

New species and distribution of the genera *Lophoturus* and *Ancistroxenus* (Myriapoda, Diplopoda, Penicillata) in the Caribbean and northern South America

Monique NGUYEN DUY-JACQUEMIN

Laboratoire de Zoologie (Arthropodes), Muséum national d'Histoire naturelle,
61 rue Buffon, F-75231 Paris cedex 05 (France)
monguyen@mnhn.fr

Nguyen Duy-Jacquemin M. 2002. — New species and distribution of the genera *Lophoturus* and *Ancistroxenus* (Myriapoda, Diplopoda, Penicillata) in the Caribbean and northern South America. *Zoosystema* 24 (2) : 451-470.

ABSTRACT

Three new species of the genus *Lophoturus* Brolemann, 1931, *L. judsoni* n. sp. from Tobago, *L. monserratensis* n. sp. and *L. sturmi* n. sp. from Colombia, are described. *L. judsoni* n. sp. is characterized by the unusual orientation of the sensilla basiconica of antennal article VI and *L. monserratensis* n. sp. by the ornamentation of its labrum. *L. sturmi* n. sp. is close to *L. adisi* Ishii, Nguyen Duy-Jacquemin & Condé, 1999 but differs in the form of the sensilla of antennal article VI. The variability of the species *L. longisetis* (Pocock, 1894) is corroborated by the new collection from Guadeloupe; the two females from Trinidad show, by the disappearance of the third sensillum basiconicum on the antennal article VI, a more advanced evolutionary stage towards a reduction of the sensilla number. The large Caribbean and Central America distribution of the genus *Lophoturus* and the species *Ancistroxenus comans* (Loomis, 1934) is corroborated. Larvae of *Macroxenodes* aff. *amazonicus* Ishii, Nguyen Duy-Jacquemin & Condé, 1999 are recorded from Tobago.

KEY WORDS

Myriapoda,
Diplopoda,
Polyxenida,
Caribbean islands,
northern South America,
polymorphism,
distribution,
new species.

RÉSUMÉ

Nouvelles espèces et répartition des genres Lophoturus et Ancistroxenus (Diplopoda, Penicillata) dans les Caraïbes et le nord de l'Amérique du Sud.

Trois espèces nouvelles du genre *Lophoturus* Brolemann, 1931 sont décrites : *L. judsoni* n. sp. de Tobago, *L. monserratisensis* n. sp. et *L. sturmi* n. sp. de Colombie. *L. judsoni* n. sp. est caractérisé par l'orientation inhabituelle des sensilles basiconiques portés par le sixième article antennaire et *L. monserratisensis* n. sp. par les ornements de la surface externe de son labre. *L. sturmi* n. sp. est proche de *L. adisi* Ishii, Nguyen Duy-Jacquemin & Condé, 1999 mais diffère par la forme des sensilles du sixième article antennaire. La variabilité de l'espèce *L. longisetis* (Pocock, 1894) est confirmée grâce au matériel de Guadeloupe ; les deux femelles de Trinidad dont le troisième sensille, réduit chez le lectotype, a complètement disparu, constituent une étape plus avancée de l'évolution vers un nombre réduit de sensilles. La large répartition du genre *Lophoturus* et de l'espèce *Ancistroxenus comans* (Loomis, 1934) est confirmée. Des larves de *Macroxenodes* aff. *amazonicus* Ishii, Nguyen Duy-Jacquemin & Condé, 1999 sont recensées à Tobago.

MOTS CLÉS

Myriapoda,
Diplopoda,
Polyxenida,
îles des Caraïbes,
Nord de l'Amérique du Sud,
polymorphisme,
répartition,
nouvelles espèces.

INTRODUCTION

After Pocock (1894), Diplopoda Penicillata were studied in several countries around the Caribbean by Loomis (1934), Condé & Terver (1964, 1965, 1979) and Terver *et al.* (1968). These studies can now be complemented thanks to collections of the Muséum national d'Histoire naturelle, Paris, from Tobago, Trinidad, Guadeloupe and French Guyana, and of the Zoologisk Museum of Copenhagen, from Colombia and Isla del Rey. This material includes, apart from three larvae of Polyxenidae belonging to the genus *Macroxenodes* Silvestri, 1948, two genera of Lophoproctidae: *Ancistroxenus* Schubart, 1947 and *Lophoturus* Brolemann, 1931. Among the six species of *Lophoturus* studied, three are new and described here.

Unless otherwise indicated, all the material studied here is deposited in the collections of the Muséum national d'Histoire naturelle, Paris.

ABBREVIATIONS

ad. adult;
ind. individual;

l.p. lateral protuberance on collum;
x p.l. with x pairs of legs;
ZMUC Zoological Museum, University of Copenhagen.

Antenna:

a anterior sensillum basiconicum;
c sensillum coeloconicum;
i intermediate sensillum basiconicum;
p posterior sensillum basiconicum;
s setiform sensillum.

Telson:

a1-aX insertions of trichomes of each anterior pair row of telson;
b-c1-c3 grouped insertions of trichomes *b* and *c1-c3*;
e external side of the group *b-c1-c3*;
i internal side of the group *b-c1-c3*.

SYSTEMATICS

Order POLYXENIDA Lucas, 1840
Family LOPHOPROCTIDAE Silvestri, 1897

Genus *Lophoturus* Brolemann, 1931

REMARKS

Lophoturus, reassessed genus (Condé & Nguyen Duy-Jacquemin 1977: 909-911), is a senior

synonym of *Alloproctinus*, replacement name for *Alloproctus*; it is characterized by zero to four pairs of linguiform processes on each side of median opening of labrum and antennal article VI with three thick sensilla (Ishii *et al.* 1999: key, p. 252) named anterior (*a*), intermediate (*i*) and posterior (*p*).

Lophoturus judsoni n. sp.
(Fig. 1)

TYPE MATERIAL. — **Tobago**. Man of War Bay, North of Charlotteville, track to Pigeon Peak, leaf litter in forest, 11.VII.1999, M. Judson leg., ad. ♀ holotype; ad. ♀ paratype. — Rainbow falls, bamboo litter, 10.VII.1999, M. Judson leg., ad. ♀ paratype.

ETYMOLOGY. — This species is named after its collector, Dr Mark Judson (Muséum national d'Histoire naturelle, Paris).

DESCRIPTION

Measurements

Body length (without caudal pencil) 2.45 mm (holotype); 2.30 mm (paratype from Rainbow falls); 2.05 mm (paratype from Man of War Bay). Tarsus II length of 13th leg 140 (holotype) to 150 µm.

Head

Anophthalmic.

Vertex with a pair of posterior tufts, each arranged in two rows: anterior row of 14 to 16 trichomes, posterior row of six to nine trichomes; the distance between each tuft is half their length (Fig. 1A).

The length and diameter of the antennal articles are represented in Fig. 1G. Antennal article VI with three dorsal sensilla basiconica arranged in a longitudinal row; their orientation is oblique to longitudinal axis of antennal article (Fig. 1G, I); the two apical sensilla (probably homologous of *p* and *i*) are thick and the basal sensillum (homologous of *a*) is thin and shorter than the other two. One apical sensillum coeloconicum *c* is present, but there is no setiform sensillum. Antennal article VII with two dorsal sensilla: anterior one thin *a* and posterior one thick *p*, directed towards apex of article, as usual in Penicillata, and one sensillum coeloconicum *c* (Fig. 1H).

Three trichobothria arranged triangularly, the apex of anterior one is slightly dilated and ended in a short spine-hair (Fig. 1D).

Labrum clothed with four posterior rows of cuticular setae (Fig. 1E). No lamellar teeth on anterior margin. Clypeo-labrum with nine setae (11 in female from Rainbow falls) along the posterior margin.

Palpi of gnathochilarium with 18 sensilla (Fig. 1F).

Trunk

The trichomes of each tergite are grouped in two, separate, oval clusters with an additional posterior or row barely subdivided in its middle (Fig. 1C), except on collum (Fig. 1B); distance between clusters much greater than length of each cluster. Collum with tufts of 47 to 54 trichomes (about 60 in female from Rainbow falls); lateral left protuberance of collum with seven or eight trichomes (*l.p.* in Fig. 1B); each oval cluster of tergites II to X with 32 to 42 trichomes (45 to 54 in female from Rainbow falls) and posterior row with 30 to 41.

Legs

Each leg article, except for tibia and tarsus, bearing pubescent and pear-shaped setae (Fig. 1K); coxae I to XII bearing two to five setae; XIII with zero to two setae; trochanters and prefemora with one seta; femora with one seta, very rarely two. Spine of tarsus II longer than telotarsus (Fig. 1J). Telotarsus without ventral process, only two dorsal, subequal, anterior and posterior denticles; claw without ventral denticle.

Telson

Seven to 11 trichomes *a*, of which six to seven placed on internal side and two to four on external side of the group of trichomes *b-c1-c3*. Trichomes of caudal pencil with two to eight hooks.

