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## A new species of *Sphaerites* (Coleoptera: Sphaeritidae) from China

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*Sphaerites nitidus* sp.n. (Coleoptera: Sphaeritidae) from southern China is described and compared with the three previously described members of the genus. *Sphaerites glabratus* (FABRICIUS) and *S. politus* MANNERHEIM may be reliably distinguished by the shape of the male metatrochanters. *Sphaerites glabratus* occurs in Japan. Records of *S. politus* from eastern Palaearctic are possibly based on misidentification. New records are given for *S. dimidiatus* JUREČEK.

Key words: Coleoptera, Sphaeritidae, taxonomy, China

### INTRODUCTION

Sphaeritidae is a small group of primitive Histeroidea, based on a single genus, *Sphaerites* DUFTSCHMID, currently including three species. *Sphaerites glabratus* (FABRICIUS) is widespread from western Europe throughout Sibiria, Transbaikalia, Russia, Mongolia to Far East Russia (KRYZHANOVSKY, 1989). Adults of *S. glabratus* are found on stumps, particularly on birch stumps, feeding on sap (NIKITSKY, 1976), occasionally under bark, on fungi, in moist vegetational debris, in shells of dead molluscs, in dung, and may be attracted by strongly smelling cheese. *Sphaerites politus* is a species known to occur in western North America, from Alaska to California, and has been recorded also from Far East Russia and Japan (KRYZHANOVSKY & REICHARDT, 1976; KRYZHANOVSKY 1989). However, these authors doubted the correctness of the Japanese records. Adults of *S. politus* have been found in compost and bear dung (HATCH, 1961). The third species of the genus is *S. dimidiatus* JUREČEK from Sichuan, poorly known and under-represented in collections.

NIKITSKY (1976) and NEWTON (1991) described the larva of *S. glabratus*, and NIKITSKY (1976) discussed the relationships of *Sphaerites* with other constituent families of the Histeroidea. This group has recently been placed within the Hydrophiloidea (NEWTON, 1991; LAWRENCE & NEWTON, 1995).

*Sphaerites glabratus* and *S. politus* are very similar and have been placed in synonymy by SCHENKLING (1931). KRYZHANOVSKY & REICHARDT (1976) provided the most recent account on the taxonomy of the Sphaeritidae and a key to the species. They have distinguished these two species by the shape of the pronotum and of the pronotal lateral striae. However, their statements are based on examination of a single specimen of *S. politus*. *Sphaerites dimidiatus* differs conspicuously by the color pattern and may be readily recognized.

Recently, the Muséum d'histoire naturelle in Geneva obtained from Dr. A. SMETANA, Ottawa, a collection of Chinese beetles, including three specimens of *Sphaerites*. One of them possesses the diagnostic characters of *S. dimidiatus*, as described in JUREČEK (1934). The two other specimens are superficially similar to *S. glabratus* and *S. politus*, but closer examination revealed numerous distinctive cha-

racters. These two specimens represent a new species which is described below. At this occasion, attention has been addressed to means of reliable identification of adult *Sphaerites*, based on morphological, and not distributional, features.

## SYSTEMATICS

*Sphaerites nitidus* sp.n.

Holotype ♂: China, Sichuan, Gongga Shan, above Camp 2, 2850 m, 26.VII. 1994, A. SMETANA (C25). Paratype ♀: same data as holotype but 2800 m (C26). Both in Muséum d'histoire naturelle, Geneva.

Length 6.3–6.7 mm. Head black, with or without metallic shine. Pygidium, scutellum, appendices, and ventral surface black and without metallic shine, or ventral surface partly very dark reddish. Pronotum black with blue, and elytra with violet metallic shine, or head, pronotum and elytra with uniform green metallic shine.

Head with frons very finely and fairly sparsely punctate, punctation becoming gradually coarser and denser posteriorly; irregular and consisting of elongate, well delimited punctures on middle portion of occiput, bearing extremely short pubescence.

