

**CLAUSILIIDAE (MOLLUSCA: GASTROPODA:  
PULMONATA) FROM CONTINENTAL SOUTHEAST ASIA IN  
THE COLLECTION OF THE FLORIDA MUSEUM OF  
NATURAL HISTORY**

**Miklós Szekeres, Jozef Grego, and John Slapcinsky**



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Cover image: *Phaedusa theobaldi* (Blanford, 1872), collected in the Mae Hong Son Province of Thailand.

# CLAUSILIIDAE (MOLLUSCA: GASTROPODA: PULMONATA) FROM CONTINENTAL SOUTHEAST ASIA IN THE COLLECTION OF THE FLORIDA MUSEUM OF NATURAL HISTORY

Miklós Szekeres<sup>1,2</sup>, Jozef Grego<sup>3</sup>, and John Slapcinsky<sup>4</sup>

## ABSTRACT

Southeast Asian Clausiliidae in the collection of the Florida Museum of Natural History, and particularly those that were obtained during recent biodiversity surveys in Myanmar and Thailand, provide important new data on the mostly endemic species of the family in that region. This paper assesses the museum's clausiliid material from continental Southeast Asia, gives well defined locality records, highlights and discusses novel distribution data, and introduces *Oospira mongmitensis* Grego and Szekeres n. sp., *O. naga* Grego and Szekeres n. sp., *O. sardicola* Grego and Szekeres n. sp., and *Phaedusa bocki thompsoni* Grego and Szekeres n. ssp. as new taxa.

**Key words:** Garnieriinae, Phaedusinae, new taxa, Nagaland, Myanmar, Thailand.

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<sup>1</sup>Institute of Plant Biology, Biological Research Centre of the Hungarian Academy of Sciences, Temesvári krt. 62, H-6726 Szeged, Hungary <szekeres@brc.hu>

<sup>2</sup>Zoology Department, Hungarian Natural History Museum, Baross u. 13, H-1088 Budapest, Hungary

<sup>3</sup>Horná Mičiná 219, SK-97401 Banská Bystrica, Slovakia <jozef.grego@gmail.com>

<sup>4</sup>Florida Museum of Natural History, University of Florida, 1659 Museum Road, Gainesville, FL 32611-7800, USA <slapcin@flmnh.ufl.edu>

## INTRODUCTION

Clausiliidae represent one of the most diverse families of stylommatophoran land snails with approximately 1300 species (Nordsieck, 2007) distributed mainly in forested areas of Eurasia, eastern and southern Africa, northern South America, and the Greater Antilles. The family is currently divided into seven extant subfamilies (Uit de Weerd and Gittenberger, 2013; Bouchet et al., 2017), of which the Garnieriinae and Phaedusinae occur in Southeast Asia.

Although in some parts of continental Southeast Asia the malacofauna had been relatively well studied in the 19th and early 20th century, most of the region became inaccessible to field work during the rest of the 20th century (Hemmen and Hemmen, 2001; Inkhavilay et al., 2019; Páll-Gergely et al., 2020). Research on the fauna was also hampered because the localities of old collections were often vaguely defined, making species distributions and within-species variation difficult to determine. As a result, the mainly endemic clausiliids in this part of Southeast Asia are among the least studied species of the family, on which only few comprehensive studies have been published (Gude, 1914; Loosjes, 1953; Nordsieck, 2002a, 2002b).

During the past couple of decades very few publications dealt with the Clausiliidae fauna of Thailand (Loosjes, 1950; Nordsieck and Rähle, 2013) and Myanmar (Nordsieck, 1974; Grego et al., 2021). Recent biodiversity surveys are beginning to provide a better idea of the diversity and distribution of the clausiliids in these countries. Such surveys are imperative as rapid development of the region is resulting in deforestation (Hughes, 2017) and loss of limestone outcrops through mining (Clements et al., 2006), putting many species at risk of extinction, sometimes before they can be discovered.

The present study reports on material collected during surveys in Thailand and Myanmar. The specimens are vouchered at the Florida Museum of Natural History. This material includes three species, and one subspecies that are described

here as new, as well as new material of previously described species that provides novel distribution records and ecological data.

## MATERIALS AND METHODS

Most of the assessed Clausiliidae material has been collected by staff members of the Florida Museum of Natural History during recent field trips supported by the Flora & Fauna International organization and the Smithsonian Consortium for Research in Myanmar initiative (to Myanmar, 2015), as well as the John Thomas Ladue McGinty Endowment, University of Florida Foundation (to Thailand, 1987 and 1988). Older material also includes samples of the orphaned Mollusca collections of the University of Alabama, Tuscaloosa, the University of Miami (mainly the private collection of Charles Torrey Simpson), and that of James H. Beal and Birdsey L. Maltbie, originally deposited at Rollins College, Winter Park, FL.

