

STUDIES ON THE FAUNA OF CURAÇAO, ARUBA,  
BONAIRE AND THE VENEZUELAN ISLANDS: No. 13.

**PSEUDOSCORPIONS OF THE GENERA GARYPUS,  
PSEUDOCHTHONIUS, TYRANNOCHTHONIUS AND  
PACHYCHITRA**

by

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Whilst visiting the Leeward Group, in 1936–1937, I couldn't help being fascinated by the striking occurrence of representatives of the arachnid order *Chelonethida* on every island of this arid region which invited me to an investigation of its soil fauna. This first publication of a serial on a group in which so much taxonomical work has still to be done, may be considered as the inevitable after-effect of these first-sight impressions.

My grateful thanks to JOSEPH C. CHAMBERLIN (Forest Grove, Oregon) and C. CLAYTON HOFF (Fort Collins, Colorado) for their interest in my work and to WILLIS J. GERTSCH and E. BROWNING for letting me have the loan of some material deposited in The American Museum of Natural History and the British Museum (Natural History).

A description of the localities may be found in the 4th paper of this series (Vol. II, p. 1–42); photographs of Stations 182 and 278 on the corresponding tab. IIb and IVb.

The taking of accurate measurements, which constitutes an essential part of systematic chelonethology, has been done according to CHAMBERLIN (1931, p. 23, fig. 1); the terminology followed, together with the abbreviations employed, is largely those used by the same author.

- Tactile setae (trichobothrien, Hörhare) of chelicera:
- AS accessory seta (seta exterior distalis, ED, SED, SE, DE)
  - BS basal seta (seta basalis, B, SB)
  - ES exterior seta (seta exterior proximalis, EP, SEP, SE, E, PE)
  - GS galeal seta (GLS; seta subterminalis, ST, SST, SS, S)

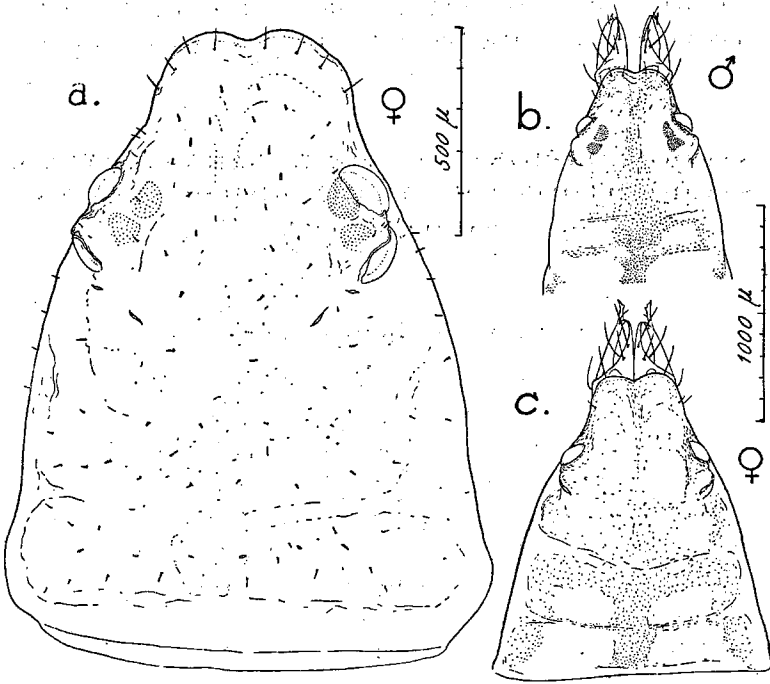


Fig. 4. *Garypus bonairensis bonairensis*, topotypes. a Carapace (no 11)  
b-c Carapace with chelicerae (no 3 and 7).

- IS interior seta (seta interior, I, SI)  
 LS laminal seta (seta lateralis, L, SL)  
 SBS sub-basal seta (seta subbasalis, SB, SSB)

Tactile setae of chela:

- b basal seta (seta basalis)  
 ds distal seta (seta distalis; xs)  
 eb exterior basal seta (seta basalis exterior)  
 esb exterior sub-basal seta (seta subbasalis exterior)  
 est exterior subterminal seta (seta subterminalis exterior)  
 et exterior terminal seta (seta terminalis exterior)  
 ib interior basal seta (seta basalis interior)  
 isb interior sub-basal seta (seta subbasalis interior)  
 ist interior subterminal seta (seta subterminalis interior)  
 it interior terminal seta (seta terminalis interior)  
 sb sub-basal seta (seta subbasalis)  
 st subterminal seta (seta subterminalis)  
 t terminal seta (seta terminalis)

**Garypus L. Koch**Genotype: *G. beauvoisi* (Savigny)

Mediterranean, Armenia, Nicobar-Islands, Maldives, Seychelles; Mustique-Island near St. Vincent, Bonaire, Aruba, Florida, California.

***Garypus bonairensis bonairensis* Beier, 1936**

[Plate II, fig. 4-12; table 4-7]

*Garypus bonairensis* BEIER, 1936, p. 444-446, fig. 1 [Bonaire].

BONAIRE, Zuidpunt, 26.III.1937, *Station 182*, under tufa-crusts near shore of salt-water lake (*Garypus* 1-39 adult ♂♂ ♀♀ partly ovigerous, several trito-, deuto- and protonymphs); *Oranje Pan*, Pekelmeer, 29.VIII.1932, shore of salt-water lake (palp; H. B. C. SCHOTBORGH coll.); *Pekelmeer*, 8.VI.1930, between coral shingle on shore of salt-water lake (Gar. 40-45); *Lagoen di Gotó*, 14.IX.1930, 23.XI.1930, between coral shingle on shore of salt-water lake (Gar. 46-86 ♂♂ ♀♀, type dd 14.IX.1930); *Salinja Foensji*, 9.IX.1930, 30.VIII.1932, shore of salt-water lake (palps; 1932 H. B. C. SCHOTBORGH coll.).

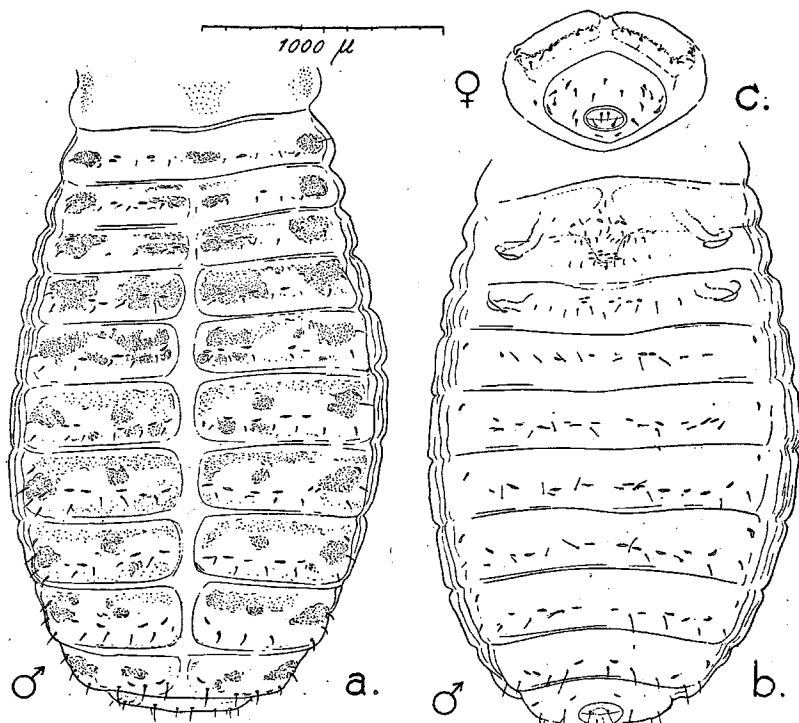


Fig. 5. *Garypus bonairensis bonairensis*, topotypes. *a-b* Dorsal and ventral aspect of abdomen (no 9). *c* Anal region from dorsal (no 12).

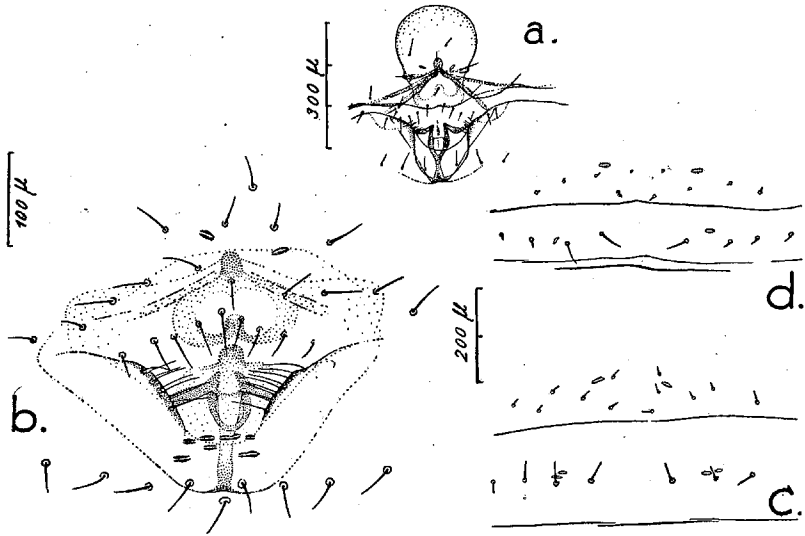


Fig. 6. *Garypus bonairensis bonairensis*, topotypes. a-b Genital area of male (no 3 and 8). c-d Genital area of female (no 11 and 6).

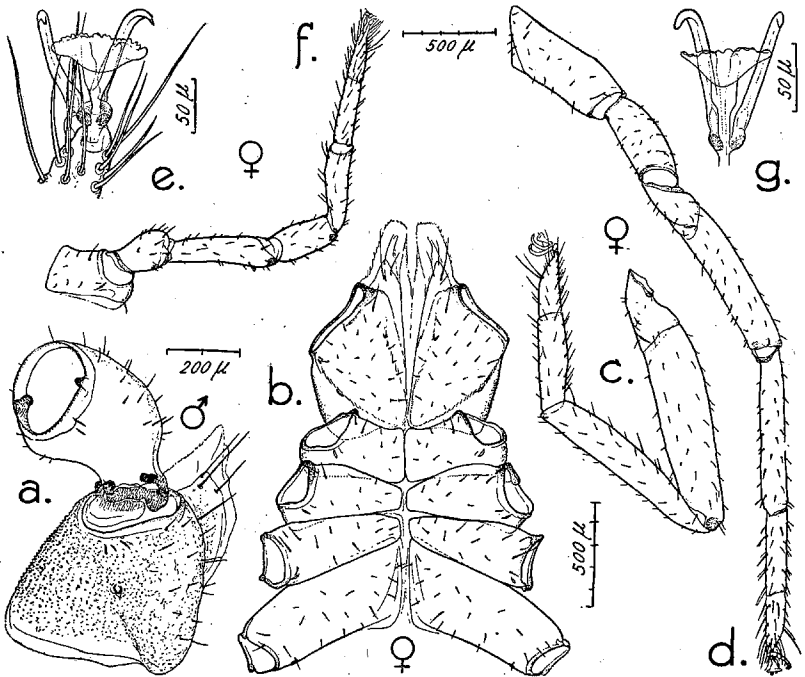
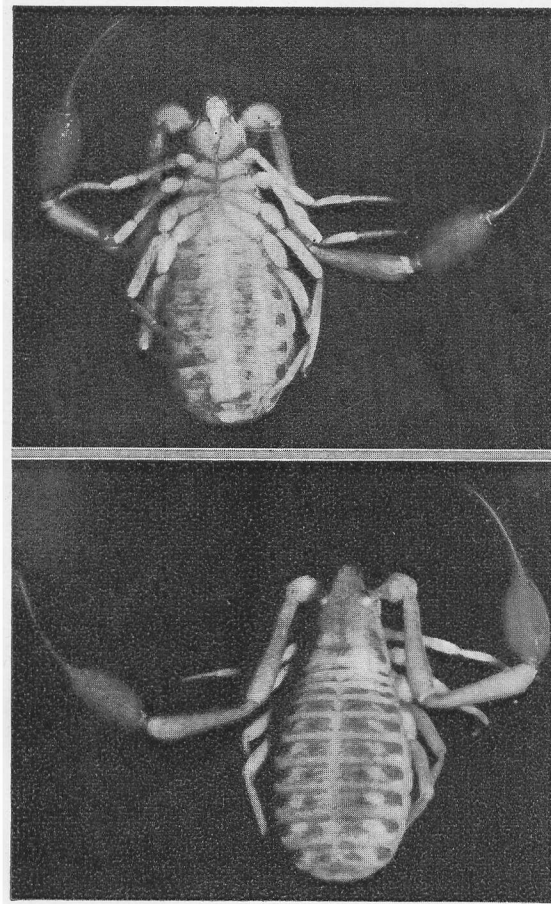
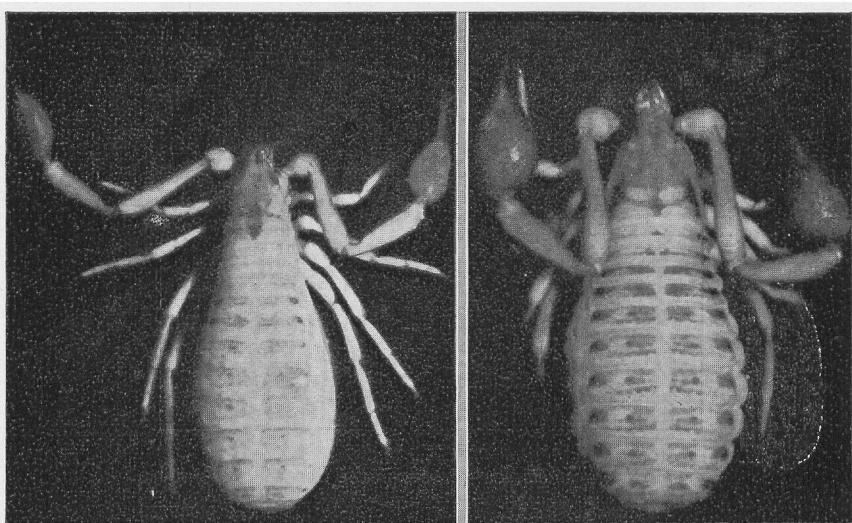
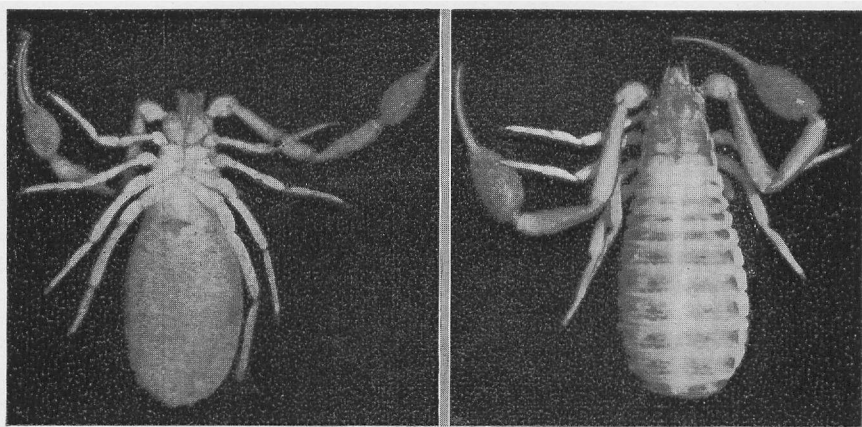


Fig. 7. *Garypus bonairensis bonairensis*, topotypes. a Right palpal coxa with trochanter from latero-ventral. b Coxal area (no 10). c Posterior aspect of left leg IV without trochanter (no 1). d Left leg IV with coxa from ventral (no 13). e Tip of right leg I (no 6). f Left leg I with coxa from ventral (no 13). g Claws and arolium of left leg II (no 3).



*Garypus bonairensis realini* ♂ from the Seroe Plat, A r u b a.



On the left: *Garypus bonairensis bonairensis* ♂ (no 15) from Zuidpunt, Bonaire.  
On the right, above: *Garypus bonairensis withi* ♀ from Mustique Island; below  
*Garypus bonairensis realini* ♀ (no 89) from the Baranca Alto.

Types and paratypes (Gotó and Pekelmeer, types dd 14.IX.1930) in the collection of MAX BEER, Wien; other paratypes in the Zoological Museum of Amsterdam; material from stat. 182 for the greater part in the Rijksmuseum van Natuurlijke Historie, Leiden, and the Zoölogisch Laboratorium, Utrecht; Gar. 17, 19, 23 and 39 in the collections of J. C. Chamberlin and C. Clayon Hoff; Gar. 18 and 25 in British Museum (Natural History).

Description (based on 23 ♂♂ 26 ♀♀ alcohol specimens)

Body, chelicerae included ♂♂ 4.4–4.8 ♀♀ 5.0–6.0 mm in length; animal yellowish to a dark reddish brown, the chelal fingers often nearly black; the medio-lateral parts of the median and posterior discs as a rule much paler than the rest of the carapace, while the tergites also are often pigmented in a rather characteristic way (fig. 8); derm distinctly reticulated on carapace, coxae, palps, legs and abdomen, often appearing somewhat subsquamose, in connection with this more or less granulated or tuberculated on carapace, coxae, palps and abdomen; hairs not always slender and acute, but sometimes relatively short and stublike.

Carapace subtriangular, 1.1–♀ 1.15–♂ 1.2–1.3 times as long as broad, ♂ 1.17–1.26 ♀ 1.35–1.50 mm long; ocular breadth about  $\frac{3}{5}$ , greatest width; anterior margin bilobed; posterior margin straight; lateral faces weakly convex near the posterior eyes, concave anteriorly to the eyes, forming a well marked cucullus; furrow of cucullus and both transfer furrows fairly well marked. Anterior margin generally with 8 rather long setae, all other setae stublike and very short; in all a varying number of about 80 setae on carapace. Two pair of eyes; anterior eye with a well-developed cornea, directed laterally and anteriorly; posterior eye with more weakly developed and less convex cornea, directed laterally and posteriorly; eyes nearly contiguous; the anterior one about 0.10–0.12 mm in diameter, 2–3 times this distance from the middle of the anterior margin of the carapax. One pair of lyrifissures on the cucullus, at least 2 pairs behind the eyes and usually 3–4 pairs on the posterior disc.

