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A re-description of the South African centipede *Schendylops caledonicus* (Chilopoda Geophilomorpha Schendylidae)

Abstract - A lectotype is selected among the syntypes of *Schendylops caledonicus* (Attems, 1928). The species is re-described and compared to the remaining African species of *Schendylops* Cook, 1899.

Riassunto - *Ridescrizione del chilopodo sudafricano* Schendylops caledonicus *(Attems, 1928) (Chilopoda Geophilomorpha Schendylidae).*
Viene fissato un lectotipo tra i sintipi di *Schendylops caledonicus* (Attems, 1928). La specie viene ridescritta, illustrata e messa a confronto con le altre specie africane del genere *Schendylops* Cook, 1899.

Key words: *Schendylops*, lectotype designation, South Africa.

Hoffman & Pereira (1997) have recently transferred to the genus *Schendylops* Cook, 1899 a South African geophilomorph centipede described by Attems in his large monograph on the Myriapoda of South Africa (Attems, 1928). The original description was wrong in respect to a key character (number of coxal organs; corrected by Hoffman & Pereira, 1997) and incomplete as to other important traits. This is why we re-describe it in this paper, on the basis of Attems' syntypes so complementing our recent treatment (Pereira & Minelli, 1995) of the African species of this genus.

NOTE TO TEXT AND FIGURES. We use the following abbreviations: a.a., antennal article; b.l., body length; d., dorsal; l., left; p.l., pair(s) of legs; r., right; v. ventral.

Family Schendylidae

Genus ***Schendylops*** Cook, 1899

DIAGNOSIS. Pleurites of second maxillae not fused to the coxosternum. Apical claw of second maxillae pectinate on both d. and v. edges. Sterna with pore fields. Last pair of legs with seven podomeres; praetarsus in form of a small hirsute tubercle or replaced by a small spine or altogether absent. Coxopleura of the last leg-bearing segment each with two internal coxal organs of simple structure ("homogeneous coxal glands" sensu Brölemann & Ribaut, 1912).

Schendylops caledonicus (Attems, 1928) (figs 1-28)

Mesoschendyla caledonica Attems, 1928: 129.
Mesoschendyla caledonica, Attems, 1929: 92.
Mesoschendyla caledonica, Verhoeff, 1937: 95.
Mesoschendyla caledonica, Verhoeff, 1940: 53.
?*Mesoschendyla caledonica*, Lawrence, 1955: 6, 27.

?*Mesoschendyla caledonica*, Lawrence, 1959: 364.
Mesoschendyla caledonica, Crabill, 1968: 287.
Schendylops caledonicus, Hoffman & Pereira, 1997: 15.

DIAGNOSIS. A *Schendylops* species with ventral pore fields extending along the entire trunk. Of the other African *Schendylops* species, this trait is present only in *S. australis* (Silvestri, 1907) and *S. pumicosus* (Demange, 1963). Characters in table 2 differentiate *Schendylops caledonicus* from these species and from all other African congeners.

TYPE MATERIAL EXAMINED – South Africa, [Cape Province], Venster Ravine, Caledon, 1 ♀ syntype with 87 p.l., b.l. 57 mm; 1 ♂ syntype with 83 p.l., b.l. 43 mm (in the collections of the Naturhistorisches Museum Wien). Ibid., Zonder End Mts., Jan. 1919, K. H. Barnard, ♀ syntype with 83 p.l., b.l. 42 mm (in the collections of the South African Museum, identification: SAM-ENW-B004100). Ibid., River Zonder End Mts., Caledon, Nov. 1928, K. H. Barnard leg., 1 ♀ with 81 p.l., b.l. 29 mm (identification SAM-ENW-B007448). Ibid., Venster Ravine, Caledon, Aug. 1901, W. E. Purcell, 2 ♂♂ with 83 p.l., b.l. 39 and 42 mm, 2 ♀♀ with 85 p.l., b.l. 46 and 55 mm (identification SAM-ENW-C003602).

