

Pseudoscorpions of the genera *Pachyolpium*, *Novohorus* and *Amblyolpium* (Pseudoscorpiones: Olpiidae) from St. Eustatius (Statia), St. Martin (Sint Maarten) and Anguilla (Lesser Antilles, Leeward group)

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Tooren, D. van den. Pseudoscorpions of the genera *Pachyolpium*, *Novohorus* and *Amblyolpium* (Pseudoscorpiones: Olpiidae) from St. Eustatius (Statia), St. Martin (Sint Maarten) and Anguilla (Lesser Antilles, Leeward group).

Zool. Med. Leiden 76 (24). 27.xii.2002: 451-472, figs. 1-9.— ISSN 0024-0672.

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Key words: Pseudoscorpiones; Olpiidae; *Pachyolpium confusum* spec. nov.; *Novohorus incertus*; *Amblyolpium martinensis* spec. nov.; St. Eustatius (Statia); St. Martin (Sint Maarten); Anguilla; keys.

Two new species of pseudoscorpions are described: *Pachyolpium confusum* spec. nov. from St. Eustatius (Statia) and *Amblyolpium martinensis* spec. nov. from St. Martin (Sint Maarten). Another species: *Novohorus incertus* (Beier, 1931) is recorded from 2 new localities: Anguilla and St. Martin (Sint Maarten).

A comparative examination is performed to check how far the ratio palpal femur length/palpal patella length is useful as a taxonomic character to separate a number of species belonging to the genus *Pachyolpium*.

Two keys are given: i. An adaptation and extension of Hoff's key (1945) to the westindian species of the genus *Pachyolpium*, relying on present-day knowledge of interspecific relationship within the genus. ii. A key to separate genera belonging to the family Olpiidae with two tactile setae on the dorsum of palpal femur.

Introduction

This contribution applies to representatives of the pseudoscorpion genera *Pachyolpium* Beier, 1931, from St. Eustatius (Statia), *Novohorus* Hoff, 1945, from Anguilla and St. Martin (Sint Maarten), and *Amblyolpium* Simon, 1898, from St. Martin (Sint Maarten). The material studied is part of the collection of Dr P. Wagenaar Hummelinck, which is deposited in the National Museum of Natural History, Leiden.

Methods

No modifications have taken place since my previous paper (van den Tooren, 2002), although this time part of the dissected specimens has been studied from temporary mounts in glycerine.

Measurements are in mm; station numbers, ratios and counts with mean values in italics; number of specimens, slide numbers and aberrant data in parentheses.

L = length, W = width, D = depth, T = tactile seta.

Abbreviations used to indicate trichobothria on palpal fingers (Chamberlin, 1931: 138): movable finger (exterior surface): *t* = terminal, *st* = subterminal, *sb* = subbasal, *b* = basal; fixed finger (exterior surface): *et* = exterior terminal, *est* = exterior subterminal, *esb* = exterior subbasal, *eb* = exterior basal; fixed finger (interior surface): *it* = interior terminal, *ist* = interior subterminal, *isb* = interior subbasal, *ib* = interior basal. Abbreviation *sb* also used to indicate subbasal tactile seta on dorsum palpal femur; *sm* = submedial tactile seta on dorsum palpal femur.

Systematics

Family *Olpiidae* Chamberlin, 1930

Subfamily *Olpiinae* Banks, 1895

Diagnosis (revised after Hoff, 1945: 1). —Tergites and sternites undivided. Flagellum with 3, seldom with 2 or 4 setae. Arolea simple, undivided.

Genus *Pachyolpium* Beier, 1931

Diagnosis in short (after Beier, 1931: 310; emended by Hoff, 1945: 2; 1964: 26; and indirectly emended by Muchmore, 1986: 84-85), after it appeared to be evident that Hoff's effort in his last mentioned paper to distinguish between the genera *Olpiolum* and *Pachyolpium* did not led to usable characteristics.—Carapace longer than wide with 4 well developed eyes. Tergites usually with a maximum of 12 setae. Chelicerae with flagellum of 3 bladelike setae. A tactile seta in the proximal part of the dorsal surface of the (palpal) femur. Venom ducts in chelal fingers moderately short. Nodus ramosus in fixed finger proximal to *et*, in movable finger distal to *t*. The location of trichobothria *est* and *it* in fixed chelal finger never together near midpoint of finger. Patella of first leg much shorter than femur, with freely movable articulation between the parts.

The genus *Pachyolpium* Beier, 1931 may be separated from following related genera:

- from *Apolpium* Chamberlin, 1930, by having its femur longer than patella in leg I, trichobothrium *ist* of fixed chelal finger proximal to *est* (versus respectively femur as long or shorter than patella in leg I, and *ist* clearly distad of *est*);

- from *Olpiolum* Beier, 1931 (redefined by Muchmore, 1986) by the location of both trichobothria *est* and *it* never near the middle of fixed chelal finger (versus both *est* and *it* near the middle of fixed chelal finger);

- from *Leptolpium* van den Tooren, 2002, by the length of the venom duct in movable chelal finger (about 1/5-1/6 x finger length), nodus ramosus in fixed chelal finger proximad of *et*, and *it* proximad of *est* (versus respectively venom duct in movable chelal finger usually shorter (1/5-1/10 x finger length), nodus ramosus in fixed chelal finger at level of *et*, and (as in *Olpiolum*) both *it* and *est* near the middle of fixed chelal finger).

Although it becomes increasingly difficult to separate the accepted, but as it appears repeatedly, very variable species of the genus *Pachyolpium*, herewith an attempt has been made for the sake of further investigation to adapt and to extend Hoff's key from 1945 relying on the nowadays knowledge. In this key has also been fitted in: *Pachyolpium amplum* (Hoff, 1964: 24-25, figs. 9-10), type locality: Jamaica; *P. machadoi* (Heurtault, 1980: 64-84, figs 26-49), type locality: Caracas, Venezuela; *P. atalanticum* Mahnert & Schuster, 1981: 265-273, figs. 1-13, type locality: Bermuda; and *P. granulatatum* Beier, 1954, as a result of my own study of 2 paratypes (♂ and ♀) from Los Roques, Venezuela.

Not inserted once more are: *Pachyolpium brevifemoratum* (Balzan, 1890), type locality: Paraguay; *P. crassichelatum* (Balzan, 1890) and *P. erratum* (Balzan, 1890), both from Brazil, as it seems highly unlikely that these species belong to the caribbean area.

Key to the species of the genus *Pachyolpium* from the West Indies

(a tentative adaptation and extension of the key by Hoff (1945))

1. Length of movable finger 0.4 mm or less, subequal to length of hand without

- pedicel; palpal patella 0.45 mm or less in length, slightly larger than femur; length/width ratio of palpal femur 2.3 or less; width of palpal chela about 0.31 mm; body length 2 mm or less *P. brevipes* (With, 1907)
- Length of movable chelal finger 0.4 mm or more; palpal patella 0.45 mm or more in length; length/width ratio of palpal femur 2.6 or more (except in female of *P. adiposum* Hoff, 1945 = *P. isolatum* (R.V. Chamberlin, 1925) comb. nov. Muchmore, 1984 (male unknown): length/width ratio 2.36-2.45 and in male of *P. arubense variabilis* van den Tooren, 2002: length/width ratio 2.46-2.65) 2
 - 2. Length/width ratio of palpal femur less than 2.8 3
 - Length/width ratio of palpal femur 2.8 or more 7
 - 3. Length/width ratio of palpal femur 2.35-2.45; length/width ratio of palpal patella 2.1; length of patella 0.60 mm ♀ (♂ unknown) *P. isolatum* (R.V. Chamberlin, 1925)
 - Length/width ratio of palpal femur more than 2.45 4
 - 4. Length/width ratio of palpal femur 2.46-2.65; length of movable chelal finger 0.49-0.59 mm ♀ *P. arubense variabilis* van den Tooren, 2002
 - Length/width ratio of palpal femur 2.63-2.78 5
 - 5. Palpal femur and patella 0.7 mm or more in length, length of movable chelal finger 0.63-0.70 mm ♀ *P. arubense variabilis* van den Tooren, 2002
 - Palpal femur and patella 0.6 mm or less in length 6
 - 6. Body less than 2 mm long; length/width ratio of palpal patella 2.3 *P. reimoseri* Beier, 1931
 - Body of male about 2 mm long, female longer; length/width ratio of palpal patella 2.4-2.45 *P. puertoricensis* Hoff, 1945
 - 7. Body length less than 2 mm, except in female of *P. atlanticum* Mahnert & Schustert, 1981: body length 1.73-2.60 mm; length of movable chelal finger less than 0.5 mm 8
 - Body length 2.1 mm or more; length of movable chelal finger more than 0.5 mm 9
 - 8. Middle tergites with no more than 10 or 12 setae *P. confundens* Hoff, 1945
 - Middle tergites with up to 23 setae *P. atlanticum* Mahnert & Schuster, 1981
 - 9. Palpal patella with length 0.8 mm or more; palpal femur more than 0.78 mm long *P. amplum* (Hoff, 1964)
 - Palpal patella and femur 0.75 mm or less in length 10
 - 10. Length of palpal femur about 0.9 times length of patella *P. confusum* spec. nov.
 - Length of palpal femur more than 0.9 times length of patella or subequal in length 11
 - 11. Movable chelal finger less than 0.6 mm long, except in female of *P. machadoi* (Heurtault, 1980): finger length 0.550-0.626 mm 12
 - Movable chelal finger usually 0.6 mm or more long 14
 - 12. Length/width ratio of palpal patella 2.3-2.4 ♂ *P. granulatatum* Beier, 1954
 - Length/width ratio of palpal patella more than 2.4 13
 - 13. Length/width ratio of palpal patella 2.45 ♂ *P. furculiferum* (Balzan, 1891) *)
 - *) No palpal measures of female given.
 - Length/width ratio of palpal patella 2.55-2.80 ♂ *P. arubense arubense* Beier, 1936 (in ♀ 2.43-2.69)
 - 14. Inner margin of palpal femur slightly concave, movable chelal finger shorter than hand with pedicel ♀ *P. granulatatum* Beier, 1954
 - Inner margin of palpal femur more or less convex, length of movable chelal finger

- subequal to the length of hand with pedicel or longer 15
15. Movable chelal finger usually somewhat longer than hand with pedicel, body length 2.225-2.290 mm *P. machadoi* (Heurtault, 1980)
- Movable chelal finger length subequal to the length of hand with pedicel 16
16. Length/width ratio of palpal femur 3.0; movable chelal finger more than 0.66 mm long; length of palpal patella 0.7 mm ♂ (♀ unknown) *P. aureum* Hoff, 1945
- Length/width ratio of palpal femur 3.05 or more: length of movable chelal finger less than 0.65 mm; length of palpal patella less than 0.68 mm *P. medium* Hoff, 1945

Pachyolpium confusum spec. nov.

