

Two new Cones from the Philippines (Gastropoda: Conidae)

By FELIX LORENZ, Buseck-Beuern, Germany
& JEAN-PIERRE BARBIER, Lapu-Lapu City, Philippines

Plates 1-4

Keywords

Conidae, Philippines *Conus vidua cuyoensis* new subspecies, Cuyo Islands, *Protoconus hanshassi* new species, Siargao Island.

Abstract

Conus vidua cuyoensis n. ssp. is described from the Cuyo Islands (Philippines). It is characterized by orange instead of dark brown bands, smaller size and a more sculptured, slightly more ventricose shell compared to *C. vidua vidua* from the direct geographical vicinity. *Protoconus hanshassi* n. sp. is described from Siargao (Philippines). It closest resembles the Caribbean *P. aurantius* and differs only in details of the colour-pattern and a taller spire.

Zusammenfassung

Conus vidua cuyoensis n. ssp. wird von den Cuyo-Inseln (Philippinen) beschrieben. Er ist im Vergleich zu *C. vidua vidua* aus der unmittelbaren geographischen Umgebung durch orangefarbene anstelle dunkelbrauner Querbänder, geringere Größe und ein bauchigeres, stärker skulpturiertes Gehäuse gekennzeichnet. *Protoconus hanshassi* n. sp. wird von Siargao Is. (Philippinen) beschrieben. Er steht morphologisch der karibischen *P. aurantius* am nächsten und unterscheidet sich nur in Details der Musterung und einer höheren Spira.

Introduction

The Philippine Islands are still a rich source of new species and subspecies of seashells. Each time an area is investigated closer, new taxa of various families of gastropods are being discovered. The two Conidae described herein originate from such newly investigated areas, namely the Pacific island of Siargao in the north east of Mindanao and the isolate Cuyo Island-group between Palawan and Panay in the centre of the Sulu Sea.

A new subspecies of *Conus vidua* REEVE, 1843 from the Cuyo Islands

The molluscivore species of the *Conus marmoreus*-species-complex display a great diversity throughout the Indo-Pacific. In the Philippines, *Conus vidua* REEVE, 1843, *C. marmoreus*, LINNAEUS, 1758 and *C. bandanus* HWASS, 1792 are commonly encountered in various shallow water habitats. Recent collecting in the isolate Cuyo Islands between Palawan and Davao in the Philippines has yielded a number of interesting discoveries, including a hitherto unknown population of *Conus vidua*.

Conus vidua cuyoensis n. ssp.

(Plate 1)

Material

Holotype: 29.3 mm coll. MNHN 24815

Paratype 1: 25.0 mm coll. CHIAPPONI LORENZ Seashell Foundation CLSF 96166C

Paratype 2: 31.5 mm coll. Naturkundemuseum Senckenberg, Frankfurt/M.

Paratype 3: 21.4 mm coll. Staatliches Museum für Naturkunde Stuttgart MNS-ZI 74099

Paratype 4: 29.8 mm coll. Staatliches Museum für Naturkunde Stuttgart MNS-ZI 74100

Paratype 5: 26.4 mm coll. Haus der Natur Cismar plus 26 further paratypes in the first author's collection.

Description

Small to medium sized, broadly conical, solid and heavy. Last whorl slightly ventricose, rather dull, the anterior half with densely spaced nodulose spiral ribs becoming gradually stronger anteriorly. Protoconch pointed, number of nuclear whorls not discernible. First five postnuclear whorls slightly domed, later postnuclear whorls flat, with strong, widely spaced and pointed tubercles. Anal notch simple, not sinoid. Aperture narrow, gently curved, slightly wider anteriorly. There is a well developed

callous plait bordering the basal part of the columella.

Ground colour pinkish white, protoconch and earlier teleoconch whorls paler white. The body whorl shows three pale zones: below the spiral ramp, midways and above the siphonal canal intermitted by two broad transverse bands of orange-brown. These bands are ornamented with indistinct, widely and irregularly distributed whitish to yellow tentmarks. Within the paler zones there is a very fine network of darker brown to black wavy lines. The basal part of the columella is darker brown with intermitted white dashes. The interstices of the spiral tubercles are distinctly blotched with darker orange and brown. The aperture is pale purple, with a darker area below both canals.

