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A second species of the genus *Pittinius* (Coleoptera: Scarabaeidae: Aphodiinae: Psammodiini) from Nepal

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Abstract. A new species of the genus *Pittinius* Rakovič et Král, 1997, *Pittinius farkaci* sp. nov., from Central Nepal is described, illustrated and compared with the type species of the genus *Pittinius omnisetosus* Rakovič et Král, 1997; a male specimen of the type species was first examined here. Appropriate photographs of the two species are also presented.

INTRODUCTION

In the course of an examination of material in our collections, we surprisingly discovered a new species of the genus *Pittinius* Rakovič et Král, 1997, which was originally established as a monotypical genus of the tribe Psammodiini, subtribe Rhyssemina (Rakovič & Král 1997).

Within the subtribe Rhyssemina, the genus *Pittinius* belongs to a group of genera having a reduced pronotal structure only, i.e. genera without transverse pronotal ridges.

Among this group, there are only two genera with macrosetaceous dorsal surfaces of the body, the South-American genus *Mysarus* Petrovitz, 1962 and the Palearctic genus *Pittinius* (Gordon & Pittino 1992, Rakovič & Král 1997, Skelley 2008).

MATERIAL AND METHODS

The specimens were observed by using the MBS-10 and SZP 1120-T stereoscopic microscopes. The photos published here were taken by the use of the Meopta laboratory microscope, CMOS 5 digital camera and Helicon Focus programme.

The following acronyms stand for collections, in which the specimens studied here are kept:

DKCP David Král collection (deposited in National Museum Prague), Czech Republic;
LMCT Ladislav Mencl private collection, Týnec nad Labem, Czech Republic;
MRCD Miloslav Rakovič private collection, Dobřichovice, Czech Republic.

Exact label data concerning specimens of the two species studied here are specified in the section Results below. Our remarks and addenda are found in brackets, separate label lines are indicated by a slash (/), separate labels by a double slash (//).

For morphological terms used in the description of epipharyngeal structures we follow Dellacasa et al. (2001).

RESULTS

Pittinius farkaci sp. nov.
(Figs 1-9, 20)

Type locality. Central Nepal, Chitwan Royal National Park, Sauraha village, 27°35′N 84°30′E, 160 m a.s.l.