REMARKS

This new species is characterized by a number of distinctive features: the implantation of the basiconica sensilla on its sixth antennal article; the direction of these sensilla, oblique to longitudinal

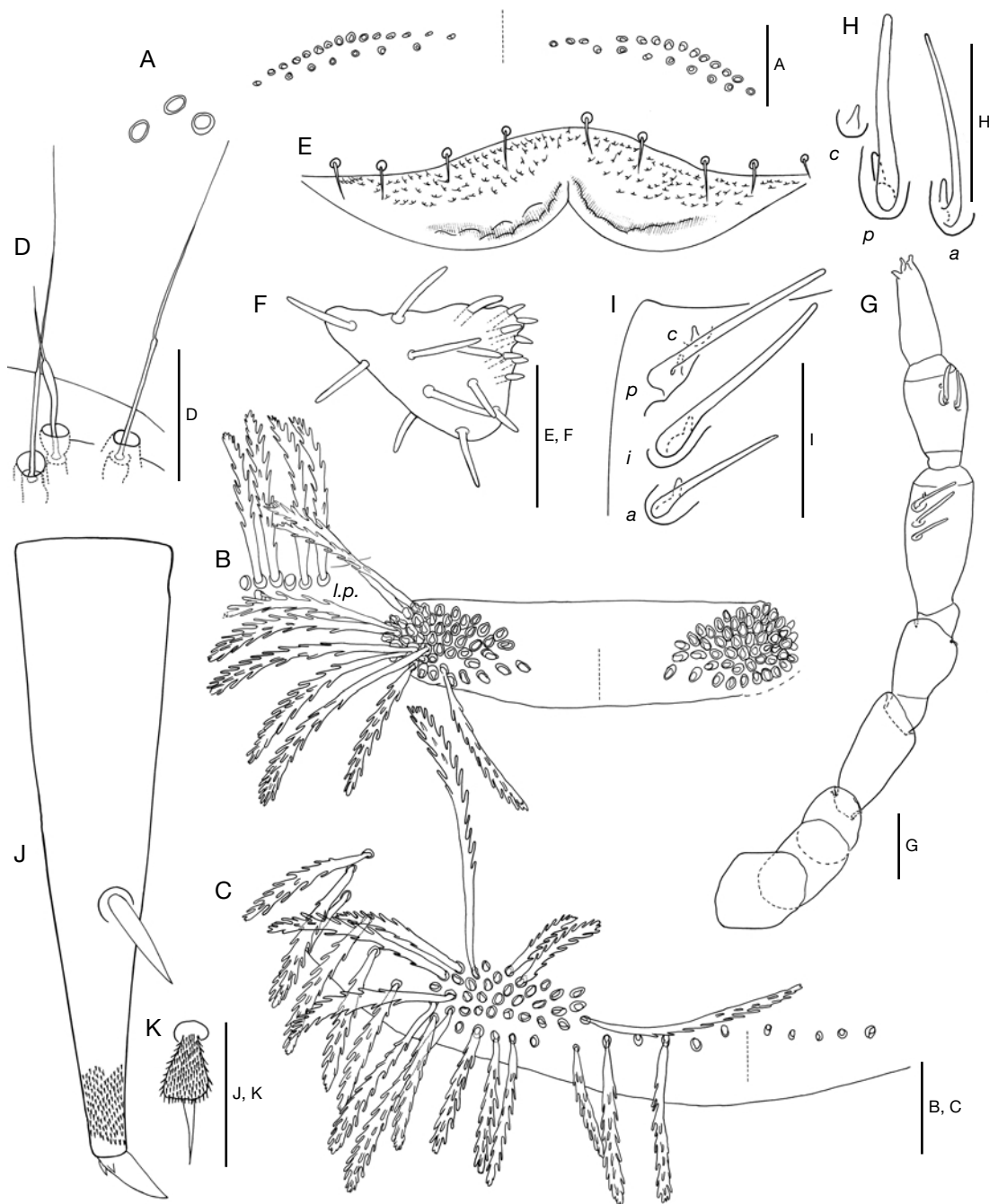


FIG. 1. — *Lophoturus judsoni* n. sp.; **A-C**, ♀ holotype; **A**, insertions of trichomes of posterior tufts and of left trichobothria on vertex; **B, C**, trichomes on collum and left half segment II; **D-F**, ♀ paratype from Man of War Bay; **D**, trichobothria; **E**, labrum; **F**, right palpus of gnathochilarium; **G-K**, ♀ from Rainbow Falls; **G**, left antenna; **H, I**, detail of sensilla on articles VII and VI of antenna; **J**, tarsus II and telotarsus of right leg IV; **K**, coxal seta of right leg II. Abbreviations: *a*, anterior sensillum basiconicum; *c*, sensillum coeloconicum; *i*, intermediate sensillum basiconicum; *l.p.*, lateral protuberance; *p*, posterior sensillum basiconicum. Scale bars: A-G, 50 μm; H-K, 25 μm.

axis of the antenna, is the only such case known in Penicillata. Moreover, *L. judsoni* n. sp. differs from *L. drifti* Condé & Terver, 1964 in having only the posterior area of the labrum covered by cuticular setae (about four rows); the whole surface of the labrum is covered by cuticular setae in *L. drifti*. In the latter species the posterior row of trichomes is widely subdivided on the middle of each tergite, as opposed to barely subdivided in *L. judsoni* n. sp.

Lophoturus monserratensis n. sp.
(Fig. 2)

TYPE MATERIAL. — **Colombia.** Near Bogotá, Páramo de Monserrate, c. 2250 m, *Espeletia grandiflora* dead leaves, 21.VII.1978, H. Sturm leg., ad. ♂ holotype (78/209 Kol. ZMUC).

ETYMOLOGY. — The name refers to the locality where the type specimen was collected.

DESCRIPTION

Measurements

Body length (without caudal pencil) 2.40 mm.
Tarsus II length of 13th leg 193 µm.

Head

Anophthalmic.

Vertex with one pair of posterior tufts consisting of two rows: anterior row of 15 and 16 trichomes, posterior row with six trichomes (Fig. 2J); the distance between each tuft is greater than their length.

The proportions of the antennal articles are represented in Fig. 2A. Antennal article VI with three dorsal basiconica sensilla (Fig. 2C): two are side by side, the anterior one *i* is slightly thicker and longer than the posterior *p*; the third sensillum *a* is more basal, anterior, thinner and half as long as the other two sensilla, its apex reaching their bases. One sensillum coeloconicum *c* is near the posterior sensillum; setiform sensillum absent. Antennal article VII with two dorsal basiconica sensilla: one anterior thin *a*, one posterior thick *p* and one apical sensillum coeloconicum *c* (Fig. 2B). Left antenna has three sensilla coeloconica *c* on the article VII (Fig. 2D) and none on article VI because it is regenerated (Fig. 2E).

Anterior trichobothria with the dilated apex ending in a short spine-hair (Fig. 2J).

Whole area of labrum well ornamented with numerous flat papillae, more or less arranged in groups and covered by small granules (Fig. 2N). Two rows of cuticular setae on posterior edge of labrum, second row interrupted by spaces. Clypeo-labrum with 11 long setae along the posterior margin.

Palpi of gnathochilarium with 39 (left) and 45 (right) sensilla (Fig. 2M).

Trunk

The trichomes of each tergite are grouped into two, separate, oval clusters with an additional posterior row, subdivided in its middle (Fig. 2K), except on collum; distance between both clusters much greater than length of each. Collum with left tuft of 55 and right tuft of 56 trichomes; each lateral protuberance of collum with six trichomes; each oval cluster of tergites II to IV with 31 to 37 trichomes and posterior row with 33 to 37.

Legs

Each leg article, except for femora, tibia and tarsi, bearing pubescent cylindrical setae (Fig. 2G-I); coxae II to XII bearing two to five setae; I and XIII with one seta; trochanters and prefemoras I to XIII with one seta. Spine of tarsus II at least 1.5 times longer than telotarsus (Fig. 2F). Telotarsus with two dorsal, subequal, anterior and posterior denticles. Claw with ventral denticle.

All areas of penis with cuticular setae.

Telson

Nine trichomes *a*, six of which placed on internal side (*i*) and three on external side (*e*) of the group of trichomes *b-c1-c3* (Fig. 2L). Most trichomes of caudal penicil lost; those remaining with one to three hooks.

REMARKS

The position of the antennal sensilla of article VI is the same as in *L. anisorhabdus* Condé & Terver, 1964. The labral ornamentations are spe-