Prementum in female about 2.6 times as wide as long (index 90/35), not inflexed and not impressed, slightly convex, with anterior margin not raised, and a stria along posterior margin.

Prementum in male about 1.8 times as wide as long (index 95/45), inflexed obliquely, slightly impressed, with anterior margin strongly arcuate and irregularly raised.

Mentum fused with gula, inflexed obliquely and in angle with prementum, slightly vaulted, strongly narrowed posteriorly; anterior edge evenly concave, one irregular row of moderately long, erect setiform sensilla, and with finely rugose grooves along posterior portions of lateral edges. Punctation consisting of irregular, coarse punctures bearing short sensilla; intervals between punctures extremely finely micropunctate. Posterior, narrow portion of mentum and/or of anterior portion of gula, flat and smooth.

Postgenae with sparse and fine punctation, partly smooth near mouthparts, obliquely ridged behind eyes. Gula strongly narrowed anteriorly; lateral edges strongly margined except anteriorly, anterior portion of lateral edges indicated by a fine stria. Gula with irregular, deep, transverse wrinkles becoming gradually smaller and more shallow from posterior edge toward middle, absent from anterior half of gula; with distinct microsculpture consisting of transverse striae evanescent anteriorly. Gular punctation irregular and coarse, punctures well visible in middle, partly in creases and concealed posteriorly. Pubescence short, hardly raising from punctures on anterior half of gula, becoming gradually longer posteriorly, moderately long and recumbent near posterior edge of gula. Ventral, neck-like, portion of head delimited by a line slightly sinuate, smooth mesally, coarsely punctate on area behind level of eyes, with punctures arranged in transverse rows near posterior edge and along gular edge, bearing recumbent pubescence. Cervical sclerites large, triangular.

Pronotum 1.7–1.8 mm long in middle, 3.2–3.6 mm wide at base. Basal edge sinuate, with a very dense row of fine punctures; basal angles obtuse, bearing a few minute denticles. Lateral edge almost straight in basal third, slightly and evenly arcuate between basal third and apical angle; lateral stria deep and wide, gradually converging to edge from mid-length toward apical angle. Apical angles broadly

rounded, with numerous minute denticles. Discal punctation sparse, extremely fine on most of surface, becoming distinctly coarser near lateral edges, with largest punctures relatively small, smaller than those on frons.

Scutellum about 1.3 times as wide as long, flat, extremely finely punctate.

Elytra 3.8 mm long along suture, combined 3.8–4.0 mm wide. Elytron with low humeral and subapical protuberances. Puncture rows (from suture laterad) 1 to 3 shortened anteriorly, 4 and 5 starting near basal edge, 6 to 9 starting behind humeral protuberance. Puncture rows becoming indistinct near elytral apex. One short additional puncture row present laterally of humeral protuberance. Punctation between puncture rows extremely fine, as that on scutellum and on most of pronotal disc. Marginal groove distinctly punctate, marginal edge raised to form a ridge. Epipleuron irregularly, very finely and sparsely punctate, with marginal ridge narrowed toward apex.

Prosternum almost entirely rugose. Punctures bearing recumbent setae orientated posteriorly present only on medioposterior portion of prosternum. Anterior and lateral edges slightly raised, lateral edge arcuate; setae along anterior edge long, yellow, horizontal. Posterior edge of prosternum sinuate, pubescent laterally.

Hypomeron with longitudinal ridges and several punctures bearing long erect setae near coxal processes; micropunctate on, and lacking setiferous punctures from, most surface; with several fine punctures bearing very short setae situated near apical prosternal angles.

