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A taxonomic review of Korean species of the genus *Philhygra* Mulsant & Rey (Coleoptera: Staphylinidae: Aleocharinae)

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Abstract

A taxonomic review of Korean species of the athetine genus *Philhygra* Mulsant & Rey, 1873 is presented. Seven species are recognized, two of which, *P. pseudoelongatula* (Bernhauer, 1907) and *P. sparsa* (Bernhauer, 1907), are new to the Korean Peninsula. A key, descriptions and illustrations of diagnostic characters are provided.

Key words: Aleocharinae, Athetini, Korea, *Philhygra*, Staphylinidae, taxonomy

Introduction

Since *Philhygra* was first proposed as a subgenus of *Microdota* Mulsant & Rey, 1873 by Mulsant & Rey (1873a), it has been treated as a subgenus of many different genera (see Fenyes 1920; Blackwelder 1952; Yosii & Sawada 1976; Lohse & Smetana 1985; Smetana 2004). Later, however, Seevers (1978) raised it to the generic level and Lohse *et al*. (1990) and Muona (1995) followed. The genus *Philhygra* contains 71 species from the Palaearctic region. In East Asia, 11 species and 4 species were recorded in China and in Japan, respectively (Smetana 2004). Five species were reported in North Korea by Paśnik (2001).

In this study we recognize seven *Philhygra* species in Korea, two of which, *P. pseudoelongatula* (Bernhauer, 1907) and *P. sparsa* (Bernhauer, 1907), are newly added to the Korean fauna. Two other species, *P. homoeopyga* (Eppelsheim, 1893) and *P. palustris* (Kiesenwetter, 1844), are identified for the first time in South Korea. A key to the Korean species, descriptions, habitus photographs and line drawings of diagnostic characters of seven species are provided.

Permanent microscope slides were prepared using the techniques described by Hanley and Ashe (2003). Terminology for chaetotaxy and microstructures follows Sawada (1972) and Ashe (1984). North Korean species were loaned from the Institute of Systematics and Evolution of Animals, Kraków, Poland. In material examined sections this depository is listed as ISEA. All the other examined specimens are deposited in the Chungnam National University Insect Collection (CNUIC), Daejeon, Korea.

Philhygra Mulsant & Rey, 1873

Type species. *Microdota* (*Philhygra*) *perdubia* Mulsant & Rey, 1873a. Fixed by Blackwelder, 1952: 300.

Diagnosis. Members of *Philhygra* can be distinguished from the other athetine genera by combination of following characters: body subparallel-sided, surface glossy with dense and fine punctures; head quadrate, not distinctly transverse; pronotum less than 1.25 times as wide as long; metatarsomeres 1–4 subequal in length; abdomen parallel-sided, tergites III–V with transverse basal impression, posterior margin of female sternite VIII with specialized minute setae; female with secondary sclerite in genital segment; internal sac of median lobe with two bundles of spinose structure; spermatheca tiny (Muona 1995).

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Key to the Korean species of *Philhygra*

1. Pronotal pubescence in midline directed anteriorly in apical half and posteriorly in basal half (Fig. 7B); a-sensillum of labrum short (Fig. 6B); prementum with medial pseudopores present 2
- Pronotal pubescence in midline directed anteriorly (Fig. 8B); a-sensillum of labrum relatively long (Fig. 4B); prementum with medial pseudopores absent 3
2. Tergite VIII with 5 macrosetae on each side of midline (Fig. 6D); male sternite VIII with 12 macrosetae on each side of midline (Fig. 6E) . . . . . *P. pseudoelongatula*
- Tergite VIII with 4 macrosetae on each side of midline (Fig. 7D); male sternite VIII with 8 macrosetae on each side of midline (Fig. 7E) . . . . . *P. sparsa*
3. Antennomeres 8–10 slightly elongate; tergite VIII with more than 5 macrosetae on each side of midline 4
- Antennomeres 8–10 about as long as wide or slightly transverse; tergite VIII with 4 macrosetae on each side of midline . . . 5
4. Body length less than 4.0 mm (Fig. 1A); tergite VIII with 5 macrosetae on each side of midline; posterior margin of male sternite VIII broadly round . . . . . *P. elongatula*
- Body length more than 4.0 mm (Fig. 1D); tergite VIII with 7 macrosetae on each side of midline; posterior margin of male sternite VIII subtruncate . . . . . *P. polaris*
5. Body relatively robust (Fig. 1B); mesoventral process distinctly pointed at apex (Fig. 3B); female sternite VIII with short marginal setae (Fig. 3D) . . . . . *P. homoeopyga*
- Body relatively narrow in dorsal aspect (Figs. 1C, 1G); mesoventral process pointed or slightly pointed at apex (Fig. 4C); female sternite VIII with moderately long marginal setae 6
6. Head about as wide as long; posterior margin of tergite VIII emarginate (Fig. 4D); posterior margin of male sternite VIII with conspicuously long marginal setae (Fig. 4E); posterior margin of female sternite VIII convex, more or less round . . . . . *P. palustris*
- Head slightly longer than wide; posterior margin of tergite VIII truncate (Fig. 8D); posterior margin of male sternite VIII with moderately long marginal setae; posterior margin of female sternite VIII subtruncate . . . . . *P. yokkaichiana*

Philhygra elongatula (Gravenhorst, 1802)

(Figs. 1A, 2A–C)

Aleochara elongatula Gravenhorst, 1802: 79.
Aleochara teres Gyllenhal, 1810: 390 (as valid species).
Aleochara microcephala Stephens, 1832: 138 (as valid species).
Metaxya impressifrons Mulsant & Rey, 1875: 168 (as valid species).
Atheta (*Metaxya*) *subpolaris* Fenyes, 1909: 423 (as valid species).
Metaxya deceptor Casey, 1910: 79 (as valid species).
Atheta elongatula: Everts, 1922: 101 (as valid species).
Aleochara teres: Everts, 1922: 101 (as synonym of *Atheta elongatula*).
Aleochara microcephala: Everts, 1922: 101 (as synonym of *Atheta elongatula*).
Atheta (*Metaxya*) *wankaiana* Bernhauer, 1927: 98 (as valid species).
Atheta (*Metaxya*) *transsilvanica* Benick, 1943: 6 (as valid species).
Atheta (*Hygroecia*) *elongatula*: Brundin, 1944: 225 (as valid species).
Atheta (*Philhygra*) *elongatula*: Benick & Lohse, 1974: 145; Paśnik, 2001: 206; Smetana, 2004: 391 (as valid species).
Metaxya deceptor: Gusarov, 2003 (Internet site) (as synonym of *Philhygra subpolaris*).
Philhygra subpolaris: Gusarov, 2003 (Internet site) (as valid species).
Metaxya impressifrons: Smetana, 2004: 391 (as synonym of *Atheta elongatula*).
Atheta (*Metaxya*) *subpolaris*: Smetana, 2004: 391 (as synonym of *Atheta elongatula*).
Atheta (*Metaxya*) *wankaiana*: Smetana, 2004: 391 (as synonym of *Atheta elongatula*).
Atheta (*Philhygra*) *transsilvanica*: Smetana, 2004: 393 (as valid species).
Atheta (*Metaxya*) *transsilvanica*: Ádám, 2008: 140 (as synonym of *Atheta elongatula*).

