

# Stuttgarter Beiträge zur Naturkunde

## Serie A (Biologie)

Herausgeber:

Staatliches Museum für Naturkunde, Rosenstein 1, D-70191 Stuttgart

Stuttgarter Beitr. Naturk.	Ser. A	Nr. 653	7 S., 12 Abb.	Stuttgart, 8. XI. 2003
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## Two new species of *Scaphidema* Redtenbacher (Coleoptera: Tenebrionidae) from Nepal and China<sup>1</sup>

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### Abstract

Two new species of the genus *Scaphidema* Redtenbacher, 1849, are described and figured: *S. schmidti* n. sp. from Nepal/Rolwaling, and *S. sichuanum* n. sp. from China/Sichuan. The Himalayan species has an unarmed pronotal lateral margin like the western Palaearctic species *S. metallicum*, whereas most of the Chinese-Taiwanese-Japanese species have a distinct angle apically at the pronotal margin. Species of *Scaphidema* have either an aedeagus with short penis hidden by the parameres, or with a long penis distinctly surpassing the parameres. Thus it might be possible that *Scaphidema* is not monophyletic, additionally the separation from *Spiloscapa* Bates, 1873, is still unclear.

Key words: Coleoptera, Tenebrionidae, *Scaphidema*, new species, Nepal, China, taxonomy.

### Zusammenfassung

Zwei neue Arten der Gattung *Scaphidema* Redtenbacher, 1849, werden beschrieben und abgebildet: *S. schmidti* n. sp. aus Nepal/Rolwaling, und *S. sichuanum* n. sp. aus China/Sichuan. Die himalayatische Art hat einen unbewehrten Pronotum-Seitenrand wie die westpaläarktische Art *S. metallicum*, wohingegen die meisten der chinesisch-taiwanesisch-japanischen Arten einen auffälligen Zahn vorne am Pronotum-Seitenrand besitzen. Die Arten der Gattung *Scaphidema* besitzen entweder einen Aedoeagus mit kurzem Penis, bedeckt durch die Parameren oder einen langen Penis, der die Parameren deutlich überragt. Deshalb erscheint es möglich, dass *Scaphidema* nicht monophyletisch ist, außerdem ist die Abgrenzung von *Spiloscapa* Bates, 1873, noch unklar.

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<sup>1</sup> Contributions to Tenebrionidae, no. 43. – For no. 42 see Acta Zoologica Academiae scientiarum Hungaricae 48: 197–202.

## 1 Introduction

The genus *Scaphidema* Redtenbacher, 1849 (type species *Mycetophagus metallicus* Fabricius, 1792) of the Tenebrionidae subfamily Diaperinae as yet contains 18 species, distributed in the Holarctic Region (see checklist, chapter 4). The type species has a wider distribution in the western Palaearctic, whereas the other species populate smaller areas in the eastern Palaearctic, and a single species is distributed in northern America. KASZAB (1975) revised the genus and the last species has been added by MASUMOTO & AKITA (2001). In the present paper, a new species from Nepal (first record of the genus in the Himalayas), and a new species from Sichuan (second species known from China) are described.

### Acronyms of depositories

NHMB	Naturhistorisches Museum Basel, Switzerland
NME	Naturkundemuseum Erfurt, Germany
SMNS	Staatliches Museum für Naturkunde Stuttgart, Germany

### Acknowledgements

I thank Dr. DANIEL BURCKHARDT (Basel) and MATTHIAS HARTMANN (Erfurt) for the loan of material under their care, and Dr. ROLAND GRIMM (Tübingen) and MARTIN LILLIG (Saarbrücken) for the critical reading of the manuscript.

## 2 Descriptions of new species

### 2.1 *Scaphidema schmidti* n. sp. (Figs. 1–3)

Holotype (♂): Nepal, Dolakha Distr., Rolwaling Valley, Dugong Kharka, 2700–2900 m, 17.V.2000, leg. J. SCHMIDT, NME.