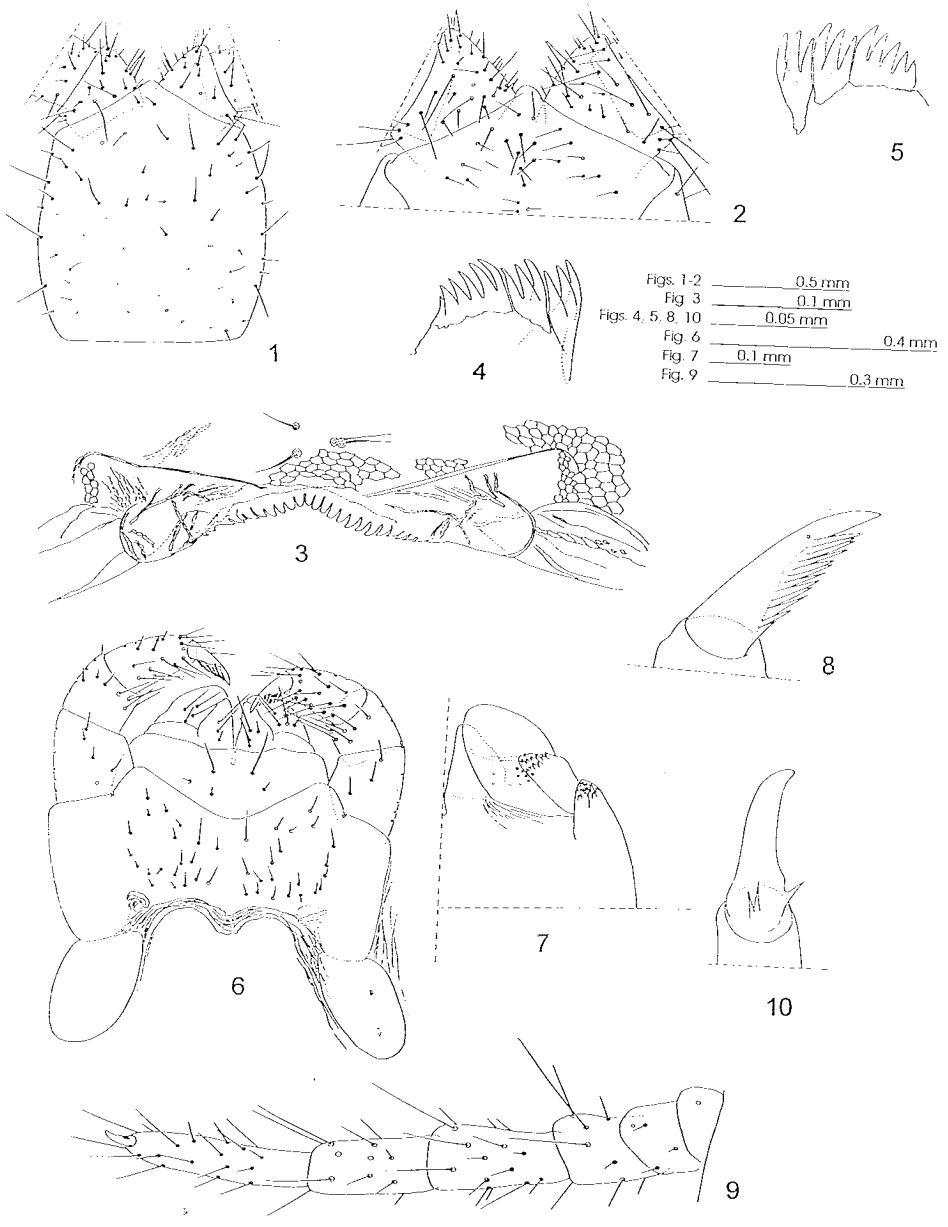
REMARKS. All these specimens are clearly syntypes. Attems (1928) based his drawings on the ♀ specimen of the Naturhistorisches Museum, Vienna, which is also the best-preserved syntype. Accordingly, we designate it here as lectotype of *Mesoschendyla caledonica* Attems, 1928 (currently, *Schendylops caledonicus* (Attems, 1928)).

TYPE LOCALITY. South Africa: Cape Province, Venster Ravine.

KNOWN RANGE. South Africa: Cape Province: Caledon, Zonder End Mts., Venster Ravine. Lawrence (1955: 6) recorded 3 specimens (sex not specified) from Cape Province: Maanskynkop, 7 miles E Hermanus and 2 ♀♀ and 1 ♂ from Cape Town, Table Mountain, Echo Valley, 3000 ft a.s.l; the same author (Lawrence, 1959: 364) cited also "Five specimens from Grootvadersbosch, near Rivier Zonderend, Cape Province (8886), collected by V. FitzSimons, Dec. 1940; the two largest specimens with 77 (♂) and 67 (♀) pairs of legs; 4 specimens from Lamotte Forest Stn, Frenchhoek, Cape Province (8908), collected by V. FitzSimons, Dec. 1940". We have not seen this material, whose specific identity would require a check.

RE-DESCRIPTION. ♀ lectotype. 87 pairs of legs, body length 57 mm; maximum body width 1.5 mm. Colour of preserved specimen pale yellowish.

Antennae ca. 3.2 times as long as the cephalic plate, distally slightly attenuate. Setae on a.a. I-V of different lengths and few in number, those of remaining articles progressively shorter and more numerous towards the tip of the appendage (similar to those in fig. 21). Terminal a.a. with ca. 30 club-shaped sensory setae on the external border and ca. 15 along the internal border. Distal end of this a.a. with ca. 5 very small specialized setae, apparently not split at the apical end. Dorsal and v. surface of a.a. II, V, IX and XIII (table 1) with very small specialized setae of two different types. Type *a* setae are very thin and not split at the apical end, type *b* setae are thicker and very similar to those of the apex of the terminal a.a. but apparently with two diminutive apical branches. On the v. side these setae are restricted to an internal latero-apical area of the a.a.; on d. side, to an external lateral area.



Figs 1-10. *Schendylops caledonicus* (Attems, 1928) (♀ lectotype; South Africa: Cape Province, Venster Ravine, Caledon): 1 - cephalic shield; 2 - clypeus and bases of antennae; 3 - labrum; 4 - dentate lamella of r. mandible; 5 - dentate lamella of l. mandible; 6 - first and second maxillae, v.; 7 - r. first maxilla, d.; 8 - claw of r. second maxilla, v.; 9 - l. leg LXXXVI, v.; 10 - claw of r. leg XXXII, postero-v.

	ventral		dorsal		Fig.
	a	b	a	b	
II	1	1	1	1	
V	1	1	1	2-3	
IX	1	1	1	2-3	22
XIII	1	1	1	2-3	

Table 1. *Schendylops caledonicus*: distribution of *a* and *b* type setae on a.a. II, V, IX and XIII.