Abdomen 1.5–1.8–2.0 times as long as broad, about 3 times the length of the carapace. Tergites and sternites 2–10 divided. The 1st–10th tergite with ♂♂ 8–10, 8–10, 8–10, 8–10–12, 8–12, 10–12–14, 10–12–14, 10–12–14, 10–12–14, 8–10–12, ♀♀ 8–10, 8–12, 8–10–14, 10–12–14, 12–14–16, 12–16–18, 14–18–24, 11–16–20, 11–14–18, 10–12–18 short, acute setae; the 2nd–10th sternite with ♂♂ 20–26–30, 7–8–10, 7–8–10, 7–8–10, 7–9–11, 8–9–10, 8–10–14, 8–9–10, 8–9–10, ♀♀ 9–10–14, 7–8–9, 8–10–12, 8–10–14, 9–12–14, 10–13–14, 11–14–15, 8–10–12 somewhat longer setae; 11th tergite, united with 11th sternite, with 10–11–14 setae; 12th segment (Anahöcker) dorsally with 2 minute and ventrally with 2 longer setae. Genital complex see fig. 6. Tergites and sternites with a series of, as a rule, about 6–7 lyrifissures; 11th segment with about 8 fissures.

Coxal area (measurements from no 10) subtriangular, 1.9 by 1.5 mm. Maxilla (palpal-coxa) 0.8 mm in length (in total 0.9; accessory length 0.7), breadth 0.45 mm (acc. br. 0.6); 3–4 rather long setae on the manducatory process; 1 larger and 3–4 smaller setae bordering the trochantic foramen, in total with 18–23–25 small setae. Median maxillary lyrifissure bent into an U, above the middle of the mesal margin; trochanteral organ comprising of three small fissures; posterior lyrifissure U-shaped, laterally on the clivus. Coxa I and II (1st and 2nd pedal-coxa) with 6–10–11, III with 9–14–18 and IV with 16–22–24 small setae, and 1 lyrifissure

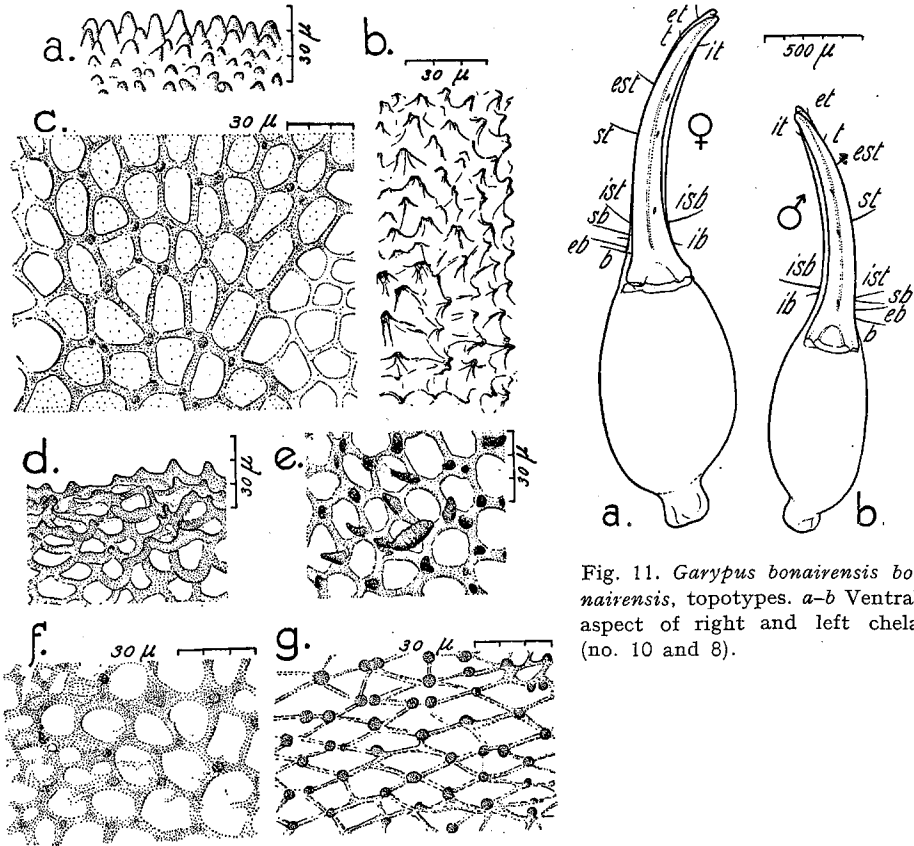


Fig. 11. *Garypus bonairensis bonairensis*, topotypes. a-b Ventral aspect of right and left chela (no. 10 and 8).

Fig. 8. *Garypus bonairensis bonairensis*, topotypes (a-b, d-g), and *G. bonairensis realini*, paratype (c). Dermal parts. a-b Pedal coxa and abdomen (no. 3). c Central part of carapaceal disc (no. 93). d-e Latero-distal and medio-distal part of carapace (no. 7). f-g Medio-lateral part of tergite 5 and central part of tergite 1 (no. 10).

near the trochantic foramen. Length of coxa I 0,26 mm (in total 0,50; acc. l. 0,40), breadth 0,50 mm (acc. br. 0,50); length of coxa IV 0,4 mm (in total 0,95; acc. l. 0,8), breadth 0,6 mm (acc. br. 0,65).

Chelicera about  $2\frac{1}{2}$  times as long as broad and 2 times as deep; ♂♂ 0,42–0,44 ♀♀ 0,48–0,50 mm long, about  $\frac{2}{5}$  carapaceal length or less,  $1\frac{1}{2}$  the length of movable finger; inner side with a marked concavity near the base of the fixed finger making the base appear distorted. Basal part with 5 setae: ES placed laterally below the insertion of the movable finger; IS at the innerside above the base of the unmovable finger; BS between ES and SBS; SBS more dorsally near the base of the fixed finger and LS about halfway up the unmovable finger. Movable finger



with 1 seta: GS, inserted ventrally to the base of the prae-apical tooth and extending beyond the apical tooth almost as far as the tip of the ♂ galea. Fixed finger rather short, the outer margin distinctly convex; distally with a row of 5-7 retroconical denticles, the most distal two very small and situated on the short, curved and very sclerotic apical tooth. Movable finger more slender, a little curved; apical tooth short, distinctly curved and very sclerotic; sub-apical lobe approximate to the apical tooth. *Flagellum* consisting of 3 stiff and bladeliike setae, up to 0,08 mm long, with a few serrations or incisions placed unilaterally at and near the end of each. *Lamina exterior* flatly convex in the central portion. *Serrula exterior* (serrula) a comblike series of 25-27-28 blunt teeth, its most distal and proximal parts only free, distal point of attachment distinctly below to that of the galeal seta; teeth rather uniform with the exception of the terminal one which is more acute. *Serrula interior* (lamina interior) a membranaceous series of about 20 or more, confluent plates, the most distal ones modified, especially the apical one which is much longer and spine-like. *Galea* in ♀♀ 0,09-0,11-0,13 mm long, about twice as long as the galeal seta and 0,02-0,03 mm broad at the base, with 4-5-6 branches distally and ventrally; in ♂♂ much smaller, about as long as the galeal seta, as a rule with 2-3 short, and often terminally broken branches. Interior and exterior lyrifissures conspicuous, the latter situated below the base of the interior seta, the former near the insertion of the movable finger at the other side; interior and exterior condylar fissures smaller.

**P a l p u s** moderately slender, with many, short and often rather stubby setae, which are a little longer on the chelal fingers than elsewhere. *Trochanter* with stout pedicle, about ♂ 0,55 ♀ 0,70 mm long, almost  $1\frac{3}{4}$  times as long as broad; flexor face well rounded; 2 lyrifissures on the outer face near the articulation between trochanter and femur. *Femur* with a small and rather ill-defined pedicle, subcylindrical, widest in its distal one-fourth part; outer face convex in the distal one-third; inner face very weakly concave in the basal one-half, weakly convex beyond but with a weak concavity near the distal end; length ♂♂ 1,20-1,37-1,50 ♀♀ 1,40-1,60-1,85 mm, ♂♂ 4,7 ♀♀ 4,8 times the width. *Tibia* with a well defined and somewhat curved pedicle, widest in its distal part; outer side almost straight in the basal two-thirds, more convex beyond; inner side weakly convex in the basal half but very weakly concave beyond; length ♂♂ 1,04-1,20-1,32 ♀♀ 1,40-1,60-1,85 mm, ♂♂ 3,9 ♀♀ 3,8 times the width; 2 larger and usually 3 small lyrifissures laterodorsally on the basal part. *Chela* with a well defined pedicle in centre of base; hand without pedicle widest near the middle; outer side of hand weakly or flatly convex, inner side evenly convex; when seen from the side the dorsal side is weakly convex, the ventral, with exception of the well-rounded basal part, flatly convex; fixed fingers very slender, gently curved, the fixed one slightly S-shaped; hairs on fingers more densely and somewhat longer than on hand. Total length, pedicle included, ♂♂ 2,05-2,27-2,55 ♀♀ 2,50-2,68-3,20 mm, ♂♂ 1,95 ♀♀ 2,0 carapaceal length, ♂♂ 4,2-4,5-4,8 ♀♀ 3,7-4,0-4,3 times the width; length of chela without pedicle ♂♂ 2,1 ♀♀ 2,5 mm, about ♂♂ 4,2 ♀♀ 3,7 the width; pedicle about 0,15 mm in length, as a rule somewhat wider than long; hand with pedicle ♂♂ 1,06 ♀♀ 1,22 mm in length, without pedicle ♂♂ 0,95 ♀♀ 1,15 mm, width ♂♂ 0,44-0,50-0,54 ♀♀ 0,60-0,67-0,86 mm, almost 1,1 times the depth; length of movable finger ♂♂ 1,25 ♀♀ 1,55 mm, about 0,55 total length of chela, ♂♂ 1,17 ♀♀ 1,28-1,43 as long as hand with pedicle. Fixed finger with ♂♂ 69-75-80 ♀♀ 70-80-92, movable finger with ♂♂ 61-66-70 ♀♀ 62-71-80 contiguous, evenly spaced, rather uniform, marginal

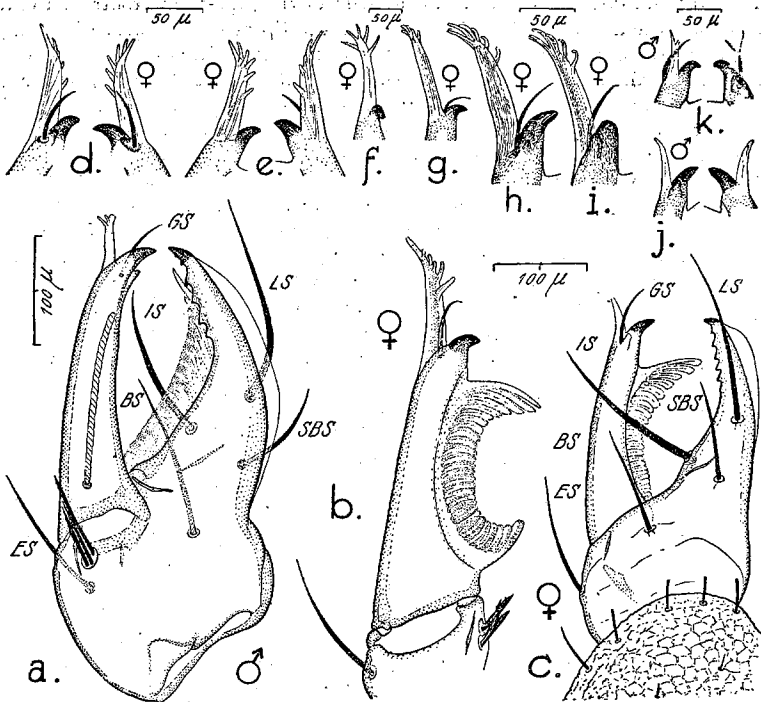


Fig. 9. *Garypus bonairensis bonairensis*, topotypes (a-f, j-k), *G. bonairensis withi* syntype (h-i), and *G. bonairensis realini*, paratype (g). a Interior aspect of right chelicera (no 3). b Interior aspect of movable cheliceral finger (no 11). c Exterior aspect of left chelicera with part of carapace (no 9). d-e Dorsal and ventral aspect of tip of movable cheliceral finger (no 1). f-g Galea from ventral (no 12 and 87). h-i Galea from dorsal and ventral. j-k Tip of movable cheliceral finger (no 4).

teeth; when seen from the side the teeth are broadly subconical, very slight / retrorse, bearing a distinct cusp; row of teeth on fixed finger at its proximal side for 2-5 teeth longer as on movable finger; the distalmost teeth very near the base of the heavy sclerotized and nical apical tooth, which is penetrated by a venom duct. Lamina defensor a very narrow blade. Fixed finger with 8 *tactile setae*; on the outer side: *et* near tip of finger, *est* almost one-third of finger length from tip; *ist* at one-fourth to one-fifth from finger base; *eb* less than one-tenth of finger length from base and *esb* between, a little nearer to *eb* than to *ist*; dorsally: *it* almost in the middle between *et* and *est*; on the inner side *ib*, the distalmost, and *isb* between the level of *esb* and *ist*. Movable finger with 4 *tactile setae* on the outer side: *t* about one-sixth of the finger length from the tip; *st* near the midpoint of the finger; *sb* about one-fifth of finger length from the base, and *b* midway between *sb* and the finger base. Fixed finger usually with 3 lyrifissures: one near the articulation of the

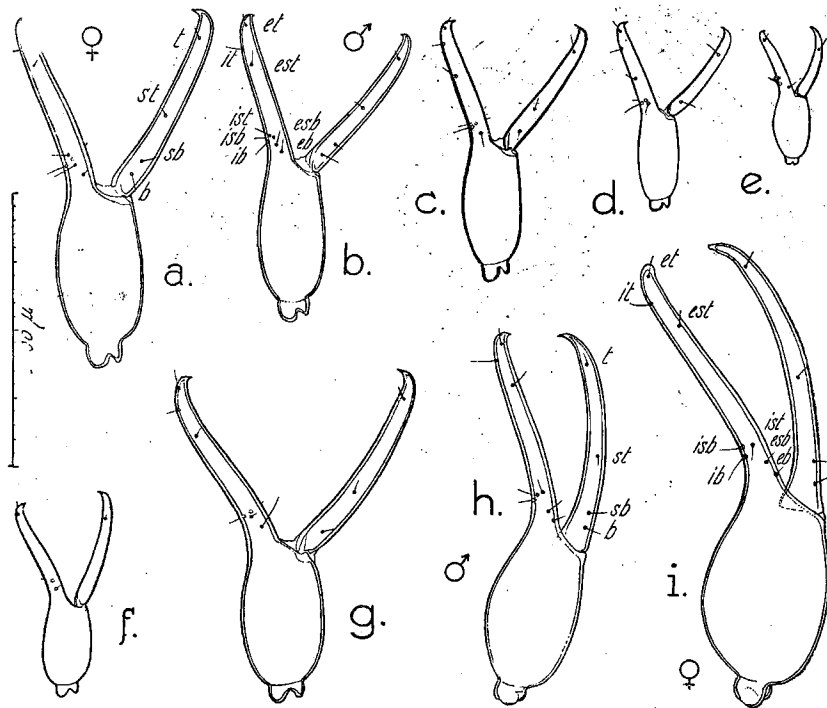


Fig. 10. *Garypus bonairensis bonairensis*, topotypes (a-e) and *G. bonairensis realini*, paratypes (f-i). Exterior aspect of right chelae. a-b, h-i Adult (no 2, 32, 98 and 88). c, g Triton, mph (no 26 and 90). d Deutonymph (no 28). e-f Protonymph (s.n., no 91).

movable finger, one dorsally near the base and another dorsally above the middle of the finger. Movable finger ventrally with 3 lyrifissures or less: usually one near the base, another somewhat above the middle and another between.

Leg I with basifemur (pars basalis of femur) and telofemur (pars tibialis of femur), metatarsus and telotarsus; slender; setae stubby, short, except on the flexor margin of tibia and tarsi, where the setae are stouter and acuminate. Telepodite I about 2, IV  $2\frac{1}{3}$  times carapaceal length. A closely parallel series of 4 lyrifissures on the antero-dorsal surface of the trochanter; a group of 1 large and 2-3 smaller fissures at the antero-ventral surface of the basifemur; probably 2-3 fissures on the telofemur antero-dorsally. Arolium shorter as the two simple claws. Leg I (measurements nos 1 and 13). Trochanter more or less subtriangular, about  $1\frac{1}{2}$  times as long as wide, about  $\frac{2}{3}$  tibial length; flexor face, excluding pedicle, convex, extensor face rather short. Basifemur subcylindrical, deepest at the distal end; flexor side very weakly convex or nearly straight except at the proximal end, extensor margin convex in distal third; length almost 4 times the depth; with a freely mobile inter-femoral articulation. Telofemur subcylindrical, much shorter than the basifemur, flexor side convex, extensor side flatly convex; length about 2 times the depth.

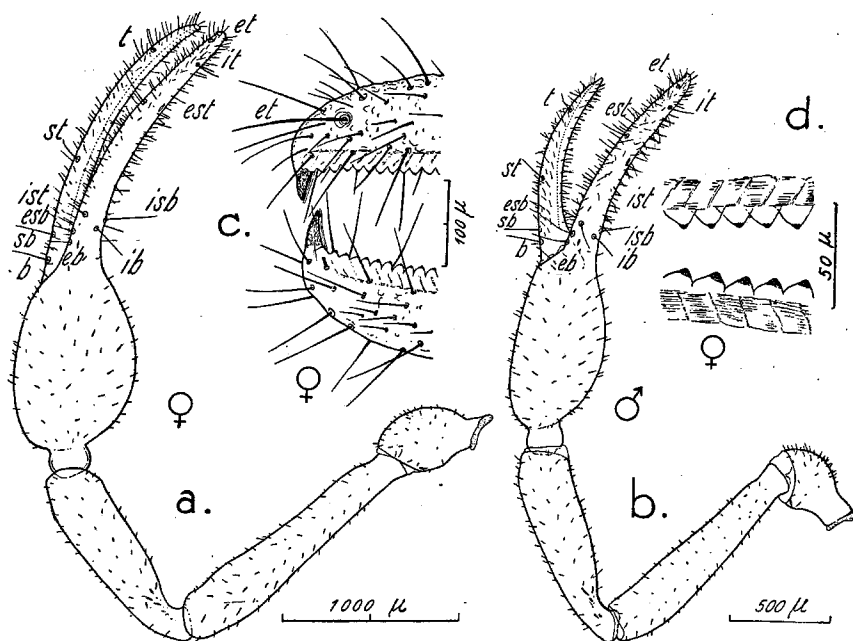


Fig. 12. *Garypus bonairensis bonairensis*, topotypes. *a-b* Left chelipeds from dorsal (no 5 and 4). *c* Tip of chela (no 12). *d* Marginal teeth of fixed (upper) and movable (lower) finger, one third of finger length from top (no 12).