Species treatments give (i) the localities (also quoted verbatim from original labels of historic material), (ii) the collectors and collection dates and/or the origins of the samples, (iii) station numbers (when available with the localities, as recorded by K. Auffenberg: KA, J. D. Slapcinsky: JDS, and F. G. Thompson: FGT), (iv) inventory numbers of the collection, and (v) the numbers of dry or 70% ethanol-preserved specimens in the samples. In the descriptions of the new taxa whorl numbers are given as described in Slapcinsky and Kraus (2016).

Collections mentioned in the text are: Florida Museum of Natural History, Gainesville, FL (UF), Hungarian Natural History Museum, Budapest (HNHM), Muséum National d'Histoire Naturelle, Paris (MNHN), University of Alabama, Tuscaloosa, AL (UA), and the University of Miami, Miami, FL (UM), as well as of Jozef Grego, Banská Bystrica (GR), András Hunyadi, Budapest (HU), and Miklós Szekeres, Budapest (SZ).

## RESULTS

### Subfamily Garnieriinae

Genus *Indonenia* Ehrmann, 1927

Type species: *Clausilia masoni* Theobald, 1864;  
by original designation

*Indonenia admirabilis* Grego and Szekeres, 2021

*Indonenia admirabilis* Grego and Szekeres in  
Grego et al. 2021: 22, figs 2b, 3-4.

Myanmar, Kayah State, Hpruso District,  
Maw Ti Do, entrance of the Phruno River Cave  
(19°22'44.6"N 97°02'34.2"E, 1230 m), leg. J.  
Grego 12.02.2019, UF 529137 (2 paratypes).

*Indonenia excellens* (Nordsieck, 2002)

(Fig. 1A)

*Tropidauchenia (Indonenia) excellens* Nordsieck,  
2002a: 16, fig. 6.

"Carin Hills" (Myanmar, Karin Hills near the  
three-border area of Kayah, Kayin and Shan States  
NE of Taungoo), leg. L. Fea, ex UA, UF 117592  
(paratype), UF 267623 (paratype).

Note. — The type material of *I. excellens*  
was collected by Leonardo Fea somewhere along  
his roughly 120 km journey from Taungoo (Bago  
Region, Myanmar) to around Loikaw (Kayah  
State, Myanmar) (Fea, 1897). The holotype is in  
the collection of the Muséum National d'Histoire  
Naturelle in Paris (MNHN-IM-2000-2467)  
(Nordsieck, 2002a).

Subfamily: Phaedusinae

Genus *Oospira* Blanford, 1872

Type species: *Clausilia philippiana* Pfeiffer,  
1847; by original designation

*Oospira gouldiana* (Pfeiffer, 1857)

*Clausilia gouldiana* Pfeiffer 1857: 259.

"Pegu" (Myanmar, Bago Region), ex UA,  
UF 117521 (2); "India" (i.e., former British India),  
ex W. Newcomb, ex UA, UF 117523 (1); Thailand,  
Tak Province, limestone knoll 5.5 km NNW Tha  
Song Yang (17°16'13"N 98°12'15"E, 180 m),  
leg. F. G. Thompson 03.05.1988 (FGT-4406), UF  
266225 (11), UF 347035 (5 in ethanol); Thailand,  
Tak Province, limestone mountain 5.0 km by road  
S of Ban Salit Luang (17°26'53"N 98°04'39"E,

180 m), leg. F. G. Thompson 03.05.1988 (FGT-  
4410), UF 266226 (1).

*Oospira insignis* (Gould, 1844)

(Fig. 1B)

*Clausilia insignis* Gould 1844: 140.

"Burmah" (Myanmar), ex M. Smith,  
ex UA, UF 117522 (2); "Tavoy" (Myanmar,  
Tanintharyi Region, Dawei), ex H. H. Godwin-  
Austen, ex UM-4955, UF 492084 (1); Myanmar,  
Tanintharyi Region, 15 km E of Hangapru, 5 km  
S of logging camp (11°00'54"N 98°54'59"E),  
leg. J. Slapcinsky 28.05.2015 (MYA-0236, JDS-  
1685), UF 494161 (1 in ethanol); Thailand, Tak  
Province, limestone knoll 5.0 km ENE of Ban  
Huei Hin Fong (15°46'37"N 98°39'50"E, 570 m),  
leg. F. G. Thompson 26.04.1988 (FGT-4389), UF  
266223 (3), (FGT-4390), UF 266224 (1); Thailand,  
Kanchanaburi Province, 8.9 km SE of Sangkhla  
Buri (15°02'N 98°29'E, 350 m), leg. K. Auffenberg  
10.05.1988 (KA-709), UF 266230 (4), UF 266231  
(3 in ethanol).

