### **DYTISCIDAE:**

# IX. Agabus suoduogangi sp.n. from northern Yünnan

## (Coleoptera)

J. ŠŤASTNÝ & A.N. NILSSON

#### Abstract

*Agabus (Acatodes) suoduogangi* sp.n. (Coleoptera: Dytiscidae) is described from the northern part of Yünnan province, China. The new species belongs to the *Agabus confinis*-group, and differs from other members of the group in the unique shape of the penis. *Agabus suoduogangi* was collected in springs and small meadow streams at an elevation of about 4000 m a.s.l.

Key words: Colcoptera, Dytiscidae, Agabus, taxonomy, new species, China.

#### Introduction

As presently delimited, the chiefly Holarctic genus *Agabus* LEACH includes 166 species in three subgenera (NILSSON 2001). The subgenus *Acatodes* THOMSON, characterised by a penis with a subapical spine, has 69 species in seven species-groups. In the eastern Palearctic, the subgenus is dominated by the speciose and poorly differentiated *A. confinis*- and *A. japonicus*-groups. NILSSON (1995) in a review of Chinese Dytiscidae, included four species from the *A. confinis*- and 11 species from the *A. japonicus*-group. The *A. japonicus*-group differs from the *A. confinis*-group chiefly in its more oval body shape and shorter, more robust hind legs (ZIMMERMANN 1934; *A. confinis*-group = his *A. congener*-group plus *A. confinis*). Especially the *A. japonicus*-group needs to be revised. The Palearctic members of the *A. confinis*-group were reviewed by NILSSON (1990), who overlooked *A. turcmenus* GUIGNOT, known from Kyrgyzstan and westernmost China.

Recently, the senior author collected a very distinct, new species of the *A. confinis*-group in Yünnan (China). The species is described herein.

#### Material, methods & abbreviations

ANIC	coll. Anders N. Nilsson, Umeå
JSTC	coll. Jaroslav Šťastný, Liberec
NMW	Naturhistorisches Museum Wien
MW	maximum width measured across widest point of elytra
PL	length of pronotum measured along midline
PMW	maximum width of pronotum
PTR	ratio of maximum width of each protarsomere 1-5 to width of protarsomere 5 at midlength, all measured in dorsal aspect
TLwH	total length without head
WC/WS	ratio of width of metacoxa (WC) along extension of line WS to maximum width of metaventrite (WS) at the point of closest approximation of metacoxa to mesocoxal cavity

Remark: We prefer to provide the body length as TLwH, because the total length including head depends on the actual orientation of head; TLwH corresponds in average to 92% of the total length.

All measurements are summarized in the following form: n = number of measured specimens, value range (mean ± standard deviation).

#### Agabus suoduogangi sp.n.

TYPE LOCALITY: 30 km east of Zhongdian, 27°48'N 99°52'E, Yünnan, China.

TYPE MATERIAL: Holotype  $\sigma$  (NMW): "China, Yünnan prov.;ca. 4000m SE ZHONGDIAN; 99°52' 27°48' flat valley, small slowly flowing stream ca. 2m wide;muddy; with plants 11.-12.10.1999, leg. J. Šťastný [printed]". **Paratypes:** nos. 1-28  $\sigma\sigma$  and 32-43  $\varphi \varphi$ : same data as holotype. Paratypes 29-31  $\sigma\sigma$  and 44-47  $\varphi \varphi$ : "China, Yünnan prov.; 30 km SE Zhongdian; 27°48'N/99°52'E; ca. 4000m a.s.l.; ground water pools, sandy-gravel; 11.-12.x.1999; leg. J. Šťastný [printed]". Paratypes are deposited in the following collections: nos. 1, 32, 43 (NMW); nos. 2, 3, 33, 34 (ANIC); nos. 4-31, 35-42, 44-47 (JSTC).

All specimens are provided with a red, black-framed label with the following printed text: HOLOTYPUS, or PARATYPUS [with no. and symbols for male or female], *Agabus suoduogangi* sp. n., J. Šťastný & A. Nilsson det. 2000. In the holotype, segments 4 - 11 of the left antenna and segments 4 - 5 of the left protarsus broke off when the specimen was sent to NMW; these parts are now glued separately.

DESCRIPTION: Body moderately large (within *Agabus confinis* group), elongate oval; lateral outline weakly curved with weak constriction at level of pronotal base in dorsal aspect (Fig. 1).

Measurements:  $(n = 10 \text{ d d} \text{ and } 10 \text{ }_{Q \text{ }_{Q}})$ . TLwH = 7.3 - 7.97 mm (7.61 ± 0.21 mm) (holotype: TLwH = 7.8 mm), MW = 4.3 - 4.6 mm (4.41 ± 0.08 mm) (holotype: MW = 4.5 mm), TLwH/MW = 1.65 - 1.84 mm (1.73 ± 0.04 mm) (holotype: TLwH/MW = 1.73).

**Male. Colour.** Head black; two posteromedial spots and narrow anterior margin of clypeus rufous; labrum brown; antenna testaceous basally, antennomeres 3 or 4-11 brown to piceous apically; palpi testaceous, apical palpomere of each palpus infuscate in at least distal half. Pronotum black with narrow lateral bead and anterolateral angle dark rufous to piceous. Elytron dark brown to piceous, lateral margin, epipleuron and humeral angle light rufo-testaceous. Ventral surface mainly black; posterior margin of metacoxal process and ventrites 3-6 rufous. Legs rufo-piceous, femora piceous to black, hind legs darkened.