Tibia subcylindrical, somewhat S-shaped; length 4 times the depth, a good  $\frac{1}{3}$  carapaceal length, a good  $1\frac{1}{3}$  the length of the telofemur and  $\frac{1}{2}$  that of whole femur. Metatarsus subcylindrical,  $3\frac{1}{2}$  as long as wide; about  $\frac{5}{7}$  tibial length; with a membranous inter-tarsal articulation. Telotarsus tapering towards the distal end, 3 times as long as wide; meta- and telotarsus together  $1\frac{1}{3}$  as long as the tibia. *Leg IV*. Trochanter almost  $2\frac{1}{2}$  times as long as deep, almost  $\frac{2}{3}$  tibial length; flexor side nearly straight, extensor side markedly convex. Basifemur subtriangular and somewhat flattened, with unevenly convex flexor margin and unevenly S-curved extensor margin; not yet 2 times as long as deep; with an oblique immobile inter-femoral symphysis. Telofemur flattened,  $1\frac{1}{2}$  as deep as wide, with a straight flexor margin almost continuous with that of the basifemur, extensor margin very weakly convex; length a good 4 times the depth, a good  $2\frac{1}{2}$  basifemural length. Tibia subcylindrical, only very slightly flattened, flexor margin weakly S-shaped, extensor margin almost straight, excluding the weakly convex basal part; length 6 times the depth,  $\frac{2}{3}$ - $\frac{3}{4}$  carapaceal length, as long as the telofemur, about  $\frac{3}{4}$  that of whole femur. Metatarsus subcylindrical,  $3\frac{1}{2}$  as long as deep, about  $\frac{1}{2}$  tibial length, with a submembranous inter-tarsal articulation. Telotarsus tapering towards the distal end, 3 times as long as wide; meta- and telotarsus together about  $\frac{4}{5}$  as long as the tibia.

**Garypus bonairensis realini** subsp. nov.

[Plate I and II; fig. 8-10; table 4-7]

**H o l o t y p e:** Rijksmuseum van Natuurlijke Historie, Leiden, collector's number Garypus 94 (♂ alcohol specimen, right palp and left chelicera with adjacent part of carapace dissected, mounted in balsam on slide); type of ♀ Gar. 88 (alc. spec., right palp dissected, mounted in balsam), Rijksmuseum Leiden. Type-locality: Aruba, Seroe Plat (type of female collected near Boca Grandi). **P a r a t y p e s:** Zoölogisch Laboratorium, Utrecht, Gar. 93 (♂ l. chela diss.), 89 (♀ l. chela diss.), 98 (♂ r. chela and leg III-IV diss.); 87, 90, 92, 96, 99, 100 (tritonymphs), 91 (protonymph); all alcohol specimens mounted in balsam. Collection C. Clayton Hoff, Fort Collins, Colorado, Gar. 95 (♀) and 97 (trit.).

**D i a g n o s i s** (based on 3 ♂♂ 3 ♀♀ alcohol-specimens, compared with *G. bonairensis bonairensis*): Body ♂♂ 5,0-5,2 ♀♀ 5,6-6,2 mm long, chelicerae included; colour design conspicuous, often pigmented with black around the anterior eyes. *Carapace* ♂♂ 1,34-1,42 ♀♀ 1,34-1,52 mm long. Length of palpal *femur* ♂♂ 1,70-1,78-1,90 ♀♀ 1,90-2,00-2,10 mm, 5,35 times the width. Length of *tibia* ♂♂ 1,44-1,53-1,60 ♀♀ 1,64-1,65-1,68 mm, ♂♂ 4,13 ♀♀ 4,00 times the width. Length of *chela*, pedicle included, ♂♂ 2,70-2,90-3,05 ♀♀ 2,90-3,18-3,40 mm, ♂♂ 1,95 ♀♀ 2,0 carapaceal length, ♂♂ 4,27 ♀♀ 3,65 times the width; length of chela without pedicle about ♂♂ 2,75 ♀♀ 3,00 mm, about ♂♂ 4,0 ♀♀ 3,45 the width; hand with pedicle ♂♂ 1,2 ♀♀ 1,4 mm in length, without pedicle ♂♂ 1,05 ♀♀ 1,25 mm, width ♂♂ 0,64-0,67-0,70 ♀♀ 0,72-0,87-0,96 mm; length of movable finger ♂♂ 1,6-1,8 ♀♀ 2,0-2,1 mm, about 0,61 total length of chela, 1,47 as long as hand with pedicle. Fixed finger with ♂♂ 78-96 ♀♀ 92-98, movable finger with ♂♂ 68-79 ♀♀ 74-80 teeth.

ARUBA, Rooi Prins, 9.I.1937, *Stat. 246*, under stones between some shrubs (Gar. 87 tritonymph; juv. s.n.); Boca Grandi, 5.I.1937, *Stat. 253*, between sandy leaf-decay of scattered low shrubs (Gar. 88 ♀); Rooi Spoki, 6.II.1937, *Stat. 255*, under debris with very little plant-decay (Gar. 99-100 triton.); Baranca Alto, 29.XII.1936, *Stat. 260*, under stones between scattered shrubs (Gar. 89 ♀, 90 triton., 91 proton.); Rooi Taki, 29.XII.1936, *Stat. 260B*, between scattered shrubs (Gar. 92 triton.); Seroe Plat, 10.II.1937, under debris on weathered soil (Gar. 93-94 ♂♂, 95 ♀, 96-97 triton.); Reef of Boekoeti, 8.II.1937, *Stat. 278*, beach-vegetation (Gar. 98 ♂).

Most of these localities are not influenced by seawater: often situated 2 km or more from sea (*Stat. 255, 260*) at noticeable heights (*Stat. 155 and 260* at about 50 m, 271 at 90 m).

The specimens from Aruba are only provisionally described as a new subspecies: their most striking characteristics probably being a result of larger size and different habitat.

Named in honor of brother M. REALINO JANSSEN, Curaçao, amateur-naturalist.

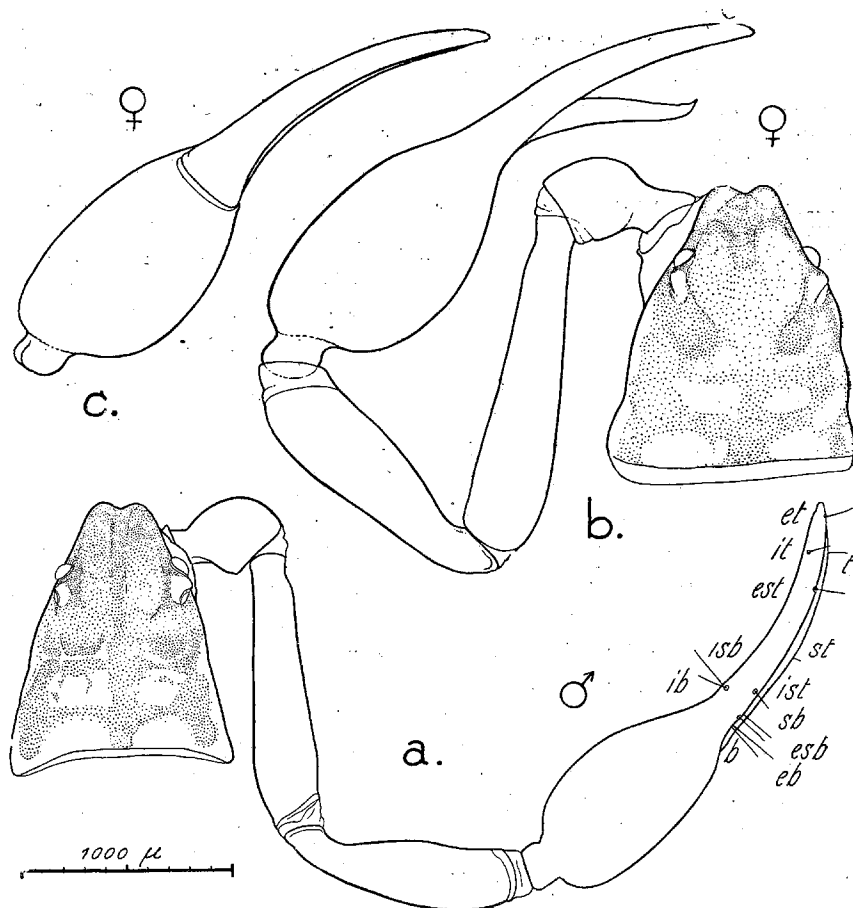


Fig. 13. *Garypus bonairensis withi*, lectotype and syntype. *a* Carapace with right cheliped. *b* Carapace with left cheliped. *c* Ventral aspect of right chela.

***Garypus bonairensis withi* Hoff, 1946**

[Plate II; fig. 9 and 13; table 4-7]

*Garypus floridensis* Banks, WITH, 1906, p. 41, fig. 9, tab. 2 fig. 4a-d; WITH, 1907, p. 70-72, tab. 9 fig. 26-28 [Mustique Island]; BEIER, 1932, p. 220, *pro parte* [excl. Florida, BANKS].

*Garypus withi* HOFF, 1946, p. 198 [based on description of WITH].

**Material:** 1 ♂ and 1 ov. ♀ of „*Garypus floridensis*, Banks” studied by WITH and considered by me as types of *Garypus withi* Hoff, the male designated as the

TABLE 4.  
Variation in *Garypus bonairensis* (length of chela and carapace)

	length of carapace, in mm													totals		
	1.02	1.06	1.10	1.14	1.18	1.22	1.26	1.30	1.34	1.38	1.42	1.46	1.50		1.52	
2.05		t	57 t													1
2.10	4	t	55 61													3
2.15				58												1
2.20				54	3	9										4
2.25					49											2
2.30				23 32												2
2.35				8 45	50	15										5
2.40				52												4
2.45				38		17 18	M									4
2.50					(t)	33										1
2.55					(t)	44										1
2.60						(t)	F									2
2.65							34 (t)	48	13							1
2.70							(t)									4
2.75							40	31 47	36	16						1
2.80								(t)								5
2.85							41	1 14	35							2
2.90								25 (t)								5
2.95							2 24	43	21	37						5
3.00									(98)	20	11					2
3.05											M					(1)
3.10										10 22						3
3.15										39						1
3.20										5						2
3.25										19	6					(1)
3.30										(95)						(1)
3.35										(93)	30					(1)
											(94)					(1)
													7			1
														(88)		(1)
														(89)		(1)
															23	26
	1		3	8	3	6	2	7	4	9	2	1			23	26
							3		(2)		(1)			(2)		(3)
									(1)							(3)

1-61 adult specimens } from Bonaire : *G. bon. bonairensis*  
t tritonymph }  
(88)-(98) adult specimens } from Aruba : *G. bon. realini*  
(t) tritonymph }  
M adult specimen } from Mustique : *G. bon. wihi*  
F adult specimen (fide HOFF) } from Florida : *G. floridensis*  
**males in thick type**





TABLE 6.

Variation in *Garypus bonairensis* (length and width of palpal tibia)

	width of tibia, in mm										totals		
	.26	.28	.30	.32	.34	.36	.38	.40	.42	.44			
1.04	4	57	t	t								2	
1.08		58	61	t								2	
1.12			54									1	
1.16			3	23								4	
			38	55									
1.20		8	M	9	15	(t)						4	
				32	(t)								
1.24			33	50	52	(t)	2	25				3	2
1.28			45	18	34	44	(t)					5	
				49		(t)							
1.32			17	40	11	16	14	47				2	5
					31	F	(t)	F					
1.36					5	24	13	21					6
					48		36						
1.40					41	1	22		35				6
							37	43					
1.44					(98)				30	10	20		3 (1)
									M				
1.48									39	6			2
1.52											19		1
1.56									(93)		7		1 (1)
1.60										(94)			(1)
1.64										(95)		(89)	(2)
1.68													(1)
totals	2	2	10	8	1	9	3	2	3			23	26
					(1)		(1)	(1)	(1)	(1)	(1)		(3)
													(3)

1-61 adult specimens } from Bonaire : *G. bon. bonairensis*  
t tritonymph }  
(88)-(98) adult specimens } from Aruba : *G. bon. realini*  
(t) tritonymph }  
M adult specimen } from Mustique : *G. bon. withi*  
F adult specimen (fide Hoff) } from Florida : *G. floridensis*  
**males** in thick type

TABLE 7.

Variation in *Garypus bonairensis* (length and width of palpal femur)

	width of femur, in mm							totals		
	.26	.28	30	.32	.34	.36	.38			
1.20	57 t	t						1		
1.25	61 4	t						2		
1.30	58	55	45 54					4		
1.35		3 23	32 49					4		
1.40		8 33	18 50	38 44				6	1	
			(t) M	47						
1.45		17 (t)	9 15	25 41				3	2	
			(t) (t)	(t)						
1.50			23 4	52 (t)	F F			3	1	
			40							
1.55				16 21	48				5	
				31 36						
1.60				1 5	13 14				7	
				37 43	24					
				(t)						
1.65					10 11	6			4	
					35					
1.70				(98)		20		1	(1)	
1.75				(93)	19 22	30 39		4	(1)	
1.80						M				
1.85						7		1		
1.90						(94)			(1)	(1)
						(95)				
1.95										
2.00							(89)			(1)
2.05										
2.10							(88)			(1)
totals	4	6	10 1	3 11 (2)	9	5 (1) (1)		23	26	(3) (3)

1-61 adult specimens } from Bonaire : *G. bon. bonairensis*  
t tritonymph }  
(88)-(98) adult specimens } from Aruba : *G. bon. realini*  
(t) tritonymph }  
M adult specimen from Mustique : *G. bon. withi*  
F adult specimen (fide Hoff) from Florida : *G. floridensis*  
**males** in thick type

lectotype: Specimens in spirit, from „Mustique Island, Juhè, sandy seashore under drift-wood”, in British Museum (Natural History).

Some characteristics (compared with *G. bonairensis bonairensis* and *G. bonairensis realini*): Colour design conspicuous. *Carapace* ♂ 1,26 ♀ 1,42 mm long. Length of palpal *femur* ♂ 1,40 ♀ 1,70 mm, about 4,8 times the width. Length of *tibia* ♂ 1,20 ♀ 1,44 mm, about 4 times the width. Length of *chela*, pedicle included, about ♂ 2,35 ♀ 2,70 mm, 1,9 carapaceal length, about ♂ 4,0 ♀ 3,75 times the width; length of chela without pedicle about ♂ 2,20 ♀ 2,55 mm, about ♂ 3,8 ♀ 3,55 the width; hand with pedicle ♂ 1,1 ♀ 1,25 mm in length, without pedicle about ♂ 0,95 ♀ 1,10 mm, width ♂ 0,58 ♀ 0,72 mm; length of movable finger ♂ 1,3 ♀ 1,5 mm, about 0,56 total length of chela, about 1,25 as long as hand with pedicle.

The specimens from Mustique Island (S. of St. Vincent), described by WITH as *G. floridensis* Banks, but considered by HOFF as belonging to a new species, are — notwithstanding their great similarity with BEIER's material of *G. bonairensis* — for practical reasons, not united taxonomically with the Bonaire specimens.

### *Garypus floridensis* Banks, 1895

[Table 4-7]

*Garypus floridensis* BANKS, 1895, p. 9 [Florida]; CHAMBERLIN, 1921, p. 191; CHAMBERLIN, 1930, p. 612; BEIER, 1932, p. 220, *pro parte* [excl. data of WITH]; BEIER, 1936, p. 446, *pro parte* [excl. data of WITH]; ROEWER, 1937, p. 268; HOFF, 1946, p. 195-198, fig. 1-3 [first detailed description of type-material, 1 ♂ lectotype, 1 ♀].

Material: 1 ♂ and 1 ♀ shortly described by BANKS, in detail by HOFF, from under drift-wood on the ocean beach, near St. Lucie River, Indian River, Florida in U.S. National Museum. (Not studied.)

Some characteristics (compared with *G. bonairensis*, according to HOFF's description of the material): Colour design not conspicuous. *Carapace* ♂ 1,27 mm long. *Palpus* in male not distinctly smaller than in female; *chela* of female even a little more slender than of male; dorsal side of hand somewhat irregularly convex; length of *femur* ♂ 1,50 ♀ 1,50 mm, ♂ 4,4 ♀ 4,5 times the width. Length of *tibia* ♂ 1,31 ♀ 1,33 mm, ♂ 3,7 ♀ 3,85 times the width. Length of *chela*, pedicle included, about ♂ 2,4 ♀ 2,4 mm, ♂ 1,9 carapaceal length, about ♂ 4,0 ♀ 4,3 times the width; length of chela without pedicle ♂ 2,25 ♀ 2,25 mm, ♂ 4,0 ♀ 4,3 the width; hand with pedicle about ♂ 1,23 ♀ 1,23 mm in length, without pedicle ♂ 1,08 ♀ about 1,08 mm, ♂ 3,75 ♀ 4,0 the width, width ♂ 0,60 ♀ 0,56 mm; length of movable finger ♂ 1,26 ♀ at least 1,3 mm, about 0,53 total length of chela, almost as long as hand with pedicle. Basifemur of first *leg* distally much widened and bulging.

Although this paper is confined to the study of the adult animals only, some attention may be drawn to the imperfect chaetotaxy of the *juveniles*, as tabulated below, which enables an easy appreciation of the several larval instars in *Garypus b mairiensis* (see fig. 10).

<i>number of tactile setae on finger</i>	fixed	movable	together
adult	8	4	12
tritonymph	7	3	10
deutonymph	6	2	8
protonymph	3	1	4

Key to the Caribbean species  
of the genus *Garypus*

(based on 23 ♂♂ 26 ♀♀ *G. bon. bonairensis*, 3 ♂♂ 3 ♀♀ *G. bon. realini*, 1 ♂ 1 ♀ *G. bon. withi* and a description of *G. floridensis* by Hoff, 1946, p. 195-198).

- 1a Male not distinctly smaller than female; chela of female not stouter, even probably a little more slender than of male; movable chelal finger about equaling hand with pedicle, appreciably shorter than femur; dorsal side of chelal hand somewhat irregularly convex; basifemur of first leg distally much widened and bulging. (Length of chela ♂♀ about 2,4 mm, about ♂ 4,0 ♀ 4,3 times the width; tibia ♂ 3,7 ♀ 3,85 the width; femur ♂♀ 1,50 mm in length; colour design probably not conspicuous) . . . . . *G. floridensis* Banks, 1895 (from Florida)
- 1b Male distinctly smaller than female; chela of female stouter than of male; movable chelal finger obviously longer than hand with pedicle, not appreciably shorter than femur; dorsal side of chelal hand not irregularly convex; basifemur of first leg distally widened but not bulging. *G. bonairensis* Beier, 1936..2
- 2a Length of chela, pedicle included, ♂ 2,70-2,90-3,05 ♀ 2,90-3,18-3,40 mm; movable finger almost 1,5 as long as hand with pedicle; length of femur ♂ 1,70-1,78-1,90 ♀ 1,90-2,00-2,10 mm. (Chela with pedicle about ♂ 4,25 ♀ 3,65, tibia ♂ 4,1 ♀ 4,0, femur about 5,35 as long as wide; colour design conspicuous) . . . . . *G. bonairensis realini* subsp. nov. (from Aruba)
- 2b Length of chela, pedicle included, ♂ 1,05-2,55 ♀ 2,50-3,20 mm; movable finger about ♂ 1,17 ♀ 1,28 (in the largest specimen almost 1,45) as long as hand with pedicle; length of femur ♂ 1,20-1,50 ♀ 1,40-1,85 mm . . . . . 3
- 3a Length of chela, pedicle included, ♂ 1,05-2,27-2,55 ♀ 2,50-2,68-3,20 mm, ♂ 4,2-4,5-4,8 ♀ 3,7-4,0-4,3 times the width; tibia ♂ 3,9 ♀ 3,8 times the width; colour design often rather conspicuous . . . . . *G. bonairensis bonairensis* Beier, 1936 (from Bonaire)
- 3b Length of chela, pedicle included, ♂ 2,35 ♀ 2,70 mm, ♂ 4,0 ♀ 3,75 times the width; tibia about 4,0 times the width; colour design conspicuous . . . . . *G. bonairensis withi* Hoff, 1946 (from Mustique Island)

**Pseudochthonius Balzan**Genotype: *Pseudochthonius simoni* Balzan

Venezuela, Trinidad, St. Vincent, Aruba, Ecuador.