Description. Body length 2.8–3.8 mm. Body (Fig. 1A) generally dark brown; antennae and pronotum paler; legs yellowish brown. Head narrower than pronotum; eyes prominent, about as long as tempora; antennae long and slender, antennomeres 4–10 slightly elongate, 11 about as long as preceding two combined; anterior margin of labrum emarginate; a-sensillum relatively long; prementum with medial pseudopores absent and lateral pseudopores present. Pronotum slightly transverse, approximately 1.15–1.20 times as wide as long, widest in apical third; pubescence in midline directed anteriorly. Elytron approximately 1.85 times longer than wide, postero-lateral margin very weakly sinuate. Male tergite VIII with 5 macrosetae on each side of midline, posterior margin truncate; male sternite VIII with 7 macrosetae on each side of midline, posterior margin broadly round; posterior margin of female tergite VIII emarginate; posterior margin of female sternite VIII round. Aedeagus as in Figs. 2A–C.

Material examined. KOREA: 4 ex., Phjongjang, 16 v 1974, ISEA; **Gangwon prov.:** 3 ex., Kymgang-san Mts., 16–18 vi 1974, ISEA

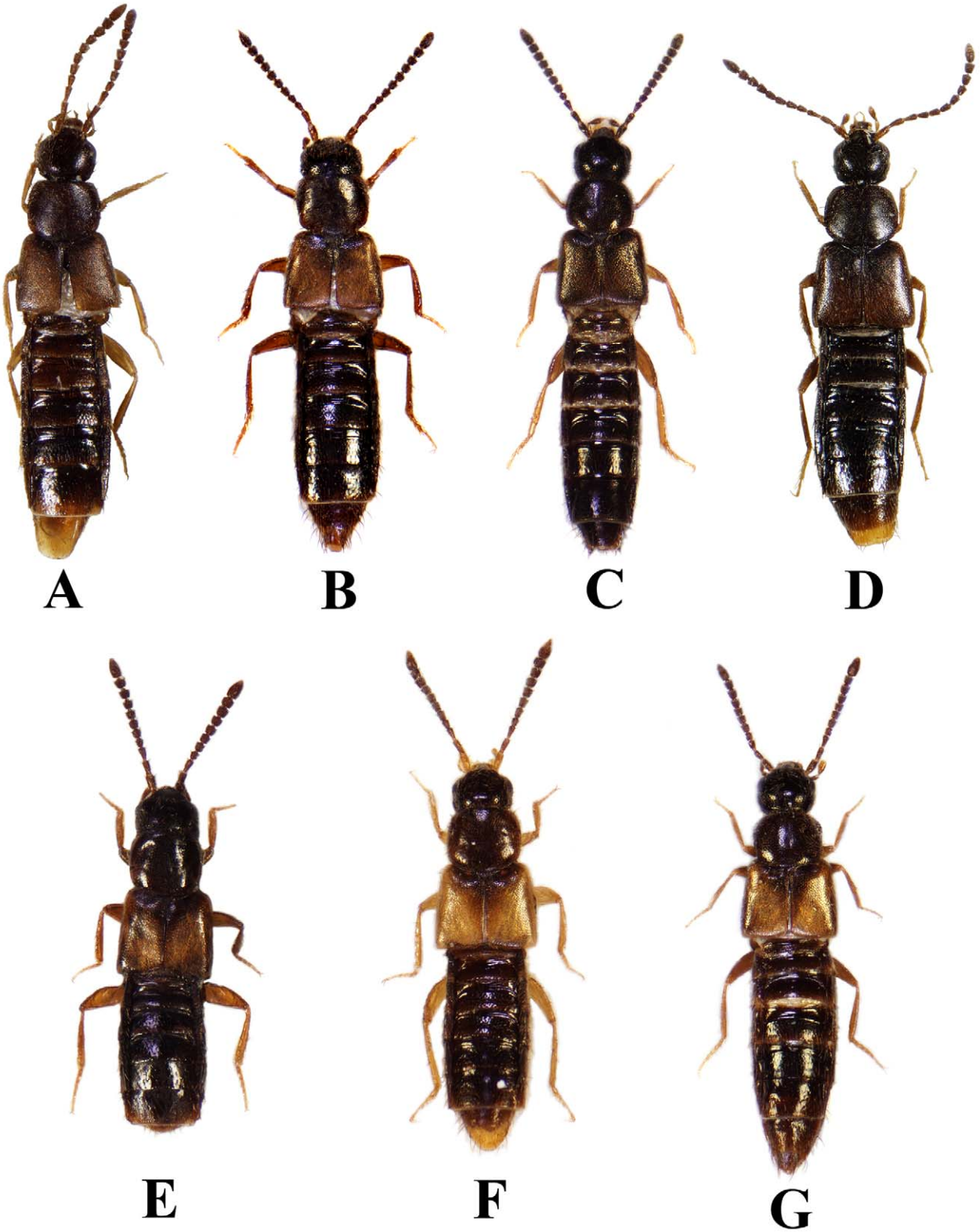

FIGURE 1. Habitus of *Philhygra*. A, *P. elongatula*, 3.4 mm; B, *P. homoeopyga*, 3.6 mm; C, *P. palustris*, 2.9 mm; D, *P. polaris*, 4.0 mm; E, *P. pseudoelongatula*, 3.0 mm; F, *P. sparsa*, 3.1 mm; G, *P. yokkaichiana* 2.9 mm.

