most species only discernable on anterior part of MTg 2). A smooth subrectangular or subtriangular area may be present on MTg 2 lateral of the sublateral ridges but it never possesses a deep pit.

Venter. Prosternum somewhat raised medially and this ridge is posteriorly produced laterad at level of procoxae to form 2(1+1) knobs. Collar may be present or absent ventrally of large lateral tubercles. Meso- and metasterna smooth, each with a median oval, finely rastrate , slightly depressed area.

Legs: Slender, covered with setiferous tubercles. Trochanters usually discernable. Femora and tibiae unmodified. Protibial comb present. Tarsi 2-segmented, distal segment longest, bearing two claws, each with associate curved pulvillus. Two bristle like parempodia present.

Abdomen: Dorsum. Tergal disk (MTg 3-6) usually slightly longer than wide, moderately elevated along median line, highest on MTg 4; lateral margins slightly convex. Carinae which separate glabrous impressions variously developed, usually discernable. Surface between carinae and impressions areolate. DELTg 1-3 fused. Posterior angles of DELTg 2 to 7 increasingly protruding; all DELTg's densely tuberculate except for LGI's. MTg 7 of males raised medially for the reception of the pygophore; paratergites 8 of males short, conical, not reaching apex of pygophore. MTg 7 of females usually with a nodulate transverse ridge near posterior margin; anterior to this 2(1+1) subquadrangular elevations, which may be joined medially to form a single transverse subrectangular elevation, usually present; paratergites 8 produced posteriorly as 2(1+1) semi-acute lobes that nearly reach to the level of the apex of tergite 9.

Venter. Sternites 1-3 fused. Suboval, slightly depressed, finely rastrate areas medially present on sternites 1+2, 3-7. Intersegmental sutures 3/4, 4/5, 5/6 and 6/7 usually well developed, reaching lateral margins of body; 6/7 in females medially produced anteriad to accommodate genitalia. VLTg 3-6 delimited by longitudinal sulci. Spiracle 2 ventral, placed on a prominent tubercle about half the width of the VLTg from lateral margin, position of spiracles 3-5 varies, 6-7 always lateral and visible from above, 8 subterminal on paratergites.

Genitalia: Visible part of pygophore pyriform with a rugose surface, dorsally with 2(1+1) subtriangular elevations separated by a cleft which ends about at level of paratergites 8; ventral of this a short ridge is present. In dorsal view of part usually obscured by MTg 7, 2(1+1) subquadrate pseudophalic styli are present just posterior of the dorsal visible part of the parameres; anteromedially these styli are produced to form 2(1+1) finger-like extensions. Visible parts of parameres usually more or less transverse. Lateral sensory areas each bear a fringe a long hairs mesally and sparse short setae laterally. Female genitalia similar to those of most Carventinae.

Discussion: *Miteronotus* is closely related to *Silvacoris* but can be distinguished by having the meso- and metanotum fused on the median ridge; lacking the sublateral pits on MTg 2; lacking the caudoventral pit on the male pygophore; having the dorsal visible part of the parameres more or less transversely placed; and by being more elongate and flatter in general facies, resulting in the tergal disk and dorsal laterotergites usually being longer than wide. It can be distinguished from *Dundocoris*, *Trichocarventus* and *Pondocoris* by the unsplit mesonotal median ridge and from *Adamanotus* by its unmodified legs, and metanotum reaching the lateral margin of the body. Four species belonging to *Miteronotus* are known, all from the evergreen coastal and montane forests of Kwazulu-Natal, the Eastern Cape Province and the Western Cape Province.

8.1.1 ***Miteronotus labeosus*** **spec. nov.**, Figs 188-203, 235-236.

Length ♂ 4,1 - 4,6 mm; ♀ 4,9 - 5,7 mm.
Width ♂ 1,6 - 1,9 mm; ♀ 2,1 - 2,5 mm.

Diagnostic measurements are given in Tables 8.1 and 8.2. Apterous. Body coated with a greyish incrustation resulting that the general appearance of uncleaned specimens is rather uniform darkish grey. The following description is based on specimens with the incrustation removed.

Table 8.1. Measurements (in mm) of *Miteronotus labeosus* spec. nov. from Dhlinza forest.

STRUCTURE		MALES					FEMALES				
		HT*	N	Mean	SD	Range	AT#	N	Mean	SD	Range
Total	length	4.41	10	4.36	0.136	4.11-4.58	5.37	10	5.30	0.231	4.95-5.66
	width	1.78	10	1.76	0.062	1.61-1.85	2.34	10	2.33	0.104	2.15-2.50
Head	length	0.80	10	0.80	0.026	0.75-0.87	0.91	10	0.91	0.040	0.84-0.95
	width	0.80	10	0.78	0.025	0.73-0.83	0.86	10	0.87	0.032	0.81-0.93
Pronotum	length	0.49	10	0.51	0.024	0.46-0.57	0.59	10	0.58	0.031	0.53-0.63
	width	1.32	10	1.32	0.037	1.24-1.38	1.54	10	1.55	0.078	1.43-1.65
Tergal disk	length	1.24	10	1.25	0.040	1.15-1.31	1.64	10	1.62	0.094	1.49-1.77
	width	1.22	10	1.21	0.047	1.12-1.27	1.62	10	1.58	0.081	1.42-1.71
Antennal segments	I	0.38	10	0.37	0.017	0.34-0.40	0.40	10	0.42	0.019	0.39-0.46
	II	0.25	10	0.25	0.009	0.24-0.27	0.30	10	0.30	0.010	0.28-0.33
	III	0.28	10	0.29	0.015	0.25-0.30	0.34	10	0.35	0.019	0.31-0.37
	IV	0.25	10	0.25	0.012	0.23-0.27	0.29	10	0.28	0.011	0.25-0.31

*** HT = holotype. # AT = allotype.**

Head: Marginally longer (not including neck area) than its width across the eyes. Genae straight anteriorly, produced laterad at base at level of antenniferous lobes. Jugae small, triangular. Vertex with three irregularly nodose median ridges, the lateral two curving laterad at level of eyes and encircling the oval interocular callosities, the median ridge continues on clypeus as a row of irregularly spaced tubercles. A prominent subapical tubercle is usually absent. Antennae 1,48-1,68 times as long as width across eyes, first segment thickest and longest, slightly curved, and tapering toward base, extending beyond apex of genae by just more than half its length; second segment slightly curved basally, gradually thickened towards apex; third segment thinnest, straight, thickening slightly and evenly towards apex, pedicellate; fourth segment fusiform, with short pedicel, conical apex pilose; relative lengths of segments 15:10,5:11,7:10 (differing slightly between population as well as between sexes). Elevated rim of rostral groove granulate, very wide and prominent especially at level of the slit-like atrium. Neck slightly constricted just behind head.

Table 8.2. Measurements (in mm) of *Miteronotus labeosus* spec. nov. from Karkloof forest.

STRUCTURE		MALES				FEMALES			
		N	Mean	SD	Range	N	Mean	SD	Range
Total	length	10	4.21	0.077	4.06-4.29	10	5.44	0.165	5.01-5.67
	width	10	1.63	0.045	1.54-1.70	10	2.40	0.070	2.08-2.61
Head	length	10	0.78	0.015	0.75-0.82	10	0.92	0.028	0.84-0.98
	width	10	0.75	0.010	0.73-0.77	10	0.84	0.015	0.80-0.88
Pronotum	length	10	0.49	0.029	0.43-0.55	10	0.58	0.020	0.53-0.64
	width	10	1.21	0.025	1.17-1.27	10	1.50	0.051	1.29-1.58
Tergal disk	length	10	1.23	0.021	1.19-1.28	10	1.72	0.049	1.58-1.80
	width	10	1.10	0.036	1.02-1.15	10	1.59	0.056	1.44-1.70
Antennal segments	I	10	0.39	0.013	0.37-0.41	10	0.44	0.013	0.41-0.48
	II	10	0.27	0.009	0.24-0.28	10	0.32	0.010	0.30-0.34
	III	10	0.29	0.010	0.27-0.31	10	0.35	0.011	0.33-0.37
	IV	10	0.26	0.008	0.24-0.28	10	0.30	0.008	0.28-0.31

Thorax: Dorsum. Pronotum about 2,55x as wide as long. Lateral lobes granulate with lateral margins converging anteriad, produced anteriad to level of anterior margin of collar. Disk smooth and shining but with somewhat uneven surface.

Mesonotal disk smooth and shining but usually with some irregular excavations; separated from median ridge by prominent furrows. Median ridge in males narrow anteriorly, widening strongly at level of posterior margin of the lateral lobes, in females wider and widening more evenly posteriad; in both sexes surface smooth and no longitudinal median suture or any sign of a median split is present.

Metanotal disk shining but irregularly excavated, delimited from wide median ridge by a shallow longitudinal depression. Median ridge with a shallow median longitudinal furrow in some populations; a transverse suture (usually incomplete) may also indicate its border with the mesonotal median ridge but often this is absent and the fusion complete (see discussion).

MTg 1 narrow, widening laterally, curving and tapering anterolaterally in an acute point that does not reach lateral margin of body. MTg 2 with sublateral longitudinal ridges prominent in females, less so in males; median longitudinal bar usually only discernable on anterior half of MTg 2 but often reaching posterior margin in males.

Venter. Collar complete.

Legs: As for genus.

Abdomen: Dorsum. Tergal disk 1,02-1,11 times longer than wide, moderately elevated along median line. Carinae which separate glabrous impressions clearly discernable but not prominent. Surface between carinae and impressions areolate, especially along margins of carinae.

Venter. Intersegmental suture 6/7 in males of the Karkloof population obliterate sublaterally for a short distance where sternites 6 and 7 are fused, complete in the other populations. Spiracle 2 ventral; 3 sublateral; placed about a spiracle width from lateral margin; 4 sublateral slightly less than a spiracle width from margin; 5-7 lateral and visible from above, 7 hardly visible from below, 8 subterminal on paratergite.

Genitalia: Pygophore (Figs 200-203) as for genus. Visible dorsal part of paramere (Figs 201, 203) sinuately transverse, being laterally sharply curved anteriad in the Ngoye population (Fig. 203). Removed parameres as in Figs 192-199.

Chromosome number: 2n(♂) = 26XY.

Habitat and distribution: Montane evergreen forests in Kwazulu-Natal. It has not yet been collected in the coastal forests. Their known distribution is shown in Fig. 183.

Etymology: Labeosus (L) = thick-lipped, referring to the prominent rim of the rostral groove.

Discussion: *Miteronotus labeosus* can be distinguished from the other known species of *Miteronotus* by its spiracle pattern, its first antennal segment extending beyond the apex of the genae by just more than half its length, by its chromosome number and, in most of the populations, by the prominent thickened rim of the rostral groove lateral to the position where the rostrum is attached to the head. Of the known species of *Miteronotus*, it is probably closest to *Miteronotus viginti* from which it can easily be distinguished by having spiracle 5 laterally placed and clearly visible from above, by its more prominent median thoracic ridge, by having antennal segment 2 longer than 4, and by its different chromosome number. Some remarkable and constant differences exist between the populations of different areas but I am not convinced that these justify subspecific status. The known populations of *Miteronotus labeosus* can be divided into three groups, corresponding to specific areas, which can readily be distinguished from each other, namely

1) the Ngoye populations occurring in Ngoye forest and Dhlinsa forest (type locality).
2) the Karkloof populations from Town Bush near Pietermaritzburg and Karkloof.
3) the Nkandla population from Nkandla forest.

The Karkloof populations are characterized by having the posteroexternal angles of DELTg 5, 6 and especially 7 much more produced than in the other populations (Fig. 189) (it is actually the VTLg's that are produced so that the suture between the DELTg and VLTg runs dorsally). These protrusions are present in both sexes although much more prominent in the males. In the males sternites 6 and 7 are fused sublaterally for a short distance in the region of the sublateral sulcus (Figs 235-236).

Other differences include the antenniferous spines that are usually more strongly developed in the Karkloof and Nkandla populations, resulting in the distance between the anterior margin of the eye and the anterolateral apex of the spine being markedly longer than the longitudinal diameter of the eye. In the Ngoye populations the antenniferous spine is weakly developed, often indistinguishable and the distance between the eye and the apex of the spine on the antenniferous lobe is usually only slightly longer than the longitudinal diameter of the eye.

The Nkandla population differs from the other by being larger and more slender (e.g. the tergal disk is about 1,13 times as long as wide), by a narrow median ridge and by having the rim of the rostral groove not as prominent as in the other populations.

The metanotal media[...] between individual populations. In the Shaws Wood farm population at Karkloof it is completely fused with the mesonotal ridge without any indication of a suture and there is also no indication of a median longitudinal furrow (Fig. 189) while some remnants of the intersegmental suture remain in all the other populations (very prominent in the Nkandla population) and a shallow median longitudinal furrow is present at least on the posterior half of the ridge (e.g. Figs 188, 191).

MATERIAL EXAMINED: **SOUTH AFRICA, Kwazulu-Natal.** ♂ holotype: Dhlinsa forest, Eshowe, 28°54′S 31°27′E, 12.iv.1980, D.H. Jacobs (TMSA); ♀ allotype: ditto (TMSA); 217 paratypes as follows: 23♂♂ 8♀♀: Ngoye Forest Reserve, nr Empangeni, 28°50′S 31°43′E, 11-12.xii.1980, D.H. Jacobs (DHJS); 41♂♂ 41♀♀: Same data as holotype (DHJS, TMSA); 2♀♀: Nkandla forest, 28°44′S 31°08′E, 12.iv.1980, D.H. Jacobs (DHJS); 34♂♂ 38♀♀: Shaws Wood farm, Karkloof, 29°19′S 30°18′E, 1.ii.1983, D.H. Jacobs (DHJS); 13♂♂ 17♀♀: Town Bush, Pietermaritzburg, 29°33′S 30°20′E, 31.i.1983, D.H. Jacobs (DHJS).