Cephalic plate slightly longer than wide (ratio 1.1: 1), shape and chaetotaxy as in fig. 1.

Clypeus with 2 postantennal setae, 20 setae on the middle and 3 praelabral setae (fig. 2).

Labrum with 28 teeth, those of the central arc dark, robust and round-tipped, those of lateral pieces less sclerotised, smaller and with a sharp medial extension (fig. 3).

Mandible: dentate lamellae subdivided into three distinct blocks with 6,3,3 and 5,3,3 teeth (figs 4-5); pectinate lamellae with ca. 20 hyaline teeth.

First maxillae with palps on both coxosternum and telopodites. Coxosternum with 3+2 setae, median projections of coxosternum subtriangular, well developed and provided with 3+4 setae. Article II of telopodite with 4+5 v. setae and 10+11 d. sensilla (figs 6-7).

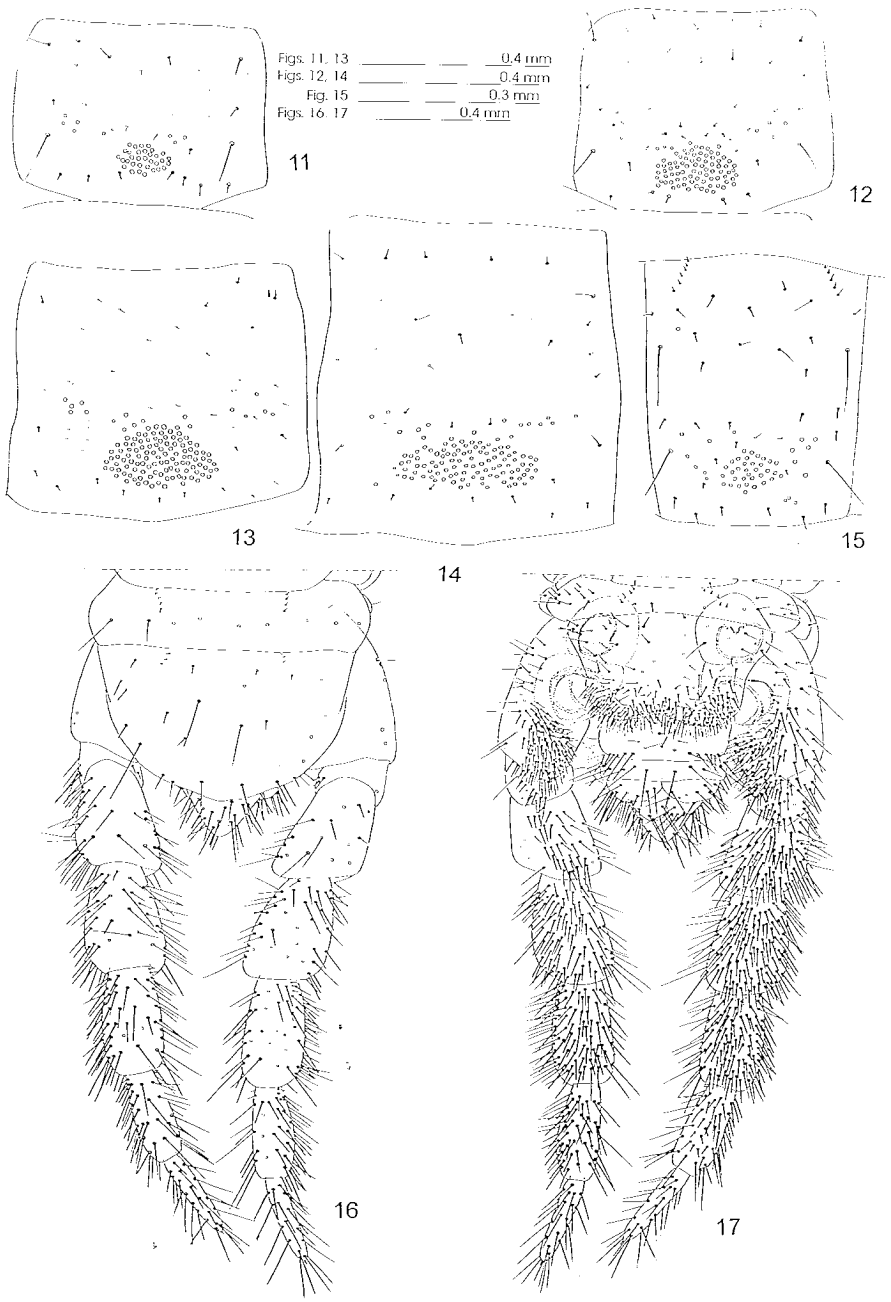
Second maxillae with 20+21 setae on coxosternum, arranged as in fig. 6. Apical claw of telopodite well-developed, bipectinate, the d. edge with ca. 9 teeth, the v. with ca. 12 teeth (fig. 8).