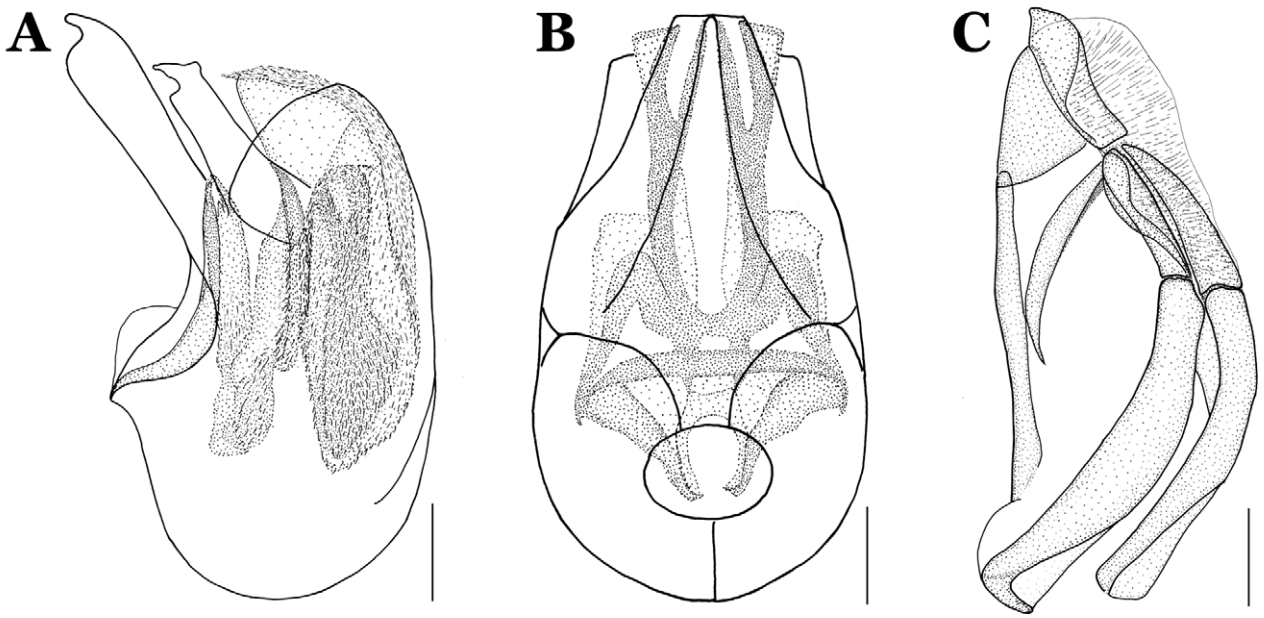

FIGURE 2. *Philhygra elongatula*. A, median lobe, lateral aspect; B, median lobe, ventral aspect; C, paramere, lateral aspect. Scale bars 0.1 mm.

Distribution. Europe, Iran, Korea, North Africa (Algeria, Morocco, Tunisia) and Russia (East Siberia, West Siberia) (Smetana 2004).

Remarks. No specimens were available for dissection. Therefore, we could not describe the mouthparts in detail.

***Philhygra homoeopyga* (Eppelsheim, 1893)**
(Figs. 1B, 3A–G)

Homalota homoeopyga Eppelsheim, 1893: 30.
Atheta (*Metaxya*) *nigropicea* Poppius, 1909: 35 (as valid species).
Atheta (*Hygroecia*) *homoeopyga*: Brundin, 1944: 198 (as valid species).
Atheta (*Metaxya*) *nigropicea*: Brundin, 1944: 198 (as synonym of *Atheta homoeopyga*).
Atheta (*Philhygra*) *homoeopyga*: Paśnik, 2001: 206; Smetana, 2004: 391 (as valid species).

Description. Body length 2.7–3.5 mm. Body (Fig. 1B) relatively robust and elongate in dorsal aspect. Head black; antennae, pronotum and elytra brown to dark brown, elytra paler than pronotum; abdominal tergites dark brown to black, posterior margin of each tergite paler; legs yellowish brown. Head surface glossy, with fine punctation, distance between punctures 2–3 times longer than their diameter; head about as long as wide, widest at middle; eyes about 1.2 times longer than tempora; antennomeres 4–7 slightly elongate, 8–10 about as long as wide, 11 about as long as preceding two combined (Fig. 3A); labrum broadly emarginate in anterior margin; a-sensillum long, pointed at apex; prementum with medial pseudopores absent and lateral pseudopores present. Pronotum slightly transverse, approximately 1.2 times as wide as long, widest at apical 2/5; midline pubescence directed anteriorly; punctation finer than on head, distance between punctures 1.5–3 times longer than their diameter; metanotal scutum with one long setae and about 3–4 short setae on each side of midline; mesoventral process elongate and distinctly pointed at apex, longer than metaventral process; length ratio of mesoventral process, isthmus and metaventral process 7:4:2 (Fig. 3B). Elytron approximately 1.7 times as long as wide, postero-lateral margin very weakly sinuate; flabellum composed of about 16 setae. Abdominal tergites glossy, with fine punctation, distance between punctures 1–2 times longer than their diameter; male tergite VIII (Fig. 3C) with 4 macrosetae on each side of midline, posterior margin subtruncate; male sternite VIII with 8 macrosetae on each side of midline, microsetae of postero-medial region distinctly denser than other regions, posterior margin truncate;

posterior margin of female tergite VIII emarginate; posterior margin of female sternite VIII (Fig. 3D) weakly emarginate, conspicuous marginal setae present. Aedeagus as in Figs. 3E–G.

Material examined. KOREA: Chungnam prov.: 24 ex., Gongju-si, Banpo-myeon, Mt. Gyeryongsan, Donghaksa, 12 vi 1999, US Hwang ; **Gangwon prov.:** 6 ex., Hoengseong-gun, Cheongil-myeon, Mt. Balgyosan, 5 vii 1998, HJ Lim, KL You.

Distribution. Korea and Russia (East Siberia) (Smetana 2004).

Remarks. This species is similar to *P. palustris*, but can be distinguished by the characters provided in the key and the shape and structure of aedeagus.

