

Revision of Afrotropical Pentastirini (Homoptera, Fulgoroidea, Cixiidae) III: *Norialsus* gen. nov.

by

J. VAN STALLE

Koninklijk Belgisch Instituut voor Natuurwetenschappen, Afdeling Entomologie, Vautierstraat
29, 1040 Brussel, Belgium

The new genus *Norialsus* is described with 34 Southern African species. A key is given primarily based on the structure of the male genitalia. The species described as *Oliarus varians* Synave, *O. pseudovarians* Van Stalle, *O. capeneri* Synave, *O. pretoriae* Synave, *O. letabensis* Synave, *O. soni* Synave, *Cixius caffer* Stål, *C. fuscipennis* Stål and *C. fasciolatus* Stål are transferred to *Norialsus*. The following species are newly described: *litoris*, *elandshoeki*, *transvaaliensis*, *pietersburgi*, *montaguensis*, *astigmaticalis*, *gonubicus*, *fouriensis*, *ficksburgi*, *somersetti*, *variabilis*, *inuitatus*, *atrifrons*, *micropterus*, *knysnanus*, *spiniferens*, *millari*, *salsolarum*, *aberdeeni*, *capicola*, *praetener*, *nuverus*, *notius*, *elytrophippi*, and *novemspinus*. A lectotype is selected for *N. caffer*, *N. fasciolatus* and *N. fuscipennis*; for each species the male genitalia are illustrated, except for *N. caffer* and *N. fasciolatus* which are only known from females.

Most of the African Pentastirini were described by various authors in the cosmopolitan genus *Oliarus*. In 1980, 103 taxa were recognized, the major part being published after 1950 by Dr H. Synave (Brussels, Belgium), Dr R. G. Fennah (London) and Dr R. Linnavuori (Raisio, Finland). The fauna has never been the subject of a revision. This third contribution on afrotropical Pentastirini deals with 34 species endemic to the temperate region of South Africa.

As in the mediterranean region, the South African Pentastirini-fauna is composed of members of the genus *Pentastiridius* and some endemic genera. The genus *Pentastiridius* is known from the palaearctic and afrotropical region* (Van Stalle, 1986). The new genus *Norialsus* is endemic to Southern Africa and all taxa, with a few exceptions, have a very restricted distribution. Some scarce accessions specimens indicate that still other (new) genera and species are present, but we wish to await more material before naming these.

In the species descriptions the chaetotaxy of the hind tarsi is expressed as follows, with and without parentheses: the formula 7/(8) indicates a single row of black teeth on the first tarsite, and a double row of eight teeth on the second segment. In the latter case it concerns a proximal row of small black teeth, opposed by a distal row of membraneous, usually larger teeth. 8/(10-12) indicates 8 teeth on the first tarsite and a variable number of 10 to 12 teeth in a double row on the second tarsite. The width of

* Recent revisional studies of other zoogeographical realms are lacking.

the vertex is measured at the tip of the basal emargination; its length is taken along the median line from apex to the tip of the basal emargination.

Unless stated otherwise, pygofer, anal segment and genital styles are drawn to the same scale, as well as the dorsal, lateral and ventral view of the female genitalia.

The assistance rendered by the following persons and institutions is acknowledged (the abbreviations are used in the material listed under each species):

- Prof. Dr J. G. Theron, University of Stellenbosch
- Mr I. M. Millar, Plant Protection Research Institute, Pretoria (PPRI)
- Mr M. D. Webb and Dr P. Broomfield and Dr W. J. Knight, British Museum (Natural History), London (BMNH).
- Dr V. B. Whitehead, South African Museum, Cape Town (SAM).
- Mr R. Toms, Transvaal Museum, Pretoria (TM).
- Dr Per Lindskog, Naturhistoriska Riksmuseet, Stockholm (NR)
- Dr H. André, Koninklijk Museum voor Midden-Afrika, Tervuren, Belgium (KMMA)
- Ir P. Dessart, Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, Belgium (KBIN)

Norialsus gen. nov.

Type species: *Oliarus capeneri* Synave

Length 4 to 7 mm. Vertex as broad as long or broader, colour varying from pale ochreous to black, lateral margins not prominent, median longitudinal keel absent or completely developed, subapical transverse keel angulate or arcuate; base shallowly excavated, apical keel blunt, thus forming an indistinct transition between frons and vertex, connected with subapical transverse keel by one short median longitudinal keel. This median keel may sometimes be absent or very reduced. Face pale ochreous to black, sometimes two-coloured, provided with a median keel usually forked (sometimes not) near vertex. Post- and anteclypeus with or without median keel, postclypeus swollen in latter case, well developed at expense of frons, reaching to level of lateral ocelli. Median ocellus small, obsolete, or absent. Pronotum small, deeply excavated along its caudal margin. Mesonotum provided with five longitudinal keels, sometimes however only three, due to reduction of the two submedian ones which then are obsolete or totally lacking. Tegmina hyaline or coriaceous, often reduced. Veins covered by large protruding and concolorous granules; costal margin going straight to stigma, or gently bent, regularly covered by granules between base and stigma. Apex of tegmina often reduced, with parallel sides or narrowing caudally, with 11 to 15 apical veinlets. Stigma usually small and sometimes lacking; in latter case three to five veinlets between Sc and costal margin. Hind tibiae with three lateral spines, one or more spines sometimes obsolete. Number of teeth on hind tarsi variable: a single row of 7 or 8 teeth on first tarsite and a double row of 7 to 9 teeth on second segment, or both segments with a double row of 8 to 12 teeth, 8 or 9 in most cases.

MALE GENITALIA. Anal segment, pygofer and genital styles asymmetrical or symmetrical. Anal segment with or without an apical lobe. Pygofer provided with lateral lobes or spines and a corrugated medioventral process. Genital styles relatively small in comparison to pygofer, and thus genital capsule open ventrally. The apex of

the genital styles bears an additional lamelliform process. Aedeagus connected to pygofer, provided with a small membranous flagellum, reduced in certain species (*Norialsus varians*). Periandrium variable within genus, mostly differentiated into a basal part with spinose processes and a distal tubular portion with, on its apex, an articulating flagellum and several movable spines. All species have a semicircular process at base of flagellum, except *N. elandshoeki*.

FEMALE GENITALIA. Cephalic border of pregenital sternite convex, caudal border usually excavated medially; ovipositor in lateral view somewhat longer or shorter than sclerotized part of anal segment, with two pairs of valvulae: first pair small, considerably reduced, second pair broad, sclerotized. Wax hairs on pygofer confined to a band between anal segment and ovipositor. Outside this band wax hairs are smaller and diffusely spread over the surface.

The gender is masculine.

Species of the genus *Norialsus* can be recognized from other Cixiidae by the combination of the following characters: postclypeus large, reaching to level of lateral ocelli; subapical transverse keel of vertex connected to apical border by only one median keel. Mesonotum with usually five, sometimes three longitudinal carinae; tegmina often reduced, costal margin provided with protruding granules; hind tarsi with a double row of 7 to 12 teeth on first and second tarsite, or only on second; the most important diagnostic character at generic level is the presence of a semicircular process at the base of the flagellum of the aedeagus; this peculiar process was never observed in other Pentastirine genera.

Within the genus the various species differ considerably in their external morphology, due to important differences in coloration (from pale ochreous to black) and a different degree of reduction of tegmina and wings. While in many species the tegmina are well developed, *N. micropterus* has small, coriaceous tegmina, which are weakly convex and nearly reach the tip of the abdomen. In this species the wings are rudimentary; another, undescribed species* is apterous, the wings being totally absent; in most species they are fairly well developed. Nothing is known however about their ability to fly. Finally, the morphology and number of teeth varies considerably within the genus; a list of this character is given in Table 1. In some species the variation might be greater than presently assumed in view of the small number of specimens examined.

INFRA-SPECIFIC VARIATION. The median keel of the vertex varies in length and is therefore not useful as a diagnostic character. Minor differences were observed in the development of the median keel on the postclypeus, especially in taxa where this keel is only partly developed; it is however always absent in the *salsolarum*-group. Variation occurs in the coloration of the specimens and minor differences were observed in the shape and proportions of the basal spines of the aedeagus. The number of teeth on the hind-tarsi varies from one tooth to exceptionally two.

DISTRIBUTION. The species have a restricted distribution in South Africa and occurs in and around the Cape region and the Drakensberg mountains.

*This species was only represented by females and thus we don't wish to name it to avoid taxonomic problems in future.

TABLE 1. List of the chaetotaxy of the hind tarsi for each species. The first number refers to the first tarsite and the second to the second tarsite. Numbers in parentheses indicate a double row of teeth.

<i>varians</i>	7/(7)	<i>somerseti</i>	(9-11)/(9-11)
<i>litoris</i>	7/(7)	<i>variabilis</i>	(11)/(11)
<i>pseudovarians</i>	7/(7)	<i>inuitatus</i>	(8)/(9)
<i>caffer</i>	7/(7)	<i>atrifrons</i>	(8)/(8)
<i>pretoriae</i>	8/(10-12)	<i>micropterus</i>	(9)/(9)
<i>elandshoeki</i>	7/(7)	<i>knysnanus</i>	(9)/(9)
<i>letabensis</i>	7/(7)	<i>spiniferens</i>	(10)/(9)
<i>transvaaliensis</i>	7/(7)	<i>millari</i>	(10)/(9)
<i>pietersburgi</i>	7/(7)	<i>salsolarum</i>	(8-9)/(8-9)
<i>soni</i>	7/(7)	<i>aberdeeni</i>	(8-9)/(8-9)
<i>montaguensis</i>	7/(7)	<i>capicola</i>	(8-9)/(8-9)
<i>astigmaticalis</i>	7/(8)	<i>praetener</i>	(8-9)/(8-9)
<i>fuscipennis</i>	7/(7)	<i>nuverus</i>	(8-9)/(8-9)
<i>fasciolatus</i>	7/(7)	<i>notius</i>	(8-9)/(8-9)
<i>gonubicus</i>	(9)/(9)	<i>capeneri</i>	(9-10)/(9-10)
<i>fouriensis</i>	(9)/(9)	<i>elytropappi</i>	(8-9)/(8-9)
<i>ficksburgi</i>	(9)/(9-10)	<i>novemspinus</i>	(8-9)/(8-9)

Key to species of *Norialsus* based primarily on the structure of the male genitalia.

Norialsus caffer, only known from a female, is omitted from this key due to the absence of consistent characters. *N. fasciolatus* on the contrary is included because of the presence of some typical external characters. The chaetotaxy of the hind tarsi is explained in the introductory notes. The terminology of the spines on the aedeagus is explained in Fig. 32. Although several external characters are useful for species recognition, they are occasionally slight between some species. The chaetotaxy of the hind tarsi is useful in order to distinguish species groups; the variability of this character however is not yet clearly understood, and therefore only used in a restricted way here. With regard to the following characters, i.e. the presence of a medium keel on the postclypeus, whether the postclypeus is swollen or not, and the reduction of the tegmina, too many intermediates occur, which makes their application in a key difficult. The left and right side are interpreted as viewed in the direction from abdomen to head. Considering that many new species obviously remain to be described, reference should always be made to the structure of the male genitalia for positive identification. Although external characters might be useful to recognize certain species, presently undescribed forms might share the same characters.