Forcipules: basal plate with an irregular transverse median row of ca. 9 setae. All articles of the telopodite lack sclerotic dark teeth. Tarsungulum basally with a small round-tipped and poorly pigmented projection on the basal internal edge. Calyx of poison gland cylindrical (fig. 25); chaetotaxy of coxosternum and telopodites as in fig. 24.

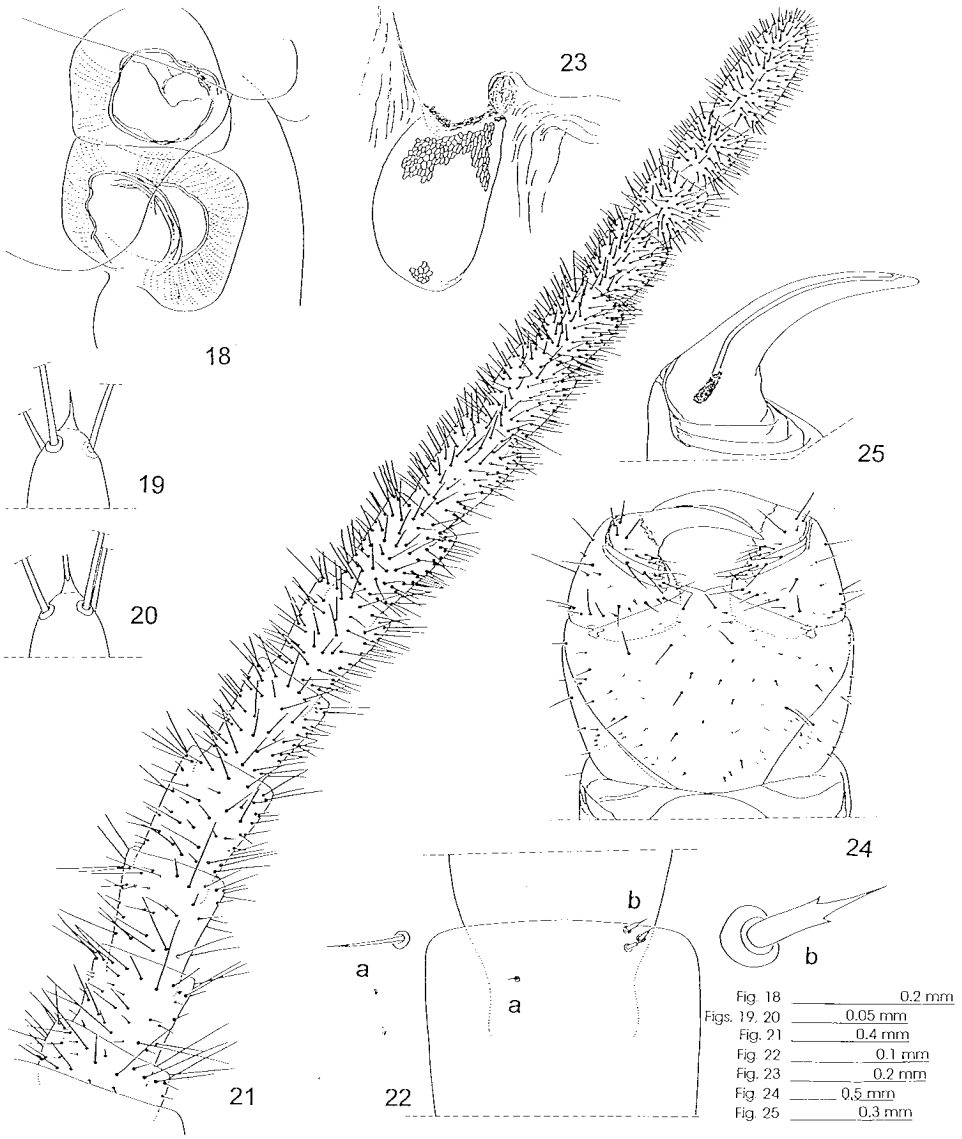
Legs (last pair excepted) with chaetotaxy (fig. 9) uniform throughout the body length. Each claw ventro-basally with three nearly equal spines, one anterior and two posterior (fig. 10).

Sterna: pore fields present from the second to the penultimate sternum. All pore fields undivided, with a small group of pores at both sides of the anterior border. Pore fields of anterior and posterior regions of the body larger than those of the intermediate segments, these with pores grouped in less consolidated areas. Shape and relative size of fields changing along the trunk as in figs 11-15. Number of pores on selected sterna: on sternum II, 6+33+3 pores; on V, 3+85+4; on XVII, 5+118+5; on XXVIII, 4+106+6; on LXXXVI, 3+42+4.

