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A revision of Palaearctic and Oriental *Rugilus*. III. Five new species from the Palaearctic region and additional records (Coleoptera: Staphylinidae: Paederinae)

V. ASSING

A b s t r a c t : Five species of the paederine genus *Rugilus* LEACH 1819 from the Palaearctic region are described and illustrated: *R. (Rugilus) rectus* nov.sp. (Nepal: Annapurna); *R. (R.) curvatus* nov.sp. (Nepal: Annapurna); *R. (R.) atronitidus* nov.sp. (China: Yunnan: Gaoligong Shan); *R. (R.) nitipennis* nov.sp. (China: Yunnan: Gaoligong Shan); *R. saudicus* nov.sp. (Saudi Arabia). The previously unknown male sexual characters of *R. lucens* ASSING 2012 are described and illustrated. Additional records of 21 described and one probably undescribed species are reported from the Palaearctic and Oriental regions, among them several new country records. The distributions of eight species are mapped. Including the new species, *Rugilus* is now represented in the Palaearctic and Oriental regions by 94 species and one subspecies.

K e y w o r d s : Coleoptera, Staphylinidae, Paederinae, *Rugilus*, Palaearctic region, Oriental region, new species, new records, distribution, sexual dimorphism.

Introduction

The paederine genus *Rugilus* LEACH 1819 was previously represented in the Palaearctic and Oriental regions by 89 species and one subspecies. They are currently attributed to two subgenera, the Palaearctic (or possibly Holarctic) nominate subgenus (71 species) and the probably circumtropical subgenus *Eurystilicus* FAGEL 1953 (16 species). The subgeneric affiliations of two species have not been resolved (ASSING 2012a, 2012b). A checklist and a key to the East Palaearctic and Oriental species were provided by ASSING (2012a).

Since the latest (first) supplement to the revision (ASSING 2012b), additional material has become available from various public and private collections. An examination of this material yielded as many as five undescribed species from Saudi Arabia, Nepal, and China, as well as the previously unknown male of *R. lucens* ASSING 2012. Thus, the genus is now represented in the Palaearctic and Oriental regions by 94 species. In addition, the material included new records of 21 previously described species.

Material and methods

The material treated in this paper is deposited in the following collections:

CAS.....	Chinese Academy of Sciences, Beijing
KSMA.....	King Saud University Museum of Arthropods, Riyadh
MNHUB.....	Museum für Naturkunde der Humboldt-Universität, Berlin (J. Frisch)
NHMB	Naturhistorisches Museum Basel (M. Geiser, I. Zürcher)
NHMW	Naturhistorisches Museum Wien (H. Schillhammer)
NME	Naturkundemuseum Erfurt (M. Hartmann)
SNSD	Senckenberg Naturhistorische Sammlungen Dresden (O. Jäger)
ZMUC.....	Natural History Museum Denmark/ University of Copenhagen Zoological Museum (A. Solodovnikov)
cAss.....	author's private collection
cPüt	private collection Andreas Pütz, Eisenhüttenstadt
cSch.....	private collection Michael Schülke, Berlin
cSha.....	private collection Alexey Shavrin, Daugavpils
cSme.....	private collection Aleš Smetana, Ottawa

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). A digital camera (Nikon Coolpix 995) was used for the photographs. The maps were created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the labrum to the abdominal apex, the length of the forebody from the anterior margin of the labrum to the posterior margin of the elytra, head length from the anterior margin of the frons to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

Species descriptions and additional records

***Rugilus (Rugilus) similis* (ERICHSON 1839)**

Material examined: Turkey: 1♂, Erzurum, Oltu env., 9.VI.1989, leg. Schönmann & Schillhammer (NHMW).

Comment: In Turkey, *R. similis* was previously known only from the south (ASSING 2008; ROUGEMONT 1988).

***Rugilus (Rugilus) iranicus* (COIFFAIT 1981)**

Material examined: Iran: 1♂, Mazandaran, Kolijak env., 36°28'N, 51°40'E, 1600-1850 m, 4.-5.V.2010, leg. Frenzel (cAss).

Comment: This species was described from Iran based on a female. The male sexual characters were described and illustrated by ASSING (2011) based on a male from Georgia. The above specimen is the first male recorded from Iran.

***Rugilus (Rugilus) orbiculatus* (PAYKULL 1789)**

Material examined: England: 1 ex., Essex, Stanford, 7.IX.1969, leg. Wewalka (NHMW). Iran: T e h r a n : 7 exs., N Tehran, Elburz Mts., Darake, Palanchal, 35°51'N, 51°23'E,

2250 m, 31.V.2010, leg. Frisch (MNHUB, cAss). *L o r e s t a n* : 2 exs., 35 km E Kuhdasht, Kashkan, 33°35'N, 47°53'E, 1010 m, 17.X.2011, leg. Frisch (MNHUB, cAss); 2 exs. 30 km E Kuhdasht, 33°35'N, 47°51'E, 1080 m, 17.X.2011, leg. Frisch (MNHUB, cAss); 1 ex., 15 km NE Alashtar, Mt. Garri, 33°58'N, 48°20'E, 1900 m, 16.X.2011, leg. Frisch (MNHUB). *I l a m* : 4 exs., 10 km S Ilam City, 33°34'N, 46°25'E, 1300 m, 19.X.2011, leg. Frisch (MNHUB); 2 exs., 16 km NNW Eyvan, 33°57'N, 46°14'E, 1150 m, 18.X.2011, leg. Frisch (MNHUB, cAss). *K e r m a n* : 27 exs., Bardsir-Baft, 10 km SE Qal'eh Askar, Mt. Lalehzar, 29°28'N, 56°43'E, 2950 m, 22.V.2010, leg. Frisch & Serri (MNHUB, cAss); 3 exs., Bardsir-Baft, 10 km SE Qal'eh Askar, Mt. Lalehzar, 29°26'N, 56°45'E, 3360 m, 22.V.2010, leg. Frisch & Serri (MNHUB); 2 exs., Bardsir-Baft, 14 km SE Qal'eh Askar, Mt. Lalehzar, 29°26'N, 56°44'E, 3240 m, 22.V.2010, leg. Frisch & Serri (MNHUB); 3 exs., Rayen-Darb Behesht, 2 km W Goruh, 29°21'N, 57°21'E, 2700 m, 28.V.2010, leg. Frisch (MNHUB); 1 ex., Baft-Jiroft, 25 km W Darb Behesht, 29°17'N, 57°07'E, 2360, 24.V.2010, leg. Frisch & Serri (MNHUB); 1 ex., pass Mahan-Sirch, Banan mts., 30°12'N, 57°24'E, 2800 m, 20.V.2010, leg. Frisch & Serri (MNHUB).

C o m m e n t : In Iran, this widespread and common species occurs sympatrically with the closely related and similar *R. longicollis* (FAUVEL 1900) and *R. korbi* (FAUVEL 1900) (ASSING 2011).

***Rugilus (Rugilus) longicollis* (FAUVEL 1900)**

M a t e r i a l e x a m i n e d : Iran: 4 exs., Ardabil province, E Abi Beyglu, 38°14'N, 48°40'E, 1470 m, X.2011, leg. Frisch (MNHUB, cAss); 2 exs., Ardabil province, 20 km NE Khalkhal, 37°41'N, 48°23'E, 1480 m, 13.X.2011, leg. Frisch (MNHUB).

C o m m e n t : The known distribution of *R. longicollis* includes Georgia, Azerbaijan, and Iran, where the species is widespread and present also in the south. Its distribution is mapped in ASSING (2011).

***Rugilus (Rugilus) capitalis* (GEMMINGER & HAROLD 1868)**

M a t e r i a l e x a m i n e d : Turkmenistan: 1 ex., Carsanga, 1.VI.1992, leg. Snizek (NHMW).

C o m m e n t : According to SMETANA (2004), *R. capitalis* is widespread from Middle Asia to East Siberia. ROUGEMONT (1988) reported the species from China.

***Rugilus (Rugilus) smetanai* ROUGEMONT 1998**

M a t e r i a l e x a m i n e d : Nepal: 2 exs., Annapurna, N Pokhara, ca. 4 km N Sikles, 2200 m, pitfall trap, 26.-27.IV.1996, leg. Jäger (SNSD, cAss); 2 ex., Annapurna, 5 km N Sikles, Kyojo Kharka, 2600 m, 29.IV.1996, leg. Jäger (SNSD).

C o m m e n t : The distribution of *R. smetanai* is apparently confined to the Annapurna and Manaslu ranges (ASSING 2012a).

***Rugilus (Rugilus) morvani* (ROUGEMONT 1987)**

M a t e r i a l e x a m i n e d : Nepal: 9 exs., south slope of Dhaulagiri Himal, N Banduk village, 28°28'N, 83°35'E, 1900-2300 m, 6.V.2009, leg. Schmidt (NME, cAss).

