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A NEW SPECIES OF THE FEATHER MITE GENUS *AMERODECTES* VALIM ET HERNANDES, 2010 (ACARIFORMES: PROCTOPHYLLODIDAE) FROM *XANTHOCEPHALUS XANTHOCEPHALUS* (PASSERIFORMES: ICTERIDAE) IN OREGON

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ABSTRACT: A new feather mite species, *Amerodectes xanthocephali* sp. n. (Astigmata: Proctophyllodidae: Pterodectinae), is described from the *Xanthocephalus xanthocephalus* (Bonaparte) (Passeriformes: Icteridae) in Oregon, USA. The new species *A. xanthocephali* is most close to *A. sicalis* Mironov et González-Acuña 2011, *A. phrygilus* Mironov et González-Acuña 2011 and *A. zonotrichiae* Mironov et González-Acuña 2014. Males of *A. xanthocephali* differ from these species in having the aedeagus extending to the posterior margin of anal suckers (*vs*. to the midlevel of these suckers in *A. phrygilus* and *A. zonotrichiae,* and to the anterior end of terminal cleft in *A. sicalis*). Females of *A. xanthocephali* most clearly differ from these species in having the apodemes of oviporus separated from epimerites IIIa (*vs*. fused), the anterior hysteronotal and the lobar shields completely separated from each other (*vs*. connected ventro-laterally), and the posterior end of fused epimerites I tridentate (*vs*. with a short median extension). A brief review of taxonomic works on the *Amerodectes* is provided.

KEY WORDS: Feather mites, Acariformes, Proctophyllodidae, *Amerodectes*, systematics, Passeriformes

INTRODUCTION

The feather mite genus *Amerodectes* Valim et Hernandes, 2010 (Proctophyllodidae: Pterodectinae) was established in the course of taxonomic and biodiversity investigations of proctophyllodids associated with passerines (Passeriformes) of South America (Valim and Hernandes 2010), and to date it has included 25 species (Mironov et al. 2008; Mironov and González-Acuña 2011, 2014; Mironov and OConnor 2014). As for most proctophyllodids, representatives of this genus live the wing feathers (primaries, secondaries, and tertialis) and the tail feather (retrices) of their avian hosts, where they are located in corridors formed by barbs on the ventral side of vanes.

Within the subfamily Pterodectinae, the genus *Amerodectes* belongs the *Pterodectes* generic complex, also referred as derived pterodectines of the New World (Mironov 2009; Valim and Hernandes 2009, 2010; Hernandes 2013; Mironov and González-Acuña 2014). Valim and Hernandes (2010) summarized host associations of all *Amerodectes* species known up to that time. Modern redescriptions and illustrations of all species described in the 19th and 20th Centuries and presently belonging to the genus *Amerodectes* were given in the papers of Valim and Hernandes (2006, 2008, 2010). Species of this genus described or redescribed before 2010 were treated in the content of the genus *Pterodectes* Robin, 1877. A key to the majority of presently known *Amerodectes* species was provided by Mironov and González-Acuña (2011).

The genus *Amerodectes* is the species-richest and most widely distributed genus of the *Pterodectes* complex (Mironov 2009; Valim and Hernandes 2010). Its representatives are known from birds of 10 families. The majority of previously known species (19 species) are associated with oscine passerines of the infraorder Passerida. Among them, 14 species were described from birds of the superfamily Passeroidea (Cardinalidae, Emberizidae, Icteridae, Parulidae and Thraupidae), four species are known from hosts of the superfamily Muscicapoidea (Turdidae and Mimidae), and one species is known from wrens, Troglodytidae (Certhioidea). Four species are known so far from suboscine passerines: three from birds of the family Tyrannidae, and one species from hosts of the family Furnariidae. Most *Amerodectes* species are known from South America, and only three species, *A. dumetellae* Mironov et OConnor, 2014, *A. molothrus* (Mironov, 2008), and *Amerodectes sialiarum* (Stoll, 1893), were recorded from North America (Park and Atyeo 1971; Hernandes and Valim 2005, 2006; OConnor et al. 2005; Valim and Hernandes 2010; Mironov and González-Acuña 2011, 2014; Mironov and OConnor 2014; Galloway et al. 2014).

