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## Taxonomic review of the *Scopaeus obscuripes* CAMERON, 1931 species group (Coleoptera: Staphylinidae: Paederinae)

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### Abstract

The *Scopaeus obscuripes* species group is defined. It comprises *S. kabakovi* GUSAROV (Afghanistan, Pakistan), *S. likovskyi* BOHÁČ (Tadzhikistan) and *S. obscuripes* CAMERON (India: Siwalik Range, Kashmir), which are illustrated and redescribed using external morphological, genital and meristic characters. A lectotype is designated for *S. obscuripes*.

**Key words:** Coleoptera, Staphylinidae, Paederinae, *Scopaeus*, Afghanistan, India, Pakistan, Tadzhikistan, taxonomy.

### Introduction

The characteristic structural type of the aedeagus of *Scopaeus* ERICHSON (Staphylinidae: Paederinae) was shown by FRISCH (1994). The phallobasis bears two distal apical lobes and a dorsal lobe and two basal lateral lobes, which are possibly homologous to the parameres. An endophallic spine, which projects from the phallobasis and is more or less orientated ventrad, obviously carries the gonoduct, which is clearly visible under the microscope. This endophallic spine is rather small and inconspicuous in most groups of related species of *Scopaeus*, but in *S. obscuripes* CAMERON from northwestern India and *S. kabakovi* GUSAROV from the Hindu Kush Mountains in Afghanistan and Pakistan it is remarkably enlarged and projects from the apical lobes. Moreover, these latter species are distinguished from other *Scopaeus* species by the completely reduced dorsal lobe. Both the remarkable endophallic spine and the absence of the dorsal lobe of the aedeagus appear apomorphic and are used here to define a *S. obscuripes* species group. *Scopaeus likovskyi* BOHÁČ from Tadzhikistan agrees in the remarkable endophallic spine. The species is included as well, although its dorsal lobe is not vestigial although discernibly shortened. The three species of the *S. obscuripes* group share further characters, which occur in several other groups of related species and are therefore not useful in defining a monophyletic group. These are: head with slightly widened tempora and a straight hind margin; aedeagus without lateral lobes and bearing large, prominent lateral lobes; male abdominal sternite 8 with a triangular, distal emargination and two longitudinal, lateral impressions without setae, which are divided by an elevated middle field. The parts of the spermatheca are conspicuously triangular.

On the basis of type material, *Scopaeus kabakovi*, *S. likovskyi* and *S. obscuripes* are redescribed and illustrated. Further distributional data are provided, and a lectotype is designated for *S. obscuripes*.

### Material and methods

The terminology of the aedeagal structures used here is that of FRISCH (1994), and the genital sclerites and the spermatheca are named as in FRISCH (1996) and UHLIG (1989). Abdominal

sclerites are counted from the morphological first segment. Specimens were measured using a binocular microscope with an eye-piece linear micrometer. Measurements and ratios are defined as follows: total length = interval from the apical margin of the mandibles to the end of the abdomen; forebody length = interval from the apical margin of the mandibles to the posterior margin of the elytra at suture; length of head = interval from the apical margin of the clypeus to the posterior margin; HLW = head length : head width; PLW = pronotal length : pronotal width; HPW = width of head : pronotal width; HPL = length of head : pronotal length; PSL = pronotal length : elytral sutural length (excluding scutellum); PLL = pronotal length : elytral lateral length; ELW = elytral lateral length : elytral width; ET = eye length : temporal length (both measured laterally); MT = mesotibial length : mesotibial width; A = length (measured without the basal and distal tapering) : width of the antennal segments 1 - 11; T = length : width of the central area (between sclerite margins) of tergite 10; V = length : width of the central area of the female valve.