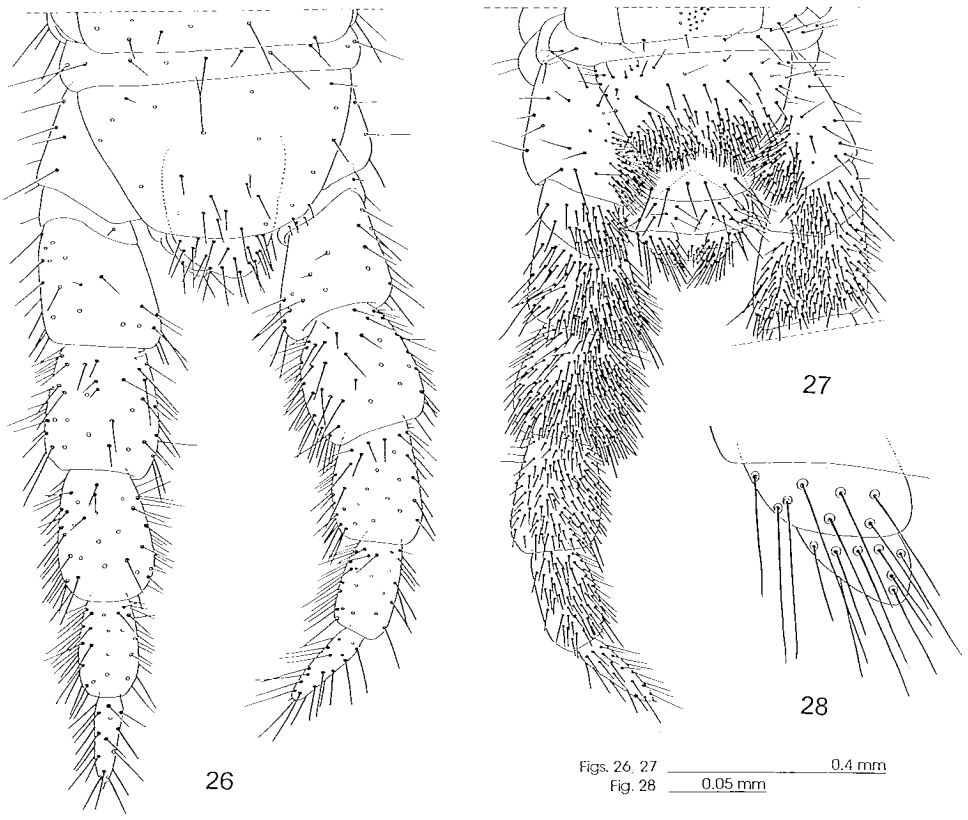
Last leg-bearing segment without pleurites at the sides of praetergum. Praesternum not divided along the sagittal plane. Form and chaetotaxy of tergum and sternum as in figs 16-17. Coxopleura protruding at their distal v. ends, setae small and numerous on distal v. half, the remaining surface with few bigger setae. Two single ("homogeneous") coxal organs on each coxopleuron, opening on the membrane between coxopleuron and sternum, partially or totally covered by the latter (figs 17-18). Last legs with seven podomeres, shape and chaetotaxy as in figs 16-17. Praetarsus as a very small tubercle with 1-2 small apical spines (figs 19-20).



Figs 11-17. *Schendylops caledonicus* (Attems, 1928) (♀ lectotype; South Africa: Cape Province, Venster Ravine, Caledon): 11-15 - sterna II, V, XVII, XXVIII, LXXXVI; 16 - last leg-bearing segment and terminal segments, d.; 17 - the same, v.



Figs 18-20. *Schendylops caledonicus* (Attems, 1928) (♀ lectotype; South Africa: Cape Province, Venster Ravine, Caledon): 18 - detail of l. coxal organs, v.; 19 - detail of distal end of last podomere of r. last leg, d.; 20 - detail of distal end of last podomere of l. last leg, d. Figs 21-25. *Schendylops caledonicus* (Attems, 1928) (♀ syntype; South Africa: Cape Province, Zonder End Mts.): 21 - l. antenna, v.; 22 - r. a.a. IX, d. (*a*, *b*: *a*, *b* type setae); 23: detail of posterior external region of r. second maxilla, v.; 24 - forcipular segment with poison claws, v.; 25 - distal portion of r. forcipular telopodite, v.

