

Notes on mites associated with Myriapoda. VI. The genus *Jacobsonia* Berlese, 1910 (Acari : Laelapidae)

Alex FAIN

Fain, A. 1994. Notes on mites associated with Myriapoda. VI. The genus *Jacobsonia* Berlese, 1910 (Acari : Laelapidae). *J. Afr. Zool.* 108: 585-595.

The genus *Jacobsonia* Berlese, 1910 (Acari : Laelapidae) is reviewed and three new species collected from Afrotropical Myriapoda are described in the subgenus *Parajacobsonia* Evans, 1955, i. e. *Jacobsonia* (*Parajacobsonia*) *andrei* n. sp., *J. (P.) puylaerti* n. sp. and *J. (P.) africanus* n. sp. A key to the genus *Jacobsonia* is provided.

Notes sur les Acariens associés aux Myriapodes. VI. Le genre Jacobsonia Berlese, 1910 (Acari: Laelapidae). - Le genre *Jacobsonia* Berlese, 1910 (Acari : Laelapidae) est étudié et trois nouvelles espèces, en provenance de Myriapodes afrotropicaux, sont décrites dans le sous-genre *Parajacobsonia* Evans, 1955; ce sont *Jacobsonia* (*Parajacobsonia*) *andrei* n. sp., *J. (P.) puylaerti* n. sp. et *J. (P.) africanus* n. sp. Une clé de toutes les espèces connues du genre *Jacobsonia* est donnée.

Key words : Systematics, association, Acari and Myriapoda, Central and West Africa, new species.

Fain, A. Institut royal des Sciences naturelles de Belgique, 29, rue Vautier, 1040-Bruxelles, Belgique.

INTRODUCTION

The Myriapoda harbour an interesting paraphagous mite fauna belonging to several orders of mites. Among them the order of Mesostigmata is specially well represented.

Evans (1955), reviewing the laelapid paraphages of Myriapoda included in this group five genera: *Hypoaspis* Canestrini, *Julolaelaps* Berlese, *Ophiopsis* Berlese, *Jacobsonia* Berlese and *Scolopendracarus* Evans. He divided *Jacobsonia* in two subgenera, *Jacobsonia* s. str. and *Parajacobsonia* Evans, new subgenus.

Ryke (1959) added to this list the genera *Iphidolaelaps* Womersley (misspelled *Iphiolaelaps*) and *Scissura-*

laelaps Womersley and proposed to consider the genus *Julolaelaps* as a subgenus of *Hypoaspis*.

Recently, in a series of five papers devoted to the mites paraphages of Myriapoda, I described the following new taxa: four new species of *Julolaelaps* from Afrotropical julids (Fain, 1987b), four new species of *Scissuralaelaps* from New Guinean Myriapoda (Fain, 1992), three new genera and four new species of Heterozetidae from Neotropical or Afrotropical Myriapoda (Fain, 1988 and 1989). In another paper dealing with astigmatic mites I described three new genera and species belonging to two new families and a new genus and species in the family Canestriniidae (Fain, 1987a).

All the measurements used herein are in micrometers. The width of the body and the shields is the maximum width.

Abbreviations

IRSNB = Institut royal des Sciences naturelles de Belgique, Bruxelles.

MRAC = Musée royal de l'Afrique centrale, Tervuren.

THE GENUS *JACOBSONIA***Status**

Berlese (1910a) created the new subgenus *Greeniella*, in the genus *Iphiopsis* Berlese, 1882, naming *Iphiopsis (Greeniella) submollis* Berlese, 1910a, found on a *Scolopendra* in Java, as the type species.

The same year, Berlese (1910b) replaced the name *Greeniella*, preoccupied, with the new name *Jacobsonia* and he raised this taxon to the genus level. He included in this genus a second species, *Jacobsonia minor* n. sp., also found on a *Scolopendra* in Java.

Vitzthum (1931) described a third species, *Jacobsonia tertia*, from a myriapod in Gabon, West Africa.

Evans (1955) described a fourth species, *Jacobsonia audyi*, from a julid in Malaya. He proposed to divide *Jacobsonia* into two subgenera with the following characters:

- *Jacobsonia* s. str. (type species: *J. submollis* Berlese): peritreme lacking, genital shield in female markedly reduced and barely extending beyond the posterior margin of coxae IV. This genus included three species: the type species, *J. (J.) minor* and *J. (J.) audyi*. *Jacobsonia* is confined to Malaya and Java;
- *Parajacobsonia* Evans, 1955 (type species: *J. (P.) tertia* Vitzthum): a short peritreme is present and the genital shield in the female is well developed, extending almost to the anal shield. This subgenus included

only the type species, and is confined to West Africa.

