



New species of *Atomaria* Stephens, 1829 (Coleoptera, Cryptophagidae) from China and Taiwan

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ABSTRACT

Two new species of *Atomaria* Stephens, 1829 from China and Taiwan are described and illustrated: *Atomaria (Atomaria) cooteris* sp. nov. and *Atomaria (Atomaria) johnsoni* sp. nov. New records for China and Taiwan are added: *Atomaria (Atomaria) klapperichi* Johnson, 1971 and *Atomaria (Atomaria) plecta* Lyubarsky, 1995. New subgeneric combinations are proposed for *Atomaria (Atomaria) klapperichi*, *Atomaria (Atomaria) plecta* and *Atomaria (Atomaria) torrida* Johnson, 1971.

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Introduction

Although from China or adjacent regions, there are an acceptable number of published Works: Bruce (1943, 1945); Esser (2017a, 2017b, 2017c, 2018); Grouvelle (1916); Lyubarsky (1996, 1999, 2000; 2014), Otero (2001, 2002), Nikitsky (1996) and Sen Gupta (1980), we believe that the fauna of the Cryptophagidae of these countries is still insufficiently known. The study of abundant materials of the genus *Atomaria* from Manchester Museum suggests that the knowledge of this group needs to be updated. The study of specimens borrowed from Manchester Museum has allowed us to describe two new species: *Atomaria (Atomaria) audisioi* sp. nov. and *Atomaria (Atomaria) johnsoni* sp. nov. The aim of this account is to contribute to the knowledge of *Atomaria* of the world.

Material and methods

The terminology and the measurements of the new species follow Otero (2005, 2011, 2012; Otero & Pereira, 2017). Structures were measured under a Leica M205C stereomicroscope equipped with an Application Suite analysis system: L = length, WL = width/length ratio, E = eccentricity of the eyes (width/half of the length). The width is measured across the widest part of a line joining the anterior and posterior limit of the eye. L is used for length in dorsal view, W for width and Ø for diameter.

The following acronyms are used for specimen depositories:

MMCJ: Manchester Museum, Manchester, United Kingdom (coll. C. Johnson).

Results

Taxonomy

Atomaria (Atomaria) cooteri sp. nov.

Description. Length: 1.2–1.3 mm. Body convex. Reddish brown to yellowish brown; appendages yellowish grey-brown. Pubescence whitish, slightly lifted and short (L = 0.040–0.050 mm). Metathoracic wings fully developed.

Head moderately transverse (WL = 1.7). Eyes sub-hemispherical and slightly protuberant (E = 0.8). Ocular facets smaller in size to head punctures (Ø = 0.012–0.014 mm). Antennae long (Fig. 1b) surpassing the base of the pronotum (L = 0.440–0.460 mm). First antennomere 1.6 times longer than wide; 3rd and 4th antennomeres equal and 1.3 times shorter than 2nd; 4th and 7th almost equal and 1.2 times shorter than 5th; 8th antennomere 1.9 times shorter than 7th; 9th and 10th antennomeres 1.5 times longer than 8th and transverse. Pronotum (Fig. 1a) convex and moderately transverse (WL = 1.5–1.6), 1.3 times narrower at the apex than at the base. Lateral margins parallel until middle area and from there, converging to the base. Base of the pronotum with a slightly marked depression. Posterior angles straight to obtuse. Punctuation well-marked and dense; distance between punctures less than puncture diameter (Ø = 0.026–0.030 mm). Scutellar shield transverse.

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Atomaria (Atomaria) johnsoni sp. nov.

(Fig. 2a, b, c, d)

Description. Length: 1.3–1.4 mm. Body convex. Head, pronotum, elytra and legs reddish brown; antennae yellowish brown. Pubescence whitish and long (L = 0.022–0.026 mm). Metathoracic wings fully developed.

Head slightly transverse. Eyes sub-hemispherical and slightly protuberant (E = 0.7). Ocular facets smaller in size to head punctures (\varnothing = 0.006–0.010 mm). Antennae long (Fig. 2b) surpassing the base of the pronotum (L = 0.525 mm). First antennomere 1.6 times longer than wide; 2nd, 3rd and 5th almost equal and 1.5 times shorter than the 1st; 4th, 6th and 7th almost equal 1.5 times shorter than the 5th; antennomere 8th 1.5 times shorter than the 7th; 9th and 10th antennomeres 1.8 times longer than 8th and transverse; 11th elongate.