***Pseudochthonius arubensis* spec. nov.**

[Fig. 14–15]

**Holotype:** Rijksmuseum van Natuurlijke Historie, Leiden, coll. nr *Pseudochthonius* 1 (♂ alcohol specimen, mounted in balsam on slide, right palpal claw and tip of fixed finger of left claw missing, leg I and IV dissected). Type-locality: Aruba, cave of Quadirikiri.

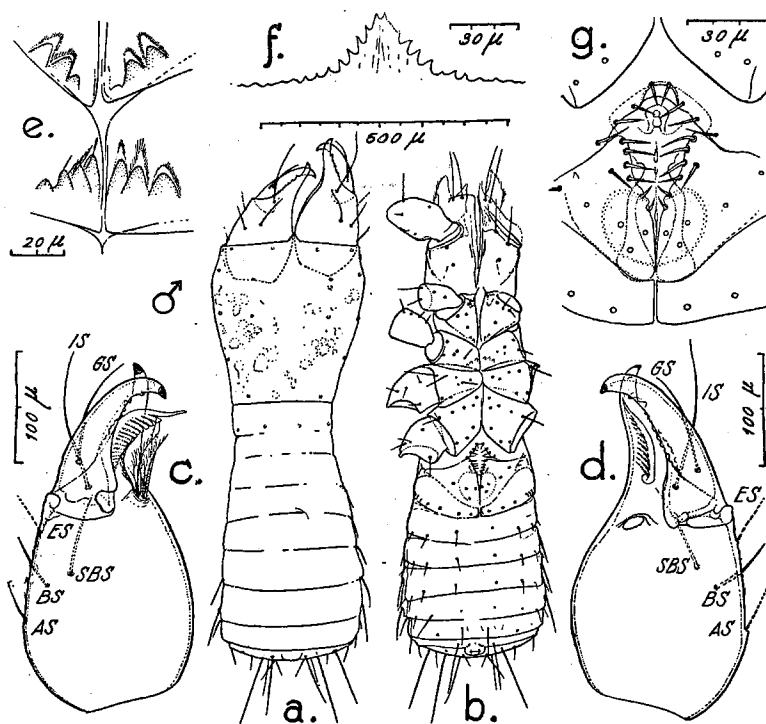


Fig. 14. *Pseudochthonius arubensis*, holotype. a Dorsal aspect of body with chelicerae. b Ventral aspect of body with right trochantera. c Ventral aspect of right chelicera. d Ventral aspect of left chelicera, flagellum and serrula omitted. e Coxal spines. f Epistome. g Genital complex.

**D i a g n o s i s** (compared with descriptions of other species of *Pseudochthonius*): *Chela*  $1\frac{3}{4}$  carapaceal length, 5,5 times the depth; length of movable finger 1,8 times the length of hand with pedicle; fixed finger with 28 well separated teeth, arranged in a single row, alternatively short and long, proximal side of margin with 2-3 acuspid and rounded teeth; movable finger with 28 teeth, 12-15 well separated, slightly retroconical, acute and of equal size, other teeth gradually reducing, the 10-12 proximal ones acuspid and flattened; *ist* at least two times as far from *est* as from *esb*; *sb* at least two times as far from *st* as from *b*. Palpal *femur*  $4\frac{1}{2}$  times as long as broad; *tibia* almost twice the width. Fixed finger of *chelicera* with 1 rather blunt tooth, followed by a row of 6 denticles; movable finger with about 7-9 conical denticles; palm of *chelicera* with ES, SBS, BS and AS; GS inserted at  $\frac{1}{4}$  of the finger-length from base of movable finger; ♂ *galea* a very minute tubercle. *Eyes* lacking. *Carapace* with 16 setae; 4th *sternite* with 6 marginal setae; *coxa* I with 2-3, II with 3-4 coxal spines. (Carapace 0,40 mm in length).

ARUBA, Cave of Quadirikiri, 9.II.1937, *Station 251*, 30-35 m from entrance in total darkness, together with very many mites living in bat-faeces (*Pseudochth.* 1 adult ♂).

#### D e s c r i p t i o n (based on 1 ♂ mounted specimen)

Body, *chelicerae* included, almost 1,25 mm in length; animal yellowish to yellowish-brown; derm reticulated or tessellated on pedipalps, carapace and abdomen, more or less subsquamose on femur of hindlegs and *chelicera*; hairs slender and acute.

*Carapace*  $1\frac{1}{7}$  times as long as broad, 0,40 mm long (epistome included); greatest width near anterior one-third; anterior margin very slightly convex, its lateral sides serrate, with a rather small, triangular, somewhat irregularly serrate epistome; lateral faces weakly convex, excepting the posterior part which is slightly hollowed; posterior margin straight,  $\frac{4}{7}$  times as long as the anterior one. Anterior margin with, very probably 6 setae, 1 on each side of the epistomal process and 2 on each lateral side, the more ventrally placed setae the smallest; posterior margin with 2 setae; in all, very probably, 18 setae on carapace. Eye-capsules or corneal eyes not visible.

*Abdomen* almost 2 times as long as broad,  $1\frac{1}{2}$  times the length of the carapace. Tergites and sternites entire. Tergites with an unknown number of setae; 3rd sternite with 8 or 10, 4th with 6 larger setae; 5th-10th sternite with 8-10 setae; all hairs rather long towards lateral sides and distal end of abdomen. The 11th tergite, united with 11th sternite, with, among 6 others, 2 long pseudotactile setae; 12th segment-ventrally with 2 minute setae. Genital complex essentially like the

genital area of ♂ *P. homodontatus* as figured by CHAMBERLIN (1929 fig. O-P). Ster-  
nites with many, mostly small lyrifissures.

Coxal area about 0,65 by 0,28 mm; ventral parts of anterior pedal coxae slightly overlapping those of posterior ones; inter-coxal tubercle lacking. Maxilla 0,24 mm in length (in total abt. 0,26; acc. l. 0,2), breadth 0,1 mm (acc. br. 0,15); 2 rather long setae on the manducatory process; 2 marginal setae bordering the trochantic foramen and 1 discal. Median and trochanteral maxillary lyrifissure simple; median fissure above the middle of the mesal margin; posterior lyrifissure laterally on the clivus. Coxa I with 3 setae bordering the trochantic foramen and 1 discal one; coxa II with 2 marginals and 3 discals. Length of coxa I 0,12 mm (in total 0,13; acc. l. 0,13), breadth 0,10 mm (acc. br. 0,12). Coxa I with 2, II with 3 larger and, in most cases 1 smaller coxal spines, each of them consisting of a narrowly triangular, fringed membrane, broadly inserted on a lobe-like pedicle. Coxa III with 2 marginal and 5 discal setae; IV with 2 marginals and 6 discals. Length of coxa IV 0,11 mm (in total 0,18; acc. l. 0,13), breadth 0,07 mm (acc. br. 0,09).

Chelicera a good 2 times as long as broad; 0,32 mm long,  $\frac{4}{5}$  carapaceal length. Basal part with 5 setae: ES placed laterally, below the insertion of the movable finger, probably rather small; AS placed proximal to the middle of the outer surface, small; SBS dorsally, a fair distance below the base of the unmovable finger, long; BS somewhat distal to the middle of the latero-dorsal surface of the hand; IS at the innerside of the base of the unmovable finger, very long. Movable finger with 1 seta: GS inserted near a point situated at one-fourth of the finger-length from the base, about 0,1 mm long, not extending beyond the tip of the finger. Fixed finger rather slender, the distal part distinctly curved; apical tooth short, conical, brown and heavily sclerotic; distal one-fifth of the inner margin smooth, 1 large, rather blunt, conical tooth below, followed by a row of 6-10 denticles; these denticles are variable in size and irregularly placed, diminishing in size and flattened at the proximal end. Movable finger rather stout and distinctly curved, 0,15 mm long,  $\frac{3}{8}$  carapaceal length; apical tooth short, conical, brown and heavily sclerotic; a row of about 7-9 rather small and blunt conical denticles along the central part of the inner margin; these denticles are variable in size and irregularly placed, in the middle of the row more pronounced than at each end; one much larger, curved, conical tooth halfway between apical tooth and distal end of row of denticles. *Flagellum* consisting of a very short row of about 6 (difficult to count accurately) feathered, more or less curved setae, arising from an elevated, ovate areole; hairs probably unilaterally pinnate and up to 0,07 mm long. *Serrula exterior* a contiguous comb-like series of 15 or 16 teeth, for at least its distal two-fifth (probably more) free; teeth rather uniform, with exception of the terminal one which is much longer, more acute and directed at an angle anteriorly from the others. *Serrula interior* in several respects similar to the serrula exterior, but smaller and more membranaceous, arising from an areole just distal and opposite to the interior seta, with 1 very long and acute apical, spinelike tooth and about 12 (very difficult to count accurately) smaller, contiguous teeth. *Galea* vestigial, occurring as a very minute tubercle located some distance from the finger tip.

Palpus slender, with relative long hairs. *Trochanter* fairly stout, 0,18 mm in length, almost 2 times the width; outer face unevenly convex, inner face very short; with about 10 hairs. *Femur* somewhat cylindrical, except near the ends, with a very short and not well differentiated pedicle; inner face nearly straight, outer face weakly convex at its distal side; wider in distal one-third than elsewhere; with 11

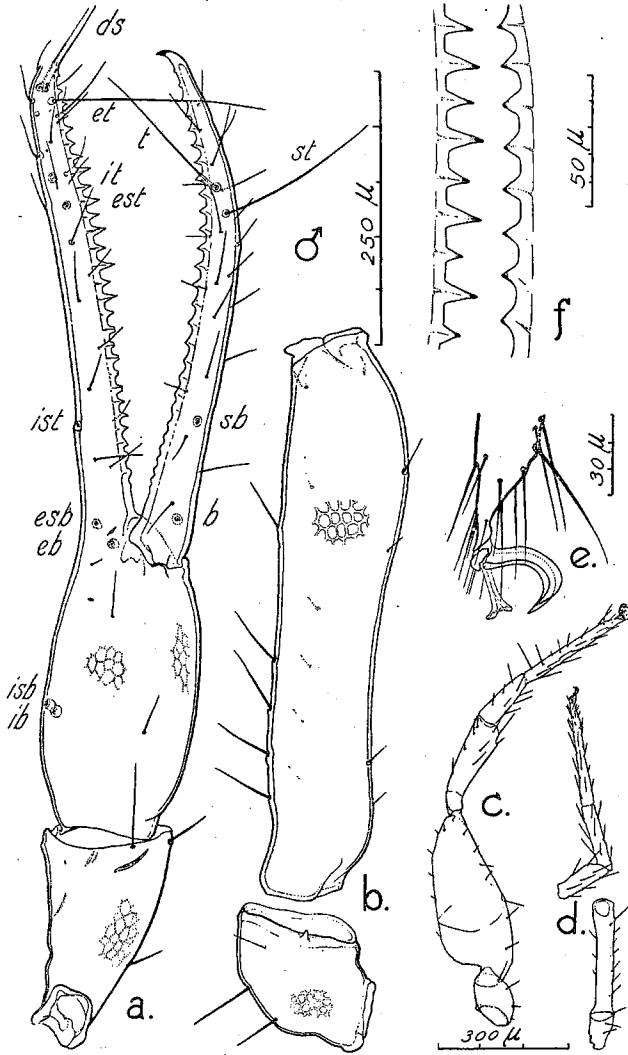


Fig. 15. *Pseudochthonius arubensis*, holotype. *a* Interior aspect of left chela with tibia. *b* Trochanter and femur of left cheliped. *c* Anterior aspect of left leg IV. *d* Left leg I. *e* Lateral view of left leg IV. *f* Marginal teeth of fixed (left) and movable (right) chelal finger.



large and stout setae on the flexor surface, arranged in two rows, several smaller, often minute setae on extensor surface; length 0,50 mm,  $4\frac{1}{2}$  times the width. *Tibia* narrow at the base and gradually widened towards the distal end; outer side weakly and evenly convex, inner side, excluding the pedicle, nearly straight; sparsely covered with hairs, among them one long seta on the flexor-distal corner; length 0,22 mm, almost 2 times the width. A large lyrifissure below the distal margin at the inner side of the tibia, and a few other fissures. Dorsal tibial organs composed of 4 or 5 fissures, and one large fissure below the distal margin at the inner side of the tibia. *Chela* fairly stout with very slender fingers and a very broad and indistinct pedicle; outer and inner sides of hand rather weakly convex; when seen from the side the dorsal margin of hand appears to be flatly convex, the ventral margin more evenly convex; fixed finger very weakly S-curved, except the distinctly curved tip; movable finger gently curved in distal half, somewhat more slender and shorter than fixed finger; chela evidently gaping when closed; sparsely covered with hairs. Total length 0,7 mm,  $1\frac{3}{4}$  carapaceal length, 5,5 times the depth (width unknown, probably subequal to depth); hand 0,25 mm in length, depth 0,13 mm; length of movable finger 0,45 mm, 1,8 times the length of hand. Fixed finger with 28, widely and evenly spaced teeth, up to 0,013 mm long, which are arranged in a single row along the entire margin, 7-8 occupying 0,1 mm in centre; the teeth are — with exception of the 2-3 reduced proximal ones — slender, conical, acute or slightly acuminate, bearing small cusps, very lightly bent towards the inner side of the chela; in the central part of the row the teeth are alternatively short and long, the shorter teeth being at least half as long as its neighbouring ones; proximal side of margin with 2-3 acuspid and rounded teeth. Movable finger with 28 teeth, up to 0,007 mm long, which are arranged in a single row along the entire margin; 12-15 teeth only well developed, of equal size, widely and evenly spaced, 6-7 occupying 0,1 mm in centre, slightly retroconical, acute or slightly acuminate, bearing small cusps, very slightly bent towards the outer side of the chela; other teeth gradually reducing; the 2-3 distal teeth much smaller but cuspid, the 10-12 proximal ones acuspid and flattened. Fixed finger with 8, hand with 2 *tactile setae* on dorsal and outer side: *it* probably about  $\frac{1}{4}$  of finger length from the tip; *est* about two and a half areole diameter proximal to *it* on the outer side; *et* somewhat nearer to finger tip than to *it*; *ds* a closely contiguous pair of areoles, no more than one areolar diameter distal to the level of *et*; *eb* and *esb* at the very base of the finger and separated by about one and a half areolar diameters; *ist* somewhat more as two times as far from *est* as from *esb* on the dorsal side at about one fourth of the finger-length from the base of fixed finger; *ib* and *isb* near or slightly proximal to the midpoint of the hand. One lyrifissure on the ventral side of the base of the fixed finger opposite to *b*. Movable finger with 4 *tactile setae* on the outer side: *t* two seventh of the finger length from the tip; *st* two and a half areolar diameters proximal to *t*; *b* at a distance from the base of about the width of the finger at the level of *b*; *sb* somewhat more as two times as far from *st* as from *b*.

Leg I and II with holotarsus, III and IV with metatarsus and telotarsus. Telepodite I  $2\frac{1}{4}$ , IV almost 3 times carapaceal length. Probably a compound lyriform organ, consisting of a closely parallel series of fissures on the anterodorsal surface of the trochanter. Setae not particularly numerous, relatively long. Arolium not exceeding the two simple claws (in mounted specimen). *Leg I*. Trochanter subtriangular,  $1\frac{1}{2}$  times as long as wide,  $\frac{4}{7}$  tibial length; flexor face convex, extensor face very short. Basifemur subcylindrical but deepened slightly at the distal end;

length  $5\frac{1}{2}$  times the depth; with a freely mobile inter-femoral articulation. Telofemur subcylindrical, deepened slightly distally; length almost 3 times the depth. Tibia subcylindrical; length almost 5 times the depth,  $\frac{2}{5}$  carapaceal length, slightly exceeding the length of the telofemur and  $\frac{2}{5}$  that of whole femur. Tarsus subcylindrical, tapering towards the distal end, 8 times as long as wide,  $1\frac{1}{5}$  tibial length. Leg IV. Trochanter  $1\frac{2}{3}$  times as long as wide,  $\frac{3}{5}$  tibial length. Basifemur strongly flattened with faintly convex flexor margin and S-curved extensor margin; greatest depth near distal end; length slightly exceeding the width; with a vertical immobile inter-femoral symphysis. Telofemur strongly flattened, with flexor margin nearly straight; extensor margin weakly convex; length about  $1\frac{1}{2}$  times the depth, almost  $1\frac{1}{2}$  basifemoral length. Tibia with distal portion of extensor side virtually straight; flexor side rather weakly S-curved, greatest depth beyond the middle; length  $3\frac{1}{2}$  times the depth,  $\frac{3}{8}$  carapaceal length,  $\frac{3}{5}$  that of whole femur. Metatarsus subcylindrical, deepest across the proximal margin, 3 times as long as wide, almost  $\frac{3}{5}$  tibial length, with a submobile, slightly oblique symphysis. Telotarsus subcylindrical, tapering towards the distal end, about 9 times as long as wide, a good tibial length.

*Pseudochthonius arubensis*, the sixth species of the genus, may be distinguished easily from the other forms by the characteristics mentioned in the key.

#### Key to the species of *Pseudochthonius*

based on 1 ♂ *P. arubensis* and descriptions of *P. simoni*, *pulchellus*, *insularis*, *homodontatus* and *heterodontatus*, according to BALZAN 1891 p. 546 and CHAMBERLIN 1929 p. 174, ELLINGSEN 1902 p. 164, CHAMBERLIN 1929 p. 178, CHAMBERLIN 1929 p. 179 and HOFF 1946 p. 4.