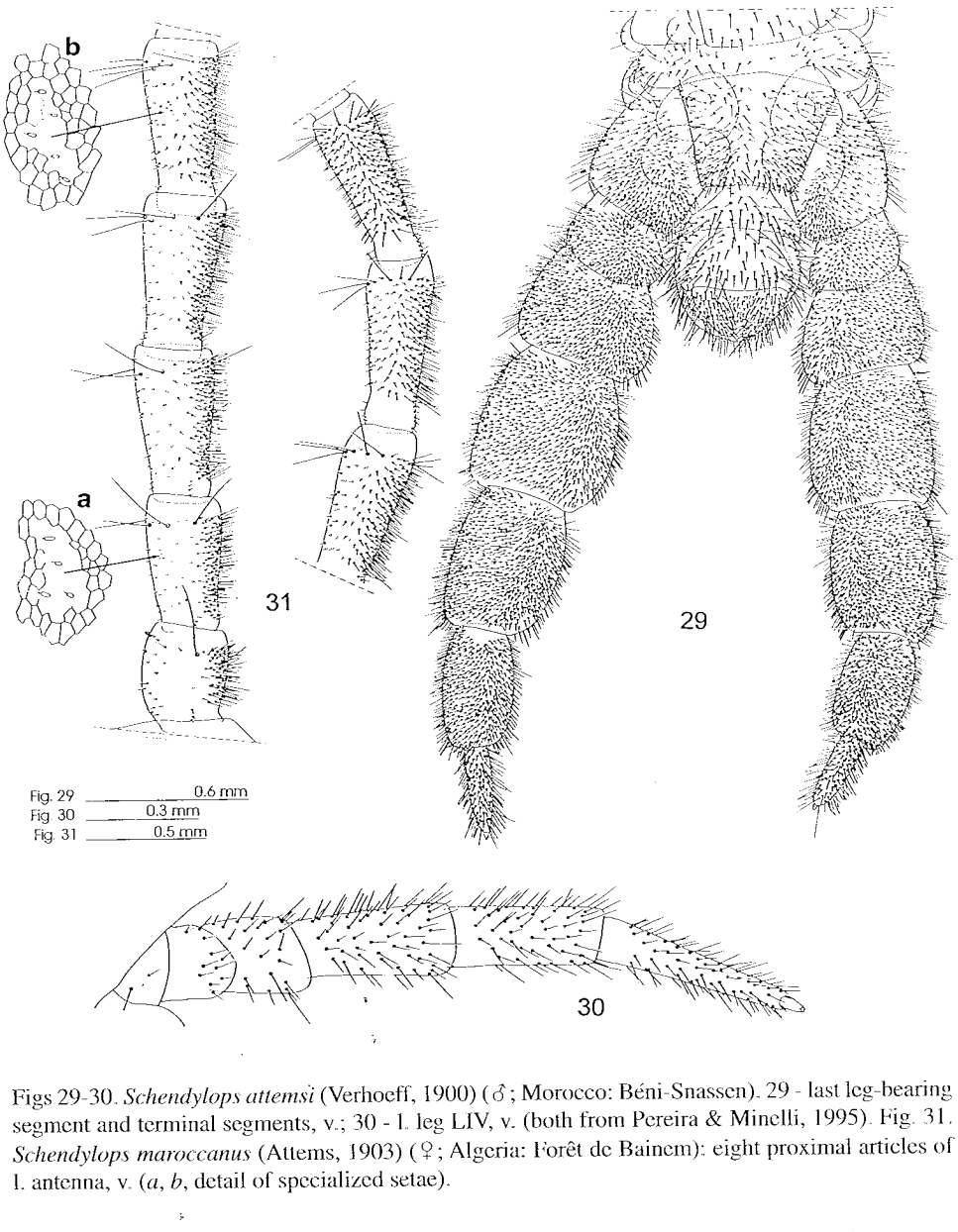


Figs 26-28. *Schendylops caledonicus* (Attems, 1928) (♂ syntype; South Africa: Cape Province, Venster Ravine, Caledon): 26 - last leg-bearing segment and terminal segments, d.; 27 - the same, v.; 28 - r. gonopod, v.

Terminal segments: posterior margin of the intermediate tergum strongly convex, that of the intermediate sternum straight or very slightly concave at the middle. Posterior margin of the first genital sternum medially slightly convex, laterally slightly concave. Gonopods unarticulated (fig. 17).

♂ syntype of the Naturhistorisches Museum Wien. 83 pairs of legs, body length 43 mm, maximum body width 1.2 mm. All features similar to those in the ♀, except for the shape and hairiness of the last leg-bearing segment and terminal segments.

Last leg-bearing segment: form and chaetotaxy of sternum and tergum as in figs 26-27. Coxopleura slightly protruding at their distal ventral ends, v. surface with setae small and numerous on distal medial area, the remaining surface with few bigger setae. Almost all podomeres of terminal legs considerable inflated with shape and chaetotaxy as in figs 26-27.



Figs 29-30. *Schendylops attemsi* (Verhoeff, 1900) (♂; Morocco: Béni-Snassen). 29 - last leg-bearing segment and terminal segments, v.; 30 - 1. leg LIV, v. (both from Pereira & Minelli, 1995). Fig. 31. *Schendylops maroccanus* (Attems, 1903) (♀; Algeria: Forêt de Bainem): eight proximal articles of l. antenna, v. (*a*, *b*, detail of specialized setae).

Terminal segments: intermediate tergum and sternum with posterior margin convex. First genital sternum with posterior margin medially slightly convex, laterally slightly concave. Gonopods 2-articulate, basal article with ca. 11 setae and distal article with ca. 12 setae (fig. 28).

VARIATION. The number of pairs of legs in the ♀♀ is 81, 83, 85 or 87 and in the ♂♂ 83.

