SPIXIANA	24	2	111–121	München, 01. Juli 2001	ISSN 0341-8391

Designation of a type species for the genus *Prosekia*, gen. nov. from South America

(Crustacea, Isopoda, Oniscidea)

Andreas Leistikow

Leistikow, A. (2001): Designation of a type species for the genus *Prosekia*, gen. nov. from South America (Crustacea, Isopoda, Oniscidea). – Spixiana **24/2:** 111-121

The neotropical genus *Prosekia* Vandel, 1968 originally comprised two species from Venezuela and a third from the Galapagos islands. Since a type species never was chosen, the genus name is not available according to § 13a ICZN. With the redescription of the Venezuelan species *Prosekia rutilans* (Vandel, 1952) and the selection as the type of the genus, the name shall be made available for the systematics of Oniscidea. Additionally, a new comprehensive definition of the genus is given and its status is discussed in the light of phylogenetic systematics and its consequences for Oniscidean systematics.

A. Leistikow, Universität Bielefeld, Abteilung für Zoomorphologie und Systematik, Morgenbreede 45, D-33615 Bielefeld / Ruhr-Universität Bochum, Lehrstuhl für spezielle Zoologie, Universitätsstraße 150, D-44780 Bochum.
e-mail: Leiste@Biologie.Uni-Bielefeld.de

Introduction

Several distinct species of the family Philosciidae are known from South America. The family Philosciidae is a paraphylum because of the characters used for a definition, as the slender runner-habitus (cf. Schmalfuss 1984) or many characters given in the diagnosis of Vandel (1973): cephalothorax with linea supra-antennalis, linea frontalis only in primitive species, pleon narrower than pereon, prominent neopleurae present in primitive species, three-articulate antennal flagellum, endite of maxilliped with penicil, genital papilla simple. All these characters are present in *Alloniscus* Dana, 1853 which is thought to be the most primitive representative of Oniscoidea (Schmalfuss 1989) or even in *Ligia* Fabricius, 1795 and thus are plesiomorphies of the Philosciidae. Among the Philosciidae, particularly the species described around the turn of the last century and ascribed to the genus *Philoscia* Latreille, 1804 are difficult to determine due to their poor descriptions. It was Vandel (1952, 1968, 1972) who contributed to our knowledge on the diversity of philosciid Oniscidea from South America on a higher taxonomic level. Unfortunately, several authors and even Vandel himself obscured the good beginnings by some inaccuracy. An example is the genus *Prosekia* Vandel, 1968 which was described to comprise the species *Chaetophiloscia rutilans* Vandel, 1952, *Chaetophiloscia hamigera* Vandel, 1952 and *Chaetophiloscia galapagensis* Andersson, 1960. Vandel did not designate a type species, so the genus name is unavailable according to the ICZN. He mentioned in his description only characters which are shared with other genera. Furthermore, the three species differ considerably in some characters which are important on a higher taxonomic level. These characters comprise the shape of the cephalothorax, the compound eyes, the mouth parts, the pereopods and even some details of the pleopods (pers. obs.). Until recently, the following species were included in *Prosekia* Vandel, 1968:

Prosekia rutilans (Vandel, 1952)
Prosekia hamigera (Vandel, 1952)
Prosekia galapagensis (Andersson, 1960)
Prosekia tarumae Lemos de Castro, 1984
Prosekia silvatica Lemos de Castro & Souza, 1985
Prosekia lejeunei Lemos de Castro & Souza, 1985
Prosekia insularis Lemos de Castro & Souza, 1985
Prosekia albamaculata Lima, 1996

For phylogenetic analysis of the taxon Oniscidea it is necessary to define monophyletic subtaxa. The reexamination of the members of *Prosekia* revealed the paraphyly of this genus. *Prosekia rutilans* was the first species described in the section on philosciids from Venezuela by Vandel (1952: 124), so this species is chosen as the type of the genus *Prosekia*. All the species but *Prosekia insularis*, which belongs to the genus *Littorophiloscia*, recently have been displaced to the genus *Androdeloscia* Leistikow (Leistikow 1999). *P. rutilans* from Venezuela and the genus *Prosekia* gen. nov. are redefined herein.

Genus *Prosekia*, gen. nov.

Diagnosis. Cephalothorax with linea supra-antennalis and lamina frontalis, faint linea frontalis, compound eyes with about 22 ommatidia in four rows. Antennula and antennal flagellum three-articulate. Molar penicil of mandibles composed of 5 to 6 branches, maxillula with lateral endite apically bearing 4+6 teeth, 5 of inner set cleft, medial endite with two stout penicils and inconspicuous tip, maxilla lacking setation, medial lobe half the breadth of lateral lobe, endite of maxilliped without setation and knob-like penicil, basipodite with sulcus lateralis.

Pereopods long and slender, carpus 1 with transverse antenna-grooming brush and ornamental sensory spine with serrate double-fringe on apex, sensory spines of considerable length, tricorn-like setae of basis flagelliform, coxal plates with noduli laterales, on coxal plate IV inserted more medially, sulcus marginalis present, gland pores not discernible at 400x magnification. Dactylar seta with apex slightly plumose, no sexual dimorphism. All female and male pleopod 3 to 5 exopodites slightly ovate, with lateral margin almost straight, no respiratory areas discernible, endopodites of respective pleopods bilobate. Uropod protopodite laterally with groove, endopodite inserting proximally of exopodite.