- 1a Eyeless; movable finger of chela not with a contiguous series of low, retrocuneate teeth . . . . . 2
- 1b With a single pair of well developed eyes; movable finger of chela with a contiguous series of low, retrocuneate teeth . . . . . 3
- 2a Movable chelal finger without marginal teeth (fixed finger heterodontate, spinneret a well marked tubercle; palpal femur at least 4 times as long as broad). . . . . *P. pulchellus* (Ellingsen), 1902 (from Ecuador)
- 2b Movable chelal finger with — for the greater part — well developed, erect and well separated teeth (fixed finger heterodontate; palm of chelicera with ES, SBS, BS and AS; palpal femur 4,5 times as long as broad; ♂ spinneret a very minute tubercle; coxa I with 2-3, II with 3-4 spines) . . . . . *P. arubensis* spec. nov. (from Aruba)
- 3a Teeth of fixed chelal finger, alternatively large and small or appearing so . . . 4
- 3b Teeth of fixed chelal finger of nearly uniform size (palm of chelicera with ES, SBS, BS and AS; palpal femur 4,7 times as long as broad; ♂ spinneret probably a very minute tubercle; coxa I with 2, II with 5 spines) . . . . . *P. homodontatus* Chamberlin, 1929 (from Venezuela)
- 4a Palm of chelicera with ES, SBS and 5 smaller setae; palps relatively slender, femur 4,9 times as long as broad (♂ spinneret a well marked tubercle; coxa I with 2, II with 5 spines) . *P. insularis* Chamberlin 1929 (from St. Vincent)

- 4b Palm of chelicera with ES, SBS, BS and AS; palps relatively stout, femur 4,3-4,5 times as long as broad. . . . . 5
- 5a Spinneret a well marked tubercle; coxa I with 4-5, II with 8 spines; teeth of fixed chelal finger alternatively differing in size . . . . .  
 . . . . . *P. simoni* Balzan, 1891 (from Venezuela)
- 5b Spinneret a very minute tubercle; coxa I with 2, II with 5 spines; teeth of fixed chelal finger in reality of equal length. . . . .  
 . . . . . *P. heterodentatus* Hoff, 1946 (from Trinidad)

### Tyrannochthonius Chamberlin

Genotype: *T. terribilis* (With)

Siam, Philippines, Formosa, Bismarck Arch., New Sealand, New Guinea, Java, Sumatra, Travancore, South Africa, Tropical East Africa; Trinidad, Curaçao, Costa Rica, Lower California.

#### Tyrannochthonius curazavius spec. nov.

[Fig. 16-19 and 21]

H o l o t y p e : Rijksmuseum van Natuurlijke Historie, Leiden, coll. nr Tyrannochthonius 1 (♂ alcohol specimen, mounted in balsam, not dissected; right palpus missing). Type-locality: Curaçao, Seroe Christoffel.

D i a g n o s i s (compared with *T. insulae* and descriptions of *T. johnstoni* and *T. centralis*): *Chela* a good 1,5 carapaceal length, about 4 times the width; hand with pedicle almost equaling length of movable finger; fixed finger with 11 teeth, not alternately large and small in central part of row; movable finger with 9 teeth as on opposing finger; *t* somewhat more than  $\frac{1}{3}$  finger length from tip of finger. Fixed finger of *chelicera* with 1 large tooth and a row of 6-8 denticles; movable finger with about 10-12 small denticles; serrula with 16 teeth, its distal two-fifth free; ♂ galea a low tubercle. *Eyes* lacking; place of insertion of *coxal spines* not elevated; *tergites* 1-2 only with 4 setae, sternite 3 with 6 setae; *carapace* with 18 setae. (Carapace 0,265 mm in length).

CURAZAO, Top of the Seroe Christoffel, 7.III.1937, *Station 234*, 340 m heigh, between cherts with decaying leaves (Tyrann. 1 adult ♂).

D e s c r i p t i o n (based on 1 ♂ alcohol specimen).

Body, chelicerae included, about 0,9 mm in length; animal yellowish; derm indistinctly reticulated on femur of hind-legs and base of fixed chelal fingers, practically smooth; hairs slender and acute.

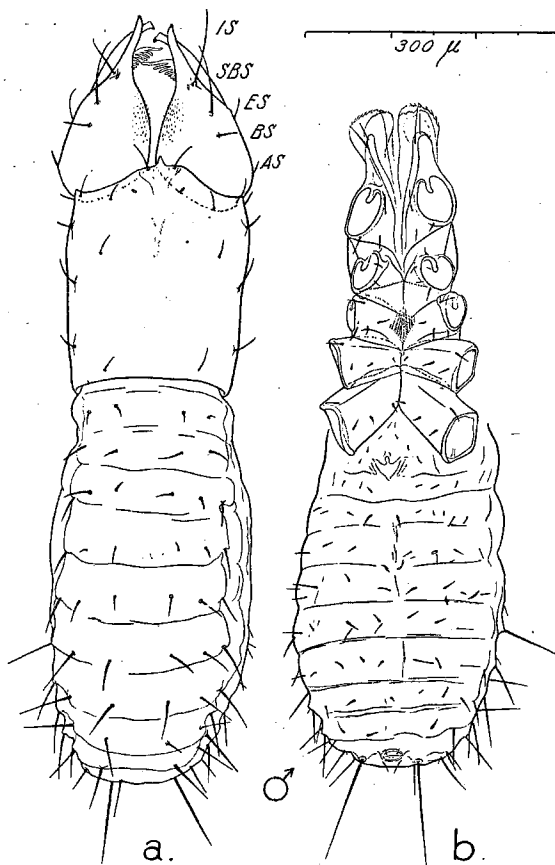


Fig. 16. *Tyrannochthonius curazavius*, holotype. *a* Dorsal aspect of body with chelicerae. *b* Ventral aspect of body.

Carapace subrectangular,  $1\frac{1}{4}$  times as long as broad, 0,265 mm long (epistome included); greatest width near anterior one-third; anterior margin convex, its lateral sides indistinctly serrate, with a small, triangular, acute epistome, which has an entire margin; lateral faces very weakly convex, excepting the posterior part, which might be flattened or even slightly hollowed; posterior margin straight. Anterior margin with 6 setae: 1 on each side of the epistomal process and 2 on each lateral side, the more ventrally placed setae the smallest; other setae arranged in 2 lateral and 2 medio-lateral series of 3 hairs, the most distal ones of the latter series close to the hind margin; in all 18 rather long setae on carapace. Eye-capsules or corneal eyes not visible.

- **A b d o m e n** a good 2 times as long as broad, almost 2 times the length of the carapace. Tergites and sternites entire. The 1st-2nd tergite with 4, the 3rd-10th

tergite with 6 setae; 3rd sternite with 6, 4th-10th sternite with about 10 mostly much smaller setae; all hairs rather long towards distal end of abdomen. The 11th tergite, united with the 11th sternite, with, among others, 2 very long pseudo-tactile setae; 12th segment ventrally with 2 minute and dorsally with 2 still smaller setae. Genital complex not especially studied; ♂ with 8 small setae, 4 of which at each side of and anterior to the operculum. Sternites with several, mostly small lyrifissures.

**Coxal area** about 0,4 by 0,2 mm; ventral parts of anterior pedal coxae slightly overlapping those of posterior ones; II with well developed coxal spines; inter-coxal tubercle lacking. Maxilla 0,175 mm in length (in total abt 0,185; acc.l. 0,125), breadth 0,065 mm (acc.br. 0,08); 2 rather long setae on the manducatory process; 2 marginal setae bordering the trochantic foramen and 1 between, behind the rim of the foramen. Median and trochanteral maxillary lyrifissures simple; median fissure above the middle of the mesal margin. Coxa I with 3 setae bordering the trochantic foramen; coxa II with 2 marginals and 2 discals; 1 marginal lyrifissure near the trochantic foramen. Length of coxa I 0,05 mm (in total 0,1; acc.l. 0,1), breadth 0,06 mm (acc.br. 0,07). Coxa II with a series of 8-10 well-separated, terminally deeply incised blades or pinnate spines, the central ones in each row up to 0,025 mm, those near the ends very small and indistinct. Coxa III and IV with 2 marginal and 2 other setae; 1 marginal lyrifissure. Length of coxa IV 0,05 mm (in total 0,125; acc.l. 0,09), breadth 0,055 (acc.br. 0,08).

**Chelicera** a good 2 times as long as broad; 0,22 mm long, a good  $\frac{4}{5}$  carapaceal length; surface slightly roughened. Basal part with 5 setae: ES placed laterally, just below the insertion of the movable finger, rather small, not as long as the width of the basal portion of the movable finger; AS placed proximal to the middle of the outer surface, shorter as ES; SBS dorsally below the base of the unmovable finger, long; BS near the middle of the dorsal surface of the hand; IS at the innerside of the base of the unmovable finger, very long. Movable finger with 1 seta: GS inserted near a point halfway down the finger, about 0,04 mm long, not extending beyond the tip of the finger. Fixed finger rather slender, the distal part distinctly curved; apical tooth short, conical, brown and heavily sclerotic; distal one-fourth of the inner margin smooth, 1 large, acute, conical tooth below, followed by a row of about 6-8 much smaller marginal denticles, directed towards the distal side; these denticles are variable in size and irregularly placed, diminishing in size at the proximal end. Movable finger slender and distinctly curved, the basal portion much wider than the rest of the finger, 0,12 mm long  $\frac{4}{9}$  carapaceal length; apical tooth short, conical, brown and heavily sclerotic; a row of about 10-12 small, conical denticles along the distal one-half of the inner margin; denticles in the middle of the row more pronounced than at each end. *Flagellum* consisting of a short row of about 7 (difficult to count accurately) feathered, more or less curved setae, arising from an elevated, ovate areole; hairs probably unilaterally pinnate and up to 0,04-0,05 mm long. *Serrula exterior* a contiguous comb-like series of 16 teeth; its distal two-fifth free, point of attachment opposite to that of the galeal seta; teeth rather uniform in shape and size with exception of the terminal one which is much longer, more acute and directed at an angle anteriorly from the others. *Serrula interior* in several respects similar to the serrula exterior, but smaller and more membranaceous, arising from an areole just distal and opposite to the interior seta, with 1 very long and acute apical, spinelike tooth and about 12 (very difficult to count accurately) smaller, contiguous teeth. *Galea* ♂ a low tubercle on the outer margin of the

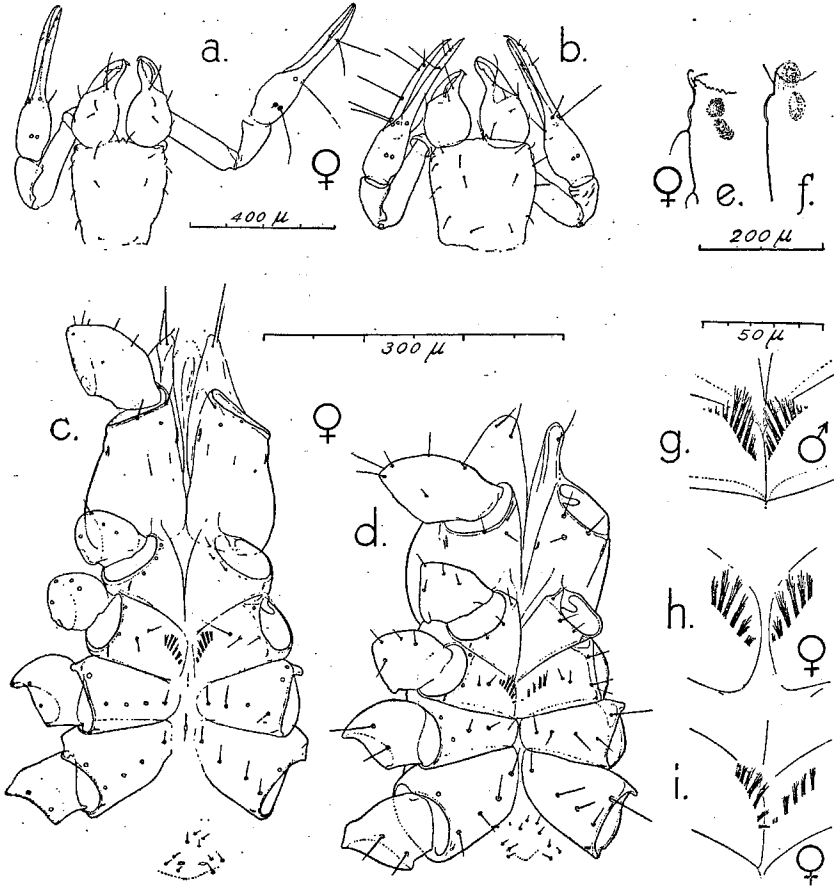


Fig. 17. *Tyrannochthonius insulae*, paratypes (a-f, h-i) and *T. curazavius*, holotype (g). a-b Carapace with chelipeds and chelicerae. c-d Coxal area of same specimens with genital area and right trochantera (the first damaged by pressure). e-f Right eyes of two specimens from ventral. g-i Coxal spines.

movable finger just proximal to the apical tooth. Internal lyrifissure, situated opposite to the internal seta, and internal condylar fissure conspicuous; external fissures not observed (due to the position of the specimen).

**P**alpus moderately slender, with relative long hairs. **T**rochanter fairly stout, 0,11 mm in length, almost 2 times the width; outer face unevenly convex, inner face very short; with about 10 hairs; a complex of 4 lyrifissures on the dorsal side near articulation between trochanter and femur. **F**emur somewhat cylindrical, except near the ends, with a very short and not well differentiated pedicle; inner face nearly straight,

outer face nearly straight or very slightly concave; slightly wider in distal one-third than elsewhere; sparsely covered with hairs, more densely on the flexor and subdorsal faces; length 0,26 mm, about 4 times the width. *Tibia* narrow at the base and gradually widened towards the distal end; outer side distinctly and unevenly convex, inner side, excluding the pedicle, straight or a little concave; sparsely covered with hairs; length 0,13 mm, almost 2 times the width. Dorsal tibial organs composed of 4 or 5 fissures, and one large fissure below the distal margin at the inner side of the tibia. *Chela* fairly stout, with slender fingers and a broad, ill defined pedicle of irregular form; outer side of hand flatly convex; inner side more convex, especially in its basal part near the longest side of the pedicle; when seen from the side the dorsal margin of hand appears to be flatly convex in basal two-third, the ventral margin more evenly convex; fixed finger nearly straight, except the tip; movable finger gently curved, somewhat more slender and a little shorter than fixed finger; chela evidently gaping when closed; sparsely covered with hairs, more densely on the finger tips. Total length 0,41 mm (excluding pedicle almost 0,40 mm), a good  $1\frac{1}{2}$  carapaceal length, a good 4,0 times the width; hand with pedicle almost 0,2 mm in length, width about 0,10 mm, subequal to depth; length of movable finger 0,23 mm, 1,1 times the length of the hand with pedicle. Fixed finger with 11, widely and more or less evenly spaced teeth, and a few ill developed denticles at the proximal part of the row, which are arranged along the entire margin, 5-6 occupying 0,1 mm in centre; the well developed teeth are conical, more or less acuminate, bearing small cusps. Movable finger with the teeth as on the opposing finger, 9 acute and well developed and two or three acuspid and ill developed teeth as on the opposing finger. Fixed finger with 8, hand with 2 *tactile setae* on outer and dorsal side: *it* almost  $\frac{2}{5}$  of the finger length from the tip; *est* less than one areolar diameter proximal to the level of *it* on the outer side; *et* somewhat nearer to *it* than to finger tip; *ds* a closely contiguous pair of areoles, nearly twice as far from the finger tip as from *et*; *eb* and *esb* at the very base of the finger and separated by about one areole diameter; *ist* at about the same level of *esb* on the dorsal side; *ib* and *isb* somewhat distal to the midpoint of the dorsum of the hand with pedicle. One lyrifissure on the ventral side of the base of fixed finger opposite to *b*, and two others on the dorsum between *ist* and *it*. Movable finger with 4 tactile setae on the outer side: *t* somewhat more than  $\frac{1}{3}$  of the finger length from the tip; *st* almost two areolar diameters proximal to *t*; *b* at a distance from the base less than the width of the finger at the level of *b*; *sb* closer to *b* than to *st*. Two lyrifissures on the ventral side of the movable finger, one between *b* and *sb* and another between *sb* and *st*.

Leg I and II with basifemur, telofemur and holotarsus; III and IV with metatarsus and telotarsus instead of holotarsus; slender. Telepodite I a good 2 times, IV about  $2\frac{3}{4}$  times carapaceal length. A closely parallel series of 4 fissures on the antero-dorsal surface of the trochanter; foreleg with 3-4 small lyrifissures on basifemur, 1 on telofemur; hindleg with 1 fissure at the antero-ventral surface of the basifemur and another one antero-dorsally on the telofemur; at least one small fissure dorsally on the tibia of the forelegs. Setae not particularly numerous, relatively long. Arolium slightly exceeding the two simple claws. *Leg I*. Trochanter subtriangular, about  $1\frac{1}{3}$  times as long as wide, about  $\frac{1}{3}$  tibial length; flexor face convex, extensor face very short. Basifemur subcylindrical but deepened slightly at the distal end; length a good  $3\frac{1}{2}$  times the depth; with a freely mobile inter-femoral articulation. Telofemur subcylindrical, deepened slightly distally; length almost  $2\frac{1}{2}$  times the depth. Tibia subcylindrical with a weakly concave to virtually straight extensor

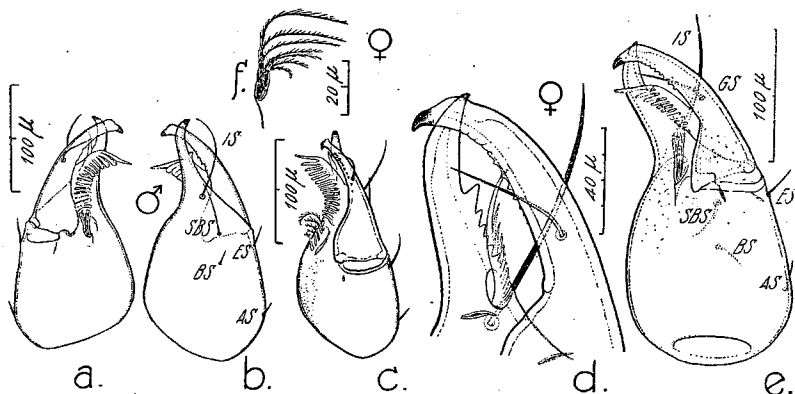


Fig. 18. *Tyrannochthonius curazavius*, holotype (a-c) and *T. insulae*, paratype (d-f). a-b Ventral and dorsal aspect of right chelicera. c Exterior aspect of left chelicera. d Ventral aspect of cheliceral finger, serrula omitted. e Ventral aspect of right chelicera, serrula interior omitted. f Flagellum.