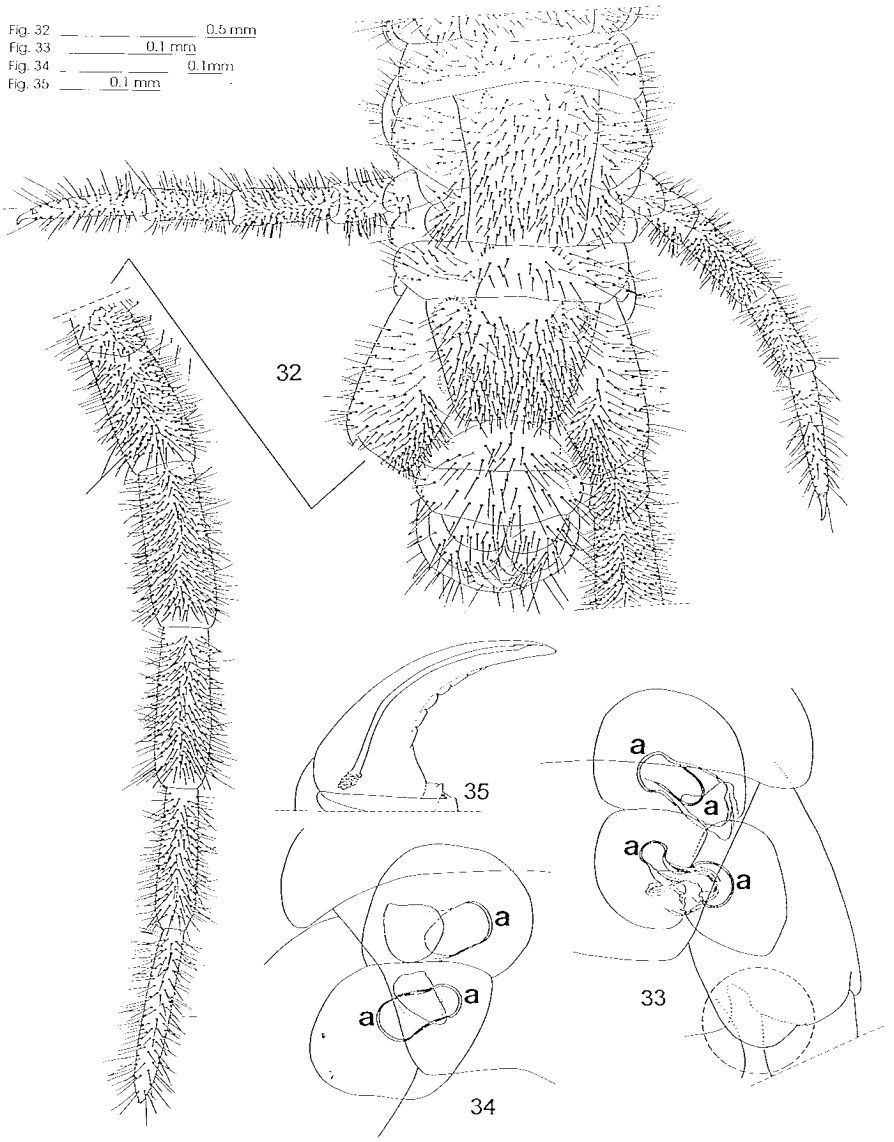


Fig. 32. *Schendylops maroccanus* (Attems, 1903) (♀; Algeria: Forêt de Bainem): two last leg-bearing segment and terminal segments, v. (both from Pereira & Minelli, 1995). Fig. 33. *Schendylops paucidens* (Attems, 1939) (♀ lectotype; Uganda: M. Elgon): detail of l. coxal organs, v. (a, independent areas of the specialized epithelium, the circle on the coxopleuron indicates the protruding area) (from Pereira & Minelli, 1995). Fig. 34. *Schendylops paucidens* (Attems, 1939) (♂ paralectotype; Uganda: M. Elgon): detail of r. coxal organs, v. (*a*, independent areas of specialized epithelium) (from Pereira & Minelli, 1995). Fig. 35. *Schendylops polypus* (Attems, 1928) (♀; specimen 7335; South Africa: Pass at Avontuur): detail of calyx of poison gland in r. poison claw, v. (from Pereira & Minelli, 1995)

	attemsi	*australis*	*caledonicus*	*maroccanus*	*paucidens*	*polypus*	*pumicosus*
pairs of legs	♂ : 57 ♀ : 57, 59, 61	♂ : 53 ♀ : 53	♂ : 83 ♀ : 81, 83, 85, 87	♂ : 61, 63, 65, 67, 69 ♀ : 65, 67, 69	♂ : 47 ♀ : 49, 51	♂ : 69 ♀ : 69, 71, 73, 75, 77	♂ : 63, 65, 67, 69 ♀ : 65, 67, 69, 71
maximum body length (mm)	58	35	57	60	20	30	47
ratio of length of antennae to length of cephalic shield	3.5	2.8	3.2	ca. 4.0	2.5	3.0	3.0
first antennal article longer than wide	no	no	no	yes, ratio 1,25: 1 (fig. 31)	no	no	no
maximum length to width ratio of antennal articles II to XIII	1.5 (on a.a. VII)	1.46 (on a.a. VI)	1.75 (on a.a. VII-VIII)	3.0 (on a.a. IX)	1.1 (on a.a. VI)	1.25 (on a.a. VI)	1.65 (on a.a. V)
medial claviform sensory setae on the terminal antennal article	absent	?	present (ca. 15)	present (ca. 2)	absent	present (ca. 5-7)	present (ca. 2)
specialized ochraceous setae on the dorsal surface of antenna	present (on a.a. II, V, IX and XIII)	absent	absent	present (on a.a. IX and XIII)	absent	present (on a.a. IX and XIII)	absent
external surface of antennomeres I - VI with setae much more abundant than in their remaining surface	no in the male (on the ♀?)	no in both sexes	no in both sexes	yes in the ♀ (fig. 31), (in the ♂?)	no in both sexes	no in both sexes	no in both sexes
number of clypeal setae	2	2	2	2	1	2	2
postantennal	ca. 33-35	ca. 10	ca.20	ca. 25-30	ca.5	ca. 10-11	ca.17
middle praelabral	0	2	3 (fig. 2)	0-2	2	2	2
dentate lamellae of mandibles divided into blocks	yes	yes	yes	yes	no	yes	yes
setae of coxosternum of first maxillae	present (ca. 5+6)	absent	present (ca. 3+2)	present (ca. 8+6)	absent	absent	absent
setae on the coxosternum of second maxillae	ca. 28-33	ca. 20	ca. 41	ca.60	ca. 11	ca. 20	ca. 16
apical internal edge of forcipular trochanteropraefemur	with a very small tooth	with a small, not sclerotized tubercle	unarmed	with a strong round tipped tooth	unarmed	with a very small tubercle	unarmed
internal edge of forcipular ungulum	smooth	smooth	smooth (fig. 25)	smooth	smooth	as in fig. 35	smooth
basal internal edge of forcipular tarsungulum	unarmed	unarmed	with a small round tipped and poorly pigmented projection (fig. 25)	unarmed	with a very small and sharp tooth	with a clearly visible tooth	with a well developed tooth