The intensity of the darker netting of the three paler zones varies among the paratypes, in smaller specimens it is darker than in larger ones. In some shells, the orange bands have a greenish stain and very fine transverse lines of brown colour. The spiral ribs are less developed in larger shells (> 25 mm), in medium sized and smaller shells they may cover the entire body whorl.

Habitat and distribution

Conus vidua cuyoensis n. ssp. is known only from the Cuyo Islands, Philippines, where it was collected in shallow water.

Etymology

The name refers to the origin of the new subspecies, the Cuyo Islands, Philippines.

Discussion

Only recently, the taxa traditionally considered variations of *Conus marmoreus* LINNAEUS, 1758 have been recognized as valid species based on mtDNA studies and toxinology (TAYLOR & al., 1993, TUCKER & TENORIO, 2009, MELAUN, pers. comm.). These studies have also revealed that colour and pattern elements have a far greater importance for species identification than previously agreed by authors. The new taxon is obviously very closely related to *Conus vidua* because of the combination of very fine darker netting on the paler bands, and widely spaced netting on the darker transverse bands. It differs from typical *C. vidua* (Pl. 2) at first glance by the striking paler orange instead of dark brown to black colour of the transverse bands. In comparison to *C. vidua vidua* from the geographical vicinity, the shells of *C. vidua*

cuyoensis n. ssp. are smaller, slightly more ventricose instead of straight, with stronger development of nodulose spiral ribs. In *Conus nocturnus* LIGHTFOOT, 1786 (Pl. 2), granulose individuals are found alongside smooth shells and popular under the varietal name *deburghiae* SOWERBY II, 1857. These shells differ from *Conus vidua cuyoensis* n. ssp. by the taller spire and the darker bands which lack paler intermitted tentmarks.

A rare individual orange colour mutant of *Conus vidua* is well known as *Conus v. vidua f. mozoi* MELVIN & MELVIN, 1980 (Pl. 2). It is found in the area of Puerto Princessa in Palawan and merely differs from typical *C. v. vidua* by the orange instead of dark brown to black colour. These shells differ from *C. vidua cuyoensis* n. ssp. by being smooth, of larger size, and by the absence of darker brown pigment and the netting on the paler zones being dissolved to absent whereas that element is especially distinct in *C. vidua cuyoensis* n. ssp. Such occasional all-orange individuals are known from populations of nearly all species of the *Conus marmoreus*-complex.

Conus vidua cuyoensis n. ssp. is considered a subspecies and not an individual variation, as the differences to typical *C. vidua vidua* are not a mere absence of darker pigment, but a different distribution of the pigmentation, which contains orange but also dark brown elements. Furthermore, the new taxon is not found directly alongside typical *Conus vidua vidua*. Its range in the Cuyo Islands seems to be very restricted, as also exceptionally slender and dark pigmented *Conus v. vidua* are known from that general area of the Sulu Sea. The phenomenon of localized radiation is also known in other species of the *Conus marmoreus*-complex, for example *C. m. crosseanus* BERNARDI, 1861, *C. m. suffusus* SOWERBY III, 1870 and *C. m. pseudomarmoreus* CROSSE, 1875 from New Caledonia, *Conus bandanus nigrescens* SOWERBY II, 1859 from Samoa and the above mentioned *C. nocturnus* from the Moluccas and Irian Jaya. All these species and subspecies are characterized mainly by different colour-pattern.

A spectacular new species of *Protoconus* from Siargao Id.

When we received the first specimen of the small cone described in the following we were hesitant to believe it was coming from the Philippines as it

looked like a Caribbean species to us! Two specimens are now available to us, with confirmed locality data.

***Protoconus hanshassi* n. sp.**

(Plate 3)

Material

Two adult live collected specimens:

Holotype: 23,4 mm, MNHN 24814

Paratype: 22,9 mm, currently in the first author's possession.

Description

Shell rather small and lightweight. The last whorl is narrowly ovate. The spire is high and pointed, the outline of it convex. The whorls are stepped, with a deep suture. There are very distinct tubercles on every whorl. These are rather far apart from each other and point outwards, especially in the paratype shell. The paucispiral protoconch is consists of only two whorls. Most of the last whorl is smooth, but there is a distinct sculpture of transverse ridges along the outer lip, getting weaker towards the dorsal part of the body whorl. The anterior third of the last whorl shows transverse striae with faint tubercles.

The protoconch is of darker grey-brown color, the ground colour of the teleoconch is white, even inside the aperture. There are brown dashes resembling a wide tentmark pattern distributed unevenly over the shell including the spire, and very small brown dots running across the last whorl in narrow bands. The suture of the spire is tinted with a brown line.

