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NEW GENERA AND SPECIES OF NOTOATURINAE
(ACARI, ATURIDAE) FROM SOUTH AFRICA

by David R. Cook*

HYDRACHNELLAE
ATURIDAE
SOUTH AFRICA

SUMMARY: Six new species belonging to two new genera of Notoaturinae are described from South Africa: Amperaturus rensburgi, A. abelus, A. similis, A. pauciporus, Valsaturus longipalpis and V. malleatus. Characteristics of the African members of the subfamily are given which distinguish them from those found in other southern continents. The third African genus, Masabania, is redefined.

INTRODUCTION

The Notoaturinae are a southern group of water mites presently known only from major land areas which were a part of Gondwanaland. These areas include New Zealand, Australia, austral South America and southern or eastern nontropical Africa. Approximately 100 species belonging to the subfamily are presently known, roughly 85% of which occur in either New Zealand or Australia. Each landmass contains genera which are very distinct from those of other areas, suggesting that major evolution within the subfamily took place after each continent rifted from the supercontinent.

Three genera are now known from Africa. Masabania, the first described genus in the Notoaturinae, was based on two species described by Walter & Bader (1952) from streams at high elevations (3000-4000 meters) in East Africa, situations where cool temperate conditions persist. Two very distinctive new genera containing six new species are described in this paper. The division of the dorsal shield into individual platelets is similar for all three African genera but very different from those of other areas. The dorsal shield consists of unpaired anteromedial and posteromedial plates and three pairs of lateral platelets (Fig. 5). Two pairs of lateral platelets are typical of genera from other areas although one unusual New Zealand taxon bears four pairs of lateral platelets. Five pairs of glandularia associated with the dorsal shield appears to be typical of the African forms but in one of the genera the pair normally on the posteromedial plate has shifted to the posterodor sal portion of the ventral shield (Fig. 36). Either four or six pairs of glandularia incorporated into the dorsal shield is typical of species from other continents. Also unique is the presence of two pairs of glandularia on the most anterior of the lateral platelets (Fig. 5) although the gland portion of one of these pairs has disappeared in Masabania and one of the new genera (Figs. 36 and 41). Although similarities of the dorsal shield indicate a common origin of the known African genera, the very pronounced differences in the

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ventral shield and appendages suggest what was once a very diverse austral notoaturine fauna has become greatly reduced as the continent shifted northward into warm tropical conditions. These differences will be discussed under the individual generic diagnoses.

Primary types are deposited in the Field Museum of Natural History (Chicago). Measurements are given in micrometers. If paratypes are available, size variation is given in parentheses following measurements of the primary types.

**Diagnoses of the African Notoaturine Genera**

*Masabania* Walter and Bader, 1952

**Diagnosis:** Adults with characters of the African Notoaturinae as given in the introduction; body sclerites relatively smooth; gland portion of one of the glandularia on the most anterior lateral platelets of the dorsal shield absent (similar to that shown in Fig. 41); preocularia lying on anterodorsal portion of ventral shield; openings for insertion of fourth legs without associated projections; anterior coxae slightly projecting; fourth coxae lacking glandularia; median margins of fourth coxae reduced to medial angles in the female but only slightly reduced in the male; genital acetabula numerous, not on distinct acetabular plates, and extending laterally in several rows nearly to lateral edges of body; gonopore terminal in female, subterminal in male; palp relatively short, with or without a few short papillae on the ventral side of P-II; males may or may not exhibit a moderate sexual dimorphism of the fourth leg; swimming setae absent.

*Type species:* *Masabania spinosa* Walter and Bader, 1952.

**Amperatus, new genus**

**Diagnosis:** Adults with characters of the African Notoaturinae as given in the introduction; body sclerites covered with small rounded papillae; gland portions present on both pairs of glandularia on the most anterior of the lateral platelets of the dorsal shield (Fig. 5); preocularia lying on anterodorsal portion of ventral shield; the coxal groups and genital field are separated in teneral individuals and the secondary sclerotization which later fuses them into a ventral shield is very distinct from that of the primary sclerites (Fig. 3); openings for insertion of the fourth legs with associated projections which mostly cover the openings when viewed ventrally; anterior coxae slightly, if at all, projecting; fourth coxae bearing a pair of glandularia; median margins of fourth coxae moderately to well developed; genital acetabula varying in number from five pairs to numerous (Fig. 14), these lying on distinct acetabular plates which extend only slightly laterally; gonopore terminal in female, subterminal to somewhat ventral in male; palp relatively short, with or without a few short papillae on the ventral side of P-II; males may or may not exhibit a moderate sexual dimorphism of the fourth leg; swimming setae absent; deutonymph with the coxae in three groups and lacking a ventral shield; a provisional genital field bearing closely spaced acetabular plates, each with two acetabula (Fig. 17); dorsum with numerous small sclerites, which unlike those described for *Masabania*, clearly show their homologies with the adult dorsum (compare Figs. 19 and 23); palp with fewer setae than the adult but otherwise rather similar.