In the present report we describe a new *Amerodectes* species from the Yellow-headed Blackbird, *Xanthocephalus xanthocephalus* (Bonaparte)

(Passeriformes: Icteridae), captured in Oregon (USA).

MATERIAL AND METHODS

The material used in the present work was collected by RO in the course of parasitological investigation of various birds in The Summer Lake Wildlife Area (also known as Summer Lake State Game Management Area), Oregon, USA, in 2002 and 2014. Bird individuals were collected under the Federal Fish and Wildlife Permit and corresponding Oregon Scientific Taking Permits. Feather mites detected on birds were removed from feathers using fine forceps or a fine red sable spotting brush and placed into tubes with 70% ethanol. Then mite specimens were mounted on microslides in Hoyer's medium according to the standard technique for this group of mites (Krantz and Walter 2009).

The description is given according to the format elaborated for species of pterodectines (Hernandes and Valim 2006; Mironov et al. 2008, 2012; Mironov and González-Acuña 2011). General morphological terms and leg chaetotaxy follow Gaud and Atyeo (1996); idiosomal chaetotaxy also follows these authors with corrections for coxal setae proposed by Norton (1998). All measurements are in micrometers (μm). The measuring techniques used for particular structures are given in the following papers: Mironov et al. (2008, 2012), Mironov and González-Acuña (2011). Distance between setae of the same pair is the direct distance between their bases, and distance between different pairs of setae is the shortest distance between the transverse levels formed by the setae of respective pairs.

The taxonomic system and scientific names of birds follow Clements et al. (2014).

Type material depositories: BMOC — Museum of Zoology, University of Michigan (Ann Arbor, MI, USA), ZISP — Zoological Institute of the Russian Academy of Sciences (Saint-Petersburg, Russia).

SYSTEMATICS

Family Proctophyllodidae Mégnin et Trouessart, 1884
Subfamily Pterodectinae Park et Atyeo, 1971
Genus *Amerodectes* Valim et Hernandes, 2010

***Amerodectes xanthocephali* sp. n.**

Figs. 1–3

Type material. Male holotype (BMOC 15-0521-001), 10 male and 14 female paratypes from the Yellow-headed Blackbird *Xanthocephalus xanthocephalus* (Bonaparte, 1826) (Passeriformes: Icteridae), USA, Oregon, Lake County, Summer Lake, 42°57′17.7″N, 120°42′43.6″W, July 2002, coll. R.M. Overstreet. Holotype, 5 male and 7 female paratypes — BMOC, 5 male and 7 female paratypes — ZISP.

Additional material. 7 male and 6 females, *X. xanthocephalus* (Passeriformes: Icteridae), USA, Oregon, Lake County, Summer Lake, 42°56′58.5″N, 120°45′54.2″W, July 2014, coll. R.M. Overstreet.

Description. Male (holotype, range for 10 paratypes in parentheses). Idiosoma, length × width, 375 (360–385) × 175 (160–180), length of hysterosoma 230 (220–240). Prodorsal shield: entire, antero-lateral extensions with two unequal indentations, lateral margins slightly concave at level of scapular setae, posterior margin straight, posterior angles acute, length 106 (105–110), width 125 (120–130), surface with few minute lacunae in anterior half or without them (Fig. 1A); bases of scapular setae *se* separated by 62 (60–65). Setae *ve* present, rudimentary. Scapular shields narrow, scarcely developed dorsally. Humeral shields absent or represented by rudimentary sclerites antero-lateral to bases of setae *cp*. Setae *cp* and *c2* situated on striated tegument. Subhumeral setae *c3* lanceolate, 19 (18–21) × 8 (7–8). Hysteronotal shield: greatest length 235 (230–245), width at anterior margin 125 (120–130), anterior margin straight, surface with minute lacunae, in some samples these lacunae in anterior half indistinct. Distance between prodorsal and hysteronotal shields about 20. Opisthosomal lobes approximately as long as wide at base; posterior margins of lobes roughly rounded, with small dent-like extensions at bases of setae *h2* and *h3*. Terminal cleft shaped as an inverted U with divergent branches, 30 (28–32) long. Supranal concavity semicircular. Setae *f2* anterior to bases of setae *ps2*. Setae *h1* situated at level of anterior end of terminal cleft. Setae *h3* whip-like, 90 (80–95) long; setae *ps2* 88 (80–90) long; setae *ps1* filiform, about 10 long, situated on margin of terminal cleft approximately at level of setae *ps2*. Distances between dorsal setae: *c2:d2* 98 (90–105), *d2:e2* 88 (85–95), *e2:h3* 44 (40–48), *d1:d2* 30 (28–33), *e1:e2* 32 (30–36), *h1:ps2* 22 (20–22), *h2:h2* 55 (53–60), *h3:h3* 40 (38–45), *ps2:ps2* 68 (65–70).