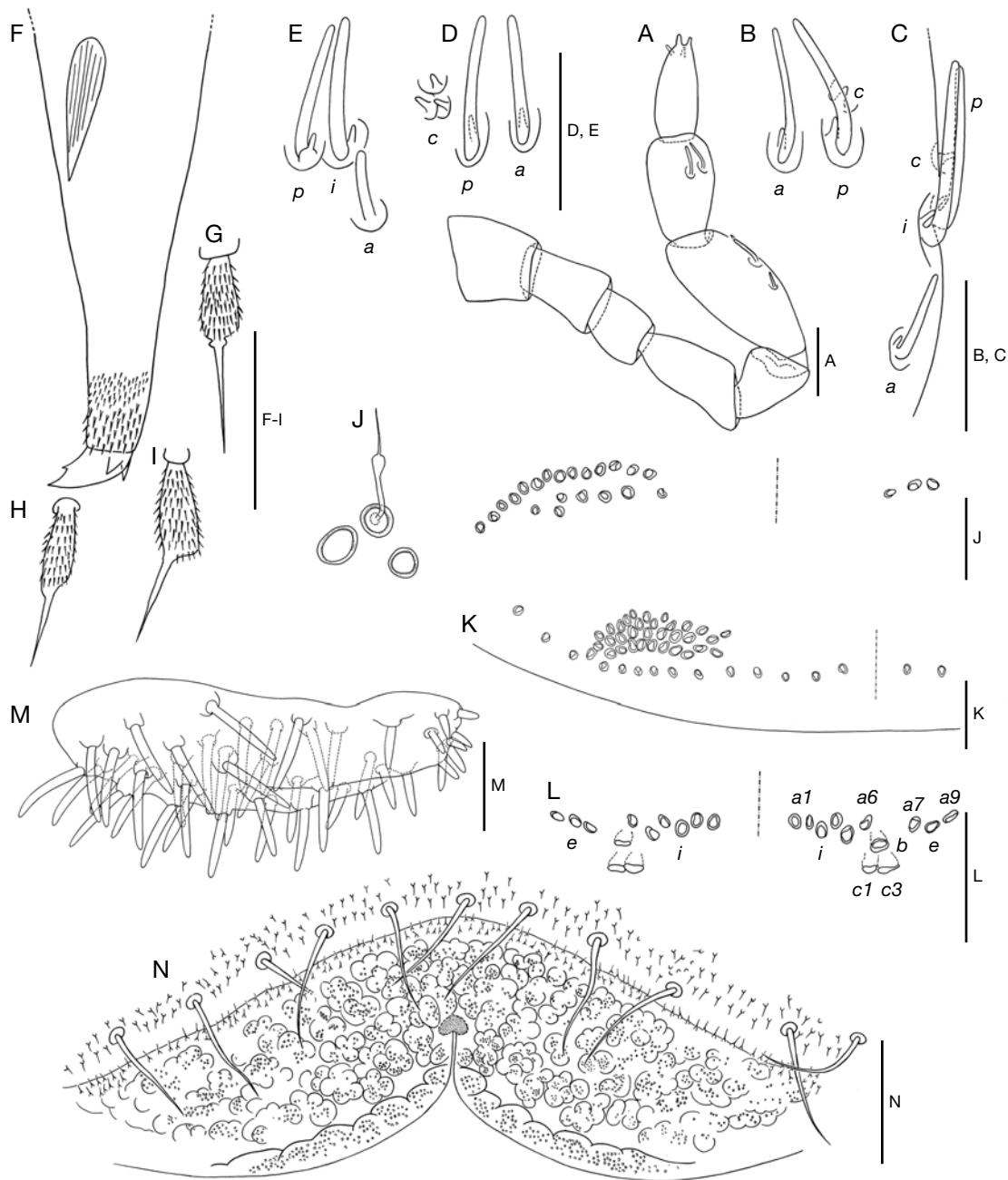


FIG. 2. — *Lophoturus monserratensis* n. sp., ♂ holotype; **A**, right antenna; **B**, **C**, detail of sensilla on articles VII and VI of antenna **A**; **D**, **E**, sensilla on left antennal VII and VI articles; **F**, distal part of tarsus II and telotarsus of left leg I; **G**, seta of prefemur left leg I; **H**, **I**, coxal setae of left legs III and I; **J**, insertions of trichomes of left posterior tuft on vertex and detail of anterior left trichobothrium; **K**, **L**, insertions of trichomes on left half tergite II and anterior part of telson; **M**, right palpus of gnathochilarium; **N**, labrum. Abbreviations: *a*, anterior sensillum basiconicum; *a1-a6*, insertions of trichomes on internal side *i*; *a7-a9*, on external side *e* of the group *b-c1-c3*; *c*, sensillum coeloconicum; *i*, *p*, intermediate and posterior sensilla basiconica. Scale bars: **A**, **J-L**, 50 µm; **B-F**, **G-I**, **M**, **N**, 25 µm.

cific and differ from those known in other species of *Lophoturus*, such as *L. niveus* (Loomis, 1934), *L. aequatus* (Loomis, 1936), *L. quebradanus* (Chamberlin, 1955) and *L. obscurus* (Brolemann, 1931).

Lophoturus sturmi n. sp.
(Fig. 3)

TYPE MATERIAL. — **Colombia.** Near Bogotá, Páramo de Monserrate, forest, litter and moss, 3060–3200 m, 11.XI.1968, H. Sturm leg., ad. ♀ holotype (ZMUC). — Bogotá, above Calle 82, mountain forest, litter, 2750 m, 26.VII.1968, H. Sturm leg., 1 ♂ and 1 ♀ paratypes; 1 ad. ♂ without antenna and 1 larva 8 p.l. not described, paratypes.

ETYMOLOGY. — This species is dedicated to the collector, Prof. Helmut Sturm (University of Hildesheim, Germany).

DESCRIPTION

Measurements

Body length (without caudal pencil) 3.50 mm (holotype); 2.30 and 3 mm (male and female paratypes). Tarsus II length of 13th leg 180 µm (holotype); 170 µm (male).

Head

Anophthalmic.

Vertex with one pair of posterior tufts consisting of two rows: anterior row of 15 trichomes (10 and 11 in male), posterior row with three to five trichomes; the distance between each tuft is greater than their length.

The proportions of the antennal articles are represented in Fig. 3G; length of VIth article about twice the diameter. Antennal article VI with three dorsal basiconica sensilla: the anterior *a* is the thinnest and most apical, the intermediate thick basiconica *i* is the most proximal and the longest (Fig. 3H); one sensillum coeloconicum *c* is near the posterior sensillum *p*, but more apical. Antennal article VII with two dorsal sensilla basiconica: anterior one thinner and shorter than posterior; one sensillum coeloconicum posterior *c* (Fig. 3I). Holotype with no sensillum coeloconicum on the left article VI; two sensilla coeloconica on

the left article VII but only one thicker sensillum basiconicum (anomaly caused by the regeneration of antenna). Cylindrical funiculus of the anterior trichobothrium with its apex bulbing.

Labrum clothed with about 50 cuticular setae on the posterior part of each half area (Fig. 3E). No lamellar finger on anterior margin, only an undulate line alongside. Clypeo-labrum with 10 setae along the posterior margin. Palpi of gnathochilarium with 19 sensilla in females, 34 and 35 sensilla in male.

Trunk

The trichomes of each tergite are grouped into two, separate, oval clusters with an additional posterior row, except on collum, subdivided in its middle (Fig. 3F); distance between clusters much greater than length of each. In the holotype, collum with tufts of 67 and 70 trichomes; lateral left protuberance of collum with seven trichomes; each oval cluster of tergites II to X with 40 to 50 (except 58 on tergite X) trichomes and posterior row with 29 to 37. In male, tufts of collum with 48 and 52 trichomes, ovale clusters of tergites II to IX with 32 to 40 trichomes, posterior row with 29 to 42.

Legs

Coxae, trochanters, prefemora and femora bearing pubescent oval setae (Fig. 3B); in holotype, coxae I to XII bearing two to four setae (five on right coxa VII); trochanters, prefemora, femora with one seta (two on right femur VI). Tibiae I and II with a small seta (Fig. 3C, D) only in holotype. Spine of tarsus II longer than telotarsus: length of spine to claw ratio about 1.25 (Fig. 3A). Telotarsus with two subequal anterior and posterior dorsal denticles; claw without ventral denticle.

Male: All areas of penis with cuticular setae.

Telson

Ten to 13 trichomes *a*, of which six to eight placed on internal side and three (holotype) to five on external side of the group of trichomes *b-c1-c3*. Trichomes of caudal pencil with one or three (rarely two, five or six) hooks.

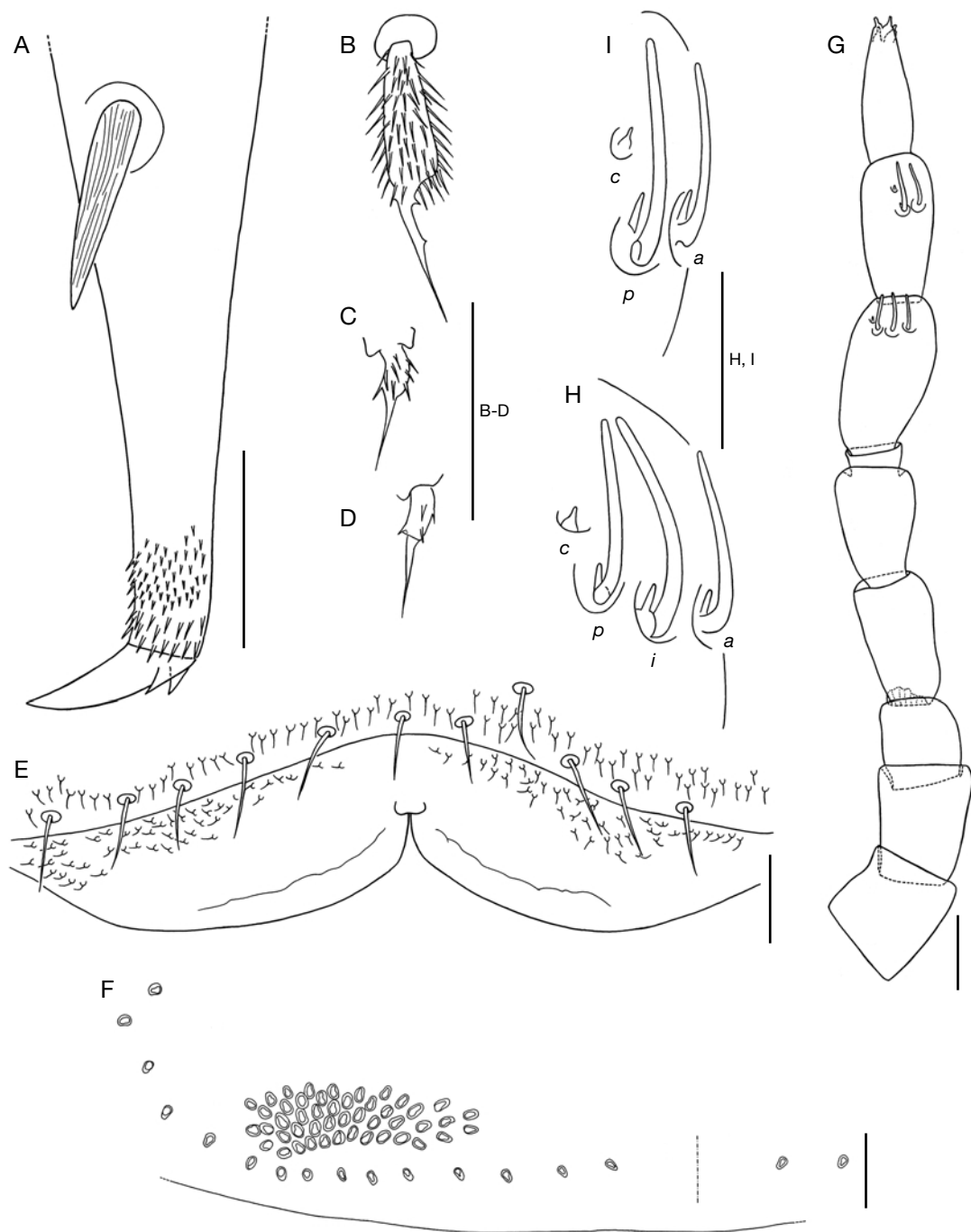


FIG. 3. — *Lophoturus sturmi* n. sp.; **A-F**, ♀ holotype; **A**, distal part of tarsus II and telotarsus of left leg II; **B**, coxal seta of right leg II; **C**, **D**, tibial setae of right legs I and II; **E**, labrum; **F**, insertions of trichomes on left part of tergite II; **G-I**, ♀ paratype; **G**, left antenna; **H**, **I**, detail of sensilla on articles VI and VII of antenna G. Abbreviations: *a*, anterior sensillum basiconicum; *c*, sensillum coeloconicum; *i*, *p*, intermediate and posterior sensilla basiconica. Scale bars: A-E, H, I, 25 µm; F, G, 50 µm.