*Type species:* *Amperatus rensburgi*, new species

**Valsaturs, new genus**

**Diagnosis:** Adults with the characters of the African Notoaturinae as given in the introduction; body sclerites with a malleate appearance (Fig. 38); gland portion of one of the glandularia on the most anterior of the lateral platelets absent (Fig. 41); preocularia lying on anterior edge of anteromedial plate of the...
dorsal shield; rounded projections covering openings for insertion of fourth legs when viewed ventrally; anterior coxae narrow and projecting far forward; fourth coxae bearing a pair of glandularia; medial margins of fourth coxae obliterated; 6-14 pairs of genital acetabula, these not extending far laterally and not on acetabular plates; gonopore terminal in female, subterminal to ventral in male; palp relatively long, especially P-IV, with a single ventral projection on P-II; males not exhibiting a sexual dimorphism of the legs; swimming setae absent; nymph unknown.

**Type species:** *Valsaturus longipalpis*, new species.

*Amperatus renshurgi*, new species
(Figs. 1-8, 17, 19)

**Male:** Dorsal and ventral shields present; integument with small rounded papillae which terminate in one of the body pores; dorsal shield 426 (395-486) in length, 348 (334-373) in width; posteromedial plate of the dorsal shield 251 (236-258) in length, 380 (364-395) in width; anteromedial plate bearing the postocularia on each side of a broad rounded medial ridge; posteromedial plate bearing a pair of glandularia located near posterior ends of a pair of low rounded lateral ridges; most anterior of the lateral platelets bearing two pairs of glandularia; the middle and posterior platelets each with a glandularium; proportions of these sclerites better illustrated (Fig. 5) than described; ventral shield 479 (464-486) in length, 380 (365-394) in width; tips of first coxae extending slightly posterior to or slightly anterior to anterior end of body proper; coxoglandularia 1 placed well anterior to suture line of second coxae; medial margins of fourth coxae relatively short compared to other species of the genus; openings for insertion of fourth legs, when viewed ventrally, partially covered by bluntly pointed projections; glandularia of the fourth coxae placed well posterior to suture lines between third and fourth coxae; coxoglandularia 2 located near posterior suture lines of the fourth coxae; genital field triangular in shape and appearing somewhat foreshortened in ventral view; the acetabula numerous, with the most anterior two pairs noticeably larger than the others; gonopore narrow and located anterior to most of the acetabula; genital field, when measured in a strict ventral view, 155 (155-170) in length, 126 (111-126) in width; gonopore 115 (111-115) in length, 31 (25-29) in width; a pair of glandularia closely flanking the genital field; Figure 4 illustrates a posteroventral view of the genital field (note that gonopore is greatly foreshortened in this view); dorsal lengths of the palpal segments: P-I, 27 (24-27); P-II, 66 (62-64); P-III, 44 (41-44); P-IV, 88 (83-87); P-V, 31 (28-31); P-II bulging ventrally and this bulge bearing a few papillae; medial side of P-IV with a concavity that extends half way up segment (Fig. 2); greatest dimension of capitulum 140 (118-133); length of chelicera 162 (155-170); structure of capitulum and chelicera as illustrated for a closely related species (Fig. 18); dorsal lengths () of the distal segments of the first leg: I-Leg-4, 81 (78-85); I-Leg-5, 93 (93-95); I-Leg-6, 104 (96-104); these segments comparatively longer and narrower than in female; dorsal lengths of the distal segments of the fourth leg: IV-Leg-3, 118 (111-129); IV-Leg-4, 126 (126-137); IV-Leg-5, 118 (112-115); IV-Leg-6, 133 (140-148); fourth leg exhibiting sexual dimorphism; IV-Leg-3 lacking the long distal projection found in the following two species but bearing two long swimming setae; IV-Leg-4 bowed and bearing thickened setae; IV-Leg-5 expanded dorsoventrally and bears a patch of thickened setae; because these segments are rotated relative to each other slight variations in orientation of the leg will cause the proportions of these segments to appear very different; the detail of Figure 8 shows how the fifth segment will appear in some specimens.