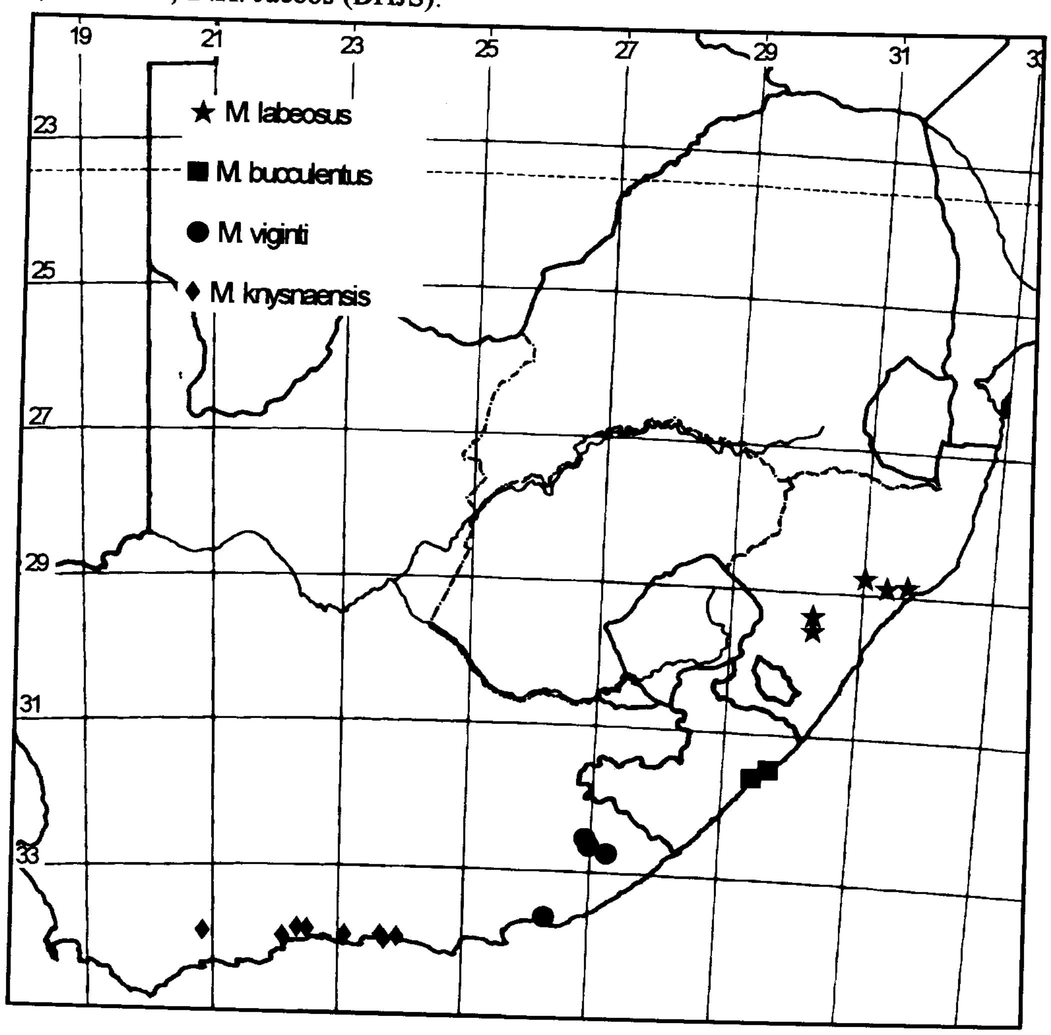


Figure 183. Distribution of *Miteronotus* species.

8.1.2 *Miteronotus viginti* spec. nov., Figs 204-211.

Length ♂ 3,82 - 4,66 mm; ♀ 4,50 - 5,27 mm.
Width ♂ 1,72 - 2,07 mm; ♀ 1,97 - 2,62 mm.
Diagnostic measurements are given in table 8.3.

Apterous, Body coated with a greyish incrustation, resulting in a general darkish appearance of uncleaned specimens. The following description is based on specimens with the incrustation removed

Head: Marginally longer (not including neck area) than its width across the eyes. Genae straight or slightly diverging anteriorly. Jugae small, triangular. Ridges on vertex as for previous species but subapical tubercle more prominent. Antennae 1,32-1,44 times as long as width across eyes, first segment thickest and longest, slightly curved and tapering towards base, extending beyond apex of genae by less than half of its length; second segment slightly curved basally, gradually thickening towards apex; third segment thinnest, straight, thickening slightly and evenly towards apex, pedicellate; fourth segment fusiform, sessile or with short pedicel, conical apex pilose; relative lengths of segments 15:10:13:11 (differing slightly between populations and sexes). Postocular tubercles prominent, often extending beyond level of outer margins of the eyes. Neck slightly constricted just behind the head.

Thorax: Dorsum. Pronotum 2,92-3,38 times as wide as long. Lateral lobes prominent, elevated, well delimited from disk, coarsely granulate; lateral margins straight or concave, converging anteriad; usually produced anteriad beyond level of collar. Disk smooth and shining with a somewhat uneven surface.

Mesonotal disk smooth and shining, usually with some irregular excavations posteriorly; disk separated from median ridge by prominent furrows. Median ridge in both sexes fairly narrow, at the most only slightly widening posteriad; surface smooth and no longitudinal suture or any sign of a median split discernable.

Metanotal disk smooth and shining anteriorly, usually exsculptate posteriorly, delimited from a rather narrow median ridge by a shallow longitudinal depression. Median ridge without a median longitudinal furrow, either completely fused and continuous with mesonotal ridge (e.g. Fig. 205) or delimited by a transverse (usually incomplete) suture (e.g. Fig 204).

MTg 1 narrow, widening laterally, slightly curving and tapering anterolaterally to end in an acute point that does not reach the lateral margin of the body. Laterally the sulcus between MTg 1 and MTg 2 is usually very narrow becoming much wider sublaterally before it completely disappear where they become fused. This results in 2(1+1) sublateral transverse elongate deep depressions on MTg 1+2. MTg 2 with 2(1+1) well developed sublateral ridges (just behind the above mentioned depressions) and usually a median bar, only visible on anterior part but sometimes not discernable.

Venter. Collar absent ventral of lateral tubercles or at most visible as a very narrow rim.

Legs: Trochanters not discernable.

Abdomen: Dorsum. Posteroexterior angles of only DELTg 6 and 7 moderately produced. Tergal disk 1,05-1,21 times as long as wide, only slightly elevated along median line. Carinae which separate glabrous impressions discernable but not prominent. Surface between carinae and impressions somewhat areolate especially along the margins of the carinae (however less than in previous species).

Table 8.3. Measurements (in mm) of *Miteronotus viginti* spec. nov.

	STRUCTURE		ISIDENGE FOREST					ALEXANDRIA FOREST				TOTAL			
			HT*	N	Mean	SD	Range‡	N	Mean	SD	Range‡	N	Mean	SD	Range®
MALES	Total	length	4.50	10	4.45	0.124	4.23-4.66	10	3.98	0.102	3.82-4.15	20	4.22	0.266	3.82-4.66
		width	2.00	10	1.97	0.082	1.82-2.07	10	1.87	0.060	1.76-1.96	20	1.92	0.087	1.72-2.07
	Head	length	0.85	10	0.84	0.022	0.79-0.87	10	0.78	0.024	0.74-0.82	20	0.81	0.040	0.74-0.87
		width	0.82	10	0.83	0.029	0.77-0.87	10	0.77	0.022	0.74-0.82	20	0.80	0.036	0.74-0.87
	Pronotum	length	0.50	10	0.47	0.025	0.42-0.52	10	0.39	0.020	0.35-0.43	20	0.43	0.044	0.35-0.52
		width	1.43	10	1.38	0.059	1.30-1.49	10	1.32	0.032	1.26-1.37	20	1.35	0.053	1.22-1.49
	Tergal disk	length	1.41	10	1.42	0.048	1.34-1.51	10	1.26	0.037	1.18-1.31	20	1.34	0.092	1.26-1.51
		width	1.24	10	1.22	0.057	1.10-1.30	10	1.20	0.038	1.10-1.25	20	1.21	0.048	1.10-1.30
	Antennal segments	I	0.35	10	0.36	0.015	0.34-0.39	10	0.32	0.011	0.29-0.34	20	0.34	0.026	0.29-0.35
		II	0.23	10	0.24	0.013	0.23-0.27	10	0.20	0.012	0.18-0.23	20	0.22	0.024	0.18-0.27
		III	0.30	10	0.30	0.020	0.26-0.33	10	0.27	0.010	0.25-0.28	20	0.28	0.022	0.25-0.33
		IV	0.25	10	0.26	0.010	0.24-0.28	10	0.23	0.009	0.21-0.25	20	0.25	0.018	0.21-0.28
			AT#	N	Mean	SD	Range‡	N	Mean	SD	Range‡	N	Mean	SD	Range®
FEMALES	Total	length	5.34	10	5.26	0.249	4.64-5.58	10	4.96	0.117	4.75-5.17	20	5.11	0.117	4.50-5.27
		width	2.46	10	2.42	0.156	2.05-2.62	10	2.33	0.090	2.13-2.45	20	2.37	0.132	1.97-2.62
	Head	length	0.92	10	0.93	0.038	0.83-0.99	10	0.88	0.014	0.85-0.91	20	0.90	0.038	0.83-0.99
		width	0.91	10	0.90	0.031	0.83-0.94	10	0.85	0.009	0.83-0.88	20	0.88	0.032	0.77-0.94
	Pronotum	length	0.54	10	0.54	0.048	0.41-0.59	10	0.47	0.017	0.43-0.51	20	0.50	0.051	0.41-0.59
		width	1.60	10	1.58	0.081	1.38-1.67	10	1.53	0.041	1.47-1.60	20	1.55	0.067	1.35-1.67
	Tergal disk	length	1.81	10	1.79	0.113	1.51-1.90	10	1.62	0.056	1.50-1.69	20	1.70	0.122	1.49-1.90
		width	1.48	10	1.48	0.100	1.25-1.60	10	1.46	0.049	1.37-1.56	20	1.47	0.078	1.23-1.60
	Antennal segments	I	0.40	10	0.39	0.014	0.36-0.42	10	0.35	0.009	0.33-0.37	20	0.37	0.024	0.33-0.42
		II	0.27	10	0.28	0.013	0.25-0.30	10	0.23	0.010	0.21-0.26	20	0.26	0.027	0.21-0.30
		III	0.35	10	0.34	0.024	0.28-0.38	10	0.31	0.014	0.28-0.34	20	0.33	0.027	0.28-0.38
		IV	0.29	10	0.29	0.008	0.27-0.31	10	0.26	0.010	0.23-0.28	20	0.27	0.020	0.23-0.31

* HT = holotype. # AT = allotype.
‡ May include measurements of specimens other than those used for statistical analysis.
® May include measurements of specimens from other localities.

Posterior nodulate transverse ridge on MTg 7 of females well developed with 2(1+1) prominent sublateral transverse elevations anterior to it.

Venter. Intersegmental suture 6/7 in males of most populations studied (not in the Alexandria population) obliterate for a short distance sublaterally (just mesally of the sublateral suture) where sternites 6 and 7 are fused. Spiracle 2 ventral; 3 & 4 sublateral, placed more than 1½ spiracle widths from margin; 5 sublateral, less than a spiracle width from margin; 6 & 7 lateral and visible from above; 8 subterminal on paratergites.

Genitalia: Pygophore (Figs 210-211) as for genus. Dorsal visible part of parameres (Fig. 211) sinuately transverse, similar to that of previous species. Removed parameres as in Figs 206-209.

Chromosome number: 2n(♂) = 20XY.

Habitat and distribution: Montane and coastal evergreen forests of the Eastern Cape (Fig. 183).

Etymology: Viginti (L) = twenty referring to its chromosome number.

Discussion: *Miteronotus viginti* is characterized by having the notal median ridge thin and smooth without a median split or suture. It differs from *Miteronotus labeosus, M. bucculentus* and *M. knysnaensis* as discussed under those species.

As in *Miteronotus labeosus,* much variation exists between different populations. Especially the Alexandria forest population seems to differ quite markedly from the other populations, but these differences do not justify subspecific status. Specimens from Alexandria forest are generally smaller and less elongate resulting, inter alia, in the tergal disk being approximately 1,1 times as long as wide (1,2 times in other populations) and the pronotum being relatively wider. They also have the first antennal segment more slender and males lack the fusion of sternites 6 and 7.

MATERIAL EXAMINED: **SOUTH AFRICA, Eastern Cape**. ♂ holotype: Isidenge forest, nr. Stutterheim, 32°41'S 27°17'E, 14-17.xii.1981, D H Jacobs (TMSA); ♀ allotype: ditto (TMSA); 254 paratypes as follows: 28♂♂ 25♀♀: Aucland Forest Reserve, Hogsback, 32°36'S 26°56'E, 16.xii.1981, D.H. Jacobs (DHJS); 10♂♂ 23♀♀: Schwarzwald forest, nr. Hogsback, 32°39'S 27°00'E, 16.xii.1981, D.H. Jacobs (DHJS); 45♂♂ 62♀♀: Same data as holotype (DHJS, TMSA); 2♂♂ 4♀♀: ditto, 2.ii.1984 (DHJS); 3♀♀: S. Afr., Cape, Amatole, Isidenge Forest St., 32°41'S 27°15'E, 16.xi.1987, E-Y: 2518, Querc. & Eucal. fungi, leg. Endrödy-Younga (TMSA); 1♂ 1♀: ditto, E-Y: 2517, Quercus for. litter (TMSA); 1♂ 2♀♀: S. Afr., Ciskei, Amatole, Pirie forest, 32°43'S 27°17'E, 8.xii.1987, E-Y: 2561, sift. wet for. ditch, leg. Endrödy-Younga (TMSA); 3♂♂: ditto, E-Y: 2560, indig. forest litter (TMSA); 19♂♂ 21♀♀: Alexandria forest, nr. Alexandria, 33°43'S 26°22'E, 18.xii.1981, D. H. Jacobs (DHJS, TMSA), 3♀♀: ditto, 30.i.1984 (DHJS); 1♂: S. Afr., SE. Cape Prov., Alexandria For. St., 33°43'S 26°23'E, 6.xii.1987, E-Y: 2555, indig. forest litter, leg. Endrödy-Younga (TMSA).

