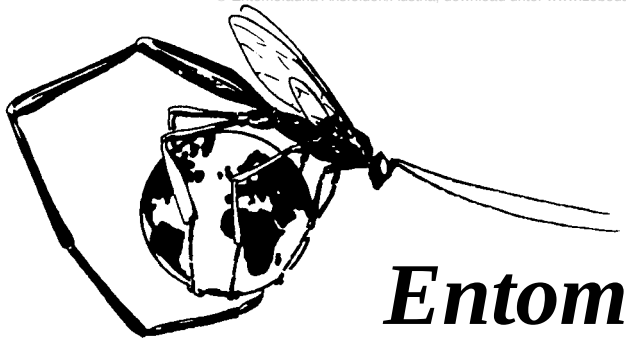

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Three new species of *Saniderus* Fauvel, 1895 (Coleoptera: Staphylinidae: Staphylininae)

Guillaume de ROUGEMONT

Abstract

Saniderus manni sp.n. from Borneo, *Saniderus cechovsky* sp.n. from peninsular Malaysia and *Saniderus cooteri* sp.n. from S.E. China are described and compared with *S. ruficollis* Fauvel and *S. laevicollis* Fauvel. New data are given for *S. ruficollis*. All five species are illustrated by photographs.

Zusammenfassung

Saniderus manni sp.n. aus Borneo, *Saniderus cechovsky* sp.n. von der Halbinsel Malaysia und *Saniderus cooteri* sp.n. aus S.E. China werden beschrieben und mit *S. ruficollis* Fauvel und *S. laevicollis* Fauvel verglichen. Neue Daten für *S. ruficollis* werden gegeben. Alle fünf Arten werden durch Fotos illustriert.

Introduction

The genus *Saniderus* was created by FAUVEL to accommodate two species, *S. ruficollis* and *S. laevicollis*, respectively from Burma and Java. FAUVEL stated that the genus is distinguished from "true" *Staphylinus* by the "short bilobed but entire labrum, the shape of the labium and of the mesosternum (being not carinate at the base, and apically broadly truncate), and by the more widely separate mesocoxae". We do not know with which of the genera then included in *Staphylinus* the author compared his new genus, but I can find no

significant differences between these structures and those of *Platydracus*. In particular, *Saniderus* shares with *Platydracus* the character state of the puncture bearing the large temporal seta being situated closer to the posterior margin of head than to the eye, as used by SMETANA & DAVIES (2000; that study is based only on the "north temperate" genera, so it is not unlikely that this and other tropical genera may be exceptions to the rule) to separate *Platydracus* from related genera.

The mouthparts of *Saniderus* are essential the same as those of *Platydracus*; there is no difference in the structures of the labrum or the labial or maxillary palps. The mandibles of *Saniderus* are if the same type as *Platydracus*, robust, with a broad base, and a long and broad dorso-lateral groove which is differently sculptured from the rest of the upper surface of the mandible, but whereas the large genus *Platydracus* exhibits a wide range of patterns of dentition, pubescence and microsculpture of the mandibles, in *Saniderus* these characters are relatively uniform. In *Platydracus* the mandibles may each bear a single median simple or bicuspid tooth, or the tooth may be much enlarged, shaped like a grinding molar; in addition there may be a true basal molar. In *Saniderus* (Fig. 15) the median tooth is always narrowly bicuspid, the secondary denticle lying in front of, and on the right mandible, on a lower plane than the primary denticle, and there is no basal molar. In *Platydracus* the mandibular lacinia may extend from base to the median tooth, or extend under and beyond the latter; in *Saniderus* it is always confined to the basal area before the tooth. The sculpture of the upper surface of the mandible and of its dorso-lateral groove also varies greatly in *Platydracus*: the surfaces may be variously microsculptured or punctate; some species have dense longitudinal striation, but this is usually confined to the basal area; in *Saniderus* the entire upper surface of the mandible is densely micro-striate from base to tip, the consequently dull surface in marked contrast to the shiny, simply punctate dorso-lateral groove. The maxillae of the two genera are also of the same type, with a dense maxillary lacinia on the inner side of the basal and distal segments; in *Platydracus* the upper surface of these segments is often very densely pubescent, the hairs merging with those of the lacinia in an apparently continuous mass; in *Saniderus* the upper surface of the maxilla is sparsely pubescent, in contrast to the lacinia.

The aedeagi of those species of which males are known are also of the short, compact type typical of *Platydracus*, albeit with a very small paramere, measuring only about 1/5th the length of the median lobe. The only remaining obvious differences are the more depressed form, especially of the pronotum, in *Saniderus*, and the type of sculpture of the head and pronotum, which leaves the disc of head impunctate and the pronotum with large, discrete, symmetrical impunctate areas clearly demarcated from areas covered in close, large umbilicate punctures. Also unlike those *Platydracus* s. str. species that have impunctate areas on the fore-body or that have sparse punctation with broad interstices, the "impunctate" areas in *Saniderus* are not very shiny, but somewhat dull due to fine but dense micro-reticulation and to irregularly scattered micro-punctures.

In view of this it would seem reasonable to simply sink *Saniderus* as a junior synonym of *Platydracus*. However, the four species described and illustrated below are all immediately recognisable as belonging to this group, even though the pattern of pronotal puncturation differs greatly from one species to another. Therefore I do not propose to change the generic status of *Saniderus*.