- 1 First segment of hind tarsi with a double row of teeth 2
- First segment of hind tarsi with a single row of seven or eight teeth 19
- 2 Mesonotum with only three distinct keels, the two submedian ones being reduced or completely lacking; postclypeus black and swollen, without median keel 3
- Mesonotum provided with five longitudinal keels 9
- 3 Vertex as broad as long (Fig. 175) 4
- Vertex broader than long 5
- 4 Genital styles with a spinose process along their apex (Fig. 178) *capeneri* (Synavc)
- Genital styles otherwise shaped (Fig. 190) *novemspinus* **sp. nov.**
- 5 Anal segment in dorsal view circular or nearly so (Fig. 153) 6
- Anal segment oval (Fig. 181) 7
- 6 Aedeagus as illustrated in Fig. 162 *aberdeeni* **sp. nov.**
- Aedeagus as illustrated in Fig. 156 *salsolarum* **sp. nov.**
- Aedeagus as illustrated in Fig. 163 *capicola* **sp. nov.**
- Aedeagus as illustrated in Fig. 164 *praetener* **sp. nov.**

7	Pygofer with a spine both on right and left side (Figs 154 and 155)	<i>nuuverus</i>	sp. nov.	8
—	Pygofer with a spine only on right side			8
8	Left side of pygofer shallowly excavated (Fig. 188)	<i>elytropappi</i>	sp. nov.	8
—	Left border of pygofer not excavated (Fig. 173)	<i>notius</i>	sp. nov.	8
9	Tegmina with very distinct fuscous transverse bands; male genitalia Figs 131 to 137	<i>knysnanus</i>	sp. nov.	10
—	Tegmina without a distinct pattern, often only apex with a dark colour mark			10
10	Left side of pygofer with two slender spines and a very characteristic clavate process, right side with a slender spine inserted dorsolaterally (Figs 129 and 130); wings rudimentary	<i>micropterus</i>	sp. nov.	11
—	Pygofer shaped otherwise; wings normally developed			11
11	Left side of pygofer with three short spines (Fig. 120); right side with a large triangular lobe (Fig. 119)	<i>atrifrons</i>	sp. nov.	12
—	Pygofer shaped otherwise			12
12	Pygofer both on left and right side with a long and slender, curved spine (Figs 142 and 143)			13
—	Pygofer shaped otherwise			14
13	Aedeagus see Fig. 148	<i>millari</i>	sp. nov.	13
—	Aedeagus see Figs 138 and 139	<i>spiniferens</i>	sp. nov.	13
14	Left side of pygofer with a very small spine (Fig. 103)			15
—	Left side of pygofer with a distinct lobe or spine			16
15	Dextral basal spine of aedeagus in dorsal view not reaching to tip of flagellum (Figs 106 to 108)	<i>variabilis</i>	sp. nov.	16
—	Dextral basal spine of aedeagus exceeding tip of flagellum (Fig. 101)	<i>somerseti</i>	sp. nov.	16
16	Anal segment with a small tooth-shaped process apically on each side (Fig. 83)			17
—	Anal segment with a single tapering process apically (Fig. 91)			17
17	Aedeagus see Figs 88 and 89	<i>fouriensis</i>	sp. nov.	17
—	Aedeagus see Figs 94 and 95	<i>ficksburgi</i>	sp. nov.	17
18	Pygofer with a spine on left side (Fig. 111)	<i>inusitatus</i>	sp. nov.	17
—	Pygofer with a blunt process on left side (Fig. 82)	<i>gomubicus</i>	sp. nov.	17
19	Second segment of hind-tarsi with a double row of ten teeth or more	<i>pretoriae</i>	(Synave)	17
—	Second segment of hind-tarsi with a double row of seven or eight teeth			20
20	Junction of vertex and frons with a rounded triangular mark on a black background (Fig. 78)			21
—	No such triangular mark on junction of vertex and frons			22
21	Tegmina hyaline, with indistinct brown marks (Fig. 79)	<i>fasciolatus</i>	(Stål)	21
—	Tegmina fuscous	<i>fuscipennis</i>	(Stål)	21
22	Left side of pygofer without spines, but sometimes with a blunt process (Figs 35, 69)			23
—	Left side of pygofer with a spinose process (Fig. 60)			27
23	Genital styles with a tapering apex or with a spinose process (Figs 36, 54)			25
—	Apex of genital styles rounded (Figs 28, 66)			24
24	Right side of pygofer with a spine, left side with a blunt lobe (Figs 26 and 27)	<i>elandshoeki</i>	sp. nov.	24
—	Both left and right side of pygofer sinuous (Figs 68 and 69); tegmina without stigma (Fig. 64)	<i>astigmaticalis</i>	sp. nov.	24
25	Right side of pygofer without spine (Figs 46, 51)			26
—	Right side of pygofer with a spinose process (Fig. 34)	<i>letabensis</i>	(Synave)	26
26	Aedeagus see Fig. 50	<i>soni</i>	(Synave)	26
—	Aedeagus see Fig. 45	<i>pietersburgi</i>	sp. nov.	26
27	Right side of pygofer with a small blunt lobe (Fig. 59)	<i>montaguensis</i>	sp. nov.	26
—	Right side of pygofer with a spine (Figs 6 and 12)			28
28	Pygofer with one spine on both sides (Fig. 12)	<i>pseudovarians</i>	(Van Stalle)	28
—	Pygofer with two spines on both sides			29
29	Aedeagus as illustrated in Fig. 1	<i>litoris</i>	sp. nov.	28
—	Aedeagus as illustrated in Fig. 3	<i>varians</i>	(Synave)	28

***Norialsus litoris* sp. nov.**, Figs 1-2

Externally like *N. varians*. Colour of tegmina variable, hyaline with three brown spots on costal margin and brown transverse veinlets, or basal third of tegmina totally brown, or with a broad oblong streak between base and apex. Length 4.5 mm.

MALE GENITALIA. Anal segment, pygofer and genital styles like those of *N. varians*. Aedeagus (Fig. 1) differing from this species by the dextral curved apical spine, which is larger, and by the different proportions of the basal spines.

MATERIAL EXAMINED. Holotype, ♂: SOUTH AFRICA: Pondoland, Port St. John, 12-30.vi.1923, R. E. Turner, BMNH. Paratypes: 1 ♀, same locality, BMNH; 1 ♂, same locality, x.1923, BMNH; 1 ♂ 3 ♀, same locality, 10-31.vii.1923, BMNH, KBIN.

REMARKS. Possibly *N. litoris* and *N. varians* refer to one and the same species; until further material becomes available we prefer to maintain both forms as different species.

***Norialsus varians* (Synave), comb. nov.**, Figs 3-10

***Oliarus varians* Synave, 1956: 4**

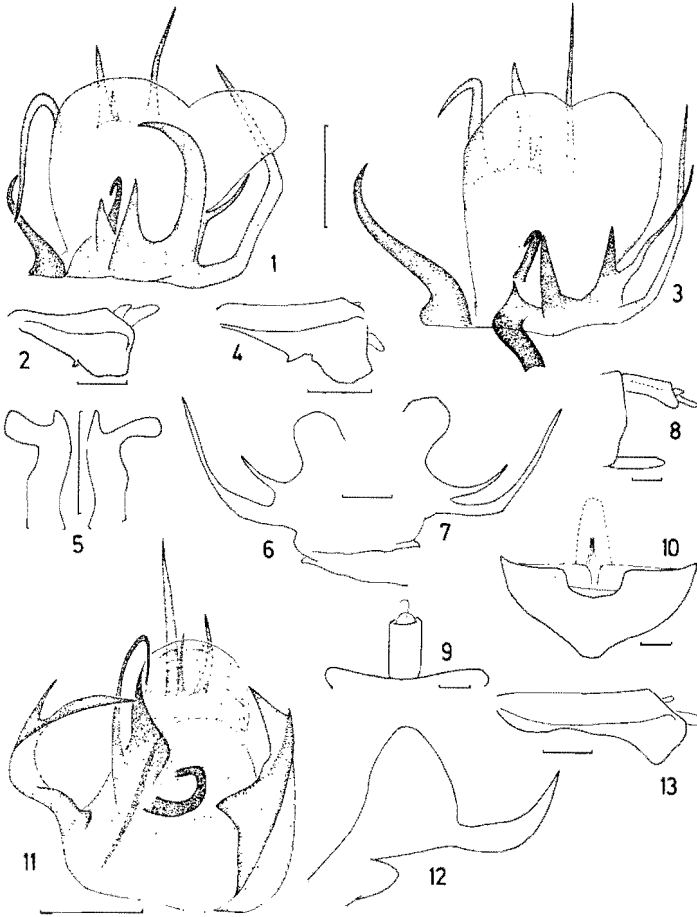
Frons, postclypeus and vertex brown to pale ochreous; postclypeus slightly swollen but median keel still visible. Vertex slightly broader than long, with median keel. Pronotum pale ochreous, mesonotum redbrown between keels, brown more laterally. Tegmina well developed, three along costal margin between base and stigma, apical margin fumated with brown between stigma and tip of clavus; transverse veinlets brown; stigma triangular; costal margin gently bent basally, regularly covered with \pm 30 granules between base and stigma. Chaetotaxy 7/(7). Length 4.5-5 mm.

MALE GENITALIA. Anal segment, pygofer and genital styles symmetrical or nearly so. Anal segment (Fig. 4) with a single ventral process apically. Pygofer (Figs 6 and 7) with two spinose processes on each side. Genital styles (Fig. 5) small in comparison to pygofer. Aedeagus (Fig. 3) provided with five spines on basal periandrium, four spines subapically on membraneous part and a semicircular process near base.

FEMALE GENITALIA. (Figs 8 to 10) Caudal border of pregenital sternite deeply incised in middle; ovipositor as long as sclerotized part of anal segment; first pair of valvulae very short. Anal segment rectangular in dorsal view.

MATERIAL EXAMINED. Holotype, ♂: SOUTH AFRICA: Natal, Umtentweni, vii.1953, TM. Paratypes: 13 spec., same locality, TM, KBIN, KMMA. Additional: 1 ♂, same locality, KMMA.

REMARKS. *N. varians* is closely related to *N. pseudovarians*, *N. litoris* and possibly also to *N. caffer* (male unknown). It differs from *N. pseudovarians* in the shape of the pygofer, which bears two spines along each side instead of one. It differs from *N. litoris* in the proportions of the aedeagal spines, and finally, it differs from *N. caffer* in its smaller size: length of tegmina 4 to 4.5 mm, while 5 mm in *N. caffer*.



Figs 1-13. *Noriatusus* spp. 1-2. *N. litoris* **sp. nov.**, holotype ♂. 1. Aedeagus, dorsal view. 2. Anal segment, left lateral view. Figs 3-10. *N. varians* (Synave). 3. Aedeagus, dorsal view. 4. Anal segment. 5. Genital styles. 6. & 7. Pygofer, right and left lateral views. 8-10. Female genitalia, left lateral, dorsal, and ventral views. 11-13. *N. pseudovarians* (Van Stalle), holotype ♂. 11. Aedeagus. 12. Pygofer, left lateral view. 13. Anal segment. Scale: 0,2 mm.

Noriatusus pseudovarians (Van Stalle), **comb. nov.**, Figs 11-13

Oliarus varians Synave, 1956: 4 (in partim)

Oliarus pseudovarians Van Stalle, 1984: 125

External characters like those of *N. varians*; length 4-5 mm.

MALE GENITALIA. Anal segment, pygofer and genital styles symmetrical. Anal

segment (Fig. 13) with a single ventral process. Pygofer (Fig. 12) on each side with one spinose process and a rounded lobe. Aedeagus (Fig. 11) with a forked dextral spine, a large sinistral process, one subapical curved spine and three apical spines.

FEMALE GENITALIA. Like those of *N. varians*, but valvulae I somewhat longer.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Natal, Umkomaas, vii.1948, A. L. Capener, KBIN. Additional: 1 ♂ 1 ♀, same locality, vii.1946, KMMA; 1 ♂, same locality, 20.viii.1947, SAM; 8 ♂ 8 ♀, same locality, 29.xi.1965, A. L. Capener, PPRI; 6 ♂ 16 ♀, same locality, 6.ix.1968, A. L. Capener, PPRI.

REMARKS. *N. pseudovarians* was described after a wrongly identified paratype of *N. varians*. The differences between *N. litoris*, *N. varians*, *N. pseudovarians* and *N. caffer* are discussed under *N. varians*.

Norialsus caffer (Stål), **comb. nov.**, Figs 14–15

Cixius caffer Stål, 1855: 92

Cixius caffer Stål; Walker, 1858: 322; Dohrn, 1859: 60

Oliarus caffer (Stål); Stål, 1862, 306; Stål, 1866: 168

Face ochreous, with paler carinae; postclypeus slightly swollen, median keel present. Vertex (Fig. 15) as long as broad, median keel obsolete. Pronotum, mesonotum and abdomen ochreous, mesonotum with five longitudinal keels. Tegmina (Fig. 14) hyaline, with brown markings as illustrated; stigma triangular, costal margin granulate. Legs ochreous, chaetotaxy 7/(7). Length body: 4.7 mm; tegmina: 5 mm.

FEMALE GENITALIA. Like those of *N. varians*, but incision on caudal border of pregenital sternite less deep.

MATERIAL EXAMINED. Lectotype, ♀, by present designation: SOUTH AFRICA: Caffraria, J. Wahlberg, NR.