In this paper, I describe three new species collected from Afrotropical Myriapoda. These species present intermediate characters between the two subgenera. In the females there is a short peritreme as in *Parajacobsonia* but the genital shield is either very small or relatively well developed; in all the three species it barely extends beyond the posterior margin of coxae IV. It appears, therefore, that the size of the genital shield in the female cannot be used to separate the two subgenera. The only character available for this purpose is the presence or the absence of the peritreme, and the reliability of this character is questionable. In this paper I will provisionally maintain the subgenus *Parajacobsonia* until new material becomes available.

Redefinition

Genus *Jacobsonia* Berlese, 1910
Greeniella Berlese, 1910a (nom. praecoc.)
Jacobsonia Berlese, 1910b (nom. nov. pro
Greeniella Berl. 1910)

Definition. - based mainly on the Afrotropical species and on *J. audyi* from Malaya.

Female. - All the shields are well sclerotized. Dorsum with a broad median shield covering at least the anterior half of the dorsum and bearing a variable number of very short and thin setae (from 10 to 40 pairs). Tectum either rounded, truncate or irregularly divided, generally bearing small teeth. Peritreme either strongly reduced or absent. Sternal shield very long, reaching at least the middle of coxa III and bearing 2 pairs of lyrifissures and 3 pairs of small setae. Genital shield variable in size, from very narrow and short to very large and extending to the anal shield. Anal shield rounded to pyriform, variously developed, bearing 2 or 3 setae, the posterior setae generally very small.

Tritosternum with a trapezoidal base and 2 relatively short laciniae either smooth or with very short setules. Gnathosoma: corniculi strong. Deutosternal groove with 7 to 10 rows of minute teeth each row with 2 to 14 teeth. Chelicerae dentate, fixed digit with an apical cylindrical poorly sclerotized process except in one species (*J. audyi*). With one or two pairs of posterior hypostomatic setae. Legs thick, relatively short, bearing setae and spines variable in length; but generally very short. All tarsi lacking claws but ending in an elaborate pulvillus. Number of setae on leg segments in a paratype of *J. audyi*: trochanters 4-5-4-4, femora 10-8-6-6, genua 6-4-4-4, tibiae 6-5-5-5. Male: dorsal shield broader than in female, bearing setae variable in number and length. Sternigenital shield not extending beyond the level of posterior margin of coxae IV. Peritreme and anal shield as in female. Setae of legs much stronger and longer than in female. tarsi II with spurs.

Type species . - *Jacobsonia submollis* Berlese, 1910.

The genus *Jacobsonia* was divided by Evans (1955) into two subgenera (see above): *Jacobsonia* s. str. and *Parajacobsonia* Evans (1955). With the discovery of three new species from Afrotropical region it has become necessary to emend the definition given by Evans for his subgenus *Parajacobsonia*, as follows.

Jacobsonia s. str.: peritreme absent, genital shield markedly reduced, barely extending beyond the posterior margin of coxae IV (Malaya and Java). Type species: *J. (J.) submollis* Berlese. Other species: *J. (J.) minor* Berlese and *J. (J.) audyi* Evans.

Parajacobsonia Evans, 1955, Fain nov. emend.: a short peritreme is present, genital shield in female variable, either very narrow and very short or relatively well developed but short and

barely extending beyond the posterior margin of coxae IV or very wide and long and extending close to the anal shield. (West and Central Africa). Type species: *J. (P.) tertia* Vitzthum. Other species: *J. (P.) andrei* n. sp., *J. (P.) puyllaerti* n. sp. and *J. (P.) africanus* n. sp.

