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A revision of Palaearctic and Oriental *Rugilus*. IV. Three new species from Nepal and additional records (Coleoptera: Staphylinidae: Paederinae)

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A b s t r a c t : Three species of the paederine genus *Rugilus* LEACH 1819 from Nepal are described and illustrated: *R.* (*Rugilus*) bibarbatus nov.sp. (W-Nepal: Karnali and Seti provinces); *R.* (*R.*) schmidti nov.sp. (Manaslu range); *R.* (*R.*) bisinuosus nov.sp. (Manaslu range); *R.* (*R.*) bisinuosus nov.sp. (Manaslu range); *R.* (*R.*) bisinuosus nov.sp. (Manaslu range); *R.* (*R.*) schmidti nov.sp. (Manaslu range); *R.* (*R.*) bisinuosus nov.sp. (Manaslu range); bisinuosus nov.sp. (Manaslu rang

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

Introduction

The paederine genus *Rugilus* LEACH 1819 was previously represented in the Palaearctic and Oriental regions by 94 species and one subspecies. They are currently attributed to two subgenera, the Palaearctic (or possibly Holarctic) nominate subgenus (75 species) and the probably circumtropical subgenus *Eurystilicus* FAGEL 1953 (16 species). The subgeneric affiliations of three species have not been resolved. A checklist and a key to the East Palaearctic and Oriental species were provided by ASSING (2012a). As many as 20 species have been recorded from Nepal, 16 of the subgenus *Rugilus*, all of them with restricted distributions, three widespread species of *Eurystilicus*, and one of unknown subgeneric assignment (ASSING 2012a, 2012b, 2013).

Since the latest supplement to the revision (ASSING 2013), additional material has become available from various public and private collections. An examination of this material yielded three additional undescribed species from Nepal. Thus, the genus is now represented in the Palaearctic and Oriental regions by 97 species. In addition, the material included new records of 17 previously described species.

Material and methods

The material treated in this paper is deposited in the following collections: NHMBNaturhistorisches Museum Basel (M. Geiser, I. Zürcher)

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.

Body length was measured from the anterior margin of the mandibles (in resting position) to the abdominal apex, the length of the forebody from the anterior margin of the mandibles 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) subtilis (ERICHSON 1840)

Material examined: Bosnia-Herzovina: 13, Sarajevo, VI.1932 (NHMW).

C o m m e n t : According to SMETANA (2004), *R. subtilis* was previously unknown from Bosnia-Herzegovina.

Rugilus (Rugilus) lesbius (ASSING 2005)

M a terial examined: <u>Greece</u>: S a mos: 3♂♂, 3♀♀, Manolates, 100-400 m, sifted, 7.-16.VII.2007, leg. Bulirsch (cRou, cAss); 1♂, SW Karlovasi, ca. 100 m, stream in forest, 13.VII.2007, leg. Bulirsch (cRou).

C o m m e n t : This species is subject to rather pronounced intraspecific variation of body size. The material from Samos is at the upper end of the size range. The species was previously known from the Greek island Lesbos and from western Turkey.

Rugilus (Rugilus) capitalis (GEMMINGER & HAROLD 1868)

M a t e r i a l e x a m i n e d : <u>Kazakhstan</u>: 1 ♀, Alma-Ata region, Tashkarasu, 43°48'N, 79°39'E, 500 m, 5.-8.VII.1993, leg. Lukhtanov (NME).

C o m m e n t : *Rugilus capitalis* was recently recorded from Kazakhstan for the first time (ASSING 2012a).

Rugilus (Rugilus) prolongatus (SOLSKY 1874)

M a t e r i a l e x a m i n e d : <u>Tajikistan</u>: 8 exs. [partly slightly teneral], Varzob district, Varzob, Campus 'Chaika', 38°46'N, 68°49'E, 1110, 7.-8.VII.2012, leg. Barševskis (cSha, cAss).

