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New records and new species of *Cephennodes* REITTER from Hong Kong (Coleoptera: Staphylinidae: Scydmaeninae)

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ABSTRACT. Two new species of *Cephennodes* REITTER, *C. (s. str.) astoni* n. sp. and *C. (incertae sedis) tertius* n. sp. are described from the Lantau Island, Hong Kong. Diagnostic characters, including the aedeagi, are illustrated. New records of the occurrence of *C. (s. str.) hongkongensis* JALOSZYŃSKI, 2008 are given.

Key words: entomology, taxonomy, new species, Staphylinidae, Scydmaeninae, Cephenniini, *Cephennodes*, Oriental, Hong Kong.

INTRODUCTION

Hitherto only a single species of the large tribe Cephenniini has been reported to occur in Hong Kong (JALOSZYŃSKI 2008). Recent collecting efforts of Paul ASTON resulted in finding several individuals of *Cephennodes* on the Lantau Island. Three distinct species were found in this interesting sample. One of them is *C. hongkongensis* JALOSZYŃSKI, known so far only from two specimens collected on the Hong Kong Island (JALOSZYŃSKI 2008). Two other species showed unique sets of characters and are described below as new. One of them, clearly belonging to the nominotypical subgenus, is highly similar to Vietnamese *C. lustricollis* JALOSZYŃSKI & NOMURA, 2009, and in order to facilitate further study of relationships within the genus a new species group is established for these two taxa. Affinities of the other new species were not possible to establish due to a puzzling suite of synapomorphies shared with all subgenera of *Cephennodes*. Its placement within the genus must remain unsettled until females have been found and their terminalia examined in detail.

Individuals of all three species were collected at lights, and all specimens are males. This suggests the females may have reduced flight abilities, or their biology differs from that of males.

Measurements and nomenclature follows that of JAŁOSZYŃSKI (2007a). The studied specimens are deposited in the Muséum d'Histoire Naturelle, Geneva, Switzerland (MHNG), the Insect Museum, Tai Lung Farm, Agriculture Fisheries and Conservation Department, Hong Kong (TLF), private collection of Paul ASTON (Wang Tong, Hong Kong) (PCPA) and private collection of the author (Poznań, Poland) (PCPJ).

TAXONOMY

Cephennodes (s. str.) *hongkongensis* JAŁOSZYŃSKI

Cephennodes (s. str.) *hongkongensis* JAŁOSZYŃSKI, 2008: 172.

MATERIAL STUDIED

Four males: 14 VI 2009; 26 VII 2009; 13 IX 2009; 1 X 2009; all from Hong Kong, Lantau Is., Wang Tong, near lights, leg. Paul ASTON (TLF, PCPA, PCPJ).

REMARKS

This species has been known so far from two specimens collected in Pok Fu Lan on the Hong Kong Is.; the finding on the Lantau Is. extends the known distribution of *C. hongkongensis* westwards.

Species group *lustricollis*

The *lustricollis*-group is characterized by the following combination of synapomorphies: body small, slender; lateral pronotal carinae separated from lateral margins; pronotal disc finely punctated but elytra with coarse, distinct punctures with elevated margins; hind tibiae non-modified; aedeagus of *simonis*-type, with projected and long apex of median lobe and large apical projection directed towards it. The group accommodates presently two species: *C. lustricollis* JAŁOSZYŃSKI & NOMURA, 2009 from Vietnam, and the newly described *C. astoni*.

REMARKS

Cephennodes astoni described below is extremely similar to *C. lustricollis*, and they share not only similar structures of the aedeagus, but also the general body shape and the pattern of punctation. The species group composed of these two taxa seems to have several transient character states between the highly derived *inflatipes*-group and all other *Cephennodes* s. str. with a similar, *simonis*-type aedeagus but without any male secondary sexual modifications. A close relationship of *C. lustricollis* to the *inflatipes*-group was postulated previously, but due to simple metatibiae this species was not included in this distinct lineage (JAŁOSZYŃSKI & NOMURA 2009). Moreover, *C.* (s. str.) *simplicipes* JAŁOSZYŃSKI, 2007b, known from China, is apparently closely allied to all above-mentioned *Cephennodes*, and so far not placed in any group. It has the same type of the aedeagus as members of the *lustricollis*- and *inflatipes*-groups, modified abdominal sternites, but non-modified metatibiae. Several species showing the

same set of characters are known to the author from the Himalaya Mts., and a separate species group will be established for them to include also *C. simplicipes* (JALOSZYŃSKI in preparation). The entire lineage, composed of the *inflatus*-group, *lustricollis*-group and *C. simplicipes* together with its yet undescribed Himalayan allies may likely form a monophyletic branch within *Cephenodes*.

