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A NEW FEATHER MITE GENUS OF THE FAMILY ALLOPTIDAE (ASTIGMATA: ANALGOIDEA) FROM PELICANS (PELECANIFORMES: PELECANIDAE)

НОВЫЙ РОД ПЕРЬЕВЫХ КЛЕЩЕЙ СЕМ. ALLOPTIDAE (ASTIGMATA: ANALGOIDEA) С ПЕЛИКАНОВ (PELECANIFORMES: PELECANIDAE)

S.V. Mironov*, T.M. Pérez**
С.В. Миронов*, Т.М. Перес**

*Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya emb., St.Petersburg, Russia, 199034.
**Departamento de Zoología, Instituto de Biología, Universidad Nacional Autonoma de México, Apartado Postal 70-153, 04510 México, D. F., México
*Зоологический институт, Российская Академия Наук, Санкт-Петербург, 199034 Россия
**Отдел зоологии, Институт Биологии, Национальный Автономный Университет Мексики, п/о 70-153, 04510 Мехико, Д.Ф., Мексика

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Ключевые слова: клещи, Analgoidea, Alloptidae, *Megalloptes* gen. n., систематика, новые таксоны, Pelecanidae

ABSTRACT

A new feather mite genus *Megalloptes* **gen. n**. (Analgoidea, Alloptidae) and two new species of this genus are described. The genus belongs to the generic group *Alloptes*, the most evolved group within the subfamily Alloptinae. Representatives of the genus *Megalloptes* **gen.n**. are associated exclusively with the pelicans (Aves, Pelecaniformes, Pelecanidae). The genus includes the following species: *Megalloptes triphyllurus* **sp.n**. from *Pelecanus onocrotalus* (type host) and *P. rufescens*; *M. major* **sp.n**. from *P. occidentalis*.

РЕЗЮМЕ

В семействе перьевых клещей Alloptidae описаны новый род *Megalloptes* **gen.n**. и два новых вида. Род принадлежит к наиболее продвинутой в подсемействе Alloptinae родовой группе *Alloptes*. Представители рода *Megalloptes* gen.n. паразитируют исключительно на пеликанах (Aves, Pelecaniformes, Pelecanidae). Представители двух видов, принадлежащих к этому роду, зарегистрированы на следующих хозяевах: *Megalloptes triphyllurus* **sp. n**. — на *Pelecanus onocrotalus* (типовой хозяин) и *P. rufescens*; *M. major* **sp.n**. — на *P. occidentalis*.

INTRODUCTION

Feather mites of the family Alloptidae Gaud, 1957 are a vast group of permanent ectoparasitic mites associated with many orders of aquatic birds. According to recent taxonomic studies [Gaud, 1972, 1982; Vasyukova & Mironov, 1991; Kivganov & Mironov, 1992; Mironov, 1996, 1998a, 1998b] and a generic review of the feather mites of the world [Gaud & Atyeo, 1996] the family embraces about 160 species and 25 genera. Nevertheless, certain genera and subfamilies of the family Alloptidae still need taxonomic revisions.

Among five genera of the family Alloptidae associated with the order Pelecaniformes the representatives of two genera, *Plicatalloptes* Dubinin, 1955 (Alloptinae) and *Alloptellus* Dubinin, 1955 (Oxyalginae), were formerly known from birds of the family Pelecanidae [Atyeo & Peterson, 1967; Peterson & Atyeo, 1972; Mironov, 1996].

The present paper represents the description of a new genus *Megalloptes* gen.n. with two new species collected from pelicans. The genus belongs to the *Alloptes* generic group [Mironov, 1998b]. Within the subfamily Alloptinae this generic group is characterized by a set of the following characters: in both sexes the distal margin of the ambulacral disc is rounded, the central sclerite of the ambulacral disc is transversal with deeply concave anterior margin, setae *d* of tarsi II, III are absent, setae *sR* of trichanters III are setiform; in males the primary opisthosomal lobes are long and narrow, secondarily fused by their medial margins into a single medial lobe, the terminus of opisthosoma with a single terminal membrane usually separated into three pairs of festoons, the lateral membranes of opisthosoma are absent, pairs of legs I, II are symmetrical and not hypertrophied. Update, this generic group included four genera: *Alloptes* Canestrini, 1879, *Laminalloptes* Dubinin, 1955, *Paradoxalloptes* Mironov, 1998, and *Plicatalloptes* Dubinin, 1955. Main morphological diagnostic characters and the host associations of these