AFFINITIES

The antennae of *L. sturmi* n. sp. are similar to those of *L. drifti* whereas the labrum is similar (apart from some additional cuticular setae) to that of *L. adisi* Ishii, Nguyen Duy-Jacquemin & Condé, 1999.

Lophoturus longisetis (Pocock, 1894)
(Fig. 4A-P)

Polyxenus longisetis Pocock, 1894: 474, 475, pl. 37, fig. 1.

Lophoturus longisetis – Condé & Terver 1979: 137-143, figs 1-4.

MATERIAL EXAMINED. — **Trinidad.** Mt St Benedict, under stones, 5.VII.1999, M. Judson leg., 1 ad. ♀, 1 ♀ 12 p.l.

Guadeloupe. Basse Terre, Parc national, at the second fall of the Carbet, 14.VI.1978, Mauriès leg., 1 ad. ♂; Vernou, trace Merwart around 400 m, 11.IV.1979, Mauriès leg., 2 ad. ♀♀; “Moscou”, litter, 24.IV.1999, Rollard & Maréchal legs, 1 ad. ♂; trace des crêtes, 16°09'250"N, 61°43'818"W, litter, 26.XI.2000, Cornic & Maréchal legs, 1 ad. ♂; forêt de Féfé, litter, 28.XI.2000, Cornic & Maréchal legs, 1 ad. ♂, 1 ♂ 12 p.l.; Trace Victor Hugues, 16°07'471"N, 61°07'471"W, litter, 2.XII.2000, Cornic & Maréchal legs, 1 ♂ 12 p.l., 1 ♂ 10 p.l.; La Madeleine, high attitude forest, litter, 4.XII.2000, Cornic & Maréchal legs, 1 ad. ♀; Crête Corossol, litter, 6.XII.2000, Cornic & Maréchal legs, 1 ad. ♀, 1 ♂ 12 p.l.; massif Grosse Montagne, litter, 26.VI.2001, Rollard & Maréchal legs, 2 ♂♂ ad.; Route Traversée, camp Piolet, litter, 23.VI.2001, Rollard & Maréchal legs, 2 ad. ♀♀ and 2 ♀♀ 12 p.l. (not described); 1 ♂ 12 p.l.; 1 ind. 8 p.l.; peak (995 m) between 3 crêtes and Merwart, litter, 27.VI.2001, Rollard & Maréchal legs, 1 ♂ 10 p.l.; îlet Pigeon, small hill, litter, 22.VI.2001, 1 ind. 8 p.l.; 23.VI.2001, Rollard & Maréchal legs 2 ♀♀ ad. — Grande terre, îlet du Gosier, 12.VII.1976, Balazuc leg., 1 ad. ♂; îlet Fajou, dry coastal forest, litter, 30.VI.2001, Rollard & Maréchal legs, 1 ad. ♂.

Les Saintes. 27.III.1979, Mauriès leg., 1 ♂ 12 p.l.

Martinique. Anse Figuier, inside downling coconut trunk, 24.II.1981, Mauriès leg., 2 ♀♀ ad., 2 ♂♂ ad., 1 ♂ 12 p.l.; State forest, Le Diamant, 1981?, 1 ♂ ad.

DESCRIPTION

Adult female from Trinidad

Measurements. Body length (without caudal pencil) 2.60 mm. Tarsus II length of 13th leg 172 µm.

Head. Anophthalmic.

Posterior vertex with one pair of tufts arranged in two rows, anterior row consisting of 18 and 19 trichomes and posterior row of five and seven. Length of each row is twice more as great as distance between them.

Antennae elongated (Fig. 4A); length of VIth article two and a half to three times the diameter; right article VI with two sensilla basiconica, the anterior *a* is slightly longer and thicker than the posterior *i*; one sensillum coeloconicum *c* near the posterior sensillum, but more apical (Fig. 4C). Right article VII with two sensilla basiconica, the anterior *a* is thinner than the posterior *p*; posterior sensillum coeloconicum *c* is present (Fig. 4B). Left antenna is regenerated, with seven articles; the homologue of article VI (Fig. 4D, F) has only one sensillum basiconicum corresponding to *a* or *i* and one rudimentary sensillum with the small associated cone at its base, as described in the original diagnose (Condé & Terver 1979: 139, fig. 2C); the two left sensilla basiconica of the homologous article VII are identical with the right, there are three sensilla coeloconica (Fig. 4E).

Cylindrical funiculus of the anterior trichobothrium with its apex slightly bulbing. Antero-medial margin of labrum with 3 + 3 lamellar fingers; one row of cuticular setae on the posterior edge of labrum; about 30 small cuticular setae elsewhere (Fig. 4J). Clypeo-labrum with 11 setae. Palpi of gnathochilarium with 17 left and 18 right (Fig. 4K) sensilla.

Trunk. On each tergite the trichomes are grouped into two separate oval areas; tufts of column with 77 and 79 trichomes, lateral protuberance of tergite I with nine and 10 trichomes in a row. Clusters of tergites II to VIII with 40 to 53 trichomes and tergites IX and X with about 30. The posterior row with a short median interruption, containing 40 to 46 trichomes on tergites II to IX.

Legs. Coxae I to XIII bearing four to eight setae (except right coxa XIII: three), trochanters with two to three setae (one in three cases), prefemora generally with three setae (once one and four; six times two); femora with one to two setae (once

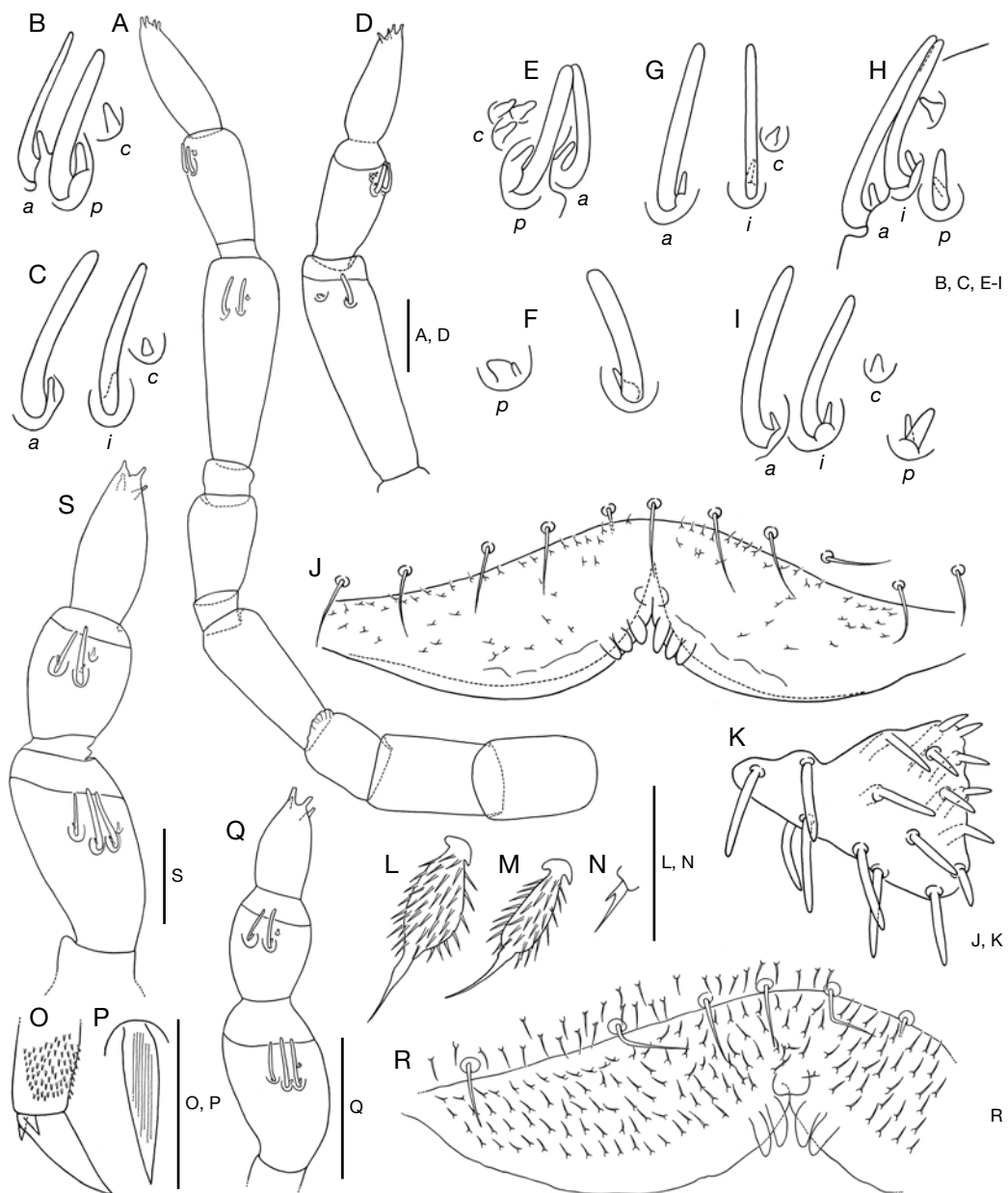


FIG. 4. — **A-P**, *Lophoturus longisetis* (Pocock, 1894); **A-F**, ♀ adult from Trinidad; **A**, right antenna; **B, C**, detail of sensilla on articles VII and VI of antenna **A**; **D**, three left apical antennal articles; **E, F**, detail of sensilla on articles VII and VI of **D**; **G**, ♀ with 12 p.l. from Trinidad, right article VI sensilla; **H, I**, ♂ adults from Guadeloupe Basse Terre "Moscou" and forêt de Féfé, right article VI sensilla; **J-P**, ♀ adult from Trinidad; **J**, labrum; **K**, right palpus of gnathochilarium; **L, M**, coxal setae of right leg I and left leg III; **N**, tibial seta of left leg I; **O, P**, claw and tarsal spine of right leg XI; **Q**, *Lophoturus drifti* Condé & Terver, 1964, larva with 4 p.l. from French Guyana, three left apical antennal articles; **R, S**, *Lophoturus fluctans* Condé & Terver, 1964, larva with 8 p.l. from French Guyana; **R**, labrum; **S**, three left apical antennal articles. Abbreviations: **a**, anterior sensillum basiconicum; **c**, sensillum coeloconicum; **i, p**, intermediate and posterior sensilla basiconica. Scale bars: **A, D, Q, S**, 50 µm; **B, C, E-P, R**, 25 µm.

three), only tibiae I to IV with one small seta (Fig. 4N). The setae, except for those of tibia, have an ovoid base covered with setules and extended by an acute process (Fig. 4L, M). Telotarsus with two, dorsal, subequal anterior and posterior denticles. Claw without ventral denticle (Fig. 4O).

