



<http://dx.doi.org/10.11646/zootaxa.3765.2.6>

<http://zoobank.org/urn:lsid:zoobank.org:pub:A1E6FE77-82D4-484A-839D-11D189D76ACD>

Two new combinations and a key to the species of the genus *Earota* Mulsant & Rey (Coleoptera: Staphylinidae: Aleocharinae)

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Abstract

Earota babai (Sawada, 1989), **comb. nov.** and *Earota koreana* (Pašnik, 2001), **comb. nov.** are transferred from the genera *Pelioptera* Kraatz, 1857 and *Aloconota* Thomson, 1858, respectively. *Earota babai* is recorded from the Korean Peninsula for the first time and *E. koreana* is a new addition to South Korea. Redescriptions, habitus photographs, illustrations of diagnostic characters of these two species and a key to the known species of the genus *Earota* Mulsant & Rey, 1874 are provided to facilitate identification.

Key words: Coleoptera, Staphylinidae, Aleocharinae, Geostibini, *Earota*, new combination, Korea

Introduction

The aleocharine genus *Earota* was described by Mulsant and Rey (1874) based on *Homalota reyi* Kiesenwetter, 1850 and contains only two species with an interesting disjunct distribution in the Nearctic and West Palearctic regions (Gusarov 2002). The genus is characterized by combination of the following characters: robust and large body; complete infraorbital carina; antennomere 11 distinctly longer than the preceding two combined or as long as the preceding three combined; reduced α -sensillum of labrum (α ; see Ashe 1984); ligula broad, divided into two lobes at base; pronotum more or less flat, pubescence on midline directed posteriorly; moderately separated mesocoxae; apically rounded mesoventral process; medial macroseta of mesotibia inconspicuous, shorter than tibial width; metatarsomere 1 as long as or slightly longer than 2; one empodial seta present, not longer than claws; medial lamellae of median lobe of aedeagus large and broad (Gusarov 2002; pers. obs.).

While studying Korean Athetini and related taxa, we discovered *Pelioptera babai* Sawada, 1989 and *Aloconota koreana* Pašnik, 2001 for the first time in the Korean Peninsula and in South Korea, respectively. After detailed examination of those two species and comparison with *E. reyi* (type species of *Earota*), we found that they are in agreement with the diagnostic characters of *Earota* presented by Gusarov (2002). In this paper we transfer these two species to the genus *Earota*, redescribe *E. babai* and *E. koreana*, and provide a key to the known species of the genus *Earota*.

Material and methods

Specimens of the type species of the genus, *Earota reyi*, were borrowed from the Field Museum of Natural History (FMNH), Chicago, USA, and the type specimens of *Aloconota koreana* (the holotype and two paratypes) were borrowed from the Institute of Systematics and Evolution of Animals (ISEA), Kraków, Poland. All other specimens examined are deposited in the Chungnam National University Insect Collection (CNUIC), Daejeon, Korea.

Habitus photographs were taken using an image processing system (Olympus SZX 16 stereoscopic

microscope, Olympus DP 71 microscope digital camera: Olympus Corporation, Tokyo, Japan) and were merged using an image stacking software Combine ZP. Permanent microscope slides were prepared using the techniques described by Hanley and Ashe (2003). The terminology used here follows Sawada (1972) but in some cases, especially for mouthparts, we followed Ashe (1984), to avoid confusion.

Results

Genus *Earota* Mulsant & Rey, 1874

See Gusarov (2002) for description and synonyms.