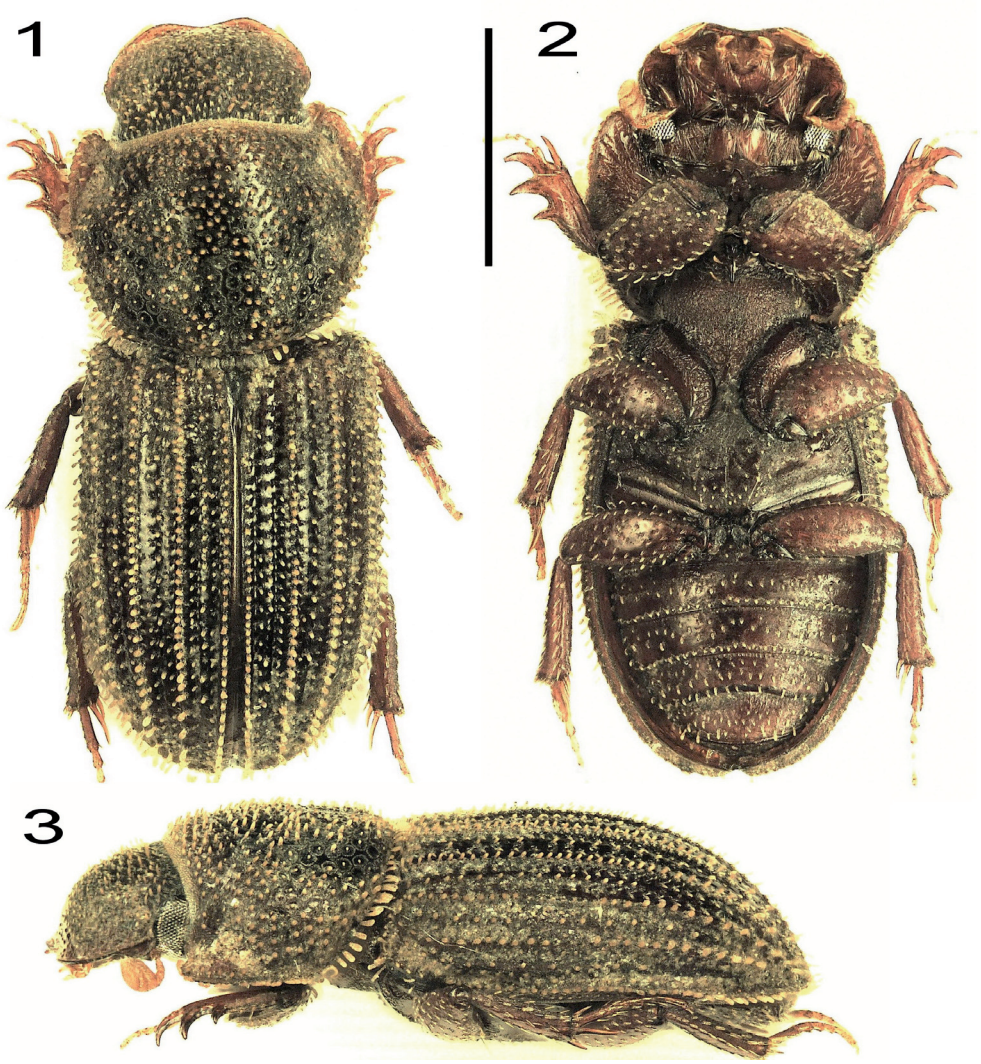
Type material. Holotype (♀): (MRCD), "C-NEPAL 21-27/7.2000 / Chitwan (Roy. Nat. Park) / SAURAHA vill. env. / 27.35N 84.30E; 160 m [GPS] / Jan Farkač lgt. (at light) [white printed label] // NEPAL expedition / Jan Farkač, David Král / & Jan Schneider 2000 [white printed label] // 1668, Dok. L. Mencl [pale green printed label, related to the photo-documentation system of the third author] // "HOLOTYPE (♀) / *Pittinius farkaci* sp. nov. / M. Rakovič, D. Král & L. Mencl det. 2014 [red printed label]".

Description. Oblong oval, subparallel, moderately convex, macrosetaceous, matte, mostly dark brown (anterior margins of clypeus, anterior corners of pronotum, legs and antennae brown), small (3.5 mm long) (Figs 1-3).

Head (Figs 1, 5-6) convex, transversal, without frontoclypeal suture and with distinct median gibbosity; head surface mostly matte except for small shining zone along clypeus anterior margin. Clypeus with round anteromedian emargination, rounded each side of it; anterior margin slightly upturned; lateral margins moderately arcuate up to small but distinct incision separating them from genae; each gena with (most likely only two) short, apically dilated macrosetae, with fine sinuation at about its midlength; genae more protruding than eyes; eyes partially visible from above. Frontoclypeal suture absent (Figs 5-6). Head surface with fairly densely and evenly distributed flat and small granules throughout, and with very short, thick, erect, apically non-dilated, sparsely distributed macrosetae.

Epipharynx (Fig. 4) transversal, anterior outline almost straight, lateral outlines regularly widely rounded; tormae and nesium well sclerotised, approximately symmetrical, apotormae missing; epitorma subquadrate, weakly sclerotised; helus with two somewhat irregular rows of sensilla and two longitudinal rows of microtrichia anteriorly; corypha and zygum absent; phobae weakly sclerotised, glabrous; chaetoparia with row of approximately 20 long, stout, closely spaced spines; area of prophobae well scletorised, bearing longitudinal row of five short, stout, sparsely spaced spines.