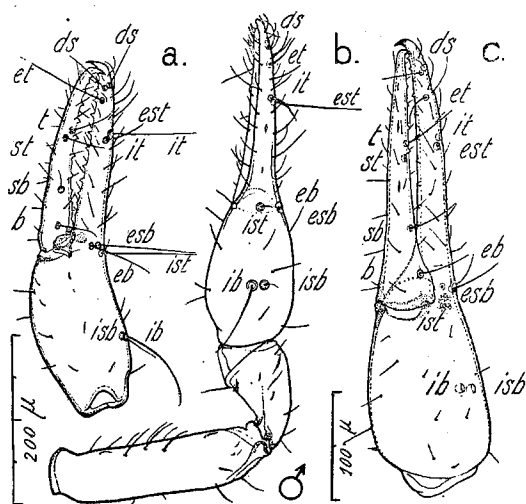


Fig. 19. *Tyrannochthonius curazavius*, holotype. a Exterior aspect of left chela. b Right cheliped without trochanter from dorsal. c Ventral aspect of left chela.

face; flexor face weakly convex, greatest depth near the centre; length almost 3 times the depth,  $\frac{1}{3}$  carapaceal length, slightly exceeding the length of the telofemur and almost  $\frac{2}{5}$  that of whole femur. Tarsus subcylindrical, tapering towards the distal end, almost 6 times as long as wide,  $\frac{1}{5}$  tibial length. *Leg IV*. Trochanter



about  $1\frac{1}{2}$  times as long as wide, almost  $\frac{1}{2}$  tibial length; flexor and extensor side nearly parallel. Basifemur strongly flattened with faintly convex flexor margin and S-curved extensor margin; greatest depth at distal end; length about equaling the depth; with a vertical immobile inter-femoral symphysis. Telofemur strongly flattened, with flexor margin nearly straight; extensor margin weakly convex; length about  $1\frac{1}{2}$  times the depth,  $1\frac{1}{2}$  basifemoral length. Tibia with distal portion of extensor side virtually straight; flexor side rather weakly S-curved, greatest depth beyond the middle; length about  $3\frac{1}{2}$  times the depth, almost  $\frac{2}{3}$  carapaceal length,  $\frac{2}{3}$  that of whole femur. Metatarsus subcylindrical,  $2\frac{1}{4}$  times as long as wide, about  $\frac{1}{2}$  tibial length, with a submobile, slightly oblique symphysis. Telotarsus subcylindrical, tapering towards the distal end, about 6 times as long as wide, almost tibial length.

### **Tyrannochthonius insulae Hoff**

[Fig. 17–18 and 20–21]

*Tyrannochthonius insulae* HOFF, 1946, p. 8–12, fig. 9–11.

**Material:** 3 ♀♀ and tritonymph, paratypes. Mounted specimens from „Litter and soil on cacao estate St. Augustine, Trinidad. 1943–1944” in The American Museum of Natural History.

**Description** (compared with *Tyrann. curazavivus*).

Total length about 1,1 mm; derm reticulated, particularly on carapace, femur of hindlegs and trochanter and femur of palps. **Carapace:** 0,30–0,33 mm long. Two pairs of eye-capsules present, close to each other, one of them without corneal development; corneal eye 0,018–0,025 mm, about its own diameter from anterior margin of carapace. **Abdomen:** 1st–10th tergite with 4 setae; 3rd–10th sternite with 10–14 smaller setae. ♀ **Genital complex** with 10 setae, 3 of which at each side of the operculum and 4 near the middle anteriorly. **Coxal area:** about 0,50 by 0,25 mm. **Maxilla** abt 0,2 mm in length (in total 0,23; acc. l. 0,16), breadth abt 0,10 mm (acc. br. 0,14). **Length of coxa I** abt 0,065 mm (in total 0,12; acc. l. 0,12), breadth abt 0,09 mm (acc. br. 0,10) — in deformed specimen. 5–7, usually 6 coxal spines. **Coxa III and IV** with 2, rarely 3 marginal and 3 other setae. **Length of coxa IV** abt 0,06 mm (in total 0,14; acc. l. 0,11), breadth abt 0,08 mm (acc. br. 0,09) — in deformed specimen. **Chelicera:** 0,26 mm long, abt  $\frac{9}{10}$  carapaceal length; basal part, especially the inner surface slightly roughened with, in addition (according to Hoff) a few small granules, often bearing short spinules. GS inserted a little proximal of a point halfway down the movable finger, abt 0,05 mm long. **Fixed finger** with 1 large tooth, followed by a row of 6–8 smaller and a few minute denticles; these denticles are rather variable in size. **Movable finger** almost 0,15 mm long,  $\frac{1}{2}$  carapaceal length. **Galea** ♀ wanting, although a slightly modified and swollen area appears to receive 2 or 3 gland ducts. **Serrula exterior** with 15–18(–19?) teeth; its distal three-fifth free. **External lyrifissure**, situated adjacent to the internal seta, and **external condylar fissure** present. **Palpus:** *Trochanter* 0,14 mm in length. **Length of femur** abt 0,3 mm, a good 4 times the width. **Tibia** with outer side flatly convex; length abt 0,15 mm, 2 times the width. **Chela** with very slender fingers; from the side the dorsal margin of hand appears to be flatly convex, a little

angular near the middle, the ventral side more distinctly convex. Total length abt 0,45 mm,  $1\frac{1}{2}$  carapaceal length, abt 4,5 times the width; hand with pedicle abt 0,15 mm in length; length of movable finger abt 0,3 mm, 2,1 times the length of the hand with pedicle. Fixed finger with 19, sometimes 18 teeth, which are arranged

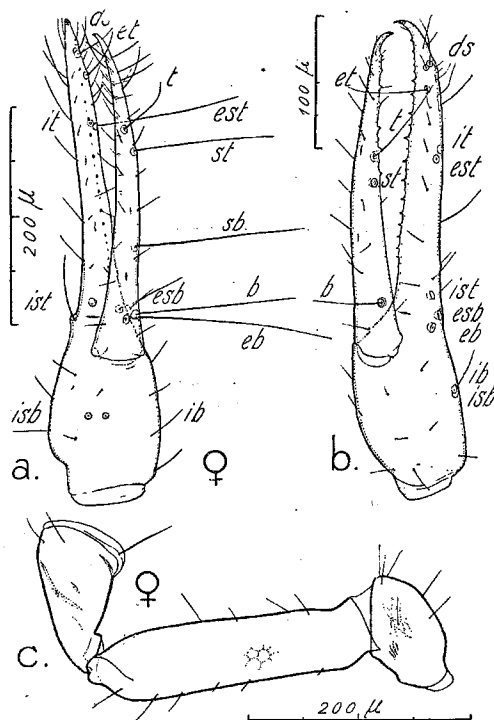


Fig. 20. *Tyrannochthonius insulae*, paratypes. a Ventral aspect of left chela. b Exterior aspect of left chela of tritonymph. c Ventral aspect of left cheliped without chela.

along the entire margin, 6-7 occupying 0,1 mm in central part; the teeth are conical, slender, bearing small cusps; in the central part of the row, where the teeth are most widely spaced, 9-10, sometimes 8, minute, acuspid denticles of same form occur, alternatively arranged with the much larger teeth. Movable finger with the teeth on distal two-thirds of the row as on the opposing finger, in all 9 teeth and 7-8 minute denticles. Teeth of the proximal one-third of the row (according to Horff) very much flattened and entirely acuspid, abt 10 in number. *it* a good  $\frac{1}{3}$  of the finger length from the tip; *ist* abt one-half areole diameter distal to the level of *esb*; *t* somewhat less than  $\frac{1}{3}$  of the finger length from the tip; *b* at a distance from the base of abt the width of the finger. Leg: Telepodite I abt 2 times carapaceal length, IV abt  $2\frac{1}{2}$  carapaceal length. Foreleg with possibly a lyrifissure at the dorsal

urface of basifemur. Claws somewhat roughened inside. *Leg I*. Length of tibia 3 times the depth, almost  $\frac{1}{3}$  carapaceal length. Tarsus  $6\frac{1}{2}$  times as long as wide, abt  $1\frac{1}{5}$  tibial length. *Leg IV*. Length of tibia (according to Hoff) abt  $3\frac{1}{3}$  times the depth, a good  $\frac{1}{2}$  carapaceal length.

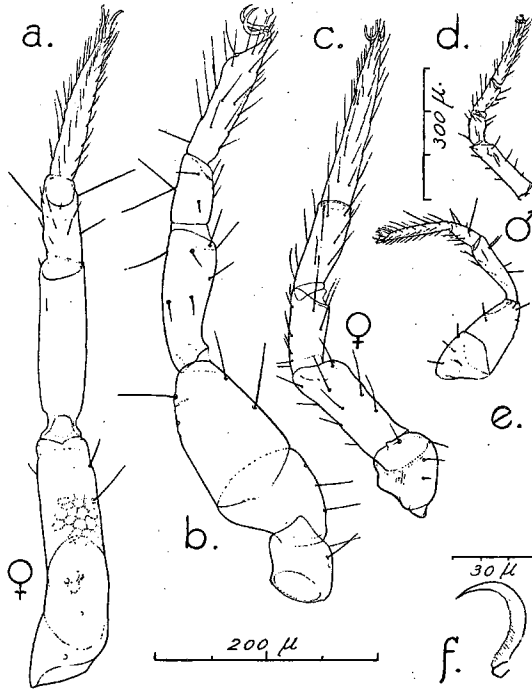


Fig. 21. *Tyrannochthonius insulae*, paratypes (a-c, f) and *T. curazavius*, holotype (d-e). a Right leg IV from ventral. b Anterior aspect of leg IV of tritonymph. c Posterior aspect of right leg I. d Anterior aspect of left leg I without trochanter. e Posterior aspect of left leg IV without trochanter. f Claw of left leg IV.

*Tyrannochthonius curazavius* is the fourth species of the genus to be reported from the Western Hemisphere. Our new species may easily be distinguished from each of these New World forms, above all by the few characteristics mentioned in the key.

#### Key to the American species of the genus *Tyrannochthonius*

(based on 1 ♂ *T. curazavius*, 3 ♀♀ *T. insulae* and descriptions of *T. johnstoni* and *T. centralis* according to CHAMBERLIN 1923 p. 357; 1929 p. 74 and BEIER 1931 p. 55; 1932 p. 63).

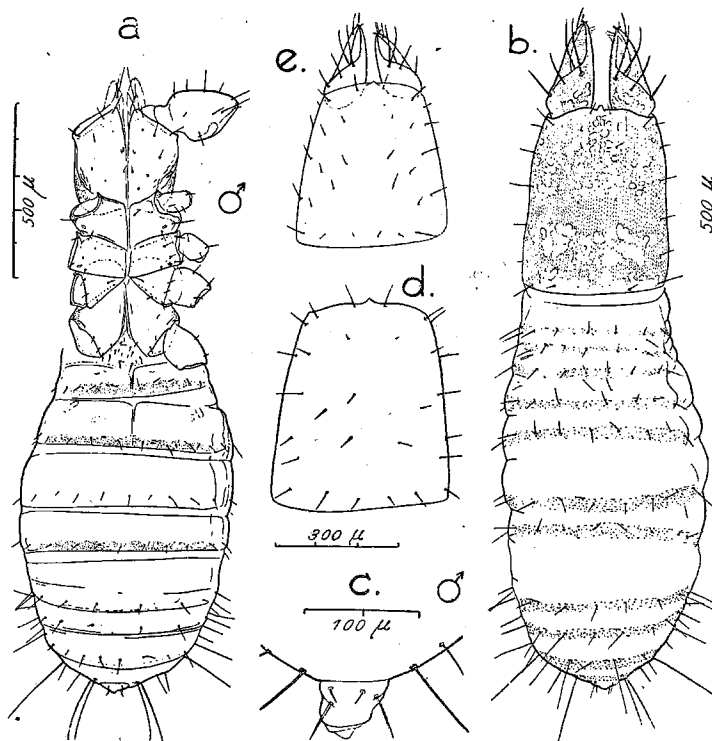


Fig. 22. *Pachychitra curazavia*, holotype and paratypes. *a* Ventral aspect of body with left trochantera (no 1). *b* Dorsal aspect of body with chelicerae (no 1). *c* Protruded anal region of tritonymph from ventral (no 9). *d* Carapace (no 4). *e* Carapace with chelicerae of tritonymph (no 10).

- 1a. Coxal spines consisting of doubly pinnate branches upon a lobe-like series of basal pedicles; carapace with a total of 14 setae; tergites 1 and 2 with 6 setae; movable finger of chelicerae with 5 teeth; length of palpal femur about 5 times its width. (Eyes 2 or 4; larger teeth of chelae without small denticles between; movable chelal finger about twice as long as hand; fixed finger of chelicerae with teeth which become smaller posteriorly) . . . . . *T. johnstoni* Chamberlin, 1923 (from Lower California)
- 1b. Coxal spines consisting of ligulate, distally frayed or incised blades, not arising from a lobe like series of pedicles; carapace with 18 or 16 setae; tergites 1 and 2 with 4 setae; movable finger of chelicerae with about 10 teeth; length of palpal femur about 4 times its width . . . . . 2
- 2a. Eyes lacking; larger teeth of chelae with no small denticles between; movable chelal finger about as long as hand. (Carapace with a total of 18 setae; fixed

- finger of chelicerae with one larger tooth, followed proximally by much smaller ones). . . . . *T. curazavius* sp.n. (from Curaçao)
- 2b Eyes 2 or 4; larger teeth of chelae with small denticles between; movable chela<sup>1</sup> finger distinctly longer as hand . . . . . 3
- 3 Carapace with 16 setae; movable chelal finger about  $1\frac{1}{4}$  as long as hand; fixed finger of chelicerae with one larger tooth, followed proximally and distally by much smaller ones . . . . . *T. centralis* Beier, 1931 (from Costa Rica)
- 3a Carapace with 18 setae; movable chelal finger about 2 times as long as hand; fixed finger of chelicerae with one larger tooth, followed proximally by much smaller ones . . . . . *T. insulae* Hoff, 1946 (from Trinidad)

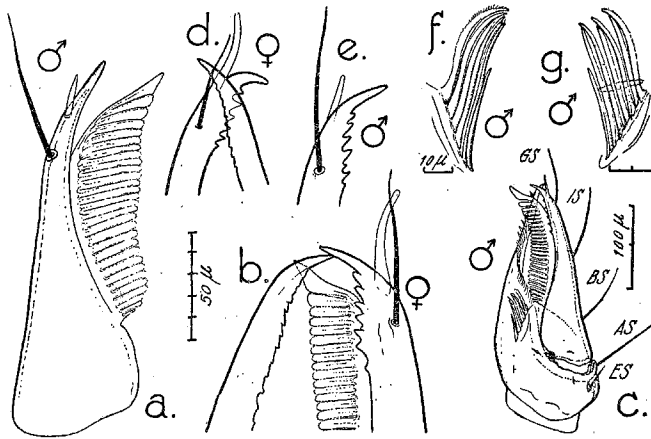


Fig. 23. *Pachychitra curazavia*, holotype and paratypes. *a* Movable finger of right chelicera from ventral (no 4). *b* Tip of chelicera from dorsal (no 3). *c* Ventral aspect of left chelicera (no 1). *d* Tip of chelicera of tritonymph (no 2). *e* Tip of movable finger of left chelicera (no 4). *f-g* Flagellum (no 8 and 1).

### **Pachychitra Chamberlin**

Genotype: *Pachychitra maya* Chamberlin

Yucatan, Puerto Rico, Desecheo, Curaçao.

### **Pachychitra curazavia spec. nov.**

[Fig. 22-26; table 8]

**H o l o t y p e:** Rijksmuseum van Natuurlijke Historie, Leiden, coll. nr Pachychitra 1 (♂ alcohol specimen, partly dissected, mounted in balsam; claw of left palpus missing). **T y p e - l o c a l i t y:** Curaçao, Seroe Christoffel. **P a r a t y p e s:** Rijks-

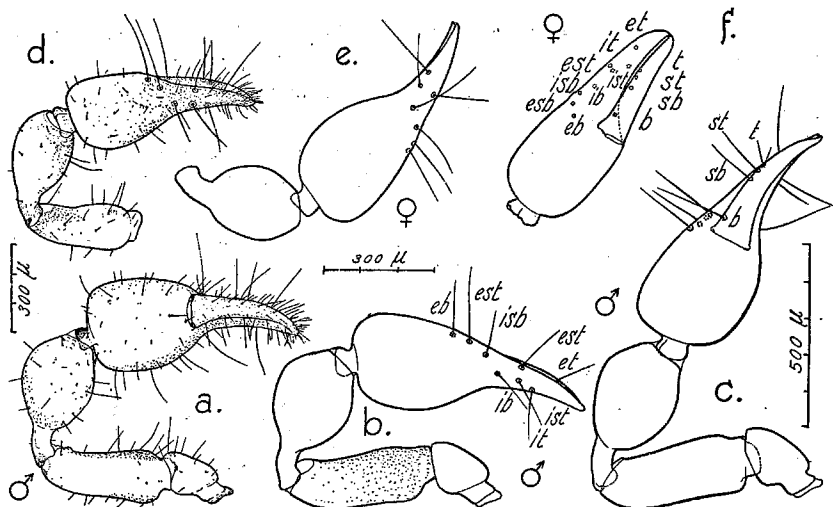


Fig. 24. *Pachychitra curazavia*, holotype and paratypes. *a* Ventral aspect of right cheliped (no 1). *b* Dorsal aspect of left cheliped (no 4). *c* Ventral aspect of right cheliped (no 8). *d* Dorsal aspect of left cheliped without trochanter of tritonymph (no 2). *e* Dorsal aspect of right chela with tibia (no 6). *f* Exterior aspect of right chela (no 6).

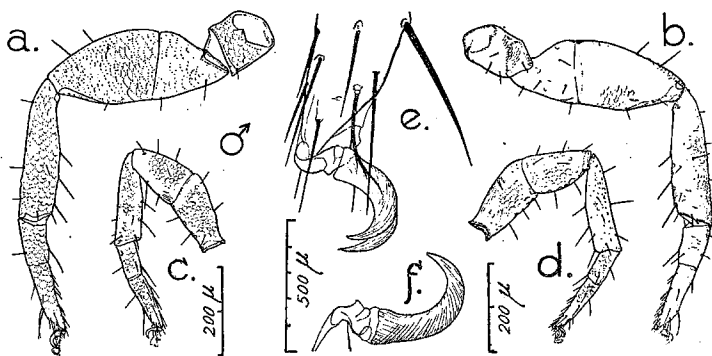


Fig. 25. *Pachychitra curazavia*, holotype. *a*–*b* Posterior and anterior aspect of left leg IV. *c*–*d* Posterior and anterior aspect of left leg I. *e* Tip of leg IV. *f* Claw of leg IV

museum van Natuurlijke Historie, Leiden, Pach. 2, 7 (left palpus and abdomen incomplete), 9, 10 (l.palp missing). Zoölogisch Laboratorium, Utrecht, Pach. 3 (damaged), 6 (damaged), 8, 11 (abdomen missing, damaged), 12 (very incomplete), 13. Collection J. C. Chamberlin, Forest Grove, Oregon, Pach. 5. Collection C. Clayton Hoff, Fort Collins, Colorado, Pach. 4. All alcohol specimens, mounted in balsam.