Pachyolpium furculiferum (Balzan, 1891); Beier, 1932: 193, 195 (misidentification).

Pachyolpium furculiferum (Balzan, 1891); Hoff, 1945: 3 (probably wrongly based on Beier's description).

Material.— **St. Eustatius** (Statia): # 423, Toby Gut, S. slope of Quill, 14.vii.1949: 3 ♂♂ (514, 518-519), 4 ♀♀ (515-517, 520), 2 tritonymphs (523-524) and 1 deutonymph (526); # 425, near Top of White Wall, 6.vii.1949: 1 ♀ (186) and 2 protonymphs (1741-1742); # 426/428, slope of Quill, above White Wall, 6.vii.1949: in Quill, E side, 12.vii.1949: 1 ♀ (1743), 1 deutonymph (1747) and 2 protonymphs (1744, 1746). (location fully described by Wagenaar Hummelinck, 1953: 21, fig. 20: sketch-map excl.).

The separation of *Pachyolpium confusum* spec. nov. from *Pachyolpium furculiferum* (Balzan, 1891) is based on the ratio of palpal femur L/palpal patella L of about 0.9 versus about 1.0. The figure of 0.9 for the ratio is used earlier by Hoff (1945: 3) to separate *P. furculiferum* from other species with ratios of about 1.0. Probably his appointment

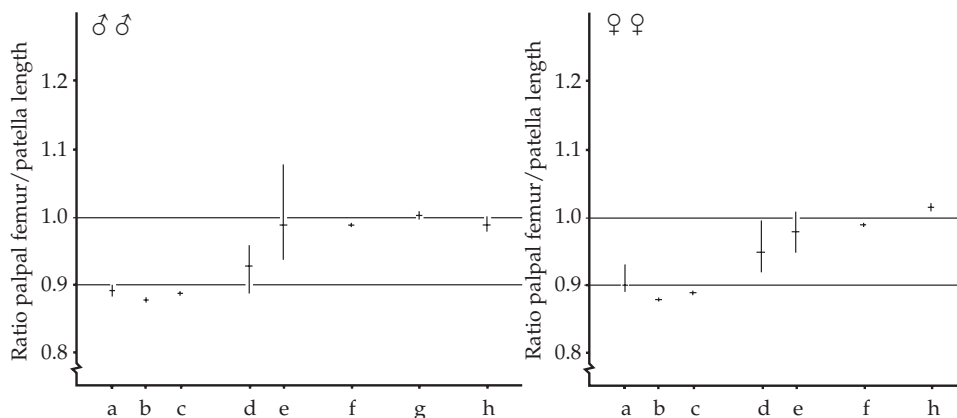


Fig. 1. Ratio palpal femur/patella length in males and females of species/subspecies belonging to the genus *Pachyolpium*: a. *Pachyolpium confusum* spec. nov.; a = 3 ♂♂ + 6 ♀♀ studied; b+c. *Pachyolpium furculiferum*; b = according to Balzan, 1891, pl 12, fig 3a; c = according to Beier, 1932: 195; d. *Pachyolpium arubense arubense* Beier, 1931; (17 ♂♂ + 17 ♀♀ studied before by present author); e. *Pachyolpium arubense variabilis* van den Tooren, 2002; (7 ♂♂ + 4 ♀♀ studied before by present author); f. *Pachyolpium crassichelatum* (Balzan, 1890); (according to Beier, 1932: 95); g. *Pachyolpium aureum* Hoff, 1945; (2 ♂♂ studied by Hoff); h. *Pachyolpium medium* Hoff, 1945; (3 ♂♂ + 3 ♀♀ studied by Hoff).

was grounded on Beier's measurements of an unknown specimen (1932: 195): femur L. 0.63 mm, tibia L 0.71 mm, i.e. ratio palpal femur L/palpal tibia L= 0.89. However Balzan (1891: 538) states in his original description of *Olpium furculiferum* from Venezuela: "Tibia femur longitudine aequans" (i.e. tibia equal to femur in length), and mentions the actual length as: "Fem., long 0.650.- Tib., long 0.650", i.e. ratio palpal femur L/palpal tibia L= 1.0.

Nevertheless an accurate measuring of the lengths of femur and tibia in fig. 3a, pl. 12 results in a ratio of 0.88 (fig.1), but possibly this may be caused by distortion of the pedipalp during reproduction.

From what precedes the conclusion must be drawn that Beier and Hoff did not have *P. furculiferum* in hand, but another species, which shows great resemblance to the new described species.

The very subtle distinguishing mark (ratio palpal femur L/palpal patella L 0.9 versus 1.0) has caused further examination. To that end above-mentioned ratio has been compared in adults and nymphs of next relevant species/subspecies, based upon data from literature and my own study: *Pachyolpium confusum* spec. nov., *P. arubense arubense* Beier, 1931, *P. arubense variabilis* van den Tooren, 2002, *P. crassichelatum* (Balzan, 1890), *P. aureum* Hoff, 1945, and *P. medium* Hoff, 1945.

The results are given in graphs (figs. 1-2). From here the conclusion may be drawn that in broad lines the distinguishing mark mentioned, compared with the average length ratios of palpal femur and patella in both sexes of the material examined, holds (with the exception of *P. arubense arubense*: 0.93/0.95). As far as data are available about the discussed length ratio in the nymphal stages, there is a tendency to observe during the development from a higher to a lower level, i.e. for *P. confusum* spec. nov. from an average of 1.0 in protonymphs, to 0.935 in deutonymphs, to 0.84 in tritonymphs.

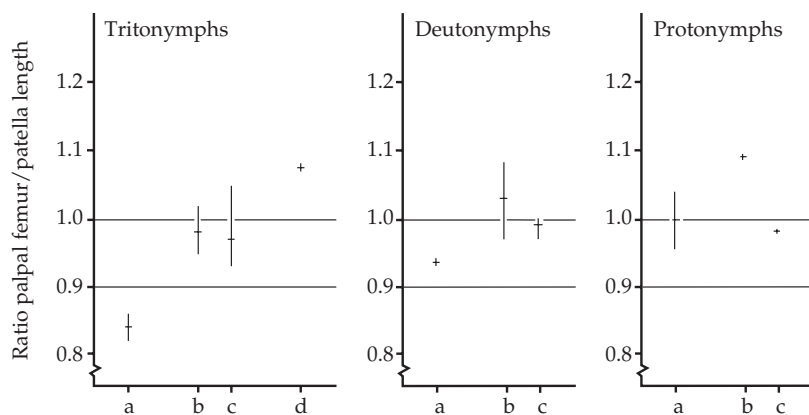


Fig. 2. Ratio palpal femur/patella length in tritonymphs, deutonymphs and protonymphs of species/subspecies belonging to the genus *Pachyolpium*: a = *Pachyolpium confusum* spec. nov., (respectively 2, 2 and 4 specimens studied); b = *Pachyolpium arubense arubense* Beier, 1931, (respectively 32, 19 and 2 specimens studied); c = *Pachyolpium arubense variabilis* van den Tooren, 2002, (respectively 9, 3 and 2 specimens studied); d = *Pachyolpium medium* Hoff, 1945, (2 tritonymphs studied by Hoff).

Diagnosis.— *Pachyolpium confusum* spec. nov. can be distinguished from related species by the following combination of characters: length of movable chelal finger (δ : 0.51–0.55; δ : 0.53–0.58), length/width ratio of palpal femur (δ : 2.68–2.78; δ : 2.72–2.87), and ratio palpal femur length/patella length (about 0.9).

Description.— Male. Description based on 3 specimens (figs. 3a–d). Moderately pigmented, with orange-red palpal chelae and brownish-red patellae, somewhat darker brownish-red carapace, pale yellow-brown basal segments of pedipalps and body (tergites), and very pale reddish-yellow legs and chelicerae.

Body L 2.34–2.42–2.47.

