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Four new species of *Paederus* FABRICIUS from Mt. Victoria, Myanmar (Coleoptera: Staphylinidae: Paederinae)

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Abstract

Four new species of *Paederus* Fabricius, 1777 (Coleoptera: Staphylinidae) are described from Nat-ma-taung National Park, Chin State, Myanmar: *Paederus goellnerae* WILLERS sp.n., *P. hiekei* WILLERS & SCHILLHAMMER sp.n., *P. natmataungensis* WILLERS & SCHILLHAMMER sp.n., *P. schillhammeri* WILLERS sp.n. All four species belong to a lineage that might be endemic to the Chin Hills. The aedeagi of all species represented by males are illustrated, as well as other important diagnostic body details. Habitus photographs of all species are provided.

Key words: Coleoptera, Staphylinidae, Paederinae, *Paederus*, new species, taxonomy, Myanmar.

Introduction

The Asian species of *Paederus* FABRICIUS, 1777 s.l. have been studied only fragmentary so far, mainly dealing with the Himalayan or Chinese (including Taiwan) fauna (WILLERS 1999, 2001a–c, 2002, LI et al. 2007, 2009, 2013, ASSING 2014). As can be inferred from these papers, *Paederus* and related genera show a significant trend towards local endemism in areas of higher elevation where virtually all species are wingless.

Nat-ma-taung (Mt. Victoria) is the highest peak of the Chin Hills (ca. 3050 m a.s.l.) and is situated in a National Park of the same name. An expedition to this mountain in 2010 by the second author revealed an astonishing number of undescribed species, among them four new species of *Paederus* which are described herein.

Material

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

MNHUB Museum für Naturkunde Berlin, Germany
NHMW Naturhistorisches Museum Wien, Austria

All types are deposited in the NHMW, the following paratypes are deposited in MNHUB:

4 paratypes (2 ♂♂, 2 ♀♀) of *Paederus hiekei* sp.n.; 1 paratype (♀) of *P. natmataungensis* sp.n.; 2 paratypes (♂♂) of *P. schillhammeri* sp.n.; 3 paratypes (♀♀) of *P. goellnerae* sp.n.

Descriptions of the new species

Paederus natmataungensis WILLERS & SCHILLHAMMER sp.n.

Holotype ♀: // MYANMAR: Chin State/ WNW Kamptet/ Natmataung Nat. P.// 2470 m, 3.6.2010/ beating of vegetation/ leg. Schillhammer (177)// HOLOTYPE ♀/ *Paederus/ natmataungensis* n.sp./ des. Willers, 10.2012// (NHMW).

Paratypes (3 ♀♀): label data identical to that of the holotype, but: 1 ♀: 21°13'21.2"N 93°58'09.6"E, 2470 m, 1.6.2010, beating of vegetation/ leg. Schillhammer (171); 1 ♀: same label data as holotype; 1 ♀: 21°13'21.9"N 93°57'56.4"E, 6.6.2010, 2450 m, beating of vegetation, leg. Schillhammer (185B).

Measurements (in mm):

Body length (labrum to last tergite, n=4): min 8.1; max 10.2; mean 9.4

Length of fore body (labrum to end of elytra, n=4): min 4.1; max 4.5; mean 4.3

DESCRIPTION (Habitus: Fig. 1): Head piceous black; antennae, palpi, pronotum and legs brick red, mandibles somewhat darker; elytra black with metallic blue sheen; abdomen black.

Head suborbicular, as wide as pronotum, with markedly prominent eyes; labrum (Fig. 5) with small median excision and with two small extensions laterally; surface of head smooth and shiny, sparingly punctate and setose; pronotum smooth and shiny, punctation and setation as on head; anterior margin and base finely bordered, without lateral line; scutellum brick red in the center, margins darker brown; surface with microsculpture of fine transverse waves; elytra short, with rounded shoulders; at posterior margin as wide as pronotum; sparingly punctate and with fine setae, punctures slightly impressed; with microsculpture composed of fine longitudinal striae visible at strong magnification; hind wings reduced; abdomen sparingly punctate and pubescent; slightly more matt than head, pronotum and elytra due to fine transversely meshed microsculpture; posterior margin of sternite VIII triangularly acute (Fig. 13), that of corresponding tergite extended into a longer point (Fig. 14).