REMARKS. *N. caffer* belongs to a species group which is characterized by a chaetotaxy of 7/(7) on the hind tarsi. It is closely related to *N. varians*, *N. pseudovarians* and *N. litoris* but differs from these species in the greater size and in the less deep incision of the pregenital sternite of the female. *N. elandshoeki*, *N. transvaaliensis* and *N. pietersburgi* are larger, and in *N. soni* the tegmina are totally yellowish. Furthermore it differs from *N. astigmaticalis* in the presence of a triangular stigma and finally it differs from *N. montaguensis* in the colour of the face.

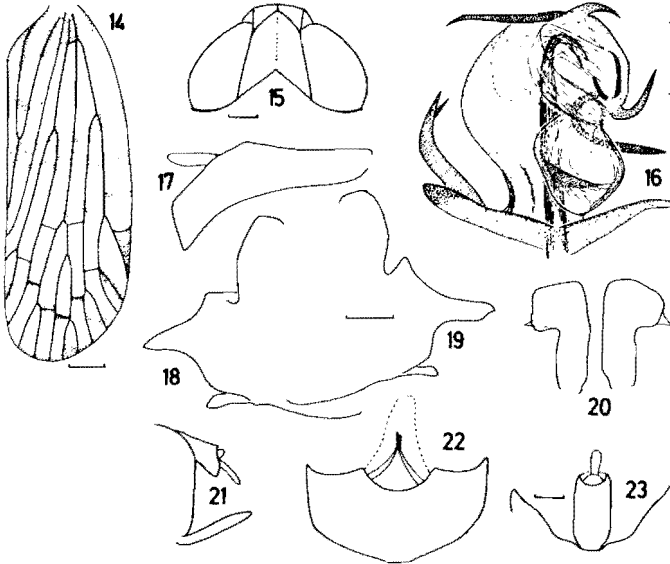
Stål gives no indication on the number of specimens in the type series; in consequence we have designated a lectotype.

As we preferred to leave the only type-specimen undamaged, we have not dissected the female in order to illustrate it. Anyway, when conspecific material could be found it needs to be compared with the lectotype to confirm the determination.

Norialsus pretoriae (Synave), **comb. nov.**, Figs 16–23

Oliarus pretoriae Synave, 1956: 3

Frons, vertex, pronotum and mesonotum pale ochreous to yellowish brown;



Figs 14–23. *Norialsus* spp. 14–15 *N. caffer* (Stål), lectotype ♀. 14. Right tegmen. 15. Head, dorsal view. 16–23. *N. pretoriae* (Synave). 16. Aedeagus, dorsal view. 17. Anal segment, right lateral view. 18 & 19. Pygofer, right and left lateral view. 20. Genital styles. 21–23. Female genitalia, left lateral, ventral and dorsal views. Scale Fig. 14: 0,5 mm; others 0,2 mm.

postclypeus, anteclypeus and genae below antennae black; postclypeus swollen, median keel obsolete to absent. Vertex as broad as long, only slightly excavated basally, with a distinct median keel. Tegmina reduced, narrowing distally, without stigma, coriaceous, colour yellowish, veins broad and concolorous, covered with protruding granules; apical veinlets fumated with brown; costal margin gently curved basally, regularly covered with large granules. Legs yellowish with brown femorae, chaetotaxy 8/(10–12). Length: 4,5 mm.

MALE GENITALIA. Anal segment, pygofer and genital styles nearly symmetrical. Each side of pygofer provided with a finger-like process, left one more abruptly narrowing than right one (Figs 18 and 19). Genital styles (Fig. 20) with an additional tooth at apex. Aedeagus provided basally with a forked spinose process, bearing a small tooth at its base (not visible on Fig. 16); furthermore two spines apically on aedeagus and three on flagellum; finally a semicircular process along inner side of the flagellum.

FEMALE GENITALIA. (Figs 21–23) Pregenital sternite with a semicircular incision. Ovipositor somewhat longer than anal segment, the latter small, rectangular.

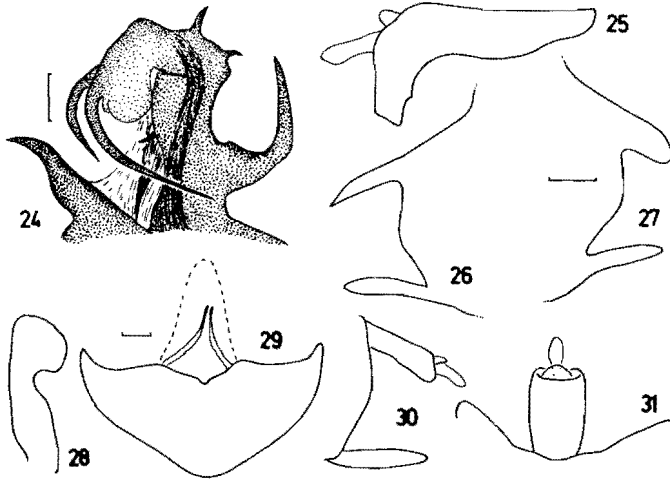
MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Pretoria, Fountains,

20.xi.1951, TM. Paratypes: 6 ♀, same locality, KMMA, KBIN. Additional: 42 specimens of same locality, KMMA, KBIN.

REMARKS. *N. pretoriae* is easily distinguished from other species by the bi-coloured face and the chaetotaxy of the hind tarsi; no closely related species have been observed.

***Norialsus elandshoeki* sp. nov.**, Figs 24–31

Face and vertex dark brown to black, with yellowish keels. Vertex shallowly incised basally, as long as broad, with median keel. Pronotum yellowish, pectoral plates black, mesonotum yellow to yellowish brown. Abdomen fuscous. Tegmina well developed, three brown spots along costal margin between fork of Sc and R, and stigma, first one prolonged to commissural border; stigma, apical transverse veinlets and ends of apical veins brown. Veins with setae in female, without in male; costal border with 30 to 35 granules between base and stigma. Legs yellowish with brown femora, chaetotaxy 7/(7). Length: 6–7 mm.



Figs 24–31. *Norialsus elandshoeki* sp. nov. 24–28. Holotype ♂. 24. Aedeagus, dorsal view. 25. Anal segment, right lateral view. 26 & 27. Pygofer, right and left lateral view. 28. Right genital style. 29–31. Female genitalia, ventral, left lateral, and dorsal views. Scale: 0.2 mm.

MALE GENITALIA. Anal segment, pygofer and genital styles symmetrical or nearly so. Left margin of pygofer with a blunt lobe (Fig. 27), right margin with a longer, more finger-like and tapering process (Fig. 26); medioventral process long and narrow. Genital styles as illustrated in Fig. 28. Aedeagus (Fig. 24) provided with seven spines, six of which visible in dorsal orientation; seventh spine short and situated along ventral margin on $\frac{1}{2}$ distance of base; finally a semicircular process along inner side of flagellum.

FEMALE GENITALIA. (Figs 29–31) Pregenital sternite shallowly excavated in middle. Ovipositor slightly longer than sclerotized part of anal segment, the latter small, rectangular.

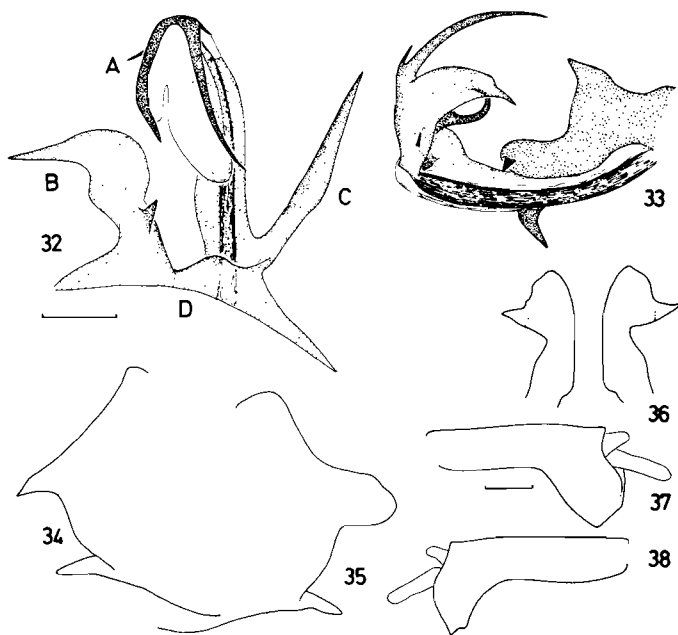
MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Elandshoek, 16.xi.1947, A. L. Capener, KBIN. Paratypes: 5 ♂ 14 ♀, same locality, 2–6.ii.1946; 1 ♂, same locality, 10.xi.1947, SAM; 5 ♂ 3 ♀, same locality, 28.xi.1968, PPRI.

Norialsus letabensis (Synave), **comb. nov.**, Figs 32–38

Oliarus letabensis Synave, 1962: 36

Face and vertex black with yellowish keels, postclypeus slightly swollen but median keel still visible. Vertex broader than long, with a median keel from base to apex. Pronotum yellowish, pectoral plates fumated with brown; mesonotum yellow to brown. Tegmina yellow to brown, sometimes provided with fuscous spots, apex slightly reduced, stigma small, triangular; veins yellow, densely covered with concolorous granules, costal margin bent basally, covered with \pm 30 granules between base and stigma. Legs yellowish, chaetotaxy 7/(7). Length: 6 mm.

MALE GENITALIA. Anal segment (Figs 37 and 38) produced into an apical



Figs 32–38. *Norialsus letabensis* (Synave), holotype ♂. 32. Aedeagus dorsal view; A: apical spines; B: dextral (right) basal spine; C: sinistral (left) basal spine; D: basal periandrium. 33. Aedeagus, right lateral view. 34 & 35. Pygofer, right and left lateral views. 36. Genital styles. 37 & 38. Anal segment, left and right lateral views. Scale: 0,2 mm.

asymmetrical lobe. Pygofer with a short blunt lobe on left side (Fig. 35), and a small tapering process on right side (Fig. 34). Genital styles (Fig. 36) with a spinose process apically. Basal periandrium of aedeagus (Figs 32 and 33) provided with a sinistral and dextral spinose process, a short spine on ventral margin on $\frac{1}{2}$ distance of base, a semi-circular process and four spines inserted at apex, the latter recurved cephalically, two of which small in comparison to the others. In males of Magoebaskloof the right small spine is longer than illustrated in Fig. 33.

FEMALE GENITALIA. Similar to those of *N. elandshoeki*.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: N. Transvaal, Letaba Valley, Tzaneen Distr., 10-31.xii.1958, KMMA. Paratypes: 3 ♂ 1 ♀, same locality, KMMA. Additional: 9 ♂ 3 ♀, Transvaal, Magoebaskloof, 12.xii.1967, J. Munting, PPRI; 1 ♀, George C. P., i.1979, S. J. v. Tonder, PPRI; 1 ♀, Knysna C. P., i.1969, S. J. v. Tonder, PPRI; 6 ♂ 5 ♀, Veekraal, 14.xii.1963; 1 ♂, Gravelotte, 17.xii.1963, PPRI, KBIN.

***Norialsus transvaaliensis* sp. nov.**, Figs 39-44

Face and vertex dark brown to black, median keel on postclypeus well developed. Median keel on vertex obsolete. Pronotum fuscous with yellowish keels, mesonotum yellowish brown with five paler keels. Tegmina slightly reduced, veins yellowish with long setae; apical part of tegmina provided with some irregular fuscous markings. Legs yellowish brown, chaetotaxy 7/(7). Length: 6-7,5 mm.

MALE GENITALIA. Anal segment (Figs 42 and 43) with one ventral process apically. Pygofer (Figs 40 and 41) with a short process along each side, left one blunt, right one tapering. Genital styles (Fig. 44) with an apical tooth-like process. Periandrium of aedeagus (Fig. 39) with a sinistral and dextral process basally, latter with an additional tooth near base. Furthermore two spines at apex of aedeagus and flagellum partly sclerotized; no spines or teeth on ventral margin; finally a very small, almost invisible spine on left side just before sclerotized part of periandrium.

FEMALE GENITALIA. Similar to those of *N. elandshoeki*.