Key to species

(mainly females)

1. - Peritreme completely lacking. Fixed cheliceral digit in female with or without an anteriorly directed process. Genital shield strongly reduced, barely extending beyond the posterior margin of coxae IV (Malaya and Java) Subg. *Jacobsonia* s. str. Berlese (2)
 - A short peritreme is present. fixed cheliceral digit in female always with an anteriorly directed process. Genital shield in female variable, either very narrow and short or relatively well developed but barely extending beyond the posterior margin of coxae IV, or very wide and long and extending almost to the anal shield (West and Central Africa) Subg. *Parajacobsonia* Evans (4)
2. - Fixed cheliceral digit in the female with an anteriorly directed process 3
 - Fixed cheliceral digit in the female without an anteriorly directed process *Jacobsonia (J.) audyi* Evans
3. - Soft cuticle behind the scutum without setae. Idiosoma of female 800 long *Jacobsonia (J.) submollis* Berlese.
 - Soft cuticle behind the scutum with 4 pairs of setae. Idiosoma of female 670 long *Jacobsonia (J.) minor* Berlese
4. - Genital shield in female very wide and long, extending almost to the anal shield *J. (Parajacobsonia) tertia* Vitzthum
 - Genital shield in female barely extending beyond the posterior margin of the coxae IV 5
5. - Genital shield strongly reduced, very narrow and short, without genital setae. All coxae without sclerotized crescentic structures. Coxae III and IV lacking scales. Body long and narrow, more than twice as long as wide.

Dorsal shield covering the anterior 2/3 of the dorsum, punctate and without lines. Metasternal setae lacking

J. (Parajacobsonia) andrei n. sp.

- Genital shield relatively wide and expanded posteriorly. All coxae with a crescentic sclerotized structure. Coxae III and IV with a posterior field or small triangular scales. Body less elongate, less than twice as long as wide. Dorsal shield covering at least the anterior 3/4 of the dorsum and bearing numerous lines. Genital and metasternal setae present6
- 6. - Dorsal shield covering anterior 4/5 of the dorsum and bearing in anterior half very numerous lines directed obliquely but not forming a distinct network. Genital shield abruptly widened in its posterior quarter or fifth.....

J. (Parajacobsonia) puylaerti n. sp.

- Dorsal shield covering the dorsum almost completely, bearing less numerous lines that form a well-developed network. Genital shield regularly trapezoidal with base posterior

J. (Parajacobsonia) africanus n. sp.

DESCRIPTION OF NEW SPECIES

Jacobsonia (Parajacobsonia) andrei nov. spec.

This species is named for Dr Henri André, director of the *Journal of African Zoology*, Tervuren.

Female

Holotype (Figs 1, 2, 11). - Length and maximum width of idiosoma, in holotype, 654 x 318; in a paratype 666 x 330. Dorsal shield 432 long and 288 wide, uniformly punctate, without lines and bearing about 13 to 15 pairs of small setae. Soft cuticle behind the scutum with 4 pairs of setae 15 to 25 long. Tectum long, irregularly rounded and dentate.

Venter. - Tritosternum with narrow and smooth laciniae. Sternal shield 231 long and 129 wide, bearing 3 pairs of

microsetae and 2 pairs of pores. Metasternal setae lacking. Genital shield 69 long (including the anterior membranous lip) and 13 wide and devoid of setae. Opisthogaster with 2 pairs of narrow spines and 1 pair of small setae, the posterior margin with (behind the anus) 2 pairs of setae 25 long. Anal shield 57 long, 63 wide and with 3 unequal setae, the posterior one is a microseta.

Gnathosoma. - Palps long, hypostome with 3 pairs of small setae, the lateral posthypostomal setae are microsetae; palpcoxa with a pair of very short setae (6 long); palptrochanter and palp genu with 2 and 5 setae respectively (as in *J. audyi*); cornicules strong; deutosternal groove with 7 rows of 6 to 10 denticles. Chelicerae dentate, the fixed digit with a poorly sclerotized cylindrical process 36 long. Stigmata situated behind coxae III, with a short peritreme about twice as long as wide.

Legs thick, the legs II to IV inserted ventrally, bearing very small setae and spinelets, except for tarsi I which have slightly longer but very thin setae. All tarsi without claws but with well developed pulvilli. Leg tibia and genu I with 6 setae (as in *J. audyi*).