C o m m e n t : This species is rather widespread in Middle Asia and has been recorded from Kyrgyzstan, Tajikistan, Uzbekistan, Afghanistan, and Pakistan (SMETANA 2004). ROUGEMONT (1988) distinguished two subspecies, with *R. prolongatus khalash* ROUGEMONT 1988 distributed in Pakistan, but this hypothesis requires confirmation.

Rugilus (Rugilus) gracilis (EPPELSHEIM 1895)

M a t e r i a l e x a m i n e d : <u>India</u>: 1♂, Uttarakhand, Uttarkashi district, 14 km E Uttarkashi, 30°45'N, 78°35E, 1370 m, 17-18.IV.2012, leg. Anichtchenko (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) bibarbatus nov.sp. (Figs 1-7)

T y p e m a t e r i a l : <u>Holotype δ </u>: "NEPAL, Prov. Karnali, distr. Jumla, Gothichaur, Wald, 2850 m NN, 82°18,1'E, 29°12,1'N, 13.VI.1997, BF, leg. A. Weigel / Holotypus δ *Rugilus bibarbatus* sp.n., det. V. Assing 2013" (NME). <u>Paratypes</u>: 1 δ : "NEPAL Prov. Seti Distr. Bajura, 19-16 km SW Simikot, Kuwadi Khola, env. Chauchaur HF, 3500-2900 m NN 06.07.2001, riverbank leg. A. Kopetz" (NME); 1 δ : "NEPAL, Prov. Karnali, Distr. Jumla, 10 km E Churta, 3500 m NN, 05./06.V.1995, leg. M. Hartmann, Gesiebe" (cAss).

E t y m o l o g y : The specific epithet is an adjective composed of the Latin prefix bi-(two) and an adjective derived from the Latin noun barba (beard). It alludes to the two clusters of long black setae on either side of the posterior excision of the male sternite VII.

D e s c r i p t i o n : Body length 5.6-6.2 mm; length of forebody 3.2-3.4 mm. Habitus as in Fig. 1. Coloration: body blackish; elytra with or without slight bronze hue; legs dark-brown to blackish-brown; antennae dark-reddish, with antennomere I infuscate.

Head (Fig. 2) approximately as broad as long, broadest across eyes; margins behind eyes smoothly curving towards posterior constriction in dorsal view, posterior angles weakly marked; punctation coarse, umbilicate, largely longitudinally confluent, and very dense; interstices reduced to very narrow ridges; surface almost matt. Eyes large and moderately convex, approximately 0.7-0.8 times as long as distance from posterior margin of eyes to posterior constriction. Anterior margin of labrum with two pronounced, basally fused teeth on either side of the narrow median incision.

Pronotum (Fig. 2) approximately 1.15 times as long as broad and approximately 0.8 times as wide as head; midline without impunctate, glossy band; punctation similar to that of head, but somewhat less defined.

Elytra (Fig. 2) long, approximately 1.1 times as long as, and much broader than, pronotum; punctation dense, distinctly finer than that of head and pronotum; interstices glossy. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II and III, or nearly so.

Abdomen 0.90-0.95 times as broad as elytra; tergites III-VI with shallow impressions anteriorly, these impressions with coarse and dense punctation; punctation of remaining tergal surfaces fine and dense; interstices without distinct microsculpture on tergites III-VI and weakly pronounced microsculpture on tergite VII; posterior margin of tergite VII with palisade fringe.





Figs 1-7: *Rugilus bibarbatus* nov.sp.: (1) habitus; (2) forebody; (3) male sternite VII; (4-5) male sternite VIII (4: Churta env.; 5: Simikot env.); (6-7) aedeagus in lateral view (6: Churta env.; 7: Simikot env.). Scale bars: 1-2: 1.0 mm; 3-5: 0.5 mm; 6-7: 0.2 mm.

 δ : sternite VII (Fig. 3) strongly transverse, posterior margin with broad, distinct, and transversely trapezoid excision in the middle, on either side of this excision with a distinct tuft of long black setae; sternite VIII (Figs 4-5) approximately 1.15 times as broad as long, posterior excision somewhat V-shaped and of rather variable depth, 0.23-0.30 times as deep as length of sternite; aedeagus (Figs 6-7) small in relation to body size, 0.63-0.66 mm long; ventral process of distinctive shape.