8.1.3 *Miteronotus bucculentus* spec. nov., Figs 212-219, 233-234.

Length ♂ 3,47 - 3,95 mm; ♀ 4,28 - 4,97 mm.

Width ♂ 1,52 - 1,69 mm; ♀ 1,89 - 2,26 mm.

Diagnostic measurements are given in Table 8.4.

Apterous. Body coated with a greyish incrustation, resulting in a general darkish grey appearance of uncleaned specimens. The following description is based on specimens with the incrustation removed.

Table 8.4. Measurements (in mm) of *Miteronotus bucculentus* spec. nov. from Port St. Johns.

STRUCTURE		MALES					FEMALES				
		HT*	N	Mean	SD	Range$	AT#	N	Mean	SD	Range$
Total	length	3.81	10	3.74	0.144	3.47-3.95	4.38	10	4.52	0.209	4.28-4.97
	width	1.62	10	1.65	0.039	1.52-1.69	2.01	10	2.01	0.112	1.89-2.26
Head	length	0.76	10	0.74	0.027	0.68-0.79	0.80	10	0.81	0.030	0.76-0.87
	width	0.80	10	0.80	0.023	0.77-0.84	0.83	10	0.84	0.023	0.80-0.88
Pronotum	length	0.44	10	0.44	0.021	0.40-0.48	0.44	10	0.48	0.040	0.42-0.55
	width	1.22	10	1.26	0.032	1.19-1.34	1.47	10	1.43	0.070	1.32-1.55
Tergal disk	length	1.05	10	1.06	0.033	1.01-1.12	1.30	10	1.37	0.071	1.23-1.47
	width	1.03	10	1.02	0.032	0.95-1.07	1.27	10	1.33	0.066	1.22-1.44
Antennal segments	I	0.24	10	0.26	0.015	0.22-0.29	0.29	10	0.28	0.012	0.26-0.31
	II	0.16	10	0.18	0.010	0.16-0.20	0.20	10	0.21	0.009	0.19-0.23
	III	0.23	10	0.23	0.008	0.21-0.25	0.25	10	0.26	0.010	0.24-0.28
	IV	0.24	10	0.25	0.009	0.23-0.27	0.27	10	0.27	0.010	0.25-0.29

* HT = holotype. # AT = allotype.
$ May include measurements of specimens other than those used for statistical analysis.

Head: About 1,05 times as wide (across the eyes) as long (not including neck area). Genae straight, relatively broad, ending bluntly. Jugae small, triangular. Lateral ridges on vertex curving anterolaterad just anterior of interocular callosities, ending on antenniferous lobes; subapical tubercle not prominent. Antennae short, 1,15-1,22x as long as width across eyes; first segment sturdy, thickest and longest, markedly curved and strongly tapering towards base, extending beyond apex of genae by about one quarter of its length; second segment shortest, slightly curved basally and gradually thickening towards apex; third segment slender, straight, thickening slightly and evenly towards apex, pedicellate; fourth segment fusiform with a short pedicel, conical apex pilose; relative lengths of segments: 11:8:10:10,5. Postocular tubercles prominent, usually reaching nearly to level of the outer margins of the eyes. Neck slightly constricted just behind the head. Rostral groove of males broadly oval, whole area, except thickenings lateral to slit where rostrum leaves the head, areolate (Fig. 234). Rostral groove of females normal, area inside rim transversely striated.

Thorax: Dorsum. Pronotum about 2,9 times as wide as long. Lateral lobes strongly elevated, clearly separated from smooth disk, covered with prominent setiferous nodules (except for a oval glabrous area mesally). Setae, which is also present on lateral lobes of meso- and metanotum, about as long as the height of the nodules. Lateral margin of lateral lobes slightly convex, converging anteriad, produced anteriorly to level of the anterior margin of the collar.

Mesonotal disk smooth and shining with a somewhat uneven surface, delimited from median ridge by 2(1+1) submedian, anteriorly converging, furrows. Median ridge pointed anteriorly, broad posteriorly, smooth and shining without a median suture. Mesonotal lateral lobes also raised, coarsely nodulate.

Metanotal disk smooth and shining anteriorly, irregularly excavated posteriorly and with large punctures submesally adjacent to the median ridge. Median ridge fairly broad, sparsely punctate, these punctures may delimit it to some extent from mesonotal ridge. Lateral lobes slightly convex, subparallel, coarsely nodulate. Suture between meso- and metanotum ending submesally in 2(1+1) prominent falcate pits.

MTg 1 narrow, moderately widening laterally, smooth and shining but with some punctures sublaterally; one of these punctures seem to be larger and deeper than the rest, forming a small sublateral pit. MTg 1 and 2 delimited for lateral half by 2(1+1) prominent transverse sulci, fused mesally. MTg 2 with sublateral ridges well developed. Lateral of these ridges 2(1+1) smooth subquadrangular areas are present, mesally of them MTg 2 is irregularly punctate and excavate except for 2(1+1) median longitudinal ridges which may be fused anteriorly.

Venter. Collar absent ventral of lateral tubercles.

Legs: Trochanters usually not discernable, sometimes a very faint line may indicate their position.

Abdomen: Dorsum. Posteroexternal angles of only DELTg 6 and 7 slightly produced. Tergal disk about 1,03 times as long as wide, moderately elevated along median line. Carinae which separate glabrous impressions prominent, sparsely punctate. Surface between carinae and impressions fairly smooth but with large scattered punctures, especially on tergite 4. Posterior nodulate transverse ridge on MTg 7 of females prominent, convex, with a single prominent transverse elevation anterior to it.

Venter. Intersegmental suture 6/7 in males complete. Spiracle 2 ventral; 3 sublateral, about two spiracle widths from lateral margin, 4 & 5 sublateral, about 1½ spiracle widths from margin, 6 & 7 lateral and visible from above, 8 subterminal on paratergites.

Genitalia: Pygophore (Figs 218-219) as for genus. Dorsal visible part of parameres (Fig. 219) transverse. Removed parameres as in Figs 214-217.

Chromosome number: $2n(♂) = 27X_1X_2Y$.

Habitat and distribution: At present only known from the evergreen forests of the Port St. Johns area in the Eastern Cape (Fig. 183).

Etymology: Bucculentus (L) = big mouth referring to the large, broadly oval rostral groove of the males.

Discussion: *Miteronotus bucculentus* is a small, broadly oval species that can at once be distinguished from the other species of the genus by the peculiar rostral groove of the males and the prominent setiferous nodules on the notal lateral lobes which bear prominent and fairly long setae. It possesses a similar spiracle pattern to *M. viginti* but can easily be distinguished by the characters mentioned above, the more prominent and broader median notal ridge, by having antennal segment 4 longer than 3 and by its different chromosome number.

MATERIAL EXAMINED: **Eastern Cape**. ♂ holotype: Mount Thesiger Nature Reserve, Port St. Johns, 31°37′S 29°31′E, 4-5.xii.1981, D.H. Jacobs (TMSA); ♀ allotype: ditto (TMSA); 55 paratypes as follows: 1♀: S. Afr., Transkei, Ntsubane forest, 31°27′S 29°44′E, 25.xi.1987, E-Y: 2537, fungi &

for. litter, leg. Endrödy-Younga (TMSA); 26♂♂ 25♀♀: Same data as holotype (DHJS, TMSA); 2♂♂ 1♀: nr. Port St. Johns, Transkei, 31°37'S 29°32'E, 3.xii.1981 D.H. Jacobs (DHJS).

8.1.4 *Miteronotus knysnaensis* spec. nov., Figs 220-231.

Length ♂ 3,49 - 4,34 mm; ♀ 4,38 - 5,16 mm.
Width ♂ 1,47 - 1,91 mm; ♀ 1,91 - 2,42 mm.
Diagnostic measurements are given in Table 8.5.

Apterous. Body coated with a greyish incrustation, resulting in a dark grey, nearly slate, appearance of uncleaned specimens. The following description is based on specimens with the incrustation removed.

Table 8.5. Measurements (in mm) of *Miteronotus knysnaensis* spec. nov.

STRUCTURE		MALES					FEMALES				
		HT*	N♦	Mean	SD	Range@	AT#	N♦	Mean	SD	Range@
Total	length	3.98	16	3.88	0.160	3.49-4.34	4.65	16	4.68	0.208	4.38-5.16
	width	1.77	16	1.73	0.088	1.47-1.91	2.14	16	2.12	0.109	1.91-2.42
Head	length$	0.71	16	0.69	0.024	0.64-0.80	0.80	16	0.78	0.029	0.73-0.83
	width	0.77	16	0.76	0.040	0.68-0.87	0.82	16	0.83	0.020	0.79-0.93
Pronotum	length	0.38	16	0.39	0.022	0.35-0.43	0.44	16	0.46	0.035	0.40-0.55
	width	1.13	16	1.17	0.093	0.99-1.31	1.24	16	1.31	0.071	1.21-1.44
Tergal disk	length	1.18	16	1.17	0.060	1.03-1.34	1.51	16	1.47	0.086	1.30-1.67
	width	1.13	16	1.15	0.046	0.99-1.27	1.45	16	1.40	0.075	1.25-1.62
Antennal segments	I	0.56	16	0.57	0.044	0.50-0.67	0.59	16	0.60	0.023	0.55-0.67
	II	0.20	16	0.20	0.014	0.16-0.23	0.23	16	0.21	0.015	0.17-0.24
	III	0.31	16	0.29	0.027	0.22-0.33	0.34	16	0.32	0.027	0.26-0.36
	IV	0.32	16	0.30	0.020	0.26-0.33	0.35	16	0.33	0.023	0.29-0.38

* HT = holotype. # AT = allotype.
@ May include measurements of specimens from other localities.
$ Because of much variation in the development of the genae, head length measurements were taken from base of head to tip of clypeus.
♦ Four individuals from each of the following localities: Witels forest, Collins Hoek forest, Diepwalle

Head: Wider (across eyes) as long (neck area and genae not included). Much variation exists in the development of the genae: 1.) they may be produced beyond the apex of the clypeus as 2(1+1) long, thin acute extensions that are either straight or converging (e.g. in Witels forest and Stormsriver Mouth populations - they may even touch anteriorly in some individuals) or diverging (e.g. in the Long forest population). 2.) they may be much shorter only just extending beyond apex of clypeus or in some specimens be slightly shorter than the clypeus (e.g. in the Diepwalle and George populations). Jugae small, triangular. Ridges on vertex as for *Miteronotus labeosus* but subapical tubercle prominent. Antennae 1,75-1,80 times as long as width of head across eyes; first segment by far the longest and thickest, tapering at base and slightly tapering apically; second segment short, slightly curved basally and thickening towards apex; third segment slender, straight, evenly thickening towards apex, pedicellate; fourth segment oblong fusiform, conical apex pilose; relative lengths of segments: 28:10:15,5:16. The first antennal segment of the males of some populations (e.g. from Witels forest, Stormsriver mouth, Witteklip forest) bears a peculiar sculpture (Figs 228-230) while that from the most other populations is of the more conventional type (Figs 231-232). The significance of this difference or the function of these structures are not known at this stage. Postocular tubercles not reaching to level of outer margins of eyes.

Thorax: Dorsum. Pronotum 2,8-3 times as wide as long. Lateral lobes granulate, on same level and not clearly delimited from disk, lateral margins straight or slightly concave, converging anteriad and produced anteriorly beyond the level of the collar. Disk small, irregularly excavated but with glabrous patches medially.

Mesonotal disk smooth submedially adjacent to cleft that separates it from median ridge, irregularly excavated laterally. Lateral lobes not elevated, granulate, lateral margins straight, converging anteriad. Median ridge fairly narrow anteriorly, becoming broader posteriorly (more so in females), containing a median longitudinal suture that is usually only visible as lightly coloured, less sclerotised line but sometimes it forms a shallow impressed line. This suture ends posteriorly when it meets the transverse suture at the anterior margin of MTg 1.

Metanotal disk with variously developed smooth and irregularly excavated areas, delimited from median ridge by a shallow, irregularly excavated depression. Median ridge fairly wide, usually with some sparse punctures and an uneven surface, completely fused with mesonotal ridge, although area where uneven surface starts may indicate border between meso- and metanotum.

MTg 1 narrow, widening laterally and curving anterolaterally, separated from MTg 2 for lateral half of its width by 2(1+1) deep sulci, completely fused medially. MTg 2 with 2(1+1) well developed sublateral ridges and a median bar which is usually only discernable on anterior part, rest of surface usually fairly smooth.

Venter. Collar absent ventral of lateral tubercles.

Legs: Trochanters fused with femora but line of demarcation usually faintly discernable.

Abdomen: Dorsum. Tergal disk marginally longer than wide, only slightly elevated along median line. Carinae which separate glabrous impressions usually only faintly recognisable except on tergite 4 where the sublateral and often the median carinae is well developed anteriorly. Surface of largest part of tergal disk covered with oval or oblong punctures.