Male and immatures

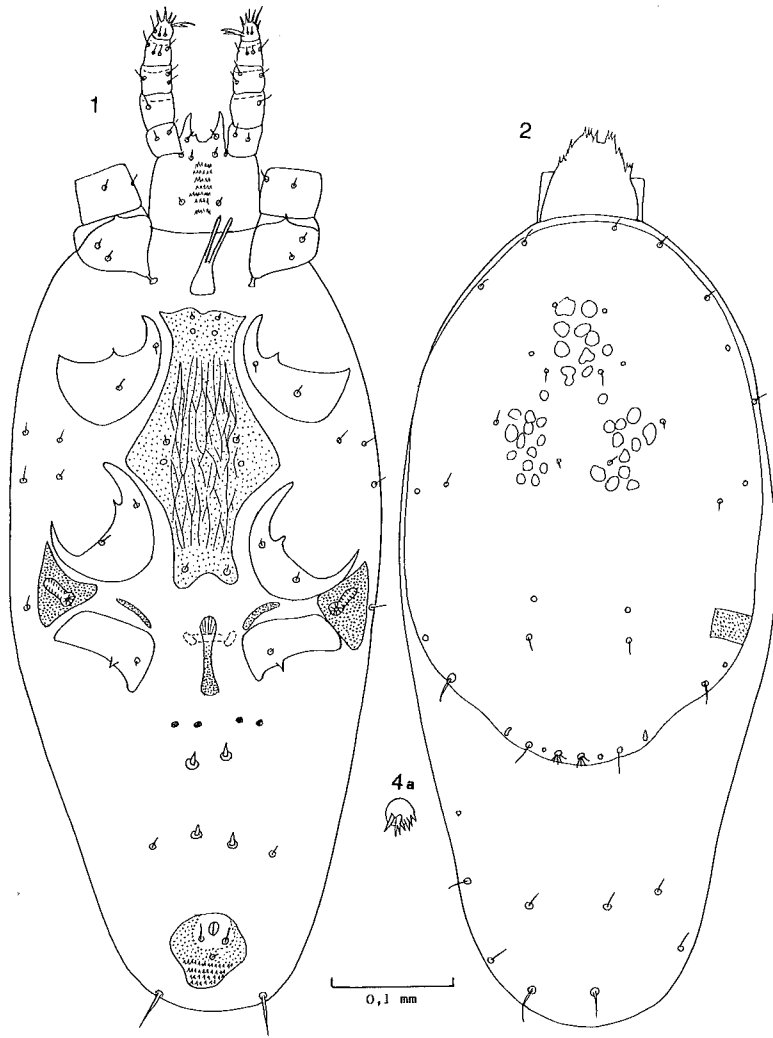
Unknown.

Host and locality

Holotype and 1 paratype female from *Spirostrepta* sp. (Diplopoda), from Mieri, Batouri (Coll. F. Puylaert, 26.I.1976). Holotype in MRAC, paratype in IRSNB.

Remarks

This species is clearly distinct from *J. (P.) tertia* in having a very small genital shield, 4 pairs of setae on the soft cuticle behind the scutum, a more elongate shape of the body, and a relatively shorter length of the scutum.