Type species. *Chaetophiloscia rutilans* Vandel, 1952, by monotypy, designated herein.

Prosekia rutilans (Vandel, 1952)

Figs 1-6

Material. Lectotype: ♂, 7 mm; paralectotypes: ♀ 9.5 mm (ovigerous), ♀ 9 mm. Venezuela, El Junquito, leg. G. Marcuzzi, 2.VII.1950, deposited in Muséum National d'Histoire Naturelle, Paris.

Synonymy. *Chaetophiloscia rutilans* Vandel, 1952.

Description

Colour. Vandel (1952) wrote: "La teinte générale est d'un rouge carmin foncé. Les zones de linéoles sont bien visibles; on observe une série de taches plus foncées sur la ligne médiane, et une autre série de taches foncées à la limite des pleurèpimères. Les pleurépimères sont pigmentés, à l'exception d'une tache claire plus ou moins étendue suivant les segments. Le pléon est entièrement pigmenté, à l'exception d'une fine ligne médiane. Les péréiopodes sont en grande partie pigmentés; les exopodites des pléopodes sont pigmentés."

Cephalothorax. Linea supra-antennalis and lamina frontalis prominent, linea frontalis inconspicuous, slightly bent, medially interrupted, slight lateral lobes, vertex arched, compound eyes composed of 22 ommatidia in four longitudinal rows (Fig. 1, Ctf).

Pereon. Body rather convex, tegument smooth and shiny, coxal plates with sulcus marginalis and noduli laterales, inserted more distally from the lateral margin on coxal plate IV, no gland pores.

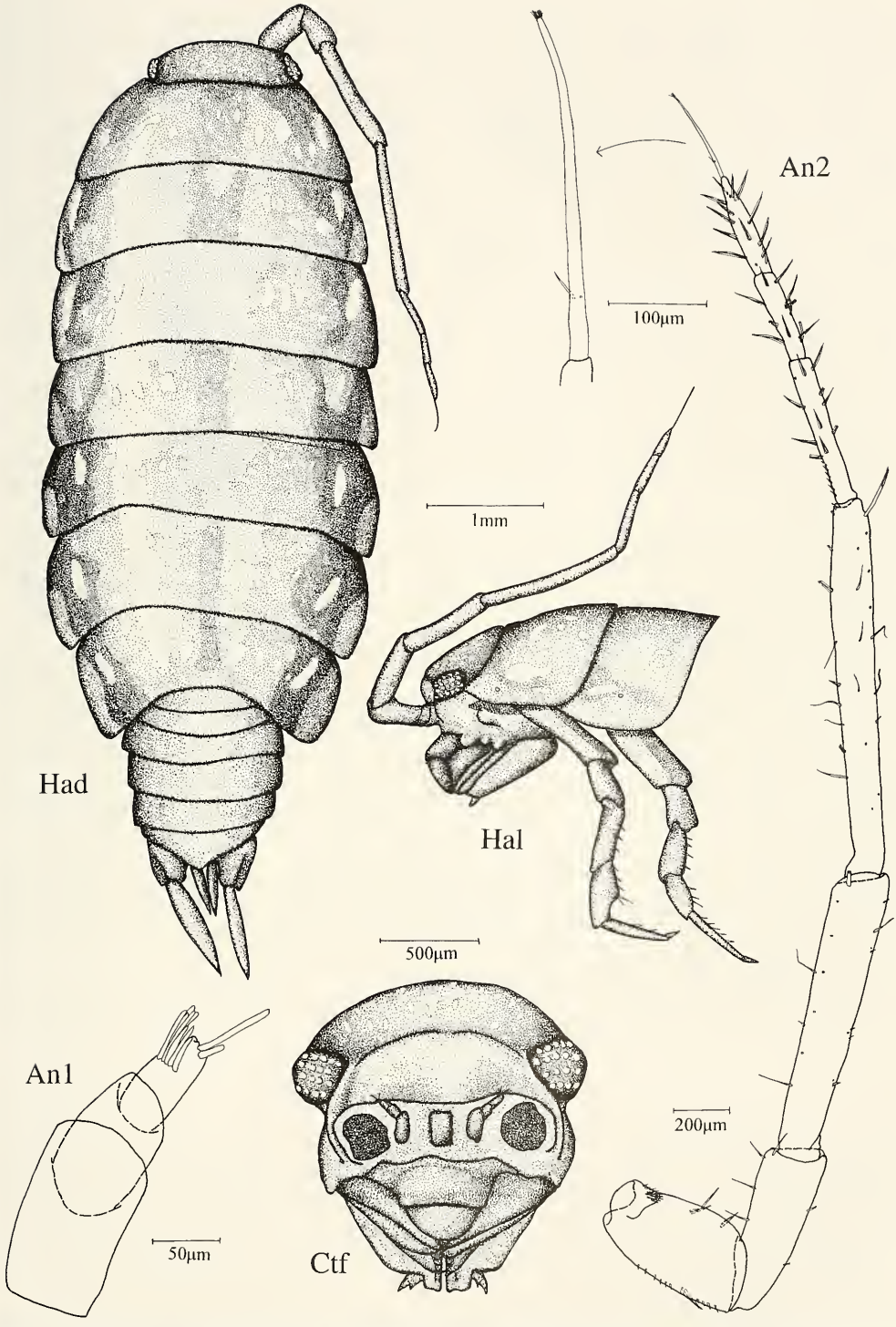

Fig. 1. *Prosekia rutilans* (Vandel, 1952). ♀ paralectotype. An1: antennula; An2: antenna; Ctf: cephalothorax in frontal view; Had: habitus in dorsal view; Hal: habitus in lateral view.