Venter. Intersegmental suture 6/7 of males complete. Spiracle 2 ventral; 3-7 lateral, visible from above, 8 subterminal on paratergites.

Genitalia: Pygophore (Figs 226-227) as for genus. Dorsal visible part of parameres as in Fig. 227 and removed parameres as in Figs 222-225.

Chromosome number: 2n(♂) = 32XY.

Habitat and distribution: Widespread and fairly common in the Tsitsikama evergreen forest in the Western and Eastern Cape.

Etymology: Named after Knysna, a town synonomous with the evergreen Tsitsikama forests.

Discussion: *Miteronotus knysnaensis* can readily be distinguished from all congeneric species by having spiracles 3-7 lateral and visible from above and by its very long first antennal segment which is longer than the second and third segments combined.

MATERIAL EXAMINED: **SOUTH AFRICA. Western Cape**. ♂ holotype: Diepwalle forest, Cape Province, 33°57′S 23°09′E, 19-21.xii.1977, D.H. Jacobs (TMSA); ♀ allotype: ditto (TMSA); 327 paratypes as follows: 8♂♂ 19♀♀: Kop Forest, Cape Province, 33°52′S 23°08′E, 20.xii.1977, D.H. Jacobs (DHJS, TMSA); 1♀: Outenikwa Pass, S Afr., S. Cape Mt., 33°53′S 22°23′E, (TMSA); 2♂♂ 2♀♀: Helderfontein 1150 m, S Afr., S Cape Mt., 33°56′S 20°52′E, 7.iii.1979, E-Y: 1560, sift. forest litter, leg. Endrödy-Younga (TMSA); 7♂♂ 1♀: Boesmansbos, 1050m, S Afr., Langeberge, 33°56′S 20°53′E, 7.iii.1979, E-Y: 1560, sift. forest litter, leg. Endrödy-Younga (TMSA); 7♂♂ 1♀: Boesmansbos, 1050 m, S. Afr., Langeberge, 33°56′S 20°53′E, 7.iii.1979, E-Y: 1560, sifted forest lit., leg. Endrödy-Younga (TMSA); 7♂♂ 6♀♀: Collins Hook forest, Cape Province, 33°56′S 22°38′E, 22.xii.1979, D.H. Jacobs (DHJS); 1♂ 1♀: Knysna forest, S. Afr., S. Cape, 33°56′S 23°08′E, 19.xi.1973, E-Y: 272, sift. Podocarp. lit., leg. Endrödy-Younga (TMSA); 1♂ 1♀: S. Afr., S. Cape Prov., Tsitsikama, Lottering, 33°56′S 23°40′E, 12.xii.1977, E-Y: 1419, forest floor litter, leg. Endrödy-Younga (TMSA); 4♂♂ 23♀♀: Long forest, Cape Province, 33°57′S 22°11′E, 21.xii.1977, D.H. Jacobs (DHJS, TMSA); 22♂♂ 18♀♀: Same data as holotype (DHJS, TMSA); 2♀♀: ditto, 19-20.xii.1981 (DHJS); 11♂♂ 11♀♀: S. Afr., S. Cape, George, 33°58′S 22°28′E, 4.ix.1979, E-Y: 1632, sifted forest litter, leg. Endrödy-Younga (TMSA); 4♂♂ 1♀: ditto, E-Y: 1633, for. litter in gorge (TMSA); **Eastern Cape**. 5♂♂ 5♀♀: Elands forest, Cape Province, 33°58′S 23°47′E, 17.xii.1977, D. H. Jacobs (DHJS, TMSA); 10♂♂ 9♀♀: Witteklip forest, Cape Province, 33°58′S 23°51′E, 17.xii.1977, D.H. Jacobs (DHJS, TMSA); 1♀: Tsitsikama, Witelsbos, S. Afr., S. Cape Province., 33°58′S 24°02′E, 10.xii.1978, E-Y: 1529, sift. forest litter, leg. Endrödy-Younga (TMSA); 4♂ 8♀♀: Witels forest, Cape Province, 33°59′S 24°06′E, 15.xii.1977, D.H. Jacobs (DHJS); 12♂♂ 25♀♀: Stormsriver mouth, Cape Province, 34°01′S 23°54′E, 18.xii.1977, D.H. Jacobs (DHJS, TMSA); 12♂♂ 65♀♀: Witels forest, Cape Province, 34°03′S 24°08′E, 16.xii.1977, D.H. Jacobs (DHJS, TMSA); 1♂ 4♀♀: ditto, 19.xii.1981 (DHJS); 3♀♀: Tsitsikama F., Humansdorp D., humus, i.1961 (TMSA).

8.2 Cytogenetics of the genus Miteronotus

The locality and number of individuals of *Miteronotus* species that were cytogenetically studied are presented in Table 8.6. The course of meioses is of the regular Carventine type.

Table 8.6. Locality and numbers of individuals of *Miteronotus* species cytogenetically studied.

Locality	Co-ordinates	Date collected	No. of individuals cytogenetically studied
Miteronotus labeosus			
Ngoye forest, nr. Empangeni	28°50'S 31°43'E	11-12/xii/1980	7
Dhlinza forest, Eshowe	28°51'S 31°27'E	12/iv/1980	10
Karkloof, nr. Pietermaritzburg	29°19'S 30°18'E	1/ii/1983	10
Town Bush, Pietermaritzburg	29°33'S 30°20'E	31/i/1983	8
Miteronotus viginti			
Qacu Forest Res., nr. Stutterheim	32°25'S 27°28'E	17/xii/1981	1
Aucland Forest Reserve, Hogsback	32°36'S 26°56'E	16/xii/1981	6
Schwarzwald forest, nr. Hogsback	32°39'S 27°00'E	16/xii/1981	7
Isidenge forest, nr. Stutterheim	32°41'S 27°17'E	14-17/xii/1981	9
ditto	"	2/ii/1984	4
Alexandria forest, nr. Alexandria	33°43'S 26°22'E	18/xii/1981	5
Miteronotus bucculentus			
Mount Thesiger Nature Reserve, Port St. Johns, Eastern Cape	31°37'S 29°31'E	4-5/xii/1981	7
nr. Port St. Johns, Eastern Cape	31°37'S 29°32'E	3/xii/1981	3
Miteronotus knysnaensis			
Long forest, nr. Knysna	33°57'S 22°11'E	21/xii/1977	2
Diepwalle forest, nr. Knysna	33°57'S 23°09'E	19-21/xii/1977	4
ditto	"	19-20/xii/1981	10
Witels forest, Eastern Cape	33°59'S 24°06'E	15/xii/1977	7
ditto	"	19/xii/1981	4

8.2.1 ***Miteronotus labeosus*** (Figs 184, 237-240).

The chromosome number of *M. labeosus* is 2n(♂) = 26XY. The true and relative chromosome areas for *M. labeosus* of different localities are presented in Table 8.7 and an idiogram in Fig. 184. Autosomes A3-A12 form a more or less gradual size series. There is a slight step towards A2 which is moderately larger than A3 and a distinct step towards A1 while is much larger than the other autosomes. The X-chromosome is the largest chromosome in the complement while the Y-chromosome is on average of about the same size as autosome A2. There is a significant variation in the size of the sex chromosomes between the different localities. For example: In the Karkloof individuals the Y-chromosome is distinctly smaller than in the other localities. There is also slight variation in autosome size between localities, but, taking A1 where reversal of order probably didn't take place as indicator, it doesn't seem to be significant.

Table 8.7. True and relative chromosome areas of *M. labeosus*.

True chromosome areas (μm^2) and standard deviation.				
Chromosome	**Karkloof**	**Ngoye forest**	**Dhlinsa forest**	**TOTAL**
Individuals	2	2	1	5
Cells	11	10	2	23
A1	2.45(±0.49)	1.94(±0.37)	2.03(±0.19)	2.20(±0.48)
A2	1.84(±0.32)	1.49(±0.28)	1.48(±0.05)	1.65(±0.33)
A3	1.62(±0.27)	1.38(±0.23)	1.37(±0.02)	1.48(±0.27)
A4	1.54(±0.25)	1.27(±0.18)	1.35(±0.02)	1.41(±0.24)
A5	1.46(±0.22)	1.25(±0.19)	1.33(±0.02)	1.36(±0.22)
A6	1.42(±0.22)	1.21(±0.19)	1.18(±0.11)	1.31(±0.22)
A7	1.35(±0.23)	1.17(±0.19)	1.12(±0.07)	1.25(±0.22)
A8	1.31(±0.22)	1.14(±0.18)	1.07(±0.06)	1.22(±0.21)
A9	1.25(±0.23)	1.09(±0.19)	1.05(±0.06)	1.17(±0.22)
A10	1.16(±0.18)	1.05(±0.18)	0.97(±0.06)	1.09(±0.18)
A11	1.09(±0.19)	0.93(±0.16)	0.86(±0.02)	1.00(±0.19)
A12	0.98(±0.19)	0.82(±0.11)	0.83(±0.00)	0.90(±0.17)
X	2.47(±0.40)	2.48(±0.59)	2.05(±0.19)	2.44(±0.48)
Y	1.50(±0.39)	1.80(±0.28)	1.74(±0.19)	1.65(±0.35)
Autosomes	17.49(±2.89)	14.71(±2.38)	14.64(±0.44)	16.03(±2.85)
All chromosomes	21.45(±3.61)	18.98(±3.22)	18.43(±0.81)	20.12(±3.46)
Relative chromosome areas (% of total area of autosomes) and standard deviation.				
A1	14.00(±1.06)	13.19(±0.80)	13.88(±0.88)	13.64(±0.99)
A2	10.49(±0.51)	10.12(±0.56)	10.08(±0.02)	10.30(±0.53)
A3	9.29(±0.36)	9.08(±0.21)	9.40(±0.41)	9.21(±0.31)
A4	8.83(±0.50)	8.68(±0.26)	9.26(±0.39)	8.80(±0.42)
A5	8.39(±0.41)	8.52(±0.19)	9.06(±0.37)	8.51(±0.36)
A6	8.14(±0.27)	8.25(±0.22)	8.03(±0.51)	8.18(±0.26)
A7	7.74(±0.34)	7.93(±0.19)	7.65(±0.26)	7.81(±0.28)
A8	7.48(±0.28)	7.77(±0.21)	7.33(±0.17)	7.60(±0.28)
A9	7.16(±0.32)	7.43(±0.26)	7.17(±0.16)	7.28(±0.31)
A10	6.62(±0.30)	7.11(±0.25)	6.60(±0.60)	6.83(±0.38)
A11	6.24(±0.31)	6.29(±0.32)	6.85(±0.07)	6.23(±0.32)
A12	5.61(±0.38)	5.62(±0.41)	5.69(±0.15)	5.62(±0.37)
X	14.12(±0.72)	16.70(±1.58)	14.02(±0.85)	15.23(±1.74)
Y	8.51(±1.06)	12.24(±0.64)	11.87(±0.92))	10.42(±2.06)

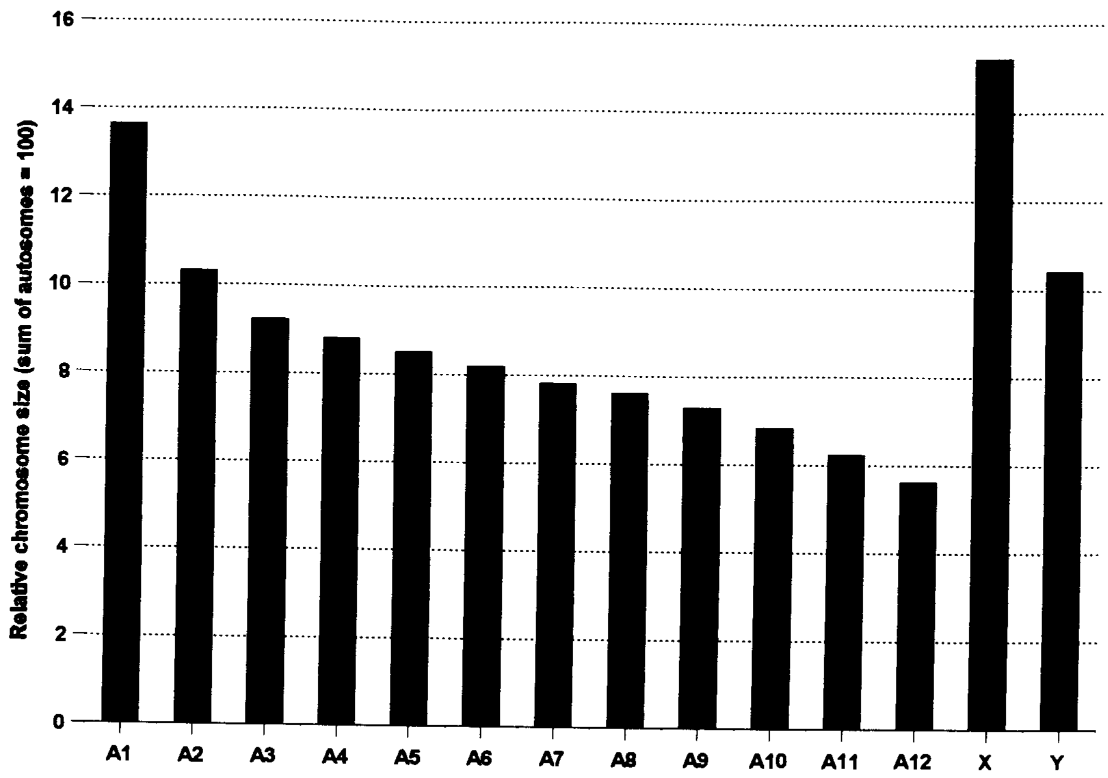


Figure 184. Idiogram of *Miteronotus labeosus*.

