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ZOOLOGY.—*A key to the Philippine operculate land mollusks of the genus Ceratopoma.*¹ PAUL BARTSCH, United States National Museum.

In 1918 we published in this JOURNAL² a *Classification of the Philippine operculate land shells of the family Helicinidae, with a synopsis of the species and sub-species of the genus Geophorus*. In that paper we gave keys to the subgenera and species of the largest genus, namely, *Geophorus*, of the subfamily Helicinidae. Since then enough material has come to hand to enable us to similarly treat another genus, namely, that of *Ceratopoma*, a key to the species of which is herewith furnished (see page 502).

Ceratopoma has the operculum less specialized than any other Philippine Helicinid. It consists of a simple, horny shell without calcareous deposit. The type of the genus is *Helicina caroli* Kobelt.

The animal, like *Geophorus*, is usually a ground dweller and may be found among dead leaves as well as in crevices of rocks. At the present time the genus is known from Luzon, Leyte, Siargao and northeastern Mindanao, and it is quite possible that careful collecting in the islands between the two extremes will reveal additional species.

Ceratopoma caroli Kobelt comes from the island of Siargao. It is a large species, with the parietal callus chestnut brown. In fact, it is the only *Ceratopoma* so far known with a brown callus.

Ceratopoma henningiana Möllendorff was described from Pena Blanca, Luzon, and differs from all the other *Ceratopomas* in having a broad brown basal band near the periphery.

Ceratopoma cagayanica, sp. nov., differs from the other two known large non-color-banded *Ceratopomas* in having the peripheral keel limited on the base by an incised line, in which character it agrees with *Ceratopoma henningiana* Möllendorff. The type, Cat. No.

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² This JOURNAL 8: 643-657. 1918.

KEY TO THE PHILIPPINE SPECIES OF CERATOPOMA

- Shell large, greater diameter more than 13 mm. *caroli* Kobelt
- Parietal callus chestnut brown
- Parietal callus not chestnut brown
- Peripheral keel limited on the base by an incised line *henningiana* Möllendorff
- Base with a brown peripheral band *cagayanica* Bartsch
- Base without a brown peripheral band
- Peripheral keel not limited on the base by an incised line *emaculata* Möllendorff
- Umbilical callus about one-half of the diameter of the shell
- Umbilical callus not one-half of the diameter of the shell *emaculata cabaliana* Bartsch
- Umbilical callus about one-fourth of the diameter of the shell
- Shell small, greater diameter less than 8 mm.
- Shell subglobose¹
- Shell not subglobose
- Shell depressed conic
- Upper surface strongly spirally striated *contermina* (Semper) Kobelt
- Greater diameter 6 mm. *contermina contermina* (Semper) Kobelt
- Greater diameter 4.9 mm. *contermina tota* Bartsch
- Upper surface not strongly spirally striated
- Upper surface without spiral sculpture on the later whorls *rosaliae* Pfeiffer
- Greater diameter 7.6 mm. *rosaliae rosaliae* Pfeiffer
- Greater diameter 6.7 mm. *rosaliae manilana* Bartsch
- Greater diameter 5.7 mm. *rosaliae igorota* Bartsch

¹ The mollusk described by Wagner as *Ceratopoma contermina camiguinensis* from Camiguin, Luzon, should come near here, but I have not seen specimens of it, and therefore am unable properly to key it.

302763, U. S. N. M., comes from Cagayan, Mindanao. It has 4.5 whorls and measures: altitude, 7.5 mm.; diameter, 13.5 mm.

Two forms of *Ceratopoma* are known from the island of Leyte, one having the umbilical callus about half the diameter of the shell, which is *Ceratopoma emaculata* Möllendorff, the other having the umbilical callus only about one-fourth the diameter of the shell, which may be known as *Ceratopoma emaculata cabaliana*, subsp. nov. The former we collected in the mountains south of Tacloban, Cat. No. 258771, U. S. N. M. The latter comes from Sitio Menoiho, Cabalian, Leyte. The type is Cat. No. 302741, U. S. N. M.

The remaining members of the genus are all from the island of Luzon, and are small, none exceeding 8 mm. in diameter. Two of these have a subglobose outline, namely, *Ceratopoma quadrasi* Möllendorff, which comes from Caxiguran, and the shell described by Wagner as *Ceratopoma contermina camiguinensis* from Camiguin, Luzon. The latter I have not seen, and consequently have not placed in the key. The figure given by Wagner resembles that of *Ceratopoma quadrasi*, but from what we know of the distribution of *Helicinas* there seems little doubt that it is distinct, and if specimens were at hand characters could be given to key it.

The remaining forms are depressed-conic, and can be divided into two species, one having the upper surface strongly spirally striated. This is *Ceratopoma contermina* (Semper) Kobelt, which was described from Pancian, northern Luzon, and has a diameter of more than 6 mm., and a smaller race, which may be called *Ceratopoma contermina iota*, subsp. nov., from Cagayan, Luzon. The type of this, Cat. No. 302758, has $4\frac{1}{3}$ whorls and measures: altitude, 3.2 mm.; greater diameter, 5.6 mm. The other species, *Ceratopoma rosaliae* Pfeiffer, is without spiral striation on the upper surface. The typical form we have seen from the eastern side of Isabella and Nueva Viscaya Provinces, Luzon.

A smaller race occupies the Manila Bay region, to which we now give the name *Ceratopoma rosaliae manilana*, subsp. nov.. The type, Cat. No. 184924, U. S. N. M., comes from Manila. It has $4\frac{1}{3}$ postnuclear whorls and measures: altitude, 3.8 mm.; diameter 6.7 mm.

A still smaller race comes from the Benguet Province which we have called *Ceratopoma rosaliae igorota*, subsp. nov., the type of which has $4\frac{1}{4}$ whorls and measures: altitude, 3.2 mm., diameter, 5.7 mm.