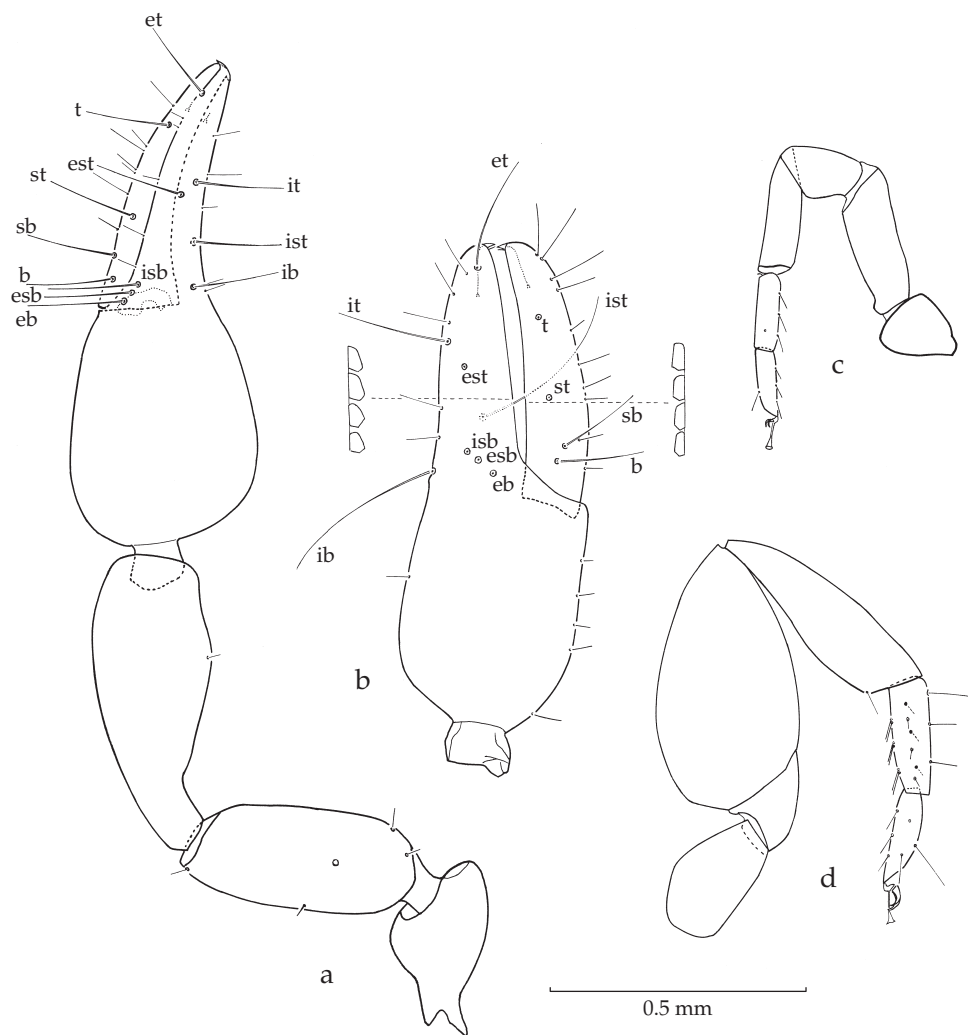


Fig. 3. *Pachyolpium confusum* spec. nov. Male from St. Eustatius (no. 514): (a) dorsal aspect of left pedipalp; (b) extero-lateral aspect of right chela; (c) posterior aspect of left leg I; (d) anterior aspect of left leg IV. Attention focussed on chaetotaxy of metatarsus IV.

Carapace: L 0.70-0.72-0.76, greatest W 0.51-0.52-0.53, L/W 1.32-1.37-1.40; eyes: 2 pairs, well developed, anterior margin with 2 medial and on each side 2 lateral setae, posterior margin with 4 setae.

Abdomen: chaetotaxy, tergites I-X (2): 6:6:8:8:8:8:10: 1T8T1; sternites IV-X (2): (4-5-6): 6:8:8:10:10: (T1T4T1T-T1.5T3.5T1.5T-T2T3T2T).

Chelicera (2): L 0.27, W 0.15, L/W 1.78, and 0.36 to 0.39 $\times$ carapace L; movable finger L (2) 0.20; galea: L 0.05, main stalk terminally bifid, small lateral ramus arising on about distal fifth; movable finger with sharp conical subapical lobe; serrula exterior with 24-25 blades; serrula interior (1) with about 14 blades; flagellum consists of 3 spiny setae, anteriormost one 0.07 long, unilaterally pinnate with about 11 rays in distal half of anterior margin, middle one 0.05 long, unilaterally pinnate in distal quarter of anterior margin, posteriormost one 0.04 long, pinnate in distal quarter of anterior margin. Inner margin of fixed finger (from distal to proximal) with 3 sclerotic and 4 non-sclerotic very flat retroconical teeth. Chaetotaxy: 5 setae on exterior surface of hand and 1 near movable finger tip.

Pedipalp: trochanter 0.34-0.34-0.365/0.19-0.20-0.205, L/W 1.72-1.78-1.84; femur 0.54-0.54-0.55/0.195-0.20-0.205, L/W 2.68-2.74-2.78; patella 0.60-0.61-0.61/0.23-0.23-0.24, L/W 2.50-2.61-2.70; femur L 0.885-0.895-0.90 $\times$ patella L; chela without pedicel 0.95-0.96-0.975/0.35-0.37-0.39, L/W 2.49-2.61-2.76; chela with pedicel 0.995-1.02-1.03/W same, L/W 2.625-2.76-2.965; hand without pedicel 0.45-0.47-0.48/0.35-0.35-0.36, L/D 1.29-1.32-1.35; hand with pedicel 0.52-0.54-0.56, D same, L/D 1.47-1.51-1.53; movable finger L 0.51-0.54-0.55, 1.08-1.15-1.21 $\times$ L hand without pedicel, and 0.96-1.0-1.07 $\times$ L hand with pedicel. *sb* on dorsum palpal femur 0.15-0.16-0.16 from exterior key point of femoral base. Femur L 3.44-3.54-3.73 $\times$ distance from *sb* to exterior key point of femoral base.

Fixed finger with 38-40-41 marginal teeth; *et* up to level of 4/5th-4.7-5th marginal tooth from apical tooth; *it* up to level of 19th-19.8-21th marginal tooth from apical tooth; nodus ramosus up to level of 9th-9.8-10/11th marginal tooth from apical tooth; fixed finger L (arbitrarily considered equal to movable finger L) 5.28-5.345-5.515 $\times$ venom duct L.

Movable finger with 36-39-41 marginal teeth; *t* up to level of 14th-15-17th marginal tooth from apical tooth; nodus ramosus up to level of 9th-10-11/12th marginal tooth from apical tooth; movable finger L 4.91-5.09-5.34 $\times$ venom duct L.

First leg: trochanter 0.15-0.15-0.16/0.12-0.12-0.13, L/D 1.20-1.21-1.22; femur 0.26-0.27-0.28/0.10-0.10-0.105, L/D 2.68-2.72-2.77; patella 0.16-0.17-0.175/0.095-0.10-0.10, L/D 1.67-1.72-1.75; femur L 1.62-1.63-1.67 $\times$ patella L; tibia 0.24-0.25-0.25/0.07, L/D 3.35-3.40-3.43; tibia L 1.425-1.455-1.49 $\times$ patella L; metatarsus 0.15-0.16-0.16/0.05, L/D 3.09-3.11-3.14; tarsus 0.14-0.145-0.15/0.04, L/D 3.40-3.45-3.53; L claws 0.03-0.03-0.04; arolium L from base claws: 0.05, and 1.36-1.49-1.57 $\times$ L claws.

Fourth leg: trochanter 0.26-0.26-0.265/0.15, L/D 1.76-1.77-1.79; femur 0.22/0.13, L/D 1.67; patella 0.51-0.52-0.53/0.27-0.28-0.29, L/D 1.85-1.865-1.895; femur + patella 0.615-0.62-0.62/0.27-0.28-0.29, L/D 2.19-2.26-2.30; tibia 0.45-0.455-0.465/0.12-0.125-0.13, L/D 3.55-3.59-3.64; metatarsus 0.23-0.23-0.24/0.07-0.07-0.08, L/D 3.10-3.11-3.13; tarsus 0.19-0.20-0.20/0.05, L/D 3.80-3.82-3.83; L claws 0.05-0.55-0.06; arolium L from base claws 0.075-0.83-0.09, and 1.43-1.51-1.59 $\times$ L claws.

Chaetotaxy of metatarsus of fourth leg: exterior lateral T+2 (T close to proximal end), dorsal 3, interior lateral 3 $\times$ 2, ventral 3.

Chaetotaxy of male genital area: (3-0-3) on anterior operculum; (7-0-7) along anterior lip; (2-0-2)-(2.67-0-2.67)-(3-0-3) on face of posterior lip; 2 pairs of medial setae along posterior margin of posterior lip; (2-0-2)-(2-0-2.67)-(2-0-3) on posterior operculum.

Female. Description based on six specimens (figs. 4a-d).

Moderately pigmented, but darker in colour than male, priming-colour of palpal chelae, tibiae and carapace brownish red, basal segments of pedipalps, abdomen (tergites), legs and chelicerae brownish-yellow.

Body L 2.67-2.78-2.91.

Carapace: L 0.68-0.70-0.725, greatest W 0.53-0.54-0.56, L/W 1.25-1.30-1.36; eyes 2 pairs, well developed, chaetotaxy of anterior and posterior margin of carapace as in male.

Abdomen: chaetotaxy, tergites I-X (5): 4-5.6-6: 6-7.6-8: 8: 8: 8-9.6-10: 8-9.6-10: 8-9.8-

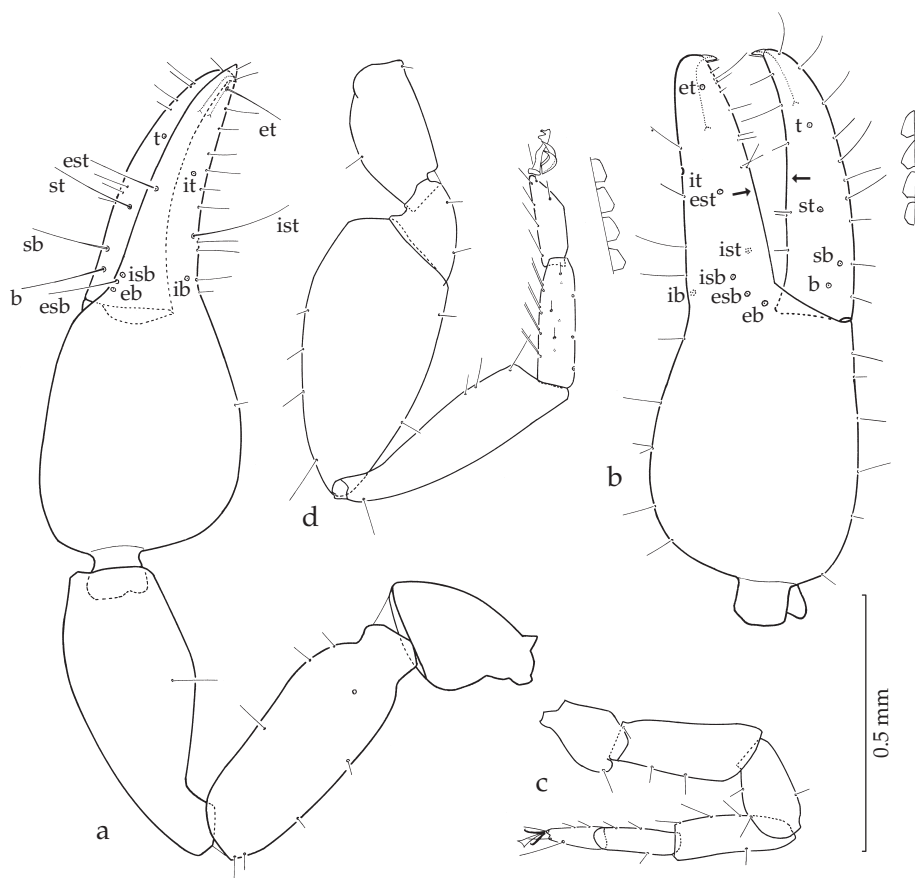


Fig. 4. *Pachyolpium confusum* spec. nov. Female from St. Eustatius: (a) dorsal aspect of left pedipalp (517); (b) extero-lateral aspect of right chela (186) (arrows indicate midpoint of sketched teeth row); (c) anterior aspect of left leg (520); (d) posterior aspect of left leg IV (520). Attention focussed on chaetotaxy of metatarsus IV.

