Dung Beetles (Coleoptera, Scarabaeidae) of Thailand

Part 1. Genus Synapsis

Yupa HANBOONSONG

Faculty of Agriculture, Khon Kaen University,
Khon Kaen, 40002 Thailand

and

Kimio MASUMOTO

Institute of Human Living Sciences, Otsuma Women's University,
12 Sanbancho, Chiyoda-ku, Tokyo, 102-8357 Japan

Abstract In the first part of the study on the dung beetles from Thailand, the genus Synapsis is dealt with. Three new species are described under the names S. kiuchi sp. nov., S. dickinsoni sp. nov. and S. boonlongi sp. nov. A key to all the Synapsis species distributed in Thailand and explanatory photographs are also provided.

Introduction

Although there are nearly 5,000 described dung beetles belonging to 234 genera of about 12 tribes on the world basis classification (HANSKI & CAMBEFORT, 1991), the dung beetle fauna of Thailand is still very poorly known as compared with other faunas, such as those of Taiwan, Borneo, etc.

One of the authors (K. M.) has contributed much to the survey and identification of the fauna of the dung beetles, Scarabaeidae, Aphodiidae and Trogidae, in North Thailand over the past 10 years, but those of other areas in Thailand are still very little known. The authors have fully realized the necessity of more detailed surveys covering the whole areas of Thailand.

In recent years, Thailand has become much concerned at the loss of biological diversity. Therefore, the Thai Government has set up a programme known as the Biodiversity Research and Training (BRT) to document the biodiversity research and training. Fortunately, the authors have been given a grant from the BRT for conducting a pilot study of the dung beetle fauna of Northeast Thailand and intend to extend this to a full survey of the fauna of Thailand.

This paper is the first contribution of a planned series concerning the Thai dung beetles and deals with the genus Synapsis of the tribe Coprini in the family Scarabae-
Systematic Position of the Genus Synapsis

In his study of the "Fauna of British India, including Ceylon and Burma", Arrow (1931) placed the genus Synapsis Bates in the tribe Coprini of the subfamily Coprinae, which consists of the Scarabaeini, Sisyphini and Coprini. The tribe Coprini sensu Arrow included the genera Synapsis, Heliocopris, Catharsius, Copris, Phalops, Anocetus, Dispysema, Caccobius, Onthophagus, Phacosoma, Parachorius, Cassolus, Liatongus, Oniticellus, Drepanocerus, Onitis and Chironitis.

In his study of the "Coléoptères Scarabéides de l’Indochine", Paulian (1945) regarded this genus as a member of the subfamily Scarabaeinae. His subfamily covered the tribe Coprini sensu Arrow.

In his monograph of the Scarabaeidae and Aphodiidae from the Palearctic and Oriental Regions, Balthasar (1963) treated this genus as a member of the tribe Coprini in the subfamily Coprinae. The tribe consists of 4 genera: Synapsis, Heliocopris, Catharsius and Copris.

Recently, in their studies on the family Scarabaeidae from Borneo, Ochi, Kon and Kikuta (1996) treated this genus as a member of the tribe Coprini in the subfamily Coprinae. The tribe Coprini from this area consists of 4 genera: Synapsis, Catharsius, Copris and Microcopris.

Genus Synapsis Bates, 1868

Synapsis Bates, 1868, Coleopt. Hefte, 4: 89. Type species: Copris brahminus Hope.


General features. Body rather depressed oval. Head broad, with outer angles strongly produced in front of eyes; clypeus acutely notched at the middle; genae completely fused with clypeus; frons with a median tubercle or an elevation. Antennae short, nine-segmented, with 4th segment a little longer than 3rd, 5th and 6th very short, the last three entirely pubescent.

Pronotum short, with a supplementary lateral carina on each side, uniting in front and behind with outer marginal carina, and enclosing a lenticular space; front angle mostly bearing two or three teeth, hind angle obtuse or almost rounded. Scutellum absent.