Note. — *Oospira insignis* (type locality:  
Tavoy, i.e., Dawei, Myanmar, Tanintharyi Region)  
and *O. gouldiana* (type locality: Mergui, i.e.,  
Myeik, Myanmar, Tanintharyi Region) have been  
considered distinct species (Gude, 1914; Nordsieck,  
2002b). Gude (1914) notes that the two are closely  
allied, but distinguishable by differences in the size,  
color, and the width of the apical whorls. However,  
the examination of 29 independent samples, which  
had been collected along and W of the Bilauk  
Mountains (11°00' to 17°30' N, in both Myanmar  
and Thailand) revealed considerable variation of  
these characters. We follow the classification of  
Gude (1914) and Nordsieck (2002b) but point out  
that future molecular analyses are needed to clarify  
whether *O. gouldiana* and *O. insignis* are indeed  
distinct species.

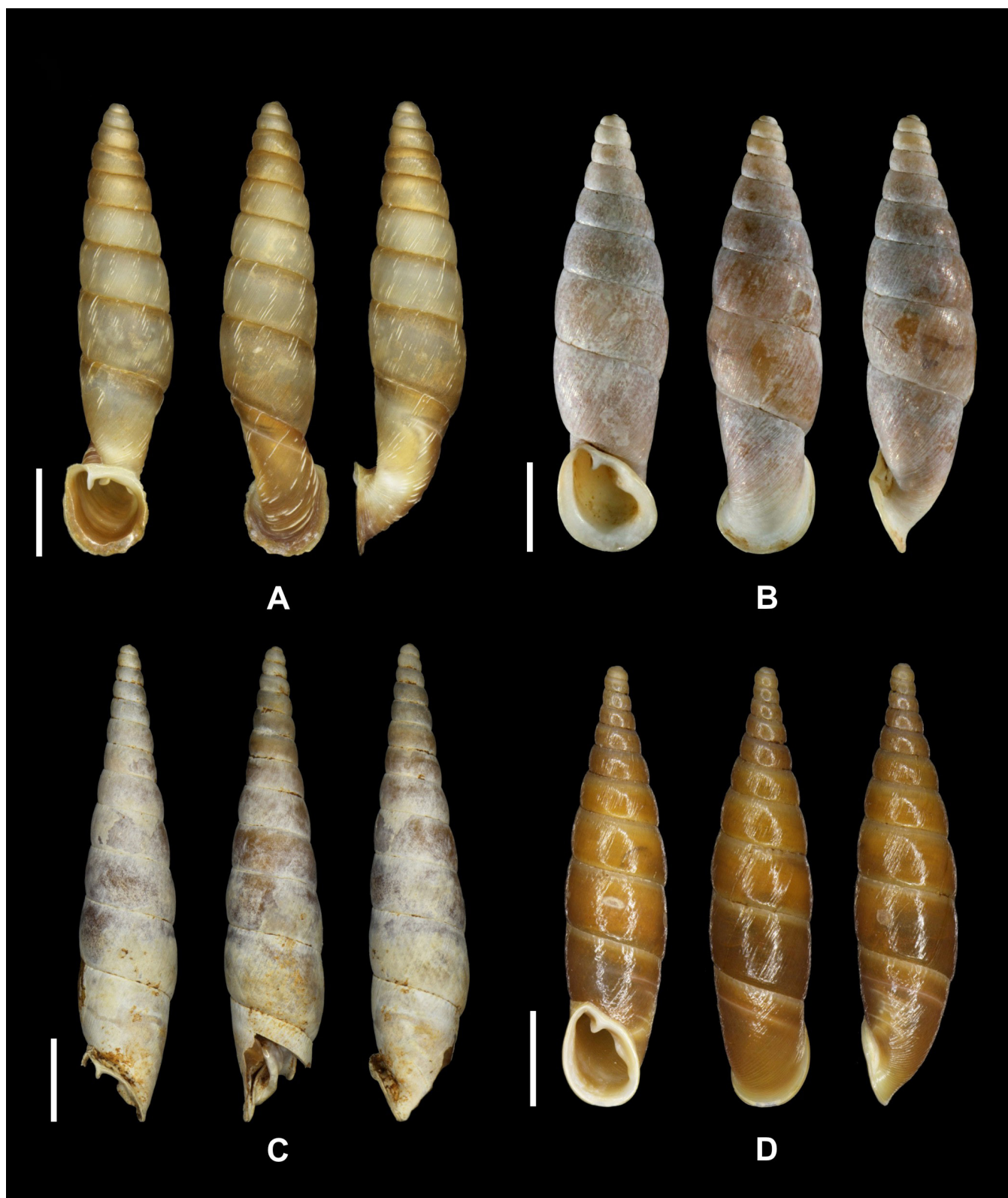
*Oospira malaisei* Nordsieck, 1973

(Fig. 1C)

*Oospira malaisei* Nordsieck 1973: 81, pl. 3, fig. 12,  
text fig. 25.