Species of *Saniderus* are confined to the oriental region (*Platydracus* is sub-cosmopolitan). Nothing has hitherto been recorded of the bionomics of these species. The specimen of *S.*

ruficollis from Doi Pui, Thailand was sifted from forest floor litter including decaying fruit; that from India from decaying banana leaves on leaf litter at the edge of dense forest.
The purpose of this paper is to aid recognition of the species of this little known group of apparently very uncommon species.

Methods

The photographs of whole insects and of the aedeagi were made in the laboratory of the Oxford University Museum of Natural History, using a Leica DFC 490 digital camera linked to a Leica M165C microscope and Syncroscopy Automontage Pro software. Measurements of the type of *S. ruficollis* were made in the OUMNH laboratory on a Wild stereo microscope with and eye-piece micrometer at x 12 magnification, and the measurements were then calibrated to give units equal to 1/7th of a millimetre. These were then adapted to accord with measurements of the other specimens which were made on a VMZ 1x-4x stereo microscope with an eye-piece micrometer in millimetres.

Key to the species of *Saniderus* FAUVEL

(All known species have reddish or testaceous elytra)

1 (6) Pronotum entirely or in greater part black 2

2 (3) Pronotum impunctate except for a few shallow punctures in anterior angles and anterior border, as in figs 3 and 4; pronotum entirely black, scutellum and abdominal tergites rufous. Java . . . . . *laevicollis* FAUVEL

3 (2) Pronotum punctate, as in figs 5 and 6, the anterior angles entirely covered in deep umbilicate punctures 4

4 (5) Length: 10-11 mm; the two discal rows of punctures extending posteriorly to 3/8^{ths} from base; pronotum entirely black; scutellum and abdominal tergites 3-6 fuscous. S.E. China . . . . . *cooteri* **sp.n.**

5 (4) Length: 19 mm; the two discal rows of punctures on pronotum entire, extending to posterior margin; pronotum black, the base narrowly testaceous; scutellum and abdominal tergites 3-6 testaceous. Peninsular Malaysia . . . . . *cechovskyi* **sp.n.**

6 (1) Pronotum entirely or in greater part reddish 7

7 (8) Pronotum entirely rufous, the puncturation as in figs 1 and 2, leaving the posterior half largely impunctate and with a discal row of varying length; scutellum black, in contrast with red elytra; aedoeagus: figs 9 and 10. Continental S.E Asia . . . . . *ruficollis* FAUVEL

8 (7) Pronotum rufous, the anterior 1/5th infuscate, the puncturation as in figs. 7 and 8, leaving only three discrete longitudinal areas impunctate; scutellum rufous, concolorous with elytra; aedeagus: figs 11 and 12. Borneo . . . . . *manni* **sp.n.**

Saniderus ruficollis (FAUVEL)

Saniderus ruficollis FAUVEL 1895: 257.
Saniderus ruficollis CAMERON 1932: 177.
Saniderus ruficollis JARRIGE 1951: 134.
Saniderus ruficollis SCHEERPELTZ 1965: 109.
Saniderus ruficollis HERMAN 2001: 3477.

Syntype?: "Carin Cheba, 900-1100 m, L. Fea, 5.XII.88"; "*ruficollis* Fv. Ex Typis, R.I.Sc.N.B. 17-4.7.9. Coll et det. A. Fauvel" (in Institut royal des sciences naturelles de Belgique).
Besides the type locality in Karen State, South-east Burma, *S. ruficollis* has been recorded from much further north on the Chinese border in Kachin State (Kambaiti) by SCHEERPELTZ, and from northern Vietnam (Tam Dao and Hoa Binh) by Jarrige. New records are as follows: 1 ♀: THAILAND, Chiang Mai, Doi Pui, 15.III.1982, G. de Rougemont leg. (coll. Rougemont); 1 ♂: N.W. THAILAND, Mae Hong Son, Ban Huai Po, 17-23.6.1991, 1600-2000 m, leg. J. Horak (in Natural History Museum, Vienna); 1 ♀: INDIA. Arunachal Pradesh, Miri hills, road from Pangin to Pasighat, 20.V.2006, G. de Rougemont leg. (coll. Rougemont). I have also seen another ♀ ex. from Doi Pui (Doi Suthep) in the collection of the Natural History museum of the University of Copenhagen, and H. Schillhammer (personal communication) has provided the following new data on this species: NE LAOS: prov. Hua Pham, Ban Saluei, Phon Pam, 1-31.5.2011, 20º12N 104 º01E, 1500-1900 m, leg. Holzschuh (in Natural History Museum, Vienna).
I have not seen these or the exx. recorded by JARRIGE from Vietnam and by SCHEERPELTZ from Burma, but I do not doubt the determinations of this distinctive species by experienced specialists.
It is not certain whether the type mentioned above (the only specimen in Fauvel's collection in the I.r.sc.n.B) is the unique type or whether it is a syntype.