Telson. Six trichomes *a* of which four placed on internal side and two on external side of the group of trichomes *b-c1-c3*. Trichomes of caudal pencil with two (rarely three) hooks.

Female with 12 pairs of legs from Trinidad

Measurements. Body length (without caudal pencil) 2.80 mm. Tarsus II length of 12th leg 161 µm. Posterior part of vertex with one pair of tufts arranged in an anterior row, consisting of 15 and 17 trichomes, and a posterior row of four. Labrum with four to five rows of cuticular setae, anteromedian margin with 3 + 3 lamellar fingers, the two externals shorter than the four medians. Palpi of gnathochilarium with 18 sensilla. Antennal characters identical with those of the adult female. Each article VI with two sensilla basiconica, the anterior *a* being larger and thicker than the posterior *p*; one sensillum coeloconicum *c* (Fig. 4G).

REMARKS ABOUT THE SPECIMENS FROM TRINIDAD

The adult female corresponds to the redescription of *Lophoturus longisetis* (Pocock, 1894) given by Condé & Terver (1979); its labrum is ornamented with a few cuticular setae and is similar to the adult male from Saint-Barthelemy Island (Condé & Terver 1979: 143), but it differs from this male in having the claws without ventral denticle, as in the syntypes described in 1979. On the other hand, these two females have lost the rudimentary sensillum of antennal article VI, except on the regenerated left antenna where one sensillum basiconicum is absent. Perhaps there is an evolution towards a reduction of the number of sensilla within this population from Trinidad.

Specimens from Guadeloupe

Coloration. The specimens, after a short time in alcohol, have the body white, with black or pale brown trichomes.

Measurements. Body length (without caudal pencil), adults: 2.30 to 3.10 mm (seven males) and 3.25 and 3.80 mm (three females); three males 12 p.l.: 2.60 to 2.80 mm; two males 10 p.l.: 1.70 mm and 2.40 mm.

Tarsus II length of 13th leg, adults: 146 to 214 µm (males), 196 and 230 µm (females).

Tarsus II length of 12th leg in males 12 p.l.: 129 and 148 µm. Second tarsal length of 10th leg in males 10 p.l.: 122 and 131 µm.

Antennal sensilla of article VI are the same as those of the type species, with two sensilla basiconica *a* and *i* and one very short sensillum basiconicum; the size of small sensillum *p* varies slightly according to the individuals (Fig. 4H, I). One exception: the two males from massif Grosse Montagne, to which the small sensillum *p* is very regressed as in males from Saint-Barthelemy and Saint-Eustatius (see Condé & Terver 1979: 139, fig. 2C).

Labrum covered by cuticular spines; anteromedian margin with 2 + 2 lamellar fingers, occasionally 2 + 3 (one adult male and one adult female) or 2 + 1 (two adult males).

Palpi of gnathochilarium with 34 to 47 sensilla in adult males, 29 to 37 in two males 12 p.l., 23 and 25 in male 10 p.l., 18 in adult females.

Claw of telotarsus with ventral denticle in females from îlet Pigeon and in males from îlet du Gosier and îlet Fajou.

Specimens from Martinique

Measurements. Body length (without caudal pencil), adults: 2.50 to 3.10 mm; male 12 p.l.: 2.70 mm.

Tarsus II length of 13th leg, adults: 187 µm (males), 190 and 195 µm (females).

Tarsus II length of 12th leg in males 12 p.l.: 178 µm.

Antennal sensilla of article VI are the same as those of the type species.

Anteromedian margin with 2 + 2 lamellar fingers (two adult males, one adult female and male 12 p.l.) and 2 + 1 (one female and one male). Sometimes the lateral fingers are smaller than the median ones. Palpi of gnathochilarium with 48 sensilla each in one adult male, 37 and 40 in the male 12 p.l.

Claw of telotarsus with ventral denticule.

INTRASPECIFIC VARIATIONS

Sensilla basiconica of the VIth antennal article

The size of the small sensillum varies according to the individual in Guadeloupe (Fig. 4H, I); its regression is more or less significant – for example, there is only a rudimentary basis and the usual small basal cone in males from Massif Grosse montagne, as in specimens from St Eustatius and St Barthelemy (Condé & Terver 1979), whereas it has completely disappeared in the two females from Trinidad (except on regenerated left antenna of adult V).

Subordinate sexual characters

Some males have tarsi II of legs XII and XIII with a ventral oval area covered by curved hairs larger than cuticular spines usually present; at the same time the tarsal diameter is larger. According to this male character, Condé & Terver (1979) have created the sub-species *Lophoturus longisetis scopiger* for the specimens from Guadeloupe and Desirade Island. The males from two stations (Anse figuiers, Forêt Diamant) from southern Martinique have the same character.

Among the males of species *Lophoturus longisetis* that I examined from Guadeloupe, only the adults from Îlet du Gosier and Îlet Fajou show this character of *L. l. scopiger*. The males from Trace des Crêtes, Trace Victor Hugues and Massif Grosse montagne are typical for *Lophoturus longisetis longisetis* (Pocock, 1894); the other males from Basse Terre: fall of Carbet, “Moscou”, Route Traversée, Corosol and Forêt de Féfé have the tarsi XII and XIII with intermediate characters, the area covered by curved hairs is smaller than that of *Lophoturus longisetis scopiger* and the size of the tarsi is normal. Material from the other three stations (Vernou, Trace Merwart, La Madeleine and Îlet Pigeon) includes only females and the male from Saintes Island has lost its 12th pairs of legs, hence this character can not be observed. Consequently, the modifications of the tarsi indicate the polymorphism of *Lophoturus longisetis* (Pocock, 1894). In Guadeloupe, the populations with tarsi corre-

sponding to these *Lophoturus longisetis scopiger* were collected in Grande Terre and in the middle of Basse Terre (Maison de la Forêt, Castarel-sous-Vernou: Condé & Terver 1979). At Trace des Crêtes, one typical male of *Lophoturus longisetis* was collected about 3 km from Maison de la Forêt. In the South of Basse Terre, the males have intermediate characters. Additional localities should be necessary to explain this polymorphism.

Lophoturus drifti (Condé & Terver, 1964) (Fig. 4Q)

Alloproctinus drifti Condé & Terver, 1964: 9-16, figs 3A-H, 4A-K.

MATERIAL EXAMINED. — **French Guyana.** Saül, savanna of Daschine inselberg, 10.IV.1997, 1 ad. ♀, 1 ad. ♂, 3 ind. 8 p.l., 1 ind. 6 p.l., 1 ind. 5 p.l., 3 ind. 4 p.l. (additional material: 1 ♂ 12 p.l., 1 ind. 10 p.l., 2 ind. 8 p.l., 2 ind. 6 p.l. not described); edge of forest, J.-P. Mauriès & R. Garrouste legs, 1 ♀ 10 p.l. — Mont Chauve, commune Regina, 25.IV.1997, R. Garrouste leg., 1 ind. 10 p.l., 1 ind. 8 p.l. (additional material: 1 ind. 10 p.l. and 2 ind. 6 p.l. not described). — Piste de Ste Elie, 20 km SW Sinnamary, experimental areas with litter, Bassin-Versant haut, 1 ad. ♀, Bassin-Versant haut (0-1cm soil), 1 ad. ♀ and Bassin-Versant haut (litière), 27.IV.1980, 1 ad. ♀ (not described), Bassin-Versant haut (humus), 9.V.1980, 1 ad. ♀, Bassin-Versant, niveau moyen, 1 ind. 5 p.l., 1 ind. 4 p.l. and 4 ind. 3 p.l., J.-M. Betsch leg.

DESCRIPTION

Adults

Measurements. Body length (without caudal pencil) 1.80 to 2.20 mm. Tarsus II length of 13th leg 105 to 116 µm.

Head. Posterior tufts with anterior row of 10 to 13 trichomes and posterior row of three to five trichomes. Females: palpi of gnathochilarium with 18 sensilla; males with about 30 sensilla.

Labrum covered by five rows of cuticular setae; antennae similar to types from Tambahredjo, Surinam (Condé & Terver 1964).

Trunk. Tergite of collum with 28 to 41 trichomes, lateral protuberance of collum with four or five trichomes. Each oval cluster on tergites II to X with 16 to 25 trichomes and posterior row II to VIII with 20 to 33.

Telson. Four to eight trichomes *a*, of which three to five placed internal side and one to three external side of the group of trichomes *b-c1-c3*.

Stadium VI (two females with 10 pairs of legs)

Measurements. Body length (without caudal pencil) 1.40 and 1.50 mm. Tarsus II length of 10th leg 89 µm.

Head. Posterior tufts with anterior row of eight or nine trichomes and posterior row of three or four trichomes. Palpi of gnathochilarium with 18 sensilla in females, about 30 in males.

Trunk. Collum with 19 trichomes in larva from Mont Chauve, 26 and 27 in other larva; lateral protuberance with three or four trichomes. Each oval cluster on tergites II to VIII with 11 to 13 trichomes (Mont Chauve) and 15 to 19 (Saül); posterior row II to VI with 17 to 26.

Telson. Seven to 10 trichomes *a*, of which five to seven placed on internal side and two to three on external side of group of trichomes *b-c1-c3*. Ventrocaudal transitory tufts (present in larvae only) with 13 and 16 trichomes.