Thailand, Mae Hong Son Province, 10.2  
km WNW of Soppong, limestone ridge along





**Figure 1.** A: *Indonenia excellens* (Nordsieck, 2002), paratype, UF 117592; B: *Oospira insignis* (Gould, 1844), Tavoy, Burma, UF 492084; C: *Oospira malaisei* Nordsieck, 1973, Thailand, Mae Hong Son Province, 10.2 km WNW of Soppong, UF 266233; D: *Oospira mongmitensis* Grego and Szekeres n. sp., holotype, UF 117571. Scale bars: 5 mm.

Highway 1095 (19°33'N 98°03'E, 820 m), leg. K. Auffenberg 20.03.1988 (KA-585), UF 266233 (1).

Note. — *Oospira malaisei* was described on the basis of a single specimen from Punkataung near Myitkyina, in Myanmar's Kachin State (Nordsieck, 1973). No further material of the species has been reported since then. The shell in the UF collection (UF 266233) shows great similarity to the holotype of *O. malaisei*, but because of its broken aperture and occurrence 650 km south of the type locality it can only tentatively be identified as belonging to this species. It was found sympatrically with *Phaedusa theobaldi* (Blanford, 1872).

***Oospira mongmitensis*** Grego and Szekeres n. sp.  
(Fig. 1D)

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urn:lsid:zoobank.org:act:26FEF95C-334B-4845-8AEF-3C583E7FD6DB

Type Material. — “Momeit” (Myanmar, Shan State, Mongmit), ex W. Doherty, ex UA. Holotype: UF 117571. Paratypes: UF 268809 (3).

Diagnosis. — Medium-size *Oospira* with glossy shell, finely papillate suture, attached peristome, lamella subcolumellaris visible in apertural view, and lateral palatal plicae.

Description. — The tumid, spindle-shaped, yellowish-brown shell consists of 9.7 to 10.7 flat whorls. The smooth, glossy surface becomes finely striate toward the apex and over the neck. The suture is finely and densely papillate. The base is rounded. The oval peristome is attached, its thickened whitish margin is not reflexed. The marginally ending lamella superior is continuous with the less emerged lamella spiralis. The steeply descending lamella inferior terminates before reaching the peristome. Its end, and also that of the nearly marginal lamella subcolumellaris, are visible in apertural view. The three-quarter whorl long plica principalis starts ventrally or ventrolaterally. Laterally there are four to five long, parallel plicae, of which the inner end of the lowest is connected to the lamella subcolumellaris via a short, vertical plica. The clausilium plate is not visible through the aperture.

Measurements. — Holotype: shell height

(Hs) 23.1 mm, spire width (Ws) 5.4 mm, aperture height (Ha) 5.4 mm, aperture width (Wa) 4.1 mm. Paratypes (n = 3): Hs 20.7–24.9 mm, Ws 4.6–5.4 mm, Ha 4.8–6.0 mm, Wa 3.9–4.4 mm.

Etymology. — The species is named after Mongmit, its type locality.

Note. — *Oospira mongmitensis* n. sp. appears related to the papillate species *O. asaluensis* (Blanford, 1872), *O. ferruginea* (Blanford, 1872), and *O. loxostoma* (Benson, 1836) of northeastern India. However, it is most similar to *O. sardicola* n. sp., which also has glossy, markedly spindle-shaped shell and occurs in the same area around Mongmit. From that species it differs by the larger, tumid shell with flatter whorls and the lamella subcolumellaris exposed in apertural view.