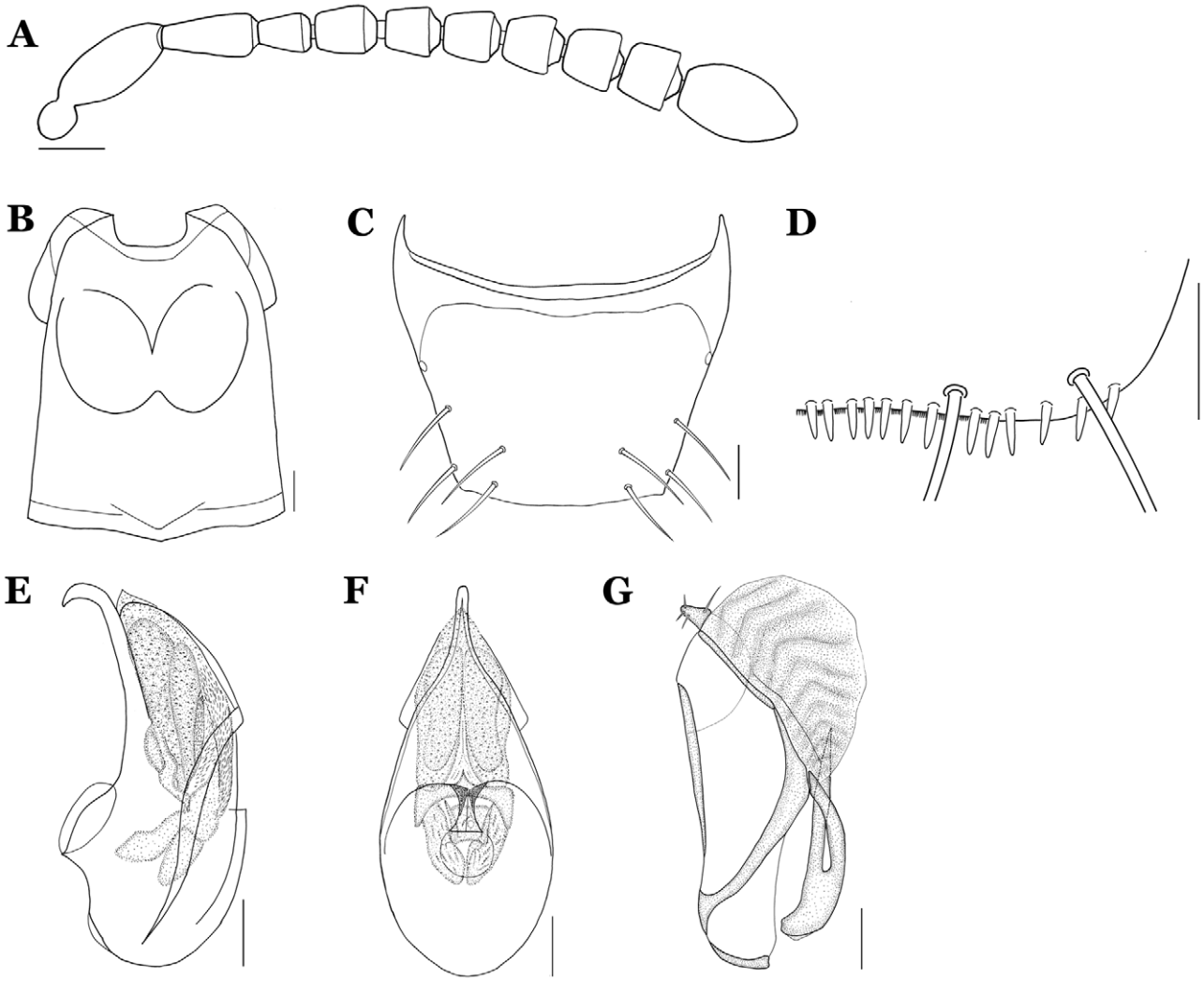

FIGURE 3. *Philhygra homoeopyga*. A, antenna, dorsal aspect; B, meso- and metaventrites, ventral aspect; C, male tergite VIII, dorsal aspect; D, posterior margin of female sternite VIII, ventral aspect; E, median lobe, lateral aspect; F, median lobe, ventral aspect; G, paramere, lateral aspect. Scale bars 0.1 mm.

Philhygra palustris (Kiesenwetter, 1844)

(Figs. 1C, 4A–H)

Homalota palustris Kiesenwetter, 1844: 318.
Microdota (*Philhygra*) *palustris*: Mulsant & Rey, 1873b: 309 (as valid species).
Atheta (*Philhygra*) *palustris*: Fenyes, 1920: 201; Yosii & Sawada, 1976: 29; Paśnik, 2001: 206; (as valid species).
See Gusarov (2003), Smetana (2004) and Gouix & Klimaszewski (2007) for more synonymies.

Description. Body length 2.2–2.9 mm. Body (Fig. 1C) relatively narrow and elongate in dorsal aspect. Head almost black; antennae, pronotum and elytra dark brown, elytra paler than pronotum; abdominal tergites II–V dark

brown and VI–VIII brownish black; legs yellowish brown. Head surface glossy, with fine punctation, distance between punctures 1–3 times longer than their diameter; head about as wide as long, widest at across eyes; eyes slightly prominent, about 1.25 times longer than tempora; antennomeres 4–5 slightly elongate, 6–10 about as long as wide, 11 about as long as preceding two combined (Fig. 4A); labrum (Fig. 4B) emarginate in anterior margin; a-sensillum relatively long; medial pseudopores absent, lateral pseudopores present in prementum. Pronotum transverse, approximately 1.2 times as wide as long, widest at apical third; pubescence in midline directed anteriorly; punctation finer than on head, distance between punctures 1–2 times longer than their diameter; metanotal scutum with one long setae and about 3–6 short setae on each side of midline; mesoventral process elongate and slightly pointed at apex, longer than isthmus; metaventral process little shorter than isthmus (Fig. 4C). Elytron approximately 1.8 times as long as wide; postero-lateral margin nearly straight; flabellum composed of about 14 setae. Abdominal tergites glossy, with fine punctation, distance between punctures 0.5–1 times longer than their diameter; male tergite VIII (Fig. 4D) with 4 macrosetae on each side of midline, posterior margin emarginate; male sternite VIII (Fig. 4E) truncate in posterior margin, with conspicuously long marginal setae; female tergite VIII similar to male tergite VIII; posterior margin of female sternite VIII convex, more or less round, with moderately long marginal setae. Aedeagus as in Figs. 4F–H.

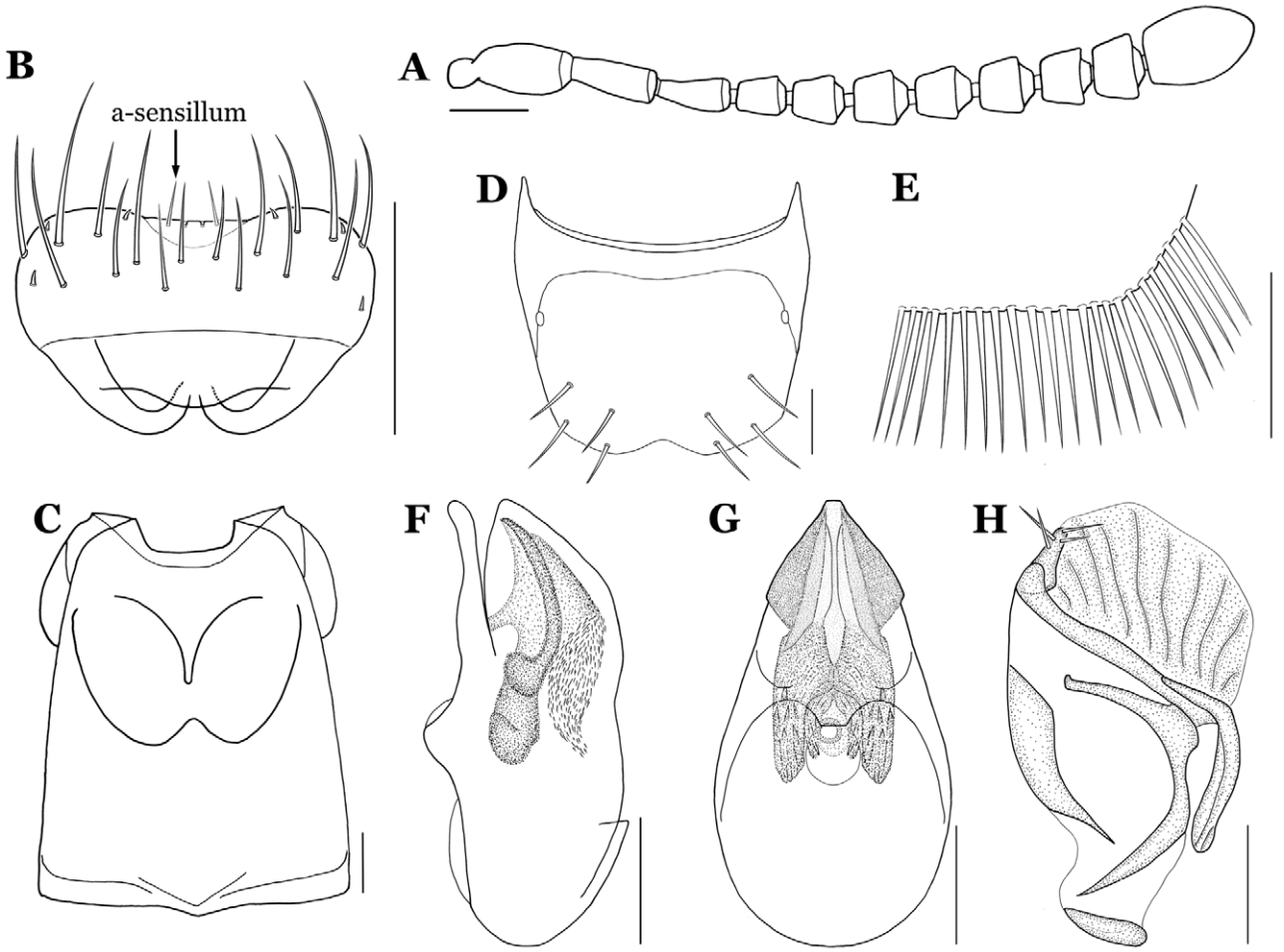

FIGURE 4. *Philhygra palustris*. A, antenna, dorsal aspect; B, labrum, dorsal aspect; C, meso- and metaventrites, ventral aspect; D, male tergite VIII, dorsal aspect; E, posterior margin of male sternite VIII, ventral aspect; F, median lobe, lateral aspect; G, median lobe, ventral aspect; H, paramere, lateral aspect. Scale bars 0.1 mm.