### *Scopaeus obscuripes* CAMERON, 1931

(Figs. 1 - 3, 10, 13, 16, 19, 22)

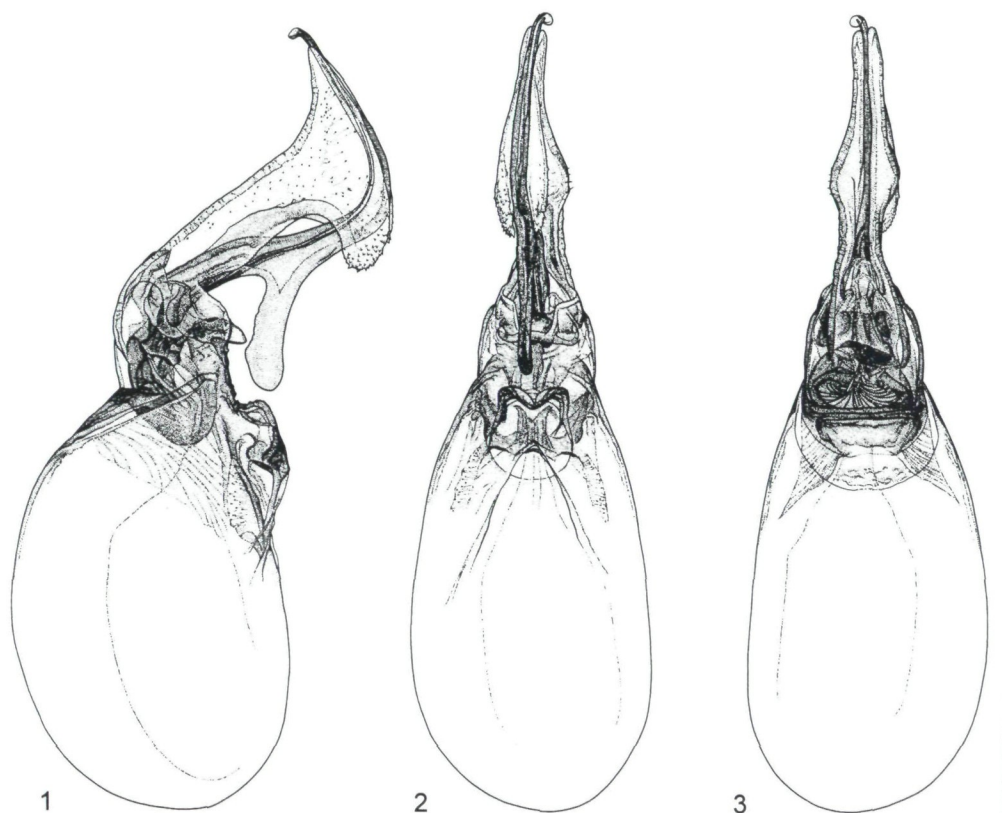
*Scopaeus obscuripes* CAMERON 1931: 173.

**Lectotype** ♂: "Chakrata Dist. Jadi Gad 7000' / Dr. Cameron. 9.V.22. / Bequest. B.M. 1955-147. / *obscuripes* (handwritten) / LECTOTYPUS *Scopaeus* ERICHSON *obscuripes* CAMERON des. J. Frisch 1998" (The Natural History Museum, London); here designated (examined). **Paralectotype** ♀: "Fagu 8000' Simla Hills. / Dr. Cameron. 1 - IX. 1921. / M. Cameron. Bequest. B.M. 1955-147. / PARALECTOTYPUS *Scopaeus* ERICHSON *obscuripes* CAMERON des. J. Frisch 1998" (The Natural History Museum, London); examined.

Additional material: 2 ♀♀, Kashmir (The Natural History Museum, London).

**DESCRIPTION.** Length 4.3 - 4.4 mm; forebody 2.0 - 2.1 mm. Dark coloured species. Forebody unicolorously blackish brown, abdomen notably darker, segments 8 - 10 slightly lighter brown. Appendages uniformly brown. Punctuation distinct, reticulation of the forebody rather obsolete, therefore somewhat shining. Head about 1.1 times as long as wide and almost 1.1 times as wide as pronotum, having slightly widened tempora, rather rounded hind angles and a straight posterior margin. Eyes somewhat longer than half the length of the tempora. Membranous wings entire. Elytra laterally exceeding pronotal length by almost a fifth, at suture about as long as pronotum. Protarsomeres 1 - 4 in both sexes twice as wide as long. Mesotibia slender. Antennae rather slender with quadrate distal antennomeres. Laterotergite 9 (Fig. 13) with a small, truncate, apico-dorsal tooth and a conspicuously short-toothed apex.

