

Taxonomy of the Genus *Thamiaraea* Thomson in Korea (Coleoptera: Staphylinidae: Aleocharinae)

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한국산 뚱보바수염반날개속의 분류학적 연구

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ABSTRACT: A taxonomic study of the genus *Thamiaraea* Thomson in Korea is presented. The genus and its two species (*T. diffinis* Sharp and *T. japonica* Cameron) are new to the Korean Peninsula. A key, redescription and illustrations of diagnostic characters are provided.

Key words: Coleoptera, Staphylinidae, Aleocharinae, *Thamiaraea*, Taxonomy, Korea

조 록: 한국산 미기록 속인 뚱보바수염반날개속(*Thamiaraea* Thomson) (신칭)의 2종 - 큰뚱보바수염반날개(*T. diffinis* Sharp) (신칭)와 뚱보바수염반날개(*T. japonica* Cameron) (신칭) - 을 한반도에서 처음으로 보고한다. 이 2종에 대한 검색표, 재기재, 및 식별형질에 대한 그림을 제시한다.

검색어: 딱정벌레목, 반날개과, 바수염반날개아과, 뚱보바수염반날개, 분류학, 한국

The genus *Thamiaraea* Thomson comprises 56 species worldwide (excluding Chile, Madagascar, South Africa and Southern region of Argentina) and 29 species in the Palearctic region (Newton and Thayer, 2005). In East Asia, one species is recorded in China, two in Japan and one in the Russian Far East (Smetana, 2004). They have been known to be found in fungus (Cameron, 1939) or fermenting sap flows on trees (Ashe, 2001).

While studying Korean Athetini, the genus *Thamiaraea* and its two species, *T. diffinis* Sharp and *T. japonica* Cameron, are identified for the first time in the Korean Peninsula. The first author compared these species with the type specimens deposited in the Natural History Museum (NHM), London,

UK to have more reliable identification. We provide a key to the Korean species, habitus photographs and illustrations of the diagnostic characters.

All specimens are deposited in the Chungnam National University Insect Collection (CNUIC), Daejeon, Korea. The terminology used here follows Sawada (1972) but we followed Ashe (1984) in some cases, particularly for mouthparts, to reduce confusion.

Taxonomic accounts

Genus *Thamiaraea* Thomson, 1858 뚱보바수염반날개속 (신칭)

Thamiaraea Thomson, 1858: 35 (Type species: *Aleochara cinnamomea* Gravenhorst, 1802).

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Diagnosis. Members of the *Thamiaraea* can be distinguished from other athetine genera by the combination of the following characters: body broad and large; head broad; eyes large, longer than tempora; antennomere 3 as long as or longer than 2, 5-10 transverse; labial palpi distinctly 2-articled or indistinctly 3-articled (1 and 2 partly or completely fused), last labial palpomere with sensory structure on mesal margin; isthmus short or absent; male with concentration of setigerous pores on frons of head; male abdominal tergite VIII modified (Cameron, 1939; Benick and Lohse, 1974; Ashe, 2001).

Key to Korean species of the genus *Thamiaraea*

1. Body larger (length 3.5-5.0 mm) and broader (Fig. 1a); antennomere 4 quadrate, 5-10 slightly transverse (Fig. 2a); labial palpi indistinctly 3-articled (Fig. 2b); posterior margin of mesocoxal cavity without small pores (Fig. 2c); male elytral surface uneven; male abdominal tergites VI-VII without tubercle; posterior margin of male tergite VIII with process (Fig. 2d) *T. diffinis*
- Body smaller (length 3.3-3.8 mm) and less broad (Fig. 1b); antennomere 4 slightly transverse, 5-10 distinctly transverse



Fig. 1. Habitus, male. (a) *Thamiaraea diffinis*, 4.9 mm; (b) *Thamiaraea japonica*, 3.5 mm.

(Fig. 3a); labial palpi 2-articled (Fig. 3b); posterior margin of mesocoxal cavity with many small pores (Fig. 3c); male elytral surface flatten; male abdominal tergites VI-VII with indistinct tubercle; posterior margin of male tergite VIII without process (Fig. 3d) *T. japonica*

***Thamiaraea diffinis* Sharp, 1888** (Figs. 1a, 2)

Thamiaraea diffinis Sharp, 1888: 292; Smetana, 2004: 420.