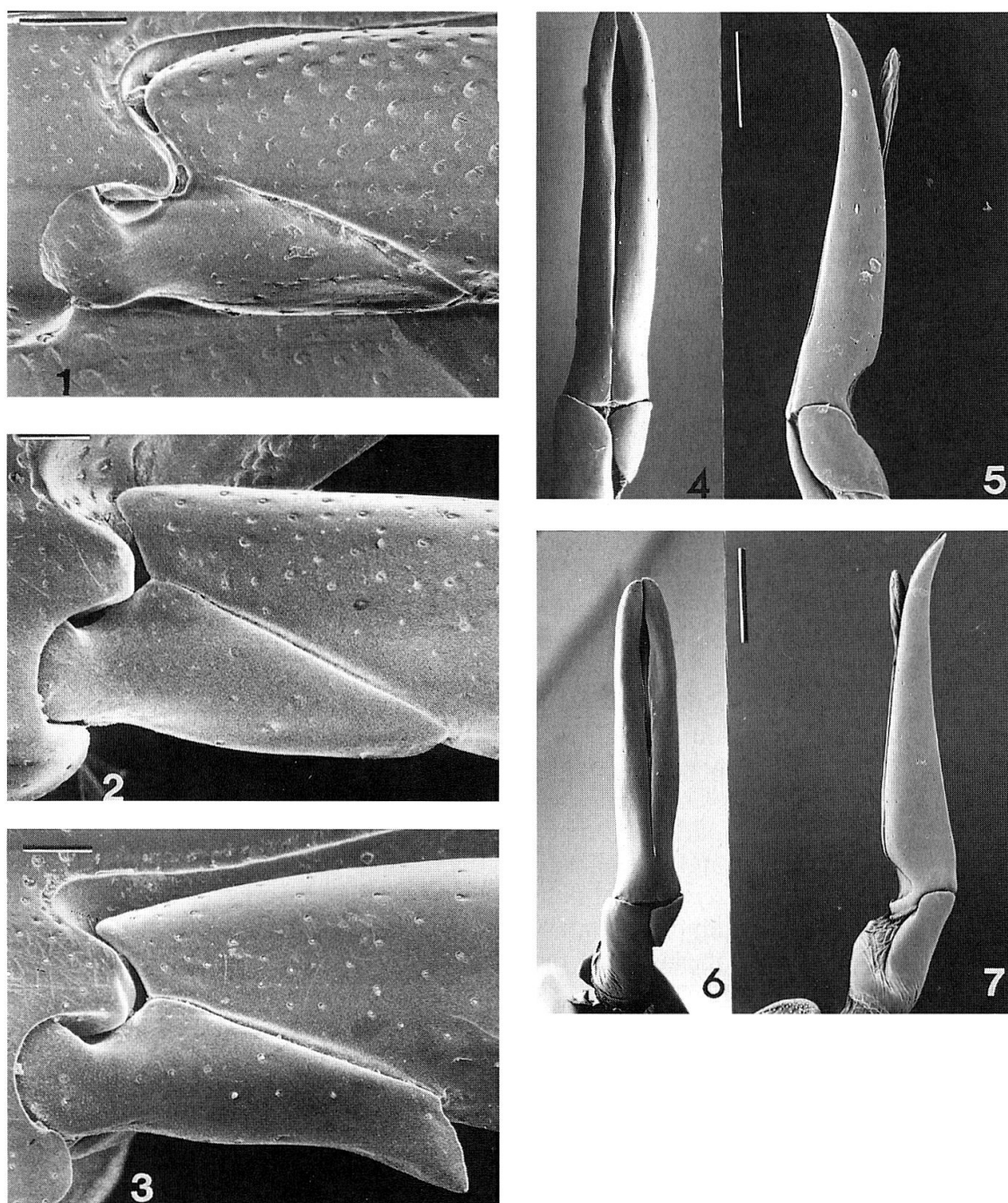
Mesosternal shield almost vertical; with impunctate mesal portion widened toward prepectus, most surface coarsely punctate and bearing short pubescence. Intercostal process slightly vaulted, with slightly arcuate posterior edge; rugose, with rather indistinct punctures situated at edges of sinuate or arcuate ridges. Prepectus impunctate, raised in middle, with shallow median depression. Mesepisternum impunctate near lateral and posterior margins, coarsely and densely punctate on remaining surface; pubescence distinct only on anterior portion.