**Female:** Dorsal and ventral shields present; integument as described for male; dorsal shield 426 (380-411) in length, 353 (334-372) in width; posteromedial plate 236 (228-243) in length, 243 (228-243) in width; dorsal shield as described and illustrated for the male; ventral shield 502 (486-502) in length, 380 (364-380) in width; tips of first coxae tending to extend somewhat anterior to the body proper; coxae and associated glandularia similar to those of male; secondary sclerotization between the coxal groups wider than in male; genital acetabula numerous with the most anterior two pairs noticeably larger than the others; acetabula lying on distinct acetabular plates;
Figs. 1–8: Amperaturus rensburgi, new species.
1. — Ventral shield, male. 2. — Medial view of palp, male. 3. — Ventral shield, female. 4. — Posteroventral view of genital field, male. 5. — Dorsal view, male. 6. — Medial view of palp, female. 7. — Distal segments of first leg, female. 8. — Distal segments of fourth leg, male.
acetabular plates subterminal in position and appearing foreshortened in ventral view; genital field 208 (200–207) in width; gonopore 74 (74–79) in width; Figure 3 illustrates the female ventral shield; dorsal lengths of the palpal segments: P-I, 27 (27–28); P-II, 65 (64–66); P-III, 44 (42–45); P-IV, 81 (83); P-V, 31 (30–31); palp similar to that of male but P-IV proportionally slimmer and the medial concavity extends only a slight distance up side of segments (Fig. 6); greatest dimension of capitulum 126 (125–130); chelicera 155 (155–163) in length; dorsal lengths of the distal segments of the first leg: 1-Leg-4, 72 (70–74); 1-Leg-5, 78 (76–81); 1-Leg-6, 81 (81–84); Figure 7 shows the proportions and chaetotaxy of these segments; II-Leg-5, III-Leg-5 and IV-Leg-5 each with two swimming setae.

DEUTONYMPH: Dorsal and ventral shields absent but the dorsum with a series of sclerites which cover most of the dorsum; soft integument between the sclerites lined; body 304 (319) in length; anterior shield of the dorsum 148 (140) in length, 148 (137) in width; unlike the adults, all dorsal glandularia are on separate platelets; the proportions of the dorsal sclerites better illustrated (Fig. 19), than described; coxae in three groups, with lined integument between them; medial margins of fourth coxae relatively short; provisional genital field with two pairs of acetabula, with the anterior pair much closer together than the posterior pair (Fig. 17); the peripheral glandularia located on moderately large papillae; dorsal lengths of the palpal segments: P-I, 15–16; P-II, 41–45; P-III, 29–31; P-IV, 58–60; P-V, 29–30; ventral side of P-II slightly bulging and bearing a few small papillae; capitulum 81–85 in greatest dimension, chelicera 96–99 in length; capitulum and chelicera much as shown for the adult of a related species (Fig. 18); dorsal lengths of the distal segments of the first leg: I-Leg-4; 47–50; I-Leg-5, 52–55; I-Leg-6, 63–65; swimming setae as described for the female.

TYPES: Holotype male, allotype female, 15 male, 15 female and 5 deutonymph paratypes, Sterkspruit (temperature 8° C) above dam at Lydenburg fish hatchery, Eastern Transvaal, South Africa, 24 May 1984; 1 male, from the Amanzinyama River (temperature 5° C) on road between Nottingham and Underberg near fork to Kamberg Nature Reserve, Natal, South Africa, 31 May, 1984.

DISCUSSION: The present species differs from other members of the genus in having relatively short medial margins of the fourth coxae, a comparatively short, stocky P-IV and, among males exhibiting a sexual dimorphism of the fourth leg, lacking a long distal projection on IV-Leg-3. Since two closely related species of the genus are present in the collection which contained the deutonymphs, it is not certain they should be assigned to the present species. However, the relatively short medial margins of the fourth coxae, palpal proportions much as in the female of the present species and presence of papillae on the ventral side of P-II strongly suggest that it does belong here.