Epimerites I fused into a V, fused part with three small dent-like extensions (lateral ones in some specimens poorly expressed) (Fig. 1B).

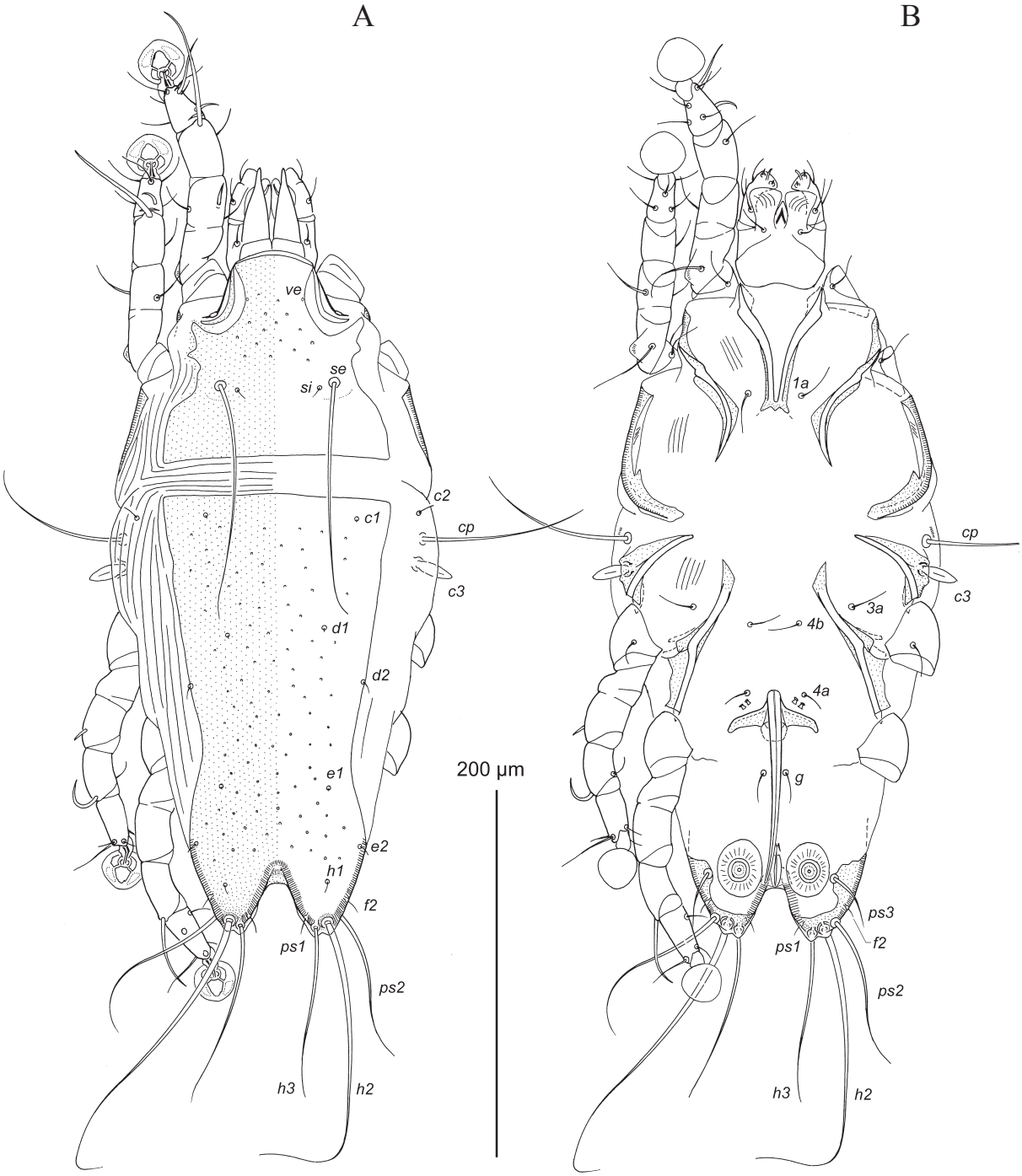

Fig. 1. *Amerodectes xanthocephali* sp. n., male. A — dorsal view, B — ventral view.

Coxal fields I, II without extensively sclerotized areas. Rudimentary sclerites rEpIIa absent. Coxal fields I–III open. Coxal fields IV without sclerotized areas at bases of trochanters IV. Epimerites IVa absent. Genital arch of moderate size, 24 (22–26) × 51 (50–53); basal sclerite of genital apparatus with rounded posterior margin; aedeagus sword-shaped, 98 (95–105) long, extending to posterior margins of anal suckers or slightly beyond this level (Fig. 3E). Genital papillae not connected at bases. Genital and adanal shields absent. Adanal suckers 13 (13–14) in diameter, corolla smooth, surrounding membrane with radial striae. Opisthoventral shields occupying lateral areas of opisthosoma and distal one third or half of opisthosomal lobes; inner margins of these shields at level of anal suckers with roughly trapezoidal or angular extensions, bearings setae *ps3*. Setae *4b* situated slightly posterior to level of setae *3a*. Distance between ventral setae: *4b*:*3a* 9 (7–10), *4b:4a*