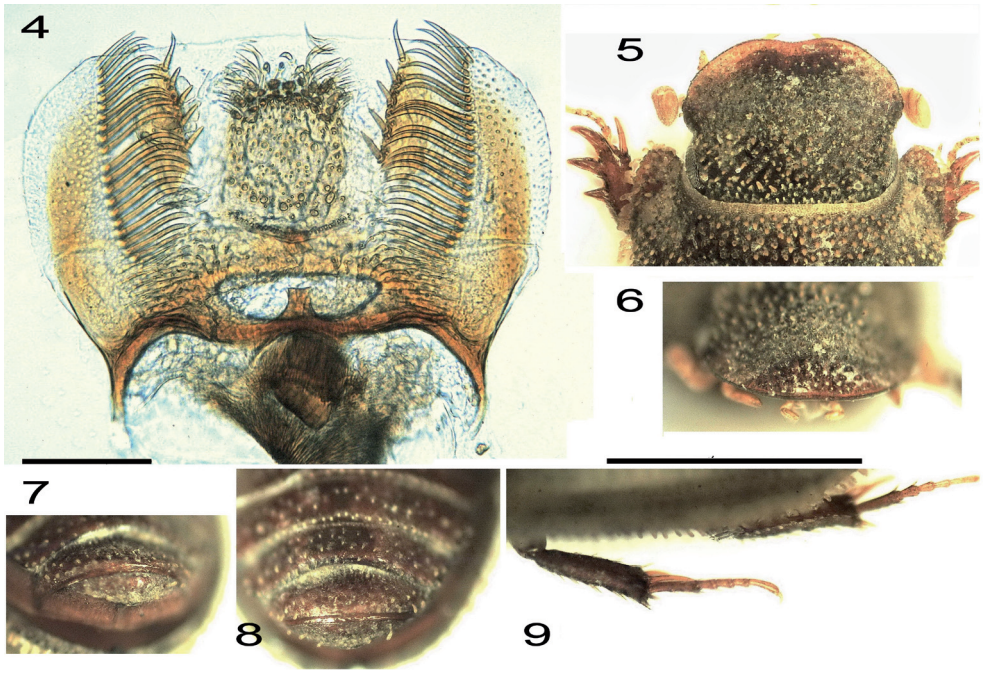
Pronotum (Fig 1-2) strongly transversal, considerably wider than head and also than elytra, widest at about midlength, explanate anterolaterally, with reduced pronotal structure: vestiges of first and third transverse furrows and posterior longitudinal furrow (furrows distinctly developed in Psammodiini having complete pronotal structure). Lateral margins with long, strongly dilated macrosetae; macrosetae along posterior corner and basal margin moderately dilated. Pronotum surface with medium-sized setigerous punctures bearing short (but longer than those on head), thick, suberect to erect macrosetae (Figs 1, 5)



Figs 1-3. *Pittinius farkaci* sp. nov., habitus of holotype, ♀: 1- dorsal view; 2- ventral view; 3- left lateral view. Scale bar 1 mm. Photos by L. Mencl.

Scutellum small, obtusely triangular (Fig. 1)

Elytra (Figs 1, 3) subparallel, only slightly broader behind, without humeral denticles, with ten striae and ten intervals. Striae not very distinct, with shallow, medium-sized, irregularly shaped punctures (neighbouring punctures distinctly separated one from another). Odd intervals (including sutural one - interval 1) subcostate, higher than even intervals; upper edge of each odd interval with row of dense, tough, considerably expanded, relatively long (longer than on the pronotum surface) macrosetae. Even intervals wider, flat, with moderately rough surface and short, thick, sparse macrosetae not arranged in rows (mostly 1-3 macrosetae



Figs 4-9. *Pittinius farkaci* sp. nov., details showing diagnostic characters, holotype, ♀: 4- epipharynx; 5- head and anterior part of pronotum; 6- anterior part of clypeus; 7- pygidium; 8- abdominal ventrites and pygidium; 9- left meso- and metatibia and meso- and metatarsus. 5, 9- dorsal aspect, 6- frontal view, 7-8- ventral view. Scale bars 1 mm for Fig. 5, 0.1 mm for Figs 5-9. Photos by L. Mencl.

per interval width). Edges of epipleurae with dense rows of macrosetae similar to those on odd elytral intervals.