Redescription. Length 3.5-5.0 mm. Body slightly fusiform; surface glossy, densely pubescent with fine punctures. Body reddish brown; antennae and legs slightly paler. **Head.** Transverse, approximately 1.2-1.3 times wider than long, widest across eyes, narrower than pronotum; eyes large and prominent, about 2.0 times as long as tempora; gular sutures moderately separated, dilated basally; infraorbital carina complete; cervical carina complete. Antennae (Fig. 2a) long and slender; antennomeres 1-3 elongate, 1 longest, 3 slightly longer than 2, 4 quadrate, 5-10 subquadrate to slightly transverse, 11 longer than wide, about as long as preceding two combined. **Mouthparts.** Labrum transverse, distinctly emarginate in anterior margin, with ϵ -sensillum and 8 macrosetae on each side of midline; epipharynx with several sensilla, including 2 lateral sensilla; α -sensillum long and setaceous, more than 2.0 times as long as ϵ -sensillum; β - and γ -sensilla short. Mandibles asymmetrical, subtriangular, decurved and pointed apically, about 1.6-1.7 times as long as basal width, moderately many denticles present in molar region; right one with internal tooth, internal margin slightly serrulate; prostheca developed, composited three portions, second portion longer. Lacinia of maxilla long, composited seven spines in distal comb, two isolated spines present; maxillary palpus elongate and relatively slender, with pubescence and long setae; palpomere 1 smallest, 2 about 2.8-3.0 times as long as wide, 3 about as long as 2, about 2.8 times as long as wide, 4 very long and digitiform, filamentous sensilla reaching to basal third to fourth. Labium with ligula divided into 2 lobes in basal third to half; two medial setae contiguous; two basal pores close together, one more or less laterally behind the other; a few median pseudopores, many lateral pseudopores, 1 setal pore and 2 real pores present on each side of prementum; labial palpus (Fig. 2b) indistinctly composed of 3 palpomeres; palpomere 1 largest, about 1.4-1.5

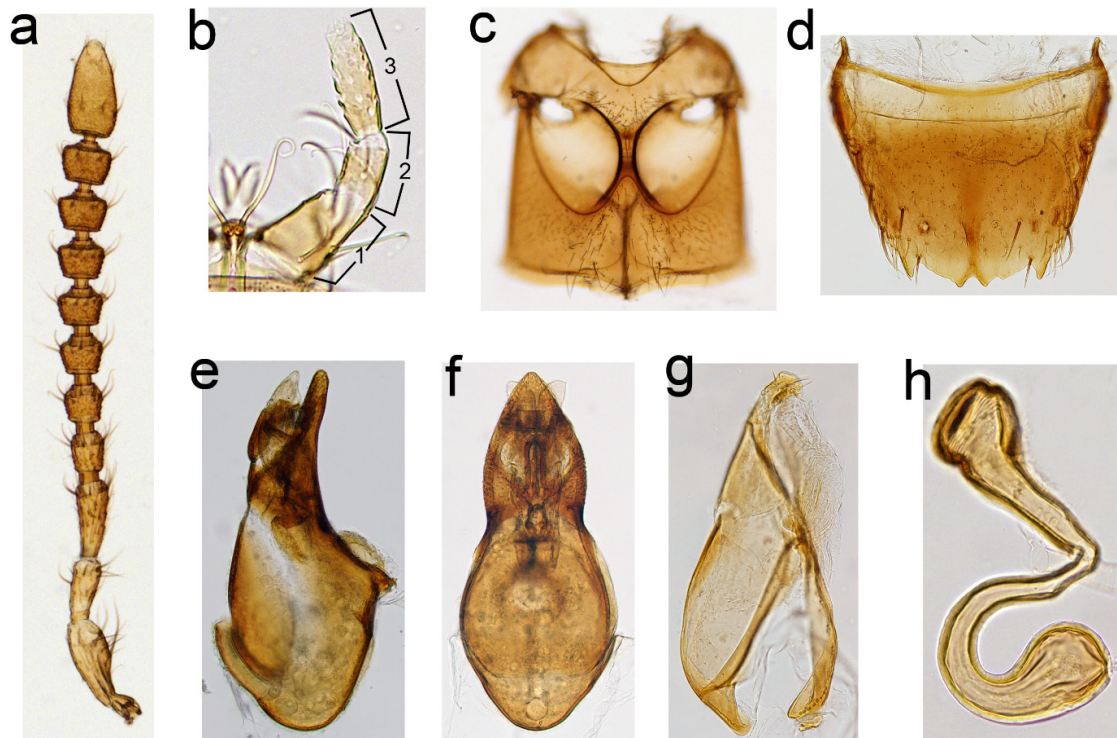


Fig. 2. *Thamiaraea diffinis*. (a) antenna; (b) labial palpi, ventral aspect; (c) meso- and metaventrites, ventral aspect; (d) male tergite VIII, dorsal aspect; (e) median lobe of aedeagus, lateral aspect; (f) median lobe of aedeagus, ventral aspect; (g) paramere, lateral aspect; (h) spermatheca. Scales = 0.1 mm.