Description (of type): length: 13.0 mm; length of head (from clypeus to poster-lateral angles):1.4; width of head: 2.1; (antennae broken off after first few segment); length of pronotum: 2.4; width of pronotum: 2.4; length of elytron: 2.6; width of elytra: 3.0. Head and neck black; pronotum and elytra rufo-testaceous; scutellum black; abdominal tergites and paratergites rufous, narrowly infuscate on tergites 3-5, the infusction increasingly broad posteriorly, leaving only lateral margins of tergite 6, tergites 7 and 8 entirely fuscous; tergites 3-7 with dense patches of golden pubescence along entire anterior border and on lateral borders, except on tergite 7 where lateral golden pubescence is lacking.
Head with prominent apico-lateral angles, the eyes large, larger than temples, the tempora and occipital area covered in large umbilicate punctures leaving the vertex and frons impunctate except a few punctures along inner margins of eyes and bases of antennae. Pronotum with anterior border and humeral angles covered in large umbilicate punctures which extend posteriorly to more than half the length of pronotum, and a few setiferous punctures in apico-lateral angles and total length of posterior margin, otherwise leaving the disc impunctate except for two irregular discal series composed of about 15 punctures extending from anterior border to a little over half the length of pronotum; sides of pronotum with 4-5 very large dark setae contrasting with more numerous and shorter pale setae. Habitus: figs. 1, 2.

Male: abdominal sternite 8 with a broad shallow emargination; adeoeagus: figs 9 and 10, the paramere very small, narrow, symmetrical and parallel-sided, the apex, with four terminal fine pale setae.

Variability: there is considerable variation among the specimens listed above in the following characters:
1) width of head, pronotum and elytra;
2) colour (extent of infuscation) of the abdomen and of the metathoracic episterna;
3) extent and number of punctures of the discal series on the pronotum;
4) extent and density of patches of golden pubescence on abdominal tergites.

None of these variations appear to be correlated in different populations of this widespread species. Thus the proportions of the ex. from India (the largest of the exx. examined) are: length 16.5 mm; length of head:1.7; width of head 2.8; length of pronotum: 3.1; width of pronotum: 3.3; length of elytron 3.6; width of elytra: 3.9, while the discal row of punctures on pronotum consists of only 10 punctures, the infuscation of abdominal tergites covers all parts of the tergites, leaving only the paratergites dark brown, and the golden pubescence of abdominal tergites is much less extensive and dense than in the syntype. The proportions of a specimen from Thailand (MaeHong Son) are: length: 14.6; length of head 1.3; width of head 1.7; length of antennae: 2.5; length of pronotum: 2.2 width of pronotum: 2.7; length of elytron: 3.0; width of elytra: 3.4, while the discal row of punctures consists of about 12-14 punctures, the infuscation of abdominal tergites is similar to that of the type, but less extensive on tergites 3-5 and less well demarcated, and the pubescence of abdominal tergites is also less dense and evident than in the type. The larger size, entirely dark abdomen and reduced number of discal punctures makes the female ex. from India, the northernmost representative of the species, almost look like a different species. *S. ruficollis*, like all other known *Saniderus*, is easily distinguished from the other species by the combination of colour pattern and pronotal puncturation alone. Its aedoeagus (figs 9 and 10) differs from that of the only other species (*S. manni* n. sp.) of which the male is known in the shape of the apex of the internal sclerotised structure of the median lobe and the smaller, much narrower and symmetrical paramere.

This species, although uncommon, has a vast distribution in SE Asia, extending from Arunachal Pradesh (NE India), through eastern Burma to North Thailand, North Vietnam, Laos and North Vietnam.

***Saniderus laevicollis* FAUVEL**

Saniderus laevicollis FAUVEL 1895: 258.
Saniderus laevicolis HERMAN 2001: 3477.

Holotype: “Java occ., Mons Gede, 4000 , Aug. 1892, A. Frühstorfer”; “*laevicollis* F.”; “R.I.Sc.N.B. 17-4.7.9. Coll. Et det. A Fauvel” (in Institut royal des sciences naturelles de Belgique).

About the size and proportions of *S. ruficollis*.

Head and pronotum black, elytra, scutellum (the scutellum slightly infuscate in antero-lateral corners) and abdominal tergites 3-5 rufous, the following tergites fuscous; legs rufo-testaceous, with the distal external parts of pro- and meso-tibia infuscate.
Eyes smaller than in other species of the genus, slightly shorter than temples. Puncturation of head limited to post-ocular area, with a few scattered smaller umbilicate punctures on frons and in front of eyes, and a single irregular transverse row of punctures on posterior margin. Disc of pronotum entirely impunctate, the only punctures limited to a single irregular row along all margins. Puncturation of elytra shallow, slightly sparser than in *S. cooteri* sp.n. described below; long yellow pubescence on abdominal tergites 3-6 less evident than in *S. cooteri* sp.n., but with a dense patch on entire anterior border of tergite 7. Habitus: Figs. 3, 4.

This species is only known by the type. It is easily recognised by the type of cephalic and pronotal puncturation, as described above and in the key.

This species is only known by the holotype.

***Saniderus manni* sp.n.**

♂ Holotype: MALAYSIA, Sabah, Lahad Datu, Ulu Segama For. Res., Danum Valley Forest Centre, 04°57.9'N 117°48.1'E, 200 m alt.xi.2005 1° Forest, FIT, coll. Mann, Slade & Villanueva, OUMNH-2006-051. 2 ♀♀ Paratypes: Ibid. (holotype and 1 paratype in the Oxford University Museum of Natural History; 1 paratype in coll. Rougemont). ♂ paratype: MALAYSIA, Sabah, Tawau, 08-14.xi.2012, 4.69N 117.52E, 160 m Alt., Coll. C.L. Gray. SAFE project area, F.I.T. Riparian forest strip in oil palm, OUMNH-2013-56 (in Oxford University Museum of Natural History).