**Male.** Sternite 8 (Fig. 10) with a shallow, triangular emargination in about the distal fifth, which has the median third strongly concave and the lateral thirds straight, and with two oblong, distal, mediolateral impressions, which are lighter coloured, lacking setae and divided by a broad, strongly sclerotized, elevated middle field, which bears fine setae and is distinct from the lateral impressions. Aedeagus (Figs. 1 - 3) having slightly asymmetrical apical lobes, a vestigial dorsal lobe and a remarkable endophallic spine. Apical lobes slightly shorter than phallobasis, bent ventrad at basis, then almost parallel but in apical fourth each dilated into a remarkable dorsal tooth and a large, rounded ventral extension which is finely serrate apically; apical margins evenly convex. Apical lobes conspicuously slender in dorsal view, their outer margins notched and evenly narrowed in the basal half, then notably convex, with some short setae and evenly narrowed toward the parallel-sided distal fourth. Dorsal lobe strongly reduced to a weakly sclerotized vestige, which somewhat projects from the basal portion of the apical lobes. Endophallic spine remarkably elongate, notably dilated in lateral view but very narrow in dorsal view, in basal half extended into a conspicuous, proximally orientated, parallel-sided process, in the distal third strongly curved dorsad and somewhat projecting from the apico-dorsal teeth of the apical lobes. A short, triangular endophallic process projects from the ventral margins of the apical lobes. Phallobasis with lateral groups of short setae.



Figs. 1 - 3: *Scopaeus obscuripes*, ♂, lectotype: aedeagus in 1) lateral, 2) ventral, 3) dorsal view. Scale bar = 0.1 mm.

Female. Parts of the spermatheca (Fig. 22) straight but shortly bent apically and conspicuously dilated triangularly. Valvula (♀) rather slender, almost eight times as long as wide.