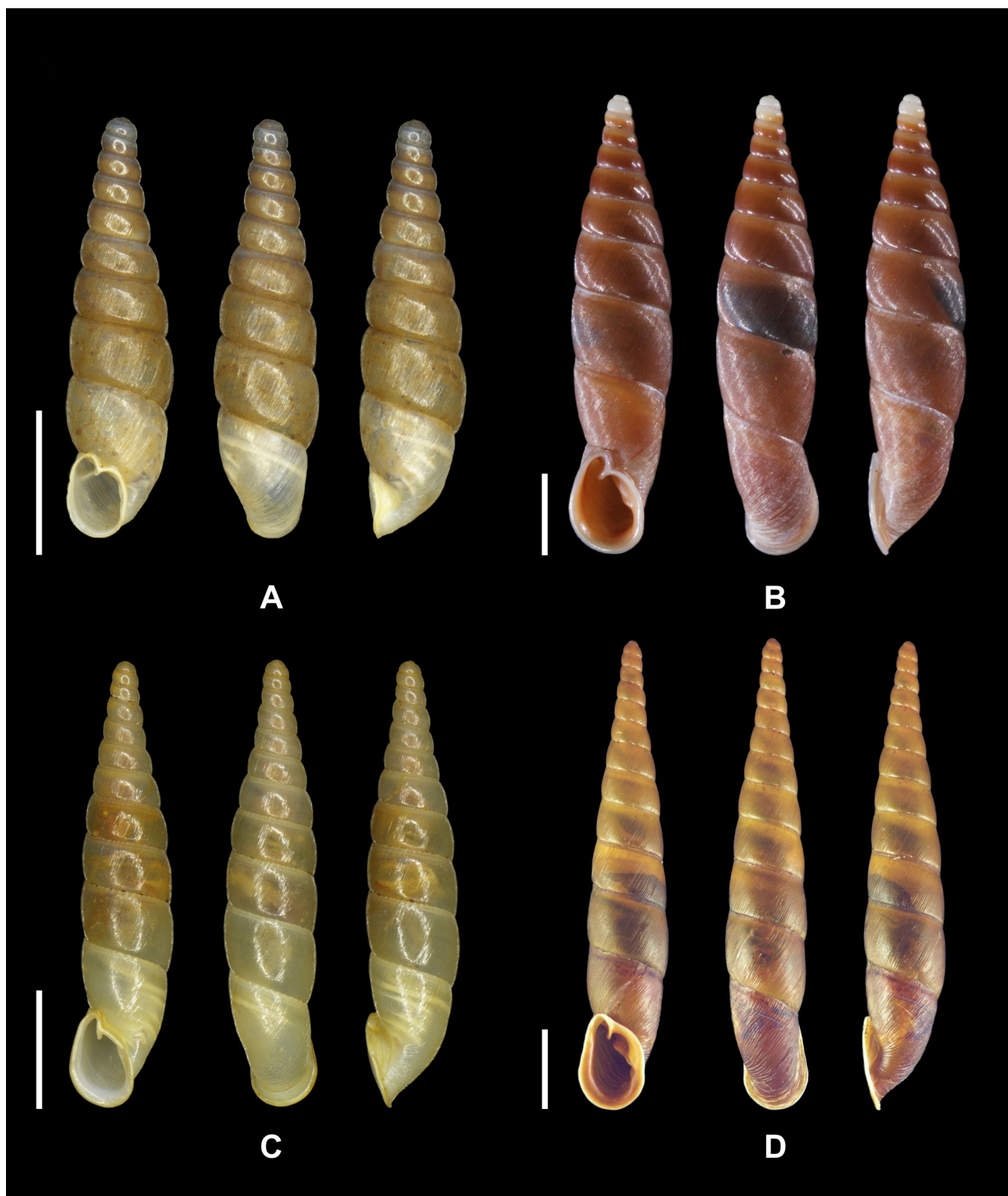
***Oospira naga*** Grego and Szekeres n. sp.  
(Fig. 2A)

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Type Material. — “India, Nagaland, Naga”, ex M. Smith (MS-3436), ex UA. Holotype: UF 117519.

Diagnosis. — Small *Oospira* with densely striate shell, non-papillate suture, attached peristome, retracted lamellae inferior and subcolumellaris, and lateral palatal plicae.

Description. — The thin-walled, light brownish-corneous shell with thick apex consists of 9.5 convex whorls. The surface is smooth and glossy on the apical whorls, but becomes very finely and densely striate toward the base. The suture is simple, the neck is rounded. The attached peristome with a wide sinulus has almost parallel columellar and parietal margins. The lamella superior is weak and sharp, inward it is continuous with the lamella spiralis. In apertural view the lower end of the steeply descending lamella inferior is fully obscured by the peristome. The deeply recessed lamella subcolumellaris and the clausilium plate cannot be viewed through the aperture. The plica principalis starts ventrolaterally and terminates on the right lateral side. Below it there are three strong, slightly downward-bent lateral plicae of equal size.



**Figure 2.** A: *Oospira naga* Grego and Szekeres n. sp., holotype, UF 117519; B: *Oospira penangensis* (Stoliczka, 1873), Thailand, Yala Province, 10.1 km NW Bannang Sata, UF 266228; C: *Oospira sardicola* Grego and Szekeres n. sp., holotype, UF 117570; D: *Phaedusa bocki thompsoni* Grego and Szekeres n. ssp., holotype, UF 266219. Scale bars: 5 mm.



Measurements. — Holotype: Hs 14.5 mm, Ws 3.7 mm, Ha 2.9 mm, Wa 2.1 mm.

Etymology. — The species is named after Nagaland, its type locality.

Note. — Despite the presence of all morphological elements, the thin-walled shell and weak peristome suggest that the holotype of *O. naga* n. sp. may not be a completely developed adult specimen. Its small size and relatively thick apex distinguishes this species from all other *Oospira* in Southeast Asia. It differs from *O. blanfordi* Nordsieck, 1998, the only other non-papillate *Oospira* recorded from Nagaland, by its smaller, less slender shell, stronger sculpture, and reduced lamella inferior.

*Oospira penangensis* (Stoliczka, 1873)

(Fig. 2B)

*Clausilia (Phaedusa) penangensis* Stoliczka 1873: 27, pl. 3 figs 4–6, 15–17.