ETYMOLOGY: The species is named after the type locality.

***Paederus hiekei* WILLERS & SCHILLHAMMER sp.n.**

Holotype ♂: // MYANMAR: Chin State/ WNW Kampetlet/ Natmataung Nat. P.// 21°14'0.34"N/ 93°59'35.0"E/ 2450 m, 6.6.2010/ beating of vegetation/ leg. Schillhammer (185B) // HOLOTYPE ♂/ *Paederus/ hiekei* n. sp./ des. Willers, 10.2012// (NHMW).

Paratypes (8 ♂♂, 13 ♀♀): label data identical to that of the holotype, but: 1 ♂, 1 ♀: 21°14'0.34"N 93°59'35.0"E, 2450 m, 6.VI.2010, beating of vegetation, leg. Schillhammer (185B); 2 ♂♂, 2 ♀♀: below (N) base camp, 21°13'11.3"N 93°56'24.2"E, ca. 2700 m, 31.V.2010, leg. Schillhammer (167); 1 ♂: below (N) base camp, 21°13'11.3"N 93°56'24.2"E, ca. 2700 m, 2.VI.2010, leg. Schillhammer (173); 1 ♂: 21°13'24.7"N 93°58'49.8"E, 2470 m, 2.VI.2010, sifting of leaf litter, leg. Schillhammer (174); 1 ♂, 2 ♀♀: 2470 m, 3.VI.2010, beating of vegetation, leg. Schillhammer (177); 3 ♂♂, 2 ♀♀: 21°13'21.2"N 93°58'09.6"E, 2470 m, 1.VI.2010, beating of vegetation, leg. Schillhammer (171); 1 ♀: 21°13'11.3"N 93°56'24.2"E, ca. 2700 m, 2.VI.2010, leg. Schillhammer (173); 3 ♀♀: 21°13'21.2"N 93°58'09.6"E, 2470 m, 1.VI.2010, sifting of leaf litter, leg. Aung Zaw Lin (176); 1 ♀: 21°13'12.7"N 93°56'32.6"E, 2720 m, 8.VI.2010, beating of vegetation, leg. Schillhammer (188).

Measurements (in mm):

Body length (labrum to last tergite, n=22): min 8.4; max 11.2; mean 9.9

Length of fore body (labrum to end of elytra, n = 22): min 4.0; max 4.8; mean 4.4

Length of aedeagus (n=9): min 2.5; max 2.7; mean 2.6

DESCRIPTION (Habitus: Fig. 2): Head, pronotum, scutellum and legs dark red brown, antennae, palpi and tarsi lighter reddish brown. Elytra black with blue-violaceous hue. Abdomen black, except for two last exposed segments which are red brown.

Head suborbicular with markedly prominent eyes, slightly broader than ovoid pronotum; labrum almost identical in both sexes (Fig. 6), in the ♀ the lateral corners somewhat less rounded; antennae, mandibles and palpi identical in both sexes; surface smooth and shiny, with scattered setiferous punctures of variable size and depth, setae black to dark brown, of variable size; pronotum ovoid, base and anterior margin bordered, lateral line becoming obsolete towards base at approximately basal fourth; surface with punctation and setation similar to that of head; prosternum with keel between procoxae; scutellum with microreticulation of transverse waves; elytra slightly trapezoid, at posterior margin somewhat narrower than pronotum, shoulders rounded; sparingly punctate and with fine setae, punctures slightly impressed; surface smooth and shiny, with weak microsculpture visible at larger magnification; hind wings reduced; surface of first four exposed abdominal segments with punctation and setation similar to that of elytra, but with indistinct transverse microsculpture; male tergite VIII with subacute apex, that of

female extended into long acute tip (Fig. 16); abdominal sternites of male with secondary sexual characters: segments IV–VII with central depression of increasing depth; depressions of sternites IV–VI with denser punctation and setation than remaining portions of sternites; sternite VII with particularly deep depression, but punctation and setation not denser than surrounding surface; sternite VIII with usual medio-apical excision; female sternite VIII (Fig. 15) with rounded apex and small lateral denticles.