genera and subgenera of the genus *Alloptes* were discussed in our previqus papers dealing with the systematics of the Alloptidae [Mironov, 1996, 1998a; 1998b]. It is only worthy to add that four subgenera recently recognized within the genus *Alloptes* [Gaud, 1972; Mironov, 1998b] apparently should be risen up to the generic rank. However the latter is a subject for a special taxonomic study.

MATERIALS AND METHODS

Materials, used in the present study, resulted from the examination of the feather mite collection of the late Prof. Jean Gaud (Université de Nice, France), a part of which was recently deposited in the Zoological Institute of the Russian Academy of Sciences (St.Petersburg), and partially derived from the Galapagos Islands where mites were collected by the junior co-author.

Descriptions of new taxa are given according to a standard format used for respective mite taxa of the family Alloptidae, the idiosomal chaetotaxy follows that of Griffiths *et al.*, [1990] and the leg chaetotaxy is that of Atyeo & Gaud [1966]. All measurements are given in micrometers (μm). As the type series of a new species is represented by a few specimens, the measurements are given for the holotype (male) and for one paratype (female).

Abbreviations for the type material repositions: MONZ — Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand; ZISP — Zoological Institute, Russian Academy of Sciences, St.Petersburg, Russia.

Abbreviations of setae used in the figures and descriptions:

Designations for idiosomal setae
c2, c3, cp — segment C setae
d1, d2 — segment D setae
e1, e2 — segment E setae
f2 — segment F setae
g — genital setae
h1-h3 — segment H setae
ps1-ps3 — setae of pseudanal segment
se, si — scapular setae
ve, vi — vertical setae
1a, 3a, 3b, 4a — coxal setae

Designations for leg setae and solenidia
cG — medial seta of genua I–II
d, e, f — dorsoapical setae of tarsi
mG — lateral seta of genua I–II
r, w — ventral setae of tarsus IV
sR — ventral setae of trochanter III
vF — ventral setae of femurs
φ — dorsoapical solenidion of tibiae
σ — dorsoapical solenidion of genua

Family Alloptidae Gaud, 1957

Subfamily Alloptinae Gaud, 1957

Megalloptes Mironov et Pérez gen. n.

Type species: *Megalloptes triphyllurus* **sp.n.**

Vertical setae *vi, ve* absent. Epimerites I fused, Y-like. Setae *d* of tarsi I–III absent. Leg chaetotaxy (solenidia are in parentheses): I 1–1–2(1)–5(2), II 1–1–2(1)–5(1), III 1–0–(1)–(1)–3, IV 0–0–0–(1)–5. Setae *mG* of genua I, II lanceolate, with acute apex; seta *mG* II slightly curved backwards. Setae *cG* of genua I, II spine-like. Seta *sR* of trochanter III hair-like, situated ventral. Prodorsal shield short, with posterior end not extending to level of scapular setae *si, se*.

Male. General shape of idiosoma rhomb-like as in the genus *Alloptes*. Opisthosomal lobes long, secondarily fused by medial margins into a single lobe with a longitudinal sclerotized stitch, opisthosoma (fused primary opisthosomal lobes) in posterior half significantly enlarged, lateral parts of opisthosomal terminus heavily sclerotized, while medial triangular area between them being weakly sclerotized, with a large terminal membrane on posterior end of opisthosoma (Fig. 1, A). Terminal membrane separated into three pairs of festoons. Lateral parts of opisthosomal terminus with two pairs of hair-like setae (*f2, ps2*) and one pair of macrochaetae *h2*. Medial part with two pairs of hair-like setae (*h3, ps1*). Genital organ small, aedeagus shorter than genital arch. Genital organ surrounded from anterior and lateral sides by genital apodemes fused into long apodemalarch. Pregenital part of these apodemes Y-shaped, connecting apodemal arch apex with medial tips of epimerites IV (Fig. 1, B). Legs IV longer and thicker than legs III; tarsus III with claw-like apex; tarsus IV with claw-like, bidentate apex and a blunt spine on medioventral surface (Fig. 1, C).