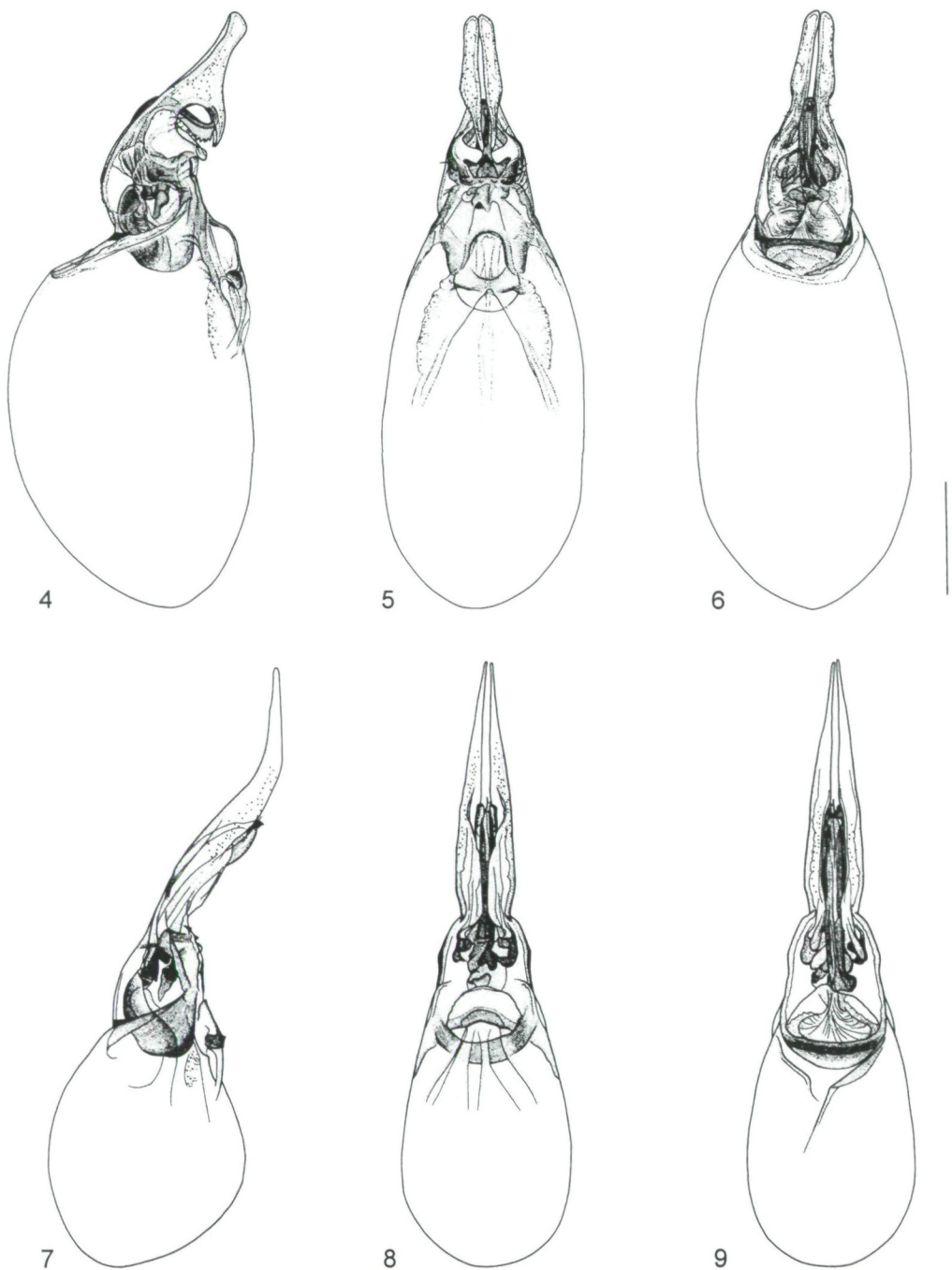
Ratios (4 specimens). HLW 1.11 - 1.13; PLW 1.23 - 1.24; HPW 1.08 - 1.09; HPL 0.98 - 0.99; PSL 0.95 - 1.0; PLL 0.8 - 0.82; ELW 1.19 - 1.22; ET 0.55 - 0.58; MT 5.7 - 5.8; A 2.5, 1.7, 1.7, 1.4, 1.2, 1.1, 1.0, 1.0, 1.0, 0.9, 1.4; T 2.3; V (♀) 7.7.

GEOGRAPHICAL DISTRIBUTION. *Scopaeus obscuripes* is recorded only from the Siwalik Range and Kashmir in northwestern India.