Material examined. KOREA: Chungnam prov.: 4 ex., Asan-si, Shinchang-myeon, Gangcheong-ri, N36°50′08.9″ E126°56′15.4″ 155 m, 6 vi 2006, SJ Park, DH Lee, decaying vegetables; **Gangwon prov.:** 15 ex., Pyeongchang-gun, Bangrim-myeon, Mt. Baekduksan, 12 vii 2001, KJ Ahn, SJ Park, decaying vegetables; **Gyeongbuk prov.:** 20 ex., Bonghwa-gun, Murya-myeon, Mt. Seondalsan, 23–25 vii 1998, KL You, HJ Lim, FIT; **Jeju prov.:** 9 ex., Seoguipo-si, Hawon-dong, Seoguipo natural recreation forest, N33°18′36″ E126°28′9.2″ 665 m,

31 v 2007, DH Lee, YH Kim, leaf litter; **Jeonbuk prov.:** 17 ex., Muju-gun, Seolcheon-myeon, Mt. Deogyusan, 22–24 v 1998, KL You, HJ Lim; **Jeonnam prov.:** 7 ex., Hadong-gun, Hwagye-myeon, Mt. Jirisan, Ssanggyesa, 25 v 2000, US Hwang, sifting; 15 ex., Gurye-gun, Toji-myeon, Mt. Jirisan, Piagol, 24–26 v 2000, HK Choi, JH Song, MS Kim, baited trap.

Distribution. Canary Islands, China, Europe, Japan, Korea, Madeira Archipelago, Mongolia, Morocco and Russia (Siberia) (Smetana 2004).

Remarks. This species is similar to *P. yokkaichiana*, but can be distinguished by the characters provided in the key and the shape and structure of aedeagus.

Philhygra polaris **(Bernhauer, 1901)**

(Figs. 1D, 5A–B)

Atheta (*Metaxya*) *polaris* Bernhauer, 1901: 536.
Atheta (*Hygroecia*) *polaris*: Brundin, 1944: 199 (as valid species).
Philhygra polaris: Lohse *et al*. 1990: 168 (as valid species).
Atheta (*Philhygra*) *polaris*: Paśnik, 2001: 206; Smetana, 2004: 392 (as valid species).
Philhygra polaris: Gouix & Klimaszewski, 2007: 95 (as valid species).

Description. Body length 4.0–4.5 mm. Body (Fig. 1D) robust, generally dark brown to black; antennae and legs paler; elytra reddish brown to dark brown. Head narrower than pronotum; eyes prominent, about as long as tempora; antennae long and slender, antennomeres 4–10 slightly elongate, 11 about as long as preceding two combined; labrum emarginate in anterior margin; a-sensillum relatively long and setaceous; medial pseudopores absent, lateral pseudopores present in prementum. Pronotum slightly transverse, approximately 1.15–1.20 times as wide as long, widest in apical third; pubescence in midline directed anteriorly. Elytron approximately 1.65 times as long as wide; postero-lateral margin very weakly sinuate. Male tergite VIII with 7 macrosetae on each side of midline, posterior margin subtruncate; male sternite VIII with 9 macrosetae on each side of midline, posterior margin subtruncate, weakly emarginate at middle; posterior margin of female tergite VIII similar to male tergite VIII; posterior margin of female sternite VIII broadly round. Aedeagus as in Figs. 5A–B.

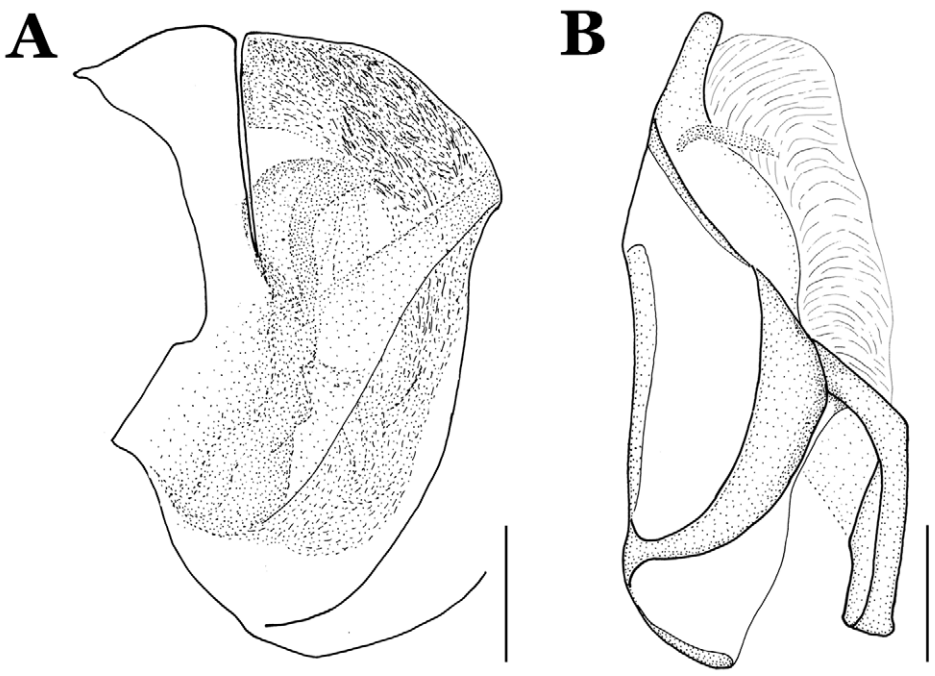

FIGURE 5. *Philhygra polaris*. A, median lobe, lateral aspect; B, paramere, lateral aspect. Scale bars 0.1 mm.

Material examined. KOREA: 3 ex., Jonggak-san Mts., 29 v 1974, ISEA.

Distribution. Europe, Korea, Nearctic Region and Russia (East Siberia, West Siberia, Far East) (Smetana 2004).

Remarks. No specimens were available for dissection. Therefore, we could not describe the mouthparts in detail.

***Philhygra pseudoelongatula* (Bernhauer, 1907)**
(Figs. 1E, 6A–H)

Atheta (*Metaxya*) *pseudoelongatula* Bernhauer, 1907: 411.
Atheta (*Hygroecia*) *pseudoelongatula*: Brundin, 1944: 185 (as valid species).
Atheta (*Philhygra*) *pseudoelongatula*: Sawada, 1977: 182; Smetana, 2004: 392 (as valid species).