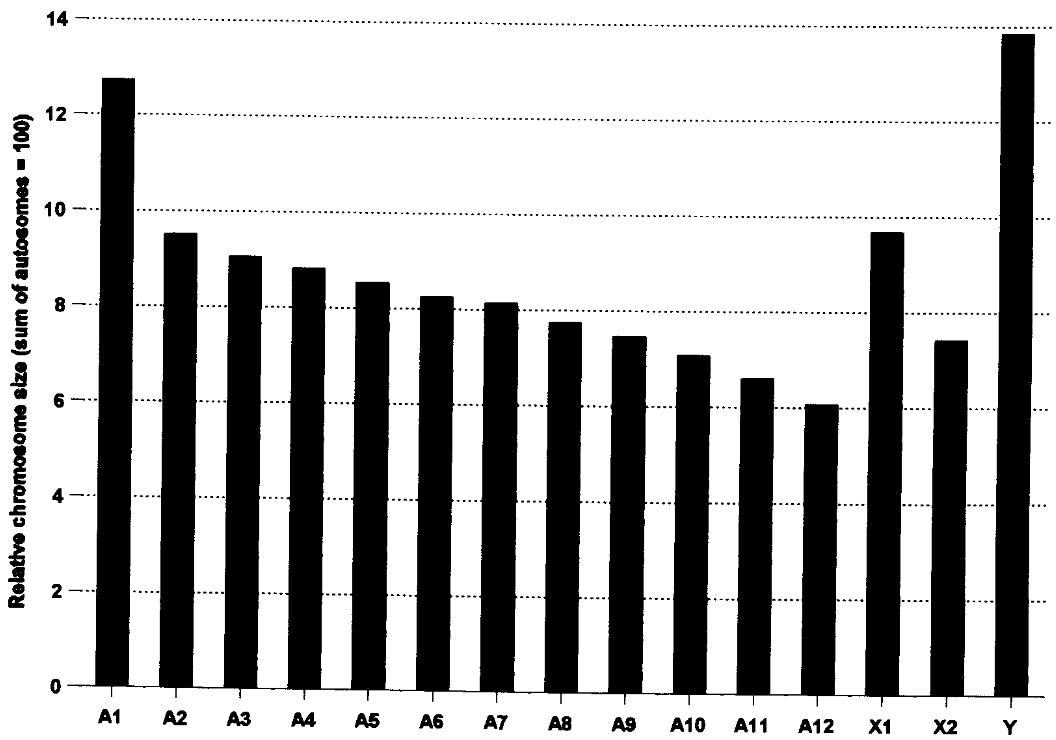


Figure 185. Idiogram of *Miteronotus bucculentus*.

8.2.2 ***Miteronotus bucculentus*** (Figs. 185, 251-253).

The chromosome number of *M. bucculentus* is 2n(♂) = $27X_1X_2Y$. The true and relative chromosome areas for *M. bucculentus* are presented in Table 8.8 and an idiogram in Fig. 185. The size distribution of the autosomes follows the same pattern as that of the previous species except that autosome A2 falls within the gradual series of A2-A12 but the sex chromosomes differ markedly. The sex chromosome system is presumably X_1X_2Y where the Y-chromosome is the largest chromosome in the complement while X_1 is of similar size as A2 and X_2 lies between A9 and A10 in size.

Table 8.8. True and relative chromosome areas of *M. bucculentus*.

	True chromosome areas (μm^2) and standard deviation.	Relative chromosome areas (% of total area of autosomes) and standard deviation.
Chromosome	**Port St. Johns**	**Port St. Johns**
Individuals	**4**	**4**
Cells	**15**	**15**
A1	**2.48(±0.40)**	**12.73(±0.70)**
A2	**1.85(±0.28)**	**9.50(±0.27)**
A3	**1.76(±0.26)**	**9.05(±0.32)**
A4	**1.72(±0.26)**	**8.82(±0.36)**
A5	**1.66(±0.26)**	**8.54(±0.40)**
A6	**1.61(±0.26)**	**8.26(±0.32)**
A7	**1.59(±0.26)**	**8.13(±0.32)**
A8	**1.51(±0.21)**	**7.76(±0.23)**
A9	**1.45(±0.20)**	**7.46(±0.22)**
A10	**1.38(±0.21)**	**7.08(±0.41)**
A11	**1.28(±0.20)**	**6.60(±0.51)**
A12	**1.18(±0.18)**	**6.07(±0.40)**
X_1	**1.89(±0.33)**	**9.68(±0.69)**
X_2	**1.44(±0.22)**	**7.42(±0.74)**
Y	**2.70(±0.42)**	**13.85(±0.75)**
Autosomes	**19.47(±2.76)**	
All chromosomes	**25.50(±3.62)**	

8.2.3 ***Miteronotus viginti*** (Figs 186, 246-250).

The chromosome number of *M. viginti* is 2n(♂) = 20XY. The true and relative chromosome areas for this taxon from different localities are presented in Table 8.9 and an idiogram in Fig. 186. The autosomes form two gradual series: four autosomes (A1-A4) form one gradual series and is distinctly larger than the other five autosomes (A5-A9) which form the second gradual series. The X-chromosome is on average about as large as the second largest autosome while the Y-chromosome lies between autosomes A4 and A5 in size.

As in the case of *M. labeosus* the sex chromosomes exhibit much variation in size between localities and even between individuals of the same locality. For example: the relative sizes of the X-chromosome for six individuals from Isidenge forest are 17.93, 17.34, 15.64, 14.77, 13.06 and 12.66 respectively. The Y-chromosome in the individual from Schwarzwald forest (Fig. 250) is significantly smaller than that of individuals from the other localities.

Table 8.9. True and relative chromosome areas of *M. viginti*.

True chromosome areas (μm^2) and standard deviation.				
Chromosome	**Isidenge forest**	**Schwarzwald forest**	**Aucland Forest Reserve**	**TOTAL**
Individuals	6	1	1	8
Cells	25	5	3	33
A1	2.67(±0.33)	3.00(±0.33)	2.89(±0.34)	2.74(±0.35)
A2	2.36(±0.29)	2.60(±0.11)	2.53(±0.34)	2.41(±0.28)
A3	2.22(±0.28)	2.44(±0.20)	2.38(±0.25)	2.27(±0.27)
A4	2.09(±0.30)	2.30(±0.17)	2.34(±0.26)	2.14(±0.29)
A5	1.60(±0.21)	1.81(±0.10)	1.90(±0.24)	1.66(±0.22)
A6	1.53(±0.23)	1.76(±0.12)	1.77(±0.24)	1.59(±0.23)
A7	1.44(±0.20)	1.62(±0.13)	1.69(±0.30)	1.49(±0.22)
A8	1.31(±0.19)	1.43(±0.10)	1.55(±0.19)	1.35(±0.19)
A9	1.19(±0.20)	1.34(±0.07)	1.41(±0.28)	1.23(±0.21)
X	2.50(±0.36)	2.14(±0.07)	2.60(±0.25)	2.46(±0.35)
Y	1.85(±0.20)	1.13(±0.06)	2.12(±0.43)	1.77(±0.35)
Autosomes	16.40(±2.10)	18.29(±0.66)	18.46(±2.42)	16.87(±2.11)
All chromosomes	20.76(±2.35)	21.56(±0.69)	23.18(±3.09)	21.10(±2.31)
Relative chromosome areas (% of total area of autosomes) and standard deviation.				
A1	16.31(±0.85)	16.38(±1.74)	15.70(±0.26)	16.27(±0.98)
A2	14.40(±0.64)	14.22(±0.61)	13.70(±0.47)	14.31(±0.64)
A3	13.55(±0.46)	13.31(±0.88)	12.90(±0.31)	13.45(±0.55)
A4	12.73(±0.68)	12.58(±0.72)	12.70(±0.24)	12.71(±0.65)
A5	9.74(±0.47)	9.88(±0.31)	10.30(±0.15)	9.81(±0.45)
A6	9.30(±0.51)	9.64(±0.37)	9.60(±0.17)	9.38(±0.48)
A7	8.75(±0.34)	8.84(±0.65)	9.13(±0.42)	8.80(±0.40)
A8	7.99(±0.44)	7.81(±0.55)	8.39(±0.26)	8.00(±0.45)
A9	7.23(±0.47)	7.34(±0.45)	7.58(±0.54)	7.28(±0.47)
X	15.39(±2.35)	11.69(±0.35)	14.11(±0.50)	14.71(±2.45)
Y	11.40(±1.33)	6.16(±0.46)	11.43(±1.09)	10.61(±2.25)

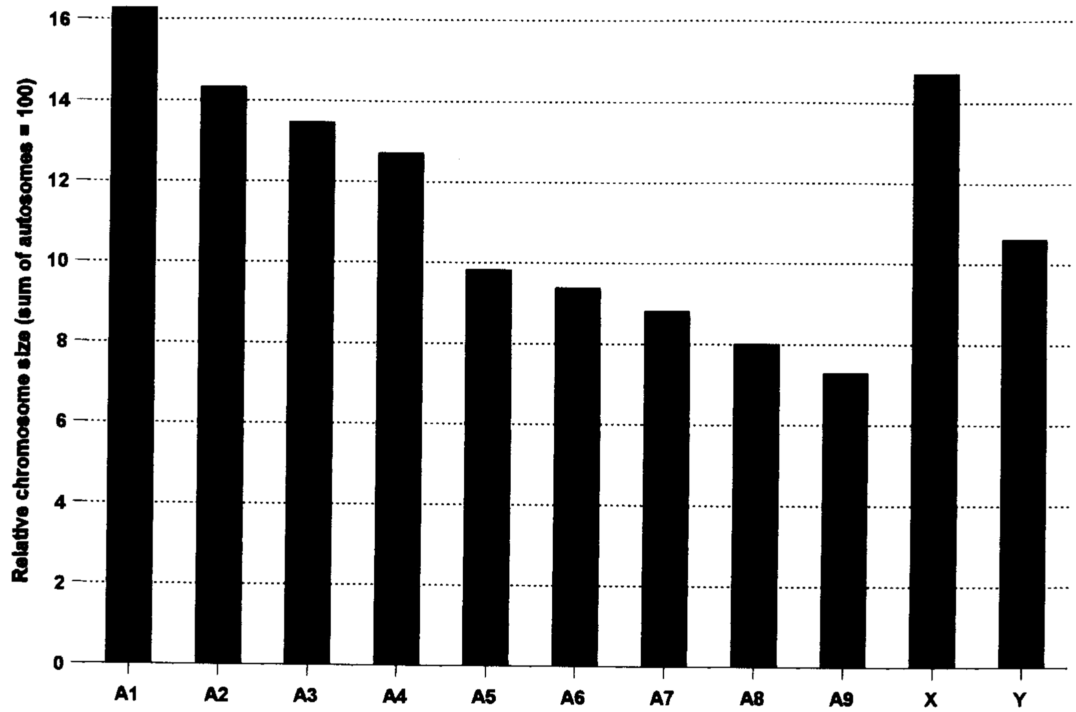


Figure 186. Idiogram of *Miteronotus viginti*.

8.2.4 ***Miteronotus knysnaensis*** (Figs 187, 241-245).

The chromosome number of *M. knysnaensis* is 2n = 32XY, the highest number thus far recorded in the Carventinae. The true and relative chromosome areas for *M. knysnaensis* are presented in Table 8.10 and an idiogram in Fig. 187. All the autosomes form a more or less gradual size series. Both sex chromosomes are much larger than any of the autosomes, the X-chromosome (on average) being about double the size of the largest autosome while the Y-chromosome is about 1.5x as large as the largest autosome. There is also a large difference in the size of the sex chromosomes (especially the X-chromosome) in the two individuals measured. The relative size of the X-chromosome of one individual is 24,02 (Figs 241-242) and of the other 18.27 (Figs 244-245).

8.2.5 Discussion.

The chromosome numbers of the species of *Miteronotus* are so widely divergent that it is difficult to deduct the relationships of the species from this cytogenetic data. The autosomal karyotypes of *M. bucculentus* and *M. labeosus* exhibit the same pattern and they are probably closely related. The multiple sex chromosome system (X_1X_2Y) in the former could have arisen by fragmentation of the X chromosome of a 26XY ancestor. Another possibility is that it could have arisen through chromatid autonomy when a 14XY protokaryotype underwent chromatid autonomy to form a $27X_1X_2Y$ or 26XY karyotype. The presence of a single large autosome in the karyotype of both these species indicates that

Table 8.10. True and relative chromosome areas of *M. knysnaensis*.