***Cephenodes* (s. str.) *astoni* n. sp.**

(Figs. 1, 3, 4)

NAME DERIVATION

The specific epithet is dedicated to Paul ASTON, an entomologist from Hong Kong, who collected the specimens used in this study.

DIAGNOSIS

The following combination of characters is unique for males of this species: vertex and frons with median area covered with extremely dense, very small punctures and surrounded by nearly impunctate cuticle; punctures on pronotal disc very fine; punctures on elytra very distinct, small but dense and with strongly raised margins, so that surface of elytra appears coarse; aedeagus *simonis*-type, with very long apical part of median lobe and broad apical projection pointing towards apex of median lobe, apical margin of projection transverse in relation to long axis of aedeagus. Females and their diagnostic characters unknown.

DESCRIPTION

Male (Fig. 1). Body relatively slender, with well marked constriction between pronotum and elytra, strongly convex, length 1.15-1.24 mm (mean 1.20 mm); pigmentation moderately light brown, vestiture slightly lighter than cuticle. Head non-modified, small, length 0.15-0.16 mm (mean 0.15 mm), width 0.30-0.31 mm (mean 0.31 mm), broadest at moderately large but strongly convex and coarsely faceted eyes; vertex and frontoclypeal region confluent, convex; supraantennal tubercles small and weakly raised. Punctures on median part of frons and vertex extremely dense and distinct but very small, punctate area surrounded on sides and posteriorly by glossy, nearly impunctate cuticle; setae relatively long and sparse, suberect. Antennae moderately long, with slender but compact proximal part and strongly broadened, 3-segmented club, length 0.53-0.55 mm (mean 0.54 mm); antennomere I ca. 1.5x as long as broad; II distinctly narrower and slightly shorter than I, 1.6x as long as broad; III-VI subequal in length and width, each distinctly narrower than II and ca. 1-1.1x as long as broad; VII barely noticeably broader and distinctly longer than VI, 1.2x as long as broad; VIII distinctly shorter and slightly broader than VII, about as long as broad; IX much broader and slightly longer than VIII, slightly broader than long; X much larger than IX, slightly broader than long; XI broader than X, about as long as IX-X together.

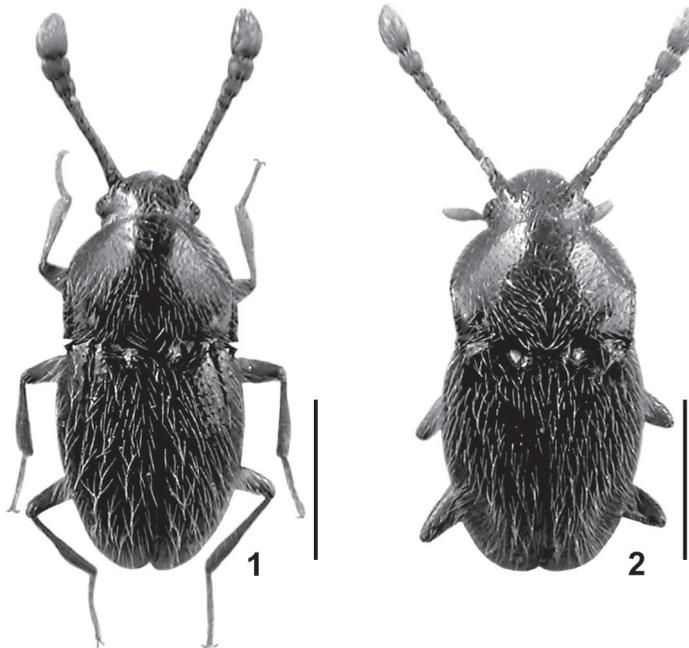
Pronotum in dorsal view semielliptical in shape, broadest near middle, length 0.38-0.40 mm (mean 0.40 mm), width 0.50-0.55 mm (mean 0.53 mm); anterior and lateral margins in anterior half strongly rounded, in posterior half sides finely microserrate,