C o m m e n t : The available evidence suggests that *R. morvani* is endemic to the Dhaulagiri range (ASSING 2012a); records from other regions are probably erroneous.

***Rugilus (Rugilus) manasluensis* ASSING 2012**

M a t e r i a l e x a m i n e d : Nepal: 2 ♀♀, western Manaslu Himal, Ngadi Khola region, below Bhara Pokhari Lekh, 28°22'N, 84°30'E, 2800 m, 12.-13.V.2005, leg. Jäger (SNSD, cAss).

C o m m e n t : This recently described species is known only from the Manaslu range (ASSING 2012a, 2012b).

***Rugilus (Rugilus) quadridentatus* (COIFFAIT 1975) (Fig. 7)**

M a t e r i a l e x a m i n e d : Nepal: 5 exs., SW-Dhaulagiri, Rahughat Khola valley, SW Lete Pass, above Dwari, 28°34'N, 83°32'E, 2500 m, 12.V.2002, leg. Jäger (SNSD, cAss).

C o m m e n t : Since this species was previously known only from the environs of Pokhara, it was assumed to be endemic to the Annapurna range (ASSING 2012a). However, the above record and the discovery of two similar micropterous species in the Annapurna range suggest that *R. quadridentatus* is actually endemic to the Dhaulagiri region. The distinctive male sternite VII is illustrated in Fig. 7.

***Rugilus (Rugilus) gogonensis* (COIFFAIT 1978)**

M a t e r i a l e x a m i n e d : Nepal: 6 exs., Mechi/Taplejung, 32 km NE Taplejung, Anda Pheci-Tortong, 27°32'N, 87°55'E, 3190 m, rhododendron forest, 18.V.2003, leg. Weigel (NME, cAss).

C o m m e n t : *Rugilus gogonensis* has been recorded from several localities in eastern Nepal and in West Bengal (ASSING 2012a).

***Rugilus (Rugilus) gracilis* (EPPELSHEIM 1895)**

M a t e r i a l e x a m i n e d : India: 4 exs., Uttarakhand, left tributary of Bhagirathi river, 30°58'N, 78°42'E, 23.-26.IV.2012 leg. Shavrin (cSha, cAss); 1 ex., Uttarakhand, Bhagirathi river, 1 km W Harsli, 31°02'N, 78°43'E, 2460 m, 15.IV.2012 leg. Shavrin (cAss).

C o m m e n t : The distribution of *R. gracilis* ranges across the southern slopes of the Himalaya from Pakistan to West Bengal (ASSING 2012a).

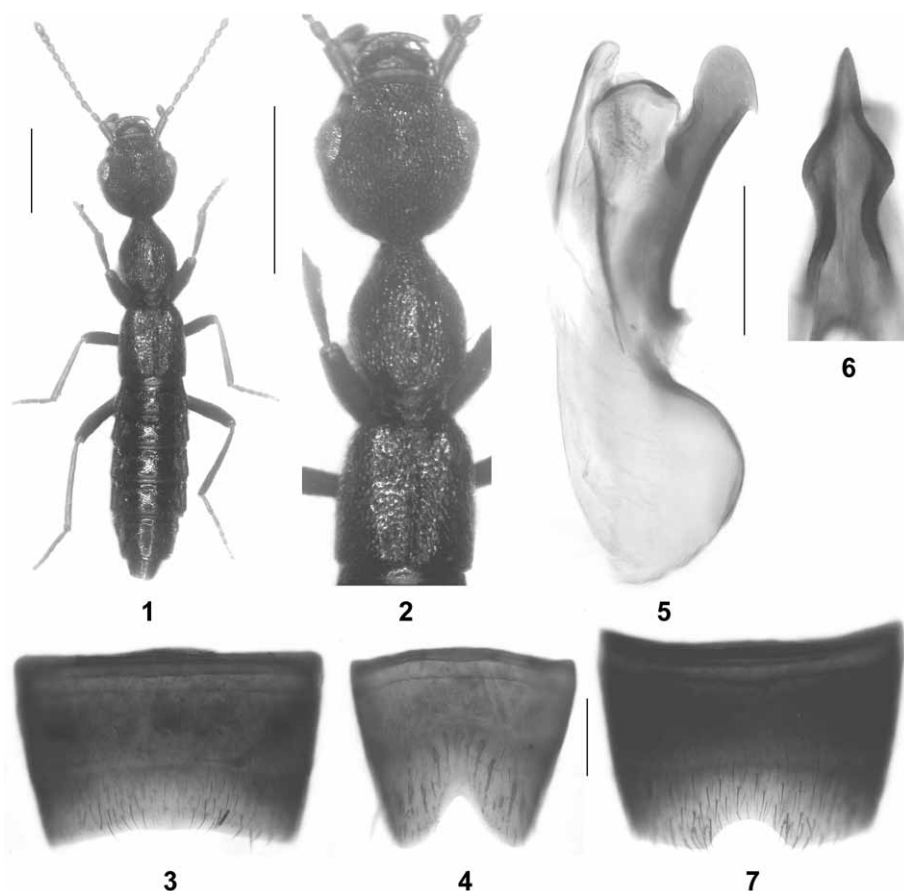
***Rugilus (Rugilus) rectus* nov.sp. (Figs 1-6)**

T y p e m a t e r i a l : Holotype ♂: "Nepal Himalaya, SE Annapurna mts., lg. Jäger, 1997 / Telbrung Danda near Gangpokhara, 2700 m, 12.-13.VI. / Holotypus ♂ *Rugilus rectus* sp. n., det. V. Assing 2012" (SNSD). Paratypes: 1 ♀: same data as holotype (cAss); 1 ♀: "Nepal Annapurna '97, 13.6. Telbrung Danda, 26-2800 m, l. Schmidt / Ankauf A. Dobbartin, Rostock 2001, Museum Dresden" (SNSD).

E t y m o l o g y : The specific epithet (Latin, adjective: straight) refers to the shape of the ventral process of the aedeagus in lateral view.

D e s c r i p t i o n : Body length 5.7-6.2 mm; length of forebody 3.1-3.3 mm. Habitus as in Fig. 1. Coloration: body blackish with very weak bronze hue; legs brown, with reddish tarsi and with apical halves of femora more or less distinctly infusate; antennae uniformly reddish or with antennomere I somewhat darker.

Head (Fig. 2) approximately as broad as long or indistinctly transverse, broadest across eyes; margins behind eyes smoothly curving towards posterior constriction in dorsal view, posterior angles obsolete; punctuation coarse and areolate, largely longitudinally confluent, and very dense; interstices reduced to very narrow ridges; surface almost matt.



Figs 1-7: *Rugilus rectus* nov.sp. (1-6) and *R. quadridentatus* (COIFFAIT) (7): (1) habitus; (2) forebody; (3, 7) male sternite VII; (4) male sternite VIII; (5) aedeagus in lateral view; (6) ventral process of aedeagus in ventral view. Scale bars: 1-2: 1.0 mm; 3-7: 0.2 mm.

Eyes large and bulging, but somewhat shorter than distance from posterior margin of eyes to posterior constriction. Anterior margin of labrum with two pronounced, basally fused teeth on either side of median incision.

Pronotum (Fig. 2) approximately 1.2 times as long as broad and approximately 0.7 times as wide as head; midline with relatively broad, but short impunctate and glossy band in posterior half; punctuation similar to that of head, but somewhat less defined.

Elytra (Fig. 2) short, 0.80-0.85 times as long as pronotum, somewhat dilated posteriad; punctuation coarse, but shallow and not very defined; interstices glossy. Metatarsomere I approximately as long as the combined length of II and III, or nearly so.

Abdomen broader than elytra; tergites III-VI with shallow impressions anteriorly, these impressions with rather coarse punctuation; punctuation of remaining tergal surfaces fine and moderately dense; interstices with very shallow microsculpture on tergites III-VI and more distinct microsculpture on tergite VII; posterior margin of tergite VII without palisade fringe.

♂: sternite VII (Fig. 3) not distinctly modified; sternite VIII (Fig. 4) with moderately deep and broadly V-shaped posterior excision; aedeagus (Figs 5-6) 0.7 mm long; ventral process almost straight and subapically with small tooth in lateral view, apically acute in ventral view.

Comparative notes: This species is distinguished from all other micropterous Himalayan representatives particularly by the male sexual characters. In the externally highly similar and geographically close *R. quadridentatus* (Dhaulagiri), the posterior margin of the male sternite VII is distinctly excised in the middle (Fig. 7), the posterior excision of the male sternite VIII is shallower and less acute basally, and the ventral process of the aedeagus is much shorter and strongly curved in lateral view. For an illustration of the aedeagus of *R. quadridentatus* see figure 9 in ASSING (2012a).