Female. Idiosoma typical for females of the subfamily Alloptinae. Opisthosoma with two opisthosomal lobes separated by a small terminal cleft. Hysteronotal shield separated by a transversal band of striated tegument situated posteriad to the level of setae *e2, h1* into anterior hysteronotal shield and pygidial shield. Supranal concavity closed (Fig. 2 A). Setae *h1* present, *e1, f2, ps1, ps2* absent. Genital setae *g* absent. Epigynium semicircular, separated from epimerites IV (Fig. 2 C). Tarsi III, IV without lateral crests. Solenidion *φ* of tibia IV greatly reduced, button-like.

Differential diagnosis. Within the *Alloptes* generic group the new genus *Megalloptes* gen.n. is most closely related to the genus *Plicatalloptes*.

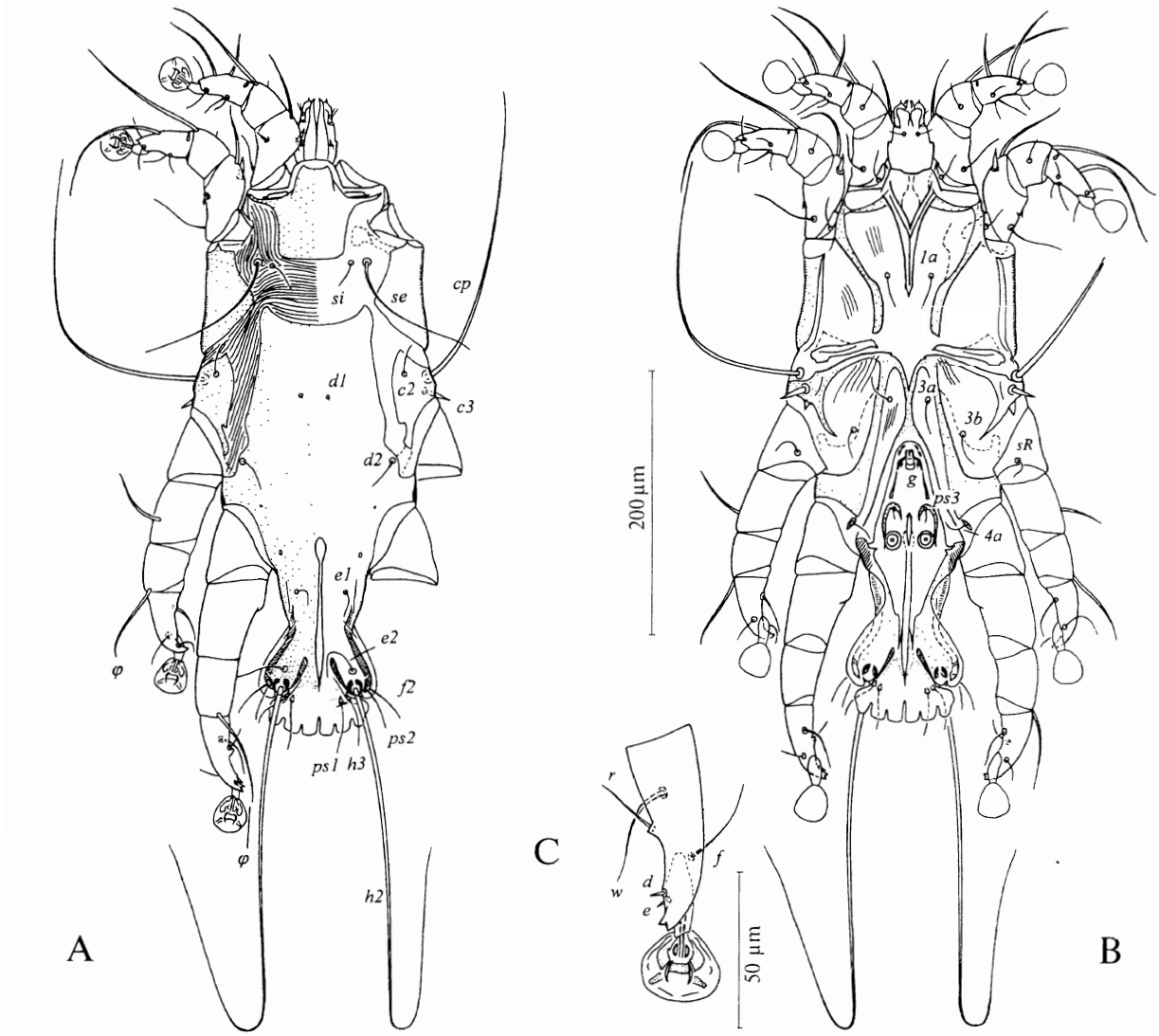

Fig. 1. *Megalloptes triphyllurus* sp. n., male. A — dorsal view, B — ventral view, C — tarsus III, dorsal view.

Рис. 1. *Megalloptes triphyllurus* sp. n., самец. A — дорсально, B — вентрально, C — лапка III дорсально.

The genus *Megalloptes* differs from *Plicatalloptes* and also from related *Laminalloptes* by several characters. In both sexes the prodorsal shield not extending to setae *si, se*, setae *cG* II spine-like; in males the fan-likely enlarged terminal part of opisthosoma (widest part about a half of idiosomal width) present; in females the hysteronotal shield is separated