TABLE 8.

Palpal measurements in *Pachychitra* (in micra)

Species	<i>curazavira</i>													<i>insularum</i>		<i>maya</i>	
	Curaçao													Puerto-Rico		Yucatan	
	adult						tritonymph							adult		adult	
Locality																	
Stade																	
Number	1	8	4	5	7	3	6	9	11	10	13	2	12	5227-S	5226-S	897.01001	
Sex	♂	♂	♂	♂	♂	♀	♀	♂	♂	♀	♀	♀	—	♂	♀	♀	
Length of carapace	560	550	520	520	500	550	530	400	340	400	380	380	—	500	—	610	
Femur																	
length	470?	470	430	440	420	430?	430	310	310?	310?	310	310?	310?	475	425	560	
width	180	185	165	165	160	175	160	125	120	125	120	125	120	160	150	205	
Tibia																	
length	460	465	420	410	425	420	400	310	280	295	290	305	285	440	415	565	
width	245	245	225	215	225	220	210	160	145	150	150	150	150	215	195	265	
Chela (pedicle incl.)																	
length	725	725	700	700	700	700	670	525	490	520	510	490	470	735	710	965	
width	305	295	275	275	275	280	270	210	190	210	205	190	180	275	250	390	
Length/width ratio																	
femur	2.6?	2.55	2.6	2.65	2.6	2.5?	2.65	2.5	2.5?	2.5?	2.6	2.5?	2.5?	3.0	2.85	2.75	
tibia	1.9	1.9	1.85	1.9	1.9	1.9	1.9	1.95	1.95	1.95	1.9	2.0	1.9	2.05	2.1	2.1	
chela	2.53	2.45	2.55	2.55	2.55	2.5	2.5	2.5	2.6	2.5	2.5	2.6	2.6	2.7	2.85	2.45	

**Diagnosis** (based on 5 ♂♂ 2 ♀♀ specimens, compared with 1 ♀ *P. maya* and 1 ♂ 1 ♀ *P. insularum*): *Chela* in part distinctly granulated; total length almost  $1\frac{1}{2}$  carapaceal length; length without pedicle about 2,5 times the width; movable finger with 36 41 teeth; fixed finger with about the same number; row of teeth on movable finger longer than on fixed finger; *ist* nearer to *est* than to *it*. Palpal *tibia* indistinctly granulated, more bulbous than in the other species; length about 1,9 times the width. Palpal *femur* rather indistinctly granulated; outer face less suddenly bulging than in *P. insularum*, but more than in *P. maya*; length about 2,6 times the width. *Telepodite* I about  $1\frac{1}{2}$  times the length of the carapace, IV about 2 times. (Carapace 0,50–0,56 mm in length). Proximal blade of *flagellum* much shorter than the other; very probably only the distalmost blade fringed.

CURAÇAO, Northwestern slope of the Seroe Christoffel, 10.XI.1936, *Station 235*, 200 m heigh, between debris of cherts with leaf-decay (Pach. 1 adult ♂, 2 tritonymph ♀); Slope of the Seroe Christoffel, II.1946, *Stat. 235Aa*, 200 m heigh, between debris of cherts with leaf-decay, from a sample collected by fr. M. ARNOLDO (Pach. 3–8 adults, 9–13 tritonymphs; 4–5, 7–9 and 11 ♂♂, 3, 6, 10 and 13 ♀♀).

**Description** (based on 5 ♂♂ 2 ♀♀ alcohol specimens)

Body, chelicerae included, up to 2 mm in length; animal yellowish to a rich reddish-brown, depending on the degree of sclerotization; derm as a rule distinctly sub-squamose, particularly on legs, pleurae, carapace, palps and chelicerae; dermal parts which are considerably sclerotized often appearing riddled with large, irregular cavities, in particular on carapace, maxilla, chelicera and chela; hairs slender and acute.

**Carapace** subrectangular, 1,2–1,33–1,5 times as long as broad, 0,50–0,54–0,56 mm long; greatest width near posterior one-third; anterior margin convex, with exception of the middle part which has a small triangular epistome; lateral faces weakly convex, excepting the middle part, which may be flattened or even slightly hollowed; posterior margin weakly and evenly convex. Surface often slightly roughened and subsquamose. Anterior margin with 6 setae, of which 1 on each side of the epistomal process; posterior margin with same number of setae; in all 28 or 30 rather short setae on carapace. Eyes lacking. Lyrifissures indistinct.

**Abdomen** about 2–3 times as long as broad, about 2–3 times the length of the carapace; not granulated, comparatively smooth. Tergites and sternites, as a rule, entire, but in some specimens the 4th and 5th sternite appear to be sub-divided. The 1st–10th tergite and 4th–10th sternite with 8–10 setae, which are rather long towards distal end of abdomen; 11th tergite, united with 11th sternite, with 6 long setae; 12th segment ventrally with 2 minute, and dorsally with 2 longer setae. Genital complex not especially studied; ♂ with about 12 small to minute external setae, 6 of which are usually situated along the central part of posterior border of



3rd segment. Tergites (at least some of them) with a single series of small lyrifissures, between the setae.

**Coxal area** (measurements from holotype) 0,80 by 0,33 mm, practically smooth; antero-lateral (condylar) angle of coxae heavily sclerotic. Maxilla 0,33 mm in length (in total 0,4; acc. l. 0,27), breadth 0,15 mm (acc. br. 0,24); sides indistinctly roughened, sub-squamose; 2 rather long setae on the manducatory process; 3 setae bordering the trochantic foramen, 1 below the middle near the mesal margin and 5 discals anterior to the clivus. Median and trochanteral maxillary lyrifissures bent into an anteriorly open U; median fissure above the middle of the mesal margin; posterior lyrifissure possibly comprising 2-3 more or less interlocking U-shaped slits, laterally on the clivus. Coxa I and II with antero-lateral angle more or less spinosely produced; 3-5 setae; 1 lyrifissure near the trochantic foramen. Length of coxa I 0,13 mm (in total 0,20 acc. l. 0,20), breadth 0,17 mm (acc. br. 0,20). Coxa III usually with 5 setae. Coxa IV much larger and broader than III; 5-6 setae; probably 1 lyrifissure anteriorly near the trochantic foramen; length about  $1\frac{1}{4}$  that of coxa I, 0,16 mm (in total 0,25; acc. l. 0,17), breadth 0,07 mm (acc. br. 0,10).

**Chelicera** smooth, about  $1\frac{1}{2}$  times as long as broad; about 0,27 mm long (pedicle excluded), almost  $\frac{1}{2}$  carapaceal length. Basal part with 5 setae: ES placed laterally, just below the insertion of the movable finger, rather small, not as long as the width of the basal portion of the movable finger; other setae very long; AS placed dorso-laterally at the same level as ES; SBS more dorsally at the base of the unmovable finger and BS just between; IS at the innerside of the base of the unmovable finger. Movable finger with 1 seta: GS inserted a little proximal of the level of a point half way down the row of marginal teeth, about 0,08 mm long, extending far beyond the tip of the ♂ galea. Fixed finger slender; apical tooth long, acute and gently curved; distal two-thirds of the inner margin with a row of about 12 very small, evenly spaced and rather uniform denticles, directed towards the proximal side; the denticles in the middle of the row more pronounced than those towards the ends. Movable finger slender, about 0,23 mm long, a good  $\frac{2}{5}$  carapaceal length; apical tooth long, acute and distinctly curved; a row of about 7 conical denticles along the distal one-third of the inner margin, variable in size and irregularly placed, acute, rather slender and usually directed distad; denticles in the middle of the row more pronounced than those at each end. *Flagellum* consisting of a series of 7 (? , difficult to count accurately) slender, ligulated, slightly curved blades, arising from an elongated slit; the blades are up to 0,06 mm long; the proximal one (at the so-called posterior extremity of the row) much shorter than the others; the distalmost one indistinctly fringed or minutely pinnate on the distal side. Galea unbranched, slender and somewhat curved; ♂ not exceeding the tip of the apical tooth, about 0,025 mm long; ♀ far exceeding the tip of the apical tooth, about 0,05 mm, nearly reaching the tip of the galeal seta. *Serrula exterior* a comb-like series of about 28 blunt teeth; its distal one-third free, point of attachment opposite to that of the galeal seta; teeth rather uniform in shape and size with the exception of the terminal one which is longer and more acute and directed at an angle anteriorly from the others. *Serrula interior* (serrula interna, lamina interior) a contiguous, membranous series of about 25-30 slender, tooth-like plates, which are probably well separated from one another in the distal part only. Internal and external lyrifissures situated opposite and adjacent to the internal seta, conspicuous; internal and external condylar fissures indistinct.

**Palpus** moderately stout. *Trochanter* dorsally rather indistinctly granulated.

about 0,25 mm in length, a good 1,9 times the width; flexor face weakly and evenly convex to almost straight, extensor face much shorter and strongly convex; about 15 relatively long hairs; probably a lyrifissure on dorsum near the articulation between trochanter and femur. *Femur* with a short pedicle well separated, on the outer

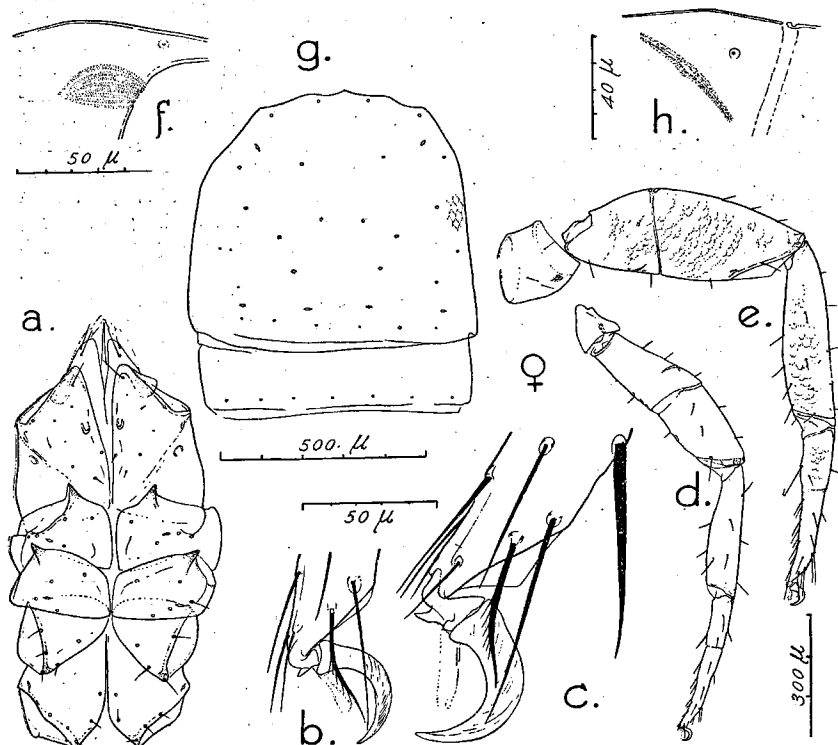


Fig. 26. *Pachychitra maya*, holotype (a-g) and *P. curazavia*, paratype (h). a Coxal area (damaged by pressure). b-c Tip of leg I and IV. d-e Anterior aspect of left leg I and III (trochanter of III damaged). f Lyrifissures on antero-dorsal surface of left leg III from ventral. g Carapace with tergite 1 (deformed by pressure). h Lyrifissure on antero-ventral surface of basifemur of left leg III from ventral.

side, from the remaining part; inner face convex in the proximal one-half, but concave in the distal half; outer-face suddenly bulging near pedicle, slightly concave or straight in the centre and convex in the distal one-third; widest near the pedicle; sparsely covered with hairs, which are longer on the inner surface than elsewhere, with a couple of especially long setae on the basal one-half; distinctly granulated, especially in the basal part and on the inner and dorsal surfaces; length ♂ 0,47-0,45-0,42 ♀ 0,43 mm, ♂ 2,55-2,6-2,65 ♀ about 2,6 times the width. *Tibia* typically club-shaped; curved pedicle about 2 as long as wide; distally of the pedicle distinctly bulbous;

with the inner side markedly and evenly convex, outer side with its greatest convexity beyond the middle; rather indistinctly granulated; sparsely covered with hairs, the inner surface with a couple of especially long setae; length ♂ 0,46–0,44–0,41 ♀ 0,42–0,41–0,40 mm, ♂ 1,85–1,9 ♀ 1,9 times the width. *Chela* robust, with rather slender fingers and a small, well defined pedicle in centre of base; outer side of hand, in part, nearly straight and meeting the basal margin in almost a right angle; inner side weakly convex; when seen from the side, the dorsal and ventral margins of hand appear to be nearly parallel and hardly convex; fixed finger fairly

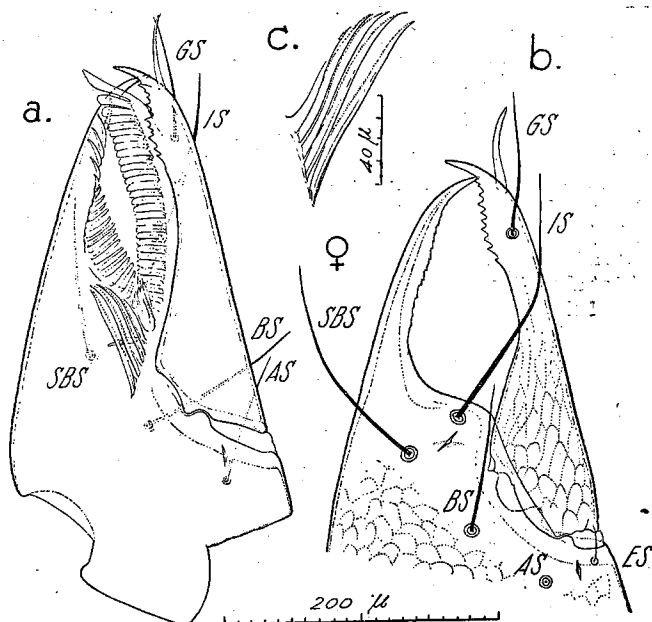


Fig. 27 *Pachychitra maya*, holotype. a Ventral aspect of left chelicera. b Dorsal aspect of right chelicera, serrulae omitted (basal part deformed). c Flagellum of right chelicera.

stout, with inner margin very slightly convex to nearly straight, outer margin nearly straight or weakly concave; movable finger more slender than fixed finger, inner side weakly concave, the outer side more distinctly convex; chela very slightly gaping when closed; in part distinctly granulated, especially on the inner surface towards the finger-base, practically smooth on basal and outer surface of hand; sparsely covered with hairs, more densely on the finger-tips, those of the inner surface especially long. Total length 0,81–0,76–0,73 mm, almost  $1\frac{1}{2}$  carapaceal length, 2,6–2,7 times the width; length of chela without pedicle ♂ 0,725–0,71–0,70 ♀ 0,70–0,685–0,67 mm, ♂ 2,35–2,5–2,55 ♀ 2,5 times the width; length of pedicle about 0,06 mm,  $1\frac{1}{2}$  times the width; hand without pedicle 0,36 mm in length, width ♂ 0,305–0,285–0,275 ♀ 0,280–0,275–0,270 mm, subequal to the depth; length of movable finger about equaling the length of the hand with pedicle. Fixed

finger with ♂ 37–40 (no 1) ♀ 36–37 (no 6) subcontiguous, evenly spaced, rather uniform marginal teeth, ♂ 16 ♀ 17 occupying 0,1 mm in centre; the teeth are more or less subrectangular, slightly retrorse, with, towards the proximal side of each tooth, a usually slightly acuminate apex, so as to form a small cusp; in the proximal part of the row, the teeth gradually become somewhat lower and the apex less sclerotized. Nodus ramosus situated near the middle between the tip of the apical tooth and the areole of *et*. Lamina defensor a narrow triangular blade. Movable finger with ♂ 36–38 (no 1) ♀ 41 (no 6) subcontiguous, evenly spaced, rather uniform marginal teeth, ♂ about 12 ♀ 15–17 occupying 0,1 mm in centre of biting edge; the teeth — with the exception of the more conical 3 distal ones — are subrectangular, broadly truncated and rounded; those situated near the apical tooth having a sclerotized apex which soon disappears towards the middle of the row; near the proximal end of the series the teeth are slightly lower; the 3 distalmost denticles are heavily sclerotized and located near the base of the apical tooth, forming the receptor venedentis. Row of teeth on the movable finger about 5 teeth longer than row on fixed finger. Fixed finger with 8 *tactile setae*: on the outer side: *et* at a distance from the tip of about one-third of the finger length; *est* somewhat below the middle at about the same level or slightly proximal from *ist*, about 2 times as far from *ib* as from *ist*; *isb* just above finger base; *esb* and *eb* a short distance below, on the distal side of hand; on the inner and dorsal side: *it* on a level just below the middle between *et* and *est*; *ist* at about the same level as *est* or slightly distal, nearer to *est* than to *it*; *ib* on the dorsal side somewhat closer to *isb* than to *ist*. A lyrifissure on the base of fixed finger opposite to *b*, and another near *it*. Movable finger with 4 tactile setae on the outer side: *b* about one-sixth of finger length from base of finger; *st* near the middle of the finger; *t* and *sb* about 2 areole diameters distal and proximal to *st*. There may be one lyrifissure on the lower part of the movable finger between *sb* and *b*, and another on the outer side, at the level of *t*.