Aedeagus (Figs. 9–10) oblong ovoid, compact; parameres laterally reaching almost three fourths of total length of aedeagus. Parameres split into two lobes at about midlength; lateral lobes prominent and sharply pointed, medial lobes contiguous and fused and continuing to almost apex of dorsal lobe, shortly split at very apex where they carry the characteristic bunch of setae.

ETYMOLOGY: The species is dedicated to our late colleague Dr. F. Hieke, who passed away earlier this year. His collegial demeanour will be missed and his contributions to the knowledge of the carabid genus *Amara* will remain invaluable for generations of scientists.

Paederus schillhammeri WILLERS sp.n.

Holotype ♂: // MYANMAR: Chin State/ WNW Kampetlet/ Natmataung Nat. P.// 21°13'21.2"N 93°55'37.3"E/ 2960 m, 8.6.2010/ spraying of bark/ leg. Zimmermann (189A)// HOLOTYPE ♂/ *Paederus schillhammeri* n. sp./ des. Willers, 10.2012// (NHMW).

Paratypes (3 exs.): label data identical to that of the holotype, but: 1 ♂: // 21°13'21.2"N 93°55'37.3"E/ 2960 m, 8.6.2010/ spraying of bark/ leg. Zimmermann (189A)//; 1 ♀: // summit of Mt. Victoria/ 21°14'03.4"N 93°54' 0.35"E/ 3050 m, 5.6.2010/ leg. Schillhammer (183); 1 ♀: // 21°13'21.2"N 93°58'0.96"E/ 2470 m, 1.6.2010/ sifting of leaf litter/ leg. Aung Zaw Lin (176)//.

Measurements (in mm):

Body length (labrum to last tergite, n=4): min 15.3; max 17.4; mean 16.7

Length of fore body (labrum to end of elytra, n=4): min 6.7; max 7.4; mean 7.0

Length of aedeagus (n=2): min 4.4; max 4.4; mean 4.4

DESCRIPTION (Habitus: Fig. 3): Obviously large species. Coloration as in *P. hiekei* (see above) but abdomen with only last exposed segment reddish, reddish color lighter than in head and pronotum, but distinctly darkened apicad.

Head transverse, above slightly protruding eyes distinctly broader than length from anterior margin of labrum to constriction of neck and slightly narrower than pronotum; labrum (Fig. 7); appendages of head in both sexes without discernible differences; surface of head smooth and shiny, sparingly punctate and setose; pronotum transversely oval, from broadly rounded anterior angles distinctly narrowed posteriad; lateral line of pronotum discernible till shortly in front of base; sheen and setation of surface as in head; median prosternal keel distinct but interrupted between bases of coxae; prosternum, meso- und metaventrite, including coxae, red brown as head and pronotum; scutellum with microsculpture of transverse waves, coloration as in head and pronotum; elytra trapezoid, broadest shortly in front of posterior margin, narrower than pronotum; surface smooth and shiny, with hardly discernible netted microreticulation; with distinct longitudinal gibbositities and depressions around shoulders; pubescence formed by few, stout, erect, black setae and sparse, almost decumbent setae; surface of abdomen matt due to distinct meshed microsculpture; semi-erect pubescence becoming denser at posterior margin of each tergite and toward apex of abdomen; tergite VIII identical in both sexes, slightly more pointed apically in ♀ (Fig. 17); surface of sternite with weak netted microsculpture, therefore more shiny; pubescence as on tergite; male sternites IV–VI with medio-apical depressions of increasing depth (there with asperate punctation and short pubescence), sternite VII with round, medial, smooth depression; sternite VIII with characteristic medio-apical emargination, lateral

margins of emargination modified into distinct longitudinal face; lateral margin of female sternite VIII acutely tooth-like protruding (Fig. 19).

