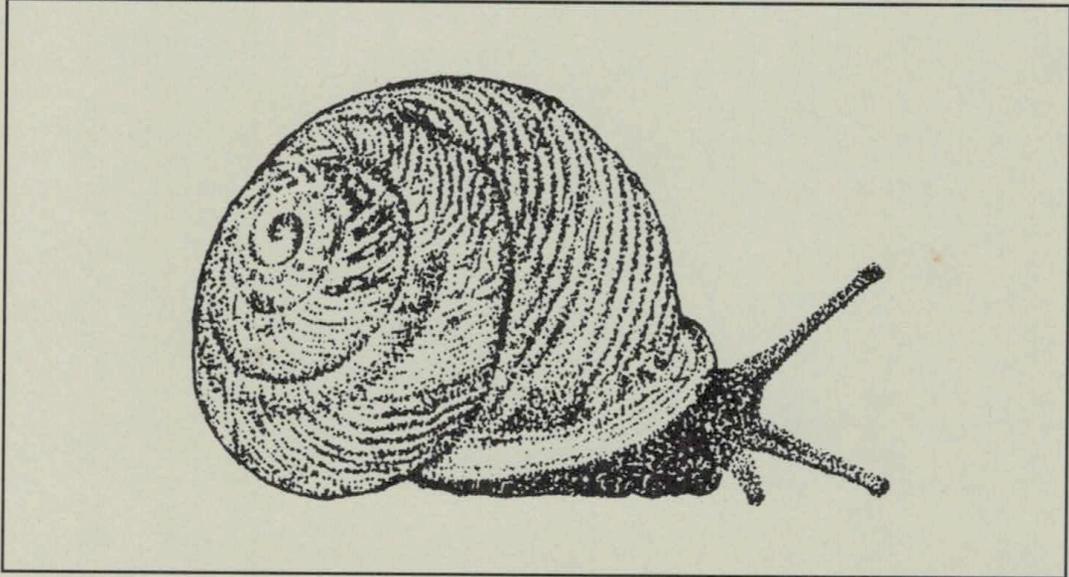


Schriften zur Malakozoologie

aus dem Haus der Natur – Cismar

Heft 5



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