Key to the species of *Earota*

- 1 Antennomere 4 elongate, 5–10 subquadrate to slightly transverse (Fig. 12) 2
- Antennomere 4 as long as wide or transverse, 5–10 transverse to significantly transverse (Fig. 3; see Gusarov 2002: Fig. 6) ..
..... 3
- 2 Body surface with fine punctures; antennomere 11 about as long as preceding three combined; male tergite VII with broad tri-
angular tubercle; posterior margin of male tergite VIII truncate *E. reyi*
- Body surface with coarse punctures; antennomere 11 shorter than preceding three combined (Fig. 12); male tergite VII with
elongate tubercle (Fig. 15); posterior margin of male tergite VIII serrulate (Fig. 16) *E. koreana* **comb. nov.**
- 3 Antennomere 4 about as long as wide (Fig. 3); tergites III–VI with transversely reticulate microsculpture; male tergite VII with
large and elongate tubercle (Fig. 6); posterior margin of male tergite VIII serrulate (Fig. 7) *E. babai* **comb. nov.**
- Antennomere 4 slightly transverse (see Gusarov 2002: Fig. 6); tergites III–VI with transversely striate microsculpture; male
tergite VII with small and round tubercle (see Gusarov 2002: Fig. 15); posterior margin of male tergite VIII triangularly con-
vex (see Gusarov 2002: Fig. 16) *E. dentata*

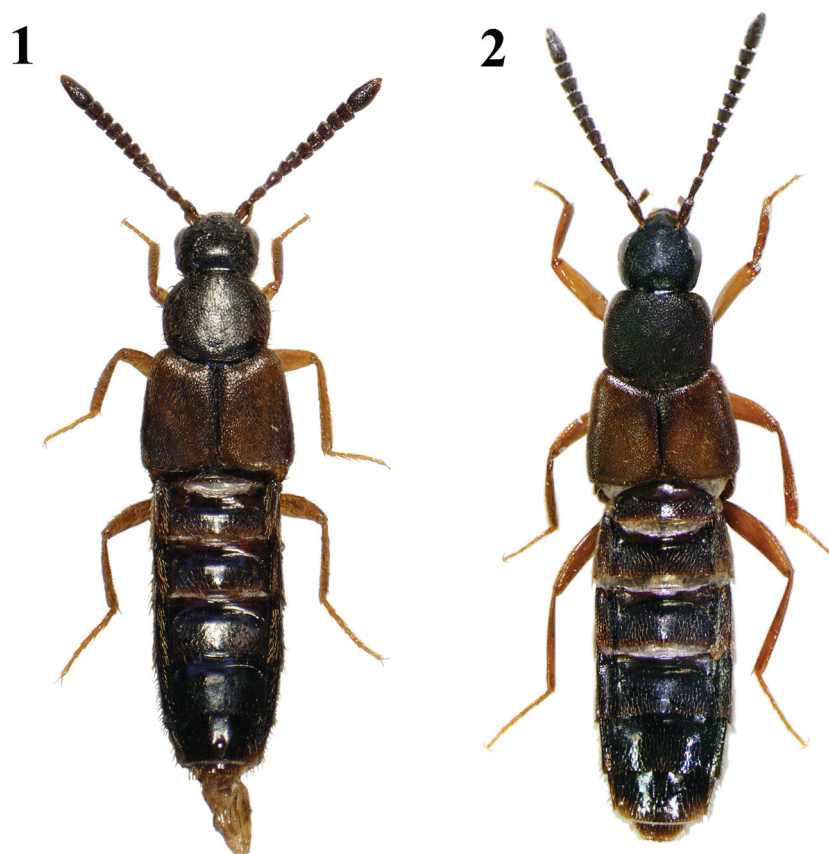
Earota babai (Sawada, 1989), **comb. nov.**

(Figs. 1, 3–11)

Pelioptera babai Sawada, 1989: 301; Smetana, 2004: 415 (as valid species).