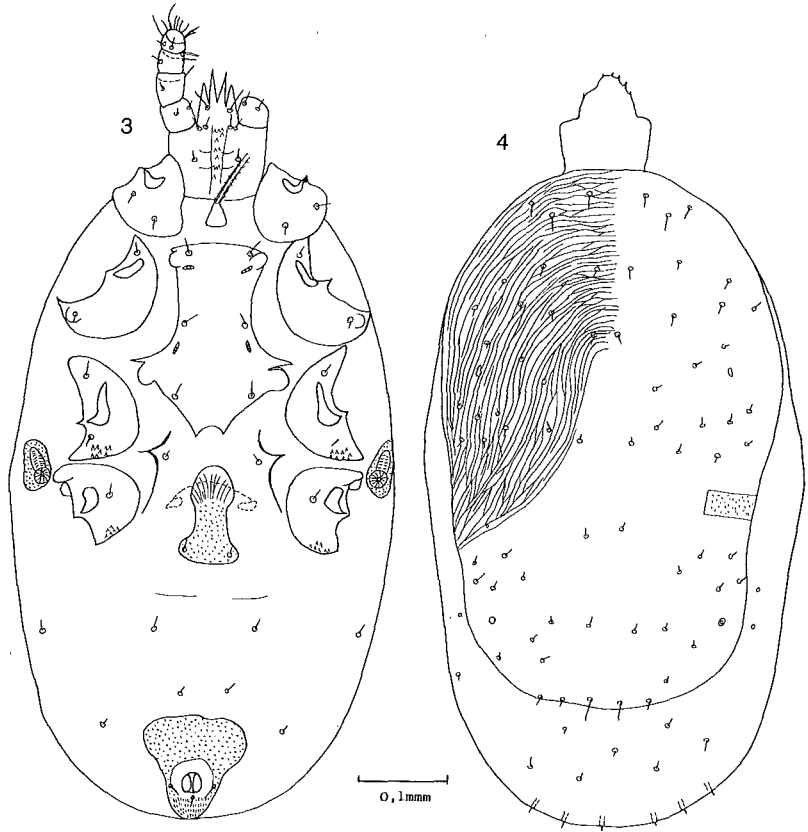


Figs. 1-2. - *Jacobsonia (Parajacobsonia) andrei* n. sp. Female in ventral (1) and dorsal (2) view; setae J5 enlarged (2a).

***Jacobsonia (Parajacobsonia) puylaerti* nov. spec.** Female

This species is named for Mr F. Puylaert, Musée royal de l'Afrique centrale, Tervuren, who collected some of the species which are described herein.

Holotype (Figs 3, 4, 8-10).- Idiosoma in holotype 720 long and 440 wide; in 2 paratypes: 760 x 460 and 770 x 450. Dorsal shield 650 long and 400 wide, with very numerous thin striations in its anterior two thirds. These striations do not form a distinct network, they are very close to each other and are directed obliquely in the lateral parts of the shield



Figs. 3-4. - *Jacobsonia* (*Parajacobsonia*) *puylaerti* n. sp. Female in ventral (3) and dorsal (4) view.

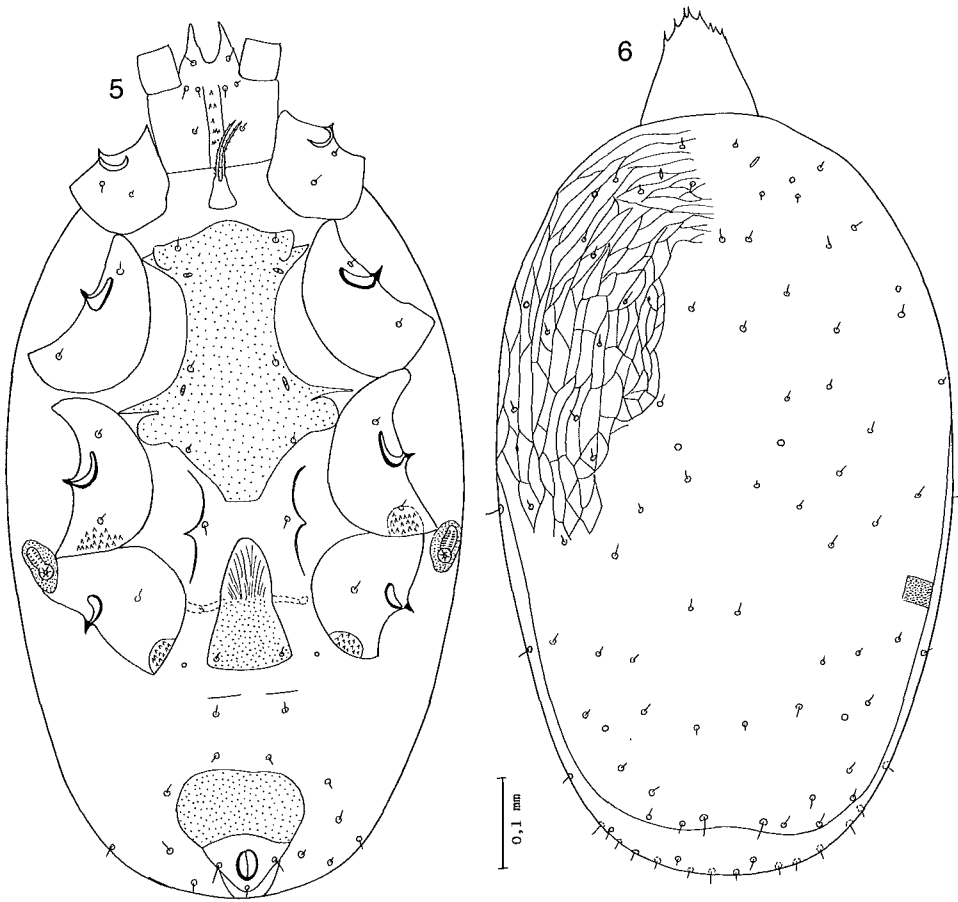
and become transverse in the middle. This shield bears about 35 to 40 pairs of very short setae 3 to 15 long. Tectum rounded with a few teeth.