Distribution and natural history: The type specimens were collected in the Telbrung Danda, a mountain in the southeastern Annapurna range, some 30-35 km to the northeast of Pokhara, at an altitude of 2600-2800 m.

***Rugilus (Rugilus) curvatus* nov.sp. (Figs 8-12)**

Type material: Holotype ♂: "Nepal-Himal 1996, Annapurna mts., lg. Schmidt, Jäger / N-Pokhara, oberh. Chipili, 2400 m, 22.4., Nyaulikharka BG / Holotypus ♂ *Rugilus curvatus* sp.n., det. V. Assing 2012" (SNSD). Paratype ♂: "Nepal-Himal 1996, Annapurna mts., lg. Schmidt, Jäger / 5 km n. Siklis, Kyojo Kharka, 2600 mNN, 29.IV." (cAss).

Etymology: The specific epithet (Latin, adjective: curved) refers to the shape of the ventral process of the aedeagus in lateral view.

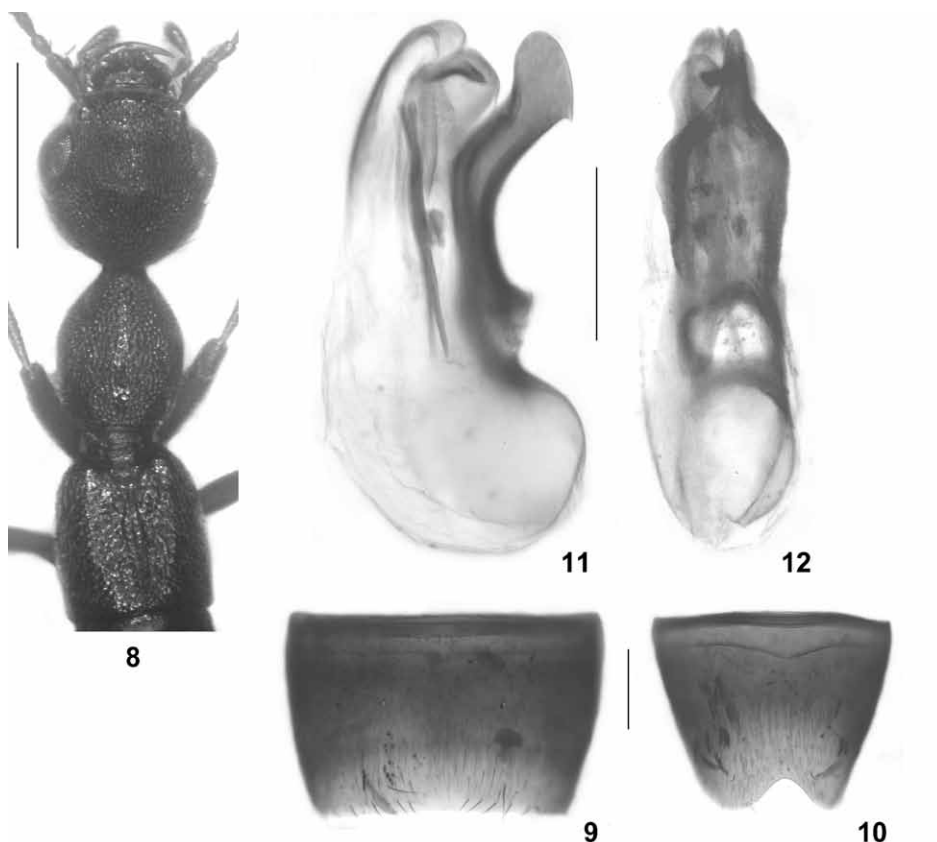
Description: Body length 5.2-5.3 mm; length of forebody 2.9-3.0 mm. Externally similar to *R. rectus*, but distinguished as follows:

Head (Fig. 8) 1.06-1.08 times as broad as long; punctuation less extensively confluent.

♂: sternite VII (Fig. 9) not distinctly modified; sternite VIII (Fig. 10) with not very deep, broadly V-shaped posterior excision; aedeagus (Figs 11-12) 0.65 mm long; ventral process strongly curved in lateral view, apically acute in ventral view.

Comparative notes: As can be inferred from the similar external and male sexual characters, *R. curvatus* is closely allied to *R. quadridentatus* (Dhaulagiri) and *R. rectus* (Annapurna). From the former, it is distinguished by the absence of a median posterior excision of the male sternite VII, the different shape of the posterior excision of the male sternite VIII, and by the differently shaped ventral process of the aedeagus. From the latter, it differs by the much shallower posterior excision of the male sternite VIII and by the much shorter and distinctly curved ventral process of the aedeagus. For additional characters separating it from *R. rectus* see the description above. For illustrations of the male sexual characters of *R. quadridentatus* see Fig. 7 and ASSING (2012a).

Distribution and natural history: The type specimens were found in two localities in the southern Annapurna range, some 15-20 km to the north of Pokhara, at altitudes of 2400 and 2600 m.



Figs 8-12: *Rugilus curvatus* nov.sp.: (8) forebody; (9) male sternite VII; (10) male sternite VIII; (11) aedeagus in lateral view; (12) aedeagus in ventral view. Scale bars: 8: 1.0 mm; 9-12: 0.2 mm.

***Rugilus (Rugilus) aquilinus* ASSING 2012**

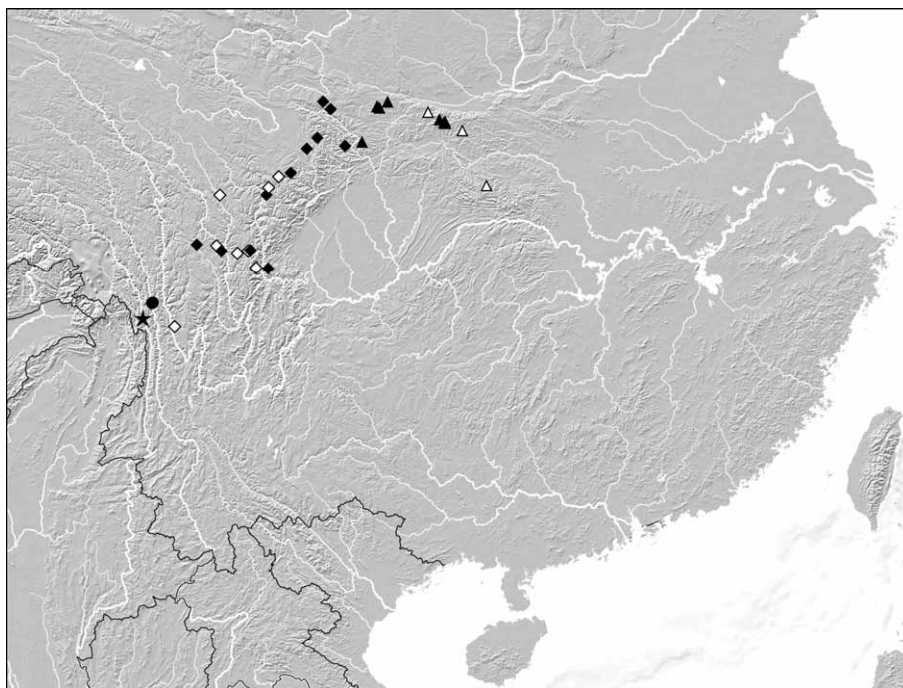
Material examined: China: 1 ex., Sichuan, Emei Shan, 29°34'N, 103°21'E, 1800-2400 m, sifted, 27.VI-5.VII.2009, leg. Grebennikov (cAss).

Comment: The above specimen was collected at the type locality, together with the types (ASSING 2012b).

***Rugilus (Rugilus) parvincisus* ASSING 2012**

Material examined: China: 2 exs., Yunnan, Yulongxue Shan, 27°01'N, 100°12'E, 2900-3500 m, 24.-26.V.1993, leg. Kubán (NHMB, cAss).

Comment: The known distribution of this species is confined to the Yulongxue Shan and the Diancang Shan in northwestern Yunnan (ASSING 2012a, 2012b).



Map 1: Distributions of *Rugilus gansuensis* ROUGEOMONT (triangles), *R. confluens* ASSING (diamonds), *R. meilixuensis* ASSING (circles), and *R. atronitidus* nov.sp. (star), based on examined records. Filled symbols: male-based records; open symbols: female-based records.