Protibia (Fig. 5) with three outer teeth in apical half, not denticulate in basal half; outer face with few fine punctures and few fine macrosetae arranged in row about parallel with and close to lateral margin; apical spur straight to 2/3 its length and then moderately bent outward. Mesotibia and metatibia apices (Fig. 9) with irregularly inequal spinules and with two apical spurs; superior spur of metatibia longer than metatarsomere 1; metatarsomeres subcylindrical (only slightly dilated apically), decreasing in length from metatarsomere 1 to metatarsomere 4, metatarsomere 5 longer.

Ventral surfaces (Figs 2, 7-8, 20) moderately shining, abdominal ventrites and femora with fine punctures bearing short macrosetae, metaventral plate with very thin longitudinal furrow.

Pygidium (Figs 7-8) with rather uneven surface, with six pygidial macrosetae.

Sexual dimorphism. Male unknown.

Variability. Unknown.

Collection circumstances. Attracted to light.

Distribution. Nepal (Chitwan National Park).

Name derivation. Patronymic, in honour of our colleague and friend Jan Farkač, collector of the holotype.

Differential diagnosis. There are two species in the genus, which can be reliably differentiated from each other as follows:

Pittinius farkaci sp. nov. is considerably larger (3.5 mm), subparallel, only moderately convex and slightly broader behind (Figs 1-3). The clypeus is obtusely rounded each side of its anteromedian emargination (Figs 1-2, 5-6). The area of prophobae well scletorised, bearing a longitudinal row of five short, stout, sparsely spaced spines (Fig. 4). The pronotum is considerably wider than the elytra and its anterior corners are markedly explanate (Figs. 1, 2, 5). The odd elytral intervals are considerably higher than the even ones; each odd elytral interval is equipped with a row of dense, relatively long macrosetae; macrosetae in even intervals are much sparser, shorter and not arranged in rows (Figs 1, 3). Abdominal ventrites are considerably macrosetaceous (Fig. 2). The metaventral plate longitudinal furrow is very thin throughout (Fig. 20).

Pittinius omnisetosus is much smaller (2.2-2.5 mm), distinctly convex and broader behind (Figs 10-13). The clypeus is dentate each side of its anteromedian emargination (Figs 10, 11). The area of prophobae only very weakly sclerotised, short longitudinal row consisting of approximately six sensilla, one long anterior spine and one short medial spine (Fig. 14). The pronotum is about as wide as the elytra, its anterior corners are not explanate (Figs 10-11). There is no difference in the height between even and odd elytral intervals. There is essentially no difference in the length and arrangement of macrosetae between the odd intervals and even intervals. Abdominal ventrites are rather glabrous or at most sparsely macrosetaceous (Figs 12-13). The metaventral plate longitudinal furrow is dilated posteriorly (Figs 18-19).

Pittinius omnisetosus Rakovič et Král, 1997
(Figs 10-19)