Distribution and habitat

The type locality is Siargao Island, Philippines. Both shells available to us have been collected at 20 m by a local diver.

Etymology

Named in honour of Prof. Dr. HANS HASS (*1919), Austrian underwater researcher, pioneer diver and inventor of SCUBA. His lifework has always been a great inspiration to us.

Discussion

There are some species of Conidae which can be similar to *Protoconus hanshassi* n. sp.:

Rolaniconus varius LINNAEUS, 1758 (Pl. 4) especially when juvenile, may have a similar outline and pattern. However, it has a less tall

spire, the suture is not deep and not tinted with a darker line, the spire does not show darker markings. The tubercles on the shoulders is denser and pointing up. The color pattern differs by being of black color and two transverse bands absent in *Protoconus hanshassi* n. sp.

Fulgiconus exiguus LAMARCK, 1810 from New Caledonia and other places in Melanesia may show a somewhat similar color pattern, especially its smaller form *cabritii* BERNARDI, 1858 (Pl. 4). However, all variations of *Fulgiconus exiguus* have a less pointed spire, and a different sculpture on the last whorl. *Fulgiconus exiguus* lacks the fine lines of brown dots that cover the shell in *Protoconus hanshassi* n. sp.

Protoconus aurantius HWASS, 1792 (Pl. 4) and related Caribbean species may have a similar color pattern on the last whorl, and tubercles on the shoulder may be similar, and those species often have fine lines of brown dots as seen in *Protoconus hanshassi* n. sp. However, the body sculpture of the Caribbean species is different in consisting of distinct transverse sulci showing white intermitted darker and white dots running into the darker pattern. These are not present in *Protoconus hanshassi* n. sp. whose body whorl is smooth in the middle. The spire of *Protoconus hanshassi* n. sp. is still taller and more distinctly stepped than in *Conus aurantius* and related species. The similarities to the Caribbean species lead us to tentatively choose *Protoconus* as genus of the new taxon.

MONTEIRO (2009) illustrated a shell from the collection of ARMANDO VERDASCA that was purchased on a shell-auction, supposedly coming from Palawan. It was first considered conspecific with our shells by the first author, but closer examination reveals that it differs by the sculpturing of the spire as being finer and restricted to the more angular shoulder, by a more distinct spiral banding with intermitted white dots and a different distribution of pattern. To us, VERDASCA's specimen is in fact a slightly eroded Caribbean *Protoconus*, possibly *aurantius* or *curassaviensis* HWASS, 1792.

As an amusing incidence, the type locality of *P. aurantius* was erroneously stated as "Philippines" by HWASS and later corrected to Curaçao by CLENCH & BULLOCK, 1970.

Acknowledgements

We thank our ladies, JANA KRATZSCH and RUTH LACANIETA BARBIER for bearing with us, and to KLAUS GROH for careful editing and layout.

Literature

CLENCH, W. J. & BULLOCK, R. C. (1970): The genus *Conus* in the western Atlantic. – *Johnsonia*, **4** (48): 375.

FILMER R. M. (2001). A catalogue of nomenclator and taxonomy in the living Conidae 1758 - 1998. – 388 pp.; Leiden (BACKHUYS Publishers).

MELAUN, C. (2008): Phylogenetische und taxinologische Untersuchungen an Conidae (Mollusca: Gastropoda) unter besonderer Berücksichtigung westatlantischer Vertreter der Gattung *Conus*. – PhD Thesis at the University of Gießen, Germany

MONTEIRO, A. (2009): An unusual specimen, but can the location be trusted? – *The Cone Collector*, **10**: 13 [online publication].

RÖCKEL, D., KORN, W. & KOHN, A. J. (1995): A manual of living Conidae. – 358 pp.; Wiesbaden (Verlag Christa. Hemmen).

TAYLOR, J. D., KANTOR Y. I. & SYSOEV A. V. (1993). "Foregut anatomy, feeding mechanisms, relationships and classification of Conoidea (Toxoglossa Gastropoda)". – *Bull. Nat. Hist. Mus. (Zool.)*, **59**: 125-169.

TUCKER J. K. & TENORIO M.J. (2009), Systematic classification of Recent and fossil conoidean gastropods. – 295 pp.; Hackenheim, Germany (ConchBooks).

TUCKER J. K. (2009). Recent cone species database. – September 4th 2009 edition.