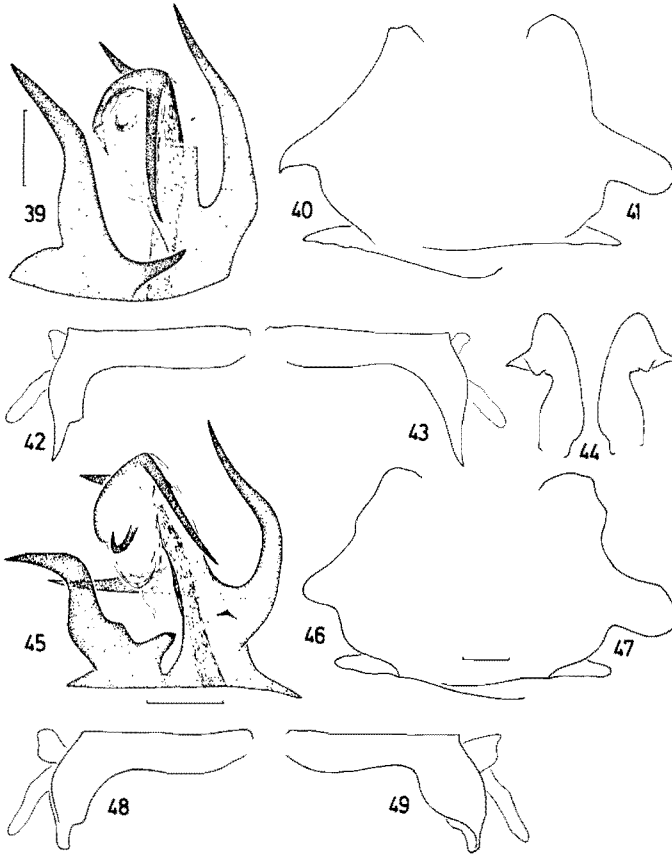
MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Transvaal, Mac Mac Falls, 18.ix.1968, E. Brinkman, PPRI. Paratypes: 3 ♂ 1 ♀, same locality, PPRI, KBIN.

REMARKS. *N. transvaaliensis* differs from *N. elandshoeki*, *N. letabensis* and *N. pietersburgi* in the absence of a ventral spine on the aedeagus, and the shape of the basal periandrium.

***Norialsus pietersburgi* sp. nov.**, Figs 45-49

External characters like those of *N. transvaaliensis*.

MALE GENITALIA. Anal segment (Figs 48 and 49) with a slightly asymmetrical apical lobe. Pygofer (Figs 46 and 47) with a short process along each side. Genital



Figs 39-49. *Norialesus* spp. 39-44. *N. transvaaliensis* **sp. nov.**, holotype ♂. 39. Aedeagus, dorsal view. 40 & 41. Pygofer, right and left lateral views. 42 & 43. Anal segment, right and left lateral views. 44. Genital styles. 45-49. *N. pietersburgi* **sp. nov.**, holotype ♂. 45. Aedeagus, dorsal view. 46 & 47. Pygofer, right and left lateral views. 48 & 49. Anal segment, right and left lateral views. Scale: 0.2 mm.

styles like those of *N. transvaaliensis*. Aedeagus (Fig. 45) with two spines along apex, three spinose processes basally on periandrium, one of which short and tooth-like, a very minute process near base of sinistral spine, and finally a long transverse spine implanted on $\frac{1}{2}$ distance on ventral margin. The form of these spines shows slight variations.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Pietersburg, 8.xii.1965, M. Hofmann, PPRI. Paratypes: 5 ♂ 4 ♀, same locality, PPRI, KBIN.

REMARKS. This species is closely related to *N. elandshoeki*, *N. letabensis*, *N. trans-*

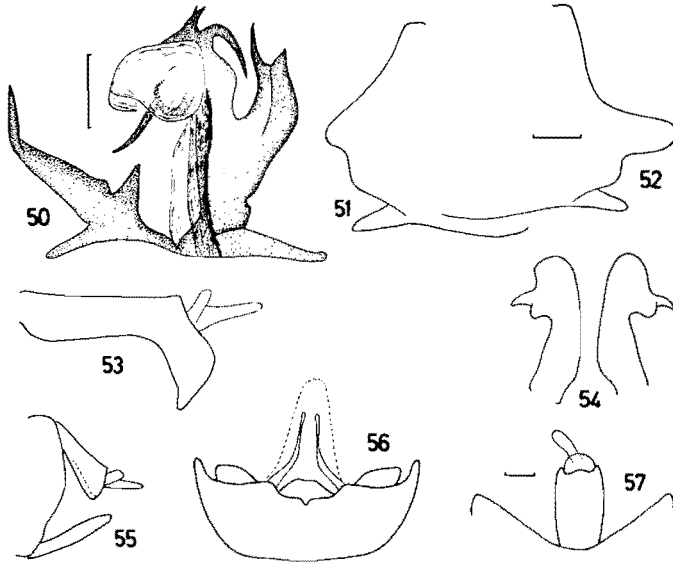
vaaliensis and *N. soni*. It differs from the first three species in the presence of a blunt lobe on the right side of the pygofer (tapering in other species), and in the presence of a long spine on the ventral surface of the aedeagus, instead of short, tooth-like in other species. The aedeagus of *N. pietersburgi* differs from that of *N. soni* in the presence of a long ventral spine (short in *N. soni*), the presence of only two apical spines, and the shape of the basal processes.

Norialsus soni (Synave), **comb. nov.**, Fig 50–57

Oliarus soni Synave, 1959: 4

Face and vertex black with yellowish carinae; postclypeus slightly swollen, median keel visible. Vertex as long as broad, with a median keel. Pronotum and mesonotum yellowish brown, lateral parts fumated with brown. Tegmina hyaline, not narrowing distally, veins and stigma yellowish; costal margin curved basally, with ± 30 granules between base and stigma. Legs yellowish, femora brown, chaetotaxy 7/(7). Length: 4.5–5 mm.

MALE GENITALIA. Anal segment (Fig. 53) with an apical lobe. Pygofer (Figs 51 and 52) slightly asymmetrical, a blunt lobe on left side, same process on right side smaller. Genital styles (Fig. 54) with a spinose process apically. Aedeagus (Fig. 50) with a right and left basal process, right one with a tooth basally, left one forked into two processes apically; furthermore two processes at apex of aedeagus, right one divided into three teeth, and two spinose processes, one of which semi-circular, on inner



Figs 50–57. *Norialsus soni* (Synave). 50. Aedeagus, dorsal view. 51 & 52. Pygofer, right and left lateral views. 53. Anal segment, left lateral view. 54. Genital styles. 55–57. Female genitalia, left lateral, ventral, and dorsal views. Scale: 0.2 mm.

side of flagellum; finally a small spine along ventral side on $1/3$ distance of apex of aedeagus.

FEMALE GENITALIA. (Figs 55 to 57). Pregenital sternite with a rounded cephalic border and a deeply incised caudal border, first valvulae relatively long.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Tshakoma, xi.1931, G. van Son, TM. Paratypes: 23 specimens, Tshakoma, Entabeni, SAM, TM, KBIN; 1 ♂, Transvaal, Louis Trichardt, SAM. Additional: 25 specimens, N. Transvaal, Louis Trichardt, xii.1956, A. L. Capener, KMMA.

Norialsus montaguensis sp. nov., Figs 58–63

Face and vertex black, median keel on postclypeus well developed. Vertex slightly broader than long, without median keel. Pronotum black with yellow carinae, mesonotum reddish-brown, more fuscous between keels. Tegmina narrowing distally, apex reduced; veins yellowish with concolorous granules; costal margin curved basally, stigma small, triangular, apex with a few brown spots. Legs yellowish with brown femora, chaetotaxy 7/(7). Length: 5 mm.

MALE GENITALIA. Anal segment (Figs 62 and 63) slightly asymmetrical, right lobe broader than left one in lateral view. Pygofer (Figs 59 and 60) with a blunt lobe on right side and a spinose process on left margin. Genital styles (Fig. 61) with two small apical processes. Aedeagus (Fig. 58) with eight spines: two large basal ones, four along flagellum, a curved process at base of flagellum on ventral margin, and a semicircular process also at base of flagellum. Finally, a short tooth at base of aedeagus on ventral margin.

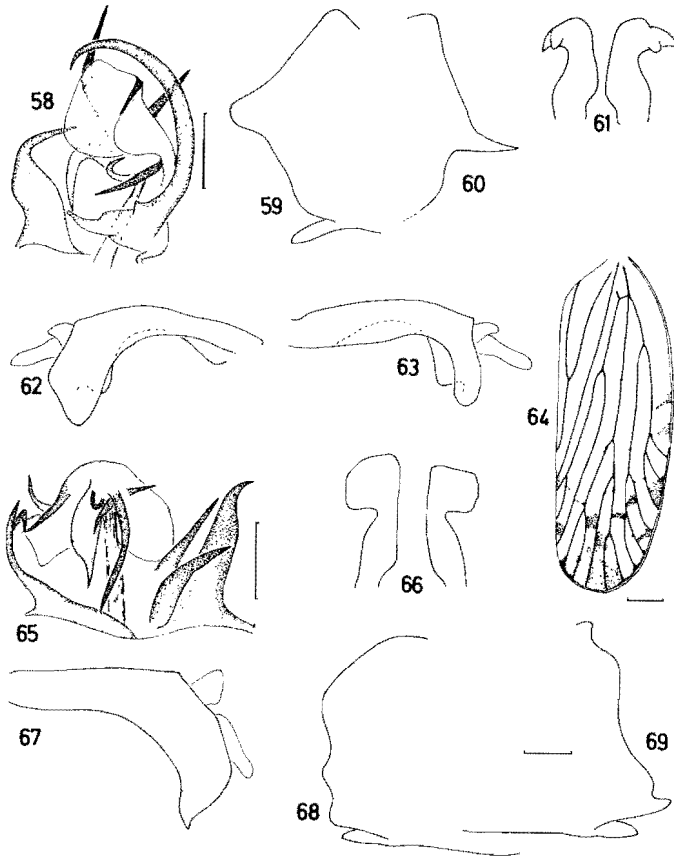
MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Cape Prov., Montagu, 1–21.x.1924. R. E. Turner, BMNH.

Norialsus astigmatalis sp. nov., Figs 64–69

Face yellowish brown with paler keels, postclypeus slightly swollen. Vertex as long as broad, without a median keel, yellow, part before subapical transverse keel black. Pronotum and mesonotum yellowish brown. Tegmina with a slightly reduced apex, without stigma, with yellow, granulated veins; costal margin curved basally, covered with granules. Apical part of tegmina (Fig. 64) with irregular brown marks, and three spots along costal margin between base and first apical vein. Legs brown, chaetotaxy 7/(8). Length: 5 mm.

MALE GENITALIA. Anal segment large, with an apical lobe which is asymmetrical in caudal view. Pygofer (Figs 68 and 69) devoid of lobes, lateral margins sinuous. Genital styles (Fig. 66) slightly asymmetrical. Aedeagus (Fig. 65) with a right basal process which is forked apically, and three sinistral spines; furthermore five spines apically recurved inward and finally, a semicircular process on inner side of flagellum.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Weenen, ix–x.1925, H. P. Thomasset, BMNH. Paratypes: 3 ♂, same locality, ii.1925, BMNH, KBIN.



Figs 58–69. *Norialsus* spp. 58–63. *N. montaguensis* **sp. nov.**, holotype ♂. 58. Aedeagus, dorsal view. 59 & 60. Pygofer, right and left lateral views. 61. Genital styles. 62 & 63. Anal segment, right and left lateral views. 64–69. *N. astigmaticalis* **sp. nov.**, holotype ♂. 64. Right tegmen. 65. Aedeagus, dorsal view. 66. Genital styles. 67. Anal segment, left lateral view. 68 & 69. Pygofer, right and left lateral view. Scale Fig. 64. 0,5 mm; others: 0,2 mm.

