

## New species and records of Aphodiinae (Coleoptera: Scarabaeidae) from Thailand and Nepal

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**Abstract.** Descriptions are given of three new species of *Aphodius* ILLIGER, *A. (Loboparius) chaiyaphumi* and *A. (Alocoderus) luangensis* from Thailand, and *A. (Agrilinus) tashi-gaonae* from Nepal. *Ataenius ambaritae* STEBNICKA is newly recorded from Thailand.

**Key words:** Scarabaeidae, Aphodiinae, new species, Thailand, Nepal.

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### I. INTRODUCTION

In spite of a number of recent papers on the Aphodiinae of southern Asia (AHRENS & STEBNICKA 1997; MASUMOTO 1988, 1991, 1992; STEBNICKA 1986, 1989, 1990, 1992) and an older monograph on the Scarabaeidae of Indochina (PAULIAN 1945), the aphodiine fauna of the region remains poorly known. Therefore quite superficial collecting can still lead to the discovery of additional new and interesting species.

There has not been a comprehensive review of the oriental members of the subfamily Aphodiinae since the treatment by BALTHASAR (1964). Nearly all recent work in the countries of the region has been based on collecting by European and Japanese visitors, with material, almost invariably, deposited in collections in Europe or Japan. This situation is not unique to the Aphodiinae, nor even to the Scarabaeidae, but is general in most groups of insects, and probably for many other organisms. Obviously, this is not going to change rapidly, but the lack of reliably identified material in the countries of origin imposes a serious constraint on the ability of residents to contribute to understanding of the local biodiversity.

In an effort to start overcoming some of the problems outlined above, the Royal Thai Government established a special research fund, the Thai Biodiversity Research and Training Fund (BRT), to assist Thai nationals, together with foreign collaborators, in cataloguing the rich biodiversity of Thailand. The junior author has the privilege of being associated with Dr Yupa HANBOONSONG, at the Department of Entomology, Khon Kaen University, in North East Thailand, in a BRT funded project to study the diversity of dung beetles of the subfamilies Scarabaeinae and Aphodiinae in the

region. The Thai material reported in this paper was collected in the course of the project. Other results of the programme are being reported elsewhere (HANBOONSONG *et al.* 1999, HANBOONSONG & MASUMOTO 1999).

The following acronyms are used for depositories of the type material and other specimens examined:

**IDEZ** – The Insect Museum, Division of Entomology and Zoology, Department of Agriculture, Bangkok, Thailand; **ISEA** – Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Krakow, Poland; **LUNZ** – Entomology Research Museum, Lincoln University, Canterbury, New Zealand.

The transliteration of Thai and Nepali place names into the Roman alphabet often causes problems for collectors and the spelling of names on insect labels can vary considerably. We have tried to use the most widely accepted spelling for species names based on place names; this may differ from the spelling on the labels of the type series.

**A c k n o w l e d g m e n t s.** We gratefully acknowledge the Thai Biodiversity Research and Training Fund for assistance to R.M.E. for travel to Thailand in 1997 and for support in Thailand in 1997 and 1998. Also to our colleague Dr Yupa HANBOONSONG for hospitality and for making available to us the Thai material of Aphodiinae reported here.