Rugilus (Rugilus) gansuensis ROUGEOMONT 1998 (Map 1)

Material examined: China: Shaanxi: 11 ♀♀ [partly teneral], SW Meixian, Qinling Shan, 34°02'N, 107°24'E, 1870 m, N-slope, secondary deciduous forest, near stream, litter and grass sifted, 26.VII.2012, leg. Assing & Schülke (cAss, cSch). Gansu: 3 ♂♂, 13 ♀♀ [partly teneral], N Chengxian, W-Qinling Shan, 34°08'N, 105°47'E, 1750 m, moist valley with stream and ponds, meadow with *Artemisia*, 28.VII.2012, leg. Assing & Schülke (cAss, cSch); 2 ♂♂, 3 ♀♀ [partly teneral], N Chengxian, W-Qinling Shan, 34°08'N, 105°47'E, 1760 m, N-slope, secondary deciduous forest margin, sifted, 28.VII.2012, leg. Assing & Schülke (cAss, cSch); 1 ♀ [teneral], N Chengxian, W-Qinling Shan, 34°08'N, 105°47'E, 1760 m, heap of rotting bamboo, sifted, 28.VII.2012, leg. Assing (cAss); 4 ♂♂, 19 ♀♀ [partly teneral], N Chengxian, W-Qinling Shan, 34°10'N, 105°43'E, 1850 m, mixed secondary forest margin, litter sifted, 29.VII.2012, leg. Assing, Schülke & Wrase (cAss, cSch); 6 ♂♂, 12 ♀♀ [partly teneral], N Chengxian, W-Qinling Shan, 34°10'N, 105°42'E, 1830 m, stream valley with secondary deciduous forest, moist litter sifted, 29.VII.2012, leg. Assing, Schülke & Wrase (cAss, cSch); 1 ♂, 6 ♀♀ [partly teneral], N Chengxian, W-Qinling Shan, 34°10'N, 105°42'E, 1830 m, stream valley with secondary deciduous forest, moist litter sifted, 29.VII.2012, leg. Assing (cAss); 4 ♂♂, 5 ♀♀ [partly teneral], mountains SE Longnan, 33°11'N, 105°14'E, 2060 m, N-slope with scree, shrub litter and moss sifted, 7.VIII.2012, leg. Assing & Wrase (cAss, cSch); 1 ♀ [teneral], mountains SE Longnan, 33°11'N, 105°14'E, 2060 m, N-slope with scree, nest of *Formica chinensis* sifted, 7.VIII.2012, leg. Assing (cAss).

Comment: *Rugilus gansuensis* is widespread in the Qinling Shan westwards to the Bailong river (Map 1), its distribution parapatrically bordering on that of *R. confluens*. Previous records from the Daba Shan (ASSING 2012a) are exclusively based on females

and require confirmation. The species is subject to a pronounced sexual wing-dimorphism; males are macropterous, females micropterous. The sex ratio is strongly biased in favour of females. Only 31 (15.6 %) in a total of 199 specimens examined so far are males. Several of the above specimens are teneral (end of July, beginning of August).

***Rugilus (Rugilus) confluens* ASSING 2012** (Figs 18-22, Map 1)

Material examined: China: Sichuan: 2♂♂, 14♀♀, pass NW Songpan, 32°56'N, 103°26'E, 3600 m, moist N-slope with *Salix* and other shrubs, litter, grass roots, and moss sifted, 11.VIII.2012, leg. Assing, Schülke & Wrase (cAss, cSch); 6♂♂ [1 macropterous], 9♀♀, N Songpan, road S 301, above Gan lake, 33°15'N, 103°46'E, 2700 m, spruce forest with birch, litter, mushrooms, moss, and dead wood sifted, 12.VIII.2012, leg. Assing, Schülke & Wrase (cAss, cSch). Gansu: 2♂♂, 3♀♀ [partly teneral], W-Qinling Shan, NW Longnan, 34°03'N, 104°10'E, 2200 m, SW-slope with shrubs, litter sifted, 1.VIII.2012, leg. Assing, Schülke & Wrase (cAss, cSch); 1♂, 6♀♀, W-Qinling Shan, NW Longnan, Lazikou pass, 34°14'32"N, 103°54'29"E, 3000 m, N-slope, pasture with shrubs, litter sifted, 2.VIII.2012, leg. Assing & Schülke (cAss, cSch); 2♂♂, 2♀♀ [partly teneral], S Longnan, Min Shan, 33°03'13"N, 104°40'57"E, 2200 m, secondary pine forest with hazelnut, moist litter and roots sifted, 6.VIII.2012, leg. Assing, Schülke & Wrase (cAss, cSch).

Comment: Previously, *R. confluens* was known only from Sichuan and one doubtful record from northwestern Yunnan, and all examined specimens were micropterous. The above record of a macropterous male from northern Sichuan proves that, like *R. gansuensis*, *R. parvencisus* and some other species, *R. confluens* is wing-dimorphic, which would explain why it is one of the more widespread representatives of the subgenus *Rugilus* in China. Its currently known distribution ranges from southern Gansu across northern and western Sichuan probably into northern Yunnan (Map 1). The only record from Yunnan, however, is based on a female. The distributions of *R. confluens* and *R. gansuensis* are apparently parapatric and roughly separated by the Bailong river.

The shape of the ventral process of the aedeagus is remarkably variable (Figs 18-22). However, a re-examination of the different morphs revealed no plausible zoogeographic pattern suggesting that the current interpretation of *R. confluens* is a complex of several closely related species. Since the macropterous morph is apparently very rare, long-distance dispersal and, consequently, gene flow between populations probably occur infrequently, which would account for the observed variation. Therefore, the different shapes of the aedeagus are interpreted as an expression of intra- rather than interspecific variation.

Based on these findings, the possibility that *R. meilixuensis* from the Meilixue Shan in northern Yunnan (Map 1), whose aedeagus is similar to that of *R. confluens*, too, will eventually prove to be conspecific with this species cannot be ruled out with certainty. However, the type specimens of *R. meilixuensis* are additionally distinguished by external characters such as the punctuation of the head. Additional records and material from southern Sichuan and northern Yunnan are required to settle this problem.

The majority of the above males (including the macropterous specimen) and some females are at least slightly teneral. The sex ratio is biased in favour of females. Only 26 (26.5 %) in a total of 98 specimens are males.

***Rugilus (Rugilus) atronitidus* nov.sp. (Map 1)**

Type material: Holotype ♂: "P. R. China, Yunnan, E slope N Gaoligong Shan, N27°59'01.0" E098°32'56.9", 27.v.2010, 3018 m, sifting22, V. Grebennikov / Holotypus ♂ *Rugilus atronitidus* sp. n., det. V. Assing 2013" (CAS).

E t y m o l o g y: The specific epithet (Latin, adjective) refers to the glossy elytra, one of the characters distinguishing this species from *R. meilixuensis* and *R. confluens*.

D e s c r i p t i o n: Body length 5.2 mm; length of forebody 3.0 mm. For illustrations of the habitus and the forebody see figures 2-3 in ASSING (2012b). Coloration: body black; legs brown with somewhat darker femora; antennae pale-brown, with antennomeres I and II somewhat infusate.

Head 1.05 times as broad as long, broadest across eyes; margins behind eyes weakly convex, posterior angles obsolete; dorsal surface somewhat uneven, median dorsal portion transversely elevated, anterior and posterior to this elevation irregularly, transversely impressed; punctation coarse and dense, largely confluent in median dorsal portion; interstices mostly reduced to narrow ridges, but surface with some shine. Eyes large and bulging, approximately 0.7 times as long as distance from posterior margin of eyes to posterior constriction, and with distinct dense and dark pubescence. Anterior margin of labrum with two pronounced, basally fused, and strongly projecting teeth on either side of median incision.

Pronotum 1.15 times as long as broad and approximately 0.7 times as wide as head; punctation dense, coarse, and granulose; midline with short, indistinct, oblong glossy patch posteriorly.

Elytra long and large, approximately 1.12 times as long and 1.5 times as broad as pronotum, and distinctly glossy; punctation dense, moderately fine; interstices without microsculpture. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II and III.

Abdomen distinctly narrower than elytra; tergites III-VI with shallow impressions anteriorly, these impressions with coarse punctation; punctation of remaining tergal surfaces fine and moderately dense; tergite VII with very shallow, tergites III-VI without appreciable microsculpture; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (ASSING 2012b: figure 5) distinctly transverse and with broadly concave posterior margin; sternite VIII (ASSING 2012b: figure 4) with moderately deep, broadly V-shaped posterior excision; aedeagus (ASSING 2012b: figure 6) 0.61 mm long; ventral process of similar shape as in *R. meilixuensis* ASSING 2012.

C o m m e n t: The holotype had previously been identified and illustrated as *R. meilixuensis*, primarily based on the similar shape of the aedeagus (ASSING 2012b). However, a re-examination of this specimen and of material of *R. meilixuensis* in the course of a comparative study of the variation of *R. confluens* revealed that the male from the Gaoligong Shan represents a distinct species.