Redescription. Body length about 3.5–4.8 mm. Body (Fig. 1) subparallel-sided; surface slightly glossy and densely pubescent, with fine punctures. Head, antennae, pronotum and abdomen dark brown to black; elytra and legs brownish, paler than other parts. **Head.** Subquadrate, about as wide as long, widest across eyes, narrower than pronotum; eyes large and distinctly prominent, about 1.5 times as long as tempora; cervical carina complete; gular sutures moderately separated, slightly diverged basally. Antennae (Fig. 3) long and slender; antennomeres 1–3 elongate, 1 longer than 2, 2 about as long as 3, 4 about as long as wide, 5–10 increasingly transverse apically, 11 longest, about as long as preceding three combined. **Mouthparts.** Labrum transverse, emarginate in anterior margin; 3 lateral sensilla and 8 macrosetae present on each side of midline; epipharynx with α -sensillum shorter than ε -sensillum, β - and γ -sensilla very short (α - ε ; see Ashe 1984). Mandibles asymmetrical, pointed at apex, about 1.6–1.7 times as long as wide; right mandible with small internal tooth, internal margin serrulate; prostheca developed. Lacinia of maxilla with nine spines in distal comb; maxillary palpus elongate, with long setae; palpomere 1 smallest, 2 about 3.6 times longer than wide, 3 slightly longer than 2, about 3.0 times longer than wide, 4 digitiform, filamentous sensillae not reaching to basal half of palpomere 4. Labium with ligula narrowed apically; two medial setae very widely separated; two basal pores very widely separated; lateral pseudopores absent, some medial pseudopores present, 1 setal pore and 3 real pores present on each side of prementum; labial palpus elongate, with many long setulae; palpomere 1 about twice longer than wide, with γ -setulae located between α and b -setulae, distance from setula α to γ twice as long as distance from setula b to γ ; palpomere 2 shortest, about 1.6 times longer than wide; palpomere 3 parallel-sided, about as long as 1, about 3.0–3.5 times longer than wide. Mentum trapezoidal, anterior margin emarginate, ν -seta very short (See Sawada 1989: 302 for mouthparts drawings). **Thorax.** Pronotum (Fig. 4) slightly transverse, approximately 1.2 times as wide as long, wider at apical third to middle; macrosetae moderately long, some assembled in postero-lateral margin. Metanotal scutum with 1

long seta and about 4–5 moderately long setae on each side of midline; mesocoxae widely separated; mesoventral process rounded at apex, as long as or slightly longer than metaventral process (Fig. 5). Elytra transverse, wider than pronotum, each elytron approximately 1.5–1.6 times as long as wide; postero-lateral margin almost straight; pubescence directed posteriorly and postero-laterally; hind wings fully developed; flabellum composed of about 12–14 setose lobes. **Legs.** Slender and moderately long, with dense pubescence; length ratio of tarsomeres 36:42:50:100 (protarsus); 50:68:65:57:96 (mesotarsus); 90:88:80:68:113 (metatarsus). **Abdomen.** Subparallel-sided, slightly wider at middle; surface glossy and densely pubescent, with transversely reticulate microsculpture. Macrochaetal arrangement of tergites II–III 01–12; tergites III–VI impressed basally; male tergite VII (Fig. 6) with elongate tubercle in median region; tergite VIII (Fig. 7) with 5 macrosetae on each side of midline, posterior margin slightly serrulate, emarginate at middle; male sternite VII with many small pores in basal region; sternite VIII with 7 macrosetae on each side of midline, posterior margin broadly round, slightly emarginate in median region, slightly sclerotized and translucent, with marginal setae; female sternite VIII similar to male, with long and short marginal setae, minute setae present in median region. Tergite X with medial setose patch chevron-shaped; seta in four oblique rows; rows convergent proximally. **Aedeagus.** Median lobe (Figs. 8, 9) oval, apical process in ventral aspect convergent apically. Apical lobe of paramerite (Fig. 10) with four setae; *a*-seta longest, *d*-seta slightly longer than *b*-seta (*a–d*; see Sawada 1972: 50). **Spermatheca.** Bursa relatively small, with flat umbilicus; duct broader apically (Fig. 11).