Pronotum (Fig. 2a) convex and moderately transverse (WL = 1.6–1.7), narrower at the apex than at the base, and strongly retracted forward. Lateral margins bordered in basal half. Base of the pronotum with a well differentiated depression. Punctuation well-marked and dense; distance between punctures less than puncture diameter (\varnothing = 0.015–0.019 mm). Scutellar shield transverse and

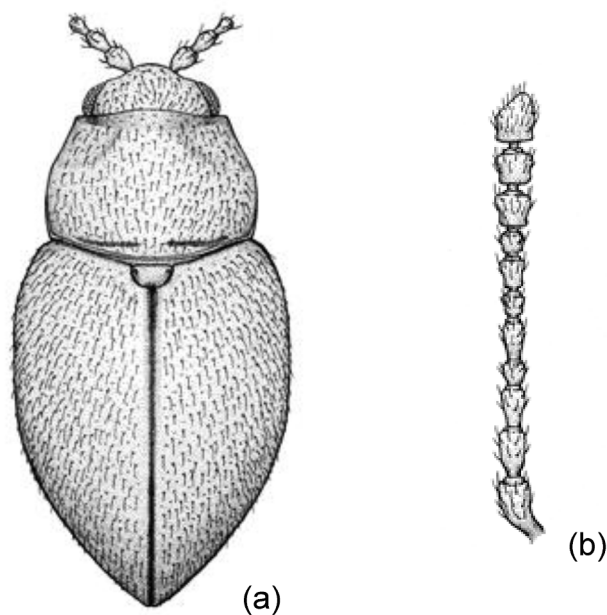


Fig. 1. *Atomaria (Atomaria) audisioi* sp. nov.: (a) general view; (b) antennae; (c) spermatheca.

Elytra together 1.2 times as long as wide and 2.6 times longer than the pronotum. Lateral margins arched. Punctuation more diffuse and separated than that of the pronotum; punctures separated by a distance greater than their diameter (\varnothing = 0.026–0.030 mm).

Male. Unknown.

Female. Spermatheca (Fig. 1c)

Material examined. Holotype, ♀, CHINA. Zhejiang Prov., Lián District, C. 300 m, W. Tianmu Shan N. R., 22.V.1996 (Leg. Cooter). Paratypes, 6♀ CHINA. Zhejiang Prov., Lián District, C. 300 m, W. Tianmu Shan N. R., 22.V.1996 (Leg. Cooter) deposited in the MMCJ.

Distribution. China.

Biology. Captured in leaf litter and humus in forests of *Cryptomeria* sp. and *Liriodendron* sp.

Etymology. Dedicated in honor of Dr. Jonathan Cooter, England, United Kingdom.

Differential Diagnosis. Morphologically, *Atomaria cooteri* sp. nov. is very similar to *Atomaria torrida*, but can be distinguished by the configuration of the female genital apparatus, base of the pronotum with a slightly marked depression and by the relative size of the antennae.

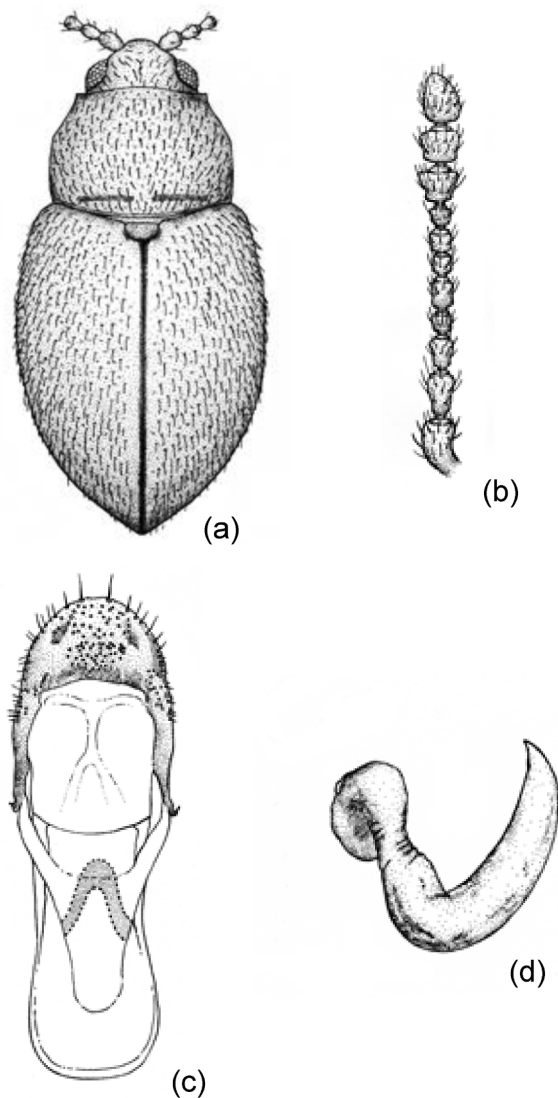


Fig. 2. *Atomaria (Atomaria) johnsoni* sp. nov.: (a) general view; (b) antennae; (c) aedeagus; (d) spermatheca.

trapezoidal.