## II. DESCRIPTIONS AND NEW RECORDS

### Thailand

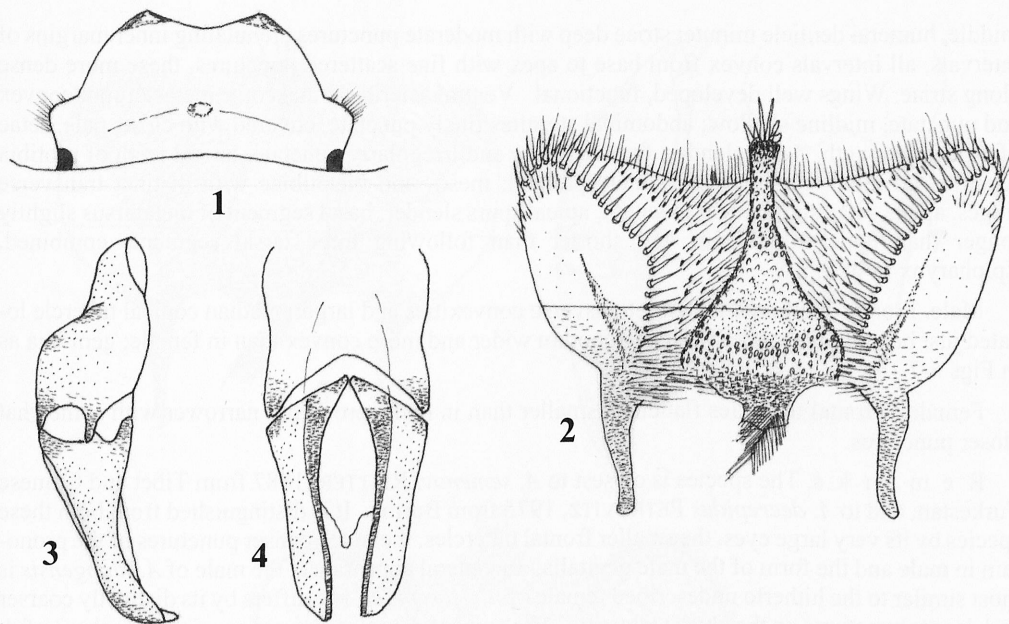
#### *Aphodius (Loboparius) chaiyaphumi* sp. n.

(Figs 1-4)

**M a t e r i a l e x a m i n e d.** *Holotype*. Male: Thailand, Phukhieo Wildlife Sanctuary, Chaiyaphum Province, 14.XII.1997, ex deer dung in forest, leg. S. PIMPASALEE, in IDEZ.

*Paratypes*. 7♂♂, 2♀♀, same data as holotype, in IDEZ, ISEA, LUNZ.

**D e s c r i p t i o n.** Length 3.0-3.2 mm, greatest width 1.5-1.8 mm. Body, short oval, strongly convex, moderately glossy, glabrous; colour jet black, anterior angles of pronotum and apex of elytra reddish. Head (Fig. 1) small, flat; clypeal margin narrowly reflexed, and sharply angled on each side of wide, moderately deep median emargination; sides slightly arcuate then deeply emarginate before small, rounded, setaceous gena; frontal suture elevated with conical tubercle at middle; clypeal surface finely and rugosely punctate, punctures on vertex separated by their diameter or less. Pronotum subquadrate, strongly convex, sides not visible from above; anterior, lateral and basal edges margined by distinct lines, middle of base slightly grooved; anterior angles obtuse, sides weakly arcuate toward rounded posterior angles; pronotal surface relatively evenly punctate, punctures a mixture of fine and larger ones, the latter concentrated on sides and here separated by less than their diameter. Scutellum narrowly triangular, slightly elevated medially, impunctate. Elytra almost globular, strongly convex at suture; striae deep with shallow punctures slightly crenulating inner margins of intervals, all striae parallel, not united at apex; intervals convex on disc, subcarinate apically, each with minute, scattered punctures, humeral area of intervals 8-9 with a few coarse punctures; epipleura narrow, cariniform in anterior half. Wings well developed, functional. Ventral sclerites glossy; metasternum convex, midline fine, surface punctures moderate in size, separated by their diameter; abdominal sternites relatively short, alutaceous, covered with short, dark setae. Legs short; femora as long as tibiae, punctures scattered, same size as those of metasternum; lateral teeth of protibia well separated, terminal spur acutely pointed; meso- and metatibiae rather thin, transverse ridges distinctly marked, terminal spurs short, slender, apical setae short, equal in length; basal segment of metatarsus longer than upper tibial spur and subequal to following two tarsal segments combined. Epipharynx as in Fig. 2. Male genitalia as in Figs 3-4.



Figs 1-4. *Aphodius (Loboparius) chaiyaphumi* sp. n. 1 – head; 2 – epipharynx; 3, 4 – male genitalia, lateral and dorsal view.

Males and females are almost identical externally.