**Etymology:** Named after JOACHIM SCHMIDT (Rostock, Germany), collector of the holotype, and specialist of Himalayan Carabidae.

**Description:** Dorsal side (Fig. 1) ferruginous with distinct metallic shine, without lighter colour pattern on the elytra. Head with somewhat denser and coarser punctation than on pronotum; shape of the antennomeres see Fig. 2, antennomere 3 twice as long as antennomere 2, antennomere 4 also prolonged. Pronotum with fine punctation, punctures basally bigger than on disc; anterior margin unbordered in the middle and swollen, lateral margin completely bordered, this border somewhat prolonged on the basal margin; lateral margin apically without angle, anterior corners not protruding; propleura without punctation. Elytron with only 8 irregular rows of punctures without striae, third row with about 45 punctures, these punctures bigger than on pronotum; intervals flat, with scattered punctures of the same size as on pronotal disk; lateral margin dorsally visible nearly on the total length, hidden only at the tip; epipleura without punctation. Abdominal ventrites with punctation denser than on metasternum; metasternum with short setation, abdominal ventrites without setation; last visible ventrite unbordered. Legs without peculiarities. Aedeagus see Fig. 3, joint parameres triangular, penis completely covered by the parameres. Body length 5.0 mm.

**Diagnosis:** *Scaphidema schmidti* n. sp. shares with the western Palaearctic species *metallicum* (Figs. 4–6, ♂ from Germany, Augsburg, 16.X.1987, leg. A. RIEDEL, SMNS) the metallic dorsal side without any lighter colour pattern on the

elytra, and the lack of an angle apically at the lateral pronotal margin. It can be separated from *metallicum* by a completely different aedeagus (Figs. 3, 6), by a different shape of the pronotum without protruding anterior corners (Figs. 1, 4), and by slender basal antennomeres (Figs. 2, 5).

Remarks: The single male represents the first record of the genus *Scaphidema* in the Himalayas and the southernmost record of the genus in Asia, being collected in the remote Rolwaling Valley in *Quercus-Rhododendron*-forest.

## 2.2 *Scaphidema sichuanum* n. sp. (Figs. 7–9)

Holotype (♂): China, W Sichuan, Gongga Shan, Hailuogou, 2900–3200 m, 3.–6. VII.1994, leg. J. FARCAČ & D. KRÁL, NHMB.

Paratypes: Same data as holotype, 3 ex. NHMB, 2 ex. SMNS.