Pleon. Narrower than pereon, neopleurae of pleonites 3 to 5 very small, adpressed to pleon. Pleotelson with slightly concave lateral margins, bearing some tricorn-like setae inserting near cuticular scale.

Antennula. Composed of three articles subequal in length, distal article rather stout, bearing apical and medial set of aesthetascs, about 8 aesthetascs of medial set directed medially (Fig. 1, An1).

Antenna. Fairly slender, length ratio of peduncular articles 1:2:2:4:5, flagellum three-articulate, proximal article the longest, 1.5× longer as articles 2 and 3 each, apical bristle as long as distal article, all antennal articles bearing tricorn-like setae, aesthetascs on flagellar article 2 and 3 (Fig. 1, An2).

Mandible. Left mandible with pars intermedia densely covered with coniform setae, bearing two penicils, on right mandible coniform setae somewhat longer, standing more sparsely, only single penicil, molar penicil composed of 5 to 6 branches, additional plumose seta distally of molar penicil (Fig. 2, Mdl/r).

Maxillula. Medial endite with two stout penicils and small tip apically, lateral endite terminated by 4+6 teeth, 5 of inner set cleft, lateral fringe of trichiform setae sinuous, small additional tooth subapically on rostral surface (Fig. 2, Mx1).

Maxilla. Both lobes lacking setation, medial lobe of half the breadth of lateral, apically bearing about 10 cusps, medially some setae (Fig. 2, Mx2).

Maxilliped. Basipodite with sulcus lateralis, distal margin only slightly rounded, endite without setation, caudally with two teeth, knob-like seta and setal tuft of rostral surface lacking, palp with three setal tufts on medial border, proximal tuft composed of 3 setae, proximal article bearing two long setae (Fig. 2, Mxp).

Pereopods. Slender appendages with spinose appearance (Figs. 3, PE1-4, 4, PE5-7), particularly pereopods 5 to 7 with long sensory spines, tricorn-like setae of basis fairly slender, most sensory spines of pereopod 1 propus and carpus with apical serrate double-fringe, antenna-grooming brush of carpus 1 medially surrounded by fasciate cuticular scales, dactylus with short inner claw (Fig. 2, Dac), prominent interungual seta, dactylar seta with inconspicuous plumose apex (Fig. 2, Sd1).

Pleopods. Pleopod exopodites almost rhomboid with lateral margin straight and medial margin rounded, laterally with four to six sensory spines, exopodite 5 with transverse row of pectinate scales on caudal surface. Endopodites bilobate, bearing no setation. No respiratory areas areas on exopodites visible at 400× magnification (Fig. 5, PL1-5, 6, PL1-2).

Sexual dimorphism. In the original description, Vandel (1952) stated, that there is no sexual dimorphism in the pereopods. Since only female pereopods could be examined by means of a light microscope, Vandel's statement could not be verified in detail. At least there are no differences on the stereoscope level.

Male pleopod 1 exopodite triangular with rounded edges, apex bent laterally, endopodite rather stout, apex cylindrical, apically rounded laterally serrate, some cuticular striation on rostral surface, mediocaudal row of spiniform setae proximally terminating at same level as "lateral saw" (Fig. 5, PL1).

Male pleopod 2 exopodite pointed, with sinuous lateral margin bearing five sensory spines, endopodite straight, surpassing exopodite, apex slightly bulbous (Fig. 5, PL2).

Uropod. Compare with generic diagnosis (Fig. 4, UR).

Genital papilla: Ventral shield pyriform, but more elongate, mouths of ductus ejaculatorii parallel, surpassing ventral shield considerably (Fig. 5, Gen).

Discussion

The species which were ascribed to the genus *Prosekia* represented a rather heterogenous assembly, and at least three different taxa were united in this genus. Vandel (1968) gave a generic diagnosis including the following characters: "1. Noduli laterales longs, flagelliformes, atteignant le tiers de la longeur du tergite péréial. 2. Segment terminal de l'antennule portant deux groups distincts d'aesthetascs. 3. Endopodite du premier pléopode mâle court, portant à son extrémité des structures complexes et généralement dentées." All these characters, which should define the genus *Prosekia*, are found in several other South American genera and are therefore no autapomorphies of the genus. Long noduli laterales are typical for *Andenoniscus* Verhoeff, 1941, *Erophiloscia* Vandel, 1972 and *Xiphoniscus* Vandel, 1968, but they are comparably shorter in *P. rutilans* (pers. obs.). The short and dentate endopodites of