Amperatums abelus, new species
(Figs. 9–16, 18)

MALE: Dorsal and ventral shields present; integument with small rounded papillae which end in a body pore; dorsal shield 456 (456) in length, 376 (364) in width; posteromedial plate of the dorsal shield 274 (288) in length, 251 (258) in width; anteromedial plate bearing the postocularia on each side of a broad rounded medial ridge; posteromedial plate bearing a pair of glandularia placed near posterior end of a pair of low rounded lateral ridges; most anterior of the lateral platelets bearing two pairs of glandularia; the middle and posterior platelets each bearing a single glandularium; Figure 13 shows the proportions of these sclerites; ventral shield 532 (352) in length, 395 (410) in width; tips of first coxae extending slightly beyond anterior end of body proper; coxoglandularia 1 located well anterior to posterior suture lines of second coxae; medial margins of fourth coxae relatively long; openings for insertion of fourth legs partially covered by projections when viewed ventrally; glandularia of the fourth coxae located well posterior to the suture lines between third and fourth coxae; coxoglandularia 2 located near posterior suture lines of fourth coxae; genital field triangular in shape and foreshortened in a strict ventral view; genital acetabula numerous, with the
FIGS. 9–16: Amperaturus abelus, new species.

anterior pair often but not always noticeably larger than those that immediately follow; gonopore long and narrow and placed anterior to most of the acetabula; genital field, when measured in a strict ventral view, 177 (200) in length, 145 (148) in width; gonopore 108 (111) in length, 27 (27) in width; a pair of glandularia closely flanking the genital field; Figure 14 shows a posteroventral view of the genital field (note that gonopore is greatly foreshortened in this view); dorsal lengths of the palpal segments: P-I, 28 (30); P-II, 70 (72); P-III, 48 (48); P-IV, 100 (97); P-V, 31 (31); distoventral portion of P-II slightly bulging and tending to lack associated papillae; P-IV lacking a medial concavity; Figure 10 illustrates the proportions and chaetotaxy of the palp; greatest dimension of capitulum 129 (133); chelicera 164 (170) in length; these structures as illustrated and described for the female; dorsal lengths of the distal segments of the first leg: I-Leg-4, 111 (107); I-Leg-5, 111 (111); I-Leg-6, 115 (113); these segments comparatively longer and narrower than in female; dorsal lengths of the distal segments of the fourth leg: IV-Leg-3, 192 (185); IV-Leg-4, 192 (185); IV-Leg-5, 148 (152); IV-Leg-6, 133 (140); fourth leg exhibiting sexual dimorphism; IV-Leg-3 with a long distal projection and bearing four long swimming setae; the projection of IV-Leg-3 only slightly curved; IV-Leg-4 slightly bowed; both IV-Leg-4 and 5 with numerous setae (Fig. 16).

**Female:** Dorsal and ventral shields present; integument as described for male; dorsal shield 456 (448) in length, 388 (380) in width; posteromedial plate 281 (274) in length, 273 (265) in width; dorsal shield as described and illustrated for the male; ventral shield 555 (543) in length, 425 (425) in width; tips of first coxae extending slightly beyond anterior end of body proper; coxae and associated glandularia similar to those of male; secondary sclerotization between the coxal groups wider than in male; genital acetabula numerous; the most anterior pair of acetabula may or may not be noticeably larger than the others; genital acetabula lie on distinct acetabular plates which are subterminal in position and appear foreshortened in a strict ventral view; Figure 11 illustrates the structure of the ventral shield; dorsal lengths of the palpal segments: P-I, 31 (31); P-II, 73 (71); P-III, 46 (48); P-IV, 93 (96); P-V, 28 (31); PI-V without a medial concavity; greatest dimension of the capitulum 133 (138); chelicera 170 (166) in length; Figure 18 shows a lateral view of the capitulum, chelicera and palp; dorsal lengths of the distal segments of the first leg: I-Leg-4, 89 (87); I-Leg-5, 91 (89); I-Leg-6, 96 (92); Figure 15 shows the proportions and chaetotaxy of these segments; II-Leg-5, III-Leg-5 and IV-Leg-5 each with two swimming setae.

**Types:** Holotype male, allotype female, 1 male and 1 female paratypes, Sterkspruit (temperature 8° C) above dam at Lydenburg fish hatchery, Eastern Transvaal, South Africa, 24 May 1984.