Stadium V (three larvae with eight pairs of legs)

Measurements. Body length (without caudal pencil) 1.50 mm. Tarsus II length of 8th leg 82 to 84 µm.

Head. Posterior tufts with anterior row of eight to 10 trichomes and posterior row of three to four trichomes. Palpi of gnathochilarium with 18 sensilla.

Trunk. Collum with 19 to 22 trichomes; lateral protuberance with three trichomes. Each oval cluster of tergites II to VII with 10 to 13 trichomes (Mont Chauve) or 12 to 16 (Saül); posterior row II to VI with 14 to 20.

Telson. Six to eight trichomes *a*, of which four to six placed on internal side and two to three on external side of the group of trichomes *b-c1-c3*. Transitory tufts with 13 or 14 trichomes.

Stadium IV (two larvae with six pairs of legs)

Measurements. Body length (without caudal pencil) 0.95 and 1.25 mm. Tarsus II length of 6th leg 79 and 82 µm.

Head. Posterior tufts with anterior row of eight or nine trichomes and posterior row of three or four trichomes. Palpi of gnathochilarium with 18 sensilla.

Trunk. Collum with 18 or 19 trichomes; lateral protuberance with three trichomes. Each oval cluster of tergites II to VI with eight to 14 trichomes; posterior row II to V with 12 to 17.

Telson. Six or seven trichomes *a*, of which four or five placed on internal side and two on external side of group of trichomes *b-c1-c3*. Transitory tufts with 11 or 12 trichomes.

Stadium III (two larvae with five pairs of legs)

Measurements. Body length (without caudal pencil) 0.70 and 0.90 mm. Tarsus II length of 5th leg 70 µm.

Head. Posterior tufts with anterior row of six and seven trichomes and posterior row of two to three trichomes. Palpi of gnathochilarium with 18 sensilla.

Trunk. Collum with 12 and 14 trichomes; lateral protuberance with two trichomes. Each oval cluster of tergites II to V with six to nine trichomes; posterior row II to IV with nine to 17.

Telson. Five to six trichomes *a*, of which two to four placed on internal side and two on external side of group of trichomes *b-c1-c3*. Each transitory tuft with 11 to 12 trichomes.

Stadium II (four larvae with four pairs of legs)

Measurements. Body length (without caudal pencil) 0.55 to 0.80 mm. Tarsus II length of 4th leg 65 to 70 µm.

Head. Posterior tufts with anterior row of seven trichomes (six in three cases) and posterior row of two trichomes. Palpi of gnathochilarium with 18 sensilla.

Trunk. Collum with 10 to 12 trichomes; lateral protuberance with two trichomes. Each oval cluster of tergites II to IV with five to seven trichomes; posterior row II and III with seven to 11.

Telson. Five trichomes *a*, of which four placed on internal side and one on external side of the group of trichomes *b-c1-c3*. Transitory tufts with 10 to 13 trichomes.

Stadium I (four larvae with three pairs of legs)

Measurements. Body length (without caudal pencil) 0.40 to 0.55 mm. Tarsus II length of 3th leg 62 and 64 µm.

Head. Posterior tufts with anterior row of five trichomes (six in one case) and posterior row of one trichome. Palpi of gnathochilarium with 18 sensilla.

Trunk. Collum with seven or eight trichomes; lateral protuberance with two trichomes. Each oval cluster of tergites II and III with three or four trichomes; posterior row II and III with two to five.

Telson. Four trichomes *a*, of which three placed on internal side and one on external side of the group of trichomes *b-c1-c3*. Transitory tufts with about 10 trichomes.

REMARKS

The larvae of stadiums I and II are observed for the first time in *L. drifti*; the larva I has only two sensilla on antennal article VI (the anterior sensillum basiconicum *a* has not yet appeared), but the larva II shows the same antennal sensilla (Fig. 4Q) as in the later larvae and adults.

Lophoturus fluctuans (Condé & Terver, 1964)
(Fig. 4R, S)

Alloproctinus fluctuans Condé & Terver, 1964: 2-9, figs 1, 2.

MATERIAL EXAMINED. — **Guyane française.** Near Saint-Eugène MNHN station and barrage EDF Petit Saut, 4°51'52"N, 53°3'37"W, litière, 10.V.1997, J.-C. de Massary leg., 1 ind. 8 p.l.

DESCRIPTION

Stadium V (one larva with eight pairs of legs)

Measurements. Body length (without caudal pencil) 1.30 mm. Tarsus II length of 8th leg 105 µm.

Head. Posterior tufts with anterior row of nine and 10 trichomes and posterior row of two trichomes. Anteromedian margin of labrum with 2 + 2 lamellar fingers (Fig. 4R); five rows of cuticular setae along most of labrum.

Palpi of gnathochilarium with 18 sensilla.

Trunk. Collum with about 20 trichomes; lateral protuberance with three trichomes. Each oval cluster of tergites II to VII with 10 to 14 trichomes; posterior row II to V with 19 to 23.

Legs. Telotarsus with two subequal dorsal denticles.

Telson. Seven trichomes *a*, of which five placed on internal side and two on external side of the group of trichomes *b-c1-c3*. Each transitory tuft with 15 trichomes.

REMARKS

The specimen from Saint-Eugène is larger (tarsal II length of 8th leg 105 µm) than the larva V syntype from Dirkshoop, Surinam, described by Condé & Terver (1964) (tarsal II length of 8th leg 77 µm). Its labrum has 2 + 2 lamellar fingers, whereas that of the larva V syntype has only 1 + 1. Apart from these slight differences, the larva from Saint-Eugène corresponds to the description of the syntypes *Lophoturus fluctuans* Condé & Terver, 1964, particularly in the antennal sensilla (Fig. 4S).

Genus *Ancistroxenus* Schubart, 1947

Ancistroxenus comans (Loomis, 1934)
(Fig. 5)

Lophoproctus comans Loomis, 1934: 4, 5, pl. 1, fig. 1.

Plesioproctus comans – Condé 1964: 61-66, figs 1, 2.

Ancistroxenus comans – Ishii *et al.* 1999: 247-251, figs 47-52.

MATERIAL EXAMINED. — **Colombia.** Near Bogotá, Páramo San Cayetano, 3600 m in *Espeletia barclayana*, 23.VIII.1985, H. Sturm leg., 3 ad. ♀♀, 2 ad. ♂♂ (85/166 Kol.).

French Guyana. Nouragues, 4°5'N, 52°41'W, 8 km North of Saut Pararé, 110 m, moss, end V.1999, Boistel leg., 2 ♀♀ 10 p.l. (described), 1 ind. 10 p.l. and 2 ind. 8 p.l. (not observed). — Mountain Roura, 1.5 km NE Fourgassié, W of the road (damaged forest), litter and downling trunks, 140-150 m, 12.II.1992, J.-P. Mauriès & J.-M. Betsch legs, 1 ♀ 10 p.l.

Pear Island. Isla del Rey, Panamabay, under bark "Monaumen", Enghoff leg., 1 ad. ♀.

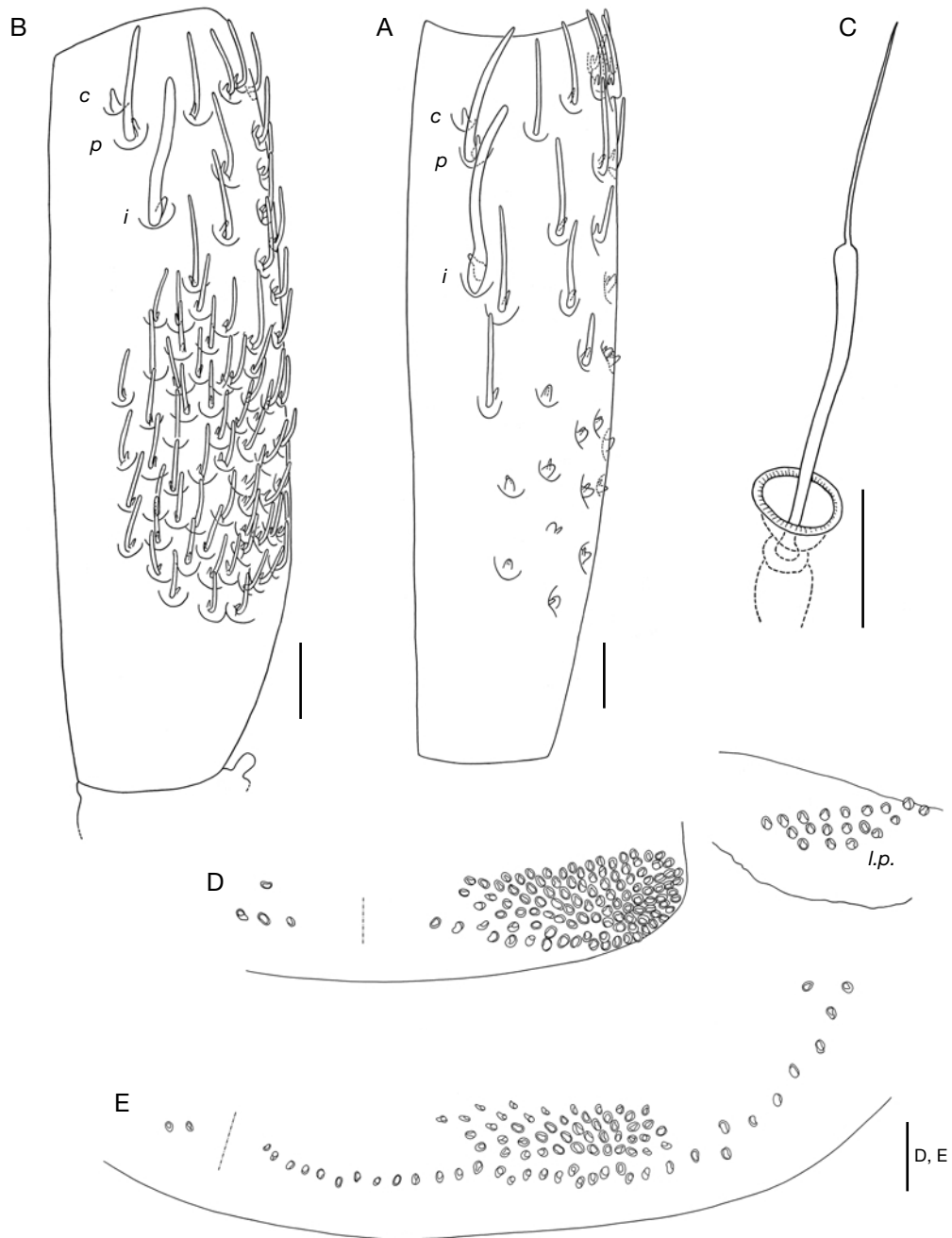


FIG. 5. — *Ancistroxenus comans* (Loomis, 1934); **A**, ♀ 10 p.l. from French Guyana, Montagne de Roura, VIth left antennal article; **B-E**, ♀ Isla del Rey; **B**, VIth left antennal article; **C**, anterior right trichobothrium; **D**, **E**, insertions of trichomes on the right half of collum and tergite II. Abbreviations: *c*, sensillum coeloconicum; *i*, intermediate sensillum; *l.p.*, lateral protuberance; *p*, posterior sensillum basiconicum. Scale bars: A-C, 25 µm; D, E, 50 µm.

