

Remarks on *Alycaeus* species from South-East Asia,
with the descriptions of four new species with keeled shells
(Gastropoda, Caenogastropoda, Cyclophoridae)

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Four *Alycaeus* species, all with keeled shells, are described from Thailand, Laos, Malaysia and Indonesia, viz. *Alycaeus christae* spec. nov., *A. rolfbrandti* spec. nov., *A. carinata* spec. nov., and *A. wilhelminae* spec. nov.

Key words: Gastropoda, Caenogastropoda, Cyclophoridae, *Alycaeus*, taxonomy, South East Asia, Thailand, Laos, Malaysia, Indonesia.

INTRODUCTION

Some years ago a project was started aiming at a revision of the species of the genus *Alycaeus* Gray, 1850, from South East Asia (except for Borneo). To this genus belongs a confusingly large number of species, most of which are poorly described, often with inadequate figures. As a consequence it is almost impossible to identify these taxa with certainty without studying type specimens. This time-consuming project is ongoing.

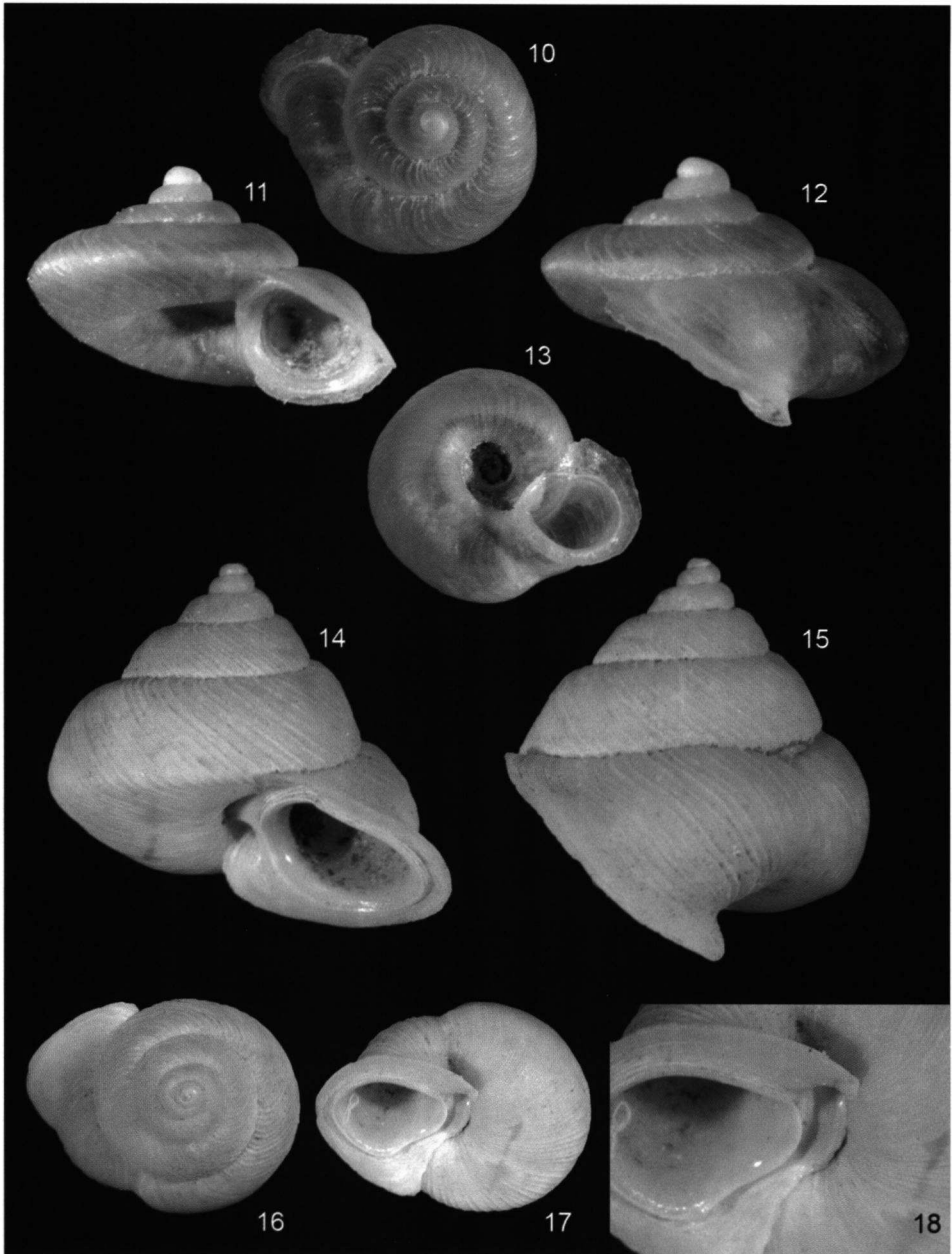
In the meantime, several samples with *Alycaeus* species, collected in Thailand and West Malaysia, were received from Mr. J. and Mrs. C. Hemmen (Wiesbaden) for identification. These specimens proved to belong to two species, both with keeled shells, a feature unknown so far for *Alycaeus* species. Another sample of a keeled *Alycaeus* species that is at my disposal, also from Laos, was collected by R. Brandt and, according to the accompanying label, identified by him as *Alycaeus carinata* Brandt. At the back of the label is written "paratypes", in his handwriting. However, Brandt apparently never described this species. Finally, I collected a peculiar *Alycaeus*-like species in Aceh, Sumatra, Indonesia, also with a keeled shell.