Aedeagus (Fig. 11–12) voluminous, oblong ovoid, pointed; in ventral view, median lobe narrowed till shortly beyond midlength; beyond that, dorsal lobe slightly widened and then slightly asymmetrically narrowed into acute tip. Parameres basally closely attached, similarly as in *P. hiekei* (see above), but lateral lobes much shorter, medial lobes fused only in apical fourth. A hook-like internal structure is discernible between parameres and dorsal lobe.

ETYMOLOGY: The species is named after its avid collector, Dr. Harald Schillhammer, Vienna.

Paederus goellnerae WILLERS sp.n.

Holotype ♀: // MYANMAR: Chin State/ WNW Kampetlet/ Natmataung Nat. P.// summit of Mt. Victoria/ 21°14'03.4"N 93°54'03.5"E/ 3050 m, 5.6.2010/ leg. Schillhammer (183)// HOLOTYPUS ♀/ *Paederus/ goellnerae* n. sp./ des. Willers, 10.2012// (NHMW).

Paratypes (11 ♀ ♀): 10 ♀ ♀ with same label data as holotype, but // PARATYPUS ♀/ *Paederus/ goellnerae* n. sp./ des. Willers, 10.2012//; 1 ♀: // MYANMAR: Chin State/ WNW Kampetlet/ Natmataung Nat. P.// below (N) base camp/ 21°13'11.3"N 93°56'24.2"E/ ca. 2700 m, 2.6.2010/ leg. Schillhammer (173)//.

Measurements (in mm):

Body length (labrum to last tergite, n=12) min 13.3, max 14.6, mean 14.0

Length of fore body (labrum to end of elytra, n=12) min 5.5, max 6.1, mean 5.9

DESCRIPTION (Habitus: Fig. 4): Generally, very similar to *Paederus schillhamperi*, but slightly smaller (on average ca. 2.5 mm). Therefore, only the details necessary to distinguish the species are described here.

Anterior margin of labrum more straight, less sinuate, lateral corners more rounded (Fig. 8); longitudinal gibbositities and depressions slightly less pronounced; surface of abdomen with much finer netted microsculpture and thus markedly less matt; tergite VIII relatively narrower and more slender, extension of apex longer and narrower (Fig. 18); lateral line separating dorsal surface of tergite from deflexed portion very weakly developed and in anterior half even lacking; the tooth-like lateral margin of sternite VIII is much less distinct in *P. goellnerae* (Fig. 20).

ETYMOLOGY: I am pleased to dedicate this species to my much appreciated senior colleague, the hemiptera specialist Dr. U. Göllner-Scheiding, Berlin, as a belated consideration of her 93rd birthday.

Discussion and bionomics

The four species described herein resemble species of the Afrotropical genus *Pachypaederus* FAGEL in habitus, coloration, and other details such as keeled prosternum and tooth-like lateral projections of female sternite VIII.

However, the unusual build of the aedeagus implies that they must belong to a separate group. The peculiarity is shown in the development of the parameres (Figs. 9, 11) in showing small lateral denticles and apical enlargements with large-scale fusions. Currently, no other group within *Paederus* s.l. is known with such parameral shapes. Obviously, these widened and fused structures are responsible for functions otherwise carried out by the ventral and dorsal parts of the median lobe.