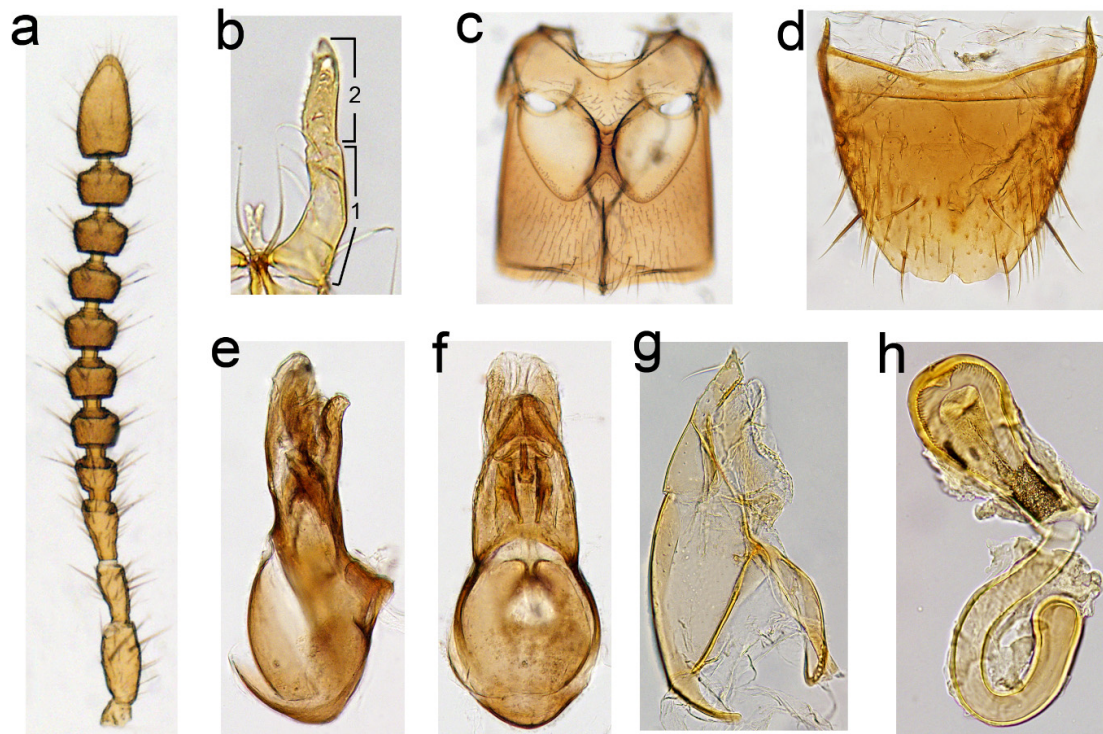


Fig. 3. *Thamiaraea japonica*. (a) antenna; (b) labial palpi, ventral aspect; (c) meso- and metaventrites, ventral aspect; (d) male tergite VIII, dorsal aspect; (e) median lobe of aedeagus, lateral aspect; (f) median lobe of aedeagus, ventral aspect; (g) paramere, lateral aspect; (h) spermatheca. Scales = 0.1 mm.