Elytra ten-striate, though the 7th striae are often unclear, with rather straight or
rounded sides, sharp lateral carinae, and broad epipleura.

Metasternum long, the hinder part a little produced in the middle, with a rather deep depression, the sides divided transversely by a raised and rather irregularly curved line, extending from end of middle coxal cavity to outer margin.

Legs fairly long but not very slender; mesocoxae widely separated and parallel; protibia with three strong teeth, the terminal one long and blunt; meso- and metatibiae slender at bases, gradually dilated apicad, with digitate apices; protarsi rather short and stout, meso- and metatarsi with diminishing triangular segments, moderately long and not very broad.

Notes. Remarkable characteristics distinguishing this genus from species of the other genera in the tribe Coprini are the body not so strongly convex, with pronotum bearing two strong lateral carinae joining in front and behind, protibia with three lateral teeth, meso- and metatibiae without distinct transverse carina on the outer side, etc.

It is very interesting that some species of this genus possess haired hollows near the front angles of the prosternum (Fig. 8), or on the mesepimera (Fig. 9). In some species, the 2nd elytral intervals possess vague swellings near the base. These characters furnish the best diagnoses for identifying the species.

The species of the genus Synapsis do not show prominent sexual dimorphism, though we can barely recognize it by the shortened abdominal segments in the male.


Description of the New Species

*Synapsis kiuchii* sp. nov.

(Figs. 2, 7, 12 & 13)

Black, hairs on ventral surface reddish brown; dorsal surface rather strongly shining, ventral surface gently shining. Ovate, gently convex.

Head rather wide, moderately punctate, the punctures varying to rugosities in middle part; clypeus cleft at the middle of front margin, produced and almost vertically reflexed above on each side of the cleavage; frons with a tubercle at the middle; genae somewhat granulate in inner portions, acutely angulate at outer angles, with hind edges weakly emarginate; vertex very slightly depressed.

Pronotum transverse, micro-aciculate, minutely punctate; front angles obtusely angulate, with front edges very feebly sinuous; hind angles almost rounded; base widely trianularly produced.

Elytra finely striate, punctures in the striae almost invisible; intervals micro-aciculate, weakly convex, 1st ones more noticeably so than the others; sides gently declined to lateral margins, which are evenly produced laterad.

Pygidium feebly convex, somewhat coriaceous, rather frequently scattered with punctures. Metasternum alutaceous, minutely and shallowly punctate in anterior por-

Body length: 23–25 mm.

Dung Beetles of Thailand

Figs. 7–9. Ventral surfaces of Synapsis spp. — 7, S. kiuchii sp. nov., lacking haired hollows near the front angle of pro sternum and mesepimeron; 8, S. dickinsoni sp. nov., bearing a haired hollow near the front angle of pro sternum; 9, S. boonlongi sp. nov., bearing a haired hollow on mesepimeron.


Notes. This new species resembles S. simplex SHARP, 1875, from Laos, in lacking haired hollows near the front angles of the pro sternum or on the mesepimera, but can be distinguished from the latter by the body more rounded, with head more acutely angular laterad, pronotum with lateral margins not notched at apical 1/3, and front angles less remarkably produced.

**Synapsis dickinsoni** sp. nov.

(Figs. 5, 8, 11, 18 & 19)

This new species closely resembles Synapsis ochii MASUMOTO, 1996 (Figs. 4, 10, 16 & 17), but can be distinguished from the latter by the following characteristics:

Black, hairs on ventral surface reddish brown; each surface gently shining. Ovate, gently convex.

Head slightly narrower, rugulose in anterior part, closely and more clearly punctate in middle; clypeus slightly more produced anter iad, cleft at the middle of front margin; frons gently raised in middle; genae granulate, more strongly sinuous before eyes; vertex weakly, somewhat transversely depressed.