11: 10-10.2-11: 1T8T1-1T8.4T1-1T9T1: 1T8T1; sternites IV-X (4): 6-8-10: 8-11.25-13: 8-9.25-10: 6-9.75-12: 6-9.75-12: 8-9.50-10: T2T(2-3)T(1-2)T to (1-2)T(0-1)T(1-2)T2T(1-2).

Chelicera: 0.26-0.27-0.29/0.15-0.16-0.17; L/W 1.73-1.76-1.87, and L 0.38-0.40-0.43 × carapace L (4); movable finger L (5) 0.19-0.20-0.22; galea L 0.07, main stalk terminally bifid, small lateral ramus arising on about distal sixth; movable finger with sharp conical subapical lobe; serrula exterior with 24 (1 with 23) blades; flagellum consists of 3 spiny setae, L anteriormost one 0.07, unilaterally pinnate in distal quarter of anterior margin, L middle one 0.04, L posteriormost one 0.03. Teeth on inner margin of fixed finger much as in male, but number of both sclerotic and non-sclerotic teeth 3-4. Chaetotaxy as in male, but laminal seta inserted somewhat more distal, i.e. on about 1/3 from base of fixed finger.

Pedipalp: trochanter 0.35-0.37-0.385/0.18-0.20-0.21, L/W 1.70-1.835-1.97; femur 0.55-0.56-0.595/0.19-0.20-0.21, L/W 2.72-2.80-2.87; patella 0.60-0.62-0.64/0.23-0.245-0.25, L/W 2.50-2.55-2.70; femur L 0.89-0.90-0.93 × patella L; chela without pedicel 0.995-1.02-1.05/0.37-0.385-0.41, L/W 2.545-2.64-2.74; chela with pedicel 1.05-1.08-1.12/W same, L/W 2.70-2.80-2.91; hand without pedicel 0.485-0.51-0.52/0.33-0.36-0.39, L/D 1.30-1.42-1.53; hand with pedicel 0.56-0.59-0.62/D same, L/D 1.51-1.65-1.79; movable finger L 0.53-0.56-0.58, 1.08-1.10-1.17 × hand without pedicel, and 0.085-0.93-1.0 × hand with pedicel. *sb* on dorsum palpal femur 0.16-0.17-0.19 from exterior key point of femoral base. Palpal femur 3.04-3.25-3.50 × distance from *sb* to exterior key point of femoral base.

Fixed finger with 38-39.8-42 marginal teeth; *et* up to level of 4th-4.75-6/7th marginal tooth from apical tooth; *it* up to level of 17th-19.2-20/21st marginal tooth from apical tooth; nodus ramosus up to level of 8th-9.3-10th marginal tooth from apical tooth; fixed finger L (arbitrarily considered equal to movable finger L) 5.055-5.36-5.72 × venom duct L.

Movable finger with 38-39.8-41 marginal teeth; *t* up to level of 14th-15.2-15/16th marginal tooth from apical tooth; nodus ramosus up to level of 10th-10.4-11th marginal tooth from apical tooth; movable finger L 4.52-4.75-4.88 × venom duct L.

First leg: trochanter 0.155-0.16-0.17/0.12-0.12-0.13 (5), L/D (5) 1.23-1.29-1.36; femur 0.27-0.28-0.29/0.10-0.10-0.105, L/D 2.63-2.71-2.83; patella 0.175-0.18-0.19/0.10-0.10-0.105, L/D 1.77-1.80-1.86; femur L 1.445-1.53-1.60 × patella L; tibia 0.24-0.25-0.26/0.07-0.07-0.075, L/D 3.20-3.45-3.64; tibia L 1.25-1.37-1.42 × patella L; metatarsus 0.15-0.155-0.17/0.05, L/D 2.88-3.03-3.17; tarsus 0.14-0.15-0.16 (3)/0.04-0.04-0.05, L/D 3.43-3.515-3.60 (2); L claws 0.03-0.03-0.04; arolium L from base claws 0.04-0.045-0.05, and 1.27-1.37-1.47 × claws.

Fourth leg: trochanter 0.26-0.27-0.28/0.12-0.14-0.15, L/D 1.77-1.94-2.16; femur 0.19-0.21-0.22/0.12-0.13-0.14, L/D 1.41-1.60-1.73; patella 0.51-0.52-0.54/0.25-0.26-0.27, L/D 1.92-2.02-2.10; femur + patella 0.60-0.62-0.65/0.25-0.26-0.27, L/D 2.32-2.37-2.51; tibia 0.46-0.47-0.49/0.12-0.125-0.13, L/D 3.57-3.73-3.83; metatarsus 0.23-0.235-0.25/0.07-0.08-0.08, L/D 3.03-3.12-3.27; tarsus 0.19-0.20-0.20/0.05-0.05-0.055, L/D 3.64-3.72-3.79; L claws 0.05-0.06-0.07; arolium L from base claws 0.08-0.09-0.095, and 1.38-1.49-1.59 × L claws.

Chaetotaxy of metatarsus of fourth leg: exterior lateral T+2 (T close to proximal end), dorsal 3, interior lateral (from proximal to distal) 2 × (1-2) + (1-2) + 2 × (1-2) to 2 × (3-4), ventral 3.

Chaetotaxy and internal structure of female genital area (5): on anterior opercu-

lum 2 or 3 setae to the left and 2, 3 or 4 to the right of midline; on posterior operculum 3 setae on each side of midline; one medial pair of cribriform plates present; lateral cribriform plates not perceptible.

Tritonymph. Description based on 2 specimens from St. Eustatius (Statia). Measurements, ratios and counts expressed as ranges.

Body L 1.93-2.005.

Carapace: 0.56-0.58/greatest W 0.42-0.43, L/W 1.32-1.375.

Chelicera: serrula exterior with 21-21 blades; flagellum of 3 spine-like setae, anterior most one longest; galea L 0.5-0.5.

Pedipalp: trochanter 0.265-0.28/0.14-0.16, L/W 1.80-1.89; femur 0.39-0.41/0.15-0.155, L/W 2.61-2.66; patella 0.44-0.45/0.18-0.18, L/W 2.41-2.44; femur L 0.82/0.86 × patella L; chela without pedicel 0.76-0.76/0.27-0.27, L/W 2.81/2.85; chela with pedicel

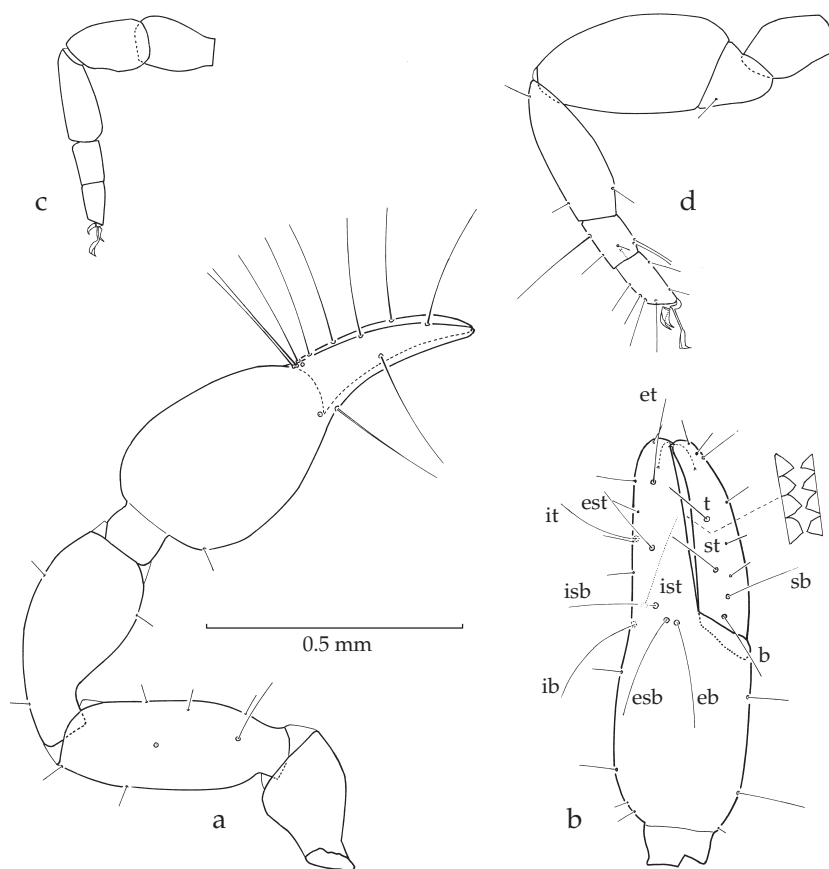


Fig. 5. *Novohorus incertus* (Beier). Male from St. Martin (no. 1251): (a) dorsal aspect of left pedipalp; (b) extero-lateral aspect of right chela; (c) anterior aspect of right leg I (trochanter lost); (d) anterior aspect of right leg IV. Attention focussed on chaetotaxy of metatarsus IV.

0.81-0.82/W same, L/W 3.0/3.06; hand without pedicel 0.35-0.36/0.25, L/D 1.44/1.47; hand with pedicel 0.41-0.42/D same, L/D 1.69-1.69; movable finger L 0.42-0.42/1.16-1.18 $\times$ L hand without pedicel, and 1.0-1.01 $\times$ L hand with pedicel. *sb* on dorsum palpal femur 0.12-0.16 from exterior key point of femoral base; palpal femur L 2.98-3.12 $\times$ distance from *sb* to exterior key point of femoral base.