into anterior hysteronotal and pygidial fragments, the lateral crests on tarsi III, IV are absent. In both sexes ofthe genus *Plicatalloptes*, the prodorsal shield extends posteriad to the level of scapular setae and always includes the bases of setae *si*, setae *cG* II are hair-like or bristle-like; in males the widest part of opisthosomal terminus not exceeding 1/4–1/3 of the idiosomal width; in females the hysteronotal shield is one-piece, legs III, IV bear rounded crest on lateral side.

It is necessary to point out that the genus *Megalloptes* is similar to several species of the genus *Alloptes* by the structure of setae *mG*II in both sexes (Fig. 2 B) and tarsi III, IV in females. However, the new genus is well distinguished from that genus and also from the *Paradoxalloptes* by all other discriminate characters listed above.

The genus includes two species.

Hosts. Pelecanidae (Pelecaniformes).

1. *Megalloptes triphyllurus* Mironov et Pérez sp.n.

Figs. 1–2.

Male (holotype). Idiosomal length 405, width 187 (idiosomal size of 2 paratypes 396–405×170–180). Prodorsal shield with almost rectangular posterior part and long acute lateral angles; length of shield 72, width at the level of posterior margin 50. External scapular setae *se* separated by 84. Hysteronotal shield having concave anterior margin, length of hysteronotal shield 283, width at the