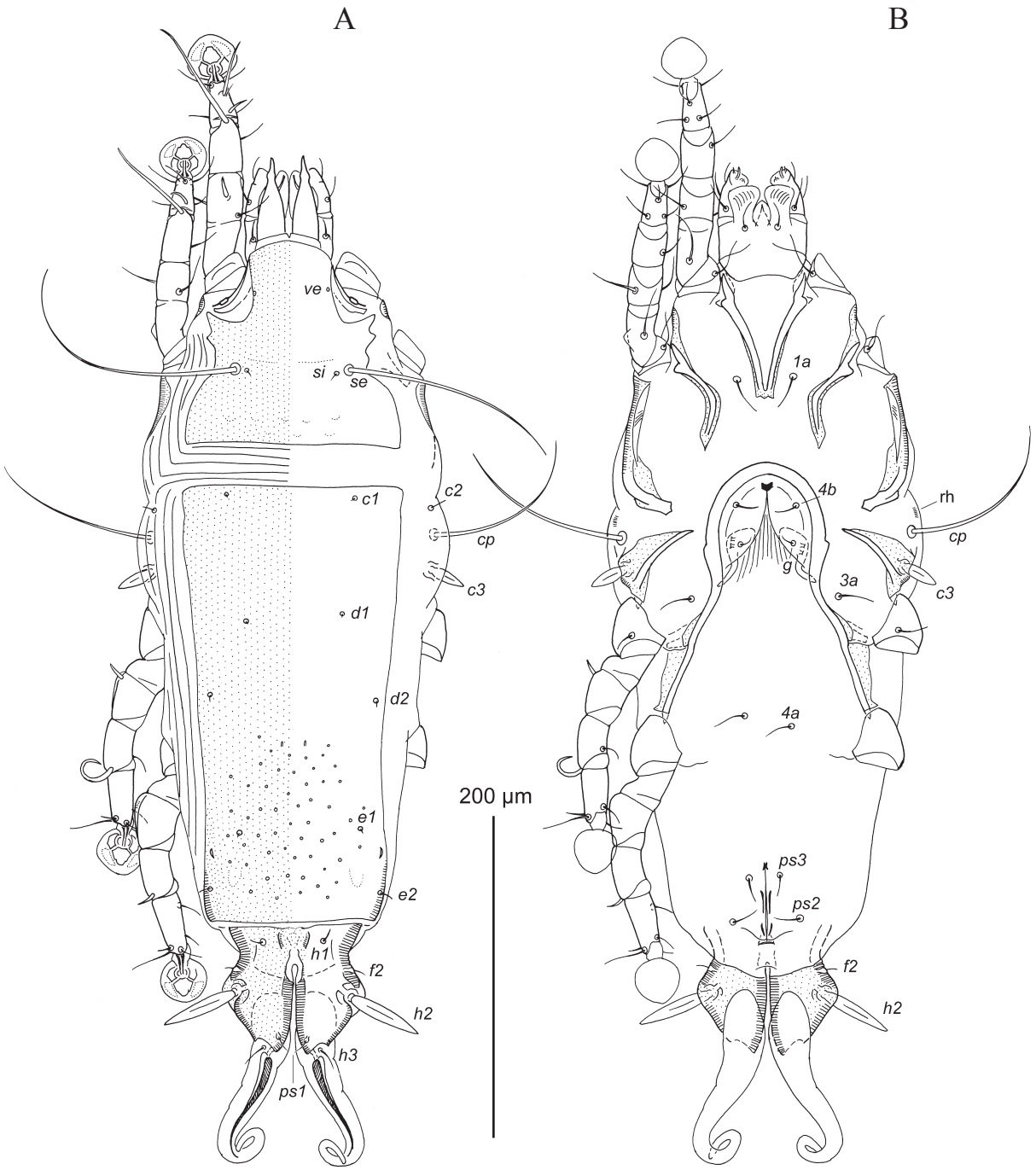

Fig. 2. *Amerodectes xanthocephali* sp. n., female. A — dorsal view, B — ventral view. rh — rudimentary humeral shield.

38 (35–42), *4a:g* 44 (42–48), *g:ps3* 58 (55–60), *ps3:ps3* 69 (65–70), *ps3:h3* 30 (29–35).

Femora I, II with narrow ventral crests, other segments of legs I, II without processes (Figs 3A, B). Solenidion *σ1* of genu I 10 (9–11) long, situated at midlevel of segment. Genual setae *cG*I, II and *mG*I filiform, setae *mG*II slightly thickened basally. Seta *d* of tarsi II subequal to corresponding seta *f*; seta *d* of tarsi III half as long as corresponding seta *f* (Fig. 3C). Solenidion *φ* of tibia IV extending to midlevel of ambulacral disc. Tarsus IV 31 (30–34) long, with apical process; seta *d* in basal half of segment (Fig. 3D). Length of solenidia: *ω1*I 11 (11–13), *ω1*II 8 (8–10), *φ*I 69 (65–70), *φ*II 53 (50–55), *φ*III 31 (28–33), *φ*IV 33 (32–36).

Female (range for 10 paratypes). Idiosoma, length × width, 500–530 × 190–210, length of hysterosoma 350–390. Prodorsal shield: shaped as in male, 125–135 × 130–138, surface with poorly distinct lacunae at posterior margin or without them, bases of setae *se* separated by 70–80 (Fig.