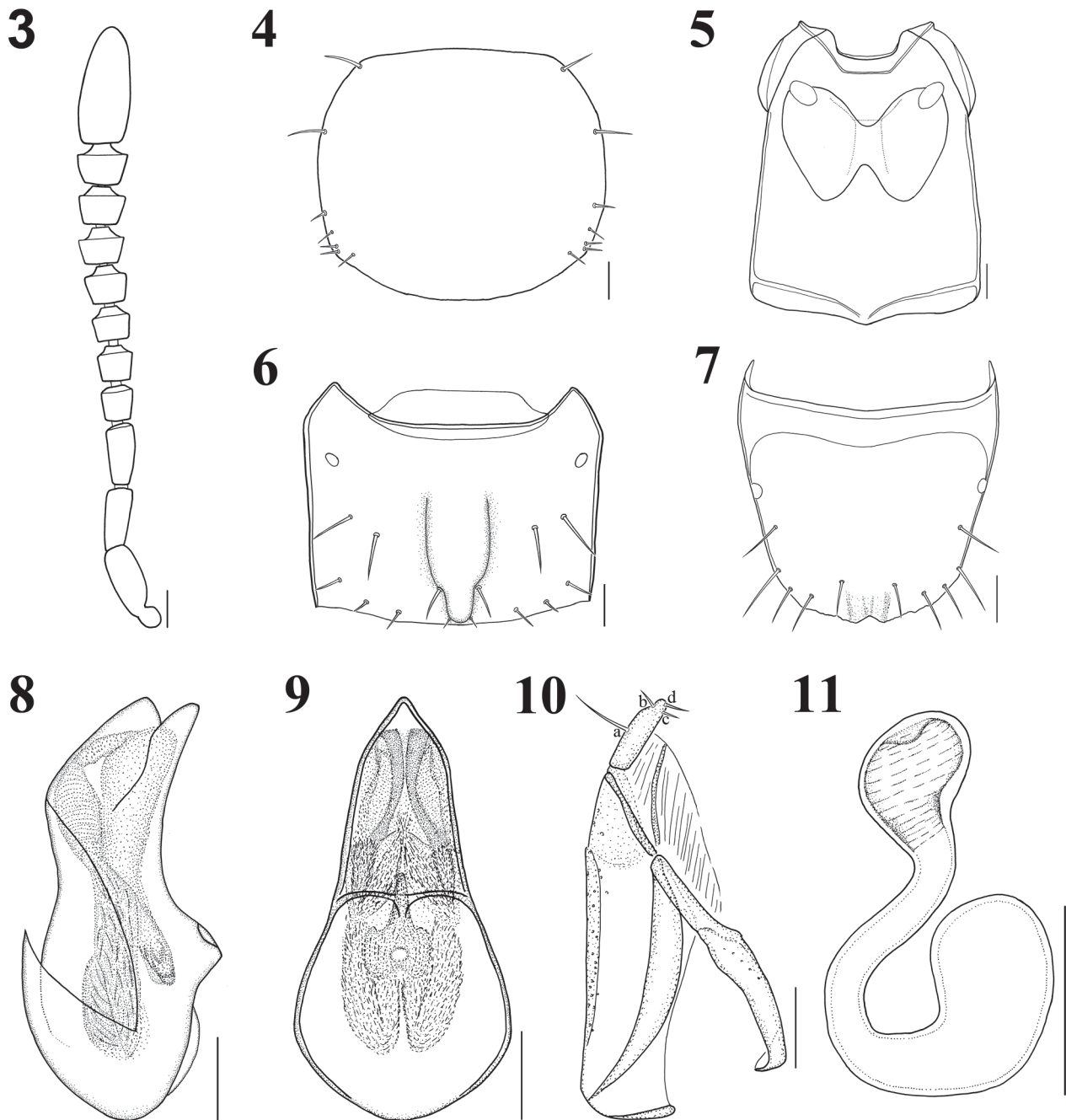


FIGURES 1–2. Habitus, male. 1, *Earota babai*, 4.3 mm; 2, *Earota koreana*, 5.5 mm.