C o m p a r a t i v e n o t e s : Based on the similar external and male sexual characters, *R. bibarbatus* is most closely related to *R. morvani* (ROUGEMONT 1987) from the Dhaulagiri range, from which it differs by the different shape and chaetotaxy of the male sternite VII (*R. morvani*: with shallower posterior excision, on either side of this excision without tufts of long setae), by the slightly broader posterior excision of the male sternite VIII, and by the differently shaped ventral process of the aedeagus (apical portion shorter and more strongly curved in lateral view). For a schematic drawing of the aedeagus of *R. morvani* see ROUGEMONT (1987).

Distribution and natural history: The species was found in three localities in Karnali and Seti provinces, West Nepal. The type specimens were collected by sifting, by hand, and with pitfall traps in forests and on a river bank at altitudes of 2850-3500 m.

Rugilus (Rugilus) schmidti nov.sp. (Figs 8-14)

T y p e m a t e r i a l : <u>Holotype &</u>: "NEPAL, Manaslu Mts., Dudh Pokhari Lekh, upper Dordi Khola Valley, 15.-17.IV.2003, 2600-2300 m NN, leg. J. Schmidt / Holotypus & *Rugilus schmidti* sp.n., det. V. Assing 2013" (NME). <u>Paratypes</u>: 12 & 3, 29 & 9 & 9: same data as holotype (NME, cAss); 2 & 3, 1 & 9: "NEPAL, Manaslu Mts., Dudh Pokhari Lekh, upper Phulinagiri Madi, 19.-21.IV.2003, 2500 m NN, leg. J. Schmidt (NME, cAss); 1 & 3: "NEPAL, Manaslu Mts., Dudh Pokhari Lekh, upper Deorali Danda, 19.IV.2003, 3200 m NN, leg. J. Schmidt" (cAss).

E t y m o l o g y : The species is dedicated to Joachim Schmidt, who, through his frequent field trips to various regions of Nepal, significantly contributed to the knowledge of the staphylinid fauna of the Himalaya and who collected all the type specimens of this species.

D e s c r i p t i o n : Body length 4.8-5.8 mm; length of forebody 2.7-3.2 mm. Habitus as in Fig. 8. Coloration: body blackish; forebody with or without weak bronze hue; legs and antennae reddish.

Head (Fig. 9) approximately 1.05 times as broad as long, broadest across eyes; margins behind eyes smoothly curving towards posterior constriction in dorsal view, posterior angles usually obsolete; punctation moderately coarse, umbilicate, partly longitudinally confluent, and very dense; interstices reduced to very narrow ridges. Eyes large and strongly convex, approximately 0.8-0.9 times as long as distance from posterior margin of eyes to posterior constriction. Anterior margin of labrum with two pronounced, basally fused teeth on either side of the narrow median incision.

Pronotum (Fig. 9) approximately 1.15 times as long as broad and approximately 0.70-0.75 times as wide as head; midline with impunctate, glossy band in posterior half; punctation similar to that of head, or slightly coarser.

Elytra (Fig. 9) short, 0.75-0.80 times as long as pronotum; humeral angles practically obsolete; punctation dense; interstices glossy. Hind wings completely reduced. Metatarsomere I slender, at least as long as the combined length of II and III.

Abdomen approximately 1.15 times as broad as elytra; tergites III-VI with shallow impressions anteriorly, these impressions with moderately coarse and rather dense punctation; punctation of remaining tergal surfaces fine and moderately dense; interstices with shallow traces of microsculpture at most; posterior margin of tergite VII without palisade fringe.



Figs 8-14: *Rugilus schmidti* nov.sp.: (8) habitus; (9) forebody; (10) male sternite VII; (11) male sternite VIII; (12-14) aedeagus in lateral view (12: Dordi Khola; 13: Deorali Danda; 14: Phulinagiri Madi). Scale bars: 8-9: 1.0 mm; 10-11: 0.5 mm; 12-14: 0.2 mm.