True chromosome areas (μm^2) and standard deviation.		Relative chromosome areas (% of total area of autosomes) and standard deviation.
Chromosome	**Diepwalle forest**	**Diepwalle forest**
Individuals	**2**	**2**
Cells	**12**	**12**
A1	**1.88(±0.57)**	**9.38(±0.55)**
A2	**1.75(±0.55)**	**8.72(±0.40)**
A3	**1.66(±0.52)**	**8.28(±0.35)**
A4	**1.62(±0.49)**	**8.08(±0.33)**
A5	**1.56(±0.47)**	**7.81(±0.24)**
A6	**1.48(±0.40)**	**7.45(±0.37)**
A7	**1.38(±0.39)**	**6.95(±0.30)**
A8	**1.33(±0.38)**	**6.66(±0.19)**
A9	**1.27(±0.38)**	**6.32(±0.27)**
A10	**1.21(±0.35)**	**6.03(±0.22)**
A11	**1.14(±0.34)**	**5.68(±0.35)**
A12	**1.06(±0.28)**	**5.33(±0.37)**
A13	**0.99(±0.26)**	**4.96(±0.32)**
A14	**0.86(±0.23)**	**4.37(±0.48)**
A15	**0.79(±0.22)**	**3.97(±0.59)**
X	**4.33(±1.75)**	**21.14(±3.52)**
Y	**2.79(±0.60)**	**14.33(±1.80)**
Autosomes	**19.98(±5.74)**	
All chromosomes	**27.10(±7.95)**	

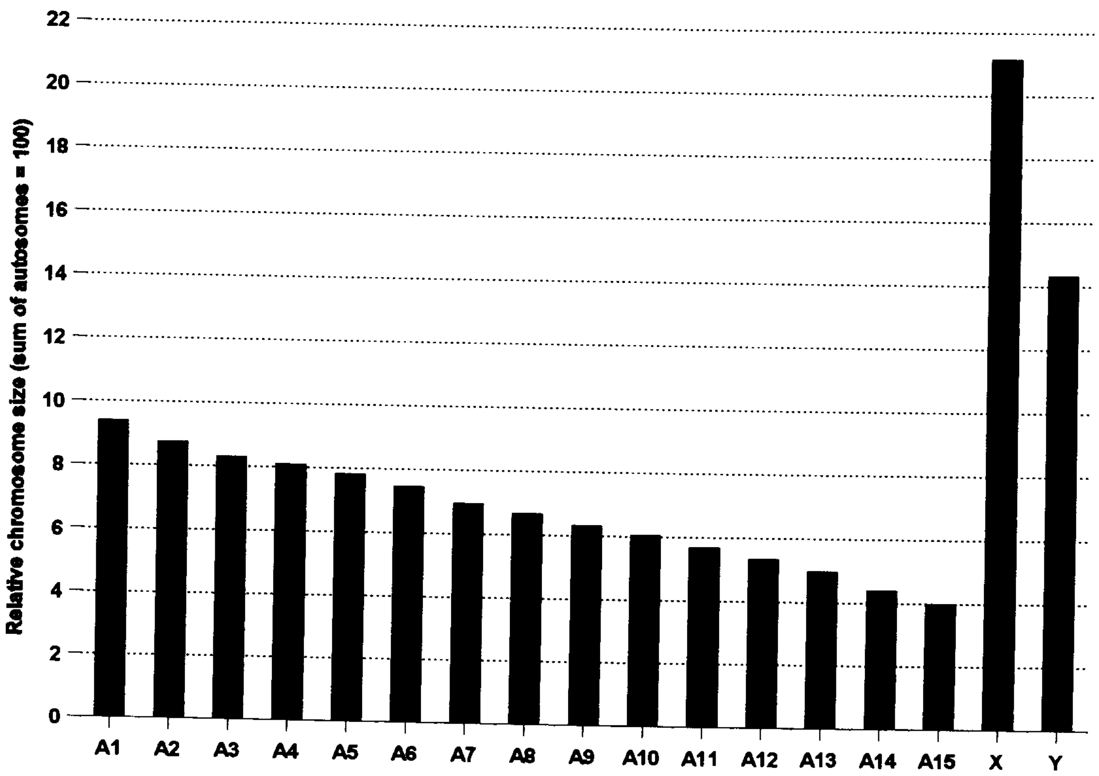


Figure 187. Idiogram of *Miteronotus knysnaensis*.

they are not the direct products of chromosome autonomy of a 14XY ancestor as one would then expect that each autosome would split up into two chromosomes of similar size. If chromatid autonomy indeed played a role in the origin of these karyotypes, at least another fission and a fusion event were necessary in order to be able to explain their origin.

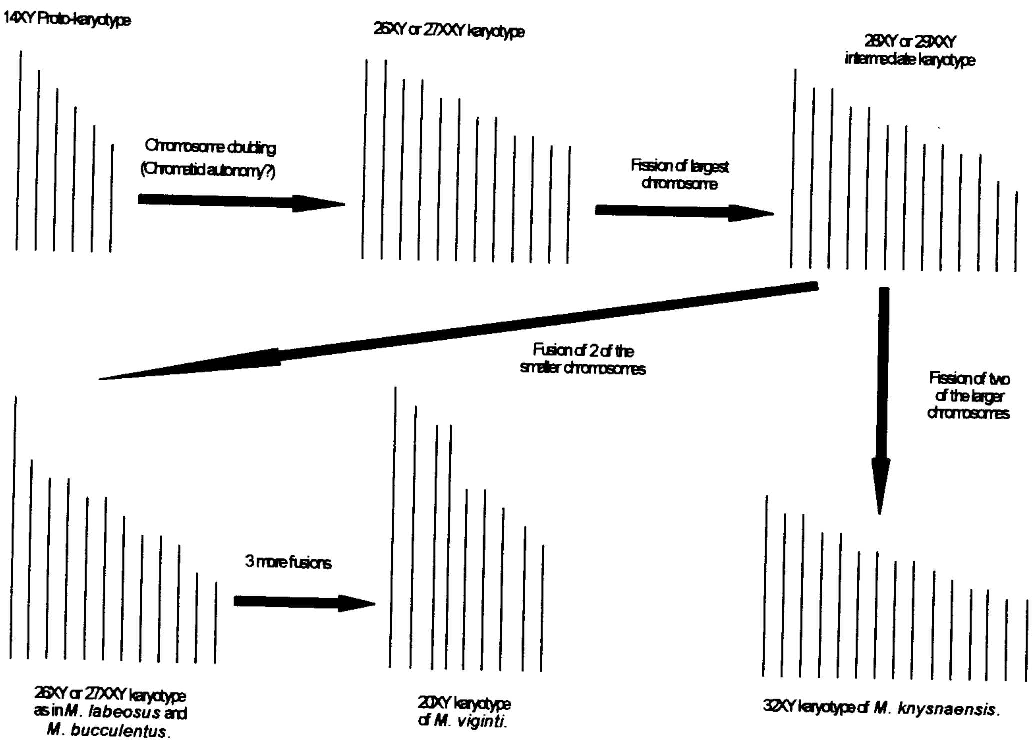
The other possibility to explain the origin of this karyotype is through multiple fissions (and perhaps some fusions) of the chromosomes of the 14XY protokaryotype.

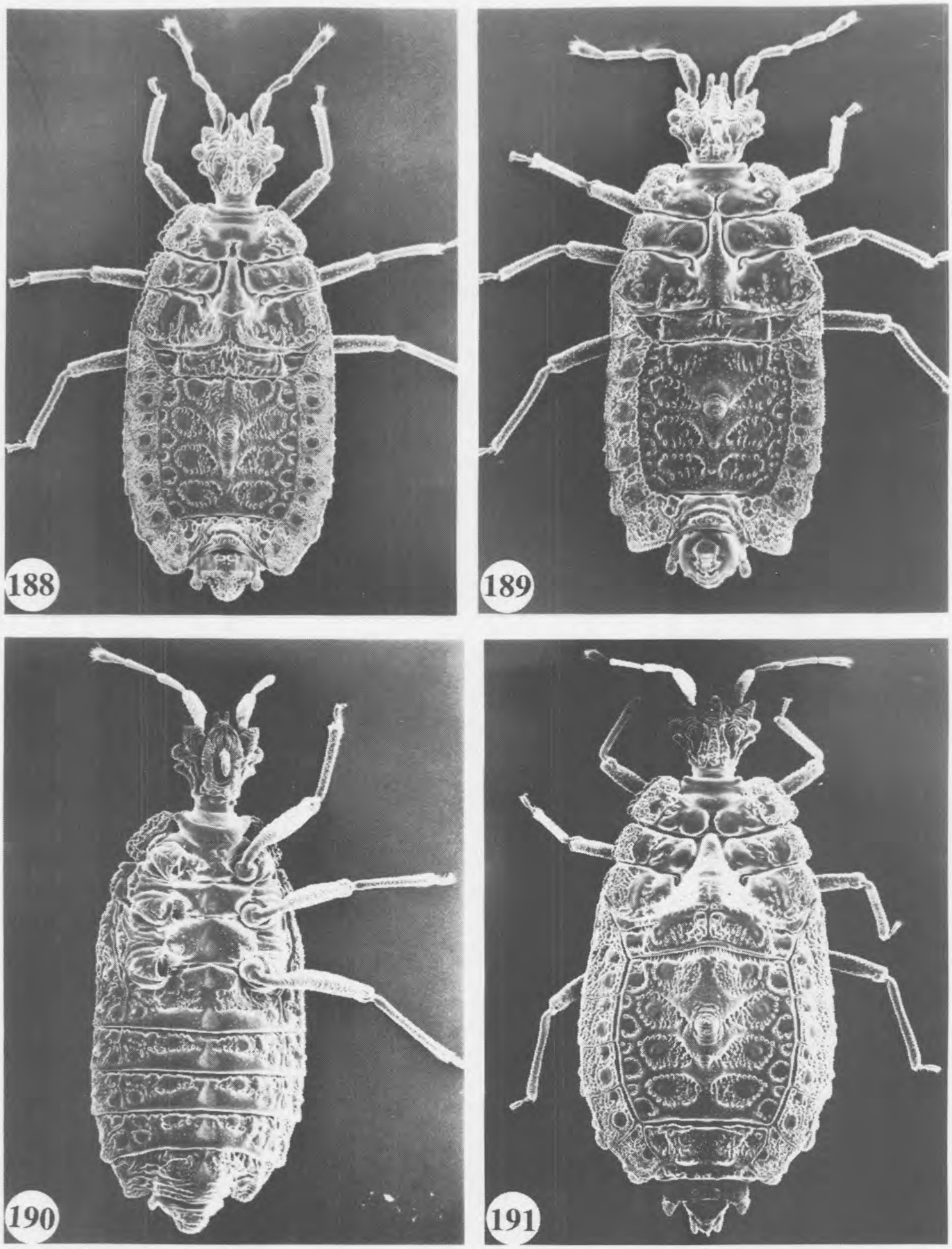
Notwithstanding the method of their origin, the similar pattern of these karyotypes almost certainly indicates a close relationship between the two species.

The karyotype of *M. viginti* shows four autosomes which are distinctly larger than the other five. If simple fragmentation of different chromosomes of a 14XY protokaryotype gave rise to this 20XY karyotype, one would expect three larger and six smaller autosomes. The fact that four large autosomes are present makes it more plausible that it originated from an 28XY karyotype, possibly the same one that was an intermediate step in the evolution of the karyotypes of *M. labeosus* and *M. bucculentus*.

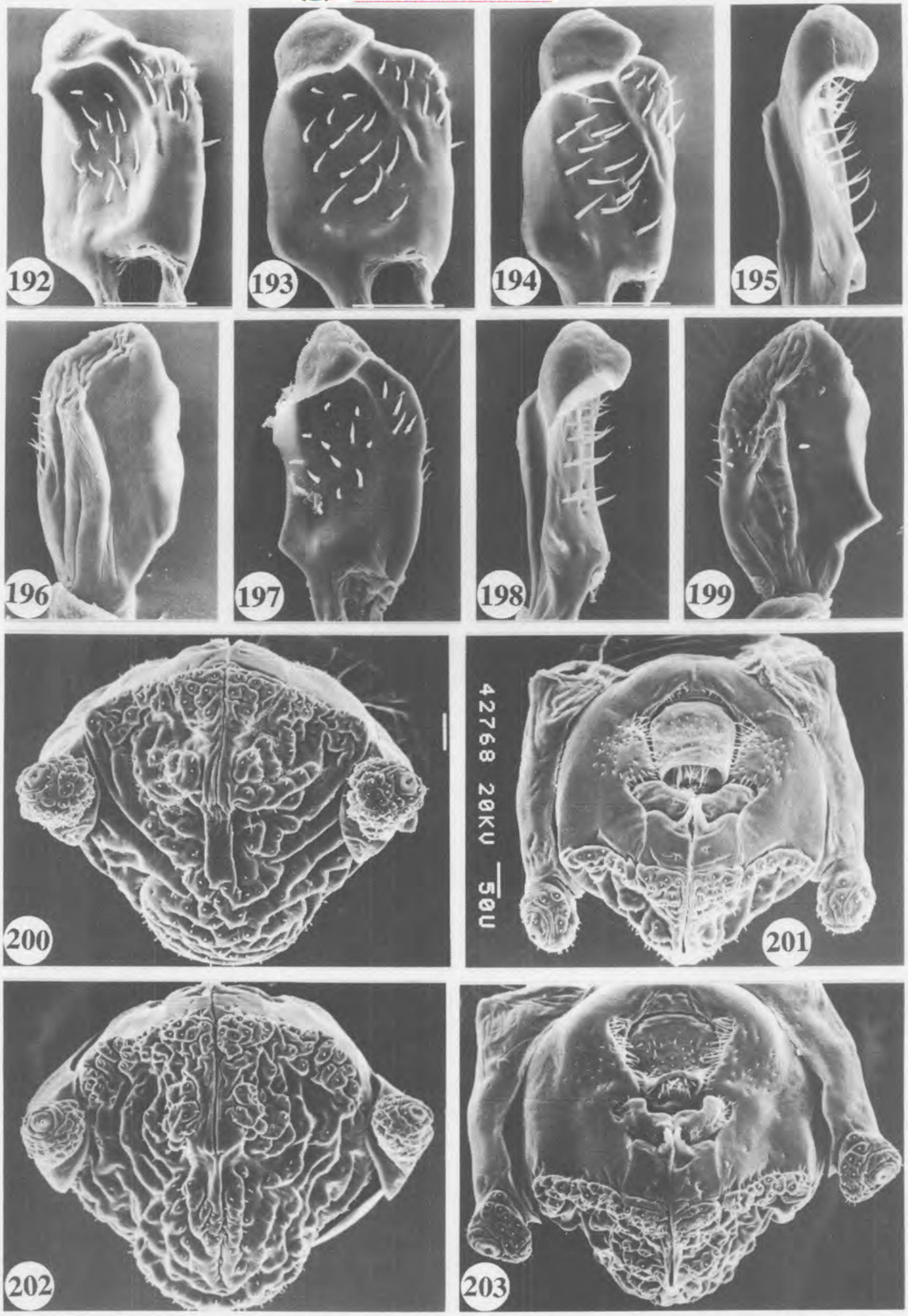
The 32XY karyotype of *M. knysnaensis* could have arisen by two fragmentation events from a 28XY intermediate karyotype.