Elytra together 1.1 times as long as wide and 2.5 times longer than the pronotum. Lateral margins arched. Punctuation more diffuse; punctures separated by a distance greater than their diameter ($\varnothing = 0.010\text{--}0.012\text{ mm}$).

Male. Aedeagus (Fig. 2c)

Female. Spermatheca (Fig. 2d)

Material examined. Holotype, ♂, TAIWAN, Fenchihu, 4–13.VI.1977, 1400 m (Leg. J. Klapperich). Paratypes, 6 ♀♀, TAIWAN, Fenchihu, 4–13.VI.1977, 1400 m (Leg. J. Klapperich). Deposited in the MMCI.

Distribution. Taiwan.

Biology. Unknown.

Etymology. Dedicated in honor of Dr. Colin Johnson, Manchester, United Kingdom

Key to species of the genus *Atomaria* s. str. From Taiwan described

In the article to the species of Atomariinae from the northern parts of the Indian (Johnson, 1971) the key and the key should be modified as follows:

1. Antennomeres seventh, ninth and tenth strongly transverse. Elytra are strongly rounded. Coloration reddish. L = 1.4–2.0 mm. Cosmopolitan.....*A. lewisi* Reitter, 1877
 - Antennomere seventh elongated; antennomeres ninth and tenth slightly transverse; antennomeres sixth and eighth sub-squares.....2
2. Head, pronotum and elytra reddish brown. The elytral suture may be obscured.....3
 - Head and pronotum reddish; elytra yellowish brown with a more or less irregular blackish brown transverse band forming a “V” along the suture. Antennomeres ninth and tenth slightly transverse. L = 1.4–1.6 mm. India, Nepal, China, Taiwan and Afghanistan.....
A. obliqua Johnson, 1971
3. Antennae (Fig. 3b) thick; first antennomere as long or slightly longer than wide, almost as long as the second antennomere; ninth and tenth slightly transverse; antennal club narrow. Pronotum (Fig. 3a) slightly transverse, 1.4 times wider than long; base of pronotum narrower than that of elytra together and with well-marked transverse depression. Lateral margins of the elytra are strongly curved. Aedeagus (Fig. 3c). Spermatheca (Fig. 3d). L = 1.57–1.65 mm. Japan, India, Nepal and Taiwan.....
A. torrida Johnson, 1971
 - Antennae graceful and long, surpassing the base of the pronotum; first antennomere 1.6 times longer than wide; ninth and tenth antennomeres transverse; antennomere eighth 1.5 times shorter than the seventh. Pronotum moderately transverse (WL = 1.5–1.7)4
4. Antennomeres (Fig. 2b) fourth, sixth and seventh almost equal and 1.5 times shorter than the fifth. Pronotum (Fig. 2a) convex and moderately transverse (WL = 1.6–1.7). Base of the pronotum with a well differentiated depression. Aedeagus (Fig. 2c). Spermatheca (Fig. 2d). L = 1.3–1.4 mm. Taiwan.....
A. johnsoni sp. nov.
 - Base of the pronotum with a slightly marked depression. The elytral suture obscured. Pronotum moderately transverse (WL = 1.4–1.5). First antennomere longer than wide and longer than the second antennomere. L = 1.4–1.5 mm. China, India, Taiwan.....
A. pudica Johnson, 1971