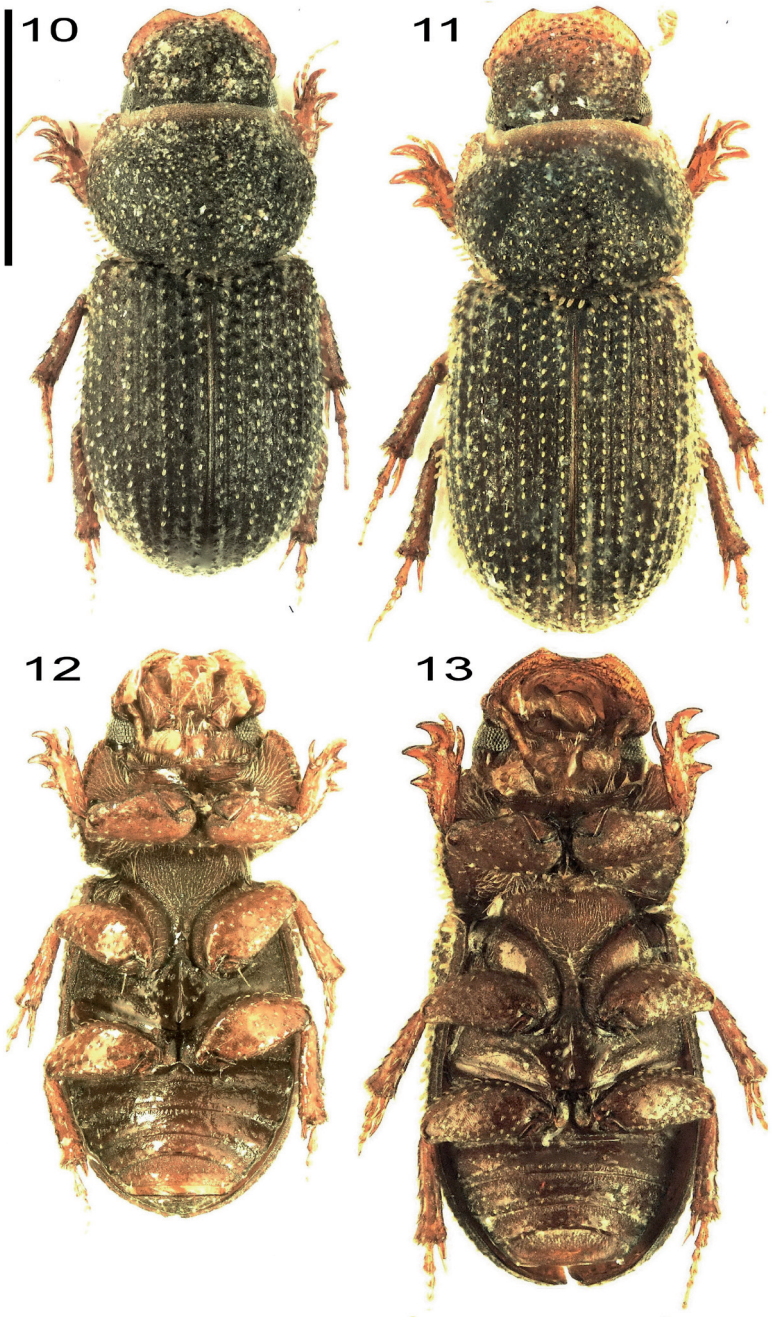
Pittinius omnisetosus Rakovič et Král, 1997: 242, fig. 16. Type locality: "Nepal, Chitwan N. P.".

Type material examined. Holotype (♀): (DKCP), "Nepal, 22.-26.5.1990, Chitwan N.P. [= National Park], S, Bílý leg. [printed] / at light [handwritten]".