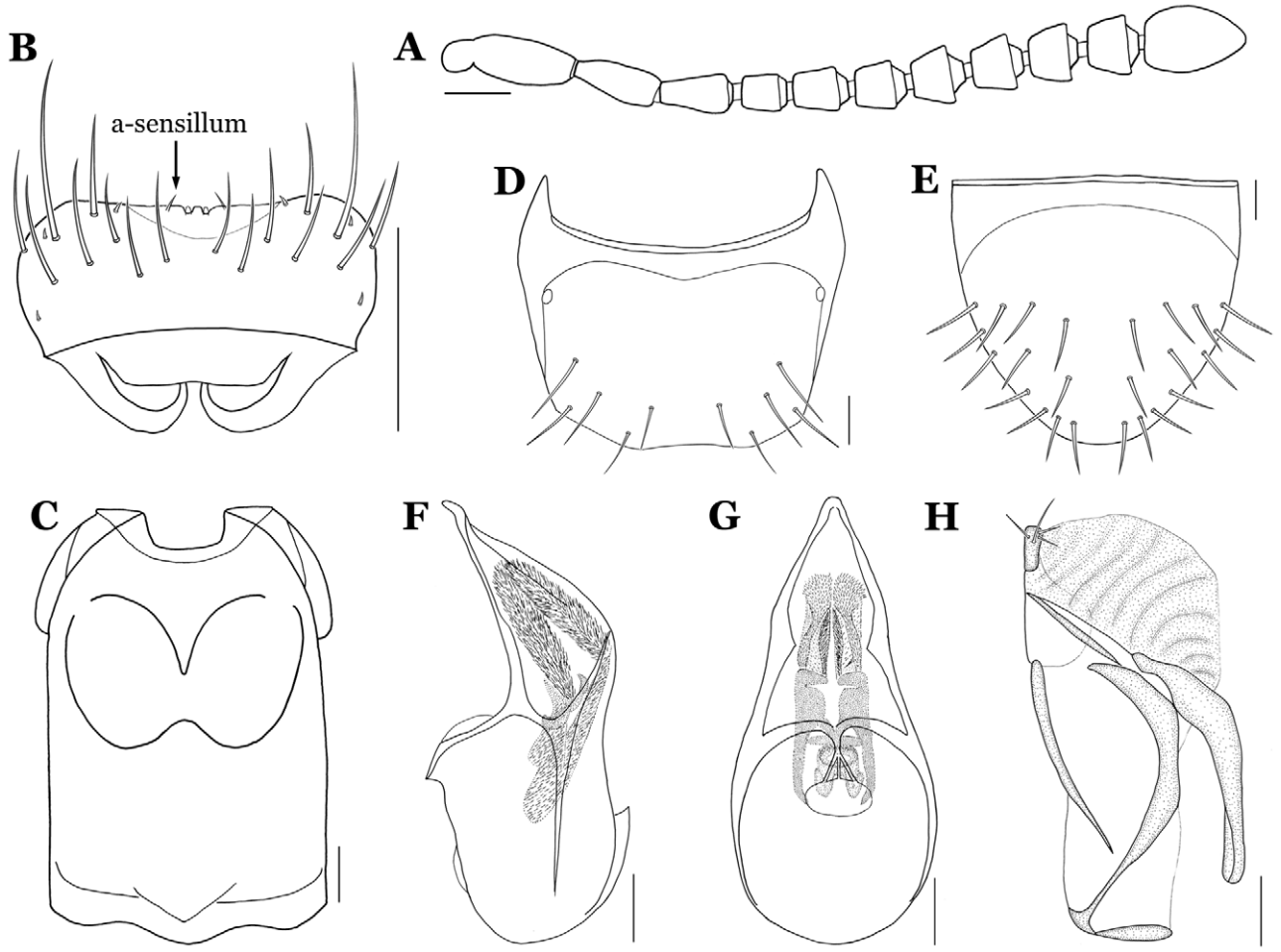

FIGURE 6. *Philhygra pseudoelongatula*. A, antenna, dorsal aspect; B, labrum, dorsal aspect; C, meso- and metaventrites, ventral aspect; D, male tergite VIII, dorsal aspect; E, male sternite VIII, ventral aspect; F, median lobe, lateral aspect; G, median lobe, ventral aspect; H, paramere, lateral aspect. Scale bars 0.1 mm.

Description. Body length about 3.0 mm. Body (Fig. 1E) moderately elongate. Head almost black; antennae and pronotum dark brown; elytra and legs yellowish brown to brown; abdominal tergites dark brown to black, posterior margin of each tergite paler. Head surface glossy, with fine punctation, distance between punctures 2–3 times longer than their diameter; head approximately 1.1 times longer than wide, widest across eyes; eyes prominent, about 1.2 times as long as tempora; antennomeres 4–5 slightly elongate, 6–10 about as long as wide, 11 little shorter than preceding two combined (Fig. 6A); labrum (Fig. 6B) emarginate in anterior margin, a-sensillum relatively short; prementum with medial and lateral pseudopores. Pronotum slightly transverse, approximately 1.15–1.20 times as wide as long, widest at apical fourth; pubescence in midline directed anteriorly, in apical half

antero-laterally, in basal half posteriorly; distance between punctures 1.5–3.0 times longer than their diameter; metanotal scutum with one long seta and about 4–5 relatively short setae on each side of midline; mesoventral process elongate and more or less pointed at apex, longer than metaventral process; length ratio of mesoventral process, isthmus and metaventral process 9:5:3 (Fig. 6C). Elytron approximately 1.65 times as long as wide, postero-lateral margin straight; flabellum composed of about 20 setae. Abdominal tergites glossy, with fine punctation, distance between punctures 0.5–1.0 times longer than their diameter; tergites VIII (Fig. 6D) with 5 macrosetae on each side of midline; posterior margin of male tergite VIII slightly emarginate; male sternite VIII (Fig. 6E) more or less round in posterior margin, with 12 macrosetae on each side of midline; posterior margin of female tergite VIII weakly emarginate at middle; posterior margin of female sternite VIII slightly round, with short marginal setae. Aedeagus as in Figs. 6F–H.

Material examined. KOREA: Gyeonggi prov.: 5 ex., Seoul-si, Dobong-gu, Taeneung, 16 iv 1988, YS Kim.

Distribution. China, Japan, Korea and Russia (Central European Territory) (Smetana 2004).

Remarks. This species is similar to *P. sparsa*, but can be distinguished by the characters provided in the key and the shape and structure of aedeagus.

Philhygra sparsa (Bernhauer, 1907)

(Figs. 1F, 7A–H)

Atheta (*Metaxya*) *sparsa* Bernhauer, 1907: 410.
Atheta (*Metaxya*) *lucidula* Cameron, 1933: 211 (as valid species).
Atheta (*Hygroecia*) *sparsa*: Brundin,1944: 183 (as valid species).
Atheta (*Philhygra*) *lucidula*: Sawada, 1977: 180 (as synonym of *Atheta sparsa*).
Atheta (*Philhygra*) *sparsa*: Sawada, 1977: 180; Smetana, 2004: 392 (as valid species).