DESCRIPTION

Two adults examined (one male and one female) from Colombia

Measurements. Body length (without caudal pencil), 4.10 mm (male); 5 mm (female) (5.70 mm with pencil). Tarsus II length of 13th leg 269 µm (male), 295 µm (female).

Head. Length of VIth antennal article 2.6 (male) or 3 (female) times longer than broad. VIth article with 16 (male) and 18 (female) sensilla basiconica plus the two thick – intermediate *i* and posterior *p* (see Condé 1964) – sensilla situated one above the other. Sensillum coeloconicum *c* present. Posterior tufts with anterior row of 13 and 14 (male), 16 and 17 (female) trichomes; posterior rows of two (male), five and six (female) trichomes. Labrum with two posterior rows of cuticular spines plus some lateral spines below these rows; clypeo-labrum with 10 setae along posterior margin. Palps of gnathochilarium with 24 sensilla (female); 39 and 43 (male).

Trunk. Collum with 83 and 88 trichomes; each lateral protuberance with 14 trichomes in female. Oval cluster of tergites II and VI with 35 to 39 (male), or 54 to 59 (female) trichomes; posterior row II and VI with 31 to 32 (male), or 33 to 40 (female).

Telson. 11 (male) or 17 (female) trichomes *a*, of which nine (male) or 12 and 15 (female), placed on internal side and four (male) or five (female) on external side of the group of trichomes *b-c1-c3*.

One female from Pear Island, Isla del Rey

Measurements. Body length (without caudal pencil) 4.20 mm. Tarsus II length of 13th leg 267 µm.

Head. Length of VIth antennal article three times greater than diameter. VIth left article with 71 sensilla basiconica plus the intermediate *i* and posterior *p* sensilla; sensillum coeloconicum *c* present (Fig. 5B); right antenna missing. Posterior tufts of vertex with anterior rows of 25 and 29 trichomes, posterior rows of five and six trichomes. Labrum with one posterior row of cuticular spines; clypeo-labrum with 12 setae along the posterior margin.

Trunk. Collum with 108 and 109 trichomes; lateral protuberance (*l.p.* in Fig. 5D) with 19 and 24 trichomes. Tergites II (Fig. 5E) and VI with a pair of oval clusters of 37 to 46 trichomes each and a posterior row of 69 and 70 trichomes.

Telson. Eleven trichomes *a*, of which seven placed on internal side and four on external side of the group of trichomes *b-c1-c3*.

Stadium VI: three females with 10 pairs of legs from French Guyana

Measurements. Body length (without caudal pencil) 2.70 to 3 mm. Tarsus II length of 10th leg 220 to 230 µm.

Head. Ratio length to diameter: 2.90 (Nouragues) and 3.50 (Roura). VIth article with 18 and 23 (in first larva), 22 and 23 (in second larva from Nouragues) sensilla basiconica plus the intermediate *i* and posterior sensilla *p*; the sensillum coeloconicum *c* is present. Posterior tufts with anterior row of 10 (once) to 11 trichomes, posterior rows of two (once) to three trichomes. On left antennal article VI, the female from Roura has 15 small proximal sensilla basiconica, 14 usual sized sensilla basiconica plus *i*, *p* and *c* (Fig. 5A); right antenna is missing. Labrum with one posterior row of cuticular spines plus some lateral spines below this row.

Telson. Eleven to 14 trichomes *a*, of which seven to nine placed on internal side and four to seven on external side of the group of trichomes *b-c1-c3*.

REMARKS

The position and the size of the VIth antennal article sensilla basiconica *i* and *p* seem invariable in this species. On the contrary the other sensilla basiconica, which are thinner and shorter than *i* and *p*, are variable in number, position and size; some among them are very short, as, for example, in the female from Montagne de Roura in French Guyana (Fig. 5A). With a total of 73 sensilla basiconica, the female of Isla del Rey holds the record for sensilla number, previously belonged to a female from Colombia with 31 sensilla (Terver *et al.* 1968). A comparison between the two adult females, from Isla del Rey and Colombia, shows that the trichome numbers of

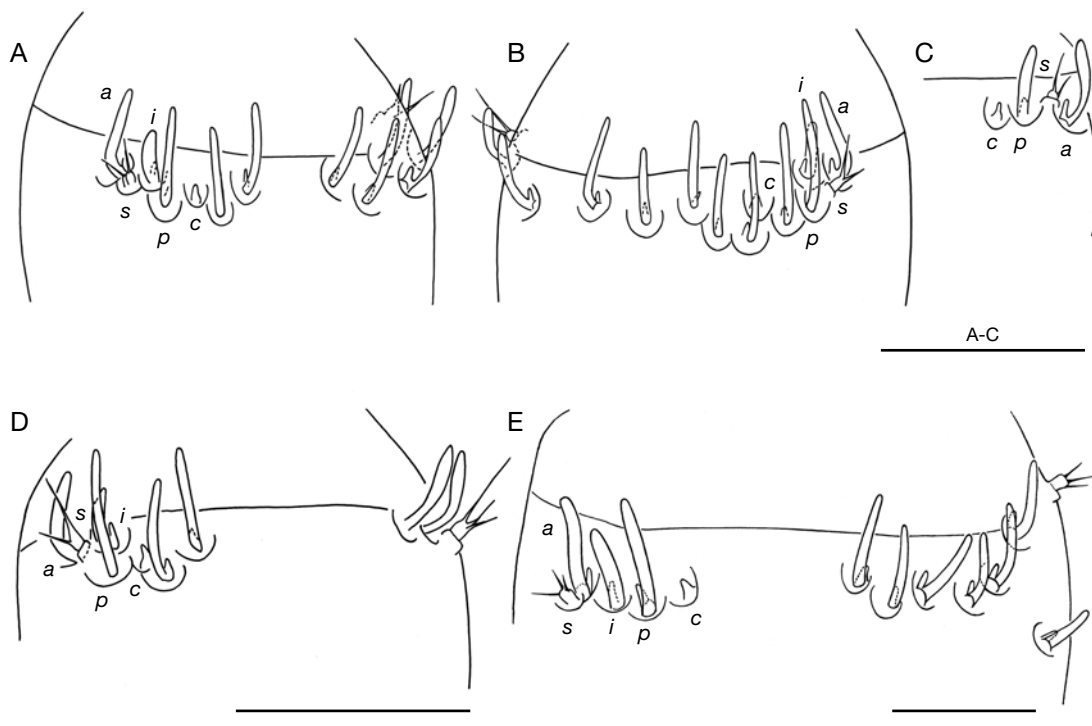


FIG. 6. — **A-C**, *Macroxenodes* aff. *amazonicus* Ishii, Nguyen Duy-Jacquemin & Condé, 1999, larva 10 p.l. from Tobago; **A**, sensilla on left antennal article VI; **B**, **C**, sensilla on right antennal articles VI and VII; **D**, larva 6 p.l. from Tobago, sensilla on left antennal antepenultimate article; **E**, *Macroxenodes amazonicus* Ishii, Nguyen Duy-Jacquemin & Condé, 1999, holotype ♀, sensilla on antennal article VI (after Ishii et al. 1999: 267, fig 87). Abbreviations: **a**, anterior sensillum basiconicum; **c**, sensillum coeloconicum; **i**, **p**, intermediate and posterior sensilla basiconica; **s**, setiform sensillum. Scale bars: 25 µm.

the vertex tufts, collum and posterior row on tergites are higher in the female from Isla del Rey (the median interruption of the posterior row is shorter); on the contrary, the number of trichomes in the tergite clusters is higher in the female from Páramo San Cayetano in Colombia.

Family POLYXENIDAE Lucas, 1840
Genus *Macroxenodes* Silvestri, 1948

Macroxenodes aff. *amazonicus*
Ishii, Nguyen Duy-Jacquemin & Condé, 1999
(Fig. 6)

MATERIAL EXAMINED. — **Tobago.** Castara Bay, under bark of live tree, 9.VII.1999, 1 ♀ 10 p.l. — Man of War Bay, North of Charlotteville, track to Pigeon Peak, under bark of live tree, 11.VII.1999, M. Judson leg., 2 ind. 8 p.l. (only one described), 1 ind. 6 p.l.

DESCRIPTION

Stadium VI (female with 10 pairs of legs)

Measurements. Body length (without caudal pencil) 1.85 mm. Tarsus II length of 10th leg 95 µm.

Head. Posterior tufts with anterior row of 12 and posterior row of eight trichomes. Surface of labrum covered with numerous, small, cuticular setae and two anterior rows of granules; antero-medial margin of labrum with 6 + 1 + 5 lamellar fingers. Clypeo-labrum with 10 setae along posterior margin.

Each outer palpus of gnathochilarium with 15 sensilla basiconica pseudo-segmented at apex, each inner palpus with 22 sensilla.

Trunk. Position of trichomes as in *M. amazonicus*, with maximum number of trichomes (73) on tergite IV; lateral protuberance of collum with four and five trichomes.