Deutonymph. Description based on 2 specimens from St. Eustatius (Statia). Measurements, ratios and counts expressed as ranges.

Body L 1.68-1.73.

Carapace 0.44-0.50/greatest W 0.34-0.385, L/W 1.29/1.30.

Chelicera: serrula exterior with 16-16 blades; flagellum of 3 spine-like setae, anteriormost one longest, galea L 0.05-0.05.

Pedipalp: trochanter 0.22-0.225/0.12-0.13, L/W 1.72-1.92; femur 0.32-0.34/0.12-0.13, L/W 2.57-2.59; patella 0.34-0.36/ 0.14-0.15, L/W 2.36-2.42; femur L 0.92-0.94 $\times$ patella L; chela without pedicel 0.61-0.63/0.21-0.21, L/W 2.9-3.0; chela with pedicel 0.65-0.67/W same, L/W 3.09-3.21; hand without pedicel 0.29-0.295/0.21-0.22, L/D 1.34-1.42; hand with pedicel 0.33-0.34/D same, L/D 1.54-1.60; movable finger L 0.31-0.35, 1.06-1.20 $\times$ L hand without pedicel, and 0.94-1.04 $\times$ L hand with pedicel. *sb* on dorsum palpal femur 0.10-0.10 from exterior key point of femoral base; palpal femur L 3.29-3.45 $\times$ distance from *sb* to exterior key point of femoral base.

Protonymph. Description based on 4 specimens from St. Eustatius (Statia).

Body L 1.21-1.29-1.33.

Carapace 0.385-0.40-0.40/greatest W 0.285-0.29-0.30, L/D 1.32-1.37-1.42.

Chelicera: serrula exterior with 14 blades; flagellum of 3 spine-like setae, anteriormost one longest; galea L 0.03-0.03-0.04.

Pedipalp: trochanter 0.16-0.17-0.19/0.08-0.08-0.09, L/W 1.89-2.04-2.19; femur (3) 0.24/0.09-0.09-0.10; L/W 2.51-2.64-2.73; patella (3) 0.235-0.24-0.25/0.10-0.11-0.13, L/W 2.0-2.19-2.38; femur L 0.95-1.0-1.04 $\times$ patella L (3); chela without pedicel (3) 0.45-0.46-0.48/0.14-0.15-0.16, L/W 3.05-3.14-3.29; chela with pedicel (3) 0.48-0.49-0.51/W same, L/W 3.22-3.33-3.48; hand without pedicel (3) 0.20-0.21-0.23/0.14-0.155-0.175, L/D 1.33-1.38-1.45; hand with pedicel (3) 0.23-0.24-0.25/D same, L/D 1.49-1.57-1.68; movable finger L 0.25-0.26-0.27, 1.21-1.24-1.28 $\times$ L hand without pedicel (3), and 1.05-1.09-1.13 $\times$ L hand with pedicel (3). *sb* on dorsum palpal femur 0.08-0.08-0.09 from exterior key point of femoral base (3); palpal femur L 2.71-2.91-3.08 $\times$ distance from *sb* to exterior key point of femoral base (3).

Etymology: the specific epithet refers to Beier's misidentification (1932: 195) of *Pachyolpium furculiferum* (Balzan, 1891); *confusus* (Latin) - confused, unrecognizable.

***Genus Novohorus* Hoff, 1945**

One of the major features of the genus *Novohorus*: the presence of two tactile setae on the dorsum of the palpal femur, has it in common with the genera *Horus*, *Hoffhorus*, *Beierolpium*, and *Antillolpium*.

Key to genera with two tactile setae on the dorsum of the palpal femur

(this key has been composed for further comparative characterization of the five genera mentioned, based on the chaetotaxy of the trichobothria on palpal chelal fingers)

1. Movable finger of palpal chela in adult animals with 4 trichobothria 2
- Movable finger of palpal chela in adult animals with 3 trichobothria
..... *Antillolepium* Muchmore, 1991
2. *it* and *est* on fixed finger of palpal chela at about same level 3
- *it* distal to *est* on fixed finger of palpal chela 4
3. *b*, *sb* and *st* on movable finger of palpal chela not situated in a straight row (but *st* distal to *sb*); *ist* extero-lateral and *isb* intero-lateral located

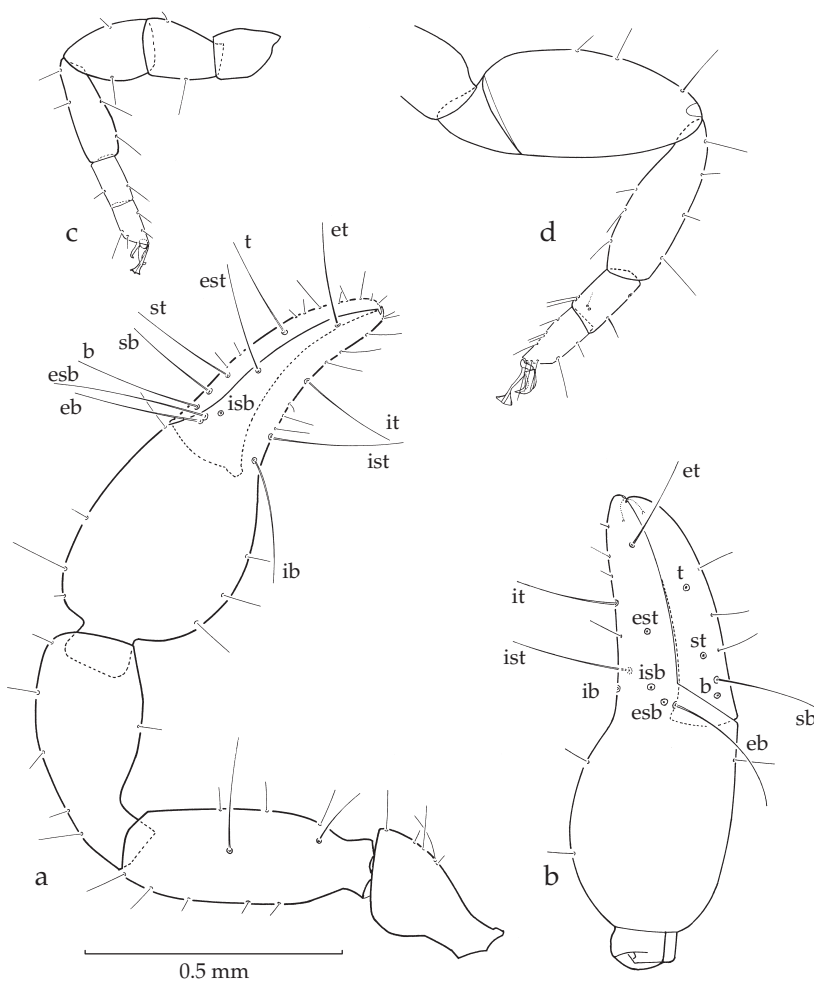


Fig. 6. *Novohorus incertus* (Beier). Female from Anguilla (no. 1309): (a) dorsal aspect of left pedipalp; (b) extero-lateral aspect of right chela; (c) posterior aspect of left leg I; (d) posterior aspect of left leg IV. Attention focussed on chaetotaxy of metatarsus IV.

- *Horus* Chamberlin, 1930
- *b*, *sb* and *st* on movable finger of palpal chela arranged in a triangle (*sb* at about same level as *st*); *ist* intero-lateral and *isb* dorsally located *Hoffhorus* Heurtault, 1976
 - 4. *b*, *sb* and *st* on movable finger of palpal chela situated more or less in a straight row *Novohorus* Hoff, 1945
 - *b*, *sb* and *st* on movable finger of palpal chela arranged in a triangle (*sb* at about same level as *st*) *Beierolpium* Heurtault, 1976

Novohorus incertus (Beier, 1931)

Olpium brevifemoratum Balzan, 1890; Ellingson, 1910 (misidentification).

Pachyolpium incertum Beier, 1931: 311; Beier, 1932: 194, fig. 223; Roewer, 1937: 262; Hoff, 1945: 3; Beier, 1954: 132; Harvey, 1991: 296.

Novohorus incertus (Beier, 1931); Muchmore. 1993a: 32; 1993b: 90; 1997: 273-275, figs. 7-11.

Material.— **Anguilla**: # 486, Upper Prickly Pear Island, 17.vi.1949, 1 ♀ (1309), 1 deutonymph (1311) and 1 protonymph (1317). **St. Martin** (Sint Maarten): # 606, Point Blanche Bay, near shore, 5.vi.1955, 1 ♂ (1251). Localities fully described by Wagenaar Hummelinck, 1953: 27; 1981: 29 (fig. 8: sketchmap), 33 (fig.10: sketchmap).

Type locality: St. Thomas.

Distribution: St. Thomas and Venezuela (?) (according to Beier, 1931, 1954); Puerto Rico, U.S. Virgin Islands (Little St. James Island and St. John), British Virgin Islands (Great Tobago Island, Tortola, Green Cay, Little Camanoe Island and Mosquito Island) (according to Muchmore, 1997).

New localities: Anguilla and St. Martin (Sint Maarten).

Diagnosis.— (The identification is based on Muchmore, 1997). *Novohorus incertus* (Beier, 1931) can be separated from the very closely related *N. suffusus* Hoff, 1945 (from Mona Island) by its smaller size (especially in female: 2.51 versus 2.9/3.1), generally in male by somewhat smaller length/width ratio of palpal femur (2.4 versus 2.5/2.65), patella (2.13 versus 2.25/2.4) and chela without pedicel (2.74 versus 2.85/3.05), and in particular by having an other setal formula on metatarsus of leg IV (T+1-1-2-1 versus T+1-1-3-1 or T+2-1-3-1).

Description.— Male: description based on 1 mounted specimen (figs. 5a-d).

Body, legs and chelicerae light yellowish orange. Pedipalps reddish orange.

Body L 2.21.