C o m p a r a t i v e n o t e s: *Rugilus atronitidus* is distinguished from *R. meilixuensis* and *R. confluens* by the completely black coloration of the body, the distinctly more shiny, less densely and more finely punctate elytra, the more glossy head and pronotum, a shorter head, the denser and more distinct pubescence of the eyes, the more uneven dorsal surface of the head, and by the slightly different shape of the aedeagus.

Distribution and natural history: The type locality is situated in the northern Gaoligong Shan in the northwest of Yunnan province, China, where the holotype was sifted at an altitude of approximately 3020 m. The pronounced wing dimorphism in closely related species suggests that *R. atronitidus* may be wing-dimorphic, too.

***Rugilus (Rugilus) nitipennis* nov.sp.** (Figs 13-17)

Type material: Holotype ♂: "China: N-Yunnan, Nujiang Lisu Aut. Pr. Gongshan Co. Gaoligong Shan, valley at 3000-3050 m, 27°47.90'N, 98°30.19'E, 21.VI.2005 A. Smetana [C169] / Holotypus ♂ *Rugilus nitipennis* sp.n., det. V. Assing 2012" (cSme). Paratypes: 1♂, 1♀: same data as holotype (cSme, cAss).

Etymology: The specific epithet (Latin, adjective) refers to the conspicuously glossy elytra.

Description: Body length 5.8-6.2 mm; length of forebody 3.6-3.8 mm. Coloration: body black; legs black, with slightly paler tarsi; antennae bicoloured, reddish with blackish antennomere I.

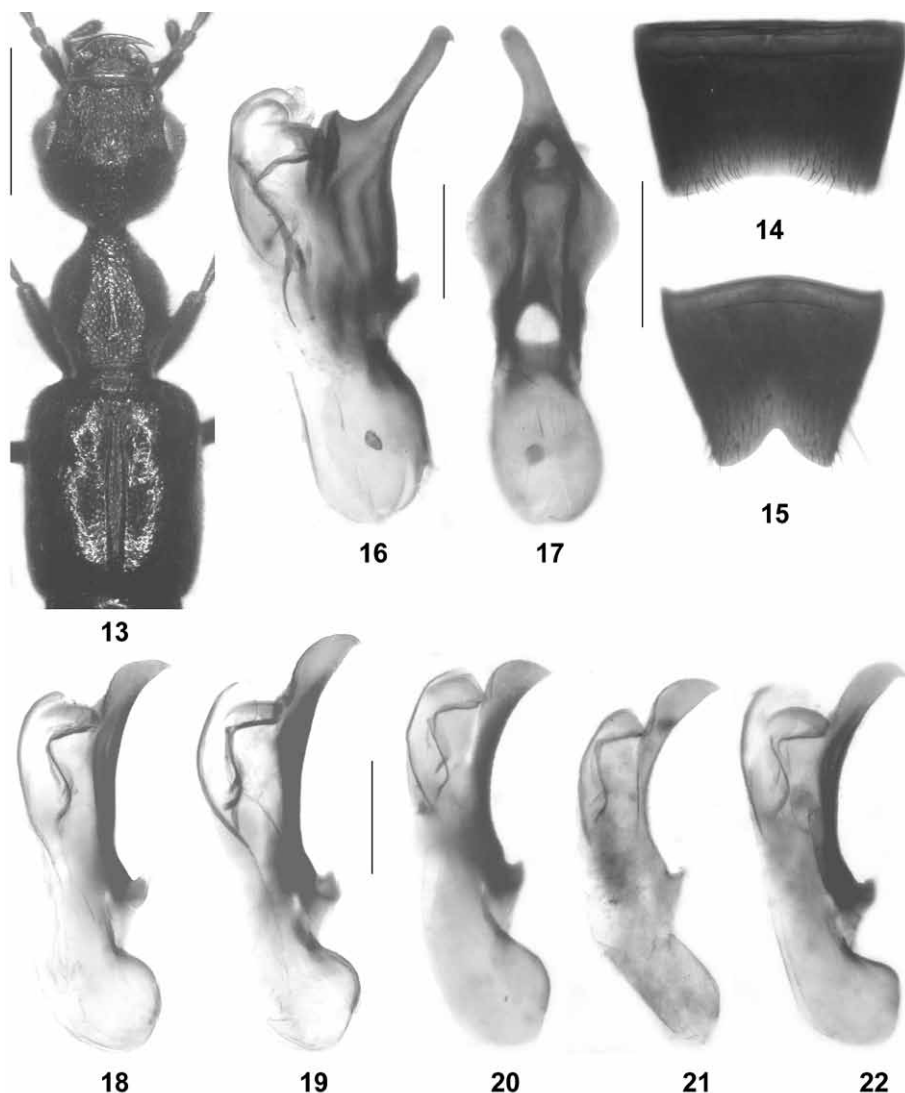
Head (Fig. 13) approximately as broad as long, broadest across eyes; margins behind eyes smoothly curving towards posterior constriction in dorsal view, posterior angles obsolete; dorsal surface somewhat uneven, median dorsal portion noticeably elevated, anterior to this elevation more or less extensively transversely impressed; punctuation dense, coarse, and areolate, largely confluent in various directions, except for median dorsal portion; interstices mostly reduced to narrow ridges; surface almost matt, only in median dorsal portion with weak shine. Eyes large and bulging, approximately 0.6-0.7 times as long as distance from posterior margin of eye to posterior constriction. Anterior margin of labrum with two pronounced separate teeth on either side of median incision.

Pronotum (Fig. 13) 1.10-1.15 times as long as broad and approximately 0.8 times as wide as head; midline somewhat elevated and shiny in posterior two thirds, on either side of this elevation with longitudinal impressions; punctuation similar to that of head, but on average slightly coarser.

Elytra (Fig. 13) conspicuously long and large, approximately 1.25 times as long and 1.5 times as broad as pronotum; punctuation extremely fine and sparse; whole surface conspicuously glossy. Hind wings apparently fully developed. Metatarsomere I approximately as long as the combined length of II and III.

Abdomen distinctly narrower than elytra; tergites III-VI with distinct impressions anteriorly, these impressions with coarse punctuation; punctuation of remaining tergal surfaces fine and moderately dense; interstices with very shallow microsculpture on tergites III-VI and slightly more distinct microsculpture on tergite VII; posterior margin of tergite VII with palisade fringe.

♂: sternite VII (Fig. 14) moderately transverse and with broadly and distinctly concave posterior margin; sternite VIII (Fig. 15) with rather deep, broadly V-shaped posterior excision; aedeagus (Figs 16-17) 0.9 mm long; apical portion of ventral process rather thin both in lateral and in ventral view, almost straight and apically weakly hooked in lateral view, and asymmetric in ventral view.



Figs 13-22: *Rugilus nitipennis* nov.sp. (13-17) and *R. confluens* ASSING (18-22; 18: holotype from Sichuan, Qionglai Shan; 19: Sichuan, Jiajin Shan; 20, 22: Sichuan, environs of Songpan; 21: Gansu, Qinling Shan): (13) forebody; (14) male sternite VII; (15) male sternite VIII; (16, 18-22) aedeagus in lateral view; (17) aedeagus in ventral view. Scale bars: 13: 1.0 mm; 14-15: 0.5 mm; 16-22: 0.2 mm.