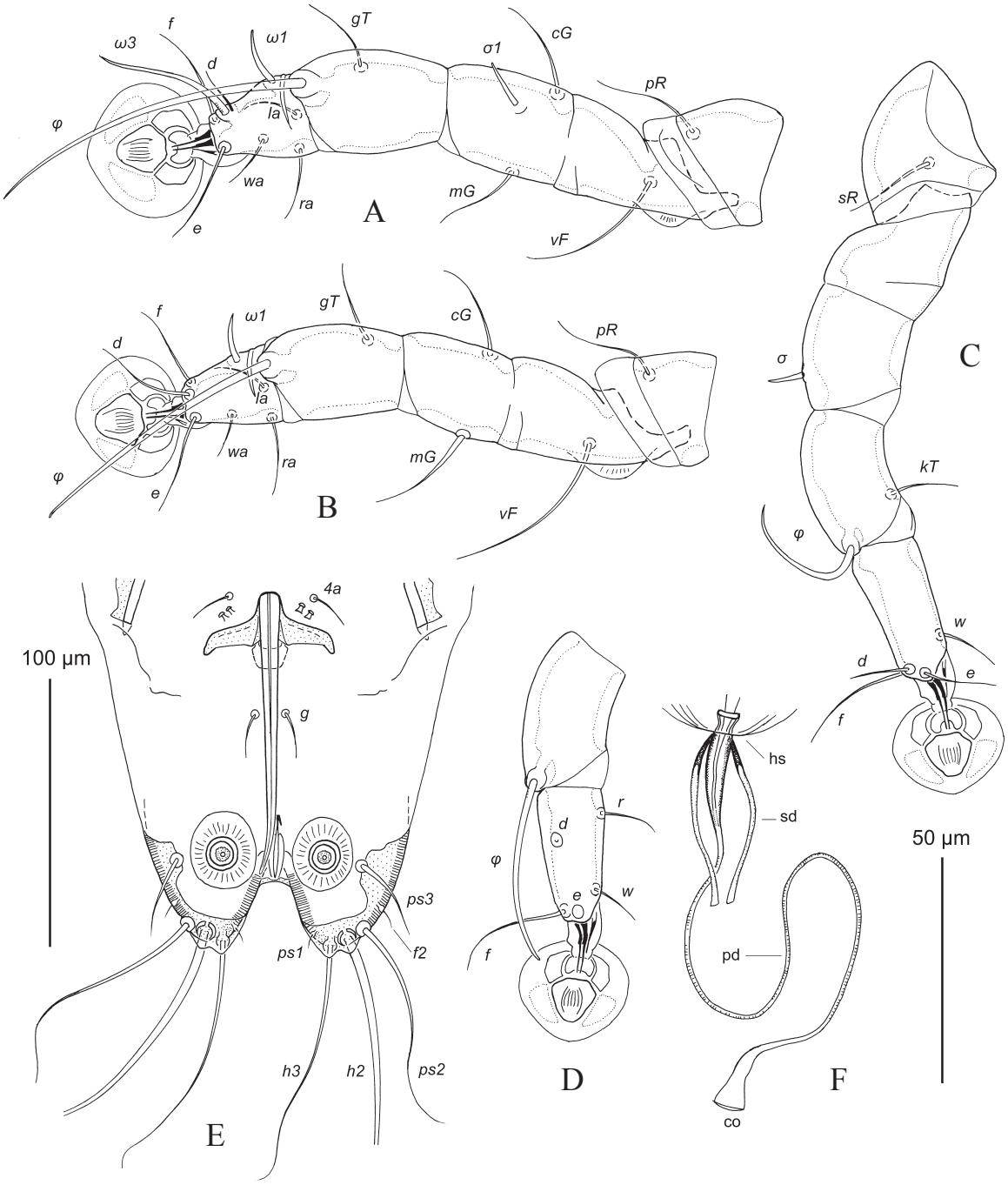

Fig. 3. *Amerodectes xanthocephali* sp. n., details. A — leg I of male, B — leg II of male, C — leg III of male, D — tibia and tarsus IV of male, E — opisthosoma of male, ventral view, F — spermatheca and spermaducts of female. co — copulatory opening, hs — head of spermathecal, pd — primary spermaduct, sd — secondary spermaduct. Scale bars: 50 µm (A–D, F); 100 µm (E).

2A). Setae *ve* present, rudimentary. Scapular shields narrow, not developed dorsally. Humeral shields absent or, represented by rudimentary sclerites antero-lateral to bases of setae *cp*. Setae *cp* and *c2* situated on striated tegument. Setae *c3* lanceolate, 22–24 × 8–9. Anterior and lobar parts of hysteronotal shield separated dorsally by narrow transverse band of soft tegument (Fig. 2B). Anterior hysteronotal shield nearly rectangular, anterior margin straight, greatest length 270–290, width at anterior margin 130–145, posterior half with minute lacunae. Length of lobar region 82–90, greatest width 85–94. Terminal cleft narrow, with lateral margins parallel-sided and almost touching, 55–60 long. Supranal concavity poorly distinct; lobar shield with short posterior incision extending to area of supranal concavity; surface without ornamentation. Setae *h1* at level of supra-