Venter. - Tritosternum with laciniae fringed with very short setules. Sternal shield 231 long and 195 wide, bearing 3 pairs of short setae and 2 pairs of lyrifissures, the 4th pair of sternal setae is situated on the soft cuticle. Genital shield 135 long (membranous lip included) and 84 maximum width, bearing a pair of very short setae. Anal shield wider (125) than long (114) bearing 3 setae. Peritreme very short, reaching the posterior fifth of coxa III. Posterior part of coxae III and IV with numerous small triangular scales. All coxae with an

elongate sclerotized more or less crescentic structure originating from the conical sclerite serving for the articulation with the trochanter.

Gnathosoma. - There are 7 to 8 rows of deutosternal denticles, each of them with 1 to 5 teeth; with 3 pairs of short hypostomal setae, the posterolaterals normally developed. Fixed digit of chelicerae with a long narrow poorly sclerotized apical process.

Legs thick, relatively short (leg I 442 long, including coxa but not the suckers). All tarsi without claws but with elaborate suckers. Apical margin of coxae IV with a rounded spur in its anterior part.



Figs. 5-6. *Jacobsonia (Parajacobsonia) africanus* n. sp. Female in ventral (5) and dorsal (6) view.

Male

Idiosoma 760 long and 460 wide. Tectum as in female. Dorsal shield 690 long and 450 wide bearing a network of lines in its anterior two thirds, specially in the lateral parts. Sternigenital shield reaching the posterior margin of coxae IV, 402 long and 162 wide, bearing 5 pairs of very thin and short setae and 2 pairs of lyrifissures. Anal shield as in female, 138 long, 150 wide. Soft cuticle of opisthogaster with 4 pairs of thin setae. Coxae and peritreme as in female. Legs as in female but the setae and spines are stronger. Tarsus II with an apico-ventral spur. Chelicerae: fixed digit

without an apical process; movable digit with a thick spermatodactyl curved near its apex.

Deutonymph

Idiosoma 550 long 375 wide. With 2 large dorsal shield covering almost completely the dorsum. Anterior shield with a few very faint striations restricted to the anterior half of the shield. Genitoventral shield 230 long, bearing 3 pairs of very small setae and 2 pairs of lyrifissures. It is followed by a small triangular shield at the level of coxa IV, and 60 long and 40 wide. Anal shield as long as wide (100). Coxae with vestigial

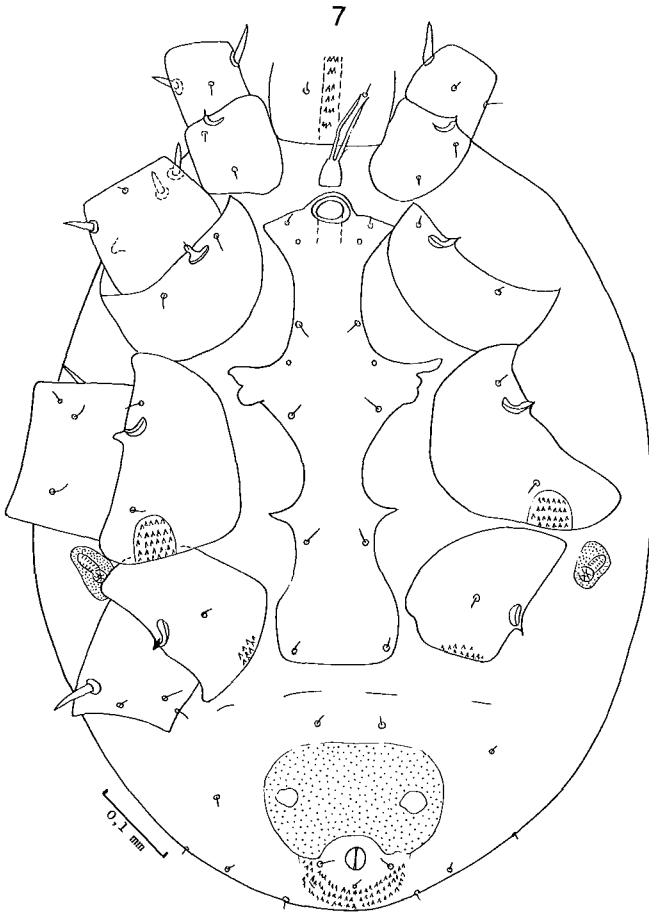


Fig. 7. - *Jacobsonia (Parajacobsonia) africanus* n. sp. Male in ventral view.

crescentic structures and coxae III and IV with a few posterior scales. Coxa IV with a relatively large triangular anteroapical rounded process. Other characters as in female.