Comparative notes: In the key in ASSING (2012a), *R. nitipennis* would key out at couplet 27, together with *R. glabripennis* ASSING 2012 from northern Yunnan. It is distinguished from this species by numerous characters, particularly the much darker legs (*R. glabripennis*: legs reddish with infuscate femoral apices), the distinctly less coarse and less confluent punctation of the head, the more shiny and more uneven surface of the

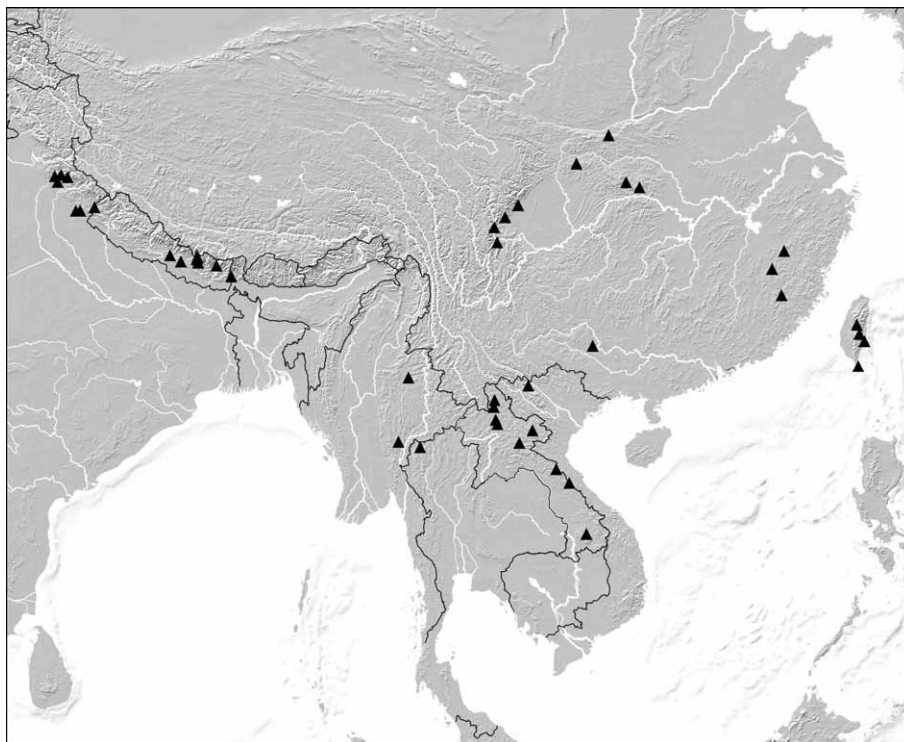
head, the presence of a median shiny elevation on the pronotum (*R. glabripennis*: whole pronotum with coarse and very dense punctation, without impunctate band and without median elevation), the even longer and more shiny elytra, the more finely and less densely punctate, as well as more shiny abdomen, and by the completely different male sexual characters. For illustrations of *R. glabripennis* see ASSING (2012a).

Distribution and natural history: The type locality is situated in the Gaoligong Shan in the northwest of Yunnan province, China, not far from the border with Myanmar. The specimens were collected at an altitude of approximately 3000 m.

Rugilus (Rugilus) sp.

Material examined: Nepal: 1♀, southwestern Dhaulagiri, Rahughat Khola valley, SW Lete pass, above Dwari, 28°34'N, 83°32'E, 2500 m, 12.V.2002, leg. Jäger (SNSD).

Comment: This macropterous species may be undescribed. From *R. morvani*, the only other macropterous species known from the Dhaulagiri range, it is distinguished by the larger and broader body, as well as by the uniformly blackish and somewhat shorter elytra.

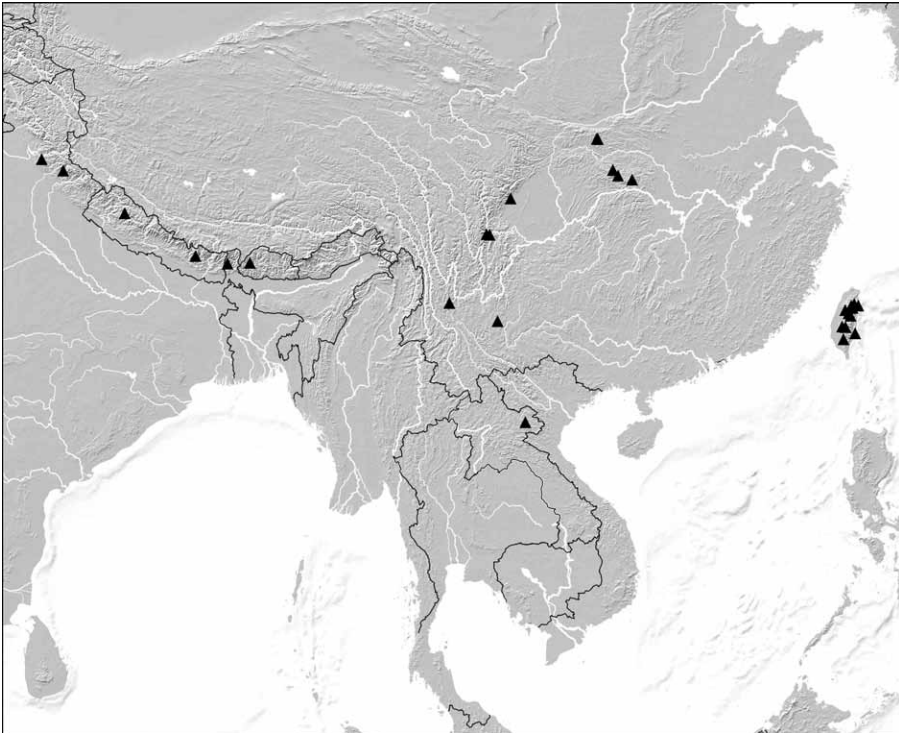


Map 2: Distribution of *Rugilus velutinus* (FAUVEL), based on examined records.

***Rugilus (Eurystilicus) velutinus* (FAUVEL 1895) (Map 2)**

Material examined: **India:** 9 exs., Uttarakhand, 14 km E Uttarkashi, 30°45'N, 78°34'E, 1450 m, 10.-12.IV.2012, leg. Shavrin (cSha, cAss); 2 exs., Uttar Pradesh, Gangani, 1250 m, 13.-20.VI.1981, leg. Brancucci (NHMB); 1 ex., Uttar Pradesh, Barikot, 1100-1200 m, 5.-12.VI.1981, leg. Brancucci (NHMB). **China:** 1 ex., S-Shaanxi, Micang Shan, 33 km S Hanzhong, 32°45'N, 106°53'E, 1360 m, stream valley, forest margin, pitfall traps, 15.-16.VIII.2012, leg. Wrase (cSch). **Laos:** 4 exs., Champasak province, Bolaven Plt., Muang Paxong, Ban Thongvay, 15°14'N, 106°32'E, 1200 m, edge of disturbed primary rain forest, flight interception trap, 8.-16.VI.2008, leg. Solodovnikov & Pedersen (ZMUC, cAss); 4 exs., Louangphrabang province, 5 km W Ban Song Cha, 20°33-34'N, 102°14'E, 1200 m, 1.-16.V.1999, leg. Kubaň (NHMB, cAss); 1 ex., Xieng Khouang province, 30 km NE Phonsavan, Phou Sane mountain, 19°38'N, 103°20'E, 1420 m, 10.-20.V.2009, leg. Hauck (NHMB); 1 ex., Xieng Khouang province, 30 km NE Phonsavan, Phou Sane mountain, 19°37-38'N, 103°20'E, 1400-1500 m, 10.-30.V.2009, leg. Kraus (NHMB); 11 exs., Oudomxai, 17 km NEE Oudom Xai, 20°45'N, 102°09'E, 1100 m, 1.-9.V.2002, leg. Kubaň (NHMB, cAss); 10 exs., Phongsaly province, Phongsaly env., 21°41-42'N, 102°06-08'E, 1500 m, 28.V.-20.VI.2003, leg. Kubaň (NHMB, cAss); 4 exs., Phongsaly province, Phongsaly env., 21°41'N, 102°06'E, 1500 m, 6.-17.V.2004, leg. Kubaň (NHMB); 4 exs., Phongsaly province, Ban Sano Mai, 21°21'N, 102°03'E, 1150 m, 19.-26.V.2004, leg. Kubaň (NHMB, cAss); 4 exs., Bolikhamxai province, 8 km NE Ban Nape, 18°21'N, 105°08'E, 600 m, 1.-18.V.2001, leg. Kubaň (NHMB, cAss); 2 exs., Houa Phan province, Phou Pane mountain, 20°13'N, 104°00'E, 1350-1500, 1.-16.VI.2009, leg. Brancucci (NHMB). **Vietnam:** 5 exs., Quang Binh province, Vietnam-Laos border area, 1 km N Cha Lo, 17°41'N, 105°46'E, 400 m, 11.-24.VI.2010, leg. Dembický (NHMB, cAss).

Comment: The distribution of *R. velutinus* ranges from the western Himalaya to Laos, Vietnam, and Taiwan (Map 2).



Map 3: Distribution of *Rugilus simlaensis* (CAMERON), based on examined records.

***Rugilus (Eurystilicus) ceylanensis* (KRAATZ 1859)**

M a t e r i a l e x a m i n e d : India: 2 exs., Assam, Bhalukpong, 27°02'N, 92°35'E, 150 m, 7.-9.VI.2007, leg. Dembický (NHMB, cAss); 1 ex., Andaman Islands, Havelock, village no. 7 env., 11°59'N, 92°58'E, 22.IV.-14.V.1998, leg. Majer (cAss). China: 1 ex., S-Shaanxi, Micang Shan, 42 km S Hanzhong, 32°41'N, 106°49'E, 1090 m, NW-slope, mixed forest margin with rocks, litter, grass, and moss sifted, 14.VIII.2012, leg. Assing (cAss); 1 ex., Guangxi, Miaoe Shan, S-slope, 1300-2000 m, 25.-26.VI.1997, leg. Bolm (NHMB). Thailand: 1 ex., Palong, 19°55'N, 99°06'E, 750 m, 26.-28.V.1991, leg. Kubaň (NHMB).