Material examined. KOREA: Chungbuk Prov.: ♀, Danyang-gun, Yeongcheon-myeon, Mt. Taehwasan, 14 VII–14 VIII 2001, KJ Ahn, SJ Park, CW Shin, FIT; 3♀, Danyang-gun, Mt. Sobaeksan, Cheondong, 7–9 V 1999, US Hwang, HJ Kim, FIT; **Gangwon Prov.:** 2♂, 2♀, Jeongseon-gun, Gohan-eup, Mt. Hambaeksan, 13 VII 1999, US Hwang, HJ Kim, FIT; ♀, Hongcheon-gun, Naechon-myeon, Mt. Baekamsan, Garyeong fall, 24 V 2002, KJ Ahn, JS Park, sifting; 2♀, Pyeongchang-gun, Bangnim-myeon, Ungyo-ri, Mt. Baekdeoksan, 12 VII–16 VII 2001, KJ Ahn, SJ Park, CW Shin, FIT; ♀, Pyeongchang-gun, Cheondong-ri, Mt. Sambangsan, 13 VII–15 VIII 2001, KJ Ahn, SJ Park, CW Shin, FIT in *Pinus* forest; 3♂, 2♀, Pyeongchang-gun, Jinbumyeon, Dongsan-ri, Mt. Odaesan,

Sangwonsa, 30 IV–4 VI 2001, KJ Ahn, SJ Park, MS Kim, MJ Jeon, FIT; ♀, same data as former except for ‘4 VI–22 VI 2001’; ♀, same data as former except for ‘22 VI–16 VIII 2001, SJ Park, CW Shin, FIT’; ♀, same data as former except for ‘18 VI 2004, SJ Park, FIT’; 2♂, ♀, same data as former except for ‘21 IV–18 V 2002, CW Shin, FIT’; ♀, same data as former except for ‘18 V–23 VI 2002’; ♂, ♀ (on slide), same data as former except for ‘N37°47.074’ E128°33.735’, 15 V 2006, TK Kim, HW Kim, sifting, leaf litter’; 7♂, 6♀, same data as former except for ‘N37°47’03” E128°33’55”, 9–25 V 2004, SJ Park, SM Choi, DH Lee, FIT’; 3♂, ♀, Pyeongchang-gun, Mt. Odaesan, Jeongmyeolbogung, 7–9 VII 1998, KL You, HJ Lim, FIT; 11♂ (two on slide), 5♀ (one on slide), Taebaek-si, Mt. Taebaeksan, Baekdansa, 14 VII 1999, US Hwang, HJ Kim, FIT; 2♂, 5♀ (one on slide), same data as former except for ‘16 VII 1999’.

Distribution. Korea (South) and Japan.



FIGURES 3–11. Details of *Earota babai*. 3, antenna; 4, pronotum, dorsal aspect; 5, meso- and metaventrites, ventral aspect; 6, male tergite VII, dorsal aspect; 7, male tergite VIII, dorsal aspect; 8, median lobe of aedeagus, lateral aspect; 9, median lobe of aedeagus, ventral aspect; 10, paramere, lateral aspect; 11, spermatheca. Scale bars 0.1 mm.