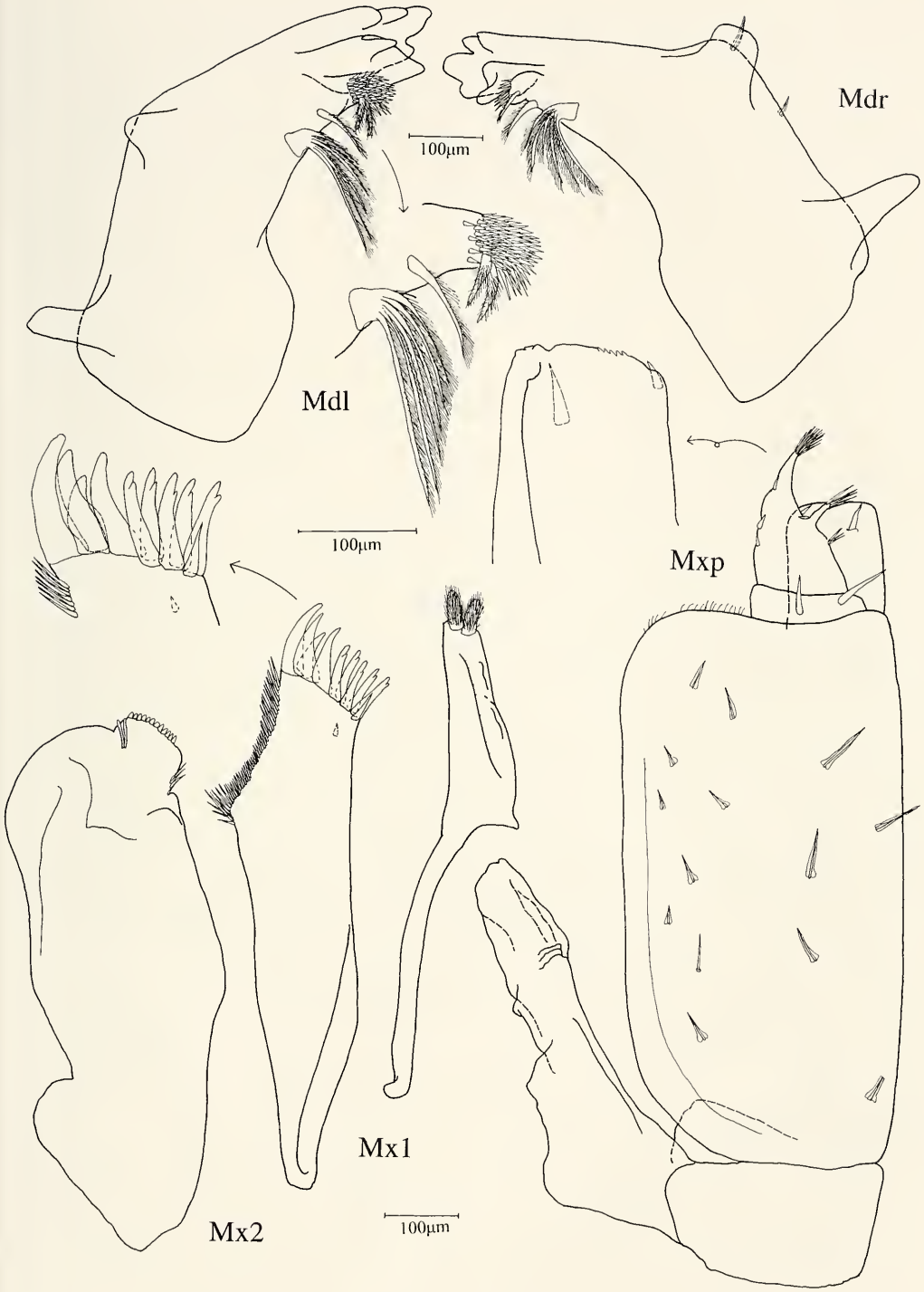

Fig. 2. *Prosekia rutilans* (Vandel, 1952). ♀ paralectotype. Mdl: left mandible; Mdr: right mandible; Mx1: maxillula with detail of apex of lateral endite; Mx2: maxilla; Mxp: maxilliped with detail of endite in rostral view.