barely noticeably rounded and very weakly convergent toward nearly right and acute hind angles; posterior margin deeply biemarginate; lateral carinae narrowly but distinctly separated from lateral margins, running in posterior 2/3 of pronotum; ante-basal pits small but distinct, each located much closer to posterior than to lateral margin of pronotum. Punctures on median part of pronotal disc extremely fine, barely discernible under magnification 80x, area near each front angle covered with much larger and very dense, but not coarse punctures; setae long and moderately dense, suberect to erect.

Elytra non-modified, oval and moderately long, broadest near anterior third, length 0.63-0.68 mm (mean 0.66 mm), width 0.50-0.55 mm (mean 0.56 mm), elytral index 1.13-1.23. Subhumeral lines carinate, short (ca. 0.3x as long as elytra) and only slightly divergent towards lateral margins of elytra; humeral denticles small but distinct; apices of elytra separately rounded. Punctures on anterior half of elytra dense and very distinct, small but with elevated margins, so that cuticle appears very coarse; setae much longer than those on pronotum, dense and strongly erect. Hind wings well developed.

Legs moderately slender and long, without peculiar characters.

Metaventricle without postmesocoxal impressions, very finely but distinctly punctate.



1-2. Dorsal habitus of male; 1 – *Cephennodes astoni* JAŁOSZYŃSKI; 2 – *Cephennodes tertius* JAŁOSZYŃSKI (scale bars: 0.5 mm)

Aedeagus (Figs. 3-4) very small, only 0.15 mm in length, *simonis*-type, with strongly projected and tapered apex of median lobe; apical projection broad, with apex directed towards apex of median lobe; parameres very slender, each with three setae.

Female. Unknown.

TYPE MATERIAL

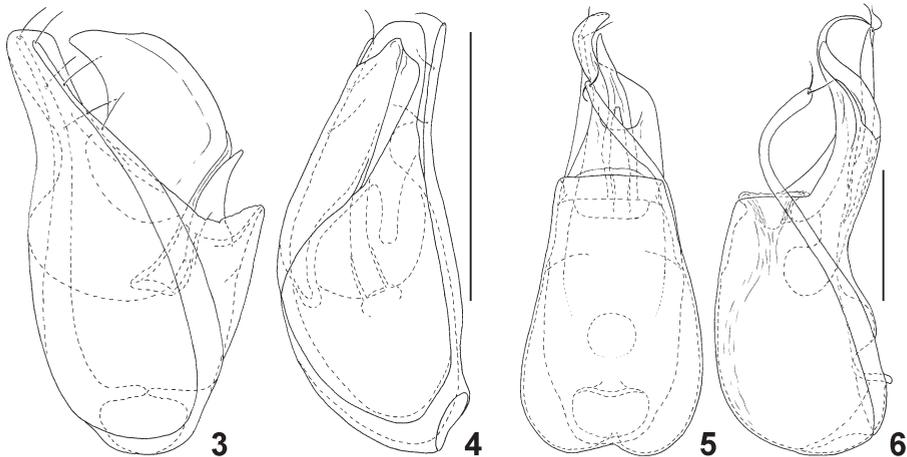
Holotype (male): "HONG KONG, LANTAU IS. \ Wang Tong, near lights \ 6 VIII 2009 \ Paul ASTON leg." [white, printed]; "*CEPHENNODES* (s. str.) *astoni* m., det. P. JAŁOSZYŃSKI, 2009, HOLOTYPUS" [red, printed] (MHNG). Paratypes (8 males): same data as holotype, each with a standard yellow identification paratype label (TLF, PCPA, PCPJ).

DISTRIBUTION

Hong Kong: Lantau Island.