Description: Proportions of holotype: length: 10.5 mm; length of head: 1.3; width of head: 1.7; length of antenna: 1.9; length of pronotum: 1.9; width of pronotum: 1.8; length of elytron: 2.3; width of elytra: 2.00.
Proportions of smallest female: length: 9.5 mm; length of head: 1.00; width of head: 1.4; length f antenna: 1.8; length of pronotum: 1.5; width of pronotum: 1.4; length of elytron: 1.6; width of elytra: 2.00.
Head and neck black, palpi testaceous, darkened towards apices, antennae with first segment testaceous, segments 2-3 brown, the following segments fuscous, the terminal one with pale apex. Pronotum rufous, the anterior border infuscate to about $1/5^{th}$ the length of pronotum; scutellum and elytra rufous; Abdominal tergites 3-4 dark testaceous, tergites 5-6 with a broad black median patch, tergites 7-8 black except anterior edge of tergite 7; tergites 9-10 and gonocoxites pale testaceous; legs testaceous, the tibia bearing external rows of stout black thorns, the rest of surface of tibia, especially distally, with dense pale pubescence.
Head widened posteriorly, with salient postero-lateral angles, the surface covered with not very close large umbilicate punctures interspersed with fewer very small simple punctures except for impunctate vertex Eyes large, longer than temples. Sides of pronotum entirely covered in large, not very close umbilicate punctures, leaving a broad median impunctate band that extends the entire length of pronotum enclosed by two shallow grooves each bearing a double or triple row of discal umbilicate punctures, on either side of these

grooves with another longitudinal impunctate area widened posteriorly that do not reach the anterior or posterior margins of pronotum, so that the pronotum is more extensively punctate than in any of the other species, and is left with only three discrete impunctate areas; the sides and base of pronotum bear a few large dark setae, in addition to the inconspicuous, short fine pale pubescence arising from umbilicate punctures. Abdominal tergites 3-5 with shallow punctures, the punctures sparser but becoming elongate on tergite 6, much denser on tergite 7 and sparse again on tergite 8; anterior margins of tergites 3-7 strongly coriaceous; anterior borders of tergites 6-7 with long, sparse golden pubescence; terminal tergites and gonocoxites with conspicuous, long but not very dense, pubescence. Habitus: figs. 7 and 8.
Male: abdominal sternites 7 and 8 unmodified; aedeagus: figs 11 and 12, the paramere larger and much broader in ventral view than that of *S. ruficollis*, somewhat asymmetrical and markedly obliquely truncate apically.
Variability: the much smaller size of the female measured above is not sex linked, since the other female in the series is approximately the size of male.

This species is almost certainly endemic on the island of Borneo.

***Saniderus cooteri* sp.n.**

♀ Holotype: CHINA, Fujian Prov. Qiliquiao, Guadun rd., ca. 1200 m, 1.VI.2001, N27º75' E117 º64', leg J. Cooter & P .Hlavác (in coll. Rougemont); 1 ♀ Paratype: CHINA, FUJIAN prov., Wuyi Shan Nat. Res., Sangan env. (900 m), 30.v-12.vi.2001, Hlavác & Cooter lgt. (in Natural History Museum, Vienna).

Description: Proportions of holotype: Length: 10.5mm; length of head: 1.1; width of head 1.5; length of antenna: 1.9; length of pronotum: 1.9; width of pronotum: 1.9; length of elytron 2.4; width of elytra: 2.4.
Head, pronotum and scutellum black, elytra rufous, palpi and labrum testaceous, basal four antennomeres rufo-testaceous, the following segments darker, reddish-brown; legs testaceous, the tibia with external rows of stout black spines, the rest of the surface with dense pale pubescence; abdominal tergites 3-5 rufous, their centres largely and increasingly extensevly occupied by black areas, sternites 6-8 entirely black except paratergites, terminal tergites and gonocoxites pale testaceous; anterior areas of tergites 3-8 with patches of long golden pubescence becoming increasingly dense posteriorly; anterior margins of tergites coriaceous.
Head transverse, with salient postero-lateral angles; eyes very large, almost twice the length of temples; surface of head covered in large setiferous umbilicate punctures except for broadly impunctate vertex and a small triangular area on frons. Puncturation of pronotum similarly disposed to that of *S. ruficollis*, with humeral angles entirely covered in umbilicate punctures extending more than half the length of pronotum on sides, and a double or triple row of punctures along lateral and basal borders, but the punctures in humeral area are much smaller and closer than in *S. ruficollis* FAUVEL, and the discal series are longer, extending to about 2/3rds of the length of pronotum, the punctures more numerous and lying in a pair of shallow grooves. The sides of pronotum are furnished with 3 or 4 larger dark setae in addition to the long pale pubescence and setae arising from

umbilicate punctures; scutellum densely punctate and pubescent; abdominal tergites with fairly uniform shallow puncturation; tergites 6 and 7 with a few sparse fine pale setae in antero-lateral angles in addition to short black pubescence of the rest of surface; tergite 8 with a continuous but narrow band of not very dense silvery pubescence along base; apical part of the tergite glabrous, with much coarser puncturation than other tergites. Habitus: figs. 5, 6.
Male: unknown.

Saniderus cechovskyi sp.n.

♀ Holotype: W-MALAYSIA, Kelantan, 30 km NW Guah Musang. Mt. Ulu Lalat, 800-1000 m, Kampong Sungai Om, 27.5.-19.6. 2011, leg. Cechovsky (in Natural History Museum, Vienna).