WALLS, J. G., 1979 Cone shells, a synopsis of the living Conidae. – 1011 pp.; Neptune City, NJ (T.F.H. Publications).

Addresses of the authors:

Dr. FELIX LORENZ
Friedrich-Ebert-Str. 12
D-35418 Buseck-Beuern, Germany
E-Mail: felix@cowries.info

JEAN-PIERRE BARBIER
Coral Point
Lapu-Lapu City, Mactan, Philippines
E-Mail: jp@topseashells.com

Opposite page: **Plate 1**

Conus vidua cuyoensis n. ssp., all Cuyo Islands, Philippines

Fig. 1: Holotype, 29.3 mm

Fig. 2: Paratype 1, 25.0 mm

Fig. 3: Paratype 2, 31.5 mm

Fig. 4: Paratype 3, 21.4 mm

Fig. 5: Paratype 4, 29.8 mm

Fig. 6: Paratype 5, 26.4 mm

Plate 1

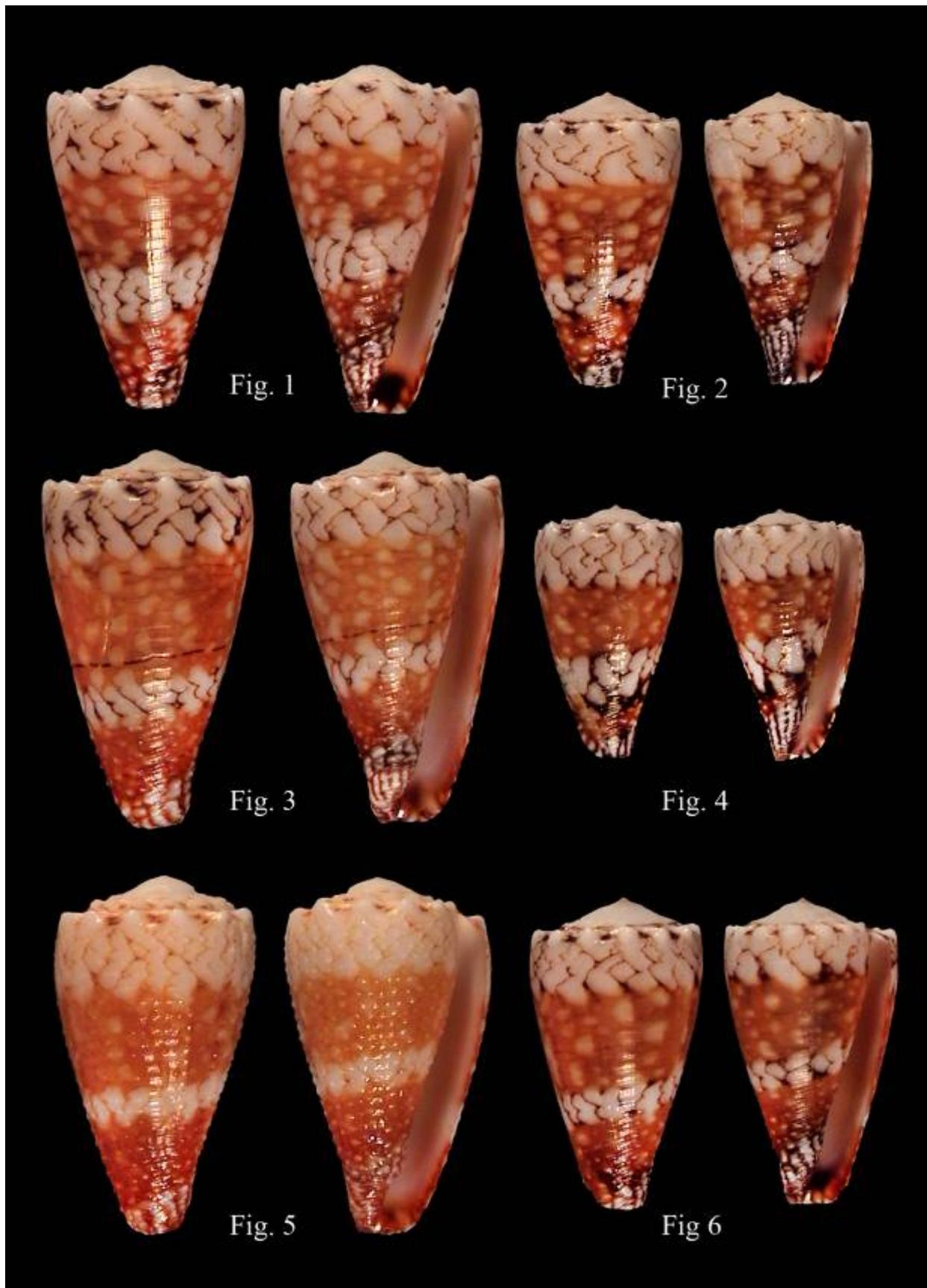


Plate 2

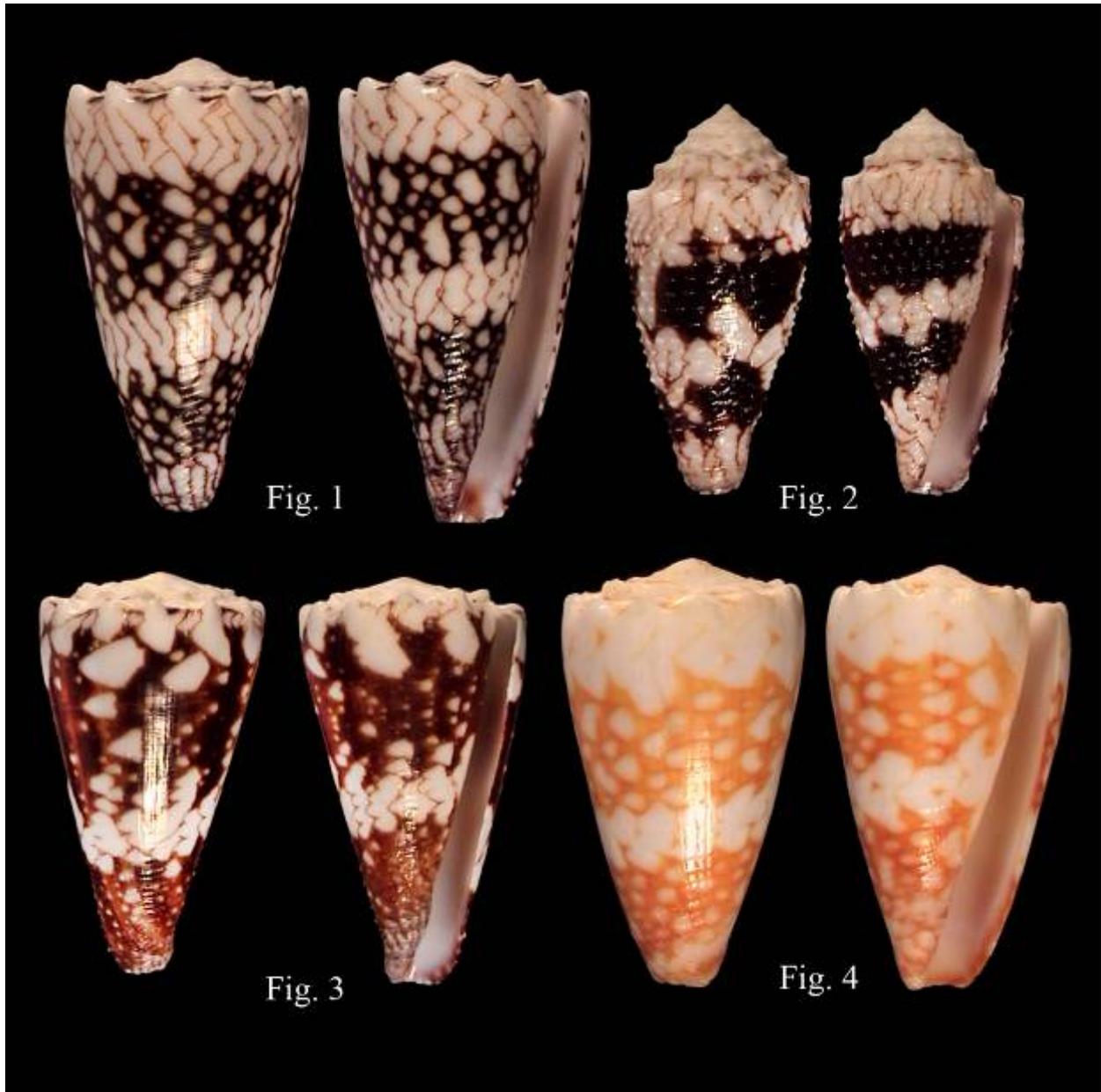


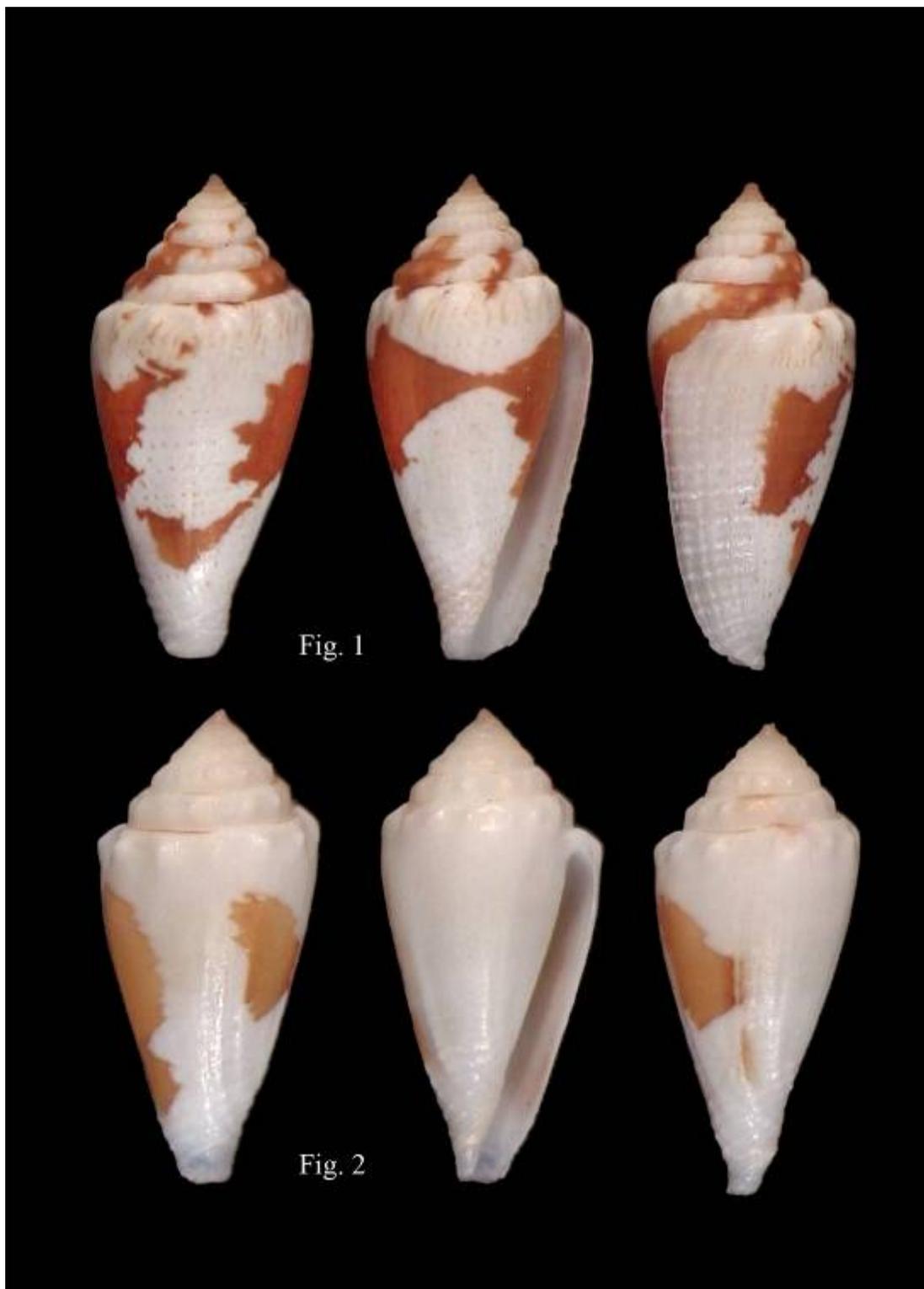
Fig. 1: *Conus v. vidua*, 43 mm, Bohol, Philippines

Fig. 2: *Conus nocturnus*, 28 mm, Halmahera, Moluccas

Fig. 3: *Conus v. vidua*, 39 mm, Cuyo Islands, Philippines

Fig. 4: *Conus v. vidua* var. *mozoi*, 40 mm, Puerto Princessa, Palawan, Philippines

Plate 3



Protoconus hanshassi n. sp., both Siargao Island, Philippines

Fig. 1: Holotype, 23 mm

Fig. 2: Paratype, 23 mm.