nal concavity; setae *h1* and *f2* arranged in a trapezium. Setae *h2* spindle-like, 45–49 × 8–9. Setae *ps1* situated near inner margins of opisthosomal lobes, close to lobar apices. Setae *h3* 18–22 long, about 1/8 the length of terminal appendages. Distances between dorsal setae: *c2:d2* 120–130, *d2:e2* 118–130, *e2:h2* 60–65, *h2:h3* 35–40, *d1:d2* 55–60, *e1:e2* 35–45, *h1:h2* 30–35, *h1:h1* 35–40, *h2:h2* 70–78, *h2:ps1* 25–30.

Epimerites I fused into a V, fused part with 3 small denticles (lateral ones in some specimens poorly expressed) (Fig. 2B). Lateral parts of coxal fields II without large sclerotized areas. Epimerites IVa absent. Translobar apodemes of opisthosomal lobes present, wide, not fused to each other anterior to terminal cleft. Epigynum with small lateral ledges, greatest width 70–78; apodemes of ovipore free from epimerites IIIa. Primary spermaduct with ampuliform enlargement near head of spermatheca; secondary spermaducts 30–35 long (Fig. 3F). Pseudanal setae filiform, setae *ps2* situated at level of posterior half of anal opening and widely separated from each other; distance between pseudanal setae: *ps2:ps2* 40–46, *ps3:ps3* 18–21, *ps2:ps3* 24–30.

Femora II with ventral crest, other segments of legs I, II without processes. Solenidion σ1 of genu I short, 9–11 long, situated at midlevel of segment. Genual setae *cG*I, II, *mG*I, II as in male. Seta *d* and *f* of tarsi II subequal, setae *d* of tarsi III, IV much shorter than corresponding setae *f*. Genu IV dorsally inflated, with narrow dorsal crest. Lengths of solenidia: *ω1*I 11–13, *ω1*II 7–9, *φ*I 68–72, *φ*II 55–62, *φ*III 30–33, *φ*IV 9–12.

Differential diagnosis. Among previously described species, the new species *Amerodectes xanthocephali* sp. n. is close to *A. sicalis* Mironov et González-Acuña 2011 from *Sicalis luteola* (Sparman), *A. phrygilus* Mironov et González-Acuña 2011 from *Phrygilus patagonicus* Lowe, and *A. zonotrichiae* Mironov et González-Acuña 2014 from *Zonotrichia capensis* (Statius Müller) (Emberizidae) in having the following combination of features: in both sexes, genual setae *cG*I, II are filiform; the anterior margin of the hysteronotal shield is straight or slightly concave, the humeral shields are absent or strongly reduced, and the hysteronotal shield is without ornamentation of large ovate lacunae; in males, setae *h3* are long and exceed the distance between bases of setae *se*, and the end of fused epimerites I is tridentate and free from epimerites II; in females, the supranal concavity is poorly outlined.

The new species differs from these three species by the following features: in males of *A. xanthocephali*, the aedeagus extends to the posterior margin of adanal suckers (*vs*. to the midlevel of adanal suckers in *A. phrygilus* and *A. zonotrichiae,* and to the anterior end of terminal cleft in *A. sicalis*); in females of *A. xanthocephali*, the apodemes of oviporus are separated from epimerites IIIa (*vs*. fused to), the anterior hysteronotal and lobar shields are completely separated from each other (*vs*. connected ventro-laterally), the posterior end of fused epimerites I is tridentate (*vs*. with a short median extension), and setae *ps2* are situated at level of anal opening (*vs*. posterior to anal opening). Additionally, *A. xanthocephali* differs from *A. phrygilus* by the following characters: in males of *A. xanthocephali*, setae *d1* are noticeably closer to the level of setae *d2* than to that of setae *c2* (*vs*. equidistant from levels of *c2* and *d2* in *A. phrygilus*), the distal half of tarsus IV extends beyond the level of lobar apices (*vs*. not extending to); in females, the humeral shields are rudimentary or absent (*vs*. represented by small sclerites touching bases of setae *cp*).

Etymology. The specific epithet is derived from the generic name of the type host and is a noun in the genitive case.

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