

# *La Conchiglia*

*The Shell*



# A new species of *Cribrarula* (Gastropoda: Cypraeidae) from Easter Island

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## Key words

Cypraeidae, Easter Island, *Cribrarula*.

## Abstract

A spectacular new species of Cypraeidae belonging to the *Cribrarula cumingii*-complex was recently found by Michael Garcia while diving at a depth of 30 m along the west coast of Easter Island. It is the fourth cowry species endemic to Easter Island and is here named in honor of its discoverer: *Cribrarula garciai* sp. nov.

## Introduction

The genus *Cribrarula* constitutes a clearly defined unit within the family Cypraeidae (Mollusca: Gastropoda). In the past decades, the account of taxa recognized in this genus steadily increased, not only with the revision of former synonyms to valid or subspecific level (e.g. *fallax* Smith 1881, *compta* Pease 1860) but also with the discovery of new species (*taitae* Burgess 1993, *pellisserpentis* Lorenz 1999).

## Material

Two adult specimens collected alive. Animals were preserved inside the shells and were examined by the first author. Holotype: 26.4 mm length; 17.4 mm width; 13.7 mm height; 25 labral teeth; 24 columellar teeth (coll. LACM). Paratype 1: 22.3 mm length, 14.3 mm width; 10.8 mm height; 24 labral teeth; 23 columellar teeth (coll. Lorenz). For the statistical comparison: 92 specimens of *C. cumingii cumingii* (Sowerby, 1832), 36 *C. cumingii compta* (PEASE 1860) and 84 *C. cumingii astaryi*.

## Description

The shell of the holotype is oval, with blunt extremities. Extremely callused at the extremities and along the margins. Spire small and depressed, fully covered with callus. Base convex, very thick. Aperture narrow and of equal width throughout, gently curved to the left in the posterior third. Labral teeth (25) indistinctly extending towards the middle of the labrum, columellar teeth (24) not extending onto base but reaching deep into the shell to form a distinctly denticulate columellar peristome. The fossula area is not separated from

the peristome and equally denticulate. The terminal ridge is thickened and rather long. The base, the marginal callus surrounding the shell, the extremities, and the dorsal lacunae are plain white. The dorsum is covered with a bright orange-brown coat forming regular round lacunae of variable size. There is an indistinct dorsal line running across the dorsum along the labral side. The margins are densely covered with very large black spots reaching onto the base and dorsum, where they form a row of slightly elevated black spots. The smaller paratype specimen agrees with the holotype in these features. The animal characteristics are unrecorded, the radula is unknown.

## Habitat and distribution

The two specimens known so far were found side by side on the roof of a cave at 30 m depth near Hanga Roa, Easter Island.

## Discussion

The new species can be compared to the Polynesian group of smaller, laterally spotted taxa of the genus *Cribrarula*, generally assigned to a single species, *Cribrarula cumingii*. There are three different subspecies and a number of ecological varieties, some of which were given separate names. The nominate form, *Cribrarula cumingii cumingii* from Tahiti is known from a smaller shelled form ranging between 12 and 16 mm, and a larger form exceeding 20 mm. Intermediate-sized shells are less frequent. The larger form is generally known as *cleopatra* Schilder & Schilder, 1938. The holotype of *cumingii*, however, measures 27 mm and the larger form is therefore the typical *cumingii* (see LORENZ, 2000). The smaller form has not been given a separate name. Large-shelled specimens are usually found in shallow lagoons, whereas the turbid habitat of the lagoon edges are inhabited by smaller-shelled individuals. The Tahitian *cumingii cumingii* is characterized by its slender shape without conspicuous marginal callus, by a fine dentition extending onto the labrum, a narrow aperture, and a conspicuous fossula showing numerous denticles.

The smaller *cumingii compta* seems to be restricted to Tuamotu. It is more inflated, with rostrated extremities.



**Plate 1**

Upper row: *C. garciai* sp. nov., holotype.

Central row: *C. garciai* sp. nov., (left) posterior view of the holotype, and (right) paratype 1.

Lower row: *C. garciai* sp. nov., paratype 1.

The labral teeth are more numerous than in typical *cumingii* and do not extend onto the lip. On the columellar side there is a callus ridge bordering the aperture. The margins are hardly callused and sparsely spotted. The status of *compta* as a subspecies or even a valid species is still under study, very little is known about its habitat and characteristics of the animal. The consistent conchological differences between the Tuamotu shells and the Tahiti ones were discovered only recently (LORENZ & HUBERT, 2000).