Pronotum convex, somewhat transversely micro-aciculate, minutely punctate; sides gently inclined, with area between two lateral ridges not becoming narrower basad; front angles subrectangular and very weakly reflexed upwards, with feebly emarginate front edges and weakly sinuous outer (side) edges; hind angles modified, the corner of upper margin being faintly impressed from oblique dorsal side, thus, the
upper margin is somewhat rounded and the lower margin angulate in dorsal view; apex more produced in middle; base very widely triangularly produced.

Elytra finely striate, punctures in the striae slightly finer; intervals less coarsely microsculptured, very slightly convex, 2nd interval with a vague swelling near base.

Pygidium wider though less produced apicad and less noticeably convex, microshagreened and scattered with minute granules. Front angles of prosternum with haired hollows. Metasternum with a longitudinal impression and a transverse depression, which are obviously shallower than in *S. ochii*. Metafemur with a spine before the middle on posterior edge; metatrochanter with bristles on posterior edge. Male genitalia larger and stouter.

Body length: 26–28.5 mm.


Notes. This new species is a member of the species-group of *S. birmanicus* GILLET, 1907 (Figs. 3, 14 & 15) in having the haired hollows near the front angles of prosternum. The nearest species except *S. ochii* might be *S. yama* GILLET, 1911, originally described from Vietnam and Laos, but can be distinguished from the latter by the
Figs. 12–19. Male genitalia of *Synapsis* spp. — 12–13, *S. kiuchii* sp. nov., dorsal view (12), and lateral view (13); 14–15, *S. birmanicus* GILLET, dorsal view (14), and lateral view (15); 16–17, *S. ochii* MASUMOTO, dorsal view (16), and lateral view (17); 18–19, *S. dickinsoni* sp. nov., dorsal view (18), and lateral view (19).

head with lateral angles less acutely produced, and the pronotum with more rounded sides and impressed hind angles.
**Synapsis boonlongi** sp. nov.

(Figs. 6 & 9)

Black, hairs on ventral surface rather reddish brown; dorsal surface dully shining, ventral surface slightly alutaceous. Ovate, gently convex.

Head rather wide, closely rugoso-punctate; clypeus cleft at the middle of front margin, remarkably produced and reflexed above on each side of the cleavage; frons gently swollen in middle; genae with outer angles slightly produced laterad and obviously hooked posteriad; vertex weakly concave in middle. Antennal clubs densely with very short hairs and sparsely with long ones.

Pronotum somewhat transversely convex, micro-shagreened, minutely punctate; front angles subrectangular and reflexed upwards, bluntly hooked antero-interiorly, with front edges feebly emarginate; hind angles obtusely angular; base weakly produced posteriad.

Elytra finely though clearly punctato-striate, the punctures small but notching intervals; intervals almost flat, obviously and closely microsculptured (covered with small punctures with aciculations, visible under 30X, the punctures being often fused with one another); sides gently declined to lateral margins, which are evenly produced laterad.

Pygidium somewhat alutaceous, sparsely scattered with shallow punctures. Mesepimera hollowed, the hollows masked by long and close reddish hairs, arising from the margins and directed to the centre; metasternum micro-aciculate and minutely punctate, with a vague longitudinal groove in posterior part, and also with a transverse depression near posterior margin, thus forming a large, somewhat rhombical depression in the middle of posterior 1/4. Metafemur with a small spine at the posterior margin at basal 2/5.

Body length: 26–27 mm.


Notes. This new species is evidently a member of the species-group of *S. ovalis* BOUCOMONT, 1916, which possesses the hollowed mesepisterna, but can be distinguished from the latter by the outer angles of head remarkably hooked posteriad, the front angles of pronotum subrectangular, reflexed upwards, and bluntly hooked antero-interiad, and the front edges feebly sinuate. Beside the above two species, *S. gilleti* ARROW, 1931, from Bengal is also a member of this species-group.

**Key to the Species of the Genus Synapsis from Thailand**

1 (4) Front angles of prothorax or mesepimera without haired hollows; frons with a tubercle at the middle.