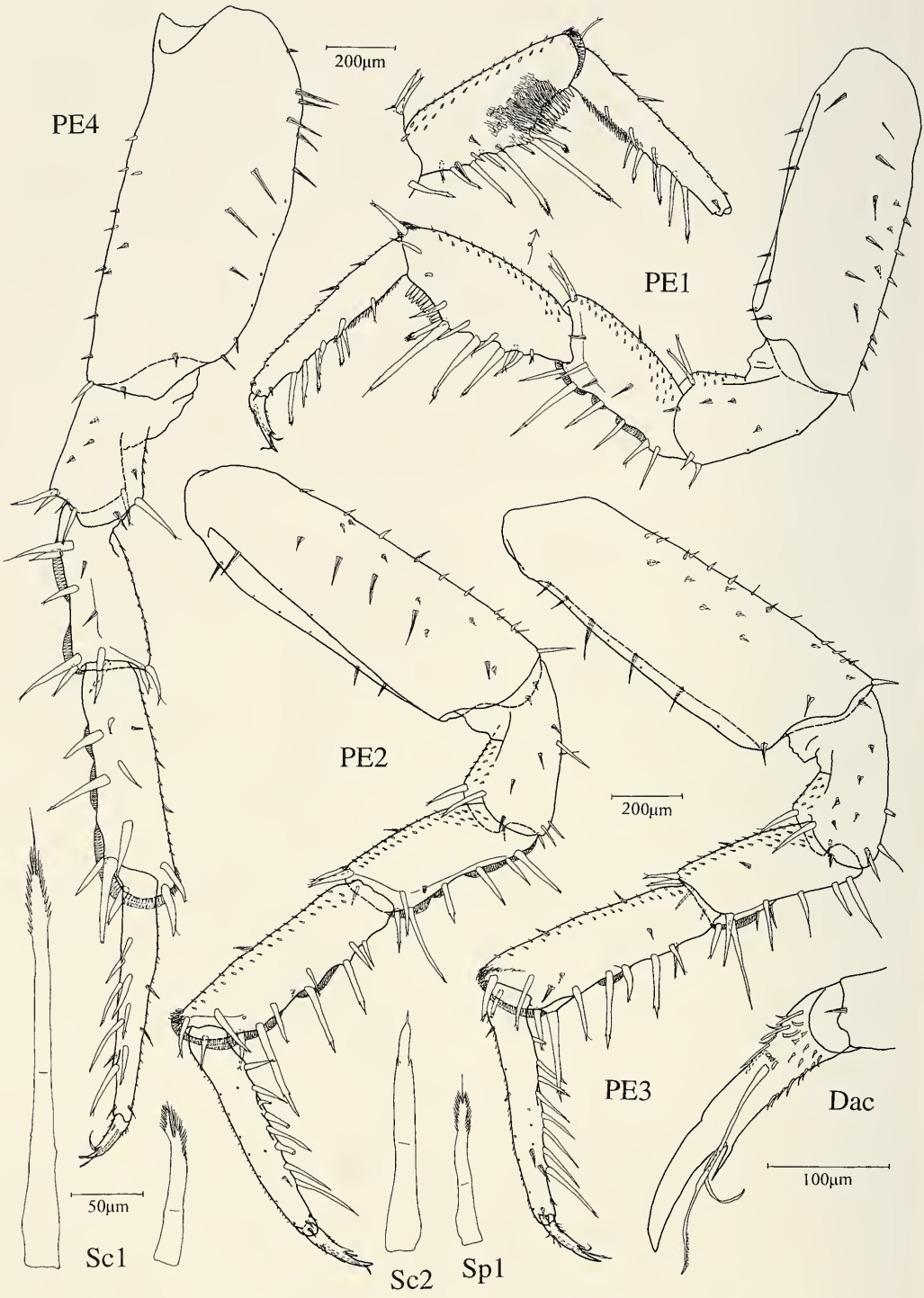

Fig. 3. *Prosekia rutilans* (Vandel, 1952). ♀ paralectotype. Dac: dactylus in rostral view; PE1-4: pereopods 1-4 caudal view, details in rostral view; Sc1: ornamental sensory spines of carpus 1; Sc2: sensory spine of carpus 2; Sp1: distal sensory spine of propus 1.