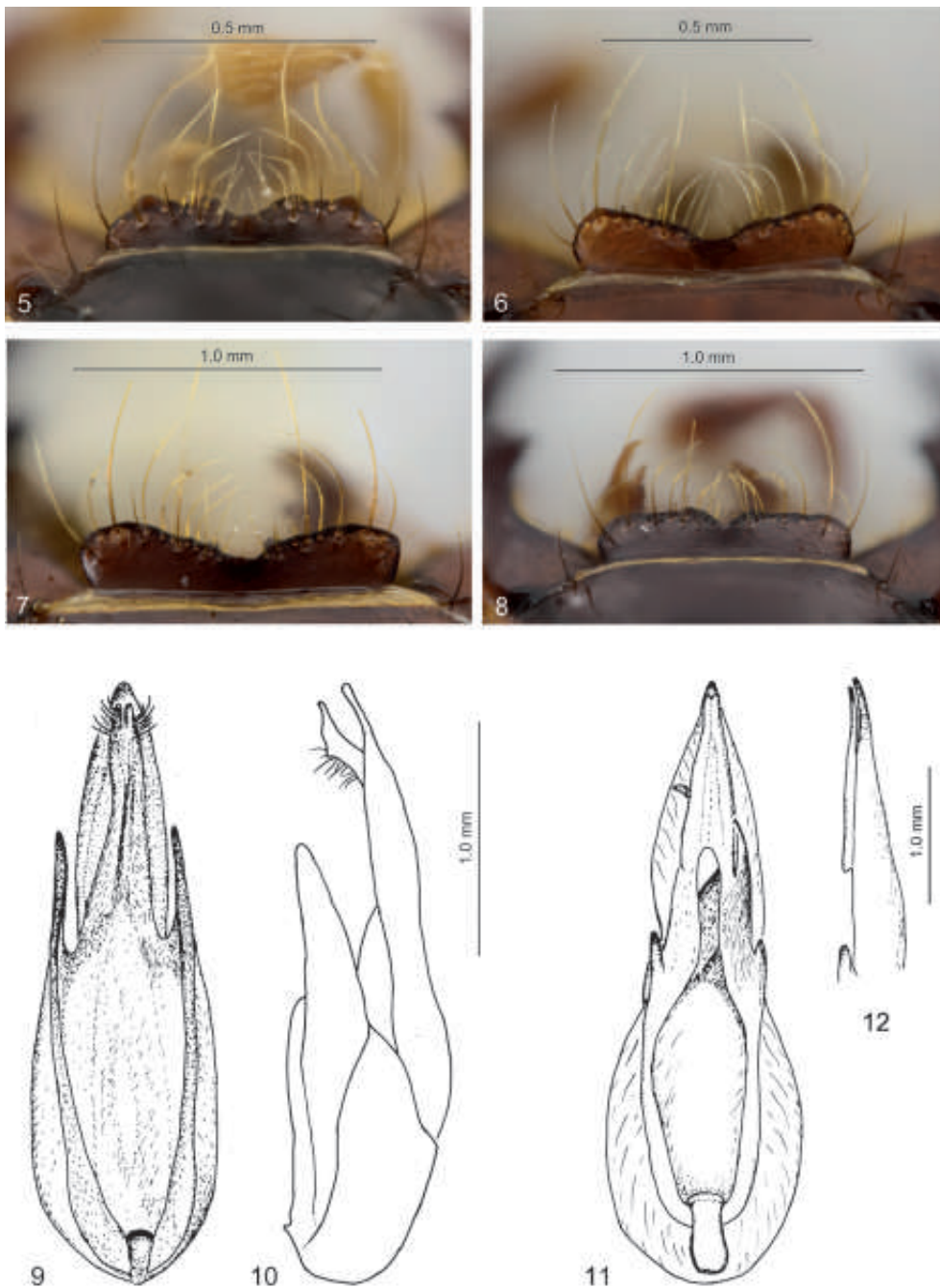
The two new species represented only by females (*P. natmataungensis*, *P. goellnerae*) can be easily assigned to this group by the combination of external characters, and to some extent also by the collecting circumstances, and can also be easily recognized as distinct species.