**Remarks.** This species blends the characteristics of all *Loboparius*-species hitherto known. Externally, it seems to be closest to *A. nathani* JOHNSON, 1978 from India (DELLACASA 1983) and to *A. dunchensis* STEBNICKA, 1982 from Nepal. It differs from *A. nathani* by the elytral intervals being subcarinate apically, and from *A. dunchensis* by the shape of head with a subdentate clypeus. The epipharyngeal structures are similar to those of *A. semiglobulus* PETROVITZ, 1962 from the Philippines, but the characters of male genitalia set *A. chaiyaphumi* apart from that species.

***Aphodius (Alocoderus) luangensis* sp. n.**

(Figs 5-7)

**Material examined.** *Holotype*. Male: Thailand, Phu Luang, Loei [Province], 1500 m, 7.I.1998, in elephant dung, leg. S. PIMPASALEE, in IDEZ.

*Paratypes*. 2♂♂ and 2♀♀, same data as holotype, in IDEZ, ISEA, LUNZ.

**Description.** Length 6.8-7.0 mm, greatest width 3.0-3.1 mm. Body elongate, convex, moderately glossy, apex of elytra finely shagreened; ground colour brown, anterior of head and sides of pronotum reddish brown, posterior of head and disc of pronotum brown, elytra yellowish brown with striae and shoulders darkened, legs and abdomen yellowish. Head trapezoid, moderately convex; clypeal margin reflexed and obtusely rounded on each side of distinct median emargination, sides slightly emarginate before small, obtuse gena; clypeal median convexity small, frontal suture distinctly elevated, surface punctures fine, close, evenly distributed, generally separated by about their diameter. Eyes very large with fine facets. Pronotum rectangular, disc moderately convex; anterior, lateral and basal edges margined by lines, sides arcuately rounded towards obtuse posterior angles and fringed with short, fine, setae; pronotal punctures evenly distributed, except for a more or less well developed smooth medial line, punctures fine and close, of two sizes, the larger only a little bigger than the smaller, generally separated by about their diameter or less. Scutellum triangular, punctate with slight longitudinal carina medially. Elytra glabrous, widest just behind the

middle, humeral denticle minute; striae deep with moderate punctures crenulating inner margins of intervals, all intervals convex from base to apex with fine scattered punctures, these more dense along striae. Wings well developed, functional. Ventral sclerites alutaceous; metasternum convex and punctate, midline shallow; abdominal sternites finely punctate, covered with close, pale, setae of moderate length. Legs slender; femora finely and irregularly punctate, lateral teeth of protibia separate, terminal spur slender, acutely pointed; meso- and metatibiae with distinct transverse ridges, apical setae short, equal in length, apical spurs slender; basal segment of metatarsus slightly longer than upper tibial spur and shorter than following three tarsal segments combined. Epipharynx as in Fig. 5.

Male. Frontal suture with lateral, transverse convexities and larger, median conical tubercle located just behind clypeal convexity; pronotum wider and more convex than in female; genitalia as in Figs 6-7.

Female. Frontal tubercles flattened, smaller than in male, pronotum narrower with somewhat closer punctures.

**R e m a r k s.** The species is closest to *A. semenovi* REITTER, 1887 from Tibet and Chinese Turkestan, and to *A. decrepidus* PETROVITZ, 1975 from Burma. It is distinguished from both these species by its very large eyes, the smaller frontal tubercles, the much denser punctures of the pronotum in male and the form of the male genitalia. In general appearance, the male of *A. luangensis* is most similar to the hitherto undescribed female of *A. decrepidus*, but differs by its distinctly coarser and denser punctures on the elytral intervals. The epipharyngeal structures are similar to those of *A. semenovi*.

*Aphodius (Megatelus) brahminus* HAROLD

*Aphodius brahminus* HAROLD, 1879

*Megatelus brahminus*: PAULIAN, 1945

*Material examined*

2 sex undetermined, Thailand, Saiyoke, Katchanaburi, 13.I.2000, in elephant dung, leg. S. PIMPASALEE, in IDEZ, LUNZ.