Description. Body length about 3.0 mm. Body (Fig. 1F) moderately elongate. Head almost black; antennomeres 2–11, pronotum and abdomen brown to dark brown; scape, elytra and legs yellowish brown or pale brown. Head surface glossy, with fine punctation, distance between punctures 1.5–3 times longer than their diameter; head approximately 1.1 times wider than long, widest at across eyes; eyes prominent, about 1.3 times longer than tempora; antennomeres 4–8 slightly elongate, 9–10 about as long as wide, 11 longest, about as long as preceding two combined (Fig. 7A); labrum emarginate in anterior margin; a-sensillum relatively short; medial and lateral pseudopores present in prementum. Pronotum (Fig. 7B) subquadrate, approximately 1.1 times as wide as long, widest at middle; pubescence in midline directed anteriorly in apical half, posteriorly in basal half; distance between punctures 2–3 times longer than their diameter; metanotal scutum with one long seta and about 4–5 relatively short setae on each side of midline; mesoventral process elongate and more or less pointed at apex, longer than metaventral process; length ratio of mesoventral process, isthmus and metaventral process 5:2:2 (Fig. 7C). Elytron approximately 1.65 times as long as wide, postero-lateral margin nearly straight; flabellum composed of about 10–12 setae. Abdominal tergites glossy, with fine punctation, distance between punctures 0.5–1.0 times longer than their diameter; male tergite VIII (Fig. 7D) with 4 macrosetae on each side of midline, posterior margin slightly emarginate; male sternite VIII (Fig. 7E) more or less round in posterior margin with 8 macrosetae on each side of midline; posterior margin of female tergite VIII weakly emarginate at middle; posterior margin of female sternite VIII broadly round with conspicuous marginal setae. Aedeagus as in Figs. 7F–H.

Material examined. KOREA: Chungnam prov.: 2 ex., Gongju-si, Banpo-myeon, Hakbong-ri, Mt. Gyeryongsan, 1 vi 2004, SM Choi, JS Park, KM Yang, SJ Park, garbage; **Gangwon prov.:** 11 ex., Pyeongchang-gun, Bangrim-myeon, Mt. Baekduksan, 12 vii 2001, KJ Ahn, SJ Park, decaying vegetables; **Gyeongbuk prov.:** 32 ex., Bonghwa-gun, Murya-myeon, Mt. Seondalsan, 23–25 vii 1998, KL You, HJ Lim, FIT; **Gyeongnam prov.:** 4 ex., Sacheon-si, Guam-eup, Guam-ri, 16 v 1986, KS Lee; 4 ex., Ulsan-si, Mugeo-dong, 31 v 1985, GS Jang, YS Kim; **Jeonbuk prov.:** 10 ex., Muju-gun, Anseong-myeon, Tonghan, 5 vi 1988, GS Jang; **Jeonnam prov.:** 3 ex., Gurye-gun, Toji-myeon, Mt. Jirisan, Piagol, 24–26 v 2000, HK Choi, JH Song, MS Kim, baited trap.

Distribution. Korea and Japan (Smetana 2004).

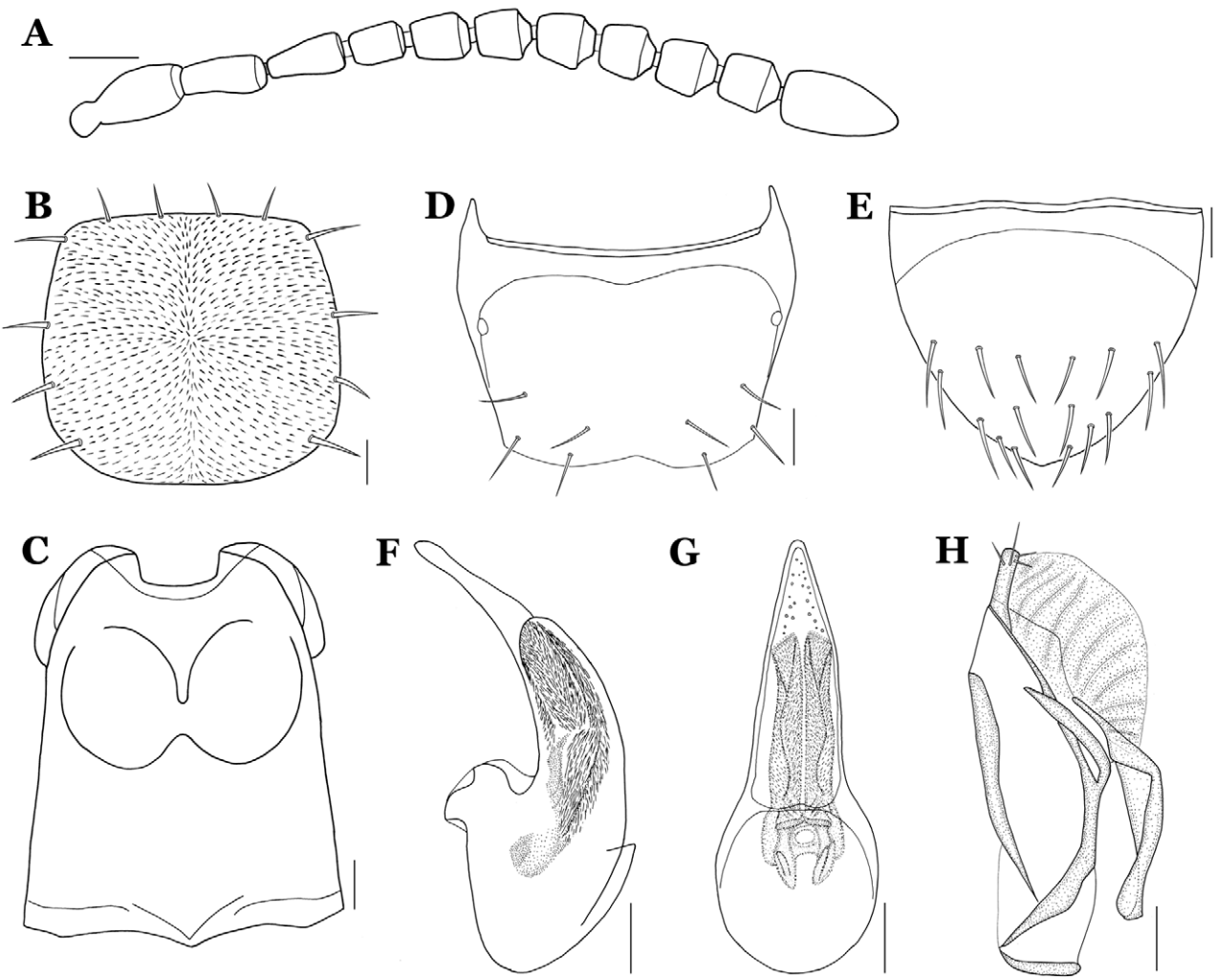

FIGURE 7. *Philhygra sparsa*. A, antenna, dorsal aspect; B, pronotum, dorsal aspect; C, meso- and metaventrites, ventral aspect; D, male tergite VIII, dorsal aspect; E, male sternite VIII, ventral aspect; F, median lobe, lateral aspect; G, median lobe, ventral aspect; H, paramere, lateral aspect. Scale bars 0.1 mm.