**Discussion:** The present species differs from the preceding in having a proportionally longer and narrower palp, fewer large acetabula at the anterior end of the genital field and a much longer medial margin of the fourth coxae. The male of the present species differs in having a long distal projection on IV-Leg-3, a characteristic of the following species. See discussion under the latter.

**Amperatums similis,** new species
(Figs. 20-23)

**Male:** Dorsal and ventral shields present; integument with small rounded papillae which end in one of the body pores; dorsal shield 380 in length, 327 in width; posteromedial plate of the dorsum 224 in length, 228 in width; anteromedial plate bearing the postocularia on each side of a broad rounded medial ridge; posteromedial plate bearing a pair of glandularia near the posterior end of paired low medial ridges; most anterior of the lateral platelets bearing two pairs of glandularia; middle and posterior pairs of lateral platelets each with a single glandularium (Fig. 23); ventral shield 471 in length, 350 in width; tips of first coxae extending well beyond the anterior end of the body proper; coxoglandularia I placed well anterior to the suture lines of the second coxae; medial margins of the fourth coxae long; openings for insertion of fourth legs, when viewed ventrally, nearly covered by rounded projections; glandularia of the fourth coxae located well posterior to the suture lines between the third and fourth coxae; coxoglandularia
Figs. 17–23: Amperatus species.

2 placed near posterior suture lines of fourth coxae; genital field somewhat triangular in shape and only slightly foreshortened in a strict ventral view; 12–13 pairs of genital acetabula visible in a ventral view but it is possible a few additional pairs may be present, but hidden in this view, at the posterior end of the genital field; the anterior two pairs of acetabula noticeably larger than the others; a posteriorly directed projection present at anterior end of genital field; gonopore short and wide relative to the preceding two species; genital field 161 in length, 81 in width; gonopore 72 in length, 26 in width; a pair of glandularia flanking the genital field; Figure 21 shows the structure of the ventral shield; dorsal lengths of segments IV of the palp: 28, 66, 48, 91, 27; ventral side of P-II with only a very slight bulge which bears a few papillae; P-IV lacking a medial concavity; greatest dimension of capitulum 108; chelicera 141 in length; structure of capitulum and chelicera as illustrated for a related species (Fig. 18); dorsal lengths of segments 4–6 of the first leg: 100, 98, 98; length of IV-Leg-3, including the long curved distal projection, 174; dorsal lengths of segments 4–6 of fourth leg: 155, 137, 118; fourth leg exhibiting a sexual dimorphism consisting mainly of a long curved distal projection on IV-Leg-3 (Fig. 20) IV-Leg-3 with three swimming setae, one of which is noticeably thicker than the others; opposite side of the fourth and fifth segments with thickened setae much as illustrated in Figure 16.

Female: Unknown.

Types: Holotype male, from a stream (temperature 9.5° C) on north side of Du Toitskloof Pass, on Route 1 east of Paarl, Western Cape, South Africa, 22 June 1984.

Discussion: The present species is most closely related the preceding, A. abelus. A. similis differs most noticeably in possessing much narrower acetabular plates which bear far fewer genital acetabula, and a proportionally much shorter and wider gonopore (compare Figs. 9 and 21). Other differences are somewhat more curved distal projection on IV-Leg-3 and a less developed bulge on the ventral side of P-II in the present species.

Amperatums paucipoms, new species
(Figs. 24–28)