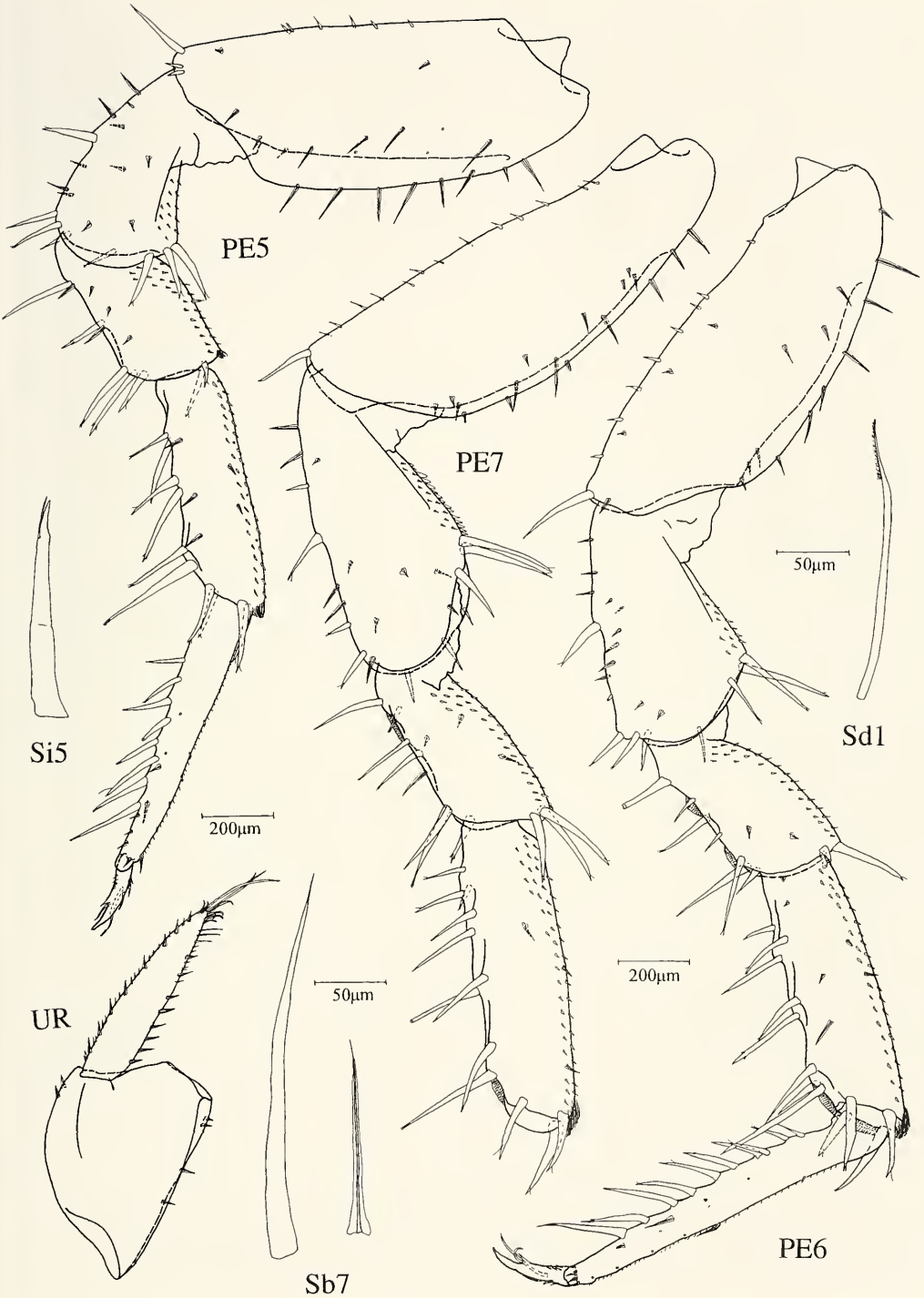

Fig. 4. *Prosekia rutilans* (Vandel, 1952). ♀ paralectotype. PE5-7: pereopods 5-7 in caudal view; Sb7: sensory spine and tricorn-like seta of basis 7; Sd1: dactylar seta 1; Si5: sensory spine of ischium 5; UR: uropod.

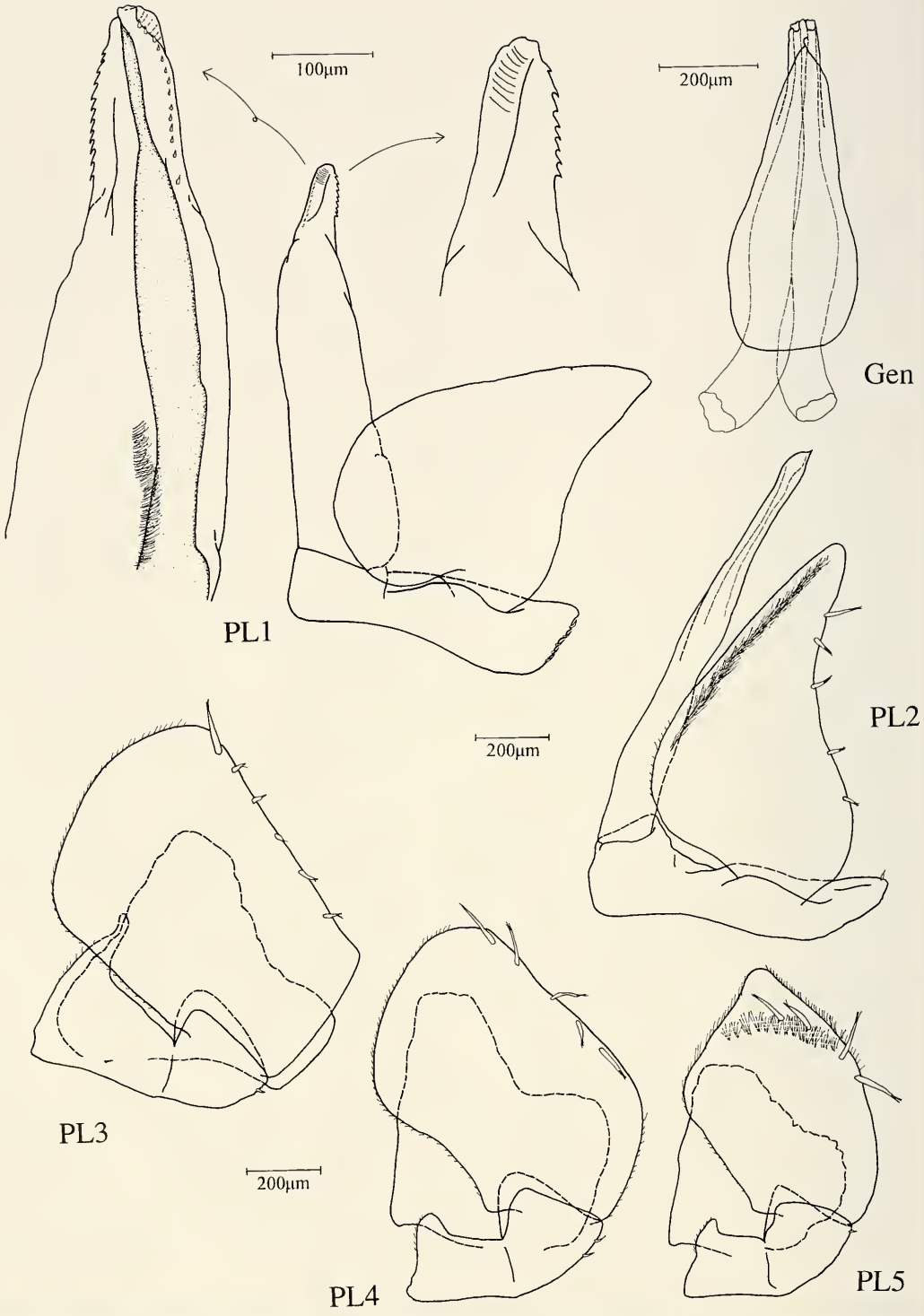

Fig. 5. *Prosekia rutilans* (Vandel, 1952). Gen: genital papilla; PL1-2: pleopods 1 and 2 (♂ lectotype); PL3-5: pleopods 3-5 (♀ paralectotype).