The following scheme could explain the origin of the autosomal karyotypes of the four species discussed above:

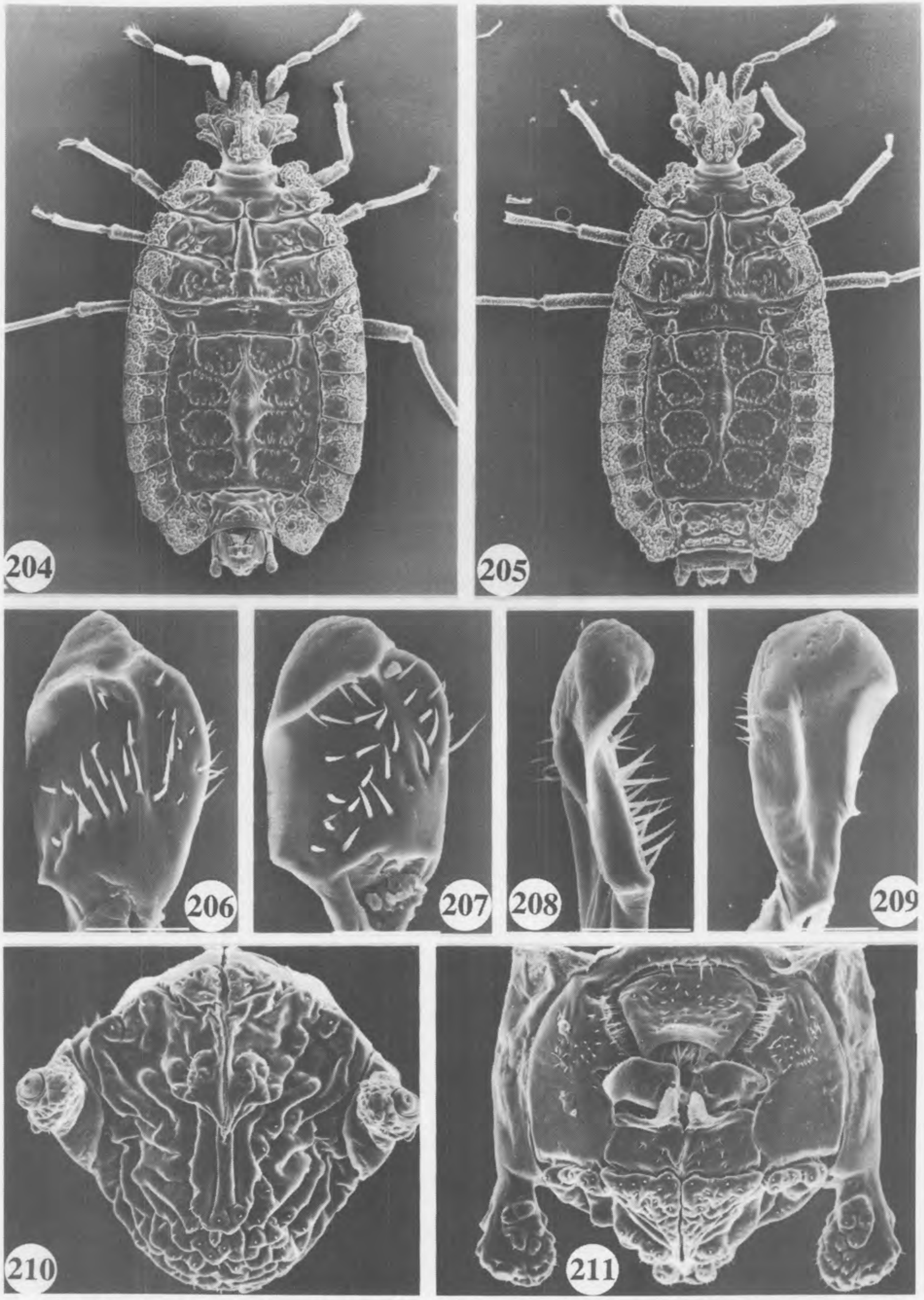




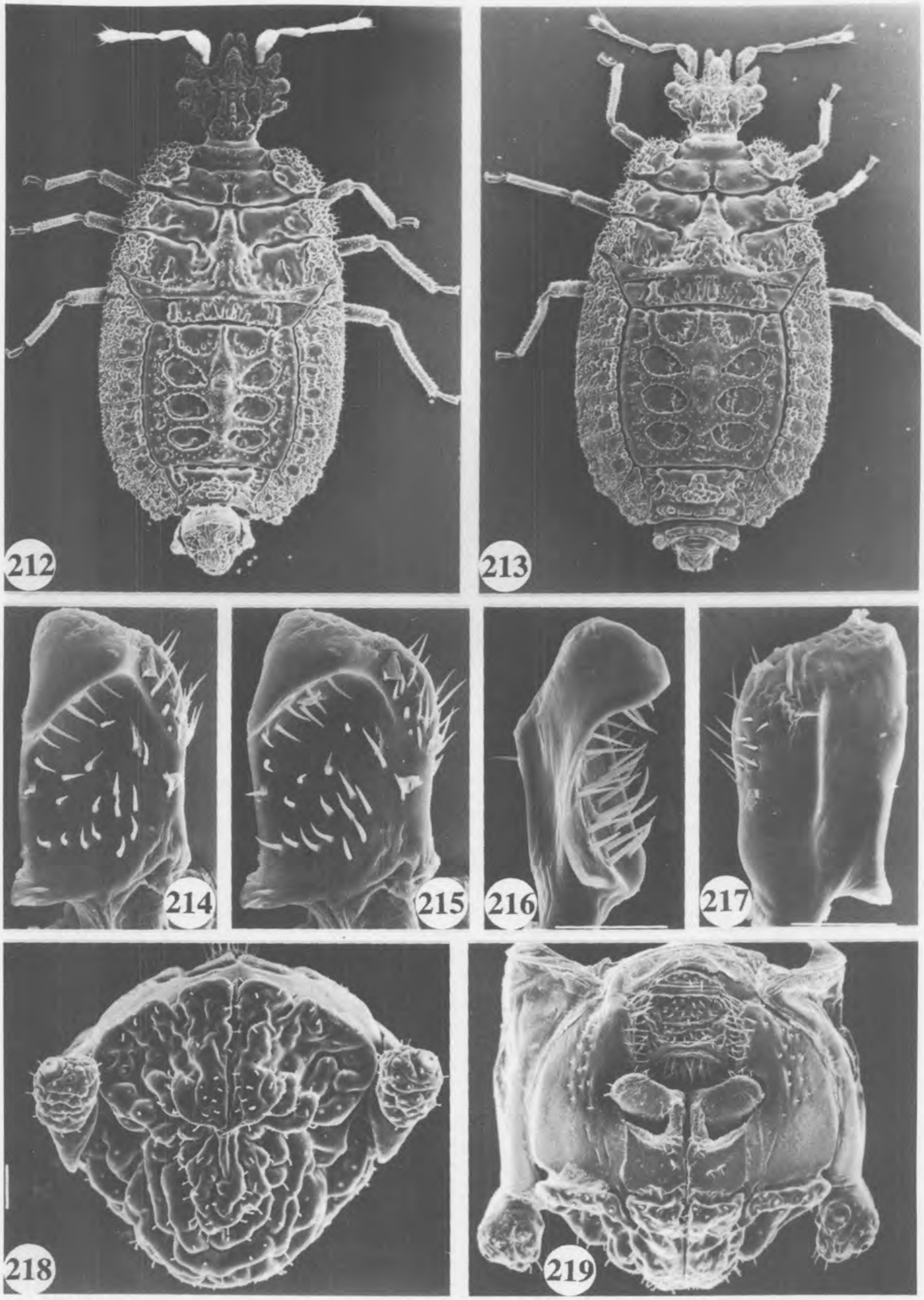
Figs 188-191. Scanning electron photomicrographs of *Miteronotus labeosus* **gen. et spec. nov.** 188. Dorsal aspect of male paratype from Ngoye forest. 189. Dorsal aspect of male paratype from Karkloof. 190. Ventral aspect of male paratype from Ngoye forest. 191. Dorsal aspect of female paratype from Ngoye forest.



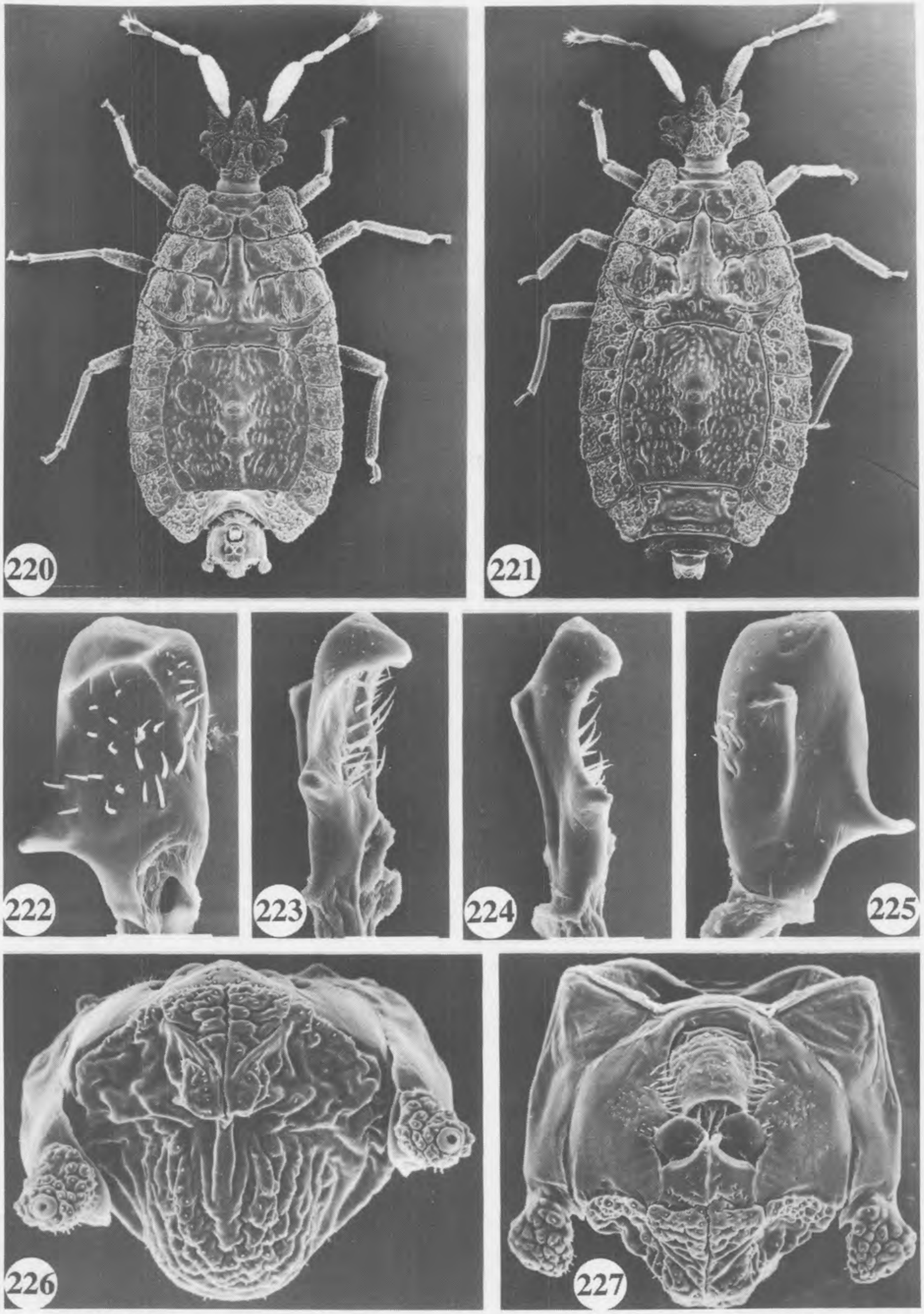
Figs 192-203. Scanning electron photomicrographs of *Miteronotus labeosus* **gen. et spec. nov.** 192-196. Different aspects of the left paramere of males from Ngoye forest (scale bar = 50 μm). 197-199. Different aspects of the left paramere of males from Karkloof. 200-201. Pygophore of male from Karkloof. 200. Caudal aspect (scale bar = 50 μm). 201. Dorsal aspect. 202-203. Pygophore of male from Ngoye forest. 202. Caudal aspect. 203. Dorsal aspect.