Male: Dorsal and ventral shields present; integument with small rounded papillae, each of which ends in a body pore; dorsal shield 244 in length, 251 in width; posteromedial plate of dorsal shield 160 in length, 160 in width; anteromedial plate bearing the postocularia; posteromedial plate bearing one pair of glandularia; most anterior of the lateral platelets bearing two pairs of glandularia; middle and posterior platelets each bearing a single glandularium; posterior portion of the anteromedial plate and anterior portion of the posteromedial plate raised but the distinct ridges found in the preceding species lacking in the present species; Figure 26 shows the proportions of these sclerites; ventral shield 334 in length, 258 in width; tips of first coxae extending well beyond anterior end of body proper; coxoglandularia I located somewhat anterior to the posterior suture lines of the second coxae; medial margins of fourth coxae relatively long; openings for insertion of fourth legs partially covered by roundly pointed projections when viewed ventrally; glandularia of the fourth coxae placed well posterior to the suture lines between third and fourth coxae; coxoglandularia 2 located near posterior suture lines of fourth coxae; posterolateral corners of ventral shield with pointed, posteriorly directed projections (Fig. 24); genital field somewhat triangular in shape and only slightly foreshortened in a strict ventral view; five or six pairs of genital acetabula on each side; all acetabula approximately the same size; a somewhat rounded medial projection at anterior end of genital field; genital field 67 in length, 74 in width; gonopore 51 in length, 11 in width; a pair of glandularia flanking the genital field; Figure 28 shows a posteroventral view of the genital field region; dorsal lengths of segments I–V of palp: 22, 53, 42, 69, 24; ventral side of P-IV somewhat bulging and bearing a few relatively large, pointed papillae (Fig. 25); P-IV lacking a medial concavity; greatest dimension of the capitulum 93; chelicera 111 in length; structure of capitulum and chelicera much as shown in Figure 18; dorsal lengths of segments 4–6 of first leg: 59, 66, 70; dorsal lengths of segments 3–6 of fourth leg: 67, 74, 89, 81; none of these segments
exhibiting a pronounced sexual dimorphism (Fig. 27); IV-Leg-5 with two swimming setae.

**FEMALE:** Unknown, but see remarks under the following species.

**TYPES:** Holotype male, from a small stream (branch of the Hoekraal River) near Karatara (Northwest of Knysna), Eastern Cape, South Africa, 10 June, 1984.

**DISCUSSION:** The male of the present species differs from those of other members of the genus in a number of characteristics, most notably in its small size, greatly reduced number of genital acetabula, presence of posterolateral projections on the ventral shield, and lack of sexual dimorphism of the fourth leg. These differences possibly could justify placing the present species in a separate subgenus, but one is not proposed here.

*Amperatus* sp.

(Fig. 29)

Also taken in the above collection was a teneral female in which the three coxal groups were separated, the secondary sclerotization having not yet uni-
tected them into a solid ventral shield. The body length is approximately 410 and the dorsal shield rather similar to that illustrated for *pauciporus*. It was initially suspected that this would be the female of the previous species but a number of differences between them suggest otherwise. The dorsal shield is 334 in length, 289 in width. Posterior plate of the dorsal shield 202 in length, 208 in width. This female is noticeably smaller than females of the other species, but still larger than one would expect for the female of the preceding species. The female has a reduced number of genital acetabula (12–14 pairs) but still much greater than would be expected in the female of the previous species. The ventral bulge on P-II bears many more, but smaller papillae, than shown for the male of *pauciporus* (similar to that shown in Fig. 6), and this female specimen lacks posterolateral projections on the ventral shield. One additional difference separates it from all other known members of the genus. The ridges extending posteriorly from the openings for the fourth legs extend decidedly posteromedially in the present female, but extend nearly directly posteriorly in the others. It is nearly certain that this female specimen belongs to an undescribed species but, as the primary species characteristics are exhibited by the male, there would be little gained by giving it a name.

**Valsatrus longipalpis,** new species

(Figs. 30–37)

**MALE:** Dorsal and ventral shields present; integument with a malleate appearance as indicated in a portion of Figure 32; dorsal shield 349 in length, 274 in width; posteromedial plate 197 in length, 197 in width; anteromedial plate bearing both the pre- and postocularia; posteromedial plate lacking glandularia, the pair of glandularia normally on this plate shifted to the dorsal portion of the ventral shield (Fig. 36); most anterior of the lateral platelets bearing two pairs of glandularia, but the gland portion of the anterior pair has disappeared; the middle and posterior lateral platelets each with a single glandularium; ventral shield 486 in length, 304 in width; anterior three pairs of coxae extending beyond the body proper, with the first pair extending far beyond the body proper; coxoglandularia 1 placed somewhat anterior to posterior suture lines of the second coxae; medial margins of coxae obliterated; openings for insertion of fourth legs with rounded projections which nearly cover the opening when viewed ventrally; glandularia of the fourth coxae located near suture line between third and fourth coxae; coxoglandularia 2 located slightly posterior to posterior suture lines of fourth coxae; gonopore somewhat subterminal and flanked near middle by a pair of genital acetabula; four pairs of small setae flanking the gonopore anterior to the first pair of acetabula; gonopore 74 in length, 7 in width; 13–14 pairs of genital acetabula, these not extending far laterally and not on distinct acetabular plates; only the most anterior acetabula can be seen in a strict ventral view (Fig. 32); dorsal lengths of palpal segments I–V, 33, 69, 54, 156, 25; ventral side of P-II with a rounded pointed projection which is somewhat larger than in the following species; palpal segments relatively long, especially P-IV (Fig. 31); capitulum 111 in greatest dimension; chelicera 103 in length; capitulum and chelicera as illustrated for the following species; dorsal lengths of segments 4–6 of the first leg: 79, 96, 96; dorsal lengths of segments 3–6 of the fourth leg: 81, 93, 111, 108; fourth leg not exhibiting a strong sexual dimorphism, although IV-Leg-5 bears more heavy setae than in the female (Fig. 33); swimming setae absent.