C o m m e n t : *Rugilus ceylanensis* is probably the most widespread species of the genus, its current distribution including large parts of the East Palaearctic, the Oriental, Australian, and Nearctic regions (ASSING 2012a).

***Rugilus (Eurystilicus) simlaensis* (CAMERON 1931) (Map 3)**

M a t e r i a l e x a m i n e d : India: 3 exs., Uttarakhand, 14 km E Uttarkashi, 30°45'N, 78°34'E, 1450 m, 10.-12.IV.2012, leg. Shavrin (cSha, cAss). Laos: 2 exs., Hua Phan province, Phu Phan mountain, 20°12'N, 104°01'E, 1750 m, 17.V.-3.VI.2007, leg. Kubaň (NHMB, cAss).

C o m m e n t : The distribution of *R. simlaensis* is similar to that of *R. velutinus* (Map 3). It is apparently particularly common in Taiwan and was previously unknown from Laos (ASSING 2012a, 2012b).

***Rugilus (Eurystilicus) rufescens* (SHARP 1874)**

M a t e r i a l e x a m i n e d : China: 1 ex., NW-Hubei, Xingshan Co., Zhenziling, 1600 m, 3.VII.1998, leg. Bolm (NHMB); 1 ex., Guangxi, Miaoe Shan, S-slope, 1300-2000 m, 25.-26.VI.1997, leg. Bolm (cAss). Laos: 6 exs., Louangphrabang province, Thong Khan, 19°35'N, 101°58'E, 750 m, 11.-21.V.2002, leg. Kubaň (NHMB); 1 ex. Houa Phan province, Ban Pahang env., 20°42-43'N, 104°28-29'E, 1000-1370 m, 7.VI.2009, leg. Geiser (NHMB); 2 exs., Bolikhamxai province, 8 km NE Ban Nape, 18°21'N, 105°08'E, 600 m, 1.-18.V.2001, leg. Kubaň (cAss); 1 ex., Xieng Khouang province, 30 km NE Phonsavan, Phou Sane mountain, 19°37-38'N, 103°20'E, 1400-1500 m, 10.-30.V.2009, leg. Kraus (NHMB); 1 ex., Vientiane province, Vang-Vieng, 18°55'N, 102°27'E, 300 m, V-VI.2001, leg. Kolibáč (NHMB); 1 ex., Phongsaly province, Ban Sano Mai, 21°21'N, 102°03'E, 1150 m, 19.-26.V.2004, leg. Kubaň (cAss).

C o m m e n t : *Rugilus rufescens* is widespread in the East Palaearctic and Oriental regions, from India to Kamchatka, Japan, and Singapore (ASSING 2012a, 2012b). The above specimens from Laos represent new country records.

***Rugilus (Eurystilicus) japonicus* WATANABE 1961**

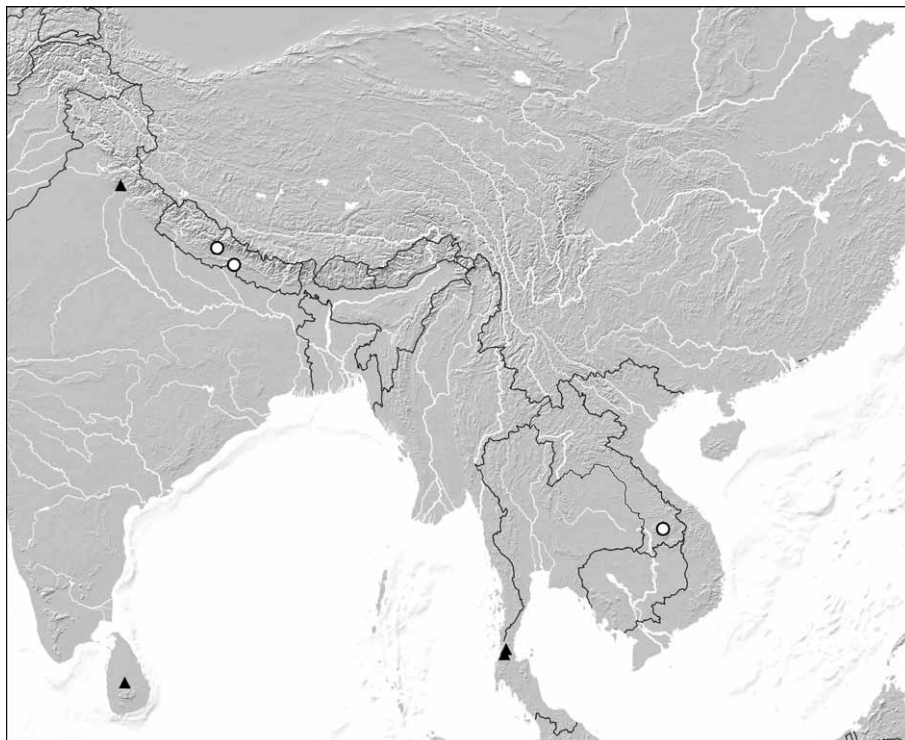
M a t e r i a l e x a m i n e d : Laos: 1 ex., Khammouane province, Ban Khounkham (Nahin), 18°13'N, 104°31'E, 300 m, disturbed primary rain forest, 3.-5.VI.2008, leg. Solodovnikov & Pedersen (ZMUC); 1 ex., Vientiane province, Phou Khao Khouay, 18°20'N, 102°49'E, 700-800 m, strongly disturbed primary rain forest, near forest edge, flight interception trap, 26.-30.V.2008, leg. Solodovnikov & Pedersen (ZMUC); 1 ex., same data, but near strongly disturbed primary rain forest, at light, 25.-30.V.2008 (cAss); 3 exs., Louangphrabang province, Thong Khan, 19°35'N, 101°58'E, 750 m, 11.-21.V.2002, leg. Kubaň (NHMB, cAss).

C o m m e n t : The vast distribution of *R. japonicus* ranges from Sri Lanka to the Philippines, Indonesia, and southern Japan (ASSING 2012a). The above specimens from Laos represent new country records.

***Rugilus pygmaeus* (KRAATZ 1859) (Map 4)**

Material examined: Thailand: 2 exs., Ranong province, Ban Na env., 9°34'N, 98°42'E, 22.-26.III.1996, leg. Majer (NHMB, cAss).

Comment: This minute species is of uncertain subgeneric affiliations. Its known distribution ranges from northern India and Sri Lanka to Timor (Map 4), but records are scarce (ASSING 2012a).