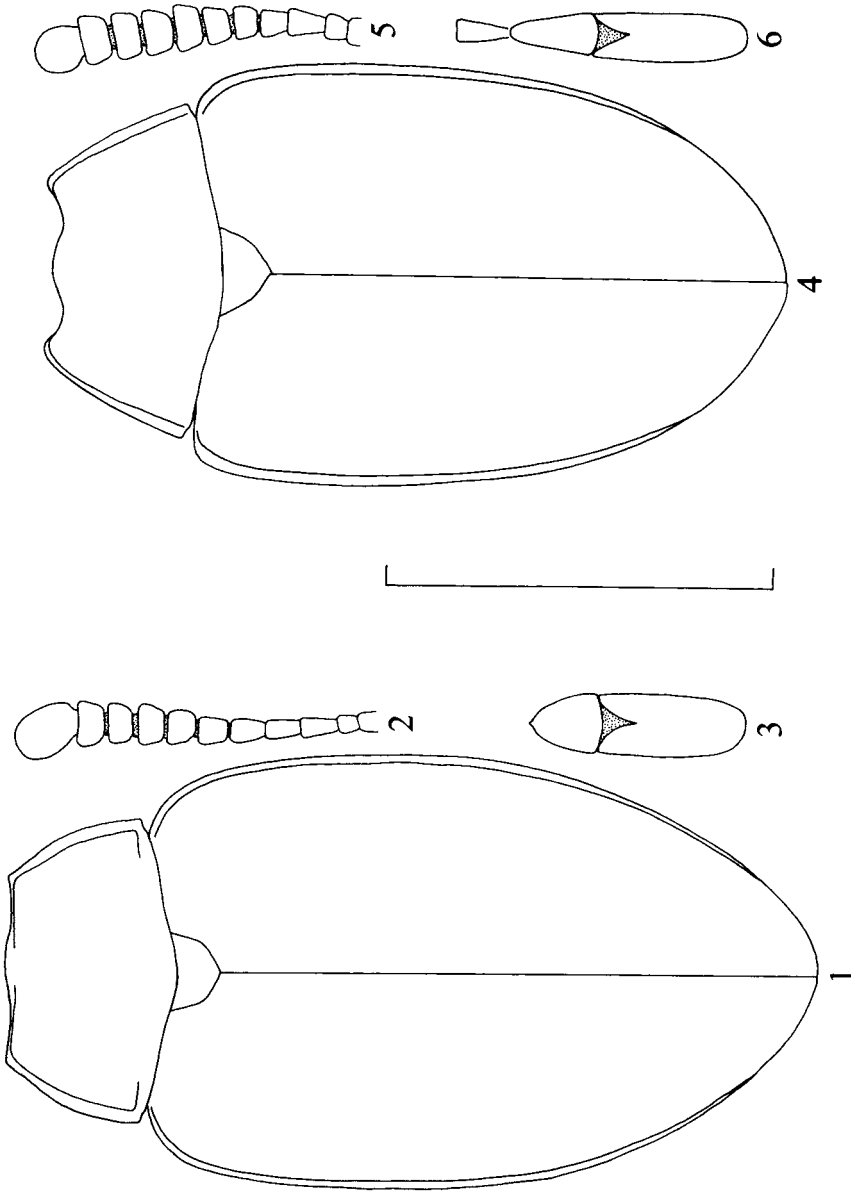
Etymology: Named after the Chinese province Sichuan, where the type series has been collected.

Description: Dorsal side (Fig. 7) blackish with feeble metallic shine, elytra with a narrow, crenate, light yellow band behind the shoulders not reaching the suture. Head with punctuation distinctly denser and coarser than on pronotum; shape of the antennomeres see Fig. 8, antennomere 3 short, antennomere 4 short and widened. Pronotum with fine and equal punctuation; anterior margin unbordered and swollen in the middle, lateral margin completely bordered, this border not prolonged on the basal margin; lateral margin apically with angle, anterior corners not protruding; propleura with similar punctuation as on disc. Elytron with only 8 irregular rows of punctures without striae, third row with about 42 punctures, these punctures somewhat bigger than on pronotum; intervals flat, with scattered punctures of smaller size as on pronotal disk; lateral margin dorsally visible nearly on the total length, hidden only at the tip; epipleura without punctuation. Abdominal ventrites with punctuation denser than on metasternum; metasternum with short setation, abdominal ventrites without setation; last visible ventrite unbordered. Legs without peculiarities. Aedeagus see Fig. 9, joint parameres spade-like, penis completely covered by the parameres. Body length 3.3–3.8 mm.