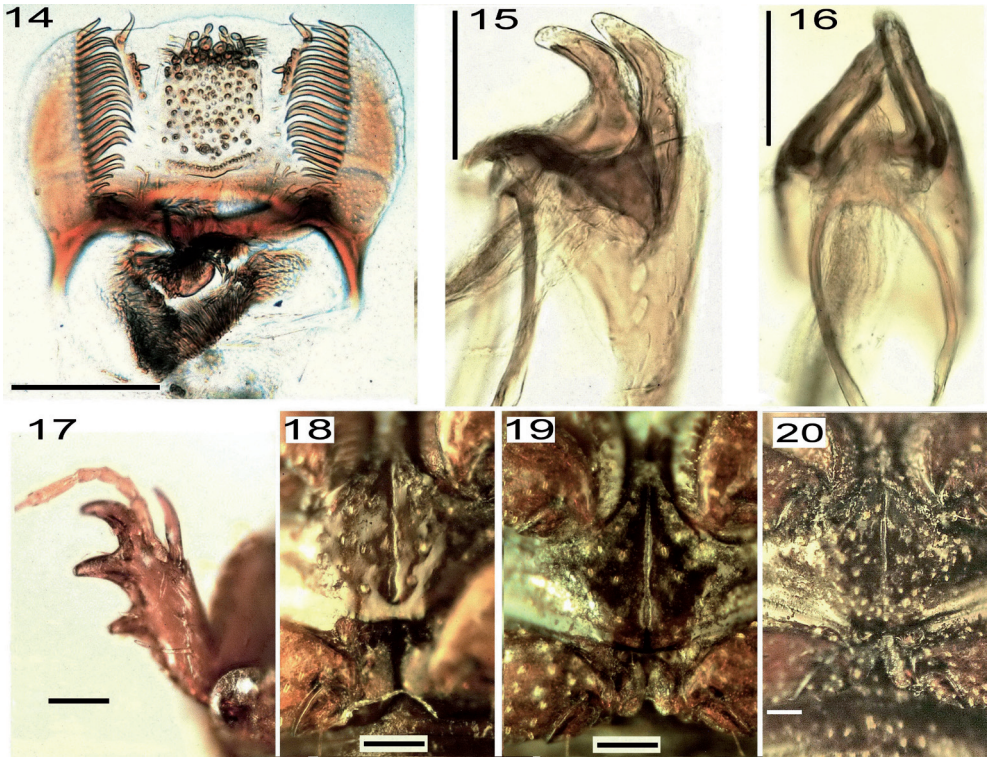
Further material examined. ♀ (DKCP), ♀ (LMCT), ♂ (MRCD), "C-NEPAL 21-27.vii.2000, / Chitwan (Roy. Nat. Park) / SAURAHA vill. 166 m / 27.35N 84.30E [GPS] env., / David Král lgt. (at light) [printed]".

Distribution. Central Nepal, North India (Uttarakhand).

Notes. Photographs of the species are first presented here (male and female dorsal and ventral aspects in Figs 10-13 and details of the epipharynx, aedeagus, protibia, and metaventral plate in Figs 14-19). Epipharynx (Fig. 14) was not analysed in the original description of the species; it is transverse, anterior outline almost straight, lateral outlines regularly widely rounded; tormae and nesium well sclerotized, approximately symmetrical, apotormae



Figs 10-13. *Pittinius omnisetosus*, habitus. 11, 13- holotype, ♀; 10, 12- ♂, Nepal, Chitwan, Sauraha vill. (MRCD): 10, 11- dorsal view; 12, 13- ventral view. Scale bar 1 mm. Photos by L. Mencl.



Figs 14-20. 14-19- *Pittinius omnisetosus*, details showing diagnostic characters. 14-18- ♂, Nepal, Chitwan, Sauraha vill. (MRCD); 19- holotype, ♀: 14- epipharynx, 15-16- aedeagus, 17- right protibia, 18, 19- metaventral plate. 15- left lateral view, 16- dorsal view, 17-19- ventral view. Scale bars 0.1 mm. Photos by L. Mencl. 20- *P. farkaci* sp. nov., holotype, ♀- metaventral plate, ventral view.

missing; epitorma subquadrate, weakly sclerotised; helus with 2-3 somewhat irregular rows of sensilla and two longitudinal rows of microtrichia anteriorly; corypha and zygum absent; phobae well sclerotised, glabrous; chaetoparia with row of approximately 20 closely spaced, long and stout spines; area of prophobae only very weakly sclerotised, short longitudinal row consisting of approximately six sensilla, one long anterior spine and one short medial spine. In contrast to the original description, where only the female holotype and a female paratype were available, in the present work, there was a chance to study a male specimen. The sexual dimorphism was thus also considered. The male is more robust than the female, which is rather more elongate (Figs 10-13); abdominal ventrites are essentially glabrous in the male and sparsely macrosetaceous in the female (Figs 12-13). The parameres are considerably short, shorter than phallobasis and bent strongly, regularly downward; their apices are only slightly sclerotised and rounded (Figs 15-16). Differences between the two species of the genus were studied and the results are summarized above, in the description of the new species, paragraph Differential diagnosis.