Surface sculpture and setation. Dorsal reticulation simple; reticulation of head consisting of meshes of irregular size and shape, occasionally with central micropuncture. Frons anteriorly between eyes with two small double punctures and two large, shallow depressions; anterior margin of each depression connected to frontoclypeal suture. Clypeus with anterior bead more or less continuous. Pronotum medially with small meshes of varied size and shape: on average more longitudinally stretched anteriorly and more rounded and smaller laterally; anterior marginal row of punctures interrupted medially, the gap not wider than length of antennomere 4; anterior fine bead absent in central third; posterior row broadly interrupted medially, punctures in some specimens with very fine setae; lateral bead relatively narrow. Elytra relatively shiny, reticulation consisting of meshes of varying shape and size, some meshes with central punctures; two discal and one lateral series of punctures distinct on each elytron. Ventral surface: genae with longitudinally elongate meshes; gula laterally punctate. Prosternum rugose, prosternal process glabrous and finely punctate. Sculpture of metaventrite lightly impressed; metacoxal plates with dense longitudinal lines forming irregular longitudinal meshes, which are rugose or with irregular secondary lines. Abdominal ventrites with fine longitudinal transverse strioles; ventrite 6 subrugose and sparsely punctate in posterior third. Metafemur ventrally with fine longitudinal reticulation and sparse micropunctures. Metatibia ventrally with fine transverse reticulation, anteroventral margin with row of oblong punctures, disc with very fine sparse micropunctures; metafemur and metatibia coarsely punctate; profemur and protibia sparsely and finely punctate. Metatarsomere 1 with 3-5 posteroventral spines.

**Structural characters.** Head moderately broad, basal width about 0.6 PMW. Pronotum broad, PMW/PL 2.50 – 2.54, with sides weakly curved, posterior angles obtuse; prosternal process various in cross section, flat or indistinctly convex, lateral beading well-defined, apex sharply pointed. Metaventrite with anteromedian impression almost attaining level of hind margin of mesocoxae; metaventral wing broad, WC/WS 2.02 – 2.33. Pro- and mesotarsomeres 1 - 3 relatively broadly dilated (PTR = 2.1 : 1.8 : 1.5 : 1.1 : 1), ventrally with transverse rows of oval suckers; protarsal claws elongate and similar in shape, somewhat longer than protarsomere 5, posterior claw very slightly shorter than anterior; metatarsomere 1 is 1.42 times as long as the longer tibial spur, metatarsal claws equal in length, arcuate.

Genitalia. Median lobe (Fig. 2) with subapical ventral spine in lateral view, subparallel-sided with apex twisted to left in dorsal aspect, in lateral view broadened in apical third, ventral surface in median part almost straight, rounded near base. Parameres (Fig. 3) in basal part sclerotized, with narrow apical appendage with long setation.

SEXUAL DIMORPHISM: Females differ from males in the following characters: meshes of dorsal surface reticulation simple, large and more deeply engraved; appearing less shiny; ventrite 6 more rugose and punctures posteriorly confluent, forming small longitudinal wrinkles, pro- and mesotarsomeres 1 - 3 not dilated and without adhesive setae; metatibia and –tarsus without ventral row of swimming hairs; gonocoxa as in Fig. 4.

VARIABILITY: The type series shows variation in body size and shape of the median lobe in lateral aspect.

DIFFERENTIAL DIAGNOSIS: By its habitus and bifid median lobe, *Agabus suoduogangi* belongs to the *A. confinis* species group as delimited by NILSSON (2001). It is a distinct species that can be distinguished easily from other members of the group by the characteristic shape of the median lobe and parameres (cf. drawings in NILSSON 1990).

COLLECTION CIRCUMSTANCES: All specimens were collected in a flat mountain valley with many helocrenes and small, slowly flowing meadow streams. The beetles were found mainly in the littoral zone of the streams that were ca. 2 m wide, with a layer of fine mud on the bottom and relatively dense macrovegetation (*Batrachium* sp.). Most of the beetles were burrowing in fine muddy substrate. Some specimens were collected in the flowing water; they were swimming or hiding in detritus. Several specimens were found in groundwater pools with sandy-gravelly bottom; this is probably a secondary habitat for migrating individuals.

ETYMOLOGY: The epithet refers to the river Suoduogang, that flows through the valley in which the type locality is located.

KNOWN DISTRIBUTION: Known only from a small area in the valley around the type locality in the northern part of Yünnan (southern China). This is the first record of the *A. confinis*-group from Yünnan.

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Fig. 1: *Agabus suoduogangi*, habitus of male. Not to scale.
Figs. 2 - 5: *Agabus suoduogangi*: 2) median lobe of aedeagus, lateral view; 3) left paramere, lateral view;
4) gonocoxa; 5) male protarsal claws, anterior aspect.

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Jaroslav ŠŤASTNÝ

Kosmonautů 359, CZ - 460 05 Liberec, Czech Republic (stastnyj@jergym.hiedu.cz; skauting@mybox.cz)

Anders N. NILSSON

Department of Biology and Environmental Science, University of Umeå, S - 901 87 Umeå, Sweden (anders.nilsson@bmg.umu.se)

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