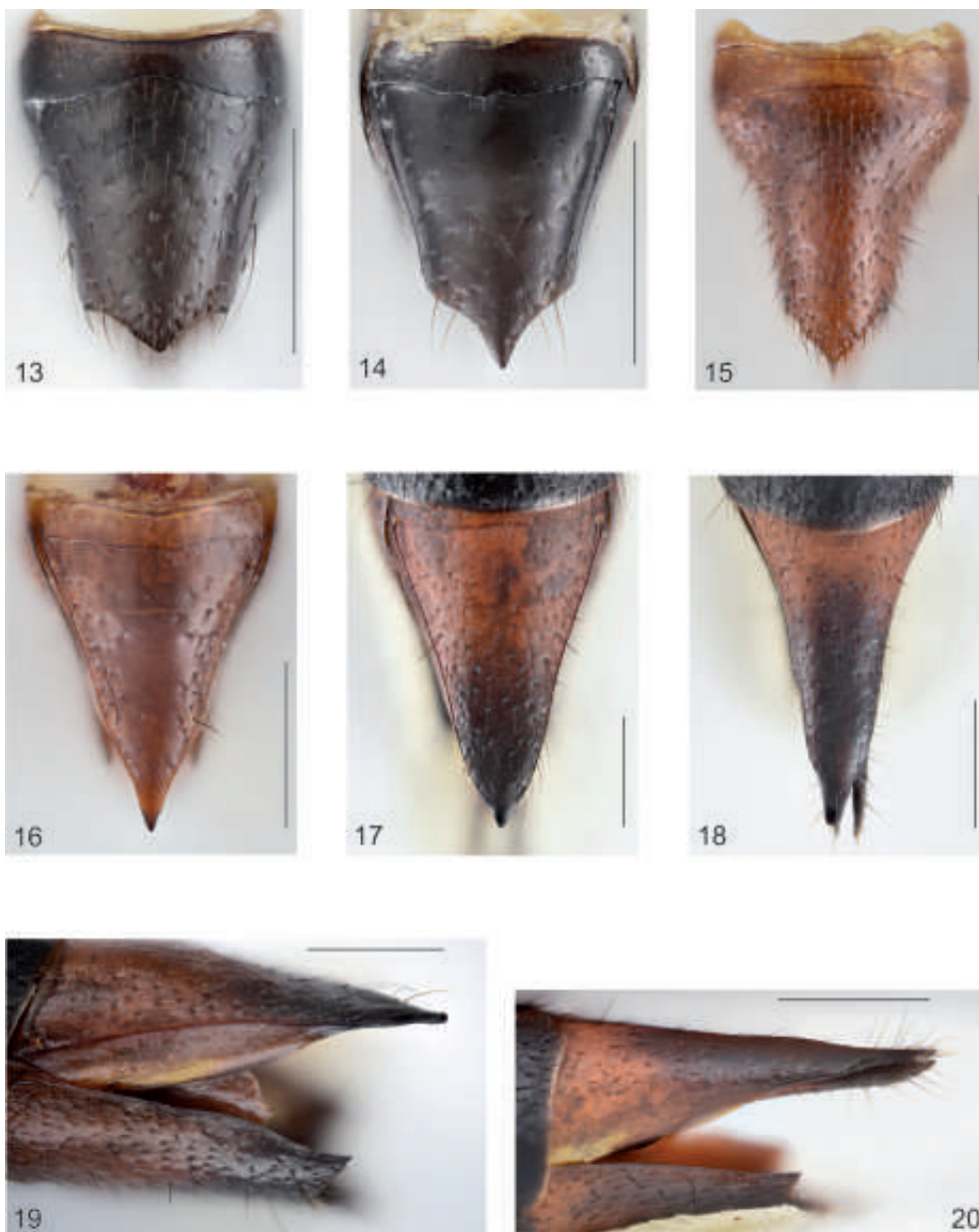
Figs. 1–2: Habitus of 1) *Paederus natmataungensis*; 2) *P. hiekei*. Not to scale.



Figs. 3–4: Habitus of 3) *Paederus schillhammeri*; 4) *P. goellnerae*. Not to scale.