Plate 4

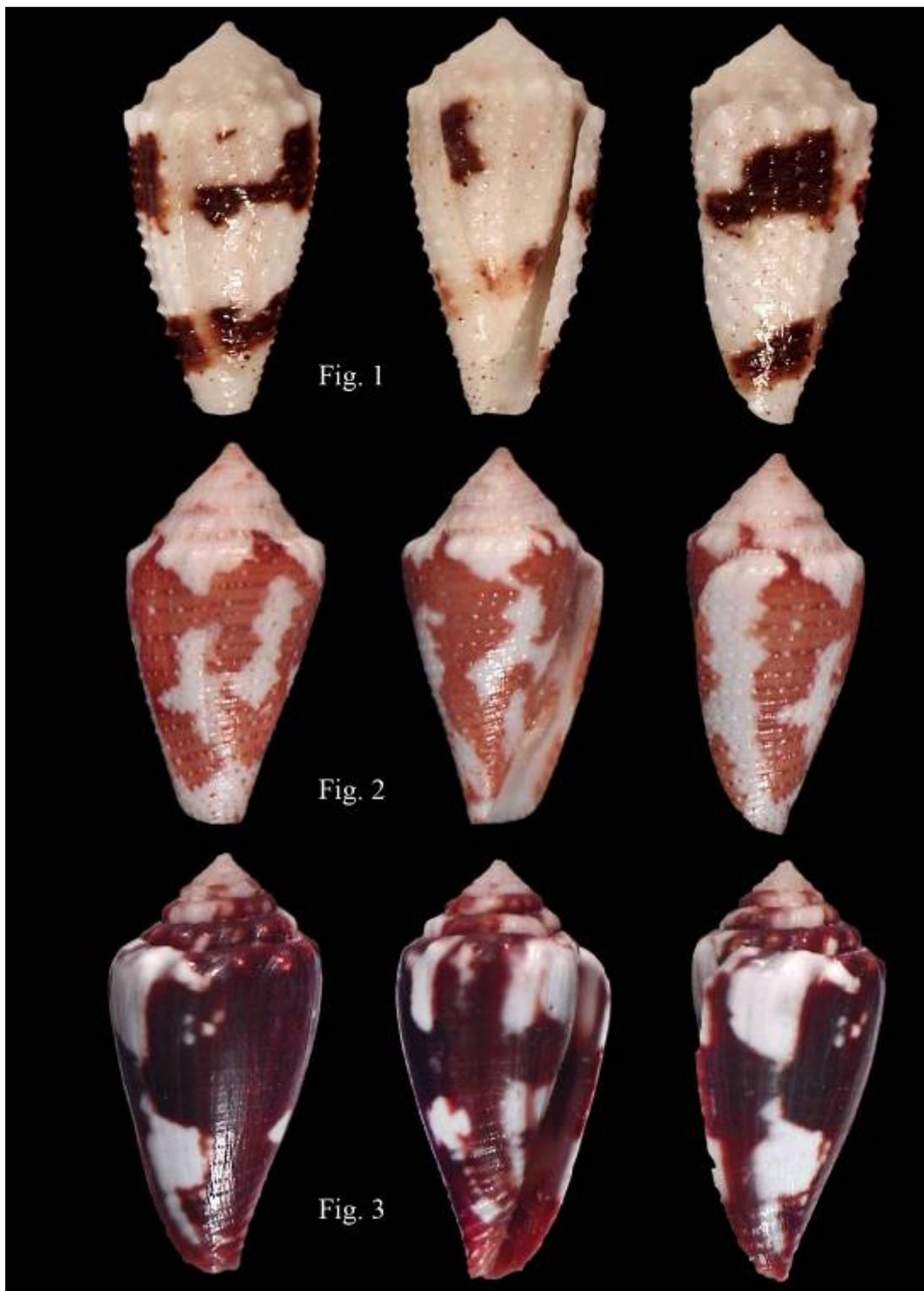


Fig. 1: *Rolaniconus varius*, 30 mm, Siargao Island, Philippines

Fig. 2: *Protoconus aurantius*, 22 mm, Bonaire, Netherlands Antilles

Fig. 3: *Fulgiconus exiguus* var. *Cabritii*, 24,2 mm, New Caledonia