Description: Proportions of holotype: Length: 19 mm; length of head: 2.0; width of head: 2.7; length of antenna: 3.0; length of pronotum: 3.0; width of pronotum: 3.1; length of elytron: 3.7; Width of elytra: 3.8.
Head and neck black; pronotum black, the posterior border narrowly (0.4-5 mm) rufo-testaceous, this colour extended anteriad along mid-longitudinal line between discal series of punctures, the median 2/5ths of anterior border also very narrowly rufo-testaceous; elytra and abdominal tergites 6 entirely testaceous, the anterior 1/5th of tergite 7 and entire 9th tergite and gonocoxites entirely testaceous, the rest of tergite 7 and entire tergite 8 black; mouthparts and legs testaceous, the tibial spines brown; first two antennomeres testaceous, the following ones infuscate.
Head transverse, the temples widened posteriad; eyes large, longer than temples; puncturation of head similar to *S. manni* sp.n. but the impunctate area of vertex less extensive, separated from a small triangular impunctate area on frons by some sparser punctures; post-ocular region with two long setae, the rest of head with sparse, shorter, paler setae. Pronotal sculpture as in fig.14 the discal series of punctures 2 or three punctures wide in anterior half, narrowed posteriorly to a single column of punctures which merges with the basal punctures; anterior half of lateral margins with 4-5 long setae, the rest of sides and disc with scattered pale setae; elytra finely and densely punctured, the anterior part of sides with 3-4 long setae, the postero-lateral angles with a few more, the disc with long dense dense pale pubescence. Abdominal tergites 3-8 more coarsely and sparsely punctured than elytra, covered with irregular long and short pale pubescence, the undersides of paratergites and posterior parts of tergites with a few longer darker setae.
Habitus: figs. 13, 14; mouthparts: fig. 15.
Male: unknown.

This is the largest of the five known species of *Saniderus*, and the median impunctate area of the vertex is less extensive than in all other species. The puncturation of the pronotum resembles that of *S. manni* sp.n. in that the extensive punctate areas leave three separate, longitudinal impunctate ones, but *S. cechovskyi* sp.n. is a much larger beetle, the puncturation of the head and pronotum is finer and denser that in *S. manni* sp.n., and the colour pattern is quite different in the two species: in *S. cechovskyi* sp.n. the pronotum is black, and abdominal tergites 3-6 are entirely testaceous, whereas the pronotum is reddish and tergites 5-6 are partly black in *S. manni* sp.n.

Acknowledgements

I am grateful to Jonathan Cooter for the gift of the holotype of *S. cooteri* sp.n., to Yvonnick Gerard, curator of Coleoptera at the Institut royal des sciences naturelles de Belgique, for the loan of Fauvel's types; to Harald Schillhammer, Vienna natural history museum; to Adam Brunke, editor or Zootaxa and to two anonymous peer reviewers for that journal for reading this articles and for making useful suggestions for improvement; to H. Schillhammer also for the loan of material, and to James Hogan of the Oxford University Museum of natural History for producing the photographs and plates that illustrate this paper. The types of *S. manni* sp.n. were collected in the field with the permission of the Danum Valley Management Committee and the Economic Planning Unit of the Prime Minister's Department under permit no. UPE Ruj. UPE 40/200.1959 issued to Dr. Eleanor Slade and project no. 224 under the Royal Society SEARRP.

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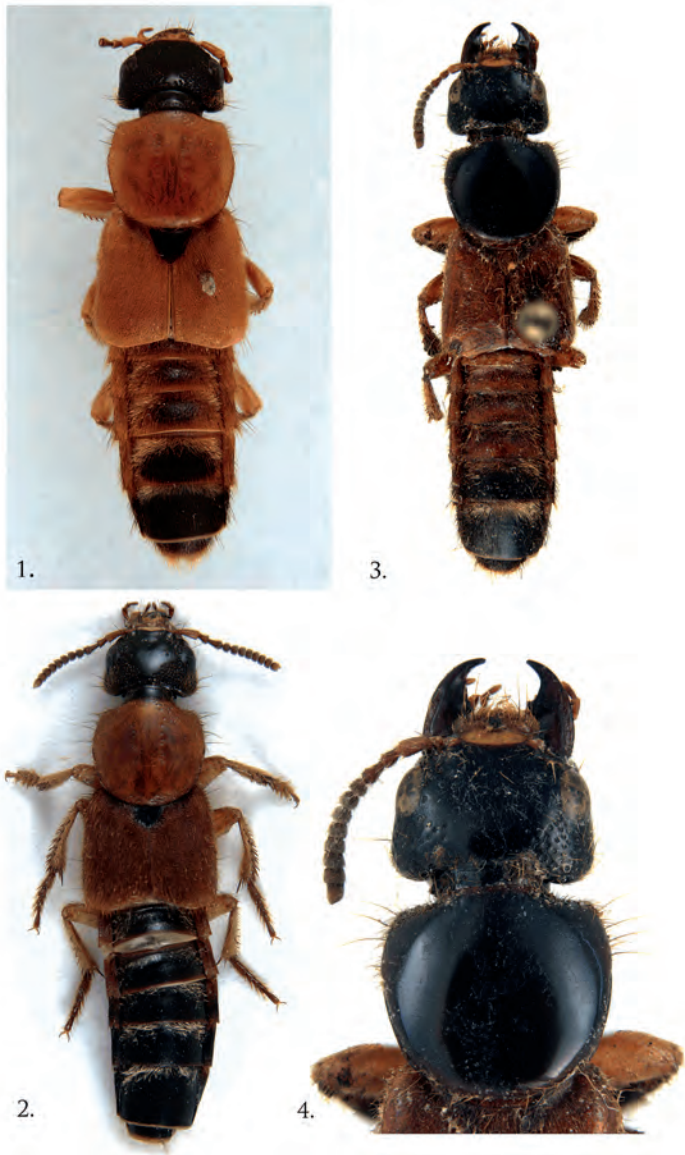

Plate 1: (**1**) *S. ruficollis* type, (**2**) *S. ruficollis* from Arunachal Pradesh, (**3**) *S. laevicollis* type, (**4**) *S. laevicollis* type.