***Scopaeus kabakovi* GUSAROV, 1994**  
(Figs. 4 - 6, 11, 14, 17, 20, 23)

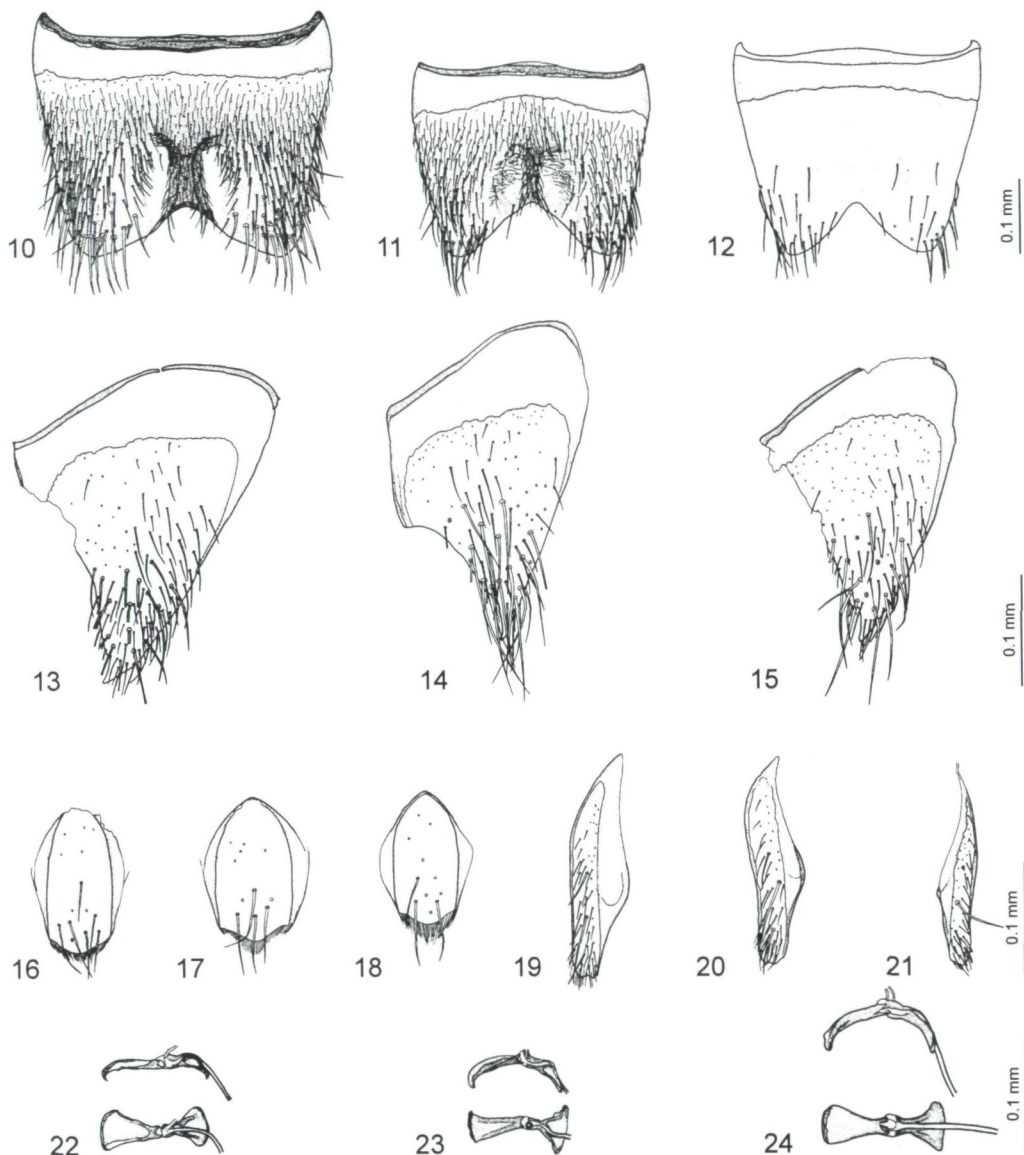
*Scopaeus* (*Hyposcopaeus*) *kabakovi* GUSAROV 1994: 437.

**Holotype** ♂: "Afghan. Nurestan S Capa-Dara 1500 m 29.5.1971 Kabakov / Holotypus ♂ *Scopaeus kabakovi* V. Gusarov 1992 (handwritten) / collection of the Zoological Institute, Academy of Sciences, St. Petersburg, Russia"; examined. **Paratype** ♂: "Afghan. Nurestan SW Capa-Dara 1500 m 9.6.1971 Kabakov / Paratypus ♂ *Scopaeus kabakovi* V. Gusarov 1992 (handwritten) / collection of V.I. Gusarov"; examined. The aedeagi of both type specimens are in a plastic tube mounted on the insect pin.



Figs. 4 - 6: *Scopaes kabakovi*, ♂, Pakistan, Kohistan: aedeagus in 4) lateral, 5) ventral, 6) dorsal view. Scale bar = 0.1 mm.

Figs. 7 - 9: *Scopaes likovskyi*, ♂, holotype: aedeagus in 7) lateral, 8) ventral, 9) dorsal view. Scale bar = 0.1 mm.