 δ : sternite VII (Fig. 10) strongly transverse and with unmodified pubescence, posterior margin more or less truncate; sternite VIII (Fig. 11) distinctly transverse, posterior excision broadly V-shaped, 0.20-0.25 times as deep as length of sternite; aedeagus (Figs

12-14) 0.75-0.80 mm long; ventral process of distinctive, but slightly variable shape.

C o m p a r a t i v e n o t e s : Based on the similar external and male sexual characters, *R. schmidti* is most closely related to *R. manasluensis* ASSING 2012, which too is endemic to the Manaslu range. It differs from *R. manasluensis* by the denser pubescence of the male sternite VII, the less strongly transverse male sternite VII, the less broad posterior excision of the male sternite VIII, and by the different shape of the apex of the ventral process of the aedeagus in lateral view. For illustrations of *R. manasluensis* see ASSING (2012a).

Distribution and natural history: The species was found in three localities in the Dudh Pokhari Lekh in the Manaslu range, Central Nepal, at altitudes of 2500-3200 m.

Rugilus (Rugilus) bisinuosus nov.sp. (Figs 15-19)

T y p e m a t e r i a l : <u>Holotype</u> δ : "NEPAL, Manaslu Mts., SE slope, W Gupchi Danda, 2500-2800 m, 19./20.V.2006, leg. J. Schmidt, 28°08'59N, 84°46'06E / Holotypus δ Rugilus bisinuosus sp.n., det. V. Assing 2013" (NME). <u>Paratype</u> δ : same data as holotype (cAss).

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

D e s c r i p t i o n : Body length 5.7-6.1 mm; length of forebody 3.2-3.3 mm. Habitus as in Fig. 15. Coloration: body blackish; elytra with weak bronze hue; legs and antennae reddish, with the apical portions of the femora and antennomere I somewhat infuscate.

Head (Fig. 16) 1.04-1.07 times as broad as long, broadest across eyes; margins behind eyes smoothly curving towards posterior constriction in dorsal view, posterior angles obsolete; punctation moderately coarse, umbilicate, largely longitudinally confluent, and very dense; interstices reduced to very narrow ridges. Eyes large and strongly convex, approximately 0.8-0.9 times as long as distance from posterior margin of eyes to posterior constriction. Anterior margin of labrum with two pronounced, basally fused teeth on either side of the narrow median incision.

Pronotum (Fig. 16) weakly oblong, approximately 1.1 times as long as broad and approximately 0.75 times as wide as head; midline with short impunctate, glossy band in posterior half; punctation similar to that of head.

Elytra (Fig. 16) short, approximately 0.75 times as long as pronotum; humeral angles practically obsolete; punctation dense; interstices glossy. Hind wings completely reduced. Legs long and slender; metatarsomere I slightly longer than the combined length of II and III.

Abdomen 1.15-1.20 times as broad as elytra; tergites III-VI with shallow impressions anteriorly, these impressions with moderately coarse and dense punctation; punctation of remaining tergal surfaces fine and moderately dense; interstices of tergites III-VI with very shallow, those of tergite V with more distinct microreticulation; posterior margin of tergite VII without palisade fringe.





Figs 15-19: *Rugilus bisinuosus* nov.sp.: (15) habitus; (16) forebody; (17) male sternite VII; (18) male sternite VIII; (19) aedeagus in lateral view. Scale bars: 15-16: 1.0 mm; 17-18: 0.5 mm; 19: 0.2 mm.

 δ : sternite VII (Fig. 17) strongly transverse and with unmodified pubescence, posterior margin with distinct median excision; sternite VIII (Fig. 18) weakly transverse, approximately 1.05 times as broad as long, posterior excision narrowly V-shaped, approximately 0.3 times as deep as length of sternite; aedeagus (Fig. 19) approximately 1.1 mm long; ventral process conspicuously slender, bisinuate in lateral view, and apically very acute.