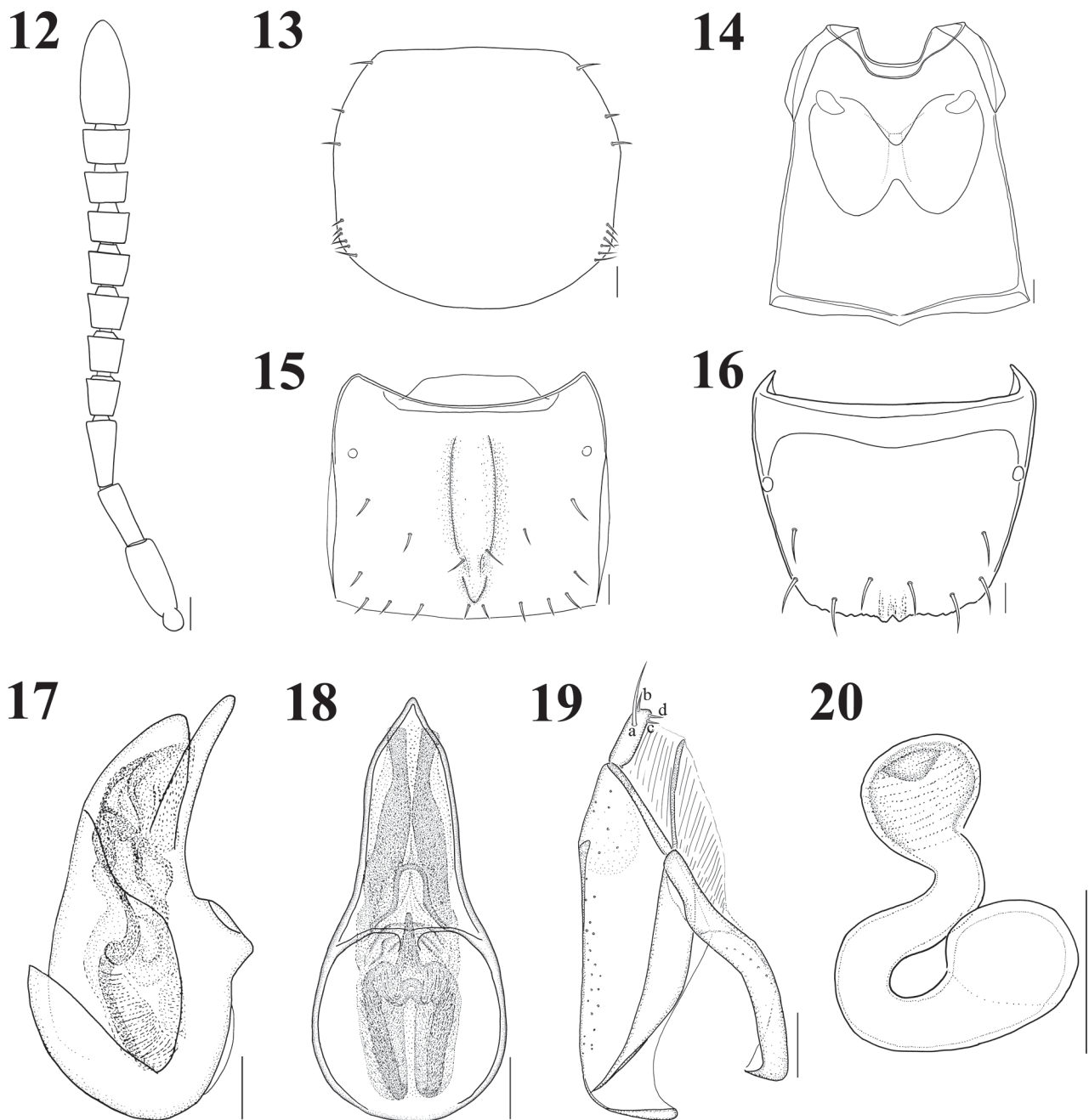
Remarks. This species is transferred from *Pelioptera* Kraatz, 1857 to *Earota* based on Gusarov's diagnosis of the latter genus (2002). It corresponds to *Earota* and differs from *Pelioptera* species in the following characters: larger and broader body (smaller and slender body in *Pelioptera*); antennomere 11 about as long as preceding three combined (antennomere 11 about as long as preceding two combined in *Pelioptera*); mesoventral process round at apex (mesoventral process truncate at apex in *Pelioptera*); large and broad medial lamellae of internal sac of aedeagus (small and narrow medial lamellae of internal sac of aedeagus in *Pelioptera*); and different shape of spermatheca. *Earota babai* is a new addition to the Korean fauna and the genus is reported from the East Palaearctic region for the first time.

***Earota koreana* (Pašnik, 2001), comb. nov.**
(Figs. 2, 12–20)

Aloconota koreana Pašnik, 2001: 196; Smetana, 2004: 368 (as valid species).