**R e m a r k s.** This species, originally described from Burma, was subsequently recorded from Laos by PAULIAN (1945), who remarked that it was rarely collected, and from Thailand and Cambodia by DELLACASA (1986).

*Ataenius ambaritae* STEBNICKA

*Ataenius ambaritae* STEBNICKA, 1988

**M a t e r i a l e x a m i n e d.** 2 sex undetermined, Thailand, Chulaporn Dam, Chaiyaphum, 2.XII.1998, in rotten passion fruit, leg. S. PIMPASALEE, in IDEZ, LUNZ.

**R e m a r k s.** This species, originally described from Sumatra (STEBNICKA 1988), is here reported from mainland Asia and Thailand for the first time.

**Nepal**

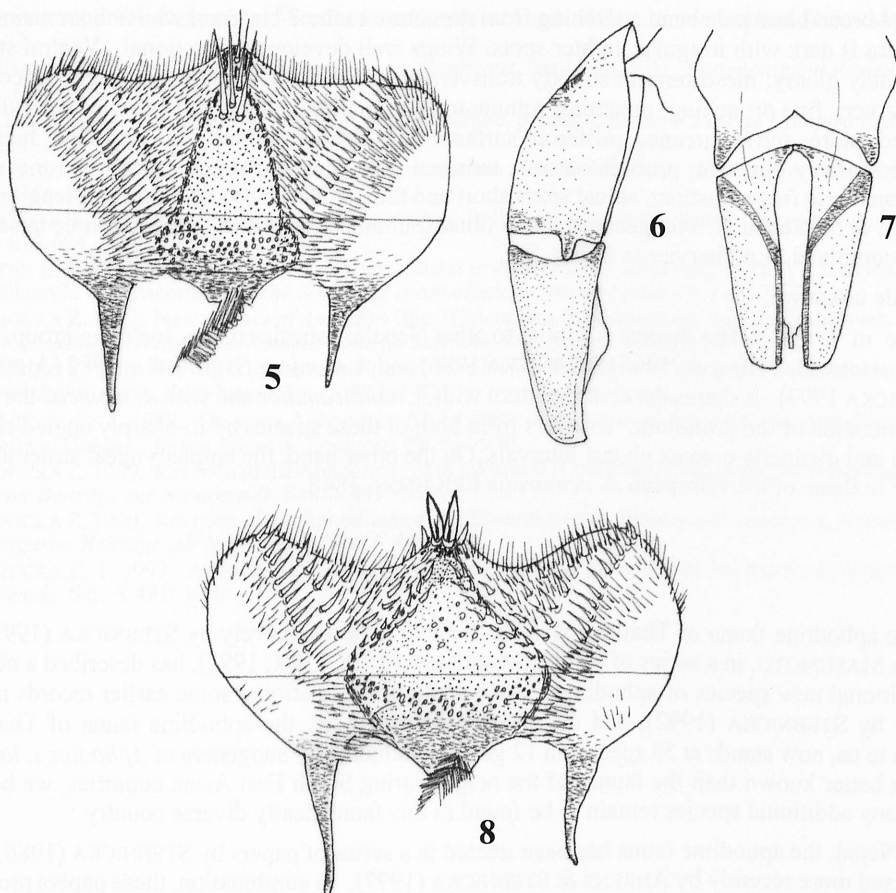
*Aphodius (Agrilinus) tashigaonae* sp. n.

(Fig. 8)

**M a t e r i a l e x a m i n e d.** *Holotype*. Female: East Nepal, Arun Koshi drainage, Tashigaon, 2250 m, 16.X.1998, in fresh cow dung, leg. R.M. EMBERSON, in LUNZ.

*Paratypes*. 6♀, same data as holotype, in ISEA, LUNZ.





Figs 5-8. *Aphodius (Alocoderus) luangensis* sp. n. 5 – epipharynx; 6, 7 – male genitalia, lateral and dorsal view. 8. *A. (Agrilinus) tashigaonae* sp.n. – epipharynx.