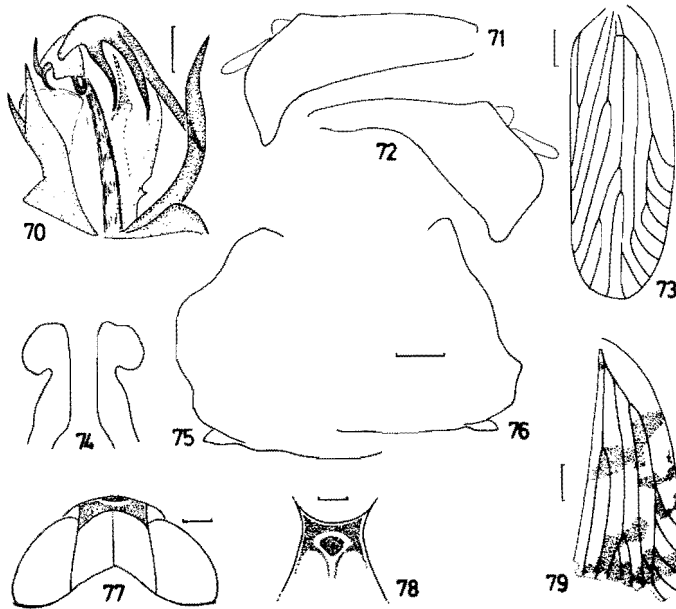
Norialsus fuscipennis (Stål), **comb. nov.**, Figs 70–76

Cixius fuscipennis Stål, 1855: 92

Cixius fuscipennis Stål; Walker, 1858: 322; Dohrn, 1859: 61

Oliarus fuscipennis (Stål); Stål, 1866: 168

Face yellow, with yellow keels bordered with black; postclypeus only slightly swollen. Vertex slightly longer than broad, with a distinct median keel, basal part yellowish, apical part black, as illustrated in *N. fasciolatus*. Pronotum and mesonotum yellowish. Tegmina short, without stigma, with five veins running from subcosta to costal



Figs 70–79. *Norialsus* spp. 70–76. *N. fuscipennis* (Stål), lectotype ♂. 70. Aedeagus, dorsal view. 71 & 72. Anal segment, right and left lateral views. 73. Right tegmen. 74. Genital styles. 75 & 76. Pygofer, right and left lateral views. 77–79. *N. fasciolatus* (Stål), lectotype ♀. 77. Head, dorsal view. 78. Junction of frons and vertex. 79. Right tegmen (mutilated). Scale Figs 73 & 79: 0,5 mm; others: 0,2 mm.

border. Veins and costal margin broad, with prominent granules and long setae. Colour uniformly dark brown, borders and base yellow. Chaetotaxy 7/(7). Length: 5 mm.

MALE GENITALIA. Anal segment (Figs 71 and 72) gradually broadening into an apical asymmetrical lobe. Pygofer (Figs 75 and 76) without distinct processes on lateral borders. Genital styles as illustrated in Fig. 74. Aedeagus (Fig. 70) with a left and right basal spine, right one forked distally, three apical spines recurved inward, and two small spines more to the right; furthermore a ventral spine directed apically (not visible in Fig. 70) and finally a semicircular process at base of flagellum.

MATERIAL EXAMINED. Lectotype, ♂, by present designation: SOUTH AFRICA: Caffraria, NR. Paralectotype, ♀, same locality, NR.

Norialsus fasciolatus (Stål), **comb. nov.**, Figs 77–79

Cixius fasciolatus Stål, 1855: 92

Cixius fasciolatus Stål; Walker, 1858: 322; Dohrn, 1859: 61

Oliarus fasciolatus (Stål); Stål, 1866: 169.

Face ochreous with paler keels. Vertex as long as broad, shallowly incised

basally, with a distinct median keel; basal portion ochreous, apical part black. Junction of frons and vertex black, keels yellowish and thus forming a rounded triangular figure (Fig. 78). Pronotum and mesonotum pale ochreous, the latter with five longitudinal keels. Tegmina (Fig. 79) mutilated, left one missing, right one with a damaged apex and clavus. Veins broad, yellowish, densely covered with prominent pale granules; costal margin gently curved between base and first branch of Sc; stigma (probably) absent, Sc with four veinlets running to costal margin. Legs pale ochreous, chaetotaxy 7/(7). Length of body (without tegmina): 5 mm.

FEMALE GENITALIA. Caudal border of pregenital sternite with a median incision. Anal segment rectangular.

MATERIAL EXAMINED. Lectotype, ♀, by present designation: SOUTH AFRICA: Caffraria, J. Wahlberg, NR.

REMARKS. *N. fasciolatus* is closely related to *N. fuscipennis* and both can be distinguished from other *Norialsus* species by the combination of the following characters: chaetotaxy 7/(7), presence of a triangular mark on junction between frons and vertex, the venation of the tegmina, devoid of a stigma and with four to five veinlets between Sc and costal margin. *N. fasciolatus* is distinguished from *N. fuscipennis* by the paler colour of the tegmina which bear irregular colour markings, while they are almost uniformly dark brown in *N. fuscipennis*.

Stål does not specify on how many specimens the description of this species was based; accordingly we have selected a lectotype.

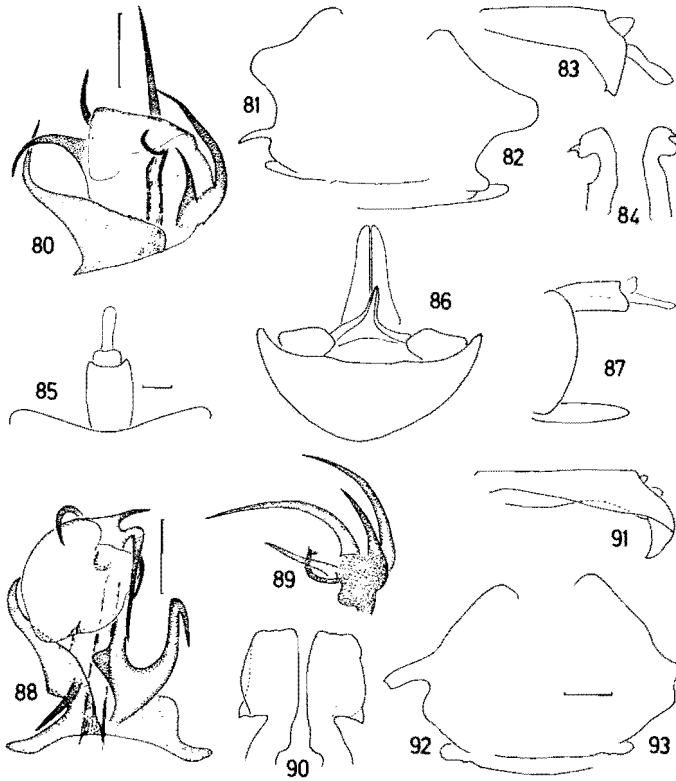
***Norialsus gonubicus* sp. nov., Figs 80–87**

Face brown to yellowish brown, median keel paler, indistinct but always present. Vertex slightly broader than long, without median keel, pale ochreous in basal part, apical part sometimes black. Pronotum fumated with black, mesonotum pale ochreous. Tegmina with a reduced apex, yellowish, with three brown spots along costal margin between base and stigma and some brown spots in apical part behind level of clavus, sometimes fused together and thus forming a single brown spot. Stigma small, veins yellowish, costal margin curved basally, densely granulated. Legs pale ochreous, chaetotaxy (9)/(9). Length: 4.5–5 mm.

MALE GENITALIA. Anal segment (Fig. 83) symmetrical, with a small tooth apically on each lateral margin, oval in dorsal view. Pygofer (Figs 81 and 82) asymmetrical, left side with two short and blunt lobes, right side with a blunt lobe and a spinose process. Aedeagus (Fig. 80) with three spines basally on periandrium, a dextral one with a toothed border and two on left side, variable in length; furthermore three spines on flagellum and a small semicircular process at base of flagellum.

FEMALE GENITALIA. (Figs 85–87) Pregenital sternite with a semicircular cephalic border and a slightly concave caudal margin. First valvulae small, reaching middle of second pair; anal segment longer than broad.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: East London, Goube, xii.1974, J. G. Theron, PPRI. Paratypes: 1 ♂ 1 ♀, same locality, PPRI; 3 ♂ 6 ♀,



Figs 80–93. *Norialsus* spp. 80–88. *N. gonubicus* **sp. nov.**, 80–84. holotype ♂. 80. Aedeagus, dorsal view. 81 & 82. Pygofer, right and left lateral views. 83. Anal segment, left lateral view. 84. Genital styles. 85–87. Female genitalia, dorsal, ventral and left lateral views. 88–93. *N. fouriensis* **sp. nov.**, holotype ♂. 88. Aedeagus, dorsal view. 89. Apical spines on aedeagus, left lateral view. 90. Genital styles. 91. Anal segment, left lateral view. 92 & 93. Pygofer, right and left lateral views. Scale: 0,2 mm.

Cape Prov., Queenstown, 3500 ft, 16.i–10.ii.1923, BMNH: 2 ♂, Stutterheim, J. G. Theron, PPRI.

***Norialsus fouriensis* sp. nov.**, Figs 88–93

Face, vertex and mesonotum brown with paler keels. Postclypeus swollen, but median keel present. Pronotum fumated with brown, borders and keels paler. Vertex broader than long (19:23), without median keel. Tegmina slightly narrowing caudad; stigma small, whitish; veins yellow to yellowish brown, costal margin densely granulated, with three brown spots between base and stigma, apical veins and three median apical cells fuscous. Chaetotaxy (9)/(9). Length: 4,5 mm.

MALE GENITALIA. Anal segment (Fig. 91) long, with a single tapering process

apically. Pygofer as illustrated in Figs 91 and 92, but most probably damaged on both sides. Genital styles with a relatively large apex and provided with a small spinose process (Fig. 90). Aedeagus (Figs 88 and 89) with a left and right basal process and four apical spines recurved inward (cephalically); furthermore a semicircular process at base of flagellum, and a straight spine ventrally on right side. Finally a tooth inserted basally on left side of ventral margin and not visible on Figs 88 or 89.

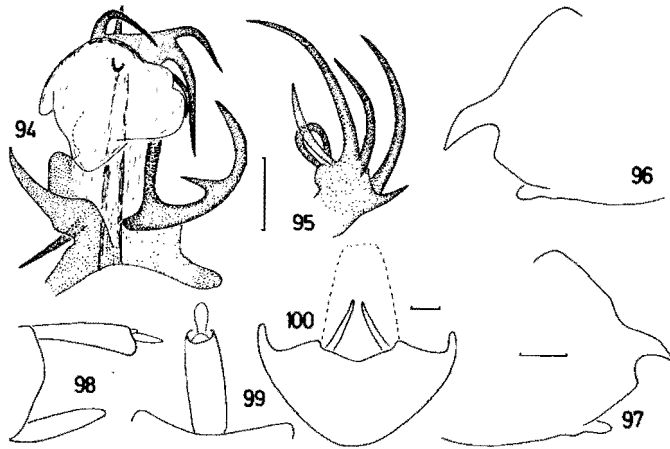
MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Fouriesburg, 30.i.1981, J. G. Theron, PPRI.

***Norialsus ficksburgi* sp. nov.**, Figs 94–100

External characters like those of *N. fouriensis*; the aedeagus bears one additional spine apically, and the left basal spine is forked.

FEMALE GENITALIA. (Figs 98–100) pregenital sternite with a shallow incision along caudal border. Ovipositor shorter than anal segment; the latter relatively long in comparison to other species.

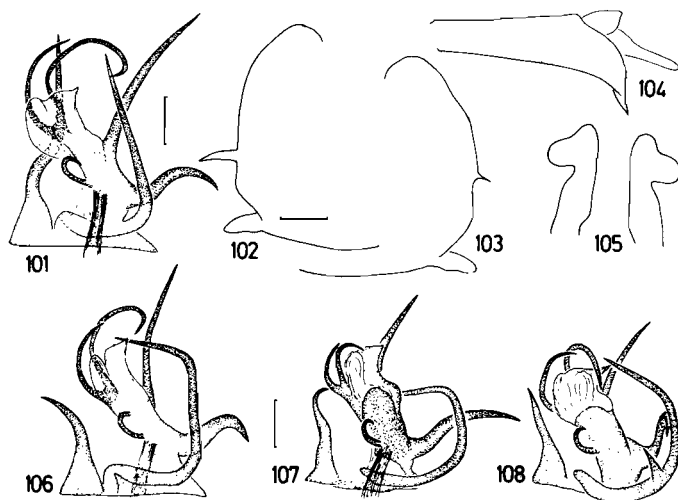
MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Ficksburg, 30.i.1981, J. G. Theron, PPRI. Paratypes: 2 ♂ 1 ♀, same locality, PPRI, KBIN.