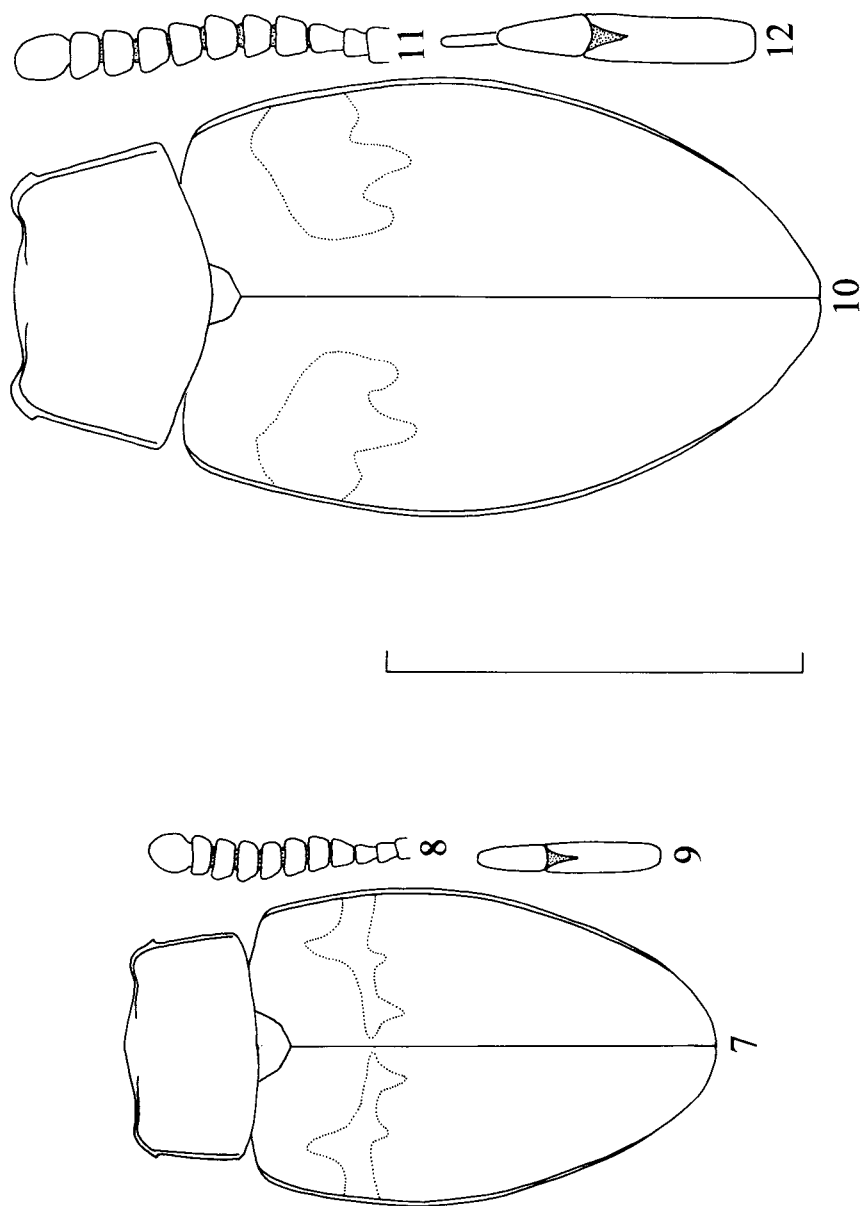
Diagnosis: *Scaphidema sichuanum* n. sp. shares with the Japanese species *ornatellum* (Figs. 10–12, ♂ from Japan, Ehime, 13. VIII.1980, leg. I. LÖBL, SMNS) the elytral colour pattern (light band only in the basal part) and the angle on the pronotal lateral margin. It can be separated from *ornatellum* by a completely different aedeagus (Figs. 9, 12), by a narrower elytral band (Figs. 7, 10), by absolutely flat intervals (slightly convex in *ornatellum*), and by a smaller body size (5 mm in *ornatellum*). The other known species from China, *angustatum*, does not have a colour pattern (according to KASZAB 1975).

## 3 Discussion

The separation of *Scaphidema* from the quite similar (?related) genus *Spiloscapa* Bates, 1873, from the adjacent Oriental and Papuan regions, is still unclear (SCHAWALLER 1997). Additionally, it is doubtful whether *Scaphidema* is monophyletic or not. Most species (for example *discalis*, *haruhiae*, *hiranoi*, *insularis*, *kondo*, *ornatellum*, *sichuanum* n. sp.) have the lateral margin of the pronotum apically



Figs. 1-6. *Scaphidema* spp. - 1-3. *S. schmidti* n. sp., ♂ holotype. 1. Dorsal view. 2. Antenna. 3. Aedeagus. - 4-6. *S. metallicum*, Germany. 4. Dorsal view. 5. Antenna. 6. Aedeagus. - Scale line: 2.5 mm.