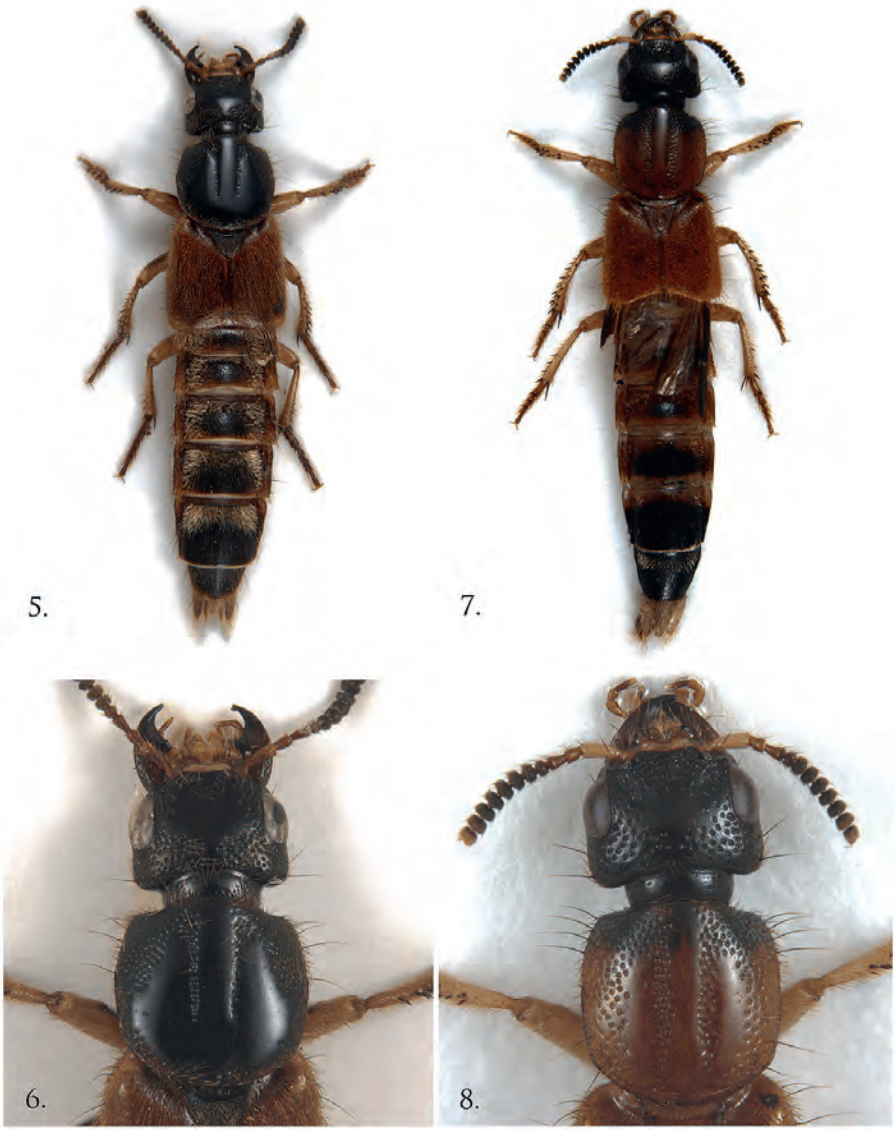

Plate 2: (**5**) *S. cooteri* sp.n., (**6**) *S.cooteri* sp.n., (**7**) *S. manni* sp.n., (**8**) *S. manni* sp.n.

Plate 3: Aedeagi, (**9**) *S. ruficollis*, lateral view (specimen from Mae Hong Son), (**10**) *S. ruficollis*, ventral view (specimen from Mae Hong Son), (**11**) *S. manni* sp.n., lateral view (holotype), (**12**) *S. manni* sp.n., ventral view (holotype).