Carapace: 0.62/greatest W 0.45, L/W 1.36; eyes 2 pairs, ocular W 0.45; anterior margin with 2 medial setae and 1 lateral seta in each front corner; posterior margin with 2 setae and 4 lyrifissures; on surface about 16 setae and 8 lyrifissures.

Abdomen: chaetotaxy on tergites and sternites difficult to ascertain, but middle tergites probably with only 4 setae.

Chelicera: L not measurable, W 0.12; movable finger L 0.14; galea L 0.05, 3 short rami on top; fixed finger with a small number of sclerotic retroconical marginal teeth in distal end of finger; movable finger with subapical lobe divided into 3 small lobes; serrula exterior with 18 blades; flagellum consists of 3 spines, anteriormost one

longest and pinnate in basal 3/4 of anterior margin, posteriormost one shortest, middle and posteriormost spines about 1/3 more slender than anteriormost one; lamina exterior present; chaetotaxy: 5 setae on exterior side of hand and 1 exterior seta near tip of movable finger, about half as long as flagellum.

Pedipalp: trochanter 0.28/0.17, L/W 1.65; femur 0.42/0.175, L/W 2.4; patella 0.43/0.20, L/W 2.13; femur L 0.98 $\times$ patella L; chela without pedicel 0.77/0.28, L/W 2.74; chela with pedicel 0.83/0.28, L/W 2.96; hand without pedicel 0.38/0.245, L/D 1.57; hand with pedicel 0.45/0.245, L/D 1.86; movable finger L 0.39, 1.025 $\times$ L hand without pedicel, and 0.865 $\times$ L hand with pedicel. Subbasal - (*sb*) and submedial tactile seta (*sm*) on dorsum femur respectively on a level of 0.12 and 0.25 from exterior key point of femoral base. Palpal femur L respectively 3.64 and 1.71 $\times$ distance from *sb* and *sm* to exterior key point of femoral base. Fixed finger with about 32 and movable finger with about 31 marginal teeth. In both fingers marginal teeth ranging from acute and slightly retroconical in distal part to flattened and finally to very flattened and poorly developed teeth at basal end of row.

Fixed finger with nodus ramosus 0.06 from base apical tooth on outside curve; fixed finger L (arbitrarily considered equal to movable finger L) 7.02 $\times$ venom duct L; *et* 0.09 from base apical tooth on outside curve; *est* 0.22 from base apical tooth on outside curve, i.e. about midpoint of finger; *it* distal to the level of *est* by a distance equal to 1 areolar diameter; remaining trichobothria located near base finger; *ist* and *isb* on about same level.

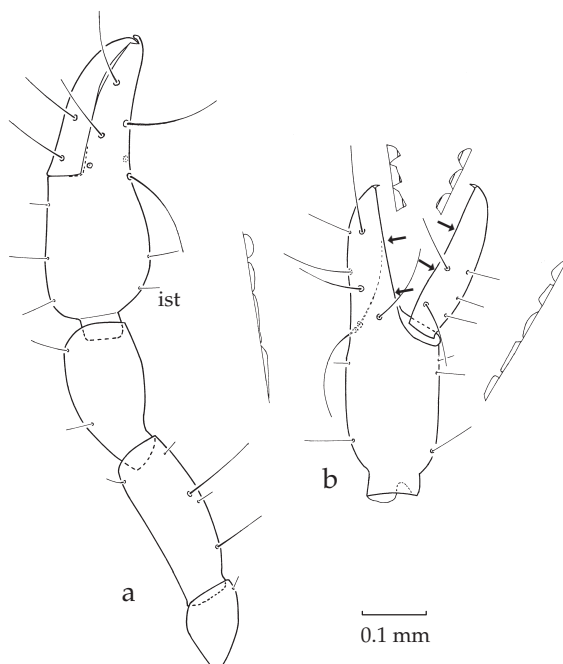


Fig. 7. *Novohorus incertus* (Beier). Deutonymph from Anguilla (no. 1311): (a) dorsal aspect of left pedipalp; (b) extero-lateral aspect of right chela. Arrows indicate midpoint of sketched teeth row.

Movable finger with nodus ramosus 0.07 from base apical tooth on outside curve; movable finger L $5.87 \times$ venom duct L; *t* 0.18 from base apical tooth on outside curve, i.e. at about 1/3 finger L from tip; *st* closer to *st* than to *t*.

First leg: trochanter 0.12/0.105, L/D 1.12; femur 0.15/ 0.10, L/D 1.55; patella 0.16/0.10, L/D 1.56; femur L $0.98 \times$ patella L; tibia 0.19/0.07, L/D 2.66; tibia L $1.20 \times$ patella L; metatarsus 0.08/0.05, L/D 1.53; tarsus 0.09/0.05, L/D 2.02; L claws 0.03; arolium L from base claws 0.06, and twice as long as claws.

Fourth leg: trochanter 0.175/0.11, L/D 1.54; femur 0.16/ 0.11, L/D 1.38; patella 0.38/0.19, L/D 1.99; femur + patella 0.465/0.19, L/D 2.44; tibia 0.31/0.105, L/D 2.92; metatarsus 0.11/0.07, L/D 1.62; tarsus 0.14/0.06, L/D 2.22; L claws 0.05; arolium L from base claws 0.09, and $1.72 \times$ L claws.

Chaetotaxy of metatarsus of fourth leg: exterior lateral: T+1 (T near proximal end), dorsal: 1, interior lateral 1×2 (near distal end), ventral 1.

Female: description based on 1 specimen (figs. 6a-d).

Colour about as in male.

Body L 2.51.

Carapace: L 0.61, greatest W 0.46, L/W 1.32; eyes: 2 pairs; anterior margin with 2 medial setae and 1 lateral seta in each front corner; posterior margin with 2 setae and 3 lyrifissures; on surface number of setae and lyrifissures about as in male.

Abdomen: tergal chaetotaxy (I-XI): 2:4:4:4:4:4:4:4:4:4:4; sternal chaetotaxy (IV-IX): 4:4:4:4:4:4.

Chelicera: L not measurable, W 0.12; movable finger L 0.15; galea L 0.05, terminally with 3 short rami; inner margin of fixed finger probably with 6 retrorse teeth; subapical lobe in movable finger as in male; serrula exterior with 18 blades; serrula interior with about 13 blades, each of which terminally ending in an awl-shaped projection, but extremely developed in most distal blade (L about 0.02); flagellum consists of 3 spiny setae, anteriormost one longest, with 5 marginal toothlike processes in distal half, posteriormost one shortest with 3 marginal toothlike processes in distal half, and middle one also with 3 marginal toothlike processes in distal half; lamina exterior present; chaetotaxy as in male.

Pedipalp: trochanter 0.32/0.17, L/W 1.91; femur 0.47/0.18, L/W 2.57; patella 0.47/0.21, L/W 2.29; femur L equal to patella L; chela without pedicel 0.84/0.31, L/W 2.71; chela with pedicel 0.91/0.31, L/W 2.93; hand without pedicel 0.44/ 0.26, L/D 1.68; hand with pedicel 0.50/0.26, L/D 1.92; movable finger L 0.45, $1.04 \times$ L hand without pedicel, and $0.91 \times$ L hand with pedicel. *sb* and *sm* on dorsum femur respectively on a level of 0.14 and 0.27 from exterior key point of femoral base. Palpal femur L respectively 3.36 and $1.735 \times$ distance from the level of subbasal and submedial tactile setae on dorsum femur to exterior key point of femoral base. Fixed finger with about 30 and movable finger with about 26 marginal teeth. Marginal teeth in both fingers ranging from cuspidate and slightly retroconical to retroconical at distal end of row to acuspidate and finally obsolete at basal end of row.

Fixed finger with nodus ramosus 0.04 from base apical tooth on outside curve; fixed finger L (arbitrarily considered equal to movable finger L) $10.01 \times$ venom duct L; *et* 0.075 from base apical tooth on outside curve; *est* 0.205 from base apical tooth on outside curve, i.e. about midpoint finger; *it* distal to level of *est* by a distance equal to $1 \ll$ areolar

diameter; remaining trichobothria near base finger; *ist* only $1/2$ areolar diameter distal to level of *isb*, and *isb* 1 areolar diameter distal to level of *ib*; *ib* and *eb* on about same level.

Movable finger with nodus ramosus 0.05 from base apical tooth on outside curve; movable finger L $9.27 \times$ venom duct L.; *t* 0.15 from base apical tooth on outside curve; *b*, *sb* and *st* within basal two-fifth of finger L; *st* much closer to *sb* than to *st*.

First leg: trochanter 0.12/0.105, L/D 1.10; femur 0.16/0.10, L/D 1.51; patella 0.17/0.11, L/D 1.56; femur L $0.91 \times$ patella L; tibia 0.215/0.08, L/D 2.83; tibia L $1.17 \times$ patella L; metatarsus 0.09/0.05, L/D 1.68; tarsus L 0.11/0.05, L/D 1.98; L claws 0.03, arolium L from base claws 0.06, and $1.84 \times$ L claws.

Fourth leg: trochanter 0.20/0.13, L/D 1.555; femur 0.18/0.125, L/D 1.43; patella 0.42/0.21, L/D 2.02; femur + patella 0.51/0.21, L/D 2.44; tibia 0.345/0.11, L/D 3.10; metatarsus 0.14/0.07, L/D 1.89; tarsus 0.14/0.06, L/D 2.23; L claws 0.06; arolium L from base claws 0.10, and $1.62 \times$ L claws.

Chaetotaxy of metatarsus of fourth leg; exterior lateral: T+1 (T near proximal end), dorsal: 1, interior lateral: 1×2 (near distal end), ventral: 1.