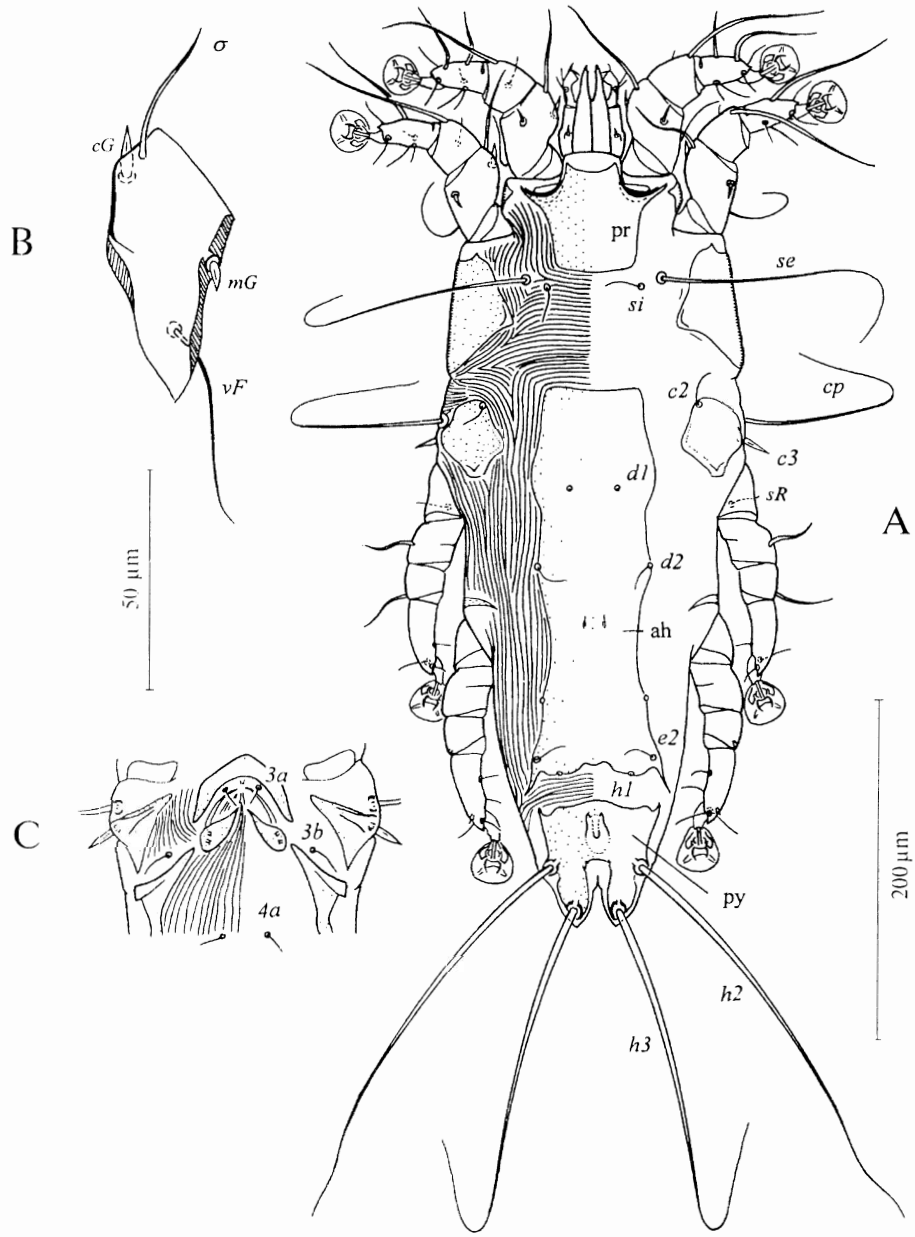

Fig. 2. *Megalloptes triphyllurus* sp. n., female. A — dorsal view, B — femurogenu II, dorsal view, C — egg opening and adjacent coxal areas. ah — anterior hysteronotal shield, pr — prodorsal shield, py — pygidial shield.

Рис. 2. *Megalloptes triphyllurus* sp. n., самка. A — дорсально. B — фемурогенум II дорсально, C — яйцевыводное отверстие и соседние коксальные участки. ah — передний гистеронотальный щит, pr — продорсальный щит, py — пигидиальный щит.

level of anterior margin 77. The distance between the prodorsal and hysteronotal shields along the medial line 51. Subhumeral setae *c3* lanceolate, with acute apex, 20 in length. Width of opisthosoma at level of setae *h2* 89, at narrowest part 48, posterior end of interlobar stitch extending to the level of setae *h2*, length of stitch 112. Terminal membrane with 3 pairs of well developed festoons, incision between medial pair of festoons slit-like (Fig. 1A). Macrochaetae *h2* whip-like, width about 3.5.

Bases of trochanters I surrounded by narrow sclerotized band connecting the bases of epimerites I, Ia. Coxal fields III open in anteromedial angle. Length of anagenital field (area from apodemal arch apex to the bases of setae *ps1*) 187. Width of fused part of Y-shaped pregenital sclerites approximately equal to that of free parts (Fig. 1, B). Sclerotized fields along epimerites IV with a smooth margin. Coxal setae *3a* situated anteriad to *3b*, pseudanal setae *ps3* disposed slightly anteriad to *4a*. Posterior tips of genital arch connected with a pair of rod-like genital shields. Adanal shields thin, hook-like. Distances between setae: *3a–g* 51, *g–ps3* 35, *ps3–ps1* 140, *4a–4a* 88.