It seems to be justified to describe these four species prior to a complete review of the genus *Alycaeus*, which cannot be presented in the near future. For the genus this implies a broadening of its range of conchological variation.

Abbreviations for shell characters: B, shell width; H, shell height. For collections: RMNH, National Museum of Natural History *Naturalis* (formerly Rijksmuseum van Natuurlijke Historie), Leiden; HW, J. & C. Hemmen, Wiesbaden; CUIZM, Chulalongkorn University, Zoological Museum, Bangkok; VL, J.J. Vermeulen, Leiden.



Figs 1-9. *Alycaeus* spec. 1-5, *A. christae* spec. nov., holotype (RMNH 104422), Thailand, Krabi prov., 08°09.574'N 098°51.761'E, actual height 11.5 mm. 6-9, *A. rolfbrandti* spec. nov., holotype (RMNH 104423), Laos, 20 km E. of Takek, actual height 7.9 mm. Photographs by J. Goud, Leiden.



Figs 10-18. *Alycaeus* spec. 10-13, *A. carinata* spec. nov., holotype (RMNH 104428), Malaysia, Pahang, Bukit Tengkek, actual height 2.5 mm. 14-18, *A. wilhelminae* spec. nov., holotype (RMNH 104429), Indonesia, Sumatra, Aceh Besar, Pasi, actual height 6.4 mm. Photographs by J. Goud, Leiden.

SYSTEMATIC PART

Cyclophoridae Gray, 1847

Alycaeus Gray, 1850

Type species (by original designation): *Cyclostoma gibbum* Eydoux, 1838 (Touranne, Cochinchina).

Alycaeus christae spec. nov. (figs 1-5)

Material examined (paratypes, unless stated otherwise). — Thailand, Krabi province, at km 117.6 of road # 4 (Krabi - Phang Nga), 1.5 km on unpaved road, 08°09.574'N 098°51.761'E, iv.2000, leg. J. Hemmen (TH 73) (RMNH 104422/holotype; 104424/1, HW/19); same locality, ix.2000, leg. J. Hemmen (TH.80) (HW/20; CUIZM/2).

Description. — Shell large for the genus, dextral, fragile, with a conical spire and a large, keeled, body whorl. In this last whorl, at about $\frac{1}{4}$ whorl from the aperture, there is a transverse constriction. After that constriction the shell widens again towards the aperture. From the constriction backwards, a very small respiration tube, about 0.75 mm in length, lies along the suture. Fresh shells are bright citron-yellow, with the spire not darker than the last whorl. Initial $1\frac{1}{2}$ whorls almost smooth, only at high magnification a finely pitted surface is visible; the following whorls covered with numerous fine ribs. The ribs are almost absent at the underside of the body whorl except for the area around the constriction. Fresh shells are a little transparent, with a dull lustre. With $4\frac{1}{4}$ convex whorls, increasing regularly in width. Only the last whorl is more inflated, bulging out distinctly in the shell profile, just before and shortly after the constriction. The suture is deep. Shell apex mamillate and its base flattened. Umbilicus open but not wide, partly hidden by the reflected peristome. Aperture almost circular, tilted at least 45° with regard to the coiling axis, and protruding beyond the peristome. Peristome continuous, flat and widely expanded, but very narrow at the parietal side, where it is narrowly attached to the body whorl. Just after the constriction the peristome curves abruptly downwards; it is attached over only a very short distance at the basal side of the body whorl near the umbilicus. Body whorl with a cord-like keel that ends at the constriction; the remaining part of this whorl, towards the peristome, is well rounded. Operculum thin, corneous, round, with a concave outer surface and a convex inside.