**FEMALE:** Except for the genital field region and the slight difference in the fourth leg the female is similar to the male and mostly only measurements are given; dorsal shield 334 (319) in length, 304 (274) in width; posteromedial plate 228 (197) in length, 243 (206) in width; ventral shield 547 (502) in length, 334 (306) in width; gonopore subterminal and 78 (74) in width; 15–19 genital acetabula on each side, only the most ventral of which can be seen in a strict ventral view; Figure 37 shows a posteroventral view of the genital field; dorsal lengths of the palpal segments: P-I, 37 (35); P-II, 81 (76); P-III, 57 (55); PIV, 159 (156); P-V, 28 (27); capitulum 118 (114) in greatest dimension; chelicera 112 (110) in length.

**TYPES:** Holotype male, allotype female, 1 paratype female, from the Bloukrans River on Route 2, in the Tsitsikama National Park area, 7 June 1984. This is one of the deeply stained streams of the area.
**FIGS. 30–37: Valsaturus longipalpis, new species.**

**FIGS. 38-42:** *Valsaturus malleatus*, new species (male).


**DISCUSSION:** See remarks under the following species.

*Valsaturus malleatus*, new species
(Figs. 38-42)

**MALE:** Dorsal and ventral shields present; integument with a malleate appearance as indicated in a portion of Figure 38; dorsal shield 289 in length, 239 in width; posteromedial plate 171 in length, 167 in width; anteromedial plate bearing both the pre- and postocularia; posteromedial plate lacking glandularia, the pair of glandularia normally on this plate apparently having shifted onto the dorsal portion of the ventral shield; most anterior of the lateral plate-lets bearing two pairs of glandularia, but the gland portion of the anterior pair has disappeared (Fig. 41); the middle and posterior lateral plates each with a single glandularium; ventral shield 410 in length, 262 in width; tips of first three pairs of coxae extending anterior to the body proper, those of the first pair far beyond; coxoglandularia 1 located slightly anterior to the posterior suture lines of the second coxae; medial margins of the coxae obliterated; openings for insertion of fourth legs nearly covered by rounded projections when viewed ventrally; glandularia of the fourth coxae placed near suture lines between third and fourth coxae; coxoglandularia 2 placed slightly posterior to posterior suture lines of fourth coxae; gonopore ventral and situated anterior to the genital acetabula; gonopore 56 in length, 7 in width; 5–6
genital acetabula on each side, these not on distinct acetabular plates and the most posterior of these acetabula can only be seen in a posteroventral view (Fig. 39); dorsal lengths of segments I-V of palp: 27, 57, 52, 126, 31; ventral side of PI with a small pointed projection; palpal segments, especially PIV relatively long; capitulum 103 in greatest dimension; chelicera 96 in length; figure 42 illustrates a lateral view of the capitulum, chelicera and palp; dorsal lengths of segments 4-6 of the first leg: 71, 76, 80; dorsal lengths of segments 3-6 of the fourth leg: 63, 81, 91, 91; legs not exhibiting sexual dimorphism (Fig. 40); swimming setae absent.

FEMALE: Unknown.

TYPES: Holotype male, from the Storms River (temp. 10\(^\circ\) C) in Tsitsikama National Park, Eastern Cape, South Africa, 6 June 1984.

DISCUSSION: Although it is unknown, it is suspected the female of *malleatus* will have far fewer genital acetabula than in the preceding species. The male of *malleatus* differs from that of the *longipalpis* is having fewer acetabula (5–6 vs. 13–14 pairs), a much shorter and more anteriorly placed gonopore, smaller projection on the ventral side of P-II and proportionally shorter and stockier segments of the fourth leg.

REFERENCE