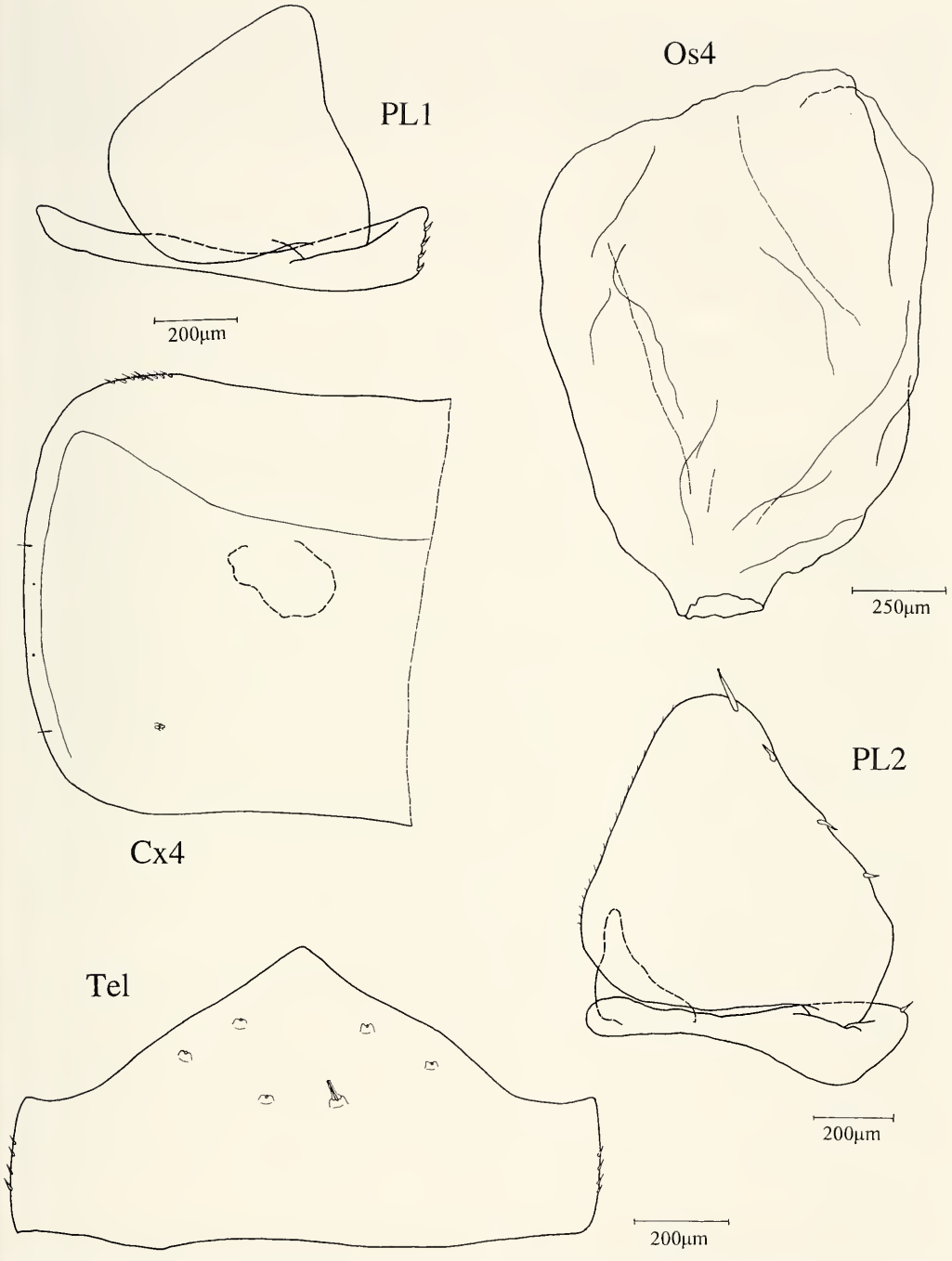

Fig. 6. *Prosekia rutilans* (Vandel, 1952). ♀ paralectotype. Cx4: coxal plate IV; PL1-2: pleopods 1 and 2; Os4: oostegite of pereonite 4; Tel: pleotelson.

the male pleopod 1 are found in *Andenoniscus* and *Xiphoniscus* (pers. obs.), and finally the shape of the antennule is similar to *Andenoniscus* (Leistikow 1998), *Erophilosica* (Leistikow 2000) and *Androdeloscia* (Leistikow 1999). The monophylum which is characterized by the shape of the antennula with an apical pair of aesthetasc and a medial tuft which sticks out is provisorically called the "*Prosekia*-group". Particularly the smaller species are fairly similar to *Andenoniscus*, they were disposited in the genus *Androdeloscia* (Leistikow 1999) due to differences in the shape of the male pleopod 5 exopodite, and the cephalothorax.

Prosekia insularis Lemos de Castro & Souza, 1986 which was described from eastern Amazonia is somewhat different. The shape of the maxilliped and the male pereopod 1 are good features for at least ascribing the species to *Littorophiloscia* Hatch, 1947 as can be seen in the re-examination of the genus by Taiti & Ferrara (1986). The shape of male pleopod 1 is quite similar to *Littorophiloscia tropicalis* Taiti & Ferrara, 1986 as can be evidenced from the drawings. Unfortunately, the type material of *P. insularis* could not be located.