Dimensions: H 10.2-11.5 mm (holotype 11.5 mm); B 11.7-13.0 mm (holotype 12.9 mm).

Derivatio nominis. — With pleasure I name this beautiful species after one of its discoverers, my friend Christa Hemmen. Together with her husband Jens she collects a wealth of interesting molluscan material all around the world.

Remarks. — The combination of a cord-like keel, the bright colour, and the widely flaring peristome makes this species easily recognizable.

Alycaeus rolfsbrandti spec. nov. (figs 6-9)

Material examined (paratypes, unless stated otherwise). — Laos, limestone hills 20 km E. of Takek; 8.ix.1963, leg. R. Brandt (17.211), ex coll. J. Hemmen (RMNH 104423/holotype, 104425/1; HW/11); Laos, Khammouane, limestone outcrops W. of Tha Bac, on Nain Theun Road, along road to Laksao; 17.xi.1995, leg. Tyson Roberts (5710) (VL/3).

Description. — Shell dextral, with a conical spire and a large, keeled, body whorl. In this last whorl, at about ? whorl from the aperture, there is a transverse constriction. After that constriction the shell widens again towards the aperture. From the constriction backwards, a respiration tube of about $\frac{1}{4}$ whorl lies along the suture. Fresh shells are light brown; the last part of the body whorl is much lighter, the spire a little darker than most of the last whorl. Initial whorls smooth, even at high magnification; the following ones covered with numerous fine ribs. The ribs at the underside of the body whorl are of the same prominence as the ones above. Fresh shells with a dull lustre and not transparent. Along the respiration tube, the surface of the body whorl (consisting of fine ribs) is covered with a very fragile layer, resembling a kind of epidermis. In this layer there are numerous little holes; by 'cleaning' the shell it disappeared quickly. Whorls $4\frac{3}{4}$, convex, the initial 4 whorls regularly increasing in width; the final $\frac{3}{4}$ whorl also increases in width and it is here where the keel starts. The suture is deep. Apex of the shell mamillate, its base flattened. Umbilicus open, wide, only for a small part hidden by the reflected peristome. Aperture more or less circular, very oblique and protruding beyond the peristome. Peristome flat and expanded, not continuous, attached with a small edge just below the keel of the body whorl; also basally it has a narrow edge. Just after the constriction, the peristome curves slightly downwards until just beneath the keel. Body whorl with a cord-like keel, ending at the constriction; the remaining part of this whorl is well rounded. Operculum thin, horny, round, with a concave outer surface and a convex inside.

Dimensions: H 6.4-7.9 mm (holotype 7.9 mm); B 8.4-9.2 mm (holotype 8.9 mm).

Derivatio nominis. — Named after its collector, the late Rolf Brandt, who recognized the species as new but did not describe it.

Remarks. — The combination of a keel with the fragile layer over the normal ribs make this species easily recognizable.

Alycaeus carinata spec. nov. (figs 10-13)

Material examined (paratypes, unless stated otherwise). — Malaysia, Pahang, Bukit Tengkek, NW. of Kuantan, x.1999, leg. J. Hemmen (MAL.137.99) (paratypes RMNH 104426/2, HW/37); Malaysia, Pahang, Bukit Sagu, NW. of Kuantan, x.1998, leg. J. Hemmen (MAL.93.98) (RMNH 104428/holotype; paratypes RMNH 104427/2, HW/58); same locality, x.1999, leg. J. Hemmen (MAL.136.99) (paratypes HW/200, CUIZM/2).