Figs. 10 - 24: *Scopaeus obscuripes*, ♂, lectotype: 10) sternite 8. ♀, paralectotype: 13) lateral tergite 9, 16) tergite 10, 19) valve, 22) spermatheca. *Scopaeus kabakovi*, ♂, Pakistan, Kohistan: 11) sternite 8. ♀, Pakistan, Kohistan: 14) lateral tergite 9, 17) tergite 10, 20) valve, 23) spermatheca. *Scopaeus likovskyi*, ♂, holotype: 12) sternite 8 (fine primary setae omitted). ♀, paralectotype: 15) lateral tergite 9, 18) tergite 10, 21) valve, 24) spermatheca.

Additional material: 20 specimens, Pakistan, Northwest Frontier, Kohistan (coll. J. Frisch, Gießen; Muséum d'Histoire naturelle, Genève).

**DESCRIPTION.** Length 3.0 - 3.2 mm; forebody 1.6 - 1.9 mm. Forebody and appendages light yellowish brown, abdomen except segments 8 - 10 somewhat darker brown. Forebody distinctly

shining with distinct punctation and completely reduced reticulation. Head with slightly widened tempora, rather rounded hind angles and a straight posterior margin, slightly more than 1.1 times as long as wide and up to 1.1 times as wide as pronotum. Eyes about half as long as tempora. Membranous wings entire. Length of the elytra variable, laterally from 1.1 times up to almost 1.25 times as long as pronotum, at the suture slightly shorter than pronotum or up to about 1.1 times as long. Protarsomeres 1 - 4 in both sexes twice as wide as long. Mesotibia slender. Distal antennomeres somewhat transverse. Laterotergite 9 (Fig. 14) with an obtuse, dorsal dilatation.

Male. Sternite 8 (Fig. 11) with a triangular emargination in about the distal third, which has the lateral margins somewhat concave but slightly convex in the proximal third, and with two deep, oblong, mediolateral impressions distally, which are lighter coloured and lacking setae, and divided by a narrow, strongly elevated middle field, which bears fine setae and has lateral margins distinct from the lateral impressions. Aedeagus (Figs. 4 - 6) with a completely reduced dorsal lobe, a remarkably extended endophallic spine and an enlarged phallobasis. Apical lobes about half as long as phallobasis, their dorsal margins serrate at basis, weakly bent distally but notably concave in the distal third. Ventral margins each with a parallel, truncate, basal extension and a distinct, proximally bent tooth at the beginning of the distal third, which forms a deep, circular, median emargination. Distal third of the apical lobes evenly narrowed, slender, but notably widened toward the obliquely truncate apices in lateral view. Apical lobes in the basal third evenly narrowed toward the acute proximal apices in ventral view but almost parallel in the distal two thirds with rounded distal apices. Endophallic spine conspicuously elongate, reaching half the length of the apical lobes, bent almost at right-angle ventrad but recurved at apex and bearing a serrate, ventral dilatation, which is visible in the median emargination of the apical lobes. Phallobasis bearing lateral groups of short setae.

Female. Valvula very slender, almost seven times as long as wide. Parts of the spermatheca (Fig. 23) evenly bent, chamber remarkably triangular.

Ratios (10 specimens). HLW 1.11 - 1.13; PLW 1.17 - 1.23; HPW 1.03 - 1.11; HPL 0.99 - 1.03; PSL 0.97 - 1.13; PLL 0.78 - 0.91; ELW 1.13 - 1.24; ET 0.51 - 0.56; MT 5.6 - 5.7; A 2.0, 1.3, 1.3, 1.3, 1.1, 1.0, 0.9, 0.9, 0.9, 0.9, 1.7; T 1.8; V (♀) 6.7.

GEOGRAPHICAL DISTRIBUTION. *Scopaeus kabakovi* is known only from Nurestan (Afghanistan) and Kohistan (Pakistan) in the southern Hindu Kush Mountains.

COMMENTS. *Scopaeus kabakovi* was collected between 1300 and 2700 m above sea level.

***Scopaeus likovskyi* BOHÁČ, 1988**  
(Figs. 7 - 10, 12, 15, 18, 21, 24)

*Scopaeus (Asiascopaeus) likovskyi* BOHÁČ 1988: 441.