DISCUSSION

Only one species of the genus *Pittinius* has still been known from Nepal and North India. The new species described here is sympatric and among Psammodiini, it exerts all the important characters of the genus as mentioned in the genus diagnosis i.e. the reduced pronotal structure, macrosetaceous dorsal surfaces and granulate elytral intervals, but also some further interesting characters such as moderately sinuate lateral margins of genae and sculpture and structure of the head surface with a lighter brown, shining zone along the clypeus anterior margin and darker, dull area of the remaining part of the head.

The two species can be safely differentiated from each other not only due to a considerably larger body size of the new species, but also based on further quite distinct characters (surprisingly also including different epipharyngeal characters, which is rather unusual at the specific level) as mentioned in the description of the new species, paragraph Differential diagnosis.

The sympatric nature of the two species is not surprising. Based on the holotype and paratype of *P. omnisetosus,* the species was considered to occur in Central Nepal and India, Uttar Pradesh, respectively, but the paratype locality, Rishikesh, Dehradun District, is currently in the Indian state Uttarakhand, which was separated from Uttar Pradesh in November 2000. It borders China (the Tibet Autonomous Region) on the north, Nepal on the east, and the Indian states of Uttar Pradesh to the south and Himachal Pradesh to the northwest. The altitude of 450 m is mentioned for Rishikesh with the *P. omnisetosus* paratype. At low altitudes, there are subtropical forests in the state of Uttarakhand.

It is to expect that climatic conditions of the locality in Uttarakhand discussed in the preceding paragraph are similar to those concerning specimens of both species, *P. omnisetosus* and *P. farkaci* sp. nov., collected in Nepal, at the border of the Chitwan National Park. The park ranges from about 100 m to 815 m in altitude and is also characterized by the presence of subtropical forests. These are just the biotopes (today mostly existing in refuges of national parks only) inhabited by enormously rich and diversified flora and fauna ("hot spots"), cf. e.g. Majupuria & Kumar (1998). This of course also holds for the group Scarabaeoidea (including Aphodiinae) (cf. e.g. Ahrens 2004). The recent discovery of the genus *Pittinius* (with quite clear apomorphies on the genus level) with two sympatrically and possibly even syntopically occurring species is thus not very surprising.

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REFERENCES

Ahrens D. 2004: *Monographie der Sericini des Himalaya (Coleoptera: Scarabaeidae)*. *Dissertation*. Müncheberg: Deutsches Entomologisches Institut, 534 pp.

Dellacasa G., Bordat P. & Dellacasa M. 2001: A revisional essay of world genus-group taxa of Aphodiinae. *Memorie della Società Entomologica Italiana* 79 (2000): 1-482.

Gordon R. D. & Pittino R. 1992: Current status of the American genera and species of Psammodiini (Coleoptera: Scarabeaidae: Aphodiinae). *Coleopterists Bulletin* 46: 260-273.

Majupuria T. C. & Kumar R. 1998: Wildlife, National Parks & Reserves of Nepal. *Know Nepal Series* 2: 1-427 pp.

Petrovitz R. 1962: Neue und verkannte Aphodiinae aus allen Erdteilen (Col. Scarab.) III. *Entomologische Arbeiten aus dem Museum Georg Frey* 13: 101-126.

Rakovič M. & Král D. 1997: New taxa, new combinations and current taxonomic status of tribes and genera of Psammodiinae (Coleoptera: Scarabaeiodea: Aphodiidae). *Acta Societatis Zoologicae Bohemicae* 61: 233-247.

Skelley P. 2008: *Generic Guide to New World Scarab Beetles. University of Nebraska State, Museum - Division of Entomology*. Available at http://museum.unl.edu/research/entomology/Guide/Scarabaeoidea/Scarabaeidae/Aphodiinae/AphodiinaeTribes/Psammodiini/Psammodiini.html (last modified May 13, 2008).

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