C o m p a r a t i v e n o t e s : *Rugilus bisinuosus* is characterized particularly by the distinctive shape of the morphology of the ventral process of the aedeagus and by the shape of the male sternite VII. It is additionally distinguished from *R. manasluensis* and *R. schmidti*, the only other locally endemic consubgeners known from the Manaslu range, by the less oblong pronotum, the strongly confluent punctation of the head and pronotum, and by the less transverse male sternite VIII with a much narrower posterior excision.

D is tribution and natural his tory: The type locality is situated in the southeastern Manaslu range at an altitude of 2500-2800 m. It can be inferred from the restricted distributions of other micropterous consubgeners known from Nepal that R. *bisinuosus* is probably locally endemic in this region.

Rugilus (Rugilus) emeiensis ASSING 2012

M a t e r i a l e x a m i n e d : <u>China</u>: 2 ♀ ♀, Sichuan, Emei Shan, Leidongping, 29°32'N, 102°23'E, 2500 m, 18.VII.1996, leg. Smetana, Farkač & Kabátek [C65] (cSme, cAss).

C o m m e n t : The known distribution of this recently described species is confined to the Emei Shan (ASSING 2012a).

Rugilus (Eurystilicus) velutinus (FAUVEL 1895)

M a t e r i a l e x a m i n e d : <u>Laos</u>: 1♂, 1♀, Phongsaly prov., Phongsaly env., 21°41-42'N, 102°06-08'E, 1500 m, 28.V.-20.VI.2003, leg. Kubáň (NHMB, cAss).

C o m m e n t : *Rugilus velutinus* is one of the most common and widespread species of the genus in the East Palaearctic and Oriental regions (ASSING 2012a).

Rugilus (Eurystilicus) ceylanensis (KRAATZ 1859)

M a t e r i a l e x a m i n e d : <u>Malaysia</u>: 2 exs., Borneo: Sabah, S Keningau, 350 m, 20.-22.III.2007, leg. Schawaller (SMNS); 1♂, Borneo: Sabah, Tambunan, 530 m, 14.-15.III.2007, leg. Schawaller (cAss).

C o m m e n t : The vast distribution of *R. ceylanensis* includes large parts of the East Palaearctic, Oriental, Australian, and Nearctic regions (ASSING 2012a).

Rugilus (Eurystilicus) ocularis (FAUVEL 1895)

M a t e r i a l e x a m i n e d : <u>Malaysia</u>: 1♂, 3 exs., Borneo: Sabah, Sepilok, 50 m, 12.-13.III.2007, leg. Schawaller (SMNS, cAss). <u>Indonesia</u>: 1♂, Celebes: Sulawesi, 17 km E Pendolo, 2°07'S, 120°46'E, 800 m, 4.-9.VII.1999, leg. Bolm (cAss).

C o m m e n t : This species, too, is one of the most widespread species of the genus, its distribution ranging from India to Indonesia, the Philippines, and New Guinea (ASSING 2012a).

Rugilus (Eurystilicus) uncatus Assing 2012

M a t e r i a l e x a m i n e d : <u>Thailand</u>: 1 ♀, Chumphon province, Pha To env., 9°48'N, 98°47'E, 27.III.-14.IV.1996, leg. Majer (NHMB); 1 ♀, same data, but III.1996 (cAss).

C o m m e n t : This species has been recorded only from Thailand and Sri Lanka (Assing 2012a).

Rugilus (Eurystilicus) pruinosus (CAMERON 1925)

M a t e r i a l e x a m i n e d : <u>Indonesia</u>: 1♂, Java, Gn. Slamet, 5 km N Baturaden, 1100 m, 12.-13.V.2001, leg. Bolm (SMNS).

C o m m e n t : The known distribution of *R. pruinosus* is confined to Java and Sumatra (Assing 2012a).

Rugilus (Eurystilicus) simlaensis (CAMERON 1931)

M a t e r i a l e x a m i n e d : <u>Nepal</u>: 1♂, Karnali province, Humla district, 18 km WNW Simikot, Chumsa Khola bridge, 30°02'N, 81°39'E, 2950 m, 20.-22.VI.2001, leg. Weigel (NME).