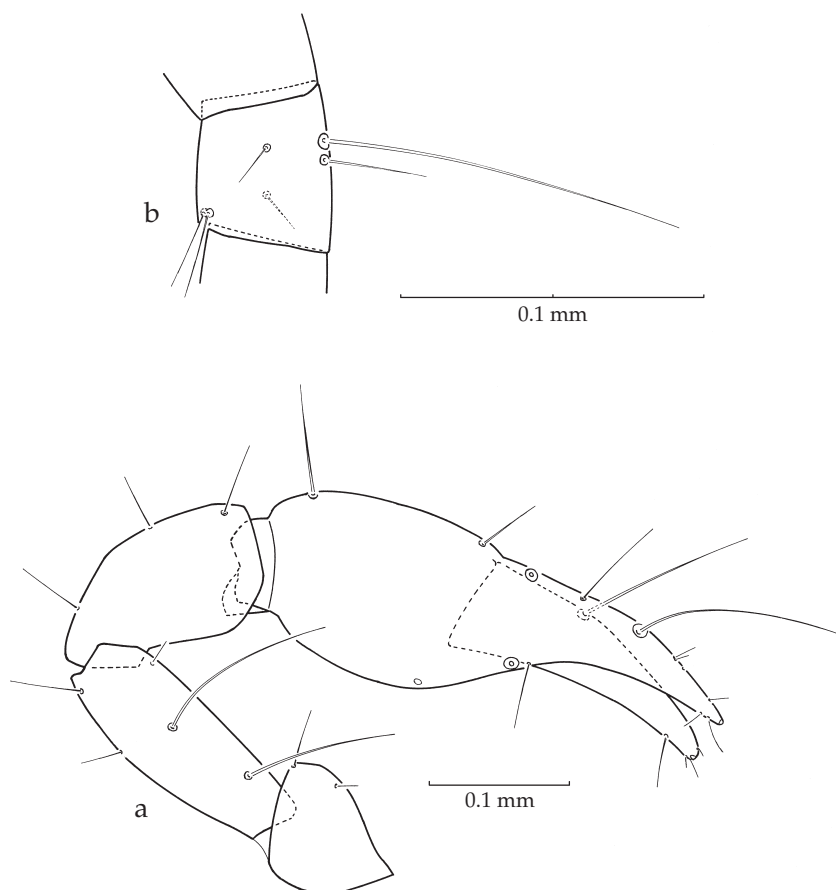


Fig. 8. *Novohorus incertus* (Beier). Protonymph from *Anguilla* (no. 1317): (a) dorsal aspect of left pedipalp; (b) anterior aspect of metatarsus of leg IV, showing chaetotaxy.

Chaetotaxy and internal structure of female genital area: anterior and posterior operculum with 4 marginal setae; 1 big medial cluster of cribriform plates.

Deutonymph: description based on 1 specimen (figs. 7a-b).

Body, pedipalps and chelicerae pale orange-like yellow in colour, legs about the same, but many more times paler.

Body L 1.49.

Carapace: 0.33/greatest W 0.25, L/W 1.31; eyes: 2 pairs; anterior margin with 2 medial setae and 1 lateral seta in each front corner; posterior margin with 2 setae.

Abdomen: tergal chaetotaxy (I-XI): 2:4:4:4:4:4:4:4:4:4:4:4; sternal chaetotaxy (IV-IX): 4:4:4:4:4:4.

Chelicera: 0.15/0.07, L/W 2.07; movable finger L 0.11; galea L 0.04, terminally with 3 short, slightly curved rami; inner margin of fixed finger with 4 teeth, 2 of which near fingertip are sclerotic; movable finger with distinct subapical lobe, divided in 3 small lobes; serrula exterior with 14 blades; flagellum consists of 3 spiny setae, anteriormost one longest, with 4 marginal toothlike processes in distal half, posteriormost one shortest; lamina exterior present; chaetotaxy: 3 setae on exterior side of hand and 1 exterior seta near fingertip of movable finger, about half as long as galea. Probably lacking setae "b" and "sb".

Pedipalp: trochanter 0.14/0.09, L/W 1.57; femur 0.26/0.10, L/W 2.54; patella 0.245/0.12, L/W 2.0; femur L 1.07 $\times$ patella L; chela without pedicel 0.47/0.175, L/W 2.68; chela with pedicel 0.50/0.175, L/W 2.84; hand pedicel 0.24/0.16, L/D 1.44; hand with pedicel 0.27/0.16, L/D 1.65; movable finger L 0.265, 1.12 $\times$ L hand without pedicel, and 0.98 $\times$ hand with pedicel. *sb* and *sm* on dorsum femur respectively on a level of 0.07 and 0.17 from exterior key point of femoral base. Palpal femur respectively 3.75 and 1.58 $\times$ distance from level of *sb* and *sm* on dorsum femur to exterior key point of femoral base. Fixed finger with 20 marginal teeth, cusped in the distal part of the row and with 3 very shallow and acuspid teeth in the basal part of the row. Movable finger with 18 marginal teeth, also cusped in the distal part of the row and with 4 shallow and acuspid teeth in the basal part of the row.

Fixed finger with nodus ramosus 0.04 from base apical tooth on outside curve; fixed finger L (arbitrarily considered equal to movable finger L) 6.625 $\times$ venom duct L; *et* 0.07 from base apical tooth on outside curve; *it* located about midpoint finger and distal to *est*; *ist*, *ib* and *eb* more basal in position; level *eb* distal to level *ist*; probably lacking "*isb*" and "*esb*". Movable finger with nodus ramosus 0.04 from base apical tooth on outside curve; movable finger L 6.31 $\times$ venom duct L; *st* located about midpoint finger; *b* within basal quarter of finger L; probably lacking "*sb*" and "*t*".

First leg: trochanter 0.06/0.05, L/D 1.13; femur 0.08/0.06, L/D 1.47; patella 0.09/0.05, L/D 1.61; femur L 0.94 $\times$ patella L; tibia 0.12/0.05, L/D 2.21; tibia L 1.345 $\times$ patella L; metatarsus 0.05/0.04, L/D 1.24; tarsus 0.07/0.04, L/D 1.72; L claws 0.03; arolium L from base claws 0.04, and 1.47 $\times$ L claws.

Fourth leg: trochanter 0.12/0.09, L/D 1.31; femur 0.11/0.08, L/D 1.39; patella 0.23/0.12, L/D 1.87; femur + patella 0.29/0.12, L/D 2.37; tibia 0.18/0.07, L/D 2.625; metatarsus 0.08/0.05, L/D 1.57; tarsus 0.10/0.05, L/D 2.07; L claws 0.03; arolium L from base claws 0.06, and 1.78 $\times$ L claws.

Chaetotaxy of metatarsus of fourth leg: exterior lateral: T+1 (T near proximal end), dorsal: 1, interior lateral: 1 $\times$ 2 (near distal end), ventral: 1.

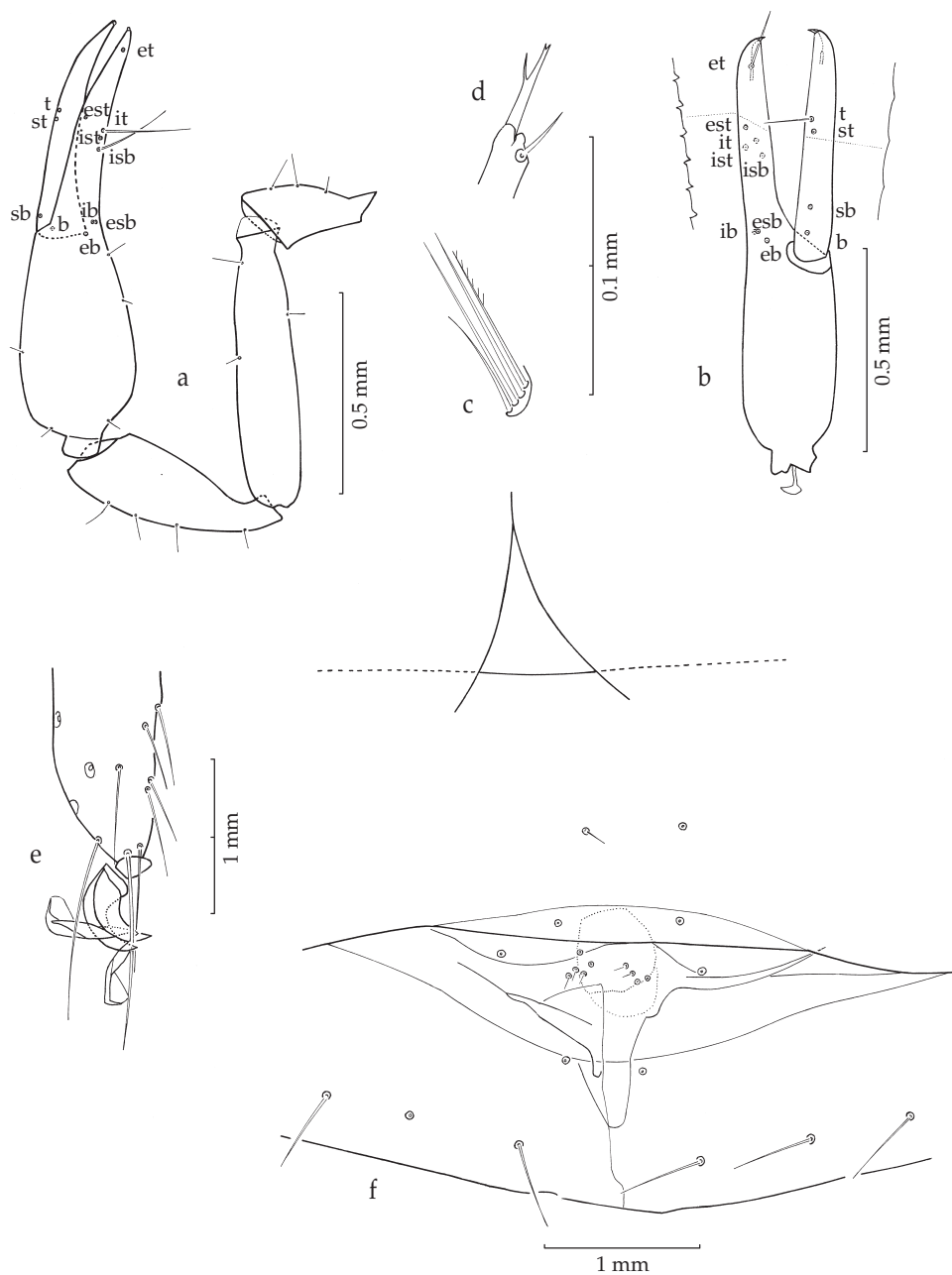


Fig. 9. *Amblyolpium martinensis* spec. nov. Holotype male from St. Martin (no. 1706): (a) dorsal aspect of left pedipalp; (b) extero-lateral aspect of right chela; (c) flagellum of right chelicera; (d) movable finger tip of left chelicera with galea; (e) posterior aspect of tarsus tip of left leg IV with claws and divided arolium; (f) chaetotaxy in male genital area.