Metasternum with anterior edge raised to form a strong mesocoxal ridge gradually widened toward mesosternal process; mesocoxal ridge margined by short striae. Mesal metasternal stria very fine and short. Transverse groove shallow, rugose, interrupted at level of posterior intercoxal process. Posterior metacoxal process narrowly notched. Most of metasternal surface covered by micropunctures. Metasternal punctation fine, with extremely short sensilla not raising out of punctures, and with a few long, erect setae situated near middle portion of mesocoxal ridge. Punctures near lateral edges of metasternum distinctly larger than those in middle of metasternum, but very shallow.

Metepisternum with punctures large and dense, partly very narrowly separated. Punctures on metepimeron smaller and less dense than those on metepisternum.

Procoxa flattened anteriorly, smooth near trochanter; microsculpture conspicuous and very dense on most of procoxa, much more coarse than that on other parts of appendices; setiferous punctures limited to inner portion of procoxa.

Protochanter with a dense subapical tuft of erect setae. Anterior side of profemur with irregular, fine punctation, apparently lacking pubescence. Posterior side of profemur with coarse punctures arranged in two or three irregular rows, each puncture bearing a short stout seta. Protibia with apical spurs subequal, curved. Mesotrochanter with a tuft of long erect setae. Mesotibia and metatibia with inner apical spur 2 times as long and distinctly stouter than outer apical spur. Ventral side of mesofemur coarsely punctate, some punctures bearing very short stout seta. Meta-trochanter entirely adjacent (Fig. 1), lacking setae. Punctation on metafemur simi-



Figs 1–3. Metatrochanters; 1. *S. nitidus*, scale bar = 0.2 mm; 2. *S. glabratus*, scale bar = 0.1 mm; 3. *S. politus*, scale bar = 0.1 mm. – Figs 4–7. Aedeagi; 4 and 5. *S. glabratus*; 5. and 6. *S. politus*; scale bars = 0.2 mm.

lar to that on mesofemur but with setae extremely short, not raising out of punctures.

Pygidium with punctation dense and fairly coarse near base, becoming gradually sparser and finer toward apex. Abdominal ventrites finely, almost evenly, punctate, finely micropunctate. First visible sternite with sparse, very fine, fairly long setae; remaining sternites apparently lacking pubescence (pubescence present but extremely short, not raising out of punctures).



Male genital segments and aedeagus similar as those in *S. glabratus* and *S. politus*. Aedeagus 1.4 mm long, 0.22 wide (dorsally), slightly flattened laterally. Median lobe 4.3 times as long as wide, subcylindrical between subbasal notch and middle, then narrowed toward tip, barely curved.