times longer than wide, with γ -setula close to b-setula, 2 shortest, about 1.8-2.0 times as long as wide, 3 about as long as 1, subparallel-sided, 2.0-2.2 times as long as wide, with many pores. Mentum trapezoidal, anterior margin emarginate; v-seta short, closer to u-seta than to w-seta. *Thorax*. Pronotum transverse, approximately 1.4-1.5 times as wide as long, widest in basal half to third; about 5-6 macrosetae present in postero-lateral margin; pubescence directed anteriorly in midline; hypomera almost fully visible in lateral aspect. Metanotal scutum with 1 long seta and about 3-4 short setae on each side of midline. Mesoventral process blunt at apex, longer than metaventral process; length ratio of mesoventral process, isthmus and metaventral process 6:3:4 (Fig. 2c). Elytra wider than pronotum; elytron approximately 1.3-1.4 times as long as wide, pubescence directed posterior and postero-laterally; postero-lateral margins almost straight; hind wings fully developed; flabellum composed of about 20 setose lobes. *Legs*. Slender and long, with pubescence and macrosetae; meso- and metatibiae with subequal length of two spurs at apex; tarsal formula 4-5-5, length ratio of tarsomeres 48:50:52:142 (protarsus); 59:64:69:61:144 (mesotarsus); 72:76:80:79:72:172 (metatarsus) ($\times 400$); one empodial seta present, robust and shorter than claw. *Abdomen*. Convergent at apex, widest in tergite III, surface glossy and densely pubescent, with conspicuous setae and transverse microsculpture; macrochaetal arrangement of tergites II-VI 01-11-13-13-13; tergite VIII with 4 macrosetae present on each side of midline. *Secondary sexual characters*. Male: elytral surface uneven; surface of abdominal tergite VII longitudinally wrinkled in posterior region; abdominal tergite VIII (Fig. 2d) with elongate and small tubercle in postero-median region, posterior margin with two outer processes and two inner processes pointed at apex; abdominal sternite VIII with 10 macrosetae on each side of midline, posterior margin convex and slightly round, with long marginal setae. Female: posterior margin of abdominal tergite VIII subtruncate; posterior margin of abdominal sternite VIII slightly round, with conspicuous marginal setae, minute setae present in median region. *Aedeagus*. Apical process of median lobe slightly curved in lateral aspect. Apical lobe of paramerite with four short setae; a-seta slightly longer, the other setae subequal in length (Figs. 2e-g). *Spermatheca*. Bursa without umbilicus; duct relatively slender and strongly curved, thick apically and apex bulbous shape (Fig. 2h).

Material examined. *Syntype*, 1 ♀, labeled as follows: 'Type, Japan. G. Lewis 1910-320, Kyoto. 10.VI-12.VI.81, *Thamiaraea diffinis* Type D.S.', **KOREA**: Jeonnam Prov., 11 ♂ ♀, Jangseong-gun, Bukha-myeon, Yaksu-ri, Mt. Naejangsan, Baekyangsa, 30 V 2003, JS Park.

Distribution. Korea (South) and Japan.

Remarks. All Korean specimens were collected around Temple Baekyangsa in Mt. Naejangsan by sifting litter.

***Thamiaraea japonica* Cameron, 1933** (Figs. 1b, 3)

Thamiaroaea japonica Cameron, 1933: 216; Smetana, 2004: 420.

Redescription. Length 3.3-3.8 mm. Body surface glossy, densely pubescent with macrosetae. Body reddish yellow to reddish brown; abdominal tergites V-VIII darker than the other parts. *Head*. Slightly transverse, approximately 1.2 times as wide as long, widest across eyes, narrower than pronotum; eyes very large and prominent, about 2.0-2.5 times as long as tempora; gular sutures moderately separated, dilated basally; infraorbital carina complete; cervical carina complete. Antennae (Fig. 3a) relatively short; antennomeres 1-3 elongate, 2 about as long as 3, 4 subquadrate to slightly transverse, 5-10 distinctly transverse, 11 about as long as 1, slightly longer than preceding two combined. *Mouthparts*. Labrum transverse, emarginate in anterior margin, with ε -sensillum and 8 macrosetae on each side of midline; epipharynx with several sensilla, including 2 lateral sensilla; α -sensillum long and setaceous, more than 2.0 times as long as ε -sensillum; β - and γ -sensilla short. Mandibles asymmetrical, subtriangular, decurved and pointed apically, about 1.6-1.7 times as long as basal width, moderately many denticles present in molar region; right one with internal tooth, internal margin slightly serrulate; prostheca developed, composited three portions, second portion longer. Lacinia of maxilla long, composited seven spines in distal comb, two isolated spines present; maxillary palpus elongate, with pubescence and long setae; palpomere 1 smallest, 2 about 2.5-2.8 times as long as wide, 3 about as long as 2, about 2.2-2.4 times as long as wide, 4 digitiform, filamentous sensilla reaching to basal third. Labium with ligula narrow, divided into 2 lobes in basal half; two medial setae contiguous and one