REMARKS

This species is very similar to *C. lustricollis* in the general body shape, proportions of body parts, punctuation and vestiture. *Cephennodes astoni* is distinctly less glossy, especially the pronotum is not so lustrous as that in *C. lustricollis*. The major difference is the punctuation of the vertex and frons, which in *C. astoni* is composed of extremely dense and distinct but very small punctures occupying the median part of the head; this punctated area is surrounded on sides and posteriorly by glossy, nearly impunctate cuticle. In *C. lustricollis* the punctures on the frons and vertex are very fine, sparse, and evenly distributed. The aedeagi of these species differ in the shape of the apical part of the median lobe, more rounded in *C. astoni* and with distinct angles separating the apical margin from sides in *C. lustricollis*. Moreover, the apical margin



3-6. Aedeagus in dorsal (3, 5) and lateral (4, 6) views; 3-4 – *Cephennodes astoni* JAŁOSZYŃSKI; 5-6 – *Cephennodes tertius* JAŁOSZYŃSKI (scale bars: 0.1 mm)

of the apical projection in *C. astoni* is transverse in relation to the long axis of the aedeagus, whereas in *C. lustricollis* the margin is distinctly slant, and the apex of the apical projection is much narrower.

Species *incertae sedis* within *Cephennodes*

***Cephennodes tertius* n. sp.**

(Figs. 2, 5, 6)

NAME DERIVATION

The Latin numeral *tertius* means “the third”; this species is the third *Cephennodes* known to occur in Hong Kong.

DIAGNOSIS

Males of this species are unique in having shallow, oval posterior impression on each elytron, not sharply delimited from surrounding cuticle, and the median lobe of the aedeagus broadest near base, with long and slender apical hook strongly curved dorsally. Females and their diagnostic characters remain unknown.

DESCRIPTION

Male (Fig. 2). Body relatively slender, with well marked constriction between pronotum and elytra, strongly convex, length 1.18-1.23 mm (mean 1.20 mm); pigmentation light brown, vestiture slightly lighter than cuticle. Head non-modified, small, length 0.15 mm, width 0.33 mm, broadest at moderately large but strongly convex and coarsely faceted eyes; vertex and frontoclypeal region confluent and convex; supraantennal tubercles small and weakly raised. Punctures on frons and vertex dense and distinct but small and shallow, separated by spaces equal to or slightly longer than puncture diameters; setae short and sparse, suberect. Antennae very long and slender, with indistinctly delimited 3-segmented club, length 0.60-0.63 mm (mean 0.61 mm); antennomere I ca. 1.6x as long as broad; II slightly narrower and shorter than I, 1.6x as long as broad; III much narrower and shorter than II, 1.2x as long as broad; IV-VI subequal in length and width, each as broad as III but slightly longer, ca. 1.3x as long as broad; VII much longer than VI and slightly broader, nearly twice as long as broad; VIII much shorter and distinctly narrower than VII, only ca. 1.2x as long as broad; IX distinctly longer and broader than VIII, 1.4x as long as broad; X much larger than IX, ca. 1.4x as long as broad; XI broader than X, as long as IX-X together.

Pronotum approximately semielliptical in dorsal view, broadest slightly anterior to middle, length 0.38 mm, width 0.53-0.54 mm (mean 0.53 mm); anterior and lateral margins in anterior half broadly rounded, in posterior half sides finely microserrate, barely noticeably concave and strongly convergent toward sharp and acute hind angles; posterior margin deeply biemarginate; lateral carinae very narrow and not separated from lateral margins; ante-basal pits small but distinct, each located slightly closer to posterior than to lateral margin of pronotum. Punctures on pronotal disc smaller and slightly sparser than those on vertex and frons, distributed unevenly and separated by

spaces 1-2x as long as puncture diameters, punctures near each front angle much denser than those in middle, but comparably small and shallow, not coarse; setae relatively long and dense, strongly erect.