**Holotype** ♂: " USSR - Tajikistan Rīsar Mt. Takob, 3000 m J. Boháč lgt. IV. 83 / Holotypus / *Scopaeus likovskyi* n. sp. J. Boháč det." (coll. J. Boháč, České Budějovice); examined. **Paratype** ♀: " USSR - Tajikistan Rīsar Mt. Takob, 3000 m J. Boháč lgt. IV. 83 / Paratypus / *Scopaeus likovskyi* n. sp. J. Boháč det." (coll. J. Boháč, České Budějovice); examined.

**DESCRIPTION.** Length 3.0 mm; forebody 1.8 mm. Head brown, pronotum and elytra somewhat lighter brown, the latter darker in the basal fourth except for the humeral callus. Abdomen blackish, segments 8 - 10 lighter. Appendages unicolorously light brown. Punctation distinct, reticulation of the forebody rather obsolete, therefore somewhat shining. Head with slightly widened tempora, rather rounded hind angles and a straight posterior margin, about 1.1 times as long as wide and 1.1 times as wide as pronotum. Eyes rather small, less than half as long as tempora. Membranous wings entire. Elytra laterally exceeding pronotal length by almost a fifth, elytra along suture as long as pronotum. Protarsomeres 1 - 4 in both sexes twice as wide as long. Mesotibia slender. Antennae rather slender with square distal antennomeres. Laterotergite 9 (Fig. 15) with a small, apico-dorsal tooth.



Male. Distal fourth of male sternite 8 (Fig. 12) with a triangular emargination, which has the lateral margins slightly convex. Sternite bearing two oblique, oblong impressions in the distal third, which are lighter coloured and lack fine setae, and are divided by an elevated middle field. Aedeagus (Figs. 7 - 10) with strongly extended, conspicuously slender apical lobes, a short dorsal lobe and a remarkable endophallic spine. Apical lobes as long as phallobasis, about seven times as long as wide, almost parallel-sided proximally, evenly narrowed and somewhat bent dorsad in the distal third. Outer margins of the apical lobes evenly narrowed toward the acute apices in dorsal view, inner margins running parallel-sided and somewhat closer together in the distal half. Apical lobes in ventral view extended toward each other at basis, followed by a median emargination. Dorsal lobe only half as long as apical lobes, evenly bent ventrad in lateral view, parallel and concave apically in dorsal view. Apex of the dorsal lobe with two ventro-lateral projections, which form an acute apex in lateral view, which is slightly emarginate ventrally and somewhat projects from the ventral margins of the apical lobes. Endophallic spine conspicuously extended, slightly longer than dorsal lobe. Phallobasis without lateral groups of short setae.

Female. Valvula conspicuously slender, nine times as long as wide. Spermatheca (Fig. 24) with parts evenly bent and strongly dilated triangularly.

Ratios (holotype). HLW 1.11; PLW 1.22; HPW 1.1; HPL 1.02; PSL 1.0; PLL 0.85; ELW 1.18; ET 0.44; A 2.7, 1.2, 1.4, 1.2, 1.2, 1.2, 1.0, 1.0, 1.0, 1.0, 2.0; T 2.0; V (♀) 9.0.

GEOGRAPHICAL DISTRIBUTION. *Scopaeus likovskyi* is known only from the type locality.

COMMENTS. In contradiction to the view of BOHÁČ (1988), *S. likovskyi* does not belong to the subgenus *Asiascopaeus* COIFFAIT, whose members have completely different aedeagal features.

### Acknowledgements

My sincere thanks are due to J. Boháč (Česke Budějovice), M.J.D. Brendell (The Natural History Museum, London), V. Gusarov (St. Petersburg), A.G. Kirejtshuk (Zoological Institute - Academy of Sciences, St. Petersburg), and I. Löbl (Muséum d'Histoire naturelle, Genève) who friendly provided specimens of *Scopaeus*. I am also indebted to P.M. Hammond (The Natural History Museum, London) for proof-reading the manuscript, and to V. Wolters, University of Gießen, who kindly supported my work in many ways. I thank the Studienstiftung des Deutschen Volkes, Bonn, for the financial support of my Ph.D. thesis.

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