Thailand, Yala Province, 10.1 km NW Bannang Sata, outcrop on E side of Highway 4077 (6°21'N 101°14'E, 110 m), leg. K. Auffenberg 07.04.1988 (KA-631), UF 266228 (10), UF 266229 (6 in ethanol); Thailand, Yala Province, 11.1 km S Ban Pa Tae (junction of Highways 4077 and 4065) (6°28'N 101°14'E, 110 m), leg. K. Auffenberg 06.04.1988 (KA-629), UF 266241 (1); Thailand, Yala Province, limestone outcrop with cave temple along Highway 4077, Ban Kuwo Bado (6°17'N 101°14'E, 100 m), leg. K. Auffenberg 07.04.1988 (KA-633), UF 266244 (1).

Note. — The type locality of this species is Penang Hill in the Penang State of Malaysia. In this country *O. penangensis* occurs sporadically from the Thai border to the Cameron Highlands, whereas in Thailand it was recorded only from Mount Besar in Pattani State (Loosjes, 1953). The new occurrence data from Yala Province reveal a wider geographic range in southernmost Thailand.

*Oospira philippiana* (Pfeiffer, 1847)

*Clausilia philippiana* Pfeiffer 1847: 69.

“Moulmein” (Myanmar, Mon State, Mawlamyine), ex L. Fea, ex UA, UF 117647 (3); “Moulmein” (Myanmar, Mon State, Mawlamyine),

ex UA, UF 117648 (2); “Maulmain” (Myanmar, Mon State, Mawlamyine), ex W. Newcomb, ex UA, UF 117650 (2); “Moulmein” (Myanmar, Mon State, Mawlamyine), ex Beal-Maltbie coll., ex W. F. Webb, UF 195955 (4); “Moulmein” (Myanmar, Mon State, Mawlamyine), ex H. H. Godwin-Austen, ex UM-4233, UF 501681 (1); Myanmar, Tanintharyi Region, trail from 27 Mile Village to Payhartan Cave Shrine (11°16'03"N 99°11'25"E), leg. J. Slapcinsky 13.05.2015 (MYA-0001, JDS-1660), UF 493996 (1 in ethanol); Myanmar, Tanintharyi Region, Payhartan Cave Shrine, 33 km SE of Lenhya (11°13'45"N 99°10'34"E), leg. J. Slapcinsky 14.05.2015 (MYA-0023, JDS-1661), UF 494005 (1 in ethanol); Myanmar, Tanintharyi Region, 16 km ENE of Hangapru, 0.6 km N of logging camp (11°04'12"N 98°54'59"E), leg. J. Slapcinsky 22.05.2015 (MYA-0181, JDS-1672), UF 494125 (3); Myanmar, Tanintharyi Region, 16 km E of Karathuri, 11 km S of logging camp (10°57'46"N 98°55'52"E), leg. J. Slapcinsky 25.05.2015 (JDS-1678), UF 494176 (1); Myanmar, Tanintharyi Region, 15 km E of Hangapru, 4 km S of logging camp (11°01'42"N 98°55'00"E), leg. J. Slapcinsky 23.05.2015 (MYA-0287, JDS-1673), UF 494216 (1); Myanmar, Tanintharyi Region, SE of the Payhartan Cave Shrine, 33 km SE of Lenhya (11°13'03"N 99°10'52"E), leg. J. Slapcinsky 14.05.2015 (JDS-1663), UF 494315 (1); Thailand, Kanchanaburi Province, 15.3 km NW of Sangkhla Buri (15°11'N 98°23'E, 200 m), leg. K. Auffenberg 09.05.1988 (KA-708), UF 266245 (1)

Note. — The type locality of *O. philippiana* is Mergui (= Myeik) in the Tanintharyi Region of Myanmar. Further occurrences in Myanmar have been reported from the valleys of the Ataran and Salween (= Thanlyin) Rivers in the Mon State (Gude, 1914). The new data from Mon State extend the known distribution of the species southward, whereas the one from Sangkhla Buri provides its first record in Thailand.

*Oospira sardicola* Grego and Szekeres n. sp.

(Fig. 2C)

Zoobank Nomenclatural Act. —  
urn:lsid:zoobank.org:act:48DC8F9A-110F-40D0-

A4E2-1C91130635BE

Type Material. — “Ruby Mines, Burmah” (Myanmar, Shan State, around Mongmit), ex W. Doherty, ex T. H. Aldrich, ex UA. Holotype: UF 117570. Paratypes: UF 267622 (2).

Diagnosis. — Medium-size *Oospira* with glossy shell, finely papillate suture, detached peristome, retracted lamella subcolumellaris, and lateral palatal plicae.