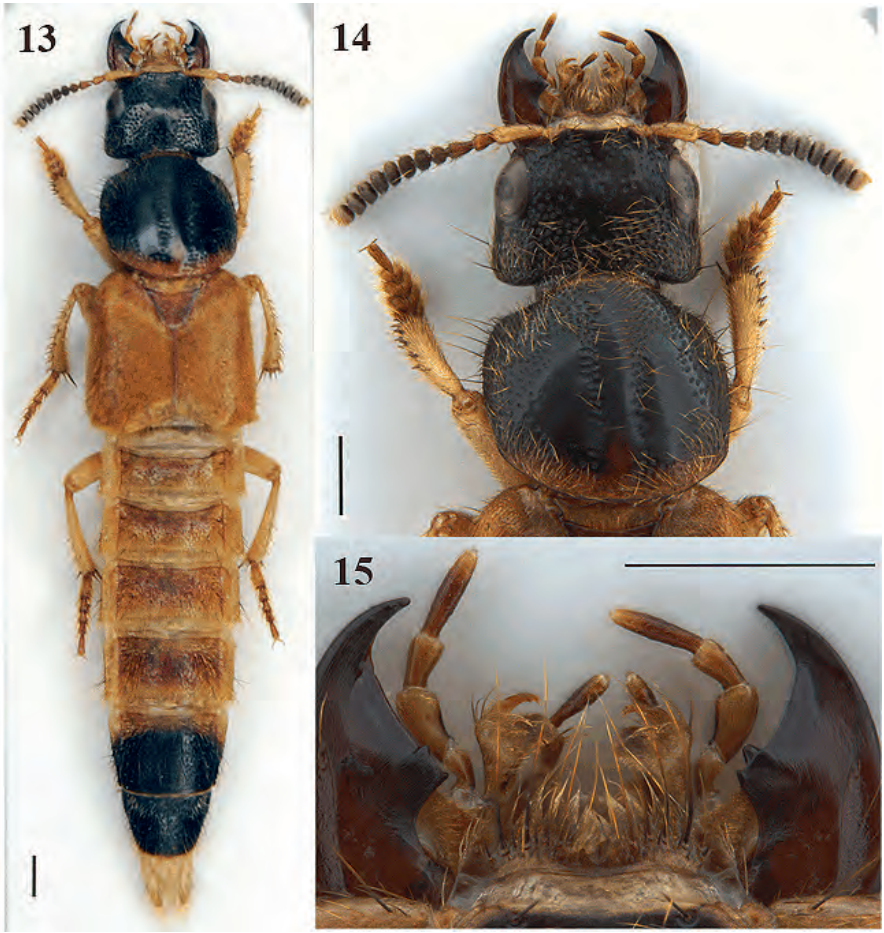

Plate 4: *S. cechovskyi* sp.n., (**13**) Habitus, (**14**) Head and Pronotum, (**15**) Mouthparts in dorsal view**.**

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Buchbesprechungen

WILDERMUTH H. & A. MARTENS: **Taschenlexikon der Libellen Europas.** Alle Arten von den Azoren bis zum Ural im Porträt. – Quelle & Meyer, Wiebelsheim, 2014. 824 S.

Die Faszination für Libellen kann auf verschiedenen Wegen zustandekommen; zum einen faszinieren sie mit ihrer Farbenpracht und Flugdynamik, zum anderen dienen sie Forschern als Objekte wissenschaftlicher Fragestellungen, nicht zuletzt durch ihre ökologische Relevanz. Beschrieben werden in diesem Taschenlexikon alle 135 europäischen Libellenarten, mit ihrem Verhalten und ihrer Ökologie. Obwohl dieser Band kein Bestimmungsbuch ersetzen kann, sollte doch in den meisten Fällen eine halbwegs gesicherte Artdiagnose möglich sein.

Die kurze Einführung gibt eine Übersicht zur Biologie der Libellen, zum Körperbau (Larven und Imagines), zur Taxonomie, zum Entwicklungszyklus, zu Umweltbeziehungen (ökologische Ansprüche), zu Gefährdung und Schutz sowie Tipps zur Beobachtung und Fotografie.

Jede Art wird mit ihrem wissenschaftlichen, deutschen und englischen Namen vorgestellt; über das Stichwort Kennzeichen erfolgt eine ausführliche Beschreibung von Imago und Larve, die Verbreitung wird relativ grob (ohne Karte) angegeben, Lebensraum und besonders Lebensweise werden sehr ausführlich dargestellt. Ein abschließendes Kapitel stellt Epizoen, Parasiten und Parasitoide vor. Erfreulich umfangreich ist auch das Literaturverzeichnis.

Eine fantastische, sehr lobenswerte Publikation.

R. Gerstmeier

ESSL F. & W. RABITSCH (Hrsg.): **Biodiversität und Klimawandel.** Auswirkungen und Handlungsoptionen für den Naturschutz in Mitteleuropa. – Springer Spektrum, Berlin-Heidelberg, 2013. 458 S.

Wie steht es zutreffend im Vorwort: “Wir wissen zwar noch lange nicht alles über den Klimawandel und seine Folgen, aber wir wissen genug um zu handeln.”

Seit etwa 1 Million Jahre war der CO_2-Gehalt der Atmosphäre noch nie so hoch wie heute, 2005 und 2010 waren global gesehen, die wärmsten Jahre seit Beginn der Aufzeichnungen vor mehr als 130 Jahren, Gletscher und Eisdecken schwinden dramatisch und in Folge steigt der Meeresspiegel kontinuierlich.

Dieses Buch bietet die Möglichkeit, sich einen umfassenden Überblick der Klimawandeleffekte auf die Biodiversität in Mitteleuropa zu machen. Es ist ein Gemeinschaftswerk des österreichischen Umweltbundesamtes, des deutschen Bundesamtes für Naturschutz, des Schweizer Bundesamt für Umwelt, des österreichischen Bundesministeriums für Wissenschaft und Forschung und des oberösterreichischen Umweltressorts in Zusammenarbeit mit 74 Autoren. Beobachtete und prognostizierte Folgen des Klimawandels auf Arten und Lebensräume nehmen dabei einen zentralen Raum

ein und indizieren frühzeitiges Handeln mit entsprechender Risikovorsorge. Dazu werden Querverbindungen zu Land- und Forstwirtschaft, Jagd und Fischerei hergestellt sowie die Auswirkungen auf Gesundheitsvorsorge und ökosystemare Leistungen berücksichtigt.