Protonymph and larva

Not known.

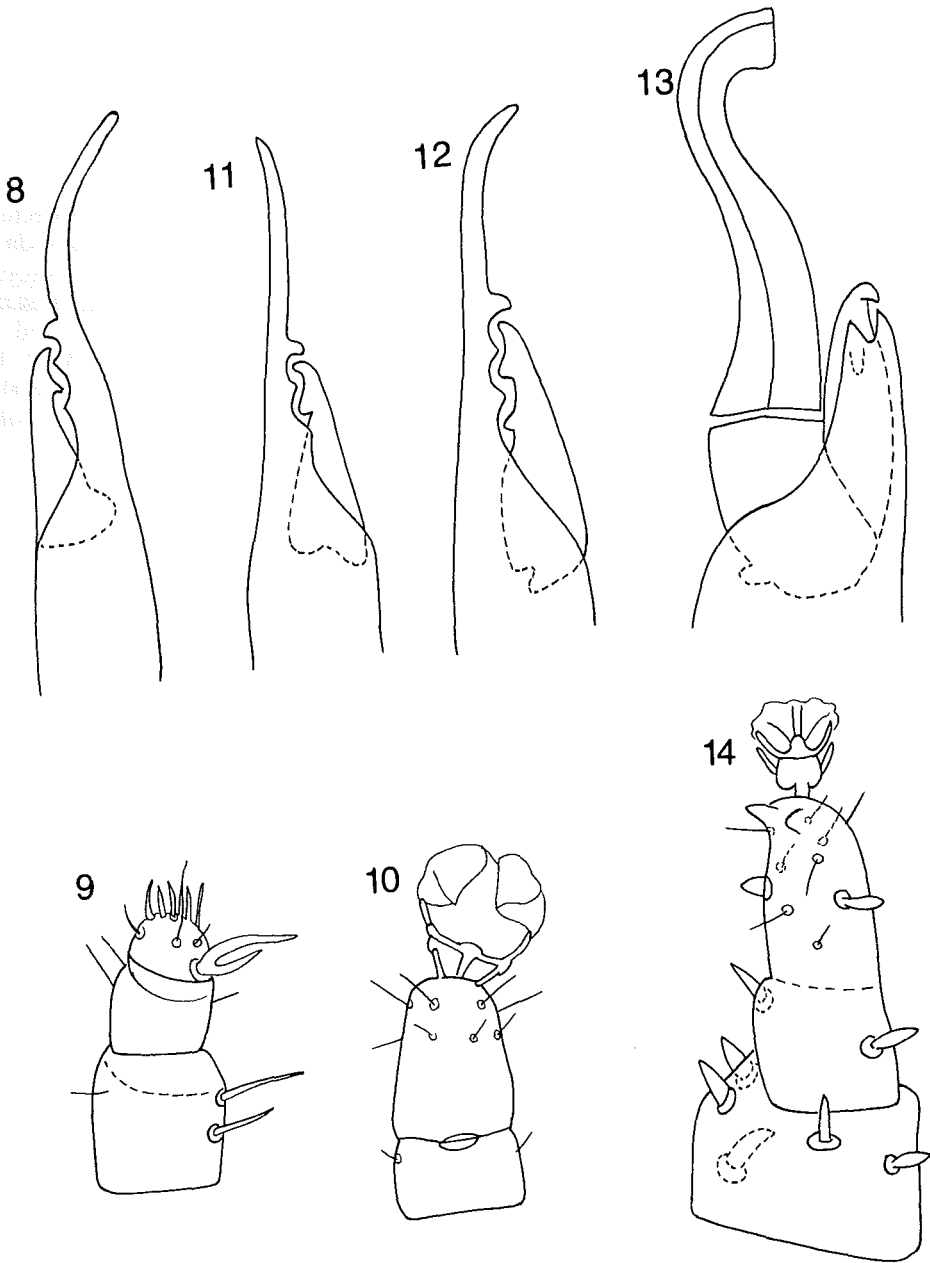
Habitat and locality

Holotype female from *Pachybolus macrosternus* (Diplopoda), in the forest along the borders of the river Kwango, Zaire (Coll. A. Fain 19.IV.1964).