more or less laterally behind the other; several median pseudopores, lateral pseudopores, 1 setal pore and 2 real pores present on each side of prementum; labial palpus (Fig. 3b) composed of 2 palpomeres; palpomere 1 completely fused into 2, about 2.2 times as long as wide, with α -, γ -, b- and d-setulae located in basal region, last palpomere about 3.0 times as long as wide. Mentum trapezoidal, anterior margin emarginate; v-seta short, distinctly closer to u-seta than to w-seta. *Thorax*. Pronotum transverse, approximately 1.5 times as wide as long, widest at middle; about 5-6 macrosetae present in postero-lateral margin; pubescence directed anteriorly in midline; hypomera partially visible in lateral aspect. Metanotal scutum with 1 long seta and about 2-5 short setae on each side of midline. Mesocoxae moderately separated; posterior margin of mesocoxal cavity with many small pores; mesoventral process blunt at apex, reaching to middle of mesocoxae, about as long as isthmus and metaventral process combined (Fig. 3c). Elytra slightly transverse, wider than pronotum; elytron approximately 1.5 times as long as wide, pubescence directed posterior and postero-laterally; postero-lateral margins almost straight; hind wings fully developed; flabellum composed of about 9-11 setose lobes. *Legs*. Slender and moderately long, with pubescence and macrosetae; meso- and metatibiae with subequal length of two spurs at apex; tarsal formula 4-5-5, length ratio of tarsomeres 30:32:35:94 (protarsus); 37:43:44:42:90 (mesotarsus); 45:50:54:52:101 (metatarsus) ($\times 400$); one empodial seta present, shorter than claw. *Abdomen*. Convergent at apex, widest in tergite III, surface glossy and densely pubescent, with conspicuous setae and transverse microsculpture; macrochaetal arrangement of tergites II-VI 01-11-11-12 or 13-23; tergite VIII with 4 macrosetae present on each side of midline. *Secondary sexual characters*. Male: abdominal tergites VI-VIII with indistinct tubercle in postero-median region; posterior margin of abdominal tergite VIII (Fig. 3d) triangularly excised at middle, postero-lateral margins sinuate; abdominal sternite VIII with 7 macrosetae on each side of midline, posterior margin round, with long marginal setae. Female: posterior margin of abdominal tergite VIII slightly concave; posterior margin of abdominal sternite VIII faintly emarginate, with conspicuous marginal setae, minute setae present in median region. *Aedeagus*. Apical process of median lobe slightly sinuate in lateral aspect. Apical lobe of paramerite with four short setae subequal in length

(Figs. 3e-g). *Spermatheca*. Bursa with small and conical umbilicus; duct deeply twisted (Fig. 3h).

Material examined. **Syntype**, 1♂, labeled as follows: 'JAPAN Kobe Harada 30 x 16, *Thamiaraea japonica* Cam TYPE, M. Cameron. Bequest. B.M. 1955-147. *Thamiaraea japonica* Cam. P.M. Hammond det.1973 SYNTYPE', **KOREA**: *Chungbuk Prov.*, 12♂ ♀, Chungju-si, Noeun-myeon, Suryong-ri, Peach-orchard, N37°03'33.08" E127°48'00.76" 145 m, 18 IX 2014, DH Lee, SG Lee, under decaying fruit; 18♂ ♀, Okcheon-gun, Annam-myeon, Jisu-ri, N36°19'51.0" E127°41'49.1" 205 m, 8 VIII 2013, YH Kim, SG Lee, JS Lee, MA Cho, fermenting peach. *Chungnam Prov.*, 7♂ ♀, Gongju-si, Gyeryong-mmyeon, Jungjang-ri, Mt. Gyeryongsan, Gapsa, 2 VII 2009, YH Kim, tree sap; 13♂ ♀, Gongju-si, Janggi-myeon, Dangam-ri, N36°29'25.14" E127°14'11.28", 70 m, 8 V 2010, SG Lee, JH Jeon, decaying food; 6♂ ♀, Taean-gun, Taean-eup, Sangok-ri, N36°45'17.0" E126°18'47.7" 40 m, 30 VII 2013, SG Lee, JS Lee, tree sap. *Jeonbuk Prov.*, 33♂ ♀, Gochang-gun, Asan-myeon, Mt. Seonunsan, N35°29'44.0" E126°34'36.7", 30 VI 2010, IS Yoo, YH Kim, tree sap. **CHINA**: 1♂, Tienmuschan N. W. China Rtt. **JAPAN**: 1♂, Kanagawa Japan. Sauter.

Distribution. Korea (South), China and Japan.

Remarks. Most Korean specimens were found in fermenting tree sap (*Quercus* Linnaeus) or decaying fruits.

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