calyx of poison gland	long and cylindrical	short and cylindrical	long and cylindrical (fig. 25)	long and cylindrical	short and cylindrical	short and cylindrical (fig.35)	spherical
walking legs with numerous ventral setae	yes (fig. 30)	no	no (fig. 9)	yes (fig. 32)	no	no	no
sterna with pore fields	II to mid-body (XXXIX)	I to penultimate	II to penultimate	II to mid-body (XVIII-XXI)	II to mid-body (XVII)	II to mid-body(XXIII)	II to penultimate
posterior sterna very densely pilose	no	no	no (fig. 15)	yes (fig. 32)	no	no	no
♀ terminal legs compared to ♂ terminal legs	?	similar to the ♂	narrower than ♂ (fig. 17)	similar to the ♂ (fig. 32)	narrower than ♂	?	similar thickness
ratio of width of tarsus to width of metatarsus of male terminal legs	4.6: 1 (fig. 29)	1.4: 1	3.6: 1 (fig. 27)	1.4: 1	1.2: 1	?	1.3: 1
last praetergum completely fused to the pleurites	no	no	yes (fig. 16)	yes	yes	no	yes
posterior border of the sternum of last leg-bearing segment conspicuously "clubbed" medially	no	no	yes (figs. 17, 27)	no	no	no	no
anterior and posterior coxal organs internally with a single area of specialized epithelium	yes	yes	yes (fig. 18)	yes	no (anterior with one or two areas, posterior with two (figs. 33-34)	yes	yes
setae on a tubercle-like base on the podomeres of terminal legs	absent	♂ : yes ♀ : ?	no (figs. 17, 27)	no	no	no	yes
last leg praetarsus	as a small tubercle with 4-6 spines	?	as a small tubercle with 1-2 spines (figs. 19-20)	as a small tubercle with 2 spines	as a small tubercle with 2 spines	?	tubercle absent, one small spine in its place
male gonopods with setae on a tubercle-like base	no	yes	no (fig. 28)	?	no	?	yes
dorsal apical setae of penis	3+4	0+0	0+0	?	0+0	?	0+0

Table 2. Synopsis of external features of the African species of the genus *Schendylops*. This synopsis complements the recent keys to the African *Schendylops* species (Pereira & Minelli, 1995; Hoffman & Pereira, 1997) and also corrects a mistake in Hoffman & Pereira's key, where it is wrongly stated that in *S. caledonicus* there are pleurites at the sides of the praetergum of the last leg-bearing segment.

DISCUSSION. The seven *Schendylops* species thus far known from Africa are less homogeneous than their much more numerous Neotropical congeners. Each species has, indeed, its idiosyncratic, unique traits (table 2). These are:

S. attemsi (Verhoeff, 1900)
- dorsal side of a.a. II and V with specialized ochraceous setae
- praetarsus of the last legs with 4-6 spines

S. australis (Silvestri, 1907)
- first sternum with pores

S. caledonicus (Attems, 1928)
- at least 81 pairs of legs (range: 81 to 87)
- posterior border of the sternum of last leg-bearing segment conspicuously inflexed medially

S. maroccanus (Attems, 1903)
- first antennal article longer than wide (ratio 1.25: 1)
- antennal articles very long (maximum ratio between length and width on a.a. IX: 3.0: 1)
- external surface of antennomeres I to VI much more hirsute than the remaining surface (in the ♀ at least)
- apical internal edge of forcipular trochantero-praefemur with a strong round-tipped tooth
- posterior sterna very densely hirsute

S. paucidens (Attems, 1939)
- dentate lamellae of mandibles not divided into blocks
- anterior coxal organs with one or two areas of specialized epithelium, posterior organs with two

S. polypus (Attems, 1928)
- internal edge of forcipular ungular blade serrate (fig. 35)

S. pumicosus (Demange, 1963)
- calyx of poison gland cylindrical
- praetarsus of the last legs not tubercle-like and represented only by a small spine

Reciprocal affinities of these species are all but clear. We can only point to some traits shared by two or three species, as follows:
- ventral chaetotaxy of walking legs represented by numerous setae: shared by *S. attemsi* and *S. maroccanus*
- high ratio of width of tarsus to width of metatarsus of male terminal legs: similar in *S. attemsi* (4.6: 1) and *S. caledonicus* (3.6: 1)
- setae of the podomeres of terminal legs and of ♂ gonopods sitting on a tubercle-like base: shared by *S. australis* and *S. pumicosus*.

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