Das Buch ist in folgende 9 Kapitel eingeteilt: Klimatologische Grundlagen, Klima als Umwelt- und Überlebensfaktor, Klimawandeleffekte heute, Klimawandeleffekte morgen: Was könnte noch kommen, Wie könnten unsere Lebensräume und Landschaften zukünftig aussehen - Eine Gesamtschau, Was leistet die Biodiversität für die Anpassung der vom Klimawandel betroffenen menschlichen Gesellschaft, Naturschutz als Beitrag zum Klimaschutz, Bewertung des Klimawandels für den Naturschutz: Probleme, Prioritäten, Handlungsoptionen und -erfordernisse.

Wer sich konkret über die möglichen Auswirkungen des Klimawandels auf die biologische Vielfalt in Mitteleuropa informieren will, kommt um dieses hervorragende Buch nicht herum. Die einzelnen Beiträge sind inhaltlich sehr ausführlich und elegant miteinander verknüpft. Anschauliche Grafiken und Fotos illustrieren den Text, zahlreiche Textboxen fassen Besonderheiten zusammen. Fachleute können sich gezielt informieren und nachschlagen, auch weniger Versierte finden hier einen idealen Einstieg in die Thematik. Eine überaus empfehlenswerte Darstellung zur Thematik Biodiversität und Klimawandel.

R. Gerstmeier

WILSON, D.E. & R.A. MITTERMEIER (eds.): **Handbook of the Mammals of the World. 4. Sea Mammals.** – Lynx Edicions, Barcelona, 2014. 614 S.

Mit den Meeressäugetieren ist nun der 4. Band der Reihe "Handbook of the Mammals of the World" erschienen, der die Ordnungen Carnivora, Cetacea und Sirenia mit insgesamt 19 Familien beinhaltet. Dass diese Gruppierung eher praktisch als phylogenetisch ist, dürfte klar sein. Was die Phylogenie betrifft, werden sich höchstwahrscheinlich größere Veränderungen ergeben; so deuten neuere molekulare Befunde auf eine enge evolutionäre Verwandtschaft der Wale mit den Flusspferden hin.

Begonnen wird dieser Band mit einem Spezialkapitel im Kontext zum Schutz der marinen Umwelt und des Klimawandels. Die Liste der angesprochenen Probleme ist lang: Fischerei, Kollisionen mit Schiffen, Habitatverlust, Verschmutzung, Infektionskrankheiten, Algenblüten, die Zunahme von Hurricans und tropischen Stürmen, der Klimawandel und die Versauerung der Meere. Im Anschluss an diese Einführung erfolgt die Besprechung der drei Ordnungen, jeweils beginnend mit der Systematik, morphologischen Aspekten, Habitat und Lebensraum, Kommunikation, Nahrung und Ernährung, soziale Organisation, das Verhältnis zum Menschen und dem Naturschutz-Status. Danach folgen die gezeichneten Farbtafeln (insgesamt 30), die Besprechung der Arten mit Verbreitungskarten (insgesamt 147) und die betreffenden Literaturzitate (insgesamt ca. 2800). Garniert sind die Texte mit absolut hervorragenden und eindrucksvollen 667 Farbfotos.

Wie schon bei den vorangegangenen Bänden lässt auch der 4. Band keine Wünsche offen - ein fantastischer Band, eine super Reihe.

R. Gerstmeier

WEHNER, R. & W. GEHRING: **Zoologie.** – Georg Thieme Verlag, Stuttgart-New York 2013, 25. Auflage, 792 S.

Mit dieser "Jubiläumsausgabe" folgt etwa 6 Jahre nach der erstmals großformatigen 24. Auflage die Neufassung des Zoologie-Klassikers, weiterhin aus der Feder von nur zwei Autoren. Die beiden in der Schweiz und Deutschland lehrenden Professoren Rüdiger Wehner und Walter Gehring bemühten sich, in den einzelnen Disziplinen die grundlegenden Fragestellungen und Konzepte herauszustellen und mit Forschungsbeispielen jeweils zu untermauern. Die vorliegende 25. Auflage wurde stark überarbeitet und aktualisiert; erstaunlich, dass sich der Gesamtumfang dabei eher deutlich verringerte (792 S. aktuell, 24. Aufl. 951 S.). Die Grundgliederung in 12 Kapitel wurde beibehalten und alle Kapitel sollten als selbstständige Texte gelesen werden können. Zahlreiche Querverweise helfen, sich beim Lesen auch jeweils anderen Themenkomplexen zuzuwenden und dort weitere Informationen zu finden. Ein besonderer Schwerpunkt wurde erneut auf das Kapitel "Vielfalt der Organismen" gelegt, also dem klassischen Systematischen Teil, der durchgehend einer phylogenetischen Systematik folgt, und etwa ein Fünftel des gesamten Textumfanges einnimmt.

Blätterst man einzelne Kapitel im Vergleich (zur 24. Aufl.) durch, wird man feststellen, dass sich eigentlich nicht sehr viel Neues getan hat, sieht man einmal vom moderneren Layout (Übersichten, Boxen) ab. Als Lehrender und auch Studierender kann man noch gut mit der 24. Auflage weiter arbeiten, was letztendlich für die beeindruckende Aktualität dieses Werkes spricht.

Der "Wehner, Gehring" wird DAS Zoologie-Lehrbuch im deutschsprachigen Raum bleiben, weil dieses Buch alle Teildisziplinen (Zellbiologie, Genetik, Neurobiologie, Ethologie, Ökologie, Evolution und Systematik) der Zoologie umfasst.

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