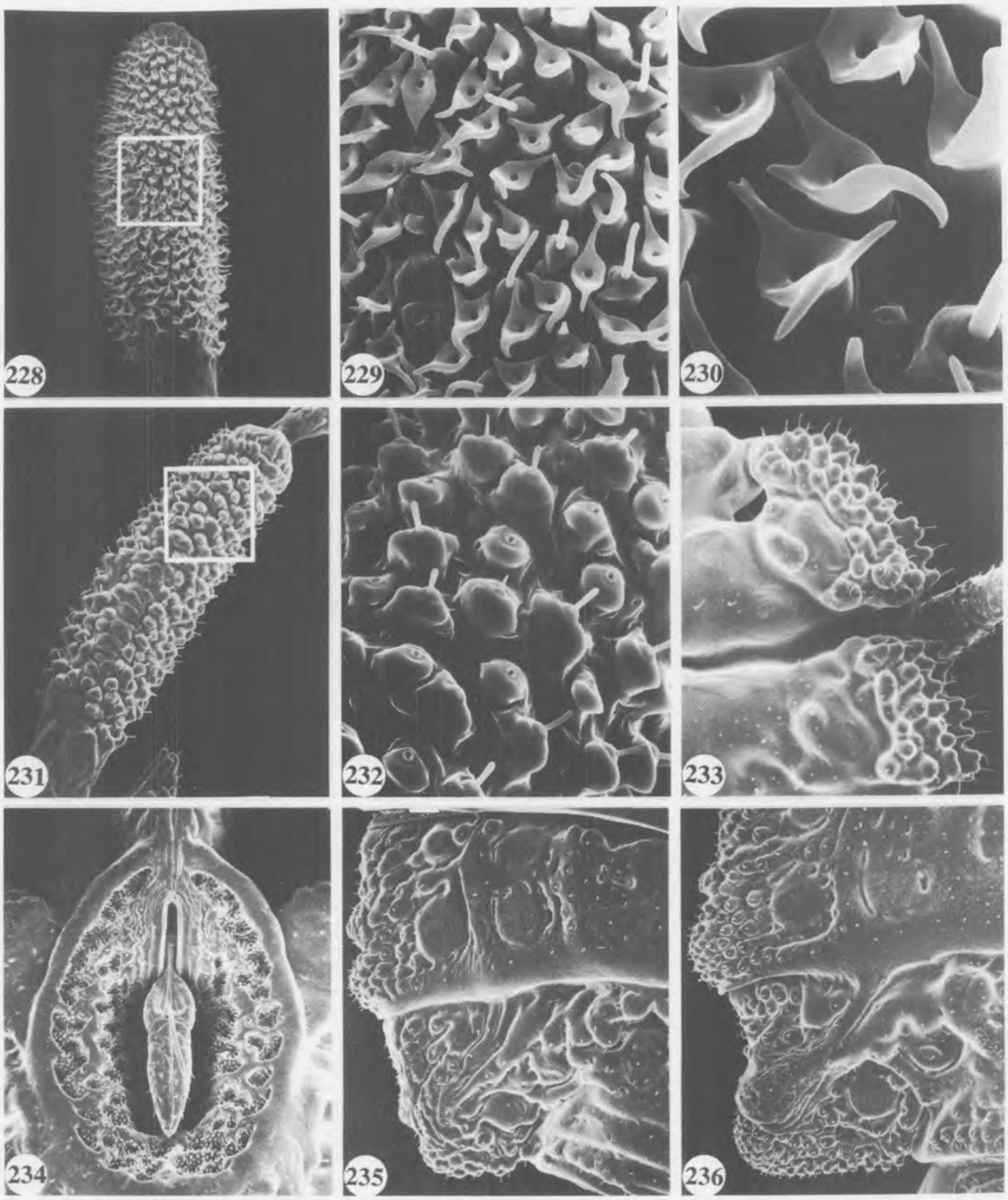
Figs 204-211. Scanning electron photomicrographs of *Miteronotus viginti* **gen. et spec. nov.** 204. Male paratype, dorsal aspect. 205. Female paratype, dorsal aspect. 206-209. Different aspects of the left paramere (scale bar = 50 μm). 210-211. Pygophore. 210. Caudal aspect. 211. Dorsal aspect (scale bar = 50 μm).



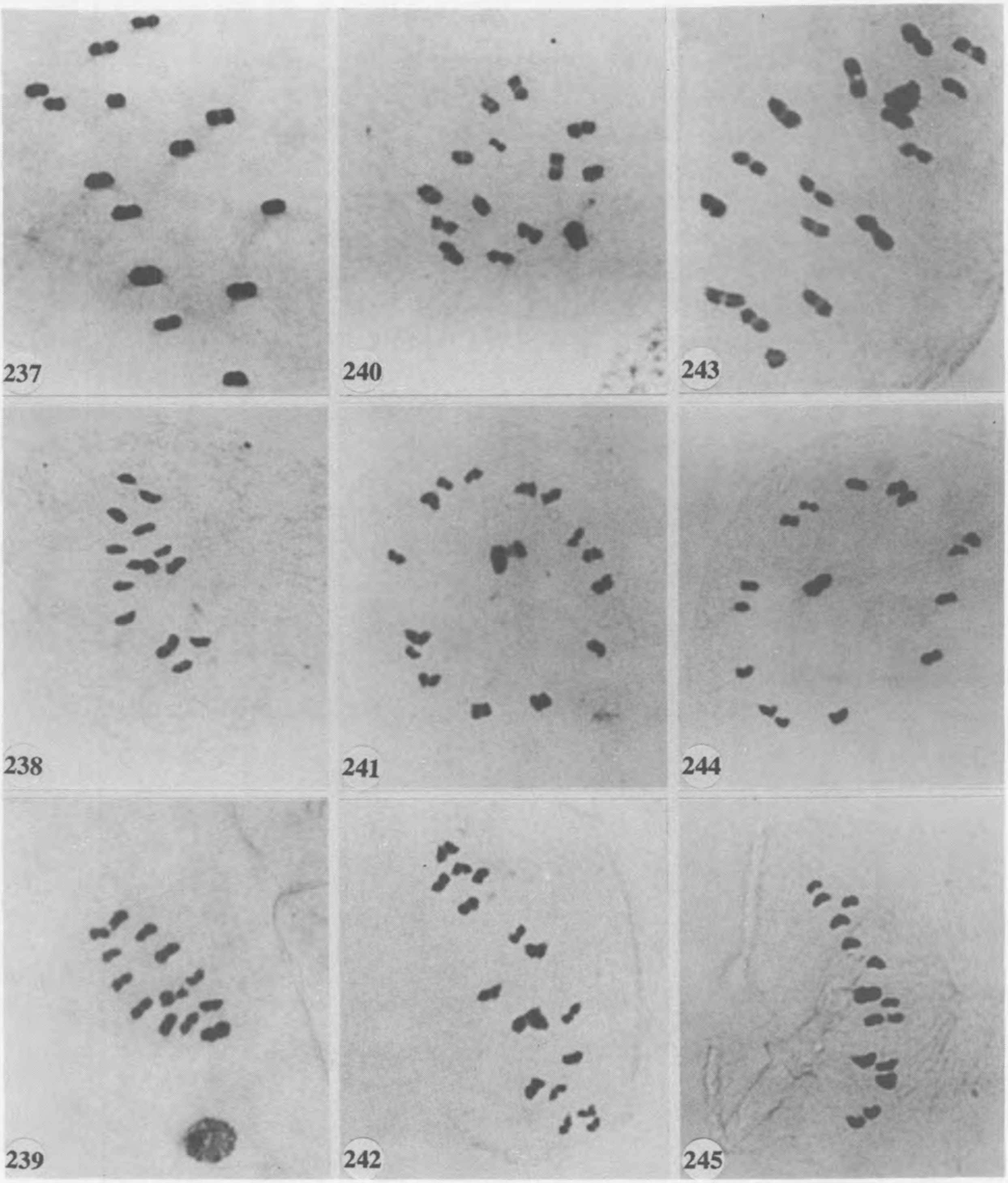
Figs 212-219. Scanning electron photomicrographs of *Miteronotus bucculentus* **gen. et spec. nov.** 212. Male paratype, dorsal aspect. 213. Female paratype, dorsal aspect. 214-217. Different aspects of the left paramere (scale bar = 50 μm). 218-219. Pygophore. 218. Caudal aspect (scale bar = 50 μm). 219. Dorsal aspect.



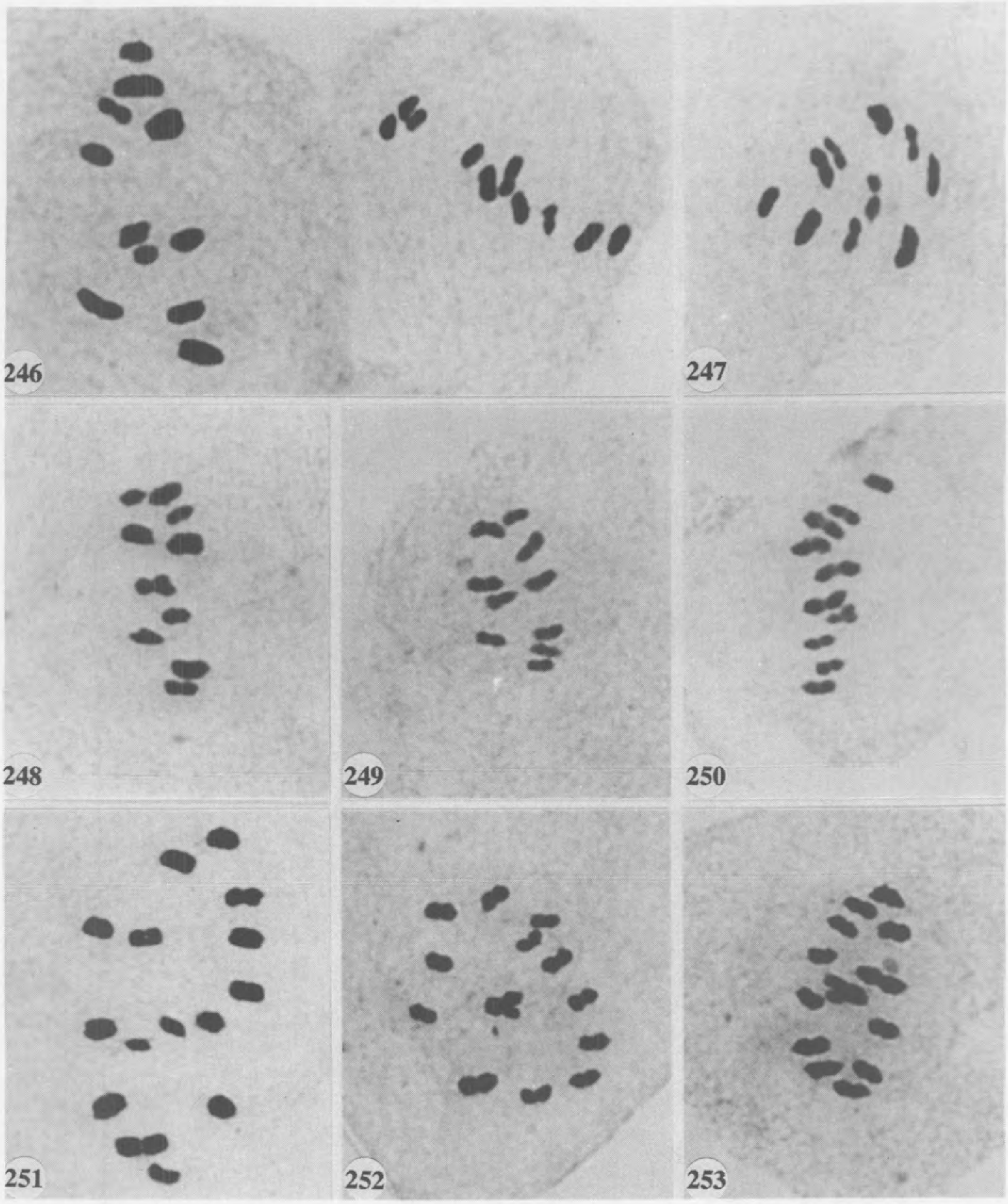
Figs 220-227. Scanning electron photomicrographs of *Miteronotus knysnaensis* **gen. et spec. nov.** 220. Male paratype, dorsal aspect. 221. Female paratype, dorsal aspect. 222-225. Different aspects of the left paramere (scale bar = 50 μm). 226-227. Pygophore. 226. Caudal aspect. 227. Dorsal aspect.



Figs 228-236. Scanning electron photomicrographs illustrating morphological features of *Miteronotus* **gen. nov.** species. 228-232. Sculpture of the first antennal segment of males of *M. knysnaensis* **spec. nov.** 228. First antennal segment of male from Witels forest. 229. Enlargement of indicated area of Fig. 228 showing its peculiar sculpture. 230. Same, showing detail of the sculpture. 231. First antennal segment of male from Kop forest. 232. Enlargement of indicated area of Fig. 230 showing its sculpture. 233. Lateral lobes of the pro- and mesothorax of *M. bucculentus* **spec. nov.** showing setiferous nodules bearing prominent, fairly long setae. 234. Ventral aspect of the head of a male of *M. bucculentus* **spec. nov.** showing the broadly oval, areolate rostral groove. 235-236. Ventral aspect of lateroposterior part of the abdomen of *M. labeosus* **spec. nov.** showing the fusion of ventrites 6 and 7. 235. Male from Ngoye forest. 236. Male from Karkloof.



Figs 237-245. Meiotic stages in *Miteronotus* species. 237-240. *M. labeosus*. 237-238. Specimen from Ngoye forest. 237. Metaphase I. 238. Metaphase II, note the relatively large Y-chromosome. 239-240. Specimen from Karkloof. 239. Metaphase II, note the relatively small Y-chromosome. 240. Metaphase I. 241-245. *M. knysnaensis*. 241-243. Specimen from Diepwalle forest. 241-242. Metaphase II, note the large size difference between the X- and Y-chromosomes. 243. Metaphase I. 244-245. Metaphase II in another specimen from the same locality. Note the small size difference between the X- and Y-chromosomes.



Figs 246-253. Meiotic stages in *Miteronotus* species. 246-250. *M. viginti*. 246-248. Specimens from Isidenge forest. 246. Metaphase I and Metaphase II. 247-248. Metaphase II. 249. Metaphase II in a specimen from Aucland Forest Reserve. 250. Metaphase II in a specimen from Schwarzwald forest. 251-253. *M. bucculentus*. 251. Metaphase I. 252-253. Metaphase II.