Philhygra yokkaichiana **(Bernhauer, 1907)**

(Figs. 1G, 8)

Atheta (*Metaxya*) *yokkaichiana* Bernhauer, 1907: 410 (as valid species).
Atheta (*Metaxya*) *unzensis* Cameron, 1933: 211 (as valid species).
Atheta (*Hygroecia*) *yokkaichiana*: Brundin, 1944: 189 (as valid species).
Atheta (*Metaxya*) *unzensis*: Sawada, 1977: 177 (as synonym of *Atheta yokkaichiana*).
Atheta (*Philhygra*) *yokkaichiana*: Sawada, 1977: 177; Paśnik, 2001: 207; Smetana, 2004: 39. (as valid species).

Description. Body length 2.4–3.0 mm. Body (Fig. 1G) relatively narrow and elongate. Head usually black; antennomeres and pronotum dark brown, elytra brown; abdominal tergites dark brown to black, posterior margin of each tergite paler; legs yellowish brown. Head surface glossy, with fine punctation, distance between punctures 1.0–3.0 times longer than their diameter; head approximately 1.05–1.10 times longer than wide, widest at basal half; eyes slightly prominent; about 1.25 times longer than tempora; antennomere 4 slightly elongate, 5–10 about as long as wide, 11 about as long as preceding two combined (Fig. 8A); labrum slightly emarginate in anterior margin; a-sensillum relatively long and pointed at apex; medial pseudopores absent, lateral pseudopores present in prementum. Pronotum (Fig. 8B) slightly transverse, approximately 1.15 times as wide as long, widest at anterior third; pubescence in midline directed anteriorly; with fine punctation, distance between punctures 0.5–1.0 times

longer than their diameter; metanotal scutum with one long seta and about 3–5 relatively short setae on each side of midline; mesoventral process narrow and slightly pointed at apex; length ratio of mesoventral process, isthmus and metaventral process 5:2:1 (Fig. 8C). Elytron approximately 1.85 times as long as wide, postero-lateral margin nearly straight; flabellum with 14–16 setae present. Male tergite VIII (Fig. 8D) with 4 macrosetae on each side of midline, posterior margin truncate; posterior margin of male sternite VIII more or less round with 7 macrosetae on each side of midline and moderately long marginal setae; posterior margin of female tergite VIII similar to male tergite VIII, posterior margin of female sternite VIII broadly round with inconspicuous marginal setae. Aedeagus as in Figs. 8E–G.

Material examined. KOREA: Chungnam prov.: 3 ex., Gongju-si, Gyeryong-myeon, Naeheung-ri, 8 v 1996, P Tripotin; **Gyeongbuk prov.:** 4 ex., Gimcheon-si, Daehang-myeon, Jikjisa, 13 v 1989, KJ Ahn, near stream; **Gyeonggi prov.:** 23 ex., Incheon-si, Bupyeong-gu, Bugae-dong, 19 v 1996, YB Cho.

Distribution. China, Japan and Korea (Smetana 2004).

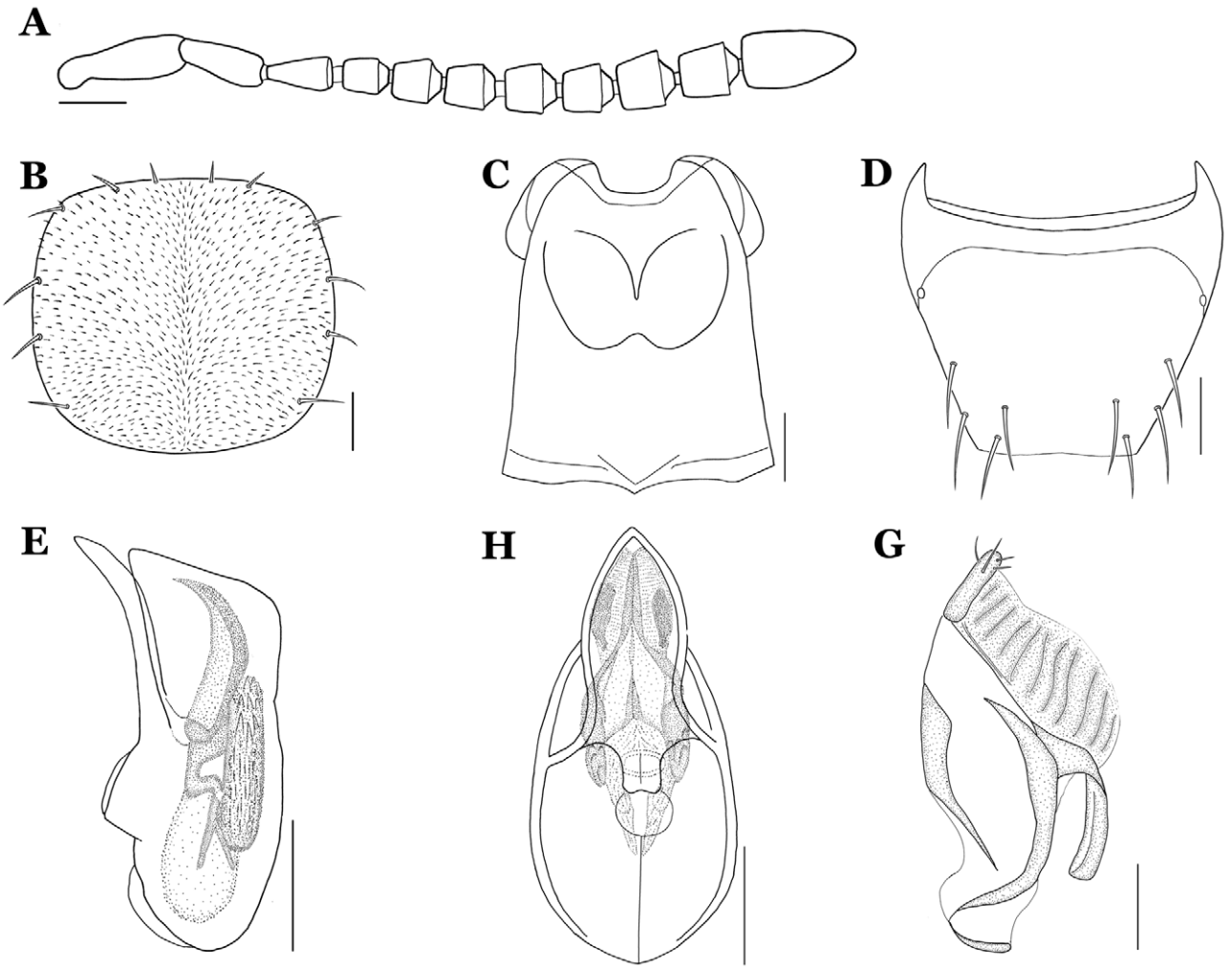

FIGURE 8. *Philhygra yokkaichiana*. A, antenna, dorsal aspect; B, pronotum, dorsal aspect; C, meso- and metaventrites, ventral aspect; D, male tergite VIII, dorsal aspect; E, median lobe, lateral aspect; F, median lobe, ventral aspect; G, paramere, lateral aspect. Scale bars 0.1 mm.

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