Figs 94–100. *Norialsus ficksburgi* sp. nov. 94–97. Holotype ♂. 94. Aedeagus, dorsal view. 95. Apical spines on aedeagus, left lateral view. 96 & 97. Pygofer, right and left lateral views. 98–100. Female genitalia, left lateral, dorsal and ventral views. Scale: 0,2 mm.

***Norialsus somersetti* sp. nov.**, 101–105

Face brown with pale keels. Vertex slightly broader than long (23:27), ochreous, median keel rudimentary. Postclypeus swollen, median keel only visible by presence of a paler colour mark. Pronotum and mesonotum pale ochreous, pectoral plates



Figs 101–108. *Norialsus* spp. 101–105. *N. somersetti* **sp. nov.**, holotype ♂. 101. Aedeagus, dorsal view. 102 & 103. Pygofer, right and left lateral views. 104. Anal segment, left lateral view. 105. Genital styles. 106–108. *N. variabilis* **sp. nov.** 106. Aedeagus, dorsal view, holotype. 107. Idem, paratype Graaff-Reinet. 108. Idem, paratype Cradock Bergkwagga Park. Scale: 0.2 mm.

brown. Tegmina narrowing distad, stigma very small, only visible as a thickening of costal margin; latter curved basally, granulated. Tegmina provided with brown spots in apical part behind level of clavus, veins yellowish. Legs brown, chaetotaxy (9–11)/(9–11). Length: 5 mm.

MALE GENITALIA. Anal segment (Fig. 104) symmetrical, running into single spinose process apically, implanted somewhat to the left in caudal view. Pygofer asymmetrical, left side (Fig. 103) with very small spine, same process on right side longer (Fig. 102). Genital styles (Fig. 105) with additional process apically on inner margin. Aedeagus (Fig. 101) with two apical curved spines, a straight spine implanted subapically, and three spines inserted on basal part of periandrium: two on left side and one on right side; finally a small semicircular process at base of flagellum.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Cape Prov., Somerset East, xi.1930, BMNH. Paratype: 1 ♂, same locality, 23–31.xii.1930, KBIN.

***Norialsus variabilis* sp. nov.**, Figs 106–108

External characters like those of *N. somersetti*, but median keel on postclypeus absent; chaetotaxy (11)/(11).

MALE GENITALIA. General structure like those of *N. somersetti*. The right spine basally on the periandrium is shorter, the long spine more to the left is longer and curved as illustrated, recurved in a paratype from Graaff-Reinet. In paratype of Cra-

dock Bergkwagga Park (Fig. 108) this process bears an additional tooth-like process on its basal part. These differences are tentatively interpreted as infraspecific variation.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Grahamstown, 21.i.1982, J. G. Theron, PPRI. Paratypes: 1 ♂ 3 ♀, Graaff-Reinet, 18.i.1984, J. G. Theron; 1 ♂ 1 ♀, Cradock Bergkwagga Park, 19.i.1984, J. G. Theron, PPRI, KBIN.

REMARKS. *N. somersetti* and *N. variabilis* differ from each other in the proportions of the basal spines of the aedeagus. Whether they represent two closely related species or one variable species needs confirmation by the study of additional material.

Norialsus inusitatus sp. nov., Figs 109–116

Face brown to black, with pale keels. Postclypeus swollen, median keel visible to halfway its length. Vertex broader than long (20:25), black, without a median keel. Pronotum and mesonotum black with yellowish keels, mesonotum reddish brown between the three median keels. Tegmina narrowing distally, with three spots along costal margin between base and stigma, two transverse bands, one at level of first costal mark and one at level of stigma (sometimes lacking) and a few fuscous marks on apical part of tegmina; veins yellowish, costal margin curved basally, densely granulated; stigma small, stramineous. Legs yellowish, chaetotaxy (8)/(9). Length: 4.5 mm.

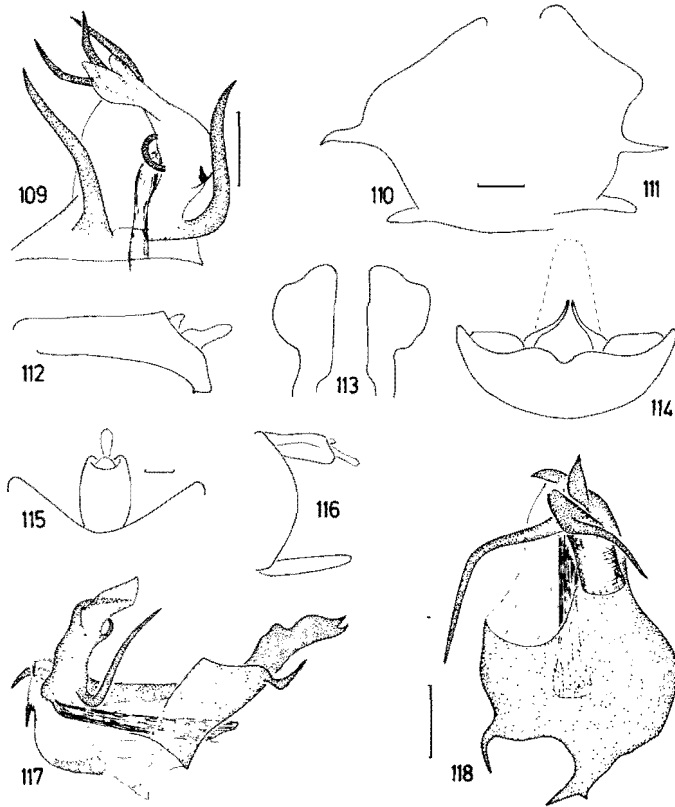
MALE GENITALIA. Anal segment (Fig. 112) symmetrical, both sides apically provided with a small tooth. Genital styles (Fig. 113) small in comparison to pygofer, with a relatively large apex bearing an additional process on its inner surface. Pygofer (Figs 110 and 111) asymmetrical, both sides with a spinose process, left side with an additional blunt lobe. Aedeagus (Fig. 109) with three apical spines, two basal ones, and a semicircular process at base of flagellum.

FEMALE GENITALIA. (Figs 114–116) Pregenital sternite short and broad, caudal margin incised medially. First valvulae half as long as second pair, ovipositor as long as anal segment. The latter longer than broad, with convex lateral margins.

MATERIAL EXAMINED. Holotype, ♂, SOUTH AFRICA: Alicedale, 21.i.1982, on *Elytropappus rhinocerotis*, J. G. Theron, PPRI. Paratypes: 1 ♀, same locality; 1 ♂, Kirkwood, 22.i.1982, J. G. Theron, PPRI, KBIN.

Norialsus atrifrons sp. nov., Figs 117–123

Colour black, borders and keels of face, vertex, pronotum, and mesonotum yellowish. Postclypeus swollen, median keel only visible in upper part; no median ocellus. Vertex as long as broad, with a very short median keel basally; no longitudinal keel between subapical transverse keel and apical border. Mesonotum with five longitudinal keels, the two submedian ones reduced. Tegmina only slightly reduced; three marks along costal margin between base and stigma and irregular brown spots in apical portion; stigma small, triangular. Chaetotaxy (8)/(8). Length: 5 mm.

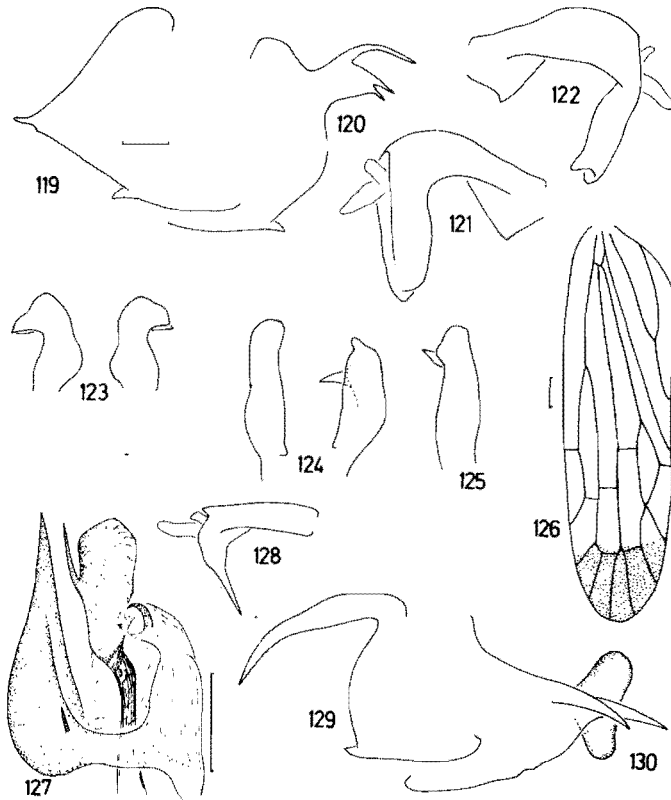


Figs 109-118. *Norialsus* spp. 109-113. *N. inusitatus* sp. nov., holotype ♂. 109. Aedeagus, dorsal view. 110 & 111. Pygofer, right and left lateral views. 112. Anal segment, left lateral view. 113. Genital styles. 114-116. Female genitalia, ventral, dorsal, and left lateral views. 117-118. *N. atrifrons* sp. nov., holotype ♂. 117. Aedeagus, right lateral view. 118. Idem, dorsal view. Scale: 0,2 mm.

MALE GENITALIA. Anal segment with a very large apical process (Figs 121 and 122). Pygofer with a large triangular lobe on right side (Fig. 119), left side with a very characteristic process (Fig. 120) bearing three spines. Genital styles as illustrated in Fig. 123. Aedeagus (Figs 117 and 118) with two long and two short spines apically. Periandrium large, lamelliform, well developed in cephalic direction, bearing three short basal spines.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Willowmore, 16.i.1984, J. G. Theron, PPRI. Paratype: 1 ♂, same locality, KBIN.

REMARKS. This species can be distinguished from all other *Norialsus* species by the very characteristic process on the left side of the pygofer.



Figs 119–130. *Norialsus* spp. 119–123. *N. atrifrons* **sp. nov.** 119 & 120. Pygofer, right and left lateral views. 121 & 122. Anal segment, right and left lateral views. 123. Genital styles. 124–130. *N. micropterus* **sp. nov.**, holotype ♂. 124. Genital styles, ventral view. 125. Idem, lateral view. 126. Left tegmen. 127. Aedeagus, dorsal view. 128. Anal segment, right lateral view. 129 & 130. Pygofer, right and left lateral view. Scale: 0,2 mm.

***Norialsus micropterus* sp. nov.**, Figs 124–130

Vertex as long as broad, pale ochreous, with a distinct median keel and one single longitudinal keel between subapical transverse keel and apical border. Frons and postclypeus black, the latter without median keel. Pronotum pale ochreous dorsally, black laterally. Tegmina coriaceous, pale ochreous with a black apex, strongly reduced (Fig. 126), with broad concolorous veins densely covered with prominent granules. Wings small, rudimentary. Legs black, hind tibiae and hind tarsi yellowish; chaetotaxy (9)/(9). Length: 4 mm.

MALE GENITALIA. Anal segment (Fig. 128) with a spinose process on right

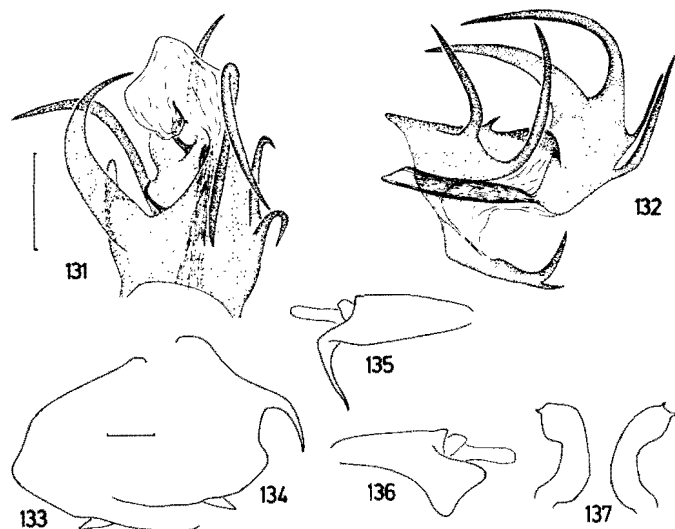
side, left side straight. Left margin of pygofer (Fig. 130) with two spines and a large characteristic process, right side with a long spine inserted near dorsal border (Fig. 129). Genital styles (Figs 124 and 125) with a tooth on their inner margins. Aedeagus (Fig. 127) with a semicircular process at base of flagellum, a large dextral spine inserted basally with a small tooth at its base, and finally a small spine on flagellum. Connection of aedeagus to pygofer narrow, equal to width of anal segment and also articulating with the latter.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: below Gydo Pass, Ceres, 2.xii.1981, J. G. Theron, PPRI. Paratypes: 1 ♀, same locality, PPRI.