Description. — Shell dextral, with a low conical spire and a large, keeled, body whorl. In this last whorl, at about ? whorl from the aperture, there is a transverse constriction. After that constriction, the shell widens again towards the aperture. From the constriction backwards a very small respiration tube lies along the suture. Fresh shells are citron yellow or light reddish brown; both the apical whorls and the last part of the body whorl near the peristome may be much lighter.

Even at high magnification the first whorl is smooth; the following ones are covered by irregularly placed, oblique ribs, which are very thin and fragile lamellae, lying down at the surface. Only the ribs near the constriction are more or less normal ribs. At the underside of the flattened body whorl the ribs are faint or almost absent. Fresh shells are semitransparent and with dull lustre. Whorls 4?, convex, regularly increasing in width for the first $3\frac{1}{2}$ whorls; the last $\frac{3}{4}$ whorl increases considerably in width and it is here where the pointed keel starts. The suture is deep. Apex of the shell mamillate, its base flattened. Umbilicus open, very wide, showing all preceding whorls, only for a small part hidden by the reflected peristome. Aperture more or less circular, extremely oblique (about 30°

with regard to the coiling axis) and protruding just beyond the peristome. Peristome very fragile, flat and expanded, not continuous, attached just below the angular side of the body whorl with a large, flaring edge; basally with another small edge. Just after the constriction the peristome bends slightly downwards until just beneath the keel. The body whorl has a pointed keel, which ends at the constriction; the remaining part of this whorl is well rounded. Operculum thin, corneous, round, with a concave outer surface and a convex inside.

Dimensions: H 2.2-2.6 mm (holotype 2.5 mm); B 4.0-4.6 mm (holotype 4.3 mm).

Derivatio nominis. — Named after its keel (= carina).

Remarks. — The combination of a pointed keel with the lamella-like ribs made this species easily recognisable.

A note about the fate of the limestone hill Bukit Sagu should be added. After Mr. J. Hemmen (in litt.), the mountain is completely surrounded by a fence now and since March 1998 the hill is transformed into a huge limestone quarry. It would take only seven years before the entire hill had disappeared. It was possible to collect at the middle of the mountain, in an enormous, collapsed, cave on very humid walls. The situation at the moment is unknown, but probably the hill does not exist any more.

Alycaeus wilhelminae spec. nov. (figs 14-18)

Material examined. — Indonesia, Sumatra, Aceh Besar, westcoast near Pasi, 10 km S. of Lhong, on limestone slope, vi.1997, leg. W.J.M. Maassen (RMNH 104429/holotype).

Description. — Shell dextral, conical, with a keeled body whorl. In that last whorl, at about $\frac{1}{4}$ whorl from the aperture, there is a transverse constriction. After the constriction the shell widens again towards the aperture. From the constriction backwards a very small respiration tube is hidden along the suture. The shell has lost his original colour because of alteration. Even at high magnification the first whorl remains smooth; the following ones are covered by regularly placed, very oblique, sharp ribs. The ribs behind the constriction are more densely spaced and finer. At the underside of the flattened body whorl the ribs are as prominent as above. Whorls $4\frac{3}{4}$, flattened, the initial 4 whorls regularly increasing in width; the last $\frac{3}{4}$ whorl increases considerably in width. The blunt keel is only visible in front view; the last half whorl is rounded. The suture is not deep. Apex of the shell mamillate, its base flattened. Umbilicus closed, completely hidden by the reflected peristome. Aperture more or less circular, oblique (about 45° with regard to the coiling axis) and protruding just beyond the peristome. Peristome flat and expanded, continuous, attached just below the angular side of the body whorl with a large, flaring edge, which continues as an edge covering the umbilicus; basally also with a narrow edge. The body whorl follows the suture, it is not curved downwards. The operculum is not known.

Dimensions: H 6.4 mm; B 7.6 mm.

Derivatio nominis. — Named after my wife, my faithful companion on our travels to Asia, who sometimes even collects molluscs.

Remarks. — The combination of a blunt keel, a covered umbilicus and an oblique striation make this species easily recognizable. So far, this is the first *Alycaeus* species with a closed umbilicus. Its generic classification is therefore somewhat uncertain.

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