Description. — The pale yellowish, spindle-shaped shell consists of 10.3 to 11.3 moderately convex whorls. The surface of the whorls is glossy and, except for the finely striate neck, entirely smooth. The suture is finely and densely papillate. The base is rounded. The oval peristome is detached, its wide whitish margin is not reflexed. The marginally ending lamella superior is continuous with the lower lamella spiralis. The steeply descending lamella inferior ends before reaching the peristome. Its moderately emerged lower part is visible in apertural view. The lamella subcolumellaris is deeply recessed and cannot be viewed through the aperture. The short, only half whorl long plica principalis starts on the ventral-ventrolateral side. Below it laterally there are three or four long, parallel plicae. Between the lowest and shortest of these and the end of the lamella subcolumellaris there is a very short, vertical plica. The clausilium plate is not visible through the aperture.

Measurements. — Holotype: Hs 18.9 mm, Ws 3.9 mm, Ha 4.0 mm, Wa 2.7 mm. Paratypes (n = 2): Hs 16.0–18.8 mm, Ws 3.9–4.0 mm, Ha 3.9–4.1 mm, Wa 2.9–3.1 mm.

Etymology. — The name of the species, derived from Latin *sardius* and *-cola*, refers to the type locality’s vicinity to the historical ruby mines of Myanmar.

Note. — Morphologically this species is closest to *O. mongmitensis* n. sp., another papillate member of the genus from the vicinity of Mongmit. It differs from *O. sardicola* n. sp. by its larger, more ventricose shell, flatter whorls, and exposed lamella subcolumellaris. Geographically the two species are somewhat isolated, with their localities at least 250 km away from other known *Oospira*

occurrences.

Genus *Phaedusa* Adams and Adams, 1855

Type species: *Clausilia corticina* Pfeiffer, 1842; by subsequent designation: Martens in Albers (1860)

*Phaedusa bocki* (Sykes, 1895)

*Clausilia (Pseudonenia) bocki* Sykes 1895: 263, fig. 1.

Previously this species was known only from China’s Yunnan Province. *Phaedusa bocki bocki* occurs along the middle course of the Hong/Red River (type locality: Honghe Zhou, Manhao Zhen), whereas *P. bocki menglunanensis* (Luo, Chen and Zhang, 1998) in the southernmost part of the province (type locality: Xishuangbanna Zhou, Mengla Xian, Menglun Zhen). A new subspecies from northern Thailand is described below.

*Phaedusa bocki thompsoni* Grego and Szekeres  
n. ssp.

(Fig. 2D)

Zoobank Nomenclatural Act. — urn:lsid:zoobank.org:act:B6477FBC-D1D5-43BC-B190-0C975249A26C

Type Material. — Thailand, Chiang Rai Province, Doi Tung (20°20’32”N 99°50’21”E, 1320 m), leg. F. G. Thompson 08.05.1988 (FGT-4416). Holotype: UF 266219. Paratypes: same data, UF 266218 (36), UF 530689 (55), UF 266220 (15 in ethanol), UF 266221 (13 decollated); Thailand, Chiang Rai Province, limestone mountain 6.0 km by road W of Ban Mae Suai, (19°38’55”N 99°26’41”E, 650 m), leg. F. G. Thompson 07.05.1988 (FGT-4414), UF 266216 (47), UF 266217 (8 in ethanol); Thailand, Chiang Rai Province, Doi Tung, parking lot at Wat Phra That Doi Tung (20°19’32.4”N 99°49’59.2”E, 1350 m), leg. A. Hunyadi 12.02.2015, HU (53), SZ (2).

Other material. — Thailand, Chiang Rai Province, limestone knoll, Ban Mae Song Nai, 4.0 km N 6.0 km NW Mae Chan (20°11’37”N 99°33’06”E, 520 m), leg. F. G. Thompson 10.05.1988 (FGT-4424), UF 266227 (1); Thailand, Chiang Mai Province, NE side of Doi Chiang Dao,

2 km NW of Wat Tham Chiang Dao (19°24'01.0"N 98°54'40.8"E, 840 m), leg. A. Hunyadi 07.02.2015 (1 body whorl).

**Diagnosis.** — Large *Phaedusa* with slender, glossy shell, in apertural view visible lamella subcolumellaris, and clausilium plate without a hook.

**Description.** — The large, slender, yellowish-brown shell consists of 10.7–12.3 gradually widening whorls. The surface of the whorls is glossy, with very fine and dense striae that become stronger and sharper toward the neck. The base is rounded. The oval peristome is detached, its wide dark brown rim is slightly reflexed. The strong and sharp lamella superior gradually transitions into the lamella spiralis. The spirally descending lamella inferior starts ventrally and ends before reaching the peristome at half the height of the aperture. The lamella subcolumellaris also initiates ventrally and reaches the peristome immediately below the lamella inferior. Its end is visible in apertural view. The plica principalis spans from the ventrolateral to the left lateral side. Laterally there are four to seven plicae, which become shorter and somewhat diffuse toward the base. The broad clausilium plate widens distally. Its blunt end, without a hook, is visible through the aperture.