C o m m e n t : In Nepal, the known distribution of the widespread *R. simlaensis* is confined to the west (ASSING 2012a).

Rugilus (Eurystilicus) rufescens (SHARP 1874)

M a t e r i a l e x a m i n e d : <u>China</u>: 42 exs., Jiangsu, Zhenjiang, leg. Reitter (NMP, cAss). <u>North Korea</u>: 2 exs., Gen-San (apparently near Wonsan) (NMP). <u>Japan</u>: 1 ex., Honshu, Tokyo, 1925 (NMP); 2 exs., Kyushu, Miyazaki-ken, Aburatsubo, 1925 (NMP, cAss); 4 exs., Kyushu, Beppu, leg. Reitter (NMP); 1 ex., locality not specified (NMP). <u>Russia</u>: 1 ex., East Siberia, "Chitaizki-Sterena", leg. v. Bodemeyer (NMP).

C o m m e n t : *Rugilus rufescens* is one of the most widespread species in the East Palaearctic and Oriental regions, its distribution ranging from India to Kamchatka, Japan, Singapore, and Laos (ASSING 2012a, b, 2013).

Rugilus (Eurystilicus) longipennis (SHARP 1874)

M a t e r i a l e x a m i n e d : <u>Russia</u>: 6♂♂, 5♀♀, Far East, Sakhalin, Kril'yon peninsula, 10 km W Aniva, 26.V.-17.VII.2008, leg. Plutenko (cAss).

C o m m e n t : This species was previously known from Japan (Honshu, Hokkaido, Rishiri Islands) and South Korea (ASSING 2012a). It was doubtfully recorded also from China. The above specimens represent the first record from Russia.

Rugilus (Eurystilicus) seriatus (CAMERON 1930)

M a t e r i a l e x a m i n e d : <u>Malaysia</u>: 1♂, 4 exs., 50 km SW Kuala Terengganu, Lake Kenyir, 5 km SW dam, 350 m, 7.-12.VII.2001, leg. Schulz & Vock (SMNS, cAss). <u>Indonesia</u>: 2 exs., Celebes: Sulawesi, 17 km E Pendolo, 2°07'S, 120°46'E, 800 m, 4.-9.VII.1999, leg. Bolm (SMNS).

C o m m e n t : *Rugilus seriatus* is widespread in Malaysia, Indonesia, and the Philippines (ASSING 2012a).

Rugilus lucens Assing 2012

M a t e r i a l e x a m i n e d : <u>Thailand</u>: 1 ç, Chumphon province, Pha To env., 9°48'N, 98°47'E, 27.III.-14.IV.1996, leg. Majer (NHMB).

C o m m e n t : This species was previously known only from Nepal and Laos. The above female represents the first record from Thailand (AssING 2013).

Rugilus pygmaeus (KRAATZ 1959)

- M a t e r i a l e x a m i n e d : <u>Thailand</u>: 1 ♀, Chumphon province, Pha To env., 9°48'N, 98°47'E, III.1996, leg. Majer (NHMB); 1♂, 1♀♀, same data, but 27.III.-14.IV.1996, leg. Majer (NHMB, cAss).
- C o m m e n t : This widespread, but rare species has been recorded from Thailand before (ASSING 2013).

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Zusammenfassung

Drei Arten der Gattung *Rugilus* LEACH 1819 aus Nepal werden beschrieben und abgebildet: *R.* (*Rugilus*) *bibarbatus* nov.sp. (W-Nepal: Provinzen Karnali und Seti); *R.* (*R.*) *schmidti* nov.sp. (Manaslu-Massiv); *R.* (*R.*) *bisinuosus* nov.sp. (Manaslu-Massiv). Weitere Nachweise von 17 bereits beschriebenen Arten werden aus der Paläarktis und der Orientalis gemeldet, darunter drei Erstnachweise. Einschließlich der neu beschriebenen Arten ist die Gattung mit derzeit 97 Arten und einer Unterart in der Paläarktis und der Orientalis vertreten.

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