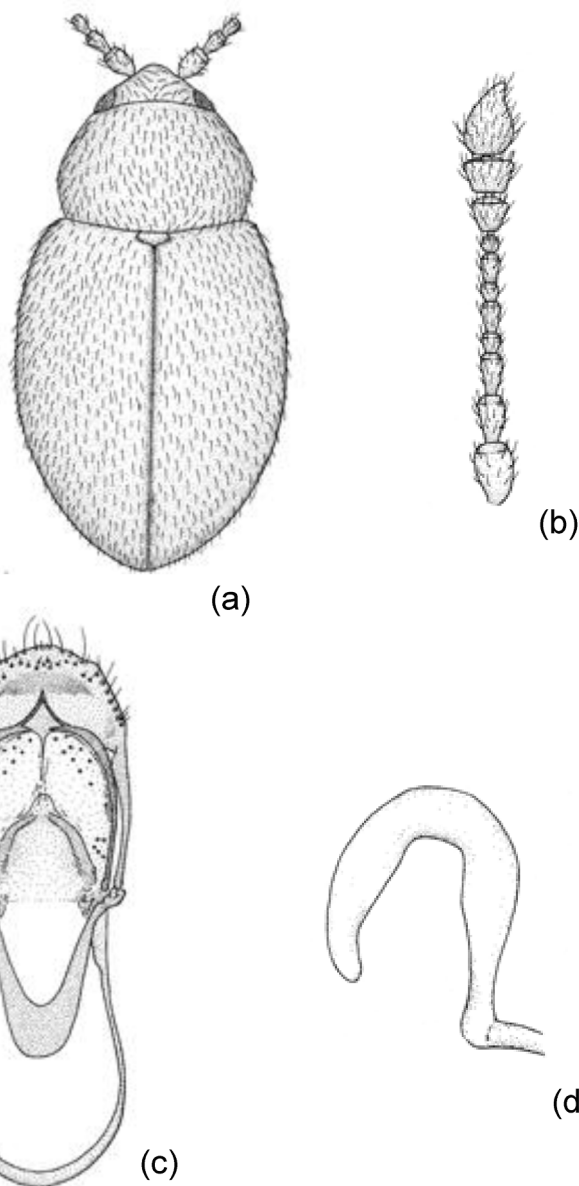


Fig. 3. *Atomaria (Atomaria) torrida* Johnson, 1971: (a) general view; (b) antennae; (c) aedeagus; (d) spermatheca. Two new species of *Atomaria* Stephens, 1829 from China and Taiwan are described and illustrated: *Atomaria (Atomaria) cooterisp.* nov. and *Atomaria (Atomaria) johnsoni* sp. nov.

New subgeneric combinations

In Otero (2011: 354) the reason for the new proposed combinations is established. The type species of this genus is *Dermestes nigripennis* Paykull, 1798, as it was correctly designated by Westwood (1838: 14). This species is renamed *Atomaria linearis* Stephens, +1830 (Johnson et al. 2007). These authors do not take into account that the name of a species does not change if the subgenus to which it belongs is modified, since the combination is made with the genus and not with the subgenus. The presence of the subgenus as an intercalated name is optional and is not part of the name of the species itself. Since the maintenance of these names does not comply with the CINZ regulations and since we are not aware of the application that has been filed, we reject this designation as contrary to nomenclatural stability. Therefore, it is necessary to modify the uses that Johnson et al. (2007) have carried out in the *Atomaria* subgenera: *Atomaria* Stephens, 1829 by *Agathengis* Gozis, 1866 and *Anchicera* C. G. Thomson, 1863 by *Atomaria* s. str.

Atomaria (Atomaria) klapperichi Johnson, 1971 comb. nov.

Material examined. CHINA, Prov. Fukien, Kuantun, Tschung Sen, 20. II.1946, 2 ♂♂ (leg. J. Klapperich) (coll. MMCJ).

Distribution. Afghanistan, Nepal (Johnson et al., 2007; Lyubarsky, 2014). New record for China.

Taxonomic remarks. New subgeneric combination according to the proposal of Otero (2011).

Atomaria (Atomaria) plecta Lyubarsky, 1995 comb. nov.

Material examined. TAIWAN, Alishan, 2,400 m, 18.IV–10.VI.1977, 2 ♀♀ (leg. J. Klapperich) (coll. MMCJ).

Distribution. China, India and Nepal (Lyubarsky, 2014). New record for Taiwan.

Taxonomic remarks. New subgeneric combination according to the proposal of Otero (2011).

Atomaria (Atomaria) torrida Johnson, 1971 comb. nov.

Material examined. JAPAN, Shiga Kogen, 15.VIII.1967, 1 ♂ (leg. T. Nakane) (coll. MMCJ).

Distribution. Taiwan, India, Nepal and Japan (Johnson, 1971; Lyubarsky, 2014).

Taxonomic remarks. New subgeneric combination according to the proposal of Otero (2011).

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.aspen.2022.101872>.

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