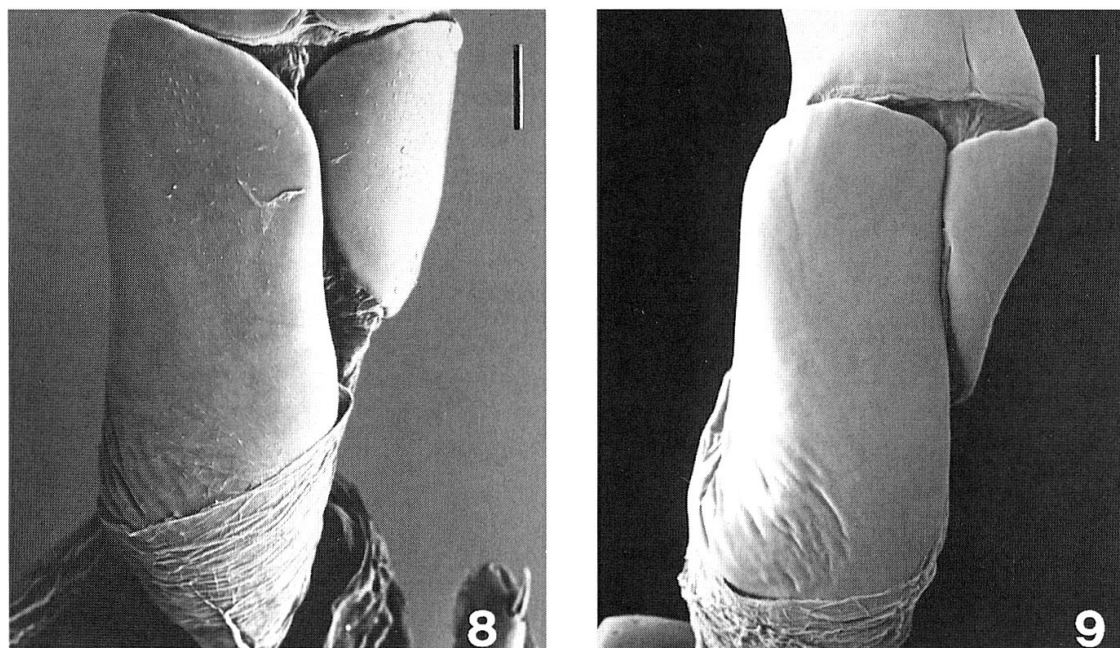
## DISCUSSION

*Sphaerites nitidus* differs from *S. glabratus* and *S. politus*, and is like *S. dimidiatus*, in having the gular grooves long and very deep, the horizontal portion of the prohypomera smooth, the procoxae flattened and not impressed anteriorly, the mesocoxal ridge widened mesally, the pygidium finely and almost evenly punctate, and the punctation on the last visible abdominal sternite similar to that on the preceding sternites. The eadeagus, unknown in *S. dimidiatus*, is stouter than that in *S. glabratus* and *S. politus*, not tapering and not distinctly curved as in those species.

*Sphaerites dimidiatus* may be easily distinguished from the congeners by the conspicuous color pattern (body black, anterior half of the elytra yellow or ochreous). In addition, it differs from *S. nitidus* by the elytra lacking protuberances, the elytral puncture rows 1 to 3 starting near basal edge of the elytra, the metasternum with the transverse groove strongly shortened mesally and the metasternal punctation distinctly deeper anteriolaterally.

In addition to a specimen of *S. dimidiatus* from «Gansu, Mts. 25 km E Xiahe, 2805–2925 m, 3.VIII.1994» collected by A. SMETANA, I have examined one specimen from «China, Gansu prov. 120 km SW Langzhou Ponggantang 30.VI.–2.VII.1992, Jaroslav TURNA leg.» (Geneva) and one specimen from «China, Sichuan, Zhilong 7.92» (priv. coll. I. JENIŠ, Naklo, Czech Republic).

*Sphaerites politus* is unique in having the inner apical spur of the protibia widened and the outer metatrochanteral edge extended, projecting apically (Fig. 3). The latter feature is particularly conspicuous, and present in all (32) examined spe-



Figs 8–9. Basal portion of aedeagi; 8. *S. glabratus*; 9. *S. politus*; scale bars = 0.05 mm.

cimens from western North America. Obviously, only one species of *Sphaerites* occurs in America, and it has been consistently, correctly identified as *S. politus*. This is likely not true for specimens recorded from other areas.

*Sphaerites glabratus* is very similar to *S. politus*. In addition to the different shape of the metatrochanter (Fig. 2), it may be distinguished by the lateral portion of the metasternum more coarsely punctate. The aedeagi in these two species are also very similar, however, their shape provides diagnostic characters (Figs 4 to 9).

So far, I had the possibility to examine five East Palaearctic specimens of *Sphaerites*, which all belong to *S. glabratus*: two are from Japan and labelled «Mt. Kurodake Mts. Daisetsu 23.VII.1981, N. YASUDA leg.» (Geneva), two from «Sakhalin, found nr Nowoaleksandrowsk, Mt. Tschechowa», and one is from «Far East Russia, Ussuri, Marit. Ter., Partizansk distr., E Monakino, Moskva Valley, 28.–30. VI.1990, S. KASANTSEV» (Naturhistorisches Museum, Basel). Thus, *S. glabratus* is distributed upto Japan, and the records of *S. politus* from Japan and Far East Russia are to be reexamined as they possibly refer to *S. glabratus*.

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