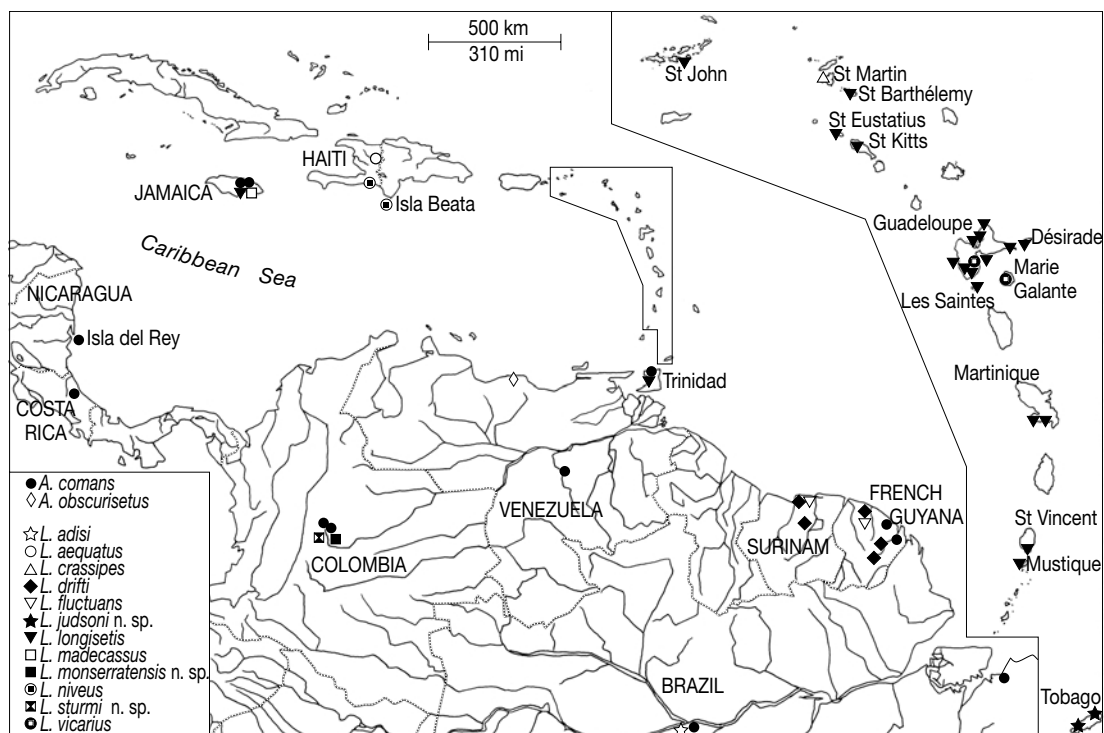


FIG. 7. — Distribution of the genera *Ancistroxenus* Schubart, 1947 and *Lophoturus* Brolemann, 1931 (Penicillata) in Central America (except Mexico) and northern South America. *L. anisorhabdus* Condé & Terver 1964, collected in Guatemala in a orchid clump from an unknown locality, is not shown on this map.

Stadium V (one larva with eight pairs of legs)

Measurements. Body length (without caudal pencil) 1.40 mm. Tarsus II length of 8th leg 85 μ m.

Head. Posterior tufts with anterior row of 10 and posterior row of seven and eight trichomes. Surface of labrum as in larva VI, but with 4 + 1 + 4 lamellar fingers. Clypeo-labrum with eight setae along posterior margin.

Each outer palpus of gnathochilarium with 15 sensilla basiconica, each inner palpus with 21 sensilla.

Trunk. Forty four to 46 trichomes on tergite II to IV; lateral protuberance of collum with three and four trichomes.

Stadium IV (one larva with six pairs of legs)

Measurements. Body length (without caudal pencil) 1.25 mm. Tarsus II length of 6th leg 78 μ m.

Head. Posterior tufts with anterior row of eight and 10 trichomes; posterior row of seven and eight trichomes. Surface of labrum as larva VI, but with 4 + 4 lamellar fingers. Clypeo-labrum with nine setae along posterior margin.

Each outer palpus of gnathochilarium with 13 sensilla basiconica, each inner palpus with 21 sensilla.

Trunk. Forty two to 45 trichomes on tergite II to V; each lateral protuberance of collum with five trichomes.

REMARKS

As in *M. amazonicus* from Brazil vicinity of Manaus, antennal article VI has a dorsal group composed of three sensilla basiconica *a*, *i*, *p*, one setiform sensilla *s* between *a* and *i*, one sensillum coeloconicum *c* posterior to *p*. However, in contrast to typical *M. amazonicus*, the posterior sen-

TABLE 1. — Distribution of the genera *Ancistroxenus* Schubart, 1947 and *Lophoturus* Brolemann, 1931 in Central America (except Mexico) and northern South America.

	<i>L. adisi</i>	<i>L. aequatus</i>	<i>L. anisorhabdus</i>	<i>L. crassipes</i>	<i>L. drifti</i>	<i>L. fluctuans</i>	<i>L. judsoni</i> n. sp.	<i>L. longisetis</i>	<i>L. madecassus</i>	<i>L. monserratisensis</i> n. sp.	<i>L. niveus</i>	<i>L. sturmi</i> n. sp.	<i>L. vicarius</i>	<i>A. comans</i>	<i>A. obscurisetus</i>
Guatemala			+												
Costa Rica														+	
Colombia										+		+		+	
Venezuela														+	+
Surinam					+	+									
French Guyana					+	+								+	
Brazil	+													+	
Trinidad								+						+	
Tobago							+								
Mustique								+							
Saint-Vincent								+							
Martinique								+							
Les Saintes								+							
Marie Galante													+		
Désirade								+							
Guadeloupe								+					+		
Saint-Kitts								+							
Saint-Eustatius								+							
Saint-Barthélemy								+							
Saint-Martin				+											
Saint-John								+							
Isla Beata											+				
Haïti		+									+				
Jamaica								+	+					+	
Isla del Rey														+	

sillum *p* is thinner than *i* and additional thin sensilla are present: one or two (Fig. 6D) in stadium IV, three or four in stadium V. In the right antenna of larva VI, the separation between the

dorsal and postero-ventral groups of antennal sensilla is not evident (Fig. 6B), unlike the holotype of *Macroxenodes amazonicus* (Fig. 6E). These larvae clearly differ from the *Macroxenus* sp. from

near Manaus (Ishii *et al.* 1999), which has numerous sensilla arranged in one or two rows and a different arrangement of trichome areas on the tergites. *Macroxenodes* is one of three genera of Polyxenidae (with *Macroxenus* Brölemann, 1917 and *Chilexenus* Silvestri, 1948) with the gnathochilarial sensilla basiconica showing a pseudo-segmentation at apex.

DISTRIBUTION

All the Penicillata considered here belong to the family Lophoproctidae, except for three larval Polyxenidae of the genus *Macroxenodes*, collected under the bark of trees. The majority of specimens were collected in litter, a common habitat for Lophoproctidae, which are endogean and anophthalmic. At present, only two genera of this family, *Lophoturus* and *Ancistroxenus*, are known from Central America (except Mexico) and northern South America. The map (Fig. 7) and Table 1 show their distribution. We can notice that we also find the two species *L. drifti* and *L. fluctuans* from Surinam in the neighbouring French Guyana. A significant polymorphism is observed in two species: *A. comans* (probably due to its large distribution) and *L. longisetis*. In this latter species, the three sensilla basiconica of sixth antennal article, which are characteristic of genus *Lophoturus*, are evolving towards a reduction to two sensilla.

Acknowledgements

I thank Dr H. Enghoff (Zoologisk Museum, Copenhagen) for the loan of material and the colleagues (MNHN) who have collected for me.

I am grateful to Dr M. Judson (MNHN) who kindly corrected the English manuscript. I wish to express my sincere thanks to M. Bertoini to skillfully inking the drawings (except Fig. 1) and to D. Geffard for drawing the map and computer-arranging the figures.

REFERENCES

- CONDÉ B. 1964. — *Lophoproctus comans* Loomis, type d'un remarquable genre inédit de Pénicillates (Diplopodes). *Revue française d'Entomologie* 31 (1): 61-66.
- CONDÉ B. & NGUYEN DUY-JACQUEMIN M. 1977. — De l'utilisation nouvelle du nom de genre *Lophoturus* Brölemann (Diplopodes, Pénicillates). *Bulletin du Muséum national d'Histoire naturelle 3^e Série*, (477), *Zoologie* 334: 909-915.
- CONDÉ B. & TERVER D. 1964. — Pénicillates du Surinam et du Guatemala (Diplopodes, Lophoproctidae). *Studies on the Fauna of Surinam and Other Guyanas* 7 (22): 1-21.
- CONDÉ B. & TERVER D. 1965. — Les Pénicillates de Haïti décrits par H. F. Loomis. *Studies Fauna of Curaças and other Carribean Islands* 22 (87): 124-134.
- CONDÉ B. & TERVER D. 1979. — Missions Muséum Antilles : Diplopodes Pénicillates. *Revue d'Écologie et de Biologie du Sol* 16 (1): 137-149.
- ISHII K., NGUYEN DUY-JACQUEMIN M. & CONDÉ B. 1999. — The first penicillate millipedes from the vicinity of Manaus, Central Amazonia, Brazil (Diplopoda: Polyxenida). *Amazoniana* 15 (3-4): 239-267.
- LOOMIS H. F. 1934. — Three new Cuban millipedes, with notes on two little-known species. *Bulletin of the Museum of Comparative Zoology*. 75 (9): 357-363.
- POCOCK R. I. 1894. — Contributions to our knowledge of the arthropod fauna of the West Indies. Part III: Diplopoda and Malacopoda with a supplement on the Arachnida of the class Pedipalpi. *Linnean Society Journal, Zoology* 24: 473-544.
- TERVER M., TERVER D. & CONDÉ B. 1968. — Représentants continentaux du genre *Plesioproctus* (Diplopodes Pénicillates, Lophoproctidés). *Entomologiske Meddelelser* 36: 191-211.

*Submitted on 27 June 2001;
accepted on 14 January 2002.*