Protonymph: description based on 1 specimen (figs. 8a-b).

Colour of body, pedipalps, chelicerae and legs about as in deutonymph, but still much more pallid.

Body L 1.12.

Carapace: 0.30/greatest W 0.28, L/W 1.09; eyes: 2 pairs; chaetotaxy as in deutonymph.

Chelicera: 0.11/0.06, L/W 1.775; movable finger L 0.075; galea L 0.03, terminally with 3 short, slightly curved rami; teeth on inner margin of fixed finger and subapical lobe of movable finger about as in deutonymph; serrula exterior with 10 blades; flagellum consists of 3 spiny setae, anteriormost one longest, posterior one shortest; lamina exterior present; chaetotaxy: 3 setae on exterior side of hand, seta *gls* near tip finger lacking.

Pedipalp: trochanter 0.10/0.06, L/W 1.815; femur 0.17/0.07, L/W 2.235; patella 0.17/0.08, L/W 2.0; femur and patella of same L; chela without pedicel 0.35/0.11, L/W 3.2; chela with pedicel 0.38/0.11, L/W 3.44; hand without pedicel 0.17/0.12, L/D 1.435; hand with pedicel 0.19/0.12, L/D 1.63; movable finger L 0.19, $1.13 \times$ L hand without pedicel, and $0.99 \times$ hand with pedicel. *sb* and *sm* on dorsum femur respectively on a level of 0.05 and 0.11 from exterior key point of femoral base. Palpal femur L respectively 3.07 and $1.51 \times$ distance from level of *sb* and *sm* on dorsum femur to exterior key point of femoral base. Both fixed and movable finger with 12 marginal teeth in distal third of finger L (including 2 reduced basal teeth).

Fixed finger with nodus ramosus 0.035 from base apical tooth on outside curve; fixed finger L (arbitrarily considered equal to movable finger L) $5.43 \times$ venom duct L; finger mentioned with 3 trichobothria, probably "*est*", located a little distal to mid-point finger, and 1 interior and 1 exterior trichobothrium near base finger.

Movable finger with nodus ramosus 0.03 from base apical tooth on outside curve; movable finger L $7.31 \times$ venom duct L; finger mentioned with 1 trichobothrium, probably "*st*", located about 1/3 of finger L from base.

First leg (process of L growth in metatarsus and tarsus probably proportionally retarded): trochanter 0.07/0.06, L/D 1.25; femur 0.07/0.06, L/D 1.28; patella 0.075/0.06, L/D 1.33; tibia 0.08/0.05, L/D 1.69; metatarsus 0.04/0.05, L/D 0.85 (!); tarsus 0.06/0.04, L/D 1.49 (!); L claws 0.02; arolium L from base claws 0.035, and $1.66 \times$ L claws.

Fourth leg: femur+ patella 0.15/0.07, L/D 2.09; tibia 0.13/0.05, L/D 2.45; metatarsus 0.06/0.05, L/D 1.30; tarsus 0.08/0.04, L/D 1.95; L claws 0.03; arolium L from base claws 0.04, and $1.67 \times$ L claws.

Chaetotaxy of metatarsus of fourth leg: exterior lateral: T+1 (T located about one-third of metatarsus L from proximal end and proximal to ordinary seta but very close to the latter), dorsal: 1, interior lateral: 1×2 , ventral: 1 (setal formula: T+1-1-2-1).

Remarks: The characters of male and female of *Novohorus incertus* mentioned in this study, fall practically completely within the limits of variation determined by Muchmore (1997: 274) in 30 adults (18 males and 12 females), from the Virgin Islands. It appears next, that both tactile setae on dorsum of palpal femur occur also in nymphal stages, and further that the chaetotaxy on the metatarsus of leg IV in nymphs is of the same tenor as in adults. The latter appointment possibly may serve separating nymphs of *N. incertus* from those of *N. suffuscus*.

Subfamily Garypininae Daday, 1888

Characterization of this subfamily is based on the bifurcate arolia of the legs, a flagellum of 4 blades and at least some of the abdominal tergites medially divided.

Genus *Amblyolpium* Simon, 1898

Diagnosis.— Pseudoscorpions of this genus may be recognized by the following combination of characters: patella of first leg distinctly shorter than femur; femur + patella of fourth leg thick-set, fixed chelal finger with *it* only a little proximal to *est* and far from *esb*, *ib* on about same level as *esb*, and *isb* closer to *ist* than to *ib*; lamina exterior lacking.

Amblyolpium martinensis spec. nov.

Material.— Holotype ♂ (1706), **St. Martin** (Sint Maarten), # 607, Philipsburg, school, 24.vi.1955. Altitude: 1-5 m; loft of St. Josephs school (dusky); bat faeces (of *Molossus molossus*) (Wagenaar Hummelinck, 1981: 33; 32: fig. 10: sketchmap).

Diagnosis.— This new species represented by a single available male, differs from *A. ortonedae* (Ellingsen, 1902), from Ecuador: South America (described in Beier, 1932: 206), by having a smaller size (2.45 versus 3.0), smaller length/width ratio of cephalothorax (1.545 versus “fast doppelt so lang wie breit”, longer palpal femur (0.72 versus 0.64) and greater length/width ratio of palpal femur (4.82 versus 4.2), and slightly greater length/width ratio of palpal chela with pedicel (4.08 versus 3.7).

Description.— Male: description based on the holotype (figs. 9a-f).

Carapace and tergites with slightly granular exterior, reddish yellow; pedipalps, chelicerae and legs paler in colour.

Body L 2.45.

Carapace: 0.74/greatest W 0.48, L/W 1.54; eyes: 2 pairs, first pair probably more developed than second pair, ocular W 0.29; anterior and posterior margin of carapace with 4 setae.

Abdomen: tergites and sternites divided, except tergites 1, 2 and 11, and sternite 11; chaetotaxy: middle tergites and middle sternites with 8 marginal setae.

Chelicera: about 0.22/0.11, L/W about 2.0; movable finger L 0.15; galea L 0.04, main stalk terminally bifid, short lateral ramus 0.02 from base; inner margin of fixed finger with 4 small conical teeth in distal end; movable finger with well-developed subapical lobe; serrula exterior with 18 blades; serrula interior with about 14 blades; flagellum consists of 4 spiny setae of which 2 middle ones long and of equal L, anteriormost one somewhat shorter and pinnate in distal half of anterior margin, and posteriormost one still shorter; lamina exterior lacking; chaetotaxy: 5 setae on anterior surface of hand and 1 on movable finger.

Pedipalp: trochanter slender, 0.34/0.15, L/W 2.29; femur very slender, 0.72/0.15, L/W 4.82; patella 0.54/0.19, L/W 2.91; femur L 1.32 × patella L; chela without pedicel 1.04/0.27, L/W 3.89; chela with pedicel 1.09/0.27, L/W 4.08; hand without pedicel

0.49/0.28, L/D 1.77; hand with pedicel 0.56/0.28, L/D 2.025; movable finger L 0.58, $1.18 \times$ L hand without pedicel, and $1.03 \times$ L hand with pedicel.

Fixed finger with 39 marginal teeth, much more developed than those of movable finger, ranging from 2 conical teeth at distal end of row through about 31 retroconial and about 6 flattened teeth at basal end of row; nodus ramosus 0.07 from base apical tooth on outside curve, i.e. up to level of *et*; *est*, *it*, *ist* and *isb* clustered just distal to midpoint finger; *esb*, *ib* and *eb* near base finger; fixed finger L (arbitrarily considered equal to movable finger L) $8.24 \times$ venom duct L.

Movable finger with 30 marginal teeth, ranging from 2 small conical and about 4 retroconial teeth at distal end of row to about 24 acuspid and very shallow and even obsolete teeth at basal end of teeth row; nodus ramosus 0.04 from apical tooth on outside curve; *t* and *st* fairly close together, i.e., successively 0.24 and 0.27 from base apical tooth on outside curve, just distal to midpoint finger; *sb* and *b* within about basal fourth of finger length; movable finger $13.1 \times$ venom duct L.

First leg: trochanter 0.13/0.12, L/D 1.14; femur 0.30/0.10, L/D 2.99; patella 0.175/0.10; L/D 1.82; femur L $1.735 \times$ patella L; tibia 0.28/0.06, L/D 4.36; tibia L $1.59 \times$ patella L; metatarsus 0.12/0.05, L/D 2.54; tarsus 0.12/0.04, L/D 2.98; (divided) arolium about twice as long as claws.

Fourth leg: trochanter 0.22/0.15, L/D 1.47; femur 0.25/0.195, L/D 1.27; patella 0.49/0.275, L/D 1.78; femur + patella 0.64/0.275; L/D 2.3; tibia 0.42/0.12; L/D 3.41; metatarsus 0.18/0.07; L/D 2.5; tarsus 0.245/0.05; L/D 4.83; (divided) arolium about twice as long as claws.

Chaetotaxy of metatarsus of fourth leg: exterior lateral: T+2 (T close to proximal end); dorsal: 2; interior lateral: 2×2 ; ventral: 3.

Chaetotaxy of male genital area: 2 medially situated setae along posterior margin of anterior operculum; 2 setae on both sides along anterior lip of aperture; 1 cluster of 5 setae on one side and 1 cluster of 4 setae on the other side along posterior lip of aperture; 2 medially situated setae on face posterior operculum, and 1 medial row of 6 setae along posterior margin of posterior operculum.

Etymology: The specific epithet (*martinensis*) refers to the type-locality of the holotype: St. Martin.

Acknowledgments

My thanks are due to Dr P. Wagenaar Hummelinck (formerly University of Utrecht), who enabled me all the time to study material of pseudoscorpions from his extensive caribbean collection, as well as to the anonymus reviewer for supplying constructive criticism. Also I am indebted to ir P.P. Loesberg e.i. for his indispensable help with word processing.

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Received: 14.iii.2002

Accepted: 3.ix.2002

Edited: C. van Achterberg