**Description.** Length 3.5-4.5 mm, greatest width 1.5-1.9 mm. Body oblong oval, moderately glossy, glabrous; basic colour dark brown, elytra yellowish brown with darker spots that are variable in size and distribution. Head trapezoid, moderately convex medially; clypeal margin subdentate on each side of shallow median emargination, sides slightly excised before small, right-angled gena; anterior surface of clypeus finely rugosely punctate, punctures becoming well delimited over median convexity to vertex, separated by their diameter or less; frontal suture ill-defined or apparently absent. Pronotum rectangular, diverging posteriorly; sides and base with very fine marginal line; anterior angles obtuse, sides weakly arcuate towards rounded posterior angles; pronotal surface evenly and densely punctate, punctures a mixture of fine ones and ones a little larger, generally separated by less than their diameter. Scutellum triangular, punctate, convex at middle. Elytra convex, widest just behind the middle, humeral denticle small, sharply pointed; striae impressed with large punctures distinctly crenulating inner margins of intervals, punctures of striae 9-10 largest and deepest; intervals from base to apex increasingly more elevated, with minute to fine, scattered punctures; darker spots usually arranged checkerboard-wise in anterior 2/3 of intervals 2-7, apical 1/3 of elytra and lateral intervals generally dark with traces of lighter spots; in some specimens dark spots occur at the base of the 5<sup>th</sup> interval and subbasally in the 3<sup>rd</sup> interval,

within a broad basal pale band stretching from the suture to the 7<sup>th</sup> interval, whilst the remainder of the elytra is dark with irregular, lighter spots. Wings well developed, functional. Ventral surface moderately glossy; mesosternum slightly transversely deplanate at middle; metasternum convex, midline very fine or lacking, punctures minute to fine, shallow; abdominal sternites with slightly elevated sutures and shagreened, piliferous surface. Legs slender; femora relatively short, fusiform, surface scarcely punctate; protibia narrow, terminal spur acutely pointed; meso- and metatibiae thin, transverse ridges distinct, apical spurs short and thin, apical setae short, equal in length; basal segment of metatarsus 1/3 longer than upper tibial spur and subequal to following three tarsal segments combined. Epipharynx as in Fig. 8.

Male unknown.

**Remarks.** The species is similar to other Nepalese species of the *Agrilinus*-group, i.e. *A. montisamator* BALTHASAR, 1965 (STEBNICKA 1986) and *A. monicae* STEBNICKA, 1982 (AHRENS & STEBNICKA 1997). It shares the elytral pattern with *A. montisamator* and with *A. monicae* the shape and punctuation of the pronotum. It differs from both of these species by its sharply angled clypeal margin and distinctly convex elytral intervals. On the other hand, the epipharyngeal structures are similar to those of the European *A. nemoralis* ERICHSON, 1848.

## DISCUSSION

The aphodiine fauna of Thailand was last treated comprehensively by STEBNICKA (1992), although MASUMOTO, in a series of papers (MASUMOTO 1988, 1991, 1992), has described a number of additional new species of aphodiines. As a result of these efforts, some earlier records not included by STEBNICKA (1992), and the species reported here, the aphodiine fauna of Thailand, known to us, now stands at 58 species in 12 genera, including 19 subgenera of *Aphodius* s. lat. Although better known than the faunas of the neighbouring South East Asian countries, we believe that many additional species remain to be found in this faunistically diverse country.

In Nepal, the aphodiine fauna has been treated in a series of papers by STEBNICKA (1986, 1989, 1990) and more recently by AHRENS & STEBNICKA (1997). In combination, these papers probably give a fairly comprehensive view of the fauna, though additional work is obviously required in some of the more poorly known species complexes, such as that reported on here.