**Measurements.** — Holotype: Hs 29.6 mm, Ws 5.1 mm, Ha 6.1 mm, Wa 4.2 mm. Paratypes (type locality, n = 20): Hs 24.0–30.2 mm, Ws 4.6–5.4 mm, Ha 5.4–6.1 mm, Wa 4.0–4.9 mm.

**Etymology.** — The new subspecies is dedicated to the late Fred G. Thompson who collected most of the type material.

**Note.** — *Phaedusa bocki thompsoni* n. ssp. is the westernmost representative of its species, which differs from both the nominotypical subspecies and *P. bocki menglunanensis* by its larger, more slender shell, glossy surface, shorter and less distinct palatal plicae. Furthermore, its clausilium plate is without the hook (see: Pilsbry, 1908) that is present in both other subspecies. Remarkably, nearly 20% of the shells collected at the type locality are decollate, retaining only 5.0 to 8.3 whorls. This phenomenon has not been observed in other *P. bocki* populations.

*Phaedusa filicostata* (Stoliczka, 1873)

*Clausilia (Phaedusa) filicostata* Stoliczka 1873: 28, pl. 3 figs 7–8.

Thailand, Pattalung Province, 16.2 km S of the junction of Highways 4 and 4122, 4.0 km E of Highway 4122 (7°25'N 99°59'E, 150 m), leg. K. Auffenberg 09.04.1988 (KA-637), UF 266242 (1 body whorl); Thailand, Yala Province, 10.5 km W of Yala, limestone outcrop on the N side of Highway 4065 (6°33'N 101°13'E, 30 m), leg. K. Auffenberg 01.04.1988 (KA-611), UF 266232 (1); Thailand, Yala Province, 38.0 km S of Yala, 3.0 km SW of Bannang Sata (6°15'N 101°14'E, 60 m), leg. K. Auffenberg 02.04.1988 (KA-614), UF 266235 (5); Thailand, Yala Province, 55.2 km S of Yala, outcrop at Ban Than To (6°10'N 101°11'E, 350 m), leg. K. Auffenberg 02.04.1988 (KA-616), UF 266236 (2); Thailand, Yala Province, 4.0 km N of Than To, Banglang National Park, 0.6 km W of Highway 410 (6°08'N 101°11'E, 180 m), leg. K. Auffenberg 03.04.1988 (KA-622), UF 266237 (2); Thailand, Yala Province, 4.0 km N of Than To, Banglang National Park, 0.6 km W of Highway 410 (6°08'N 101°11'E, 280 m), leg. K. Auffenberg 05.04.1988 (KA-624), UF 266238 (39); Thailand, Yala Province, 14.3 km S of Bannang Sata, Ban Tang Ka Deng, outcrop 0.7 km W of Highway 410, Banchon Mine (6°11'N 101°11'E, 260 m), leg. K. Auffenberg 06.04.1988 (KA-626), UF 266239 (5); Thailand, Yala Province, 11.1 km S of Ban Pa Tae (junction of Highways 4077 and 4065) (6°28'N 101°14'E, 110 m), leg. K. Auffenberg 06.04.1988 (KA-629), UF 266240 (1); Thailand, Yala Province, limestone outcrop with cave temple along Highway 4077, Ban Kuwo Bado (6°17'N 101°14'E, 100 m), leg. K. Auffenberg 07.04.1988 (KA-633), UF 266243 (2).

**Note.** — The type locality of *P. filicostata* is Penang Hill in Penang State, Malaysia. The species is widely distributed in Malaysia, north of Kuala Lumpur, but from the neighboring regions of Thailand it had been recorded only from Mount Besar in Pattani Province (Loosjes, 1953). The current data from Yala and Pattalung Provinces show a much wider distribution in the southern part of the Malay Peninsula.



**Figure 3.** *Phaedusa theobaldi* (Blanford, 1872), Thailand, Mae Hong Son Province, 10 km NW of Ban Soppong, UF 266222. Scale bar: 5 mm.

*Phaedusa theobaldi* (Blanford, 1872)  
(Fig. 3)

*Clausilia* (? *Medora*) *theobaldi* Blanford 1872: 201, pl. 9 fig. 5.

Thailand, Mae Hong Son Province, limestone pass 10 km NW of Ban Soppong (19°33'11"N 98°11'32"E, 800 m), leg. F. G. Thompson 24.06.1987 (FGT-4353), UF 266222 (1); Thailand,

Mae Hong Son Province, 10.2 km WNW of Soppong, limestone ridge along Highway 1095 (19°33'N 98°03'E, 820 m), leg. K. Auffenberg 20.03.1988 (KA-585), UF 266234 (4).

Note. — The type locality of *P. theobaldi* is the hill area east of Taungoo, in the Bago Region or Kayin State of Myanmar, and it is also known from Mai-i (Mwa-ywa, Rakhine State, Myanmar)



(Gude, 1914). The samples from Mae Hong Son Province in Thailand provide the first occurrence data from this country.

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