***Norialsus knysnanus* sp. nov.**, Figs 131–137

Vertex and face dark brown to black, with pale carinae. Median keel on postclypeus completely developed. Vertex as long as broad, median keel only developed in basal part and subapical transverse keel angulate in middle. Pronotum black with pale carinae and borders. Mesonotum brown to black with five yellowish longitudinal keels. Tegmina with three distinct transverse brown bands, the two basal ones connected with each other by the brown clavus. Stigma small, triangular. Legs brown, chaetotaxy (9)/(9). Length: 4 mm.

MALE GENITALIA. Anal segment asymmetrical, right side with an apical spine (Fig. 135), left side terminating into a blunt lobe (Fig. 136). Pygofer with a rounded lobe on right side (Fig. 133), and a ventrally curved spine on left lateral margin (Fig. 134). Genital styles (Fig. 137) as illustrated. Aedeagus (Figs 131 and 132) with three



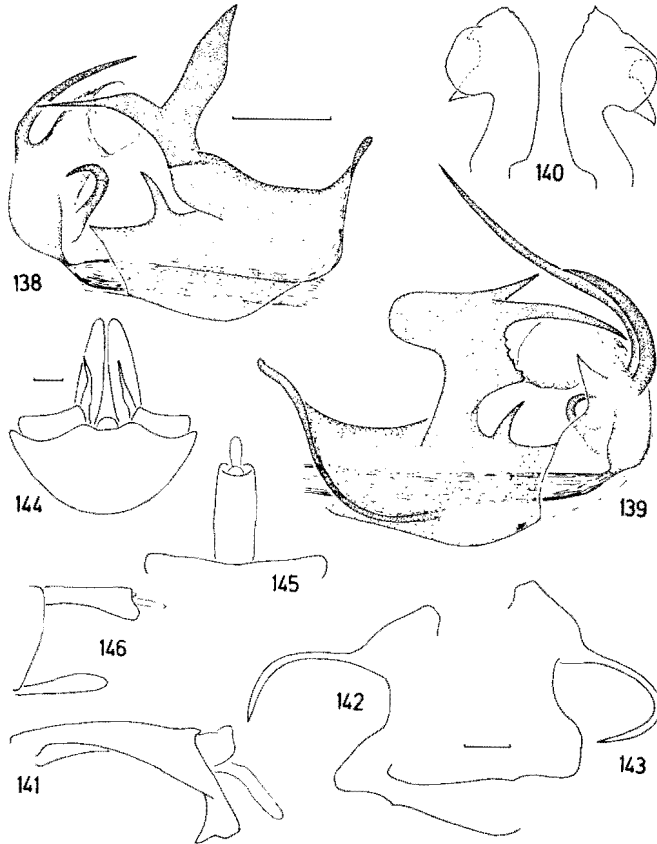
Figs 131–137. *Norialsus knysnanus* sp. nov., holotype ♂. 131 & 132. Aedeagus, dorsal and left lateral views. 133 & 134. Pygofer, right and left lateral views. 135 & 136. Anal segment, right and left lateral views. 137. Genital styles. Scale: 0,2 mm.

spines apically and a small semicircular process near base of flagellum; furthermore three spines more basally on right side and two on left side, and finally a small tooth-like process dorsally on periandrium halfway along length of aedeagus, and a forked spine on ventral margin, emerging from the base of the aedeagus.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Knysna C. P., i.1979, C. Kok, S. J. V. v. Tonder, PPRI.

***Norialsus spiniferens* sp. nov., Figs 138–146**

Frons ochreous, postclypeus dark brown to black, median keel on latter and median ocellus absent. Vertex as long as broad, pale ochreous, with a median keel. Pronotum and mesonotum pale ochreous, abdomen dark brown. Tegmina milky hya-



Figs 138–146. *Norialsus spiniferens* sp. nov. 138–143. Holotype ♂. 138 & 139. Aedeagus, right and left lateral views. 140. genital styles. 141. Anal segment, left lateral view. 142 & 143. Pygofer, right and left lateral views. 144–146. Female genitalia, ventral, dorsal, and left lateral views. Scale: 0,2 mm.

line with three brown irregular transverse bands, and apical margin covered by a brown band extending from tip of clavus to costal margin, at $2/3$ distance of base. Legs black, chaetotaxy (10)(9). Length: 5–5.5 mm.

MALE GENITALIA. Anal segment (Fig. 141) with a single apical process. Pygofer (Figs 142 and 143) bearing a curved spine on each side. Genital styles (Fig. 140) each with two teeth on inner side of apex. Aedeagus (Figs 138 and 139) with three long apical spines, a semicircular process at base of flagellum, a short spine and two large spinose processes on dorsal margin of periandrium and a tooth-like process on ventral margin near apical border of periandrium.

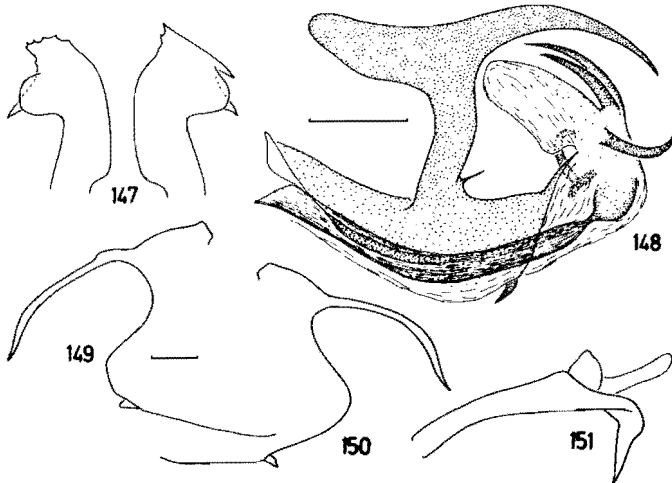
FEMALE GENITALIA. (Figs 144–146) Pregenital sternite with a shallow median incision bordered by two blunt lobes submedially. Ovipositor shorter than length of anal segment in lateral view.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Golden Gate, 20.xii.1982, J. G. Theron, PPRI. Paratypes: 3 ♂ 2 ♀, same locality, PPRI, KBIN.

***Norialsus millari* sp. nov.**, Figs 147–151

Closely related to *N. spiniferens*; head, pronotum and mesonotum yellowish brown. Tegmina reduced, coriaceous, without stigma, with broad veins covered by prominent granules; colour yellow, apical border broadly fumated with black. Legs yellowish brown, chaetotaxy (10)/(9). Length: 4.5 mm.

MALE GENITALIA. General structure of male genitalia like those of *N. spiniferens*. Apical process of anal segment (Fig. 151) longer, and spines on pygofer (Figs 149



Figs 147–151. *Norialsus millari* sp. nov., holotype ♂. 147. Genital styles. 148. Aedeagus, left lateral view. 149 & 150. Pygofer, right and left lateral views. 151. Anal segment, left lateral view. Scale: 0.2 mm.

and 150) less curved. Left apical spine of aedeagus (Fig. 148) running caudally and not parallel to flagellum, as is the case in *N. spiniferens*. Ventral spine on periandrium larger and left dorsal process with one single spine instead of two; spine on base of latter smaller.

FEMALE GENITALIA. Similar to those of *N. spiniferens*.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Natal, Cathedral Peak Area, 28,55 S, 29,14 E, 10.xi.1981, I. M. Millar, PPRI. Paratypes: 3 ♀, same locality, PPRI, KBIN.

***Norialsus salsolarum* sp. nov., Figs 152–161**

General colour black, borders and keels yellowish. Vertex broader than long (17:22). Postclypeus large, swollen, devoid of a median keel. Mesonotum with three distinct keels and two very obsolete, almost absent submedian keels. Tegmina irregularly mottled all over their surface, and three brown spots along costal margin between base and stigma. Costal margin going straight from base to stigma, densely covered with small granules. Legs predominantly black, chaetotaxy (8–9)/(8–9). Length: 4–4.5 mm.

MALE GENITALIA. Anal segment (Figs 152 and 153) rounded in dorsal view and with one single process apically. Pygofer (Figs 154 and 155) and genital styles (Fig. 158) slightly asymmetrical, the latter with an additional lamelliform process on inner side of apex. Aedeagus (Fig. 156) consisting of two basal plate-like processes, together bearing five spines; furthermore four spines at apex of aedeagus, the two dextral ones fused together at their base in a sharp angle, constant within all paratypes, and finally a semicircular process at base of flagellum. The basal plate-like periandrium is slightly variable (compare with Fig. 157).

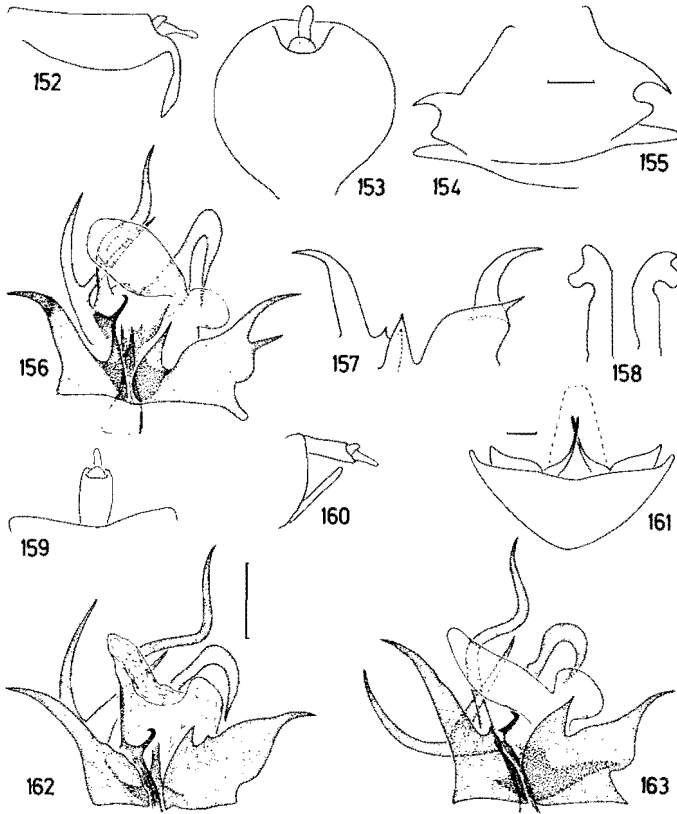
FEMALE GENITALIA. Caudal margin of pregenital sternite slightly concave. Valvulae I longer than half length of ovipositor; anal segment small, rectangular.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Steytlerville, 22.i.1982, J. G. Theron, PPRI. Paratypes: 3 ♂ 2 ♀, same locality; 5 ♂ 1 ♀, Calvinia, 2.ii.1978; 1 ♂, Beaufort West, 24.i.1983; 1 ♂ 2 ♀, Prince Albert, 24.i.1983, on *Salsola*; 1 ♂, Graaff-Reinet, 18.i.1984, J. G. Theron, PPRI, KBIN.

REMARKS. *N. salsolarum* and the species described below form a very uniform group within the genus. They are characterized by their small size, black colour in contrast with the yellow keels, the absence of a median keel on the postclypeus, the straight costal border of the tegmina and the presence of only three distinct keels on mesonotum, the two submedian ones being reduced and totally absent.