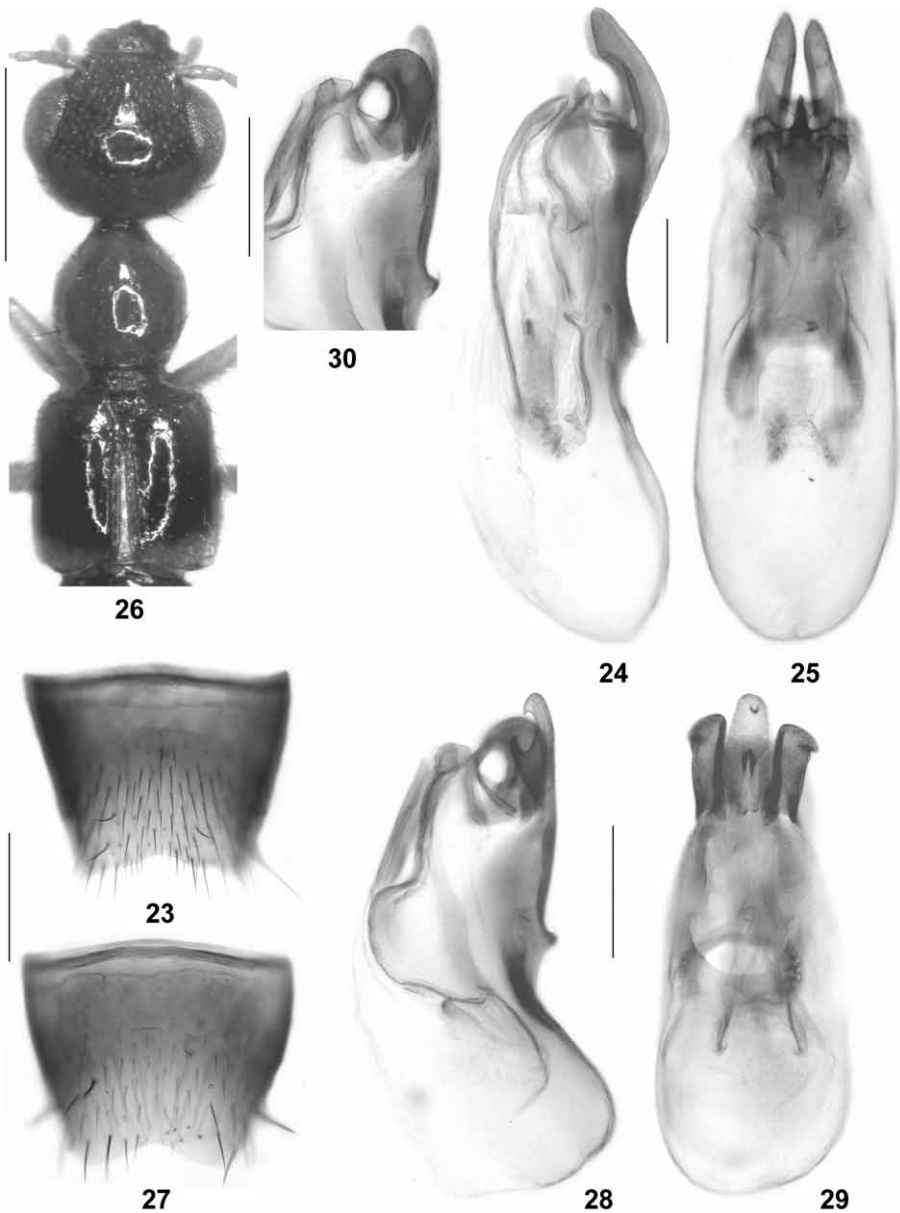


Map 4: Distributions of *Rugilus pygmaeus* (KRAATZ) (triangles) and *R. lucens* ASSING (circles), based on examined records.

***Rugilus lucens* ASSING 2012 (Figs 23-25, Map 4)**

Material examined: Laos: 6 exs., Champasak province, Bolaven plateau, Muang Paxong, Ban Thongvay, 15°14'N, 106°32'E, 1000-1200 m, disturbed primary rain forest, leg. Solodovnikov & Pedersen (ZMUC, cAss).

Comment: The original description of this conspicuous species is based on two females from Nepal (ASSING 2012a). The above first record from Laos suggests that the species is widespread in the East Palaearctic and Oriental regions (Map 4). The subgeneric affiliations are still unclarified, but its hypothesized close relationship to *R. saudicus* (see the following section) suggests that both species may have their closest relatives in the Afrotropical region. The previously unknown male sexual characters are as follows:



Figs 23-30: *Rugilus lucens* ASSING (23-25) and *R. saudicus* nov.sp. (26-30): (23, 27) male sternite VIII; (24, 28) aedeagus in lateral view; (25, 29) aedeagus in ventral view; (26) forebody; (30) apical portion of aedeagus in lateral view. Scale bars: 26: 1.0 mm; 23, 27: 0.2 mm; 24-25, 28-30: 0.1 mm.

♂: sternite VII transverse and with broadly concave posterior margin; sternite VIII (Fig. 23) with dense pubescence, posteriorly with broad and shallow excision; aedeagus (Figs 24-25) approximately 0.5 mm long, with pair of long apical structures.

***Rugilus saudicus* nov.sp.** (Figs 26-30)

Type material: Holotype ♂: "SAUDI ARABIA 740 m, Al Bahah, Al Mukhwah, Dhi Ayn Arch. vill., 19°55'46"N, 41°26'30"E, 15.V.2011, leg. Sharaf / Holotypus ♂ *Rugilus saudicus* sp. n., det. V. Assing 2013" (KSMA). Paratypes: 1♂, 1♀: same data as holotype (cAss); 2♂♂, 2♀♀: same data as holotype, but 11.V.2011 (cAss); 1♂, 1♀: "Saudi Arabia, Al Bahah, Al Mukhwah, Dhi Ayn Arch. vill., 23.IX.2011, 19°55'46.5"N, 41°26'34.3"E, 744 m, Leg. M.R. Sharaf, 0046" (cAss).

E t y m o l o g y : The specific epithet (adjective) is derived from Saudi Arabia, where the species was discovered.

D e s c r i p t i o n : Small species; body length 3.4-3.9 mm; length of forebody 2.1-2.3 mm. Coloration: head and pronotum bright reddish; elytra reddish, posterior margins broadly yellow, anterior to this yellow margin usually more or less extensively and more or less strongly transversely infusate, occasionally leaving only the anterior third reddish; abdomen dark-brown; legs and antennae yellow.

Head (Fig. 26) distinctly transverse, 1.20-1.25 times as broad as long; posterior outline (behind eyes) smoothly and weakly convex in dorsal view, posterior angles completely obsolete; punctuation rather coarse and moderately dense in anterior and antero-lateral portion, and sparse in postero-median portion; interstices without microsculpture and glossy. Eyes conspicuously large and bulging, longer than distance from posterior margin of eye to posterior constriction in dorsal view. Labrum with one distinct tooth-like projection on either side of middle. Antenna with antennomere III approximately 2.5 times as long as broad, as long as, or slightly longer than II; IV approximately 1.5 times as long as broad and distinctly shorter than III; V weakly oblong; VI approximately as long as broad; VII-X increasingly transverse; X less than 1.5 times as broad as long.

Pronotum (Fig. 26) small in relation to head, 1.05-1.10 times as long as broad and 0.65-0.70 times as broad as head; midline broadly impunctate; laterally with rather sparse and fine punctuation; interstices glossy, without microsculpture.

Elytra (Fig. 26) approximately as long as pronotum and with pronounced humeral angles; punctuation fine and sparse; interstices without microsculpture. Hind wings apparently fully developed. Metatarsus slender, approximately 0.9 times as long as metatibia; metatarsomeres I-IV of decreasing length, but all oblong; metatarsomere I approximately as long as the combined length of II and III, or slightly longer.

Abdomen broadest at segments V/VI, slightly narrower than elytra; anterior impressions of tergites III-V shallow and with dense, coarse punctuation; remainder of tergal surfaces with moderately fine and moderately dense punctuation; interstices without microsculpture; posterior margin of tergite VII with palisade fringe.

♂: sternite VII in postero-median portion without setae, posterior margin weakly concave; posterior excision of sternite VIII broad and not very deep (Fig. 27); aedeagus (Figs 28-30) approximately 0.38 mm long; ventral process apically bent dorsad (hooked) in lateral view, on either side of ventral process with a moderately sclerotized lateral lobe.

C o m p a r a t i v e n o t e s : *Rugilus saudicus* is evidently closely related to *R.*

lucens, as can be inferred from the similar external and male sexual characters. It is distinguished from *R. lucens* particularly by the different shape of the head (in *R. lucens* relatively smaller, less transverse, and with moderately marked posterior angles), the sparser punctuation of the head, the finer and much sparser punctuation of the elytra, and the morphology of the aedeagus. The coloration is similar to that of *R. clarissimus* (BERNHAEUER 1915) from the Afrotropical region, but that species is larger (4.1-4.3 mm), has a less transverse head, much smaller eyes (distinctly shorter than postocular region in dorsal view), and an aedeagus of different shape. For illustrations of the aedeagus of *R. clarissimus* see FÄGEL (1953).

Distribution and natural history: The type locality is situated in Al Bahah in southwestern Saudi Arabia at an altitude of approximately 740 m. The soil is compact clay and humid throughout the year due to irrigation of banana plantations. The specimens were sifted from leaf litter beneath *Acacia* (SHARAF, pers. comm.).

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Zusammenfassung

Fünf Arten der Paederinengattung *Rugilus* LEACH 1819 aus der Paläarktis werden beschrieben und abgebildet: *R. (Rugilus) rectus* nov.sp. (Nepal: Annapurna); *R. (R.) curvatus* nov.sp. (Nepal: Annapurna); *R. (R.) atronitidus* nov.sp. (China: Yunnan: Gaoligong Shan); *R. (R.) nitipennis* nov.sp. (China: Yunnan: Gaoligong Shan); *R. saudicus* nov.sp. (Saudi Arabia). Die bislang unbekannten männlichen Sexualmerkmale von *R. lucens* ASSING 2012 werden beschrieben und abgebildet. Weitere Nachweise von 21 bereits beschriebenen Arten sowie einer vermutlich noch unbeschriebenen Art werden aus der Paläarktis und der Orientalis gemeldet, darunter eine Reihe von Erstnachweisen. Die bekannten Verbreitungsgebiete von acht Arten werden anhand von Karten illustriert. Einschließlich der neu beschriebenen Arten ist die Gattung mit derzeit 94 Arten und einer Unterart in der Paläarktis und der Orientalis vertreten.

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