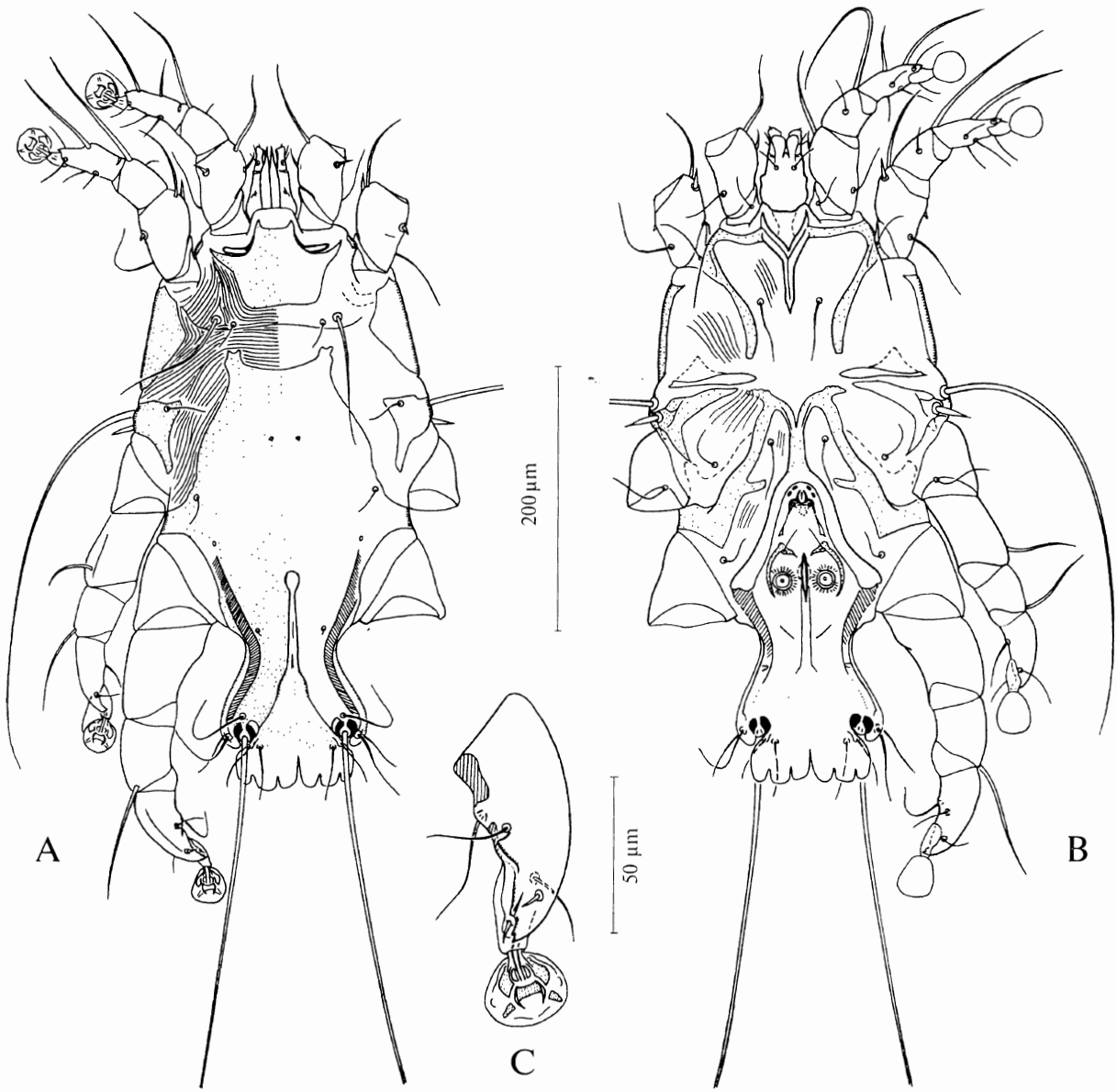

Fig. 3. *Megalloptes major* sp. n., male. A — dorsal view, B — ventral view, C — tarsus III, dorsal view.

Рис. 3. *Megalloptes major* sp. n., самец. A — дорсально, B — вентрально, C — лапка III дорсально.

Length of legs IV excluding pretarsus 218, length of tarsus IV 60. Solenidion φ of tibia IV slightly longer than tarsus IV. Seta *w* of tarsus IV situated proximal than seta *r* (Fig 1,C).