The third subspecies of *c. cumingii* is restricted to the Marquesas Islands: *Cribrarula cumingii astaryi*. Most authors accepted *astaryi* as a valid species at first, but this step was questioned by LORENZ & HUBERT (1993, 2000). Repeated findings in the Marquesas of shells hardly assignable to either

*c. cumingii* or *c. astaryi* seem to support the status of a geographical subspecies (unpublished observation). The actual status of *c. astaryi* remains an open question. The main conchological features separating *c. astaryi* from *c. cumingii* are a somewhat broader shell, a wider aperture, and less numerous fossula denticles. There are two ecological extremes, with a wide spectrum of intermediate forms: the typical *c. astaryi* is small-shelled (12-14 mm), rather slender and hardly callused on the columellar side. The variety *lefaiti* Martin & Poppe, 1989 is defined as being larger (16-20 mm) and more callused. However, small-shelled individuals also occasionally have a strong callus, and large shells may be slender, without any callus. We consider *lefaiti* an ecological or individual form without taxonomic importance. *Cribrarula garciai* sp.

<i>Cribrarula</i>	<i>c. cumingii</i>	<i>c. compta</i>	<i>c. astaryi</i>	<i>garcaii</i>
<b>Distribution</b>	Tahiti	Tuamotu	Marquesas	Easter Island
<b>Shell formula</b>	Small form: 15(55)31:31 Large form: 21(55)31:32	11(54)43:34	Typical form:: 15(57)23:24 forma "lefaiti": 19(60)23:23	24(65)25:24
<b>Fossula</b>	Projecting, finely denticulate		Projecting, denticles less fine	Not projecting, finely denticulate
<b>Labral margin</b>	Not callused, separated from dorsum by distinct groove			Very callused, merging with dorsum
<b>Columellar margin</b>	Hardly callused		Sometimes slightly callused	Extremely callused, extending up
<b>Spots on labral side</b>	Numerous, distant, restricted to margin		Very large, dense, extending up high	
<b>Spots on col. side</b>	Often less numerous, not visible from dorsal view		Numerous, rarely visible from dorsal view	Very large, reaching far onto dorsum, conspicuous in dorsal view
<b>Dorsal lacunae</b>	Discrete, dense	Large, sparse	Large, dense	Large, sparse
<b>Posterior extremity</b>	Elegantly rostrate, fragile			Callused, blunt
<b>Dorsal coat</b>	Yellow-orange	Pale yellow	Saturate orange	
<b>Spire</b>	Deeply umbilicate, not covered by callus			Covered by callus

**Table 1:** Comparison of *Cribrarula garcaii* sp. nov. with *C. cumingii* and its subspecies.

nov. can safely be assigned in the vicinity of the *cumingii*-like species because of its relatively fine dentition, narrow aperture, and finely denticulate fossular area. Table 1 compares *Cribrarula garcaii* sp. nov. with *C. cumingii* and its subspecies<sup>1</sup>.

Separating *C. garcaii* sp. nov. from other species of the genus represents no problem: it differs from *C. gaskoinii* (Reeve, 1846) from Hawaii by its finer dentition, finely denticulate fossula, and the large, sparse marginal spots which are particularly dense and fine in *gaskoinii*. The dorsal lacunae are also much larger and more sparse than in the Hawaiian species. The Melanesian *C. catholicorum* Schilder & Schilder, 1938 may be similar in the development of a strong marginal callus, but in that species the teeth are coarser and the fossula is steep with only four to seven coarse denticles.

The marginal spots are fine and inconspicuous. The western Polynesian *C. taitae* Burgess, 1993 is hardly callused, with a coarse dentition resembling *C. catholicorum*. The recently described *C. pellisserpentis* Lorenz, 1999 from Madagascar may be similar in size, callosity of the margins, and size of the marginal spots. That species, however, has a wide aperture, comparatively coarse teeth and a short, coarsely denticulate fossula.

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<sup>1</sup> For an exact numeric comparison of the shell dimensions we have chosen the shell formula by SCHILDER & SCHILDER, 1938: L(W/L)labR:colR. L: average length (mm), W/L: width/length in percent, labR: reduced number of labral teeth, colR: normalized number of columellar teeth. The formula to get the normalized number of teeth (to a hypothetical shell of 25 mm length) is:  $R = 7 + ((c-7)\sqrt{(25/\text{shell's length})})$ .

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