Figs. 5–12: 5–8: labrum of 5) *Paederus natmataungensis*; 6) *P. hieki*; 7) *P. schillhammeri*; 8) *P. goellnerae*; 9–12: aedeagus (ventral and lateral view) of 9, 10) *P. hieki*; 11, 12) *P. schillhammeri*. Scale bar: 0.5 mm (Figs. 5, 6), 1 mm (Figs. 9–12).



Figs. 13–20: 13, 14) *Paederus natmataungensis*, female sternite VIII (13) and female tergite VIII (14); 15, 16) *P. hiekei*, female sternite VIII (15) and female tergite VIII (16); 17) *P. schillhammeri*, female tergite VIII; 18) *P. goellnerae*, female tergite VIII; 19–20) segment VIII (lateral view) of 19) *P. schillhammeri*; 20) *P. goellnerae*. Scale bar: 1 mm.

The four new species represent an isolated group and are likely endemic to the mountain system where they were collected. The majority of specimens was collected by beating of vegetation or fogging of mossy tree stems. Obviously, the species are preferably arboreal, as can be observed in many wingless species from higher altitudes in the Oriental Region. Since this geographical area (Chin Hills, Naga Hills in Myanmar and the adjacent parts of India) are virtually unexplored, a much better and wider sampling coverage is required to be able to assess the phylogenetic position of this group within *Paederus* s.l.

Zusammenfassung

Vier neue Arten der Gattung *Paederus* Fabricius, 1777 werden vom Nat-ma-taung National Park (Chin State, Myanmar) beschrieben: *Paederus goellnerae* WILLERS sp.n., *P. hiekei* WILLERS & SCHILLHAMMER sp.n., *P. natmataungensis* WILLERS & SCHILLHAMMER sp.n., *P. schillhammeri* WILLERS sp.n. Alle vier Arten gehören zu einer Verwandtschaftslinie, die in den Chin Hills endemisch sein dürfte. Die Aedeagi aller durch Männchen vertretenen Arten sowie wichtige Merkmale werden illustriert. Der Habitus aller vier Arten wird durch Farbfotos dargestellt.

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Buchbesprechung

HARTMANN, M. & WEIPERT, J. (Hrsg.) 2015: Biodiversität und Naturlausstattung im Himalaya V. – Verein der Freunde und Förderer des Naturkundemuseums Erfurt e.V., Erfurt: 580 S.; ISBN 978-3-00-048970-9, Preis: € 89.- plus Versand, Bezug: Naturkundemuseum Erfurt, Große Arche 14, D – 99084 Erfurt, Deutschland (matthias.hartmann@erfurt.de)

Der nunmehr fünfte Band dieser Serie enthält 37 Originalarbeiten von 53 Wissenschaftlern aus 12 Ländern. Die Beiträge sind wiederum breit gestreut: Geographie/Klimatologie (2), Botanik (4), Säugetiere, Vögel, Mollusken (je 1), Arthropoda allgemein (1), Spinnen (1), Insekten: Zikaden, Fangschrecken, Heuschrecken, Libellen, Schmetterlinge, Köcherfliegen (je 1) und Käfer (20).

Die Käferartikel umfassen folgende Familien: Carabidae (4), Staphylinidae (2), Lycidae (1), Lampyridae (1), Cantharidae (1), Dasytidae (1), Malachiidae (2), Dermestidae (1), Cleridae (1), Pyrochroidae (1), Tenebrionidae (1), Silphidae (1), Cerambycidae (1), Chrysomelidae (1), Rhynchitidae (1).

Besonders erwähnenswert sind die umfassenden Artikel über Weberknechte (J. Martens), Zikaden (A.F. Sanborn), Fangschrecken (R. Ehrmann & M. Borer), Libellen (T. Brockhaus), Köcherfliegen (D. Mattern) und Tagfalter (Shordoni et al.).

Es ist ein wahrer Genuss in diesem Band zu schmökern, vor allem wenn man sich für die Naturgeschichte und die erstaunliche Artenvielfalt der Himalaya-Region interessiert.

M.A. JÄCH

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