TAXONOMY OF DRUPELLA (Gastropoda, Muricidae)

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My contribution to the *Drupella* jigsaw puzzle is to try to put names on the primary pieces. That this is necessary is evident from the terrible confusion already in the literature due to incorrect identification of the muricid gastropods reported as being obligate coral-eaters. I know that for most of you taxonomy is deadly dull but this is an example of how necessary it is to get the names right so that we can talk sense to each other.

In some of the recent discussions of the *Drupella* problem 5 species have been implicated and several synonomous names have been used to identify some of them. By my account there may be only two species in *Drupella.* Both are obligate coral-eaters and they alone produce the reef damage we are here to talk about. Other species which have been assigned to the genus do not belong there. I must qualify this, however, by noting that the two species which I acknowledge are polytypic and further study may show that they comprise more than one entity, and that there is a third, unidentified coral-eater on our reefs which may turn out to be another species of *Drupella.*

The following formal account gives details of the taxa as I see them.

Genus **DRUPELLA** Thiele, 1925

Purpura elata Blainville (= *cornus* Röding)

The shell form of this genus is little different to that of the Indo-West Pacific genus *Cronia* but the radula of *Drupella* is very different. In fact it is unique among the muricids in having very long, reed-like lateral teeth which are sharply and minutely denticulate at the base and terminally bifid or denticulate. Along the length of the radula the laterals outnumber the centrals. It can be assumed that this unique radular type is an adaptation to coral-eating.

There has been much confusion about the generic nomenclature of the genus as well the species.

To begin with the type species of the genus was designated by Thiele as *Drupa (Drupella) ochrostoma* Blainville. I will suggest later that *ochrostoma* is actually a very different species in a different genus. It has been shown that the material which Thiele had was

actually what we now call *cornus*. The matter was resolved by the International Commission in a ruling in 1980 when it designated *elata* Blainville as the type of the genus. I will show that *elata* is synonym of *cornus*.

If all that leaves you breathless you could simply take my word for it that the type of *Drupella* is *cornus*.

Drupella cornus (Röding, 1798)

Shell: massive and very thick, adults usually covered with a thick calcareous growth; body whorl with 4 spiral rows of prominent, pointed or compressed and angular nodules, and fine spiral cords in the interspaces; outer lip sharp-edged though thick and inwardly inclining in adults, with 5-7 small inner nodules; columella smooth or with 1-4 tiny anterior denticles. White or cream; columella and outer lip white although the edge may be green, interior white to yellow or orange.

Body: colour like *D. rugosa* but much paler and with much less and paler mottling (more blotched than mottled); eye band green - made up of denser and darker olive-green mottles; operculum dark brown.

3.8 cm. Indo-West Pacific; Abrolhos, WA to Capricorn Group, Qld.
Synonyms: elata Blainville, 1832; *eburnea* Kuster, 1862; *dealbata* Reeve, 1846.

The confusion between *cornus* and *elata* arose because it was claimed that the aperture of the Pacific form is typically white while the Indian Ocean form has a yellow aperture. In fact samples from both oceans normally include individuals of both types. Further study may show that there is a greater propensity for yellow apertures in Indian Ocean populations but that would hardly warrant species distinction. It is for this reason that *cornus* and *rugosa* are regarded here as synonyms.

Drupella rugosa (Born,1778)

Shell : ovate to biconical; body whorl with 5 spiral rows of axially aligned nodules forming axial ribs, 11-12 per whorl, nodules may be low to obsolete or prominent and pointed, the row at the shoulder is the first and the largest, the anterior row is smallest and about the same height and thickness as the fasciole, prickly spiral threads present in the interspaces, fasciole scabrous; outer lip thick in adults, with 6-7 inner denticles; columella with 2-4 weak transverse anterior nodules. Cream,white or pale orange, nodules sometimes brown or orange; aperture and columella white, mauve or yellow.

Body : pale green, mottled with darker olive-green and flecked with white; white flecks larger and more numerous on the siphons and eye tentacles; sole of foot pale yellow; base of eye tentacles and siphon very pale green to colourless, with white flecks, just below the eye itself there is a band of pale green which lacks the darker green mottles but has a concentration of "internal" white flecks; there are two obscure, small brownish patches on

top of the foot just behind the front edge; penis coloured as the eye tentacles; operculum yellow-brown.

3.3 cm. Indo-West Pacific; North West Cape, WA to Capricorn Group, Qld. *Synonyms: concatenata* Lamarck, 1822; *fragum* Blainville, 1832.

The colouring of this species is polytypic. The typical form is white with a faintly tinted columella but samples from Queensland, taken from single feeding groups, include specimens with moderately to prominently brown nodules and stongly tinted columella (the *concatenata* form). Western Australian populations comprise only the strongly coloured form. This leaves the taxonomic position ambivalent. It is possible that further study may show that the Western population deserves subspecies status in which case the name *concatenata* would apply. Genetic studies are needed to clarify this situation.

Literature reports.

If my synonomies are correct, the early accounts of *Drupella* aggregations with coral damage must be reassessed with respect to which of the two species was responsible.

Moyer et al ,1982 observed 2 species damaging coral reefs in Japan and 2 in the Philippines. I have not been able to examine any voucher material of theirs and so cannot be certain which species these authors observed. However, on the basis of my synonomies, they probably observed both *cornus* and *rugosa* in Japan but only *rugosa* at the Philippine locality. A simple transposition of synonyms would be as follows:

	Moyer et al	senior synonym
Miyake-jima, Japan :	*fragum*	*rugosa*
	elata	*cornus.*
Philippines :	*fragum*	*rugosa*
	rugosa	*rugosa*

Fujioka & Yamazato, 1983 reported damage in the Ryukyu Is as done by *Drupella fragum* for which you should read *Drupella rugosa.*

Dwarfism. Another problem has arisen because of literature reports that *D. cornus* is sexually dimorphic with the males being dwarf. This report seems to have originated with Walter Cernohorsky but I believe that it was based on a mis-identification of his material.

The specimens which I have seen identified as dwarf male *cornus* are actually small *rugosa* and they are not all male. There is no evidence from exhaustive measurements of *cornus* samples by me and others that this species is sexually dimorphic.

Other species

Three other muricids are sometimes placed in *Drupella* but do not belong there. As far as I can determine, none of them are obligate coral-eaters, viz.:

Pascula ochrostoma (Blainville, 1832)

Muricodrupa fenestrata (Blainville, 1832)
= *cariosus* Wood, 1828
= cancellata Quoy & Gaimard, 1833
(This is the type of the genus *Muricodrupa* named by Iredale

Morula (Oppomorus) nodulifera (Menke, 1829)
= *chaidea* Duclos, 1832
(This is the type of the subgenus named by Iredale.)

During the course of several of the studies to be reported at this seminar by Western Australian and Queensland researchers specimens have been collected which, on shell characters alone, seem somewhat different to either *D. cornus* or *D. rugosa,* being more stout and thick-shelled. They were observed to be feeding on corals. The status of these specimens remains uncertain. I hope that some of you will have opportunities to study the live animals of them. They may be another variant of *rugosa* or *cornus,* but there is a possibility that they will turn out to be be a third species of *Drupella.* In that event, a name for it would be problematical.