Paratypes: 2 females, 1 male and 5 deutonymphs with the same data as the holotype. Holotype, 1 male and 1 deutonymph in MRAC, other material in IRSNB.

Remarks

This species is distinguished from *J. (P.) tertia* especially by the shape of the genital shield in the female and the structure of the coxae (presence of scales on coxae III and IV and of crescentic structures on all coxae). This coxal character also distinguishes *J. (P.) puylaerti* from *J. (P.) andrei*.



Figs. 8-12. - (8-10) *Jacobsonia* (*Parajacobsonia*) *pyylaerti* n. sp. Female : cheliceral digit (8), apical segments of palp (9), tarsus II ventrally (10). - (11) *Jacobsonia* (*Parajacobsonia*) *andrei* n. sp. Female: cheliceral digits. - (12-14) *Jacobsonia* (*Parajacobsonia*) *africanus* n. sp. Female : cheliceral digits (12); Male : cheliceral digits (13); tibia and tarsus II in lateral view (14).

***Jacobsonia (Parajacobsonia) africanus* nov. spec.**

Female

Holotype (Figs 5, 6, 12). - Length and width of idiosoma in holotype: 708 x 402; in 2 paratypes: 816 x 492 (specimen from Togo) and 780 x 450 (specimen from Côte-d'Ivoire). Dorsal shield 648 long and 400 wide, bearing a well-developed network of lines in the lateral parts of its anterior two thirds. It bears 30 to 35 pairs of small setae (3 to 6 long) except for the slightly longer posteromedian pair (15 long). Tectum more or less triangular, with 7 strong teeth.

Venter: - Sternal shield 258 long, 186 wide, bearing 3 pairs of small sternal setae and 2 pairs of lyrifissures. The metasternal setae are situated behind the sternal shield on the soft cuticle. Genital shield (including the soft anterior lip) trapezoidal 135 long and 85 wide in its posterior part. Anal shield 120 wide and 100 long, bearing 3 setae, of which the posterior one is a microseta. Soft cuticle opisthogaster with 8 pairs of small setae. Peritreme about twice as long as wide.

Gnathosoma. - Palps long, hypostome with 3 pairs of normal setae. Chelicerae, leg coxae and legs as in *J. (P.) puylaerti*.

Male

(Figs 7, 13, 14)

Idiosoma more or less pyriform, 900 long and 720 wide. Scutum very broad, covering almost all the dorsum, with a distinct network of lines in its two anterior thirds. Sternigenital shield 516 long (445 and 510 long in 2 other males) and not extending beyond the posterior margins of coxae IV, bearing 4 pairs of small setae. Anal shield slightly wider (200) than long (180) with 3 anal setae. Tectum triangular terminating in 3 strong unequal teeth (one thick median and 2 thinner lateral). Chelicerae: fixed digit

without apical process. Spermatodactyl sinuous, thick and long. legs very thick, especially legs II and III. Legs I-III with strong spines, tarsi I with relatively long setae. Tarsi II-III with 3 spurs. Claws absent on all the legs. All tarsi ending in a large pulvillus.

Habitat and localities

All of our specimens were collected from *Spirostrepta* sp. (Diplopoda). Holotype female from Galim, Cameroun (Coll. F. Puylaert, 15.VIII.1971) (host n° 159.627); Paratypes: 6 females and 2 males from Missahohe, Togo (Coll. F. Puylaert, 6.VIII.1969) (host n° 138.800); 2 females from Côte-d'Ivoire (Coll. Verheyen & Thys, 16.VII.1966) (host n° 159.589) and 6.VIII.1979 (host n° 159.604).

Holotype and 3 paratypes female and 2 paratypes male in MRAC; 3 females and 1 male, all paratypes, in the IRSNB.

Remarks

This species is close to *J. (P.) puylaerti*. It differs from this species, in the female, by the following characters: presence of a well-developed network of lines on the scutum, tectum with teeth poorly developed; genital shield abruptly widened in its posterior fifth. In the male, the body and the shield are much larger than in *J. (P.) puylaerti*.

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- (Manuscript received 21 March 1994, revised 28 April 1994, accepted 20 July 1994)