Figs. 7–12. *Scaphidema* spp. – 7–9. *S. sichuanum* n. sp., ♂ holotype. 7. Dorsal view. 8. Antenna. 9. Aedeagus. – 10–12. *S. ornatellum*, Japan. 10. Dorsal view. 11. Antenna. 12. Aedeagus. – Scale line: 2.5 mm.

with a distinct angle, in a few other species (for example in the type species *metallicum* as well as in *kbnzoriani*, *schmidti* n. sp.) this lateral margin is unarmed. The general shape of the aedeagus shows at least two groups: species with the penis distinctly surpassing the parameres (for example in the type species *metallicum* as well as in *hiranoi*, *ornatellum*), and species with a short penis completely covered by the parameres (*schmidti* n. sp., *sichuanum* n. sp.). At the present state of knowledge these differences are not considered as generic.

It is striking, that the Himalayan species has an unarmed pronotal lateral margin as the western Palaearctic species *metallicum*, whereas most of the Chinese-Taiwanese-Japanese species have a distinct angle apically at the pronotal margin. If we consider this angle as a synapomorphic character for these species, *schmidti* n. sp. belongs to a different group together with *metallicum*. However, the phylogenetic grouping within the genus might be completely different if the structure of the aedeagus is considered as basic phylogenetic character; in this case species with or without pronotal angle would be joined (for example *metallicum* and *hiranoi*). Unfortunately the structure of the aedeagus is unknown in most of the other species.

TRIPLEHORN (1965: fig. 19) figured in his review of the North American Diaperini the aedeagus of *Scaphidema metallicum* with a triangular tip of the joint parameres, but all examined males of the present author have the parameres with a round tip as figured herein (Fig. 6). It cannot be decided here whether this difference reflects a certain infraspecific variation of this character or is based on a mistake in that paper. The second character of the aedeagus, namely the length of the penis (long and surpassing the parameres or short and covered by the parameres) might depend on the state of extension, then this character should not be used for taxonomic purposes.

#### 4 Checklist of the species of *Scaphidema*

<i>aeneolum</i> LeConte, 1850 ( <i>Nelites</i> )	N America
<i>aikoeae</i> Chûjô, 1983	Japan (Yakushima Is.)
<i>angustatum</i> Pic, 1935	China
<i>discale</i> Lewis, 1894	Japan
<i>formosanum</i> Masumoto, 1982	Taiwan
<i>haruhiae</i> Chûjô, 1985	Japan (Tsushima Is.)
<i>hiranoi</i> Masumoto & Akita, 2001	Japan (Ryukyu Is.)
<i>insularis</i> Medvedev & Kompanceva, 1989	E Siberia (Sachalin)
<i>kayokoae</i> Chûjô, 1992	S Korea (Chejodo Is.)
<i>kbnzoriani</i> Kaszab, 1975	E Siberia
<i>kondoi</i> Nakane, 1968	Japan (Ryukyu Is.)
<i>metallicum</i> Fabricius, 1792 ( <i>Mycetophagus</i> )	Europe, W Siberia
<i>michihidei</i> Chûjô & Lee, 1993	S Korea
<i>nigricorne</i> Lewis, 1894	Japan (Honshu)
<i>ornatellum</i> Lewis, 1894	Japan
<i>pictipenne</i> Lewis, 1894	Japan
<i>rousi</i> Picka, 1983	Caucasus
<i>schmidti</i> n. sp.	Himalayas (Nepal)
<i>sichuanum</i> n. sp.	China (Sichuan)
<i>trimaculatum</i> Chûjô, 1968	Taiwan

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Manuscript received: 16. VI.2003, accepted: 7. VII.2003.

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ISSN 0341-0145

Autoren-Richtlinien: <http://www.naturkundemuseum-bw.de/stuttgart/schriften>  
Schriftleitung: Dr. Hans-Peter Tschornig, Rosenstein 1, 70191 Stuttgart  
Gesamtherstellung: Gulde-Druck GmbH, 72072 Tübingen