Female (paratype). Length of idiosoma 454, width 161 (idiosomal size in 2 other paratypes 460–495×186–195). Prodorsal shield as in male, length 67, width at the level of posterior margin 48. Setae *se* separated by 84. Anterior hysteronotal shield with straight anterior margin, lateral margins slightly concave posteriad to setae *d2*, posterior angles acute, length from anterior margin to setae *h1* 240, width at anterior margin 60 (Fig. 2,A). The distance between the prodorsal and hysteronotal shields along the medial line about 58. Setae *c3* narrow lanceolate, acute at apex, 22 in length. Length of pygidial shield 77. Supranal concavity open. Opisthosomal lobes separated by V-shaped terminal cleft, length of cleft 29. Setae *h1* situated posteriad to setae *e2*. Distances between setae: *d2–e2* 118, *e2–h1* 12, *e2–h3* 91, *e2–e2* 75; *h3–h3* 24; *h2–h3* 26. Coxal fields I as in male. Epigynium semicircular, 26 in length, 55 in width (Fig. 2,C). Apex of tarsus IV not extending to the bases of setae *h2*.

Type material. Holotype male (ZISP 4192), paratypes: 2 males, 3 females from the eastern white pelican *Pelecanus onocrotalus*, St. Lucia, Zululand, November, 1965, F.Zumpt coll.

Additional material. 2 females from the pink-backed pelican *P. rufescens*, St. Lucia, Zululand, November, 1965, F.Zumpt coll. Holotype and paratypes — ZISP.

2. *Megalloptes major* Mironov et Pérez sp. n.

Fig. 3.

Male (holotype). Idiosomal length 420, width 244. Prodorsal shield with trapezoid posterior part and long acute lateral angles, length of shield 65, width at posterior margin 65. External scapular setae *se* separated by 96. Hysteronotal shield with concave anterior margin, length of hysteronotal shield 308, width at level of anterior margin 79. The distance between the prodorsal and hysteronotal shields along medial line 48. Subhumeral setae *c3* lanceolate, with acute apex, 23 in length. Width of opisthosoma at the level of setae *h2* 110, at narrowest part 72, length of interlobar stitch about 78. Terminal membrane with three pairs of well developed festoons. Incision between medial pair of festoons Y-shaped (Fig. 3 A). Macrochaetae *h2* whip-like, width about 3.5.

Bases of throchanters I surrounded by narrow sclerotized band connecting bases of respective epimerites I, Ia. Coxal fields III open in anteriomedial angle. Sclerotized fields along epimerites IV with a finger-like projection (Fig. 3 B). Length of anagenital field 197. Width of fused part of Y-shaped pregenital sclerites approximately two times larger than that of free branches. Coxal setae *3a* situated anteriad to *3b*, pseudanal setae *ps3* disposed slightly anteriad to *4a*. Posterior tips of genital arch connected with a pair of stick-like genital shields. Adanal shields hook-like.

Distance between setae: *3a–g* 50, *g–ps3* 34, *ps3–ps1* 145, *4a–4a* 120. Femur IV with a blunt tubercle on medial side. Length of legs IV excluding pretarsus 266, tarsus IV 74 in length. Solenidion φ of tibia IV slightly longer than tarsus IV. Seta *w* of tarsus IV situated slightly proximad comparing to seta *r*.

Female unknown.

Type material. Holotype male (MONZ) and paratype male (ZISP 4207) from the brown pelican *Pelecanus occidentalis*, Playa Espumilla, Isla Santiago, the Galapagos Islands, 13 April, 1992, R.L. Palma coll. Holotype — MONZ, paratype — ZISP.

KEY TO *MEGALLOPTES* MALES

1. Interlobar stitch extending by posterior end to level of setae *h2*, medial margin of sclerotized fields along epimeritesIV smooth, width of idiosoma less than 200, widest part of opisthosomal terminus about 80–90 ..... *M. triphyllurus*

Interlobar stitch extending to midlength of opisthosoma,medial margins of sclerotized fields along epimerites IV with a finger-like projection, width of idiosoma more than 230, widest part of opithosomal terminus about 100–110 ..... *M. major*

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