Prosekia rutilans is differing from the above mentioned species of the *Prosekia*-group by several characters. The autapomorphies of *Prosekia rutilans* are:

- faint linea frontalis which is medially even more inconspicuous [linea frontalis present, not interrupted]
- profrons more level [profrons with two depressions medially of the eyes]
- knob-like penicil of maxillipedal endite reduced [knob-like penicil present]
- sensory spines of the pereopod 1 carpus apically serrate [only one prominent serrate sensory spine present, other sensory spines with two subapical tips]
- club-like apex of the male pleopod 2 endopodite, "renflé en vésicule à son extrémité" after Vandel (1952) [endopodite pointed]

Several other characters are plesiomorphies and exclude *P. rutilans* from a subtaxon of the *Prosekia*-group which comprises *Andenoniscus*, *Androdeloscia*, *Erophiloscia*, and *Xiphoniscus*: The dactylar seta is apically plumose, a character shared with the Scleropactidae, *Ischioscia* Verhoeff, 1928 and several Scyphacidae. The prominent compound eyes with ommatidia arranged in four rows are likewise found in the above mentioned taxa, whereas all the other taxa of the *Prosekia*-group have about 10 ommatidia which do not appear to be arranged in a distinct pattern. In the description of Vandel (1968) the number of ommatidia refers to the species now in *Androdeloscia*. The long *noduli laterales*, the reduction of the number of branches of the molar penicil are further apomorphic characters *Andenoniscus*, *Androdeloscia*, *Erophiloscia*, and *Xiphoniscus*. Thus, *P. rutilans* is the basalmost representative of the *Prosekia*-group.

The distant position of nodulus lateralis IV with respect to the lateral margin of the coxal plate is a character commonly found in many philosciid taxa. This character was used by Vandel (1952) to define his *groupe chaetophiloscien*. Since the polarity for this character is not resolved and many genera are insufficiently known, it is premature to discuss the monophyly of this group. Nonetheless, *Prosekia* and its allies may be related to some of the genera of this group.

Interestingly, *P. rutilans* has a characteristic feature on the male pleopod 1 endopodite: The cuticle near the apex is forming some hyaline lamellae. There are only few species with this character. Among these are several members of the *Prosekia*-group, like *Erophiloscia longistyla* Vandel, 1972. Therefore, so this character has to be ascribed at least to the ground plan of the *Prosekia*-group. No other philosciid genus from South America bears such a structure and in other taxa it probably evolved independently. For example, in Southeastern Asia this character can be found in *Exalloniscus bicoloratus* Taiti & Ferrara, 1988. But this is due to convergence, since the two genera do not have any character in common which could be evaluated as a synapomorphy of *Prosekia* and *Exalloniscus*, nor is there biogeographic evidence for a close relationship. For more details, the description of *E. bicoloratus* should be consulted (Taiti & Ferrara 1988).

With respect to the compound eyes, Vandel (1952) stated that there are about 10 to 12 ommatidia, in contradiction to this, he figured 14 (Vandel 1952: 123, Fig. 38). The reexamination revealed the presence of more than 20 ommatidia in the largest specimen, which were arranged in 4 rows.

Acknowledgements

The author thanks Dr. H. Dalens, Université de Toulouse, for the loan of the material, the permission to dissect a specimen and the critical review of earlier stages of the manuscript. For manuscript revision he also is grateful to Dr. A. Ohlers and Dr. S. Taiti. He is indebted to Prof. Dr. J. W. Wägele for his support of this investigation and the possibility to discuss on this work.

References

Andersson, A. 1960. South American terrestrial isopods in the collection of the Swedish State Museum. – Ark. Zoöl. **12**: 537-570

Leistikow, A. 1998. Redescriptions of terrestrial Isopoda from Chile and Peru (Crustacea: Isopoda: Oniscidea). – Spixiana **21**(3): 215-225

–– 1999. *Androdeloscia* gen. n., a new genus of South American terrestrial isopods with description of 13 new species (Crustacea: Isopoda: "Philosciidae"). – Rev. suisse Zool. **106**: 813-904

–– 2001. The genus *Erophiloscia* Vandel, 1972 – its phylogeny and biogeography, with description of three new species (Crustacea: Isopoda: Oniscidea). – Spixana **24**(1): 29-51

Lemos de Castro, A. & Souza, L.A. 1986. Très espèces novas de isopodes terrestres do gênero *Prosekia* Vandel da Amazonia Brasileira. – Revta. Bras. Zool. **46**: 429-438

Schmalfuss, H. 1984. Eco-morphological strategies in terrestrial isopods. – Symposia of the Zoological Society, London **53**: 49-63

–– 1989. Phylogenetics in Oniscidea. – Mon. zool. ital. (N.S.) **4**: 3-27

–– 1990. Die Landisopoden Griechenlands. 11. Beitrag: Gattung *Chaetophiloscia*. – Rev. suisse Zool. **97**: 169-193

Taiti, S. & Ferrara, F. 1986. Taxonomic revision of the genus *Littorophiloscia* with description of six new species. – J. Nat. Hist. **20**: 1347-1380

–– 1988. Revision of the genus *Exalloniscus* Stebbing, 1911 (Crustacea: Isopoda: Oniscidea). – Zool. J. Linnean Soc. **94**: 339-377

Vandel, A. 1952. Étude des isopodes terrestres récoltés au Vénézuela par le Dr. G. Marcuzzi. – Mem. Mus. civ. Storia Nat. Verona **3**: 59-203

–– 1968. Isopodes terrestres. – in: N. and J. Leleup (eds.) Mission zoologique belge aux Îles de Galapagos et Ecuador **84**: 35-168

–– 1972. Les isopodes terrestres de la Colombie. – Stud. Neotrop.Fauna Environm. **7**: 147-172

–– 1973. Les isopodes terrestres (Oniscoidea) de la Mélanésie. – Zool. Verhandl. **125**: 1-160