Redescription. Body length about 5.5 mm. Body (Fig. 2) subparallel-sided; surface slightly glossy and densely pubescent, with coarse punctures. Head, antennae, pronotum and abdomen almost black; elytra reddish brown; legs paler than other parts. **Head.** Subquadrate, approximately 1.1 times as long as wide, widest across eyes, narrower than pronotum; eyes large and prominent, about 1.3 times longer than tempora; cervical carina complete; gular sutures moderately separated, slightly diverged basally. Antennae (Fig. 12) long and slender; antennomeres 1–3 elongate, 1 longer than 2, 2 about as long as 3, 4 slightly elongate, 5 about as long as wide, 6–10 subquadrate to slightly transverse to apex, 11 longest, slightly shorter than preceding three combined. **Mouthparts.** Labrum transverse, emarginate in anterior margin; 3 lateral sensillae, about 8 macrosetae present on each side of midline; epipharynx with α -sensillum shorter than ε -sensillum, β - and γ -sensilla very short (α - ε ; see Ashe, 1984). Mandibles slightly asymmetrical, pointed at apex, about 1.6 times as long as basal width; right mandible with small internal tooth, internal margin serrulate; prostheca developed. Lacinia of maxilla with nine spines in distal comb; maxillary palpus elongate, with pubescence and long setae; palpomere 1 smallest, 2 about 3.6 times longer than wide, 3 slightly longer than 2, about 3.3–3.4 times as long as wide, 4 digitiform, filamentous sensillae not reaching to basal half of palpomere 4. Labium with ligula narrowed apically; two medial setae very widely separated; two basal pores very widely separated; lateral pseudopores absent, some medial pseudopores present, 1 setal pore and 3 real pores present on each side of prementum; labial palpus elongate, with many setulae; palpomere 1 largest, about 2.2–2.5 times longer than wide, with γ -setulae located between α and b -setulae, slightly closer to b than to α -setula; palpomere 2 shortest, about twice longer than wide; palpomere 3 parallel-sided, about as long as 1, about 3.5–4.0 times longer than wide. Mentum trapezoidal, with numerous pores, anterior margin emarginate; ν -seta very short. **Thorax.** Pronotum (Fig. 13) subquadrate and granular, approximately 1.1–1.2 times as wide as long, wider at apical third; macrosetae relatively short, some assembled in postero-lateral margin. Metanotal scutum with 1 long seta and about 6–7 moderately long setae on each side of midline; mesocoxae moderately separated, mesoventral process slightly pointed at apex, as long as or slightly longer than metaventral process; isthmus shorter than metaventral process (Fig. 14). Elytra transverse, wider than pronotum, each elytron 1.6 times as long as wide, pubescence directed posteriorly and postero-laterally; postero-lateral margin almost straight; hind wings fully developed; flabellum composed of about 14–18 setose lobes. **Legs.** Slender and long, with dense pubescence; length ratio of tarsomeres 48:60:60:120 (protarsus); 70:97:80:67:113 (mesotarsus); 130:120:99:85:140 (metatarsus); empodial seta slightly shorter than claws (protarsus) or about as long as claws (meso- and metatarsi). **Abdomen.** Subparallel-sided, slightly wider at middle; surface glossy and densely pubescent, with transversely striate microsculpture; macrochaetal arrangement of tergites II–III 01–12 (see Yosii & Sawada 1976); tergites III–V impressed basally; male tergite VII (Fig. 15) with elongate tubercle in median region; male tergite VIII (Fig. 16) with 4 macrosetae on each side of midline, posterior margin serrulate, with two small processes at middle; male sternite VII with many small pores in basal region; male sternite VIII with 7 macrosetae on each side of midline, posterior margin round, slightly sclerotized and translucent, with marginal setae; posterior margin of female tergite VIII slightly emarginate at middle, posterior margin of female sternite VIII subtruncate, with conspicuous marginal setae, minute setae present in median region. Tergite X with medial setose patch chevron-shaped; setae in three or four oblique rows; rows convergent proximally. **Aedeagus.** Median lobe (Figs. 17, 18) oval, apical process

relatively elongate and in ventral aspect convergent apically. Apical lobe of paramerite (Fig. 19) with four setae; *a*-seta longest, *b*-seta slightly longer than *d*-seta, *c*- and *d*-setae placed close to each other (*a*–*d*; see Sawada, 1972). **Spermatheca.** Bursa relatively large, with triangular umbilicus; duct broader apically (Fig. 20).