***Norialsus aberdeeni* sp. nov., Fig. 162**

External characters, anal segment, pygofer and genital styles like those of *N. salsolarum*. The aedeagus differs from the preceding species in the shape of the basal plate-like periandrium, which is constant in all paratypes. *N. aberdeeni* differs from



Figs 152–163. *Norialsus* spp. 152–161. *N. salsolarum* sp. nov. 152–156. Holotype ♂. 152 & 153. Anal segment, left lateral and dorsal views. 154 & 155. Pygofer, right and left lateral views. 156. Aedeagus, dorsal view. 157. Basal processes on periandrium, paratype Calvinia. 158. Genital styles. 159–161. Female genitalia, dorsal, left lateral, and ventral views. 162. *N. aberdeeni* sp. nov., holotype ♂, aedeagus, dorsal view. 163. *N. capicola* sp. nov., holotype ♂, aedeagus, dorsal view. Scale: 0,2 mm.

N. capicola in the structure of the two dextral apical spines, which are fused together in a sharper angle.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Aberdeen, 17.i.1984, J. G. Theron, PPRI. Paratypes: 3♂ 2♀, Willowmore, 16.i.1984, PPRI, KBIN.

***Norialsus capicola* sp. nov.**, Fig. 163

External characters, anal segment, pygofer and genital styles like those of *N. salsolarum*. Aedeagus (Fig. 163) with the same general structure, but differing in the orientation and angle of the two fused dextral spines, and in the shape of the basal peri-

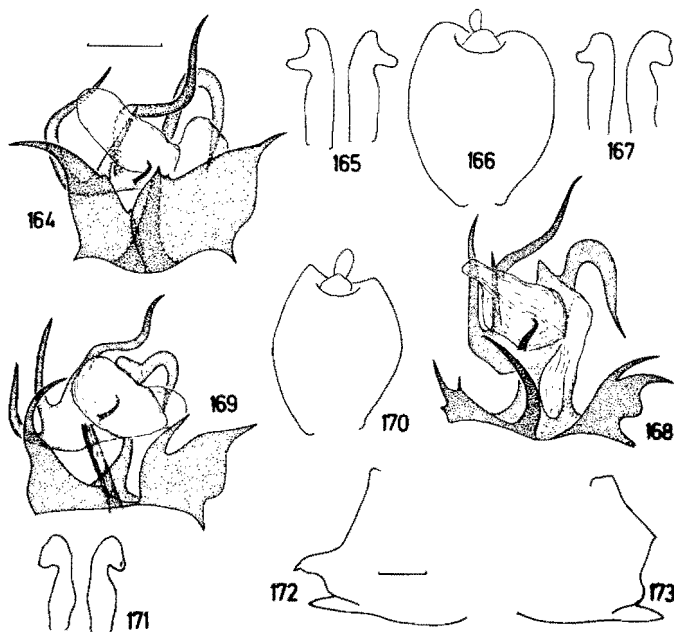
andrium. The holotype bears a small spine on right side of basal periandrium, as illustrated; this process is absent in the paratype from Grahamstown, and smaller in the paratype from Cradock.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Cape Prov., Somerset East, 23-31.xii.1930, BMNH. Paratypes: 1 ♂ 2 ♀, Grahamstown, 21.i.1982, J. G. Theron, PPRI; 1 ♂ 1 ♀, Cradock, Bergkwagga Park, 19.i.1984, J. G. Theron, PPRI, KBIN; 2 ♂, same data as holotype, BMNH.

***Norialsus praetener* sp. nov.**, Figs 164-165

External characters and general structure of the genitalia like those of *N. salso-larum*. The aedeagus (Fig. 164) differs in the shape of the basal periandrium, and in the orientation of the fused dextral spines.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Barrydale, 19.i.1982, J. G. Theron, PPRI. Paratypes: 1 ♂ 1 ♀, Cape Prov., Heidelberg Distr., Breede River, 1.ii.1932, BMNH.



Figs 164-173. *Norialsus* spp. 164-165. *N. praetener* sp. nov., holotype ♂. 164. Aedeagus, dorsal view. 165. Genital styles. 166-168. *N. nuverus* sp. nov. 166. Anal segment, dorsal view. 167. Genital styles. 168. Aedeagus, dorsal view. 169-173. *N. notius* sp. nov., holotype ♂. 169. Aedeagus, dorsal view. 170. Anal segment, dorsal view. 171. Genital styles. 172 & 173. Pygofer, right and left lateral views. Scale: 0,2 mm.

***Norialsus nuwerus* sp. nov.**, Figs 166–168

External characters, pygofer and genital styles like those of *N. salsolarum*. Anal segment oval in dorsal view instead of round (Fig. 166), as is the case with the preceding species; basal perianthrium of aedeagus smaller, fused dextral spines running parallel to each other.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Nuwerus, 10.ii.1971, J. G. Theron, PPRI. Paratypes: 1 ♂ 2 ♀, same locality, J. G. Theron, PPRI, KBIN.

***Norialsus notius* sp. nov.**, Figs 169–173

External characters like those of *N. salsolarum*.

MALE GENITALIA. Anal segment like that of *N. salsolarum*, but oval in dorsal view instead of rounded (Fig. 170). Right side of pygofer (Fig. 172) with a tapering process, left margin (Fig. 173) angulate, without a distinct process. Genital styles (Fig. 171) with an additional lamelliform process along inner side. Aedeagus (Fig. 169) with four apical spines, the two parallel spines unequal in holotype, equal in length in paratypes; furthermore a semicircular process on base of flagellum and finally one spine on right side of basal perianthrium and two plate-like processes on left side.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Cape Prov., Huguenot, ii.1932, BMNH. Paratypes: 2 ♂ 1 ♀, nr. Mamre, 18.xii.1981, J. G. Theron; 1 ♂, Halfmanshof, 9.ii.1983, J. G. Theron; 1 ♂, Jonkershoek, xii.1922, C. W. Mally, PPRI, KBIN.

***Norialsus capeneri* (Synave), comb. nov.**, Figs 174–185

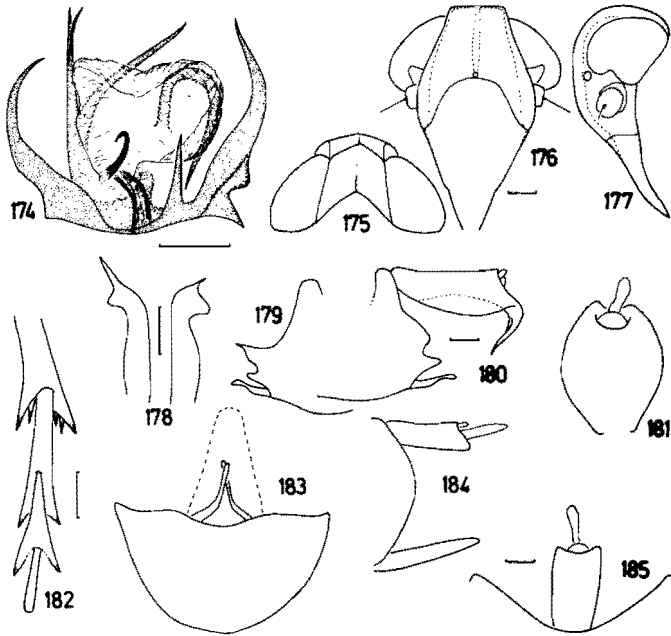
***Oliarus capeneri* Synave, 1953: 1**

External characters like those of *N. salsolarum*, except for the proportions of the vertex (as long as broad) and the chaetotaxy of the hind tarsi: (9–10)/(9–10).

MALE GENITALIA. Anal segment (Fig. 180) oval in dorsal view, with a broad ventral process apically. Pygofer (Figs 179 and 180) with two small blunt lobes along left side, and one tapering and one blunt process on right side. Genital styles (Fig. 178) with a spinose process apically. Aedeagus (Fig. 174) with three spines on basal perianthrium, one dextral and two sinistral ones, and three further spines more apically: the right one two-pronged and fused together basally with the median one, left semicircularly curved and pointing to base of aedeagus; finally a small semicircular process at base of flagellum.

FEMALE GENITALIA. (Fig 183–185) Caudal margin of pregenital sternite slightly concave in middle. Ovipositor as long as anal segment, the latter rectangular.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Pretoria, Fountains, 20.xii.1950. Paratypes: 59 specimens from the same locality, KMNA, KBIN, BMNH, TM; eight of these belong to *Oliarus rustenburgi* Synave.



Figs 174-185. *Norialsus capeneri* (Synave). 174-181. Paratype ♂. 174. Aedeagus, dorsal view. 175-177. Head, dorsal, frontal, and left lateral views. 178. Genital styles. 179. Pygofer, right lateral view. 180. Pygofer and anal segment, left lateral view. 181. Anal segment, dorsal view. 182. Hind tarsus and distal part of hind tibia. 183-185. Female genitalia, ventral, left lateral and dorsal views. Scale: 0.2 mm.

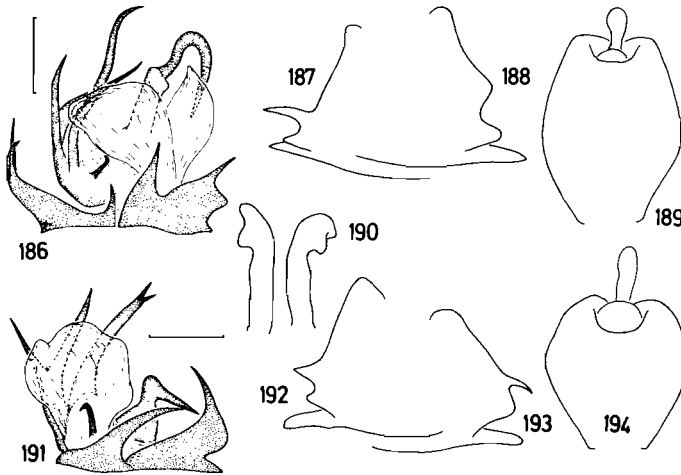
Additional: 1 ♂, Orange Free State, Harrismith, ii.1927, BMNH; 1 ♂, Cape Prov., Somerset East, 23-31.xii.1930, BMNH; 1 ♂, Buff. Farm, Thabazimbi, 9.i.1957, A. L. Capener, Priv. Coll. Linnavuori, Finland; 9 ♂ 2 ♀, Cape Prov. Aliwal North, xii.1922, R. E. Turner, BMNH; 1 ♂, Ventersdorp, 28.i.1975, J. G. Theron, PPRI; 4 ♂ 2 ♀, Dundee, 21.i.1981, J. G. Theron; 5 ♂ 3 ♀, Winburg of S., i.1979, PPRI; 1 ♂ 2 ♀, Rustenburg, 10-13.xii.1962, A. L. Capener, PPRI; 7 ♂ 2 ♀, Queenstown, 20.i.1984, J. G. Theron, PPRI, KBIN.

REMARKS. *N. capeneri* is the most common species of the genus; the dates of capture are situated between December and February.

Norialsus elytropappi sp. nov., Figs 186-190

External characters like those of *N. salsolarum*

MALE GENITALIA. Anal segment (Fig. 189) oval in dorsal view; pygofer (Figs 187 and 188) with two small lobes along left side, and a spinose process along right side. Aedeagus (Fig. 186) with four apical spines, a semicircular process at base of



Figs 186–194. *Norialsus* spp. 186–190. *N. elytrapppi* sp. nov., holotype ♂. 186. Aedeagus, dorsal view. 187–188. Pygofer, right and left lateral views. 189. Anal segment, dorsal view. 190. Genital styles. 191–194. *N. novemspinus* sp. nov., holotype ♂. 191. Aedeagus, dorsal view. 192 & 193. Pygofer, right and left lateral views. 194. Anal segment, dorsal view. Scale: 0.2 mm.

flagellum and five spinose processes on basal periandrium, two sinistral and two dextral ones.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Matroosberg Station, 18.i.1982, on *Elytropappus rhinocerotis*, J. G. Theron, PPRI. Paratypes: 1 ♀, same locality; 4 ♂ 1 ♀, De Doorns, 14.ii.1969, J. G. Theron, PPRI, KBIN.

***Norialsus novemspinus* sp. nov.**, Figs 191–194

External characters like those of *N. salsolarum*, vertex slightly longer than broad (20:18).

MALE GENITALIA. Anal segment (Fig. 194) oval in dorsal view; pygofer with two small processes on right and left side (Figs 192 and 193). Aedeagus (Fig. 191) with five spinose processes on basal periandrium, four more apically, and a small semicircular process at base of flagellum.

MATERIAL EXAMINED. Holotype, ♂. SOUTH AFRICA: Thaba Nchu, 20.xii.1978, J. G. Theron, PPRI.

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Accepted 3 February 1986