## REFERENCES

- AHRENS D., STEBNICKA Z. 1997. On the Aphodiini of the Nepal-Himalayas (Coleoptera, Scarabaeidae). *Stuttgarter Beiträge zur Naturkunde*, Ser. A **552**: 1-17.
- BALTHASAR V. 1964. *Monographie der Scarabaeidae und Aphodiidae der palaearktischen und orientalischen Region. Band 3. Coleoptera: Lamellicornia: Aphodiidae*. Prague. 652pp.
- BALTHASAR V. 1965. Neue Aphodius-Arten aus Nepal. [In:] *Khumbu Himal, Ergebn. Forsch.-Unternehmen Nepal-Himalaya*, 2: 108-113.
- DELLACASA G. 1983. Taxonomic studies on Aphodiinae, X. Revision of subgenus *Loboparius* A. Schmidt, with description of a new species. *Annali del Museo civico di Storia Naturale di Genova*, **84**: 245-268.
- DELLACASA G. 1986. A world-wide revision of *Aphodius* sharing a large scutellum. *Frustula entomologica*, **7-8**: 173-282.
- ERICHSON W. F. 1848. *Naturgeschichte der Insekten Deutschlands. I. Coleoptera*. Berlin, **3**: 1-968.
- HANBOONSONG, Y., CHUNRAM, S., PIMPASALEE, S., EMBERSON, R. M., MASUMOTO, K. 1999. The dung beetle fauna (Coleoptera, Scarabaeidae) of Northeast Thailand. *Elytra*, **27**: 463-469.
- HANBOONSONG, Y., MASUMOTO, K. 1999. Dung beetles (Coleoptera, Scarabaeidae) of Thailand. Part 1. Genus *Synapsis*. *Elytra*, **27**: 453-462.
- JOHNSON C. 1978. A new species of *Aphodius* (*Loboparius*) from India. *Entomologist's monthly Magazine*, **114**: 53-54.
- MASUMOTO K. 1988. Coprophagid-beetles from Northwest Thailand (II). *Entomological Review, Japan*, **43**: 135-143.

- MASUMOTO K. 1991. Coprophagid-beetles from Northwest Thailand (VI). *Entomological Review, Japan*, **46**: 27-37.
- MASUMOTO K. 1992. Coprophagid-beetles from Northwest Thailand (VIII). *Entomological Review, Japan*, **47**: 115-117.
- PAULIAN R. 1945. Coléoptères scarabéides de l'Indochine, première partie. *Faune de l'Empire Français*, **3**: 1-228.
- PETROVITZ R. 1962. Neue und verkannte Aphodiinae aus allen Erdteilen. 3. *Entomologische Arbeiten aus dem Museum Georg Frey*, **13**: 101-131.
- PETROVITZ R. 1975. Neue Aphodiinae, Hybosorinae, Bolbocerinae und Orphninae. *Revue suisse Zoologie*, **82**: 615-624.
- REITTER E. 1887. Insecta in itinere CL.N. Przewalskii in Asia centrali novissime lecta. VI. Clavicornia, Lamellicornia et Serricornia. *Horae Societatis entomologicae rossicae Moscov*, **21**: 201-234.
- STEBNICKA Z. 1982. New species of *Aphodius* Illig. (Coleoptera, Scarabaeidae) from the Himalayas. *Bulletin de l'Academie polonaise de Sciences Serie de Sciences biologiques*, **29**: 333-339.
- STEBNICKA Z. 1986. Revision of the Aphodiinae of the Nepal-Himalayas (Coleoptera, Scarabaeidae). *Stuttgarter Beiträge zur Naturkunde, Ser. A* **397**: 1-51.
- STEBNICKA, Z. T. 1988. On some Aphodiinae (Coleoptera: Scarabaeidae) from the Museum d'histoire naturelle in Geneve. *Revue suisse de Zoologie*, **95**: 961-970.
- STEBNICKA Z. 1989. Revision of the Aphodiinae of the Western Himalayas (Coleoptera, Scarabaeidae). *Stuttgarter Beiträge zur Naturkunde, Ser. A* **441**: 1-29.
- STEBNICKA Z. 1990. Revision of the Aphodiinae of the Eastern Nepal-Himalayas (Coleoptera, Scarabaeidae). *Stuttgarter Beiträge zur Naturkunde, Ser. A* **449**: 1-14.
- STEBNICKA Z. T. 1992. Aphodiinae from Thailand (Coleoptera: Scarabaeidae) *Stuttgarter Beiträge zur Naturkunde, Ser. A* **481**: 1-16