FIGURES 12–20. Details of *Earota koreana*. 12, antenna; 13, pronotum, dorsal aspect; 14, meso- and metaventrites, ventral aspect; 15, male tergite VII, dorsal aspect; 16, male tergite VIII, dorsal aspect; 17, median lobe of aedeagus, lateral aspect; 18, median lobe of aedeagus, ventral aspect; 19, paramere, lateral aspect; 20, spermatheca. Scale bars 0.1 mm.

Type material examined. Holotype, ♂, pinned, with genitalia on a small plate. Original label: “Corea septentr. Hamgjong-pukdo, 2–6 X 1991 ISEZ”. **Paratypes**, 2♂: same data as holotype.

Additional material examined. KOREA: Gangwon Prov.: ♂, ♀, Mt. Odaesan, 14 IX 1997, YB Cho; ♀, Pyeongchang-gun, Jinbu-myeon, Dongsan-ri, Mt. Odaesan, Sangwonsa, 30 IV–4 2001, KJ Ahn, SJ Park, MS Kim, MJ Jeon, FIT; 2♀, same data as former except for ‘4 VI 2001, SJ Park, sifting’; ♂, same data as former except for ‘N37°47.074’ E128°33.735’, 15 V 2006, TK Kim, HW Kim, sifting, leaf litter’; 3♂, same data as former except for ‘Duro-ryeong, N37°48.713’ E128°34.422’, 16 V 2006, DH Lee, YH Kim, sifting, leaf litter’; ♂, Pyeongchang-gun,

Jinbu-myeon, Mt. Odaesan, Sangwonsa, 18 V 2002, SJ Park, CW Shin, sifting; ♂, same data as former except for '18 VI–22VII 2004, SJ Park, KM Yang, DH Lee, FIT'; ♀, Pyeongchang-gun, Mt. Odaesan, 25 V 2004, SJ Park, JS Park, sifting; ♀, same data as former except for 'Jeongmyeolbogung, 7–9 VII 1998; KL You, HJ Lim, FIT'.

Distribution. Korea.

Remarks. This species is transferred from *Aloconota* Thomson, 1858 to *Earota* based on Gusarov's diagnosis of the latter genus (2002). It corresponds to *Earota* and differs from *Aloconota* in the following characters: large and broad body (small and narrow body in *Aloconota*); antennomere 11 distinctly longer than preceding two combined (antennomere 11 about as long as preceding two combined in *Aloconota*); infraorbital carina complete (infraorbital carina incomplete in *Aloconota*); mesocoxae moderately separated (mesocoxae narrowly separated in *Aloconota*); mesoventral process slightly pointed at apex (mesoventral process distinctly pointed at apex in *Aloconota*); metatarsomere 1 about as long as 2 (metatarsomere 1 longer than 2 in *Aloconota*); empodial seta shorter than claw (empodial seta longer than claw in *Aloconota*).

Acknowledgments

We thank Margaret Thayer and James Boone (FMNH, Chicago), and Grzegorz Paśnik (ISEA, Poland) for arranging the loans of the specimens. Comments by two anonymous reviewers significantly improved the manuscript. Financial support was provided by the National Institute of Biological Resources (NIBR, Incheon) of Ministry of Environment, KOREA (1834-302) and the research on the two *Earota* species newly discovered in Korea was supported by a grant from the National Institute of Biological Resources (NIBR), funded by the Ministry of Environment (MOE) of the Republic of Korea (NIBR No. 2013-02-001).

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