Elytra oval and moderately long, broadest near anterior third, length 0.65-0.70 mm (mean 0.68 mm), width 0.56-0.58 mm (mean 0.57 mm), elytral index 1.17-1.22. Subhumeral lines carinate, very short (ca. 0.2x as long as elytra) and strongly divergent towards lateral margins of elytra; humeral denticles prominent; each elytron bears large, oval and shallow longitudinal impression in posterior third, broadly separated from all margins, covered with very dense, fine punctures or pores and setae directed more towards sides of elytra than those on remaining surface; apices of elytra separately rounded. Punctures on non-modified parts of elytra much larger and more distinct than those on head and pronotum, small but deep and relatively sharply marked, separated by spaces 1-1.5x as long as puncture diameters, punctures are gradually smaller and shallower towards lateral and apical margins of elytra; setae on non-modified areas similar to those on pronotum but slightly longer. Hind wings well developed.

Legs moderately slender and long, without peculiar characters.

Metaventre without postmesocoxal impressions, very finely but densely punctate.

Aedeagus (Figs. 5-6) small, 0.34 mm in length, highly modified *latus*-type, with slightly asymmetrical median lobe and long, strongly asymmetrical apical complex of projections, in lateral view composed of slender apical hook strongly curved dorsally and copulatory piece curved ventrally. Dorsal wall of median lobe with deep impression and circular translucent area just above orifice. Parameres slender, with asymmetrical apices, each with two apical setae visible, and with bases possibly partly fused with the wall of median lobe.

Female. Unknown.

TYPE MATERIAL

Holotype (male): "HONG KONG, LANTAU IS. \ Wang Tong, near lights \ 23 VI 2009 \ Paul ASTON leg." [white, printed]; "*CEPHENNODES* (i. s.) *tertius* m., det. P. JAŁOSZYŃSKI, 2009, HOLOTYPUS" [red, printed] (MHNG). Paratype: 1 male, labels as in holotype, except for a standard yellow identification paratype label (TLF).

DISTRIBUTION

Hong Kong: Lantau Island.

REMARKS

Since the aedeagus of this unusual species is extremely similar to that of *C. (Aculeodes) atuin* JAŁOSZYŃSKI & NOMURA, 2009, and the female remains unknown, it is not possible to place *C. tertius* in any subgenus of *Cephennodes*. The shape of the aedeagus suggests a close relationship to *Aculeodes*, but similarities in external morphology are rather remote. The modification of the elytra in the new species is very similar to impressions in *C. (s. str.) elytratus* JAŁOSZYŃSKI, 2007b from China, but the latter species has the aedeagus distinctly different, with symmetrical parameres and

short apical projections, without the apical hook. The postero-lateral impressions in *C. elytratus* are sharply delimited from the median area of the elytra, and in *C. tertius* the transition between the convex surrounding cuticle and the concave area is gradual, not abrupt. Lateral modifications of the elytra can also be found in two species of the subgenus *Fusionodes* from Vietnam: *C. lateralis* JALOSZYŃSKI & NOMURA, 2009 and *C. pseudolateralis* JALOSZYŃSKI & NOMURA, 2009. However, their shape and placement is different than those in *C. tertius* and *C. elytratus*. The hyperdiverse aedeagi and generalized, uniform external morphology, often with bizarre male dimorphic characters, make the taxonomic study on *Cephennodes* very difficult and the current subgeneric division must be regarded as temporary, until a more comprehensive and strictly phylogeny-based classification has been developed. This, however, still requires an extensive descriptive work, due to a large number of undescribed species accumulated in various museums, many of them bearing novel informative characters that may fill gaps in potential morphoclines.

Despite the striking similarity in the shape of the aedeagus of *C. tertius* and *C. atuin*, these two species differ significantly in external characters, and can be easily distinguished solely on the basis of the body length (1.18-1.23 vs. 1.82-2.02 mm, respectively). The aedeagus of *C. atuin* is relatively larger, measuring >0.4 of the body length, whereas that in *C. tertius* is small and its length is below 0.3 of the body length. The most unusual character in *C. tertius* is the deep impression just above the orifice of the aedeagus, accompanied by a translucent circular area located above the impression. The very thin wall of the median lobe, forming the circular area, is surrounded by very thick regions, hence in dorsal view visible as a light 'window'. The parameres seem to be partly fused with the wall of the median lobe around this circular region. This structure adds up to the puzzling variety of the characters associated with the hyperdiverse aedeagus in *Cephennodes*.

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