2 (3) Lateral angles of head produced into very slender acuminate processes; pro-
notum with tridentate front angles, a prominence at the middle near front margin, a transverse, smooth and shining swelling in posterior half, and also with surface granulate except for the swelling; 30–36 mm; India, Myanmar, N. Thailand, Laos, Vietnam, China (Fig. 1) .................. S. tridens SHARP.

(2) Lateral angles of head not slenderly produced but just triangular; pronotum with front angles obtusely angulate, without prominence and swelling, the surface not granulate, but almost smooth and minutely punctate (S. simplex group); 24–27 mm; N. Thailand (Fig. 2) ................. S. kiuchii sp. nov.

(1) Front angles of prosternum or mesepimera with haired hollows.

(10) Haired hollows on front angles of prosternum (S. birmanicus group); lateral angles of head not hooked; front angles of pronotum not reflexed above.

(7) Elytra with second interval lacking a vague swelling near base; pronotum with outer margins of front angles noticeably sinuous; 23–27 mm; Myanmar, N. Thailand (Fig. 3) .................. S. birmanicus GILLET.

(6) Elytra with second interval bearing a vague swelling near base; pronotum with outer margins of front angles less noticeably sinuous.

(9) Pronotum with hind angles not impressed from oblique dorsal side but simply obtusely angulate, area between two lateral ridges wider but becoming narrower basad; 22–26 mm; N. Thailand (Fig. 4) .......... S. ochii MASUMOTO.

(8) Pronotum with hind angles faintly impressed from oblique dorsal side, thus the upper margin being somewhat rounded and the lower one angulate in dorsal view; area between two lateral ridges narrower but not becoming narrower basad; 26–28.5 mm; NE. Thailand (Fig. 5) .................. S. dickinsoni sp. nov.

(5) Haired hollows on mesepimera (S. ovalis group); lateral angles of head feebly hooked posteriad; front angles of pronotum weakly reflexed dorsad; 26–27 mm; NE. Thailand (Fig. 6) .................. S. boonlongi sp. nov.

Acknowledgement

First of all, the authors wish to express their acknowledgment to the Thailand Biodiversity Research and Training Programme for giving them the grant. They are deeply indebted to Dr. R. W. EMBERSON, Lincoln University, New Zealand for his participation and help for preliminary identification of dung beetles from Northeast Thailand. They also thank Dr. Angoon LEWVANICH and Ms. Sommai CHUNRAM, Division of Entomology and Zoology, Department of Agriculture, Bangkok, for providing materials and invaluable comments concerning this study. Appreciation should also be expressed to Dr. Yves CAMBEFORT, Muséum National d’Histoire Naturelle, Paris, and Malcolm KERLEY, the Natural History Museum, London, for examining type specimens and other materials preserved in the Museums under their care. Thanks are also expressed to Dr. Makoto KIUH, Institute of Ministry of Agriculture, Forestry and
Fisheries, for taking many excellent photographs inserted in this paper, and to Mr. Teruo OCHI, Osaka Prefecture, and Syosuke FUJOKA, Tokyo, for their assistance in various ways.

Finally, the authors deeply thank Dr. Shun-Ichi UENO, National Science Museum (Nat. Hist.), Tokyo, for his constant guidance in the course of the present study.

要約

Y. HANBOOSONG・益本仁雄：タイ産の食糞コガネムシ類，I. Synopsis属について。—— チア産の食糞コガネムシ（Scarabaeidae）研究の第1回として，ダイコクコガネ亜科（Coprinae）ダイコクコガネ族（Coprini）のSynopsis属を検討した。その結果，この地域には，Synopsis tridens SHARP, S. birmanicus GILLET, S. ochii MASUMOTOの3種のほかに，新たに3種の分布していることが判明した。それらを，S. kiuchii sp. nov., S. dickinsoni sp. nov., S. boonlongi sp. nov.と命名した。

References