Leg with basifemur and telofemur, metatarsus and telotarsus; rather slender, sub-squamose, with a few shallow pits on the lower side of the femur. Telepodite (leg without coxa) I about  $1\frac{1}{2}$  times, IV about 2 times carapaceal length. A closely parallel series of 4 lyrifissures on the antero-dorsal surface of the trochanter; foreleg with 1 pronounced lyrifissure at the dorsal surface of the basifemur; hindleg with 1 pronounced fissure at the antero-ventral surface of the basifemur and a smaller one antero-ventrally on the telofemur. Setae not particularly numerous, relatively long, especially on the ventral side of the tibia and the tarsi; a well developed pseudotactile seta on the dorsum of the distal part of the telotarsus. Subterminal seta of telotarsus with a distinct S-curve and about 5 bristles situated ventrally along the distal two-thirds; not quite equaling the axial length of the terminal claws. Arolium exceeding the two simple claws. *Leg I*. Trochanter subtriangular, about  $1\frac{1}{2}$  times as long as wide, about  $\frac{1}{2}$  tibial length; flexor face evenly convex, extensor face very short. Basifemur flattened, with both flexor and extensor faces weakly convex, with the greatest depth near the distal end; length 2 times the depth; with a vertical submobile inter-femural articulation. Telofemur flattened, with the flexor face somewhat more convex than corresponding face of the basifemur; length a good  $1\frac{1}{2}$  times the depth. Tibia subcylindrical with a weakly concave to virtually straight extensor face; flexor face weakly convex, greatest depth near the centre; length a good 4 times the depth, about  $\frac{2}{5}$  carapaceal length,  $\frac{1}{2}$  length of telofemur and  $\frac{2}{3}$  that of whole femur. Metatarsus subcylindrical, 2 times as long as wide, about  $\frac{2}{5}$  tibial length, with a submembranous inter-

tarsal articulation. Telotarsus subcylindrical, tapering towards the distal end, 4 times as long as wide; meta- and telotarsus together are of the same length as the tibia. *Leg IV*. Trochanter about  $1\frac{2}{3}$  times as long as wide,  $\frac{1}{2}$  tibial length; flexor and extensor face nearly straight and parallel. Basifemur strongly flattened, with faintly convex to nearly straight flexor margin and weakly S-curved extensor margin; greatest depth at distal end; length about  $1\frac{1}{5}$  times the depth; with a vertical immobile inter-femoral symphysis. Telofemur strongly flattened, with basal portion of flexor margin straight; extensor margin weakly convex; length about  $1\frac{3}{4}$  times the depth,  $1\frac{3}{7}$  basifemural length. Tibia with central and distal portions of extensor side virtually straight; flexor side weakly convex, greatest depth beyond the middle; length about 4 times the depth, about  $\frac{3}{5}$  carapaceal length,  $1\frac{1}{4}$  length of telofemur and almost  $\frac{4}{5}$  that of whole femur. Metatarsus subcylindrical, slightly narrowing towards the distal end,  $1\frac{4}{5}$  times as long as wide, about  $\frac{1}{3}$  tibial length, with a submembranous inter-tarsal articulation. Telotarsus subcylindrical, tapering towards the distal end, almost 4 times as long as wide; meta- and telotarsus together a good  $\frac{3}{4}$  of the tibial length.

*Tritonymphs* (2 ♂♂ 3 ♀♀ 1?) with only 3 tactile setae on the movable finger and 7 on the fixed finger of the chela: *st* and *eb* probably being absent. Palpal proportions not much differing from those in the adult (see table 6). — According to CHAMBERLIN, 1938, p. 112, in the tritonymph of *Pach. maya*, the chelicera has 2 accessory setae, while *ib* is missing from the fixed finger of the chela.

### ***Pachychitra maya* Chamberlin**

[Fig. 26–28; table 8]

*Pachychitra maya* CHAMBERLIN, 1938, p. 111–113, fig. 1; HOFF, 1945, p. 4.

**Material:** 1 ♀, holotype. Mounted specimen from „1st cave San Roque Road Oxcutzcab. Near mouth. Yucatan. July 22” in the collection of J. C. Chamberlin.

**Description** (compared with *Pach. curazavia* and *Pach. insularum*).

Rather distinctly sub-squamose. Carapace: 0,61 mm long; lyrifissures distinct; chaetotaxy probably 4–6–(26), possibly 6–6–(28) or 6–6–(30). Abdomen: (4th–12th segment missing); 1st–2nd tergite with 7, 3rd with 8 setae. Coxal area: Length of maxilla almost 0,42 mm (in total almost 0,6; acc.l. 0,34), breadth 0,22 mm (acc.br. 0,28); 2 setae bordering the trochantic foramen. Length of coxa I 0,16 mm (in total 0,27?; acc.l. 0,24), breadth 0,25? mm (acc.br. 0,28?). Length of coxa IV 0,25 mm (in total 0,32; acc.l. 0,21?), breadth 0,075 mm (acc.br. 0,11). Length of coxa IV about  $1\frac{1}{2}$  that of coxa I. Chelicera: Base 0,34 mm long (pedicle excluded), almost  $\frac{4}{7}$  carapaceal length; ES very small, much shorter than the width of the basal portion of the movable finger; GS about 0,10 mm long. Fixed finger with about 20 denticles along the inner margin; movable finger 0,30 mm long, almost  $\frac{1}{2}$  carapaceal length, with about 10 denticles. Flagellum consisting of 5 or 6, possibly 7 (?) blades which are up to 0,10 mm long; the proximal one not shorter than the others; all rather distinctly fringed. Galea ♀ 0,06 mm in length. Both internal and external lyrifissures near ES distinct. Palpus: Trochan-

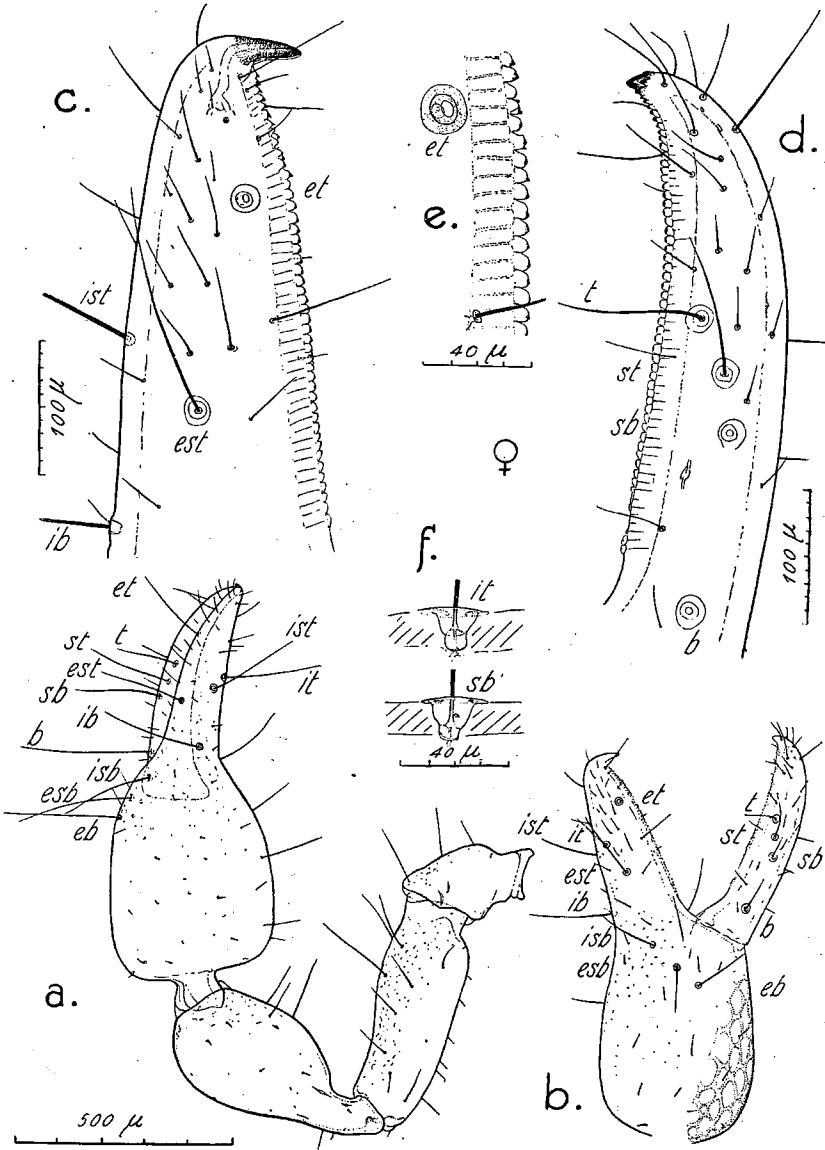


Fig. 28. *Pachychitra maya*, holotype. *a* Dorsal aspect of left cheliped. *b* Exterior aspect of right chela (basal part deformed). *c-d* Exterior aspect of fixed finger and movable finger of right chela. *e* Marginal teeth of fixed finger of right chela. *f* Basal cups of tactile setae.

*ter* 0,33 mm in length; a lyrifissure on dorsum. *Femur* ♀ 0,56 mm in length, 2,75 times the width; very indistinctly granulated, practically smooth; outer face rather bulging near pedicle. *Tibia* ♀ 0,565 mm in length, 2,1 times the width; not or nearly not granulated; rather bulbous, the outer side with its greatest convexity in distal part. *Chela* in part indistinctly granulated; total length almost  $1\frac{3}{4}$  carapaceal length, 2,7 times the width; length without pedicle ♀ 0,965 mm, 2,45 times the width. Fixed finger with ♀ 46 teeth, 14 occupying 0,1 mm in centre; teeth with a rather sclerotized apex. Movable finger with ♀ 58 teeth, 15 occupying 0,1 mm in centre; teeth near apical tooth having a rather heavily sclerotized apex which gradually disappears towards the middle of the row. Row of teeth on the movable finger about 5 teeth shorter than on fixed finger. *et* at a distance from the tip of about  $\frac{3}{10}$  finger length; *est* distinctly proximal from *ist*, about  $1\frac{1}{2}$  times as far from *ib* as from *ist*; *ist* nearer to *it* than to *est*. A lyrifissure on the base of fixed finger opposite *b* and possibly another near *it*; 2 single fissures on the dorsum of the movable finger. *L e g*: Telepodite of leg I a good 2, of leg IV a good  $2\frac{1}{2}$  times carapaceal length. *Leg I*. Trochanter  $1\frac{1}{4}$  times as long as wide,  $\frac{2}{5}$  tibial length; length of telofemur about  $1\frac{2}{3}$  times the depth; tibia a good  $\frac{1}{2}$  carapaceal length,  $\frac{7}{10}$  length of whole femur; metatarsus  $2\frac{1}{2}$  times as long as wide; telotarsus 5 times as long as wide. *Leg IV*. Basifemur about  $1\frac{1}{10}$  as long as deep; length of telofemur about  $1\frac{1}{5}$  the depth,  $1\frac{1}{5}$  basifemural length; tibia about 4 times as long as deep, of about  $\frac{3}{4}$  carapaceal length,  $1\frac{1}{5}$  the length of the telofemur; metatarsus 2 times as long as wide; telotarsus a good 4 times as long as wide.

### ***Pachychitra insularum* Hoff**

[Fig. 29; table 8]

*Pachychitra insularum* HOFF, 1945, p. 1-4, fig. 1-5.

*M a t e r i a l*: 1 ♂ 1 ♀, paratypes. Mounted specimens from, Mayagüez, Porto Rico" in The American Museum of Natural History.

*D e s c r i p t i o n* (compared with *Pach. curazavia* and *Pach. maya*).

Indistinctly sub-squamose. *C a r a p a c e*: about 0,5 mm long; lyrifissures not visible; chaetotaxy 4?-6-(28?). *A b d o m e n*: 4th and 5th sternite entire; 1st-10th tergite probably with 8-10 setae. *C o x a l a r e a* (♂): Length of maxilla 0,37 mm (in total 0,43; acc.l. 0,27), breadth 0,16 mm (acc.br. 0,24); probably 3 setae bordering the trochantic foramen. Length of coxa I 0,13 mm (in total 0,20; acc.l. 0,18), breadth 0,17 mm (acc.br. 0,20). Length of coxa IV 0,15 mm (in total 0,25; acc.l. 0,17), breadth 0,08 mm (acc.br. 0,11). Length of coxa IV about  $1\frac{1}{4}$  that of coxa I. *C h e l i c e r a*: Base about 0,23 mm long (pedicle excluded), a good  $\frac{3}{7}$  carapaceal length; ES rather small, not as long as the width of the basal portion of the movable finger; GS about 0,75 mm long. Fixed finger with about 12 denticles along the distal two-thirds of the inner margin; movable finger about 0,20 mm long,  $\frac{2}{5}$  carapaceal length, with about 8 denticles. *Flagellum* consisting of 6 (?) blades which are up to 0,06 mm long; the proximal one not shorter than the others; the distalmost rather distinctly fringed. *G a l e a* ♀ nearly 0,05 mm in length. Both inter-

nal and external lyrifissures near ES distinct. Pedipalps: *Trochanter* about 0,25 mm in length; a lyrifissure on dorsum. *Femur* ♂ 0,475 ♀ 0,425 mm in length, ♂ 3,0 ♀ 2,85 times the width; distinctly granulated; outer face very suddenly bulging near pedicle. *Tibia* ♂ 0,44 ♀ 0,415 mm in length, ♂ 2,05 ♀ 2,1 times the width; distinctly granulated; rather bulbous, the outer side with its greatest convexity beyond the middle. *Chela* in part rather distinctly granulated; total length a good  $1\frac{1}{2}$  carapaceal length, 2,9–3,1 times the width; length without pedicle ♂ 0,735 ♀ 0,710 mm, ♂ 2,7 ♀ 2,85 times the width. Fixed finger with ♂ 38 ♀ 33 teeth.

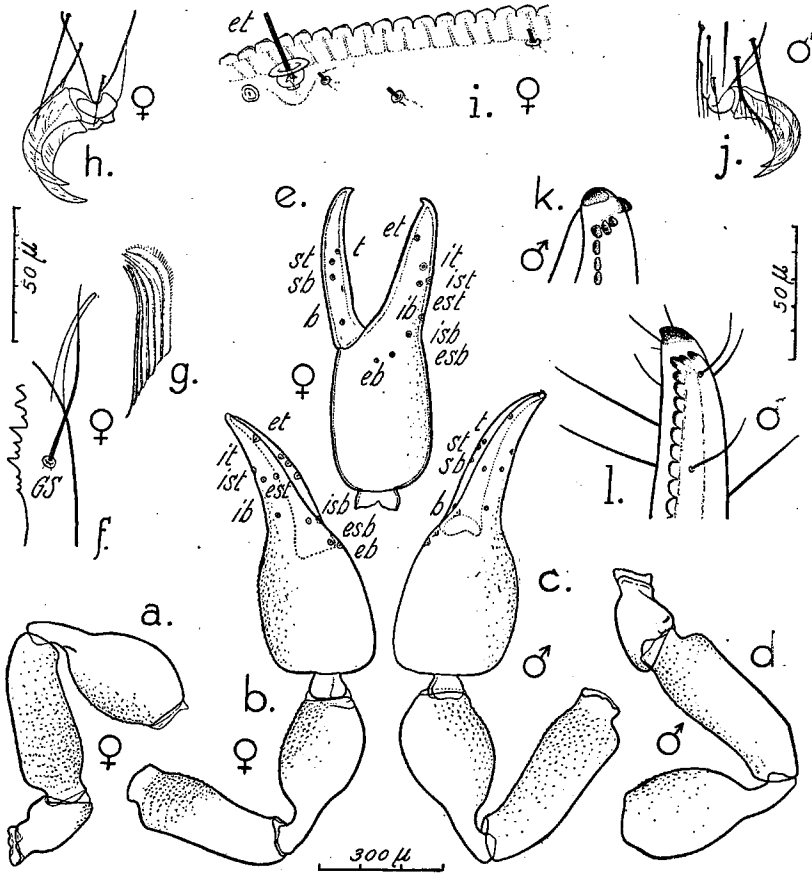


Fig. 29. *Pachychitva insularum*, paratypes. a Dorsal aspect of left cheliped without chela. b–c Dorsal aspect of right and left cheliped without trochanter. d Ventral aspect of right cheliped without chela. e Exterior aspect of left chela. f Part of movable finger of right chelicera, from dorsal. g Flagellum of right chelicera. h, i Tip of leg I and leg IV. j Marginal teeth of fixed finger of right chela. k–l Ventral and dorsal aspect of tip of movable chelal finger.



13–14 occupying 0,1 mm in centre; teeth with a somewhat sclerotized apex. Movable finger with ♂ 47 ♀ 42 teeth, ♂ 12 ♀ 15–17 occupying 0,1 mm in centre; teeth near apical tooth having a sclerotized apex which soon disappears towards the middle of the row. Row of teeth on the movable finger about 3 teeth longer than on fixed finger. *et* at a distance from the tip of about  $\frac{3}{10}$  finger length; *est* slightly proximal from *ist*, about 3 times as far from *ib* as from *ist*; *ist* nearer to *est* than to *it*. There may be lyrifissures on the fixed finger; 2 single fissures on the dorsum of the movable finger. Leg: Telepodite of leg I a good  $1\frac{1}{2}$ , of leg IV a good 2 times carapaceal length. Leg I. Trochanter about  $1\frac{1}{2}$  times as long as wide, about  $\frac{1}{2}$  tibial length; length of telofemur a good  $1\frac{1}{2}$  times as long as deep; tibia about  $\frac{3}{7}$  carapaceal length,  $\frac{2}{3}$  length of whole femur; metatarsus 2 times as long as wide; telotarsus 4 times as long as wide. Leg IV. Basifemur about  $1\frac{2}{5}$  as long as deep; length of telofemur about  $1\frac{9}{10}$  times the depth,  $1\frac{1}{2}$  basifemural length; tibia about  $4\frac{1}{2}$  times as long as deep, of about  $\frac{7}{11}$  carapaceal length,  $1\frac{1}{4}$  the length of the telofemur; metatarsus almost 2 times as long as wide; telotarsus almost 4 times as long as wide.

Key to the species  
of the genus *Pachychitra*

(based on 1 ♀ *P. maya*, 1 ♂ 1 ♀ *P. insularum* and 5 ♂♂ 2 ♀♀ *P. curazavia*)

- 1a Chela practically smooth; *ist* nearer to *it* than to *est*; row of teeth on movable finger shorter than on fixed finger; movable finger with 58 teeth. Outer face of palpal femur rather bulging near pedicle. Telepodite of I a good 2 times the length of the carapace, of IV a good  $2\frac{1}{2}$  times. (Carapace 0,60 mm). Probably all blades of the flagellum fringed. . . . . *P. maya* Chamberlin, 1938 (from Yucatan)
- 1b Chela in part distinctly granulated; *ist* nearer to *est* than to *it*; row of teeth on movable finger longer than on fixed finger; movable finger with 36–47 teeth. Outer face of palpal femur suddenly bulging near pedicle. Telepodite of I about  $1\frac{1}{2}$  times the length of the carapace, of IV about 2 times. (Carapace 0,50–0,55 mm). Probably only the distalmost blade of the flagellum fringed . . . 2
- 2a Chela without pedicle about  $2\frac{3}{4}$  times as long as wide; movable finger with 42–47 teeth. Palpal tibia distinctly granulated; length about 2,1 times the width. Palpal femur distinctly granulated; outer face very suddenly bulging near pedicle. Proximal blade of flagellum not shorter than the other . . . . . *P. insularum* Hoff, 1945 (from Desecheo and Puerto Rico)
- 2b Chela without pedicle about  $2\frac{1}{2}$  times as long as wide; movable finger with 36–41 teeth. Palpal tibia indistinctly granulated; length about 1,9 times the width. Palpal femur rather indistinctly granulated; outer face suddenly bulging near pedicle. Proximal blade of flagellum much shorter than the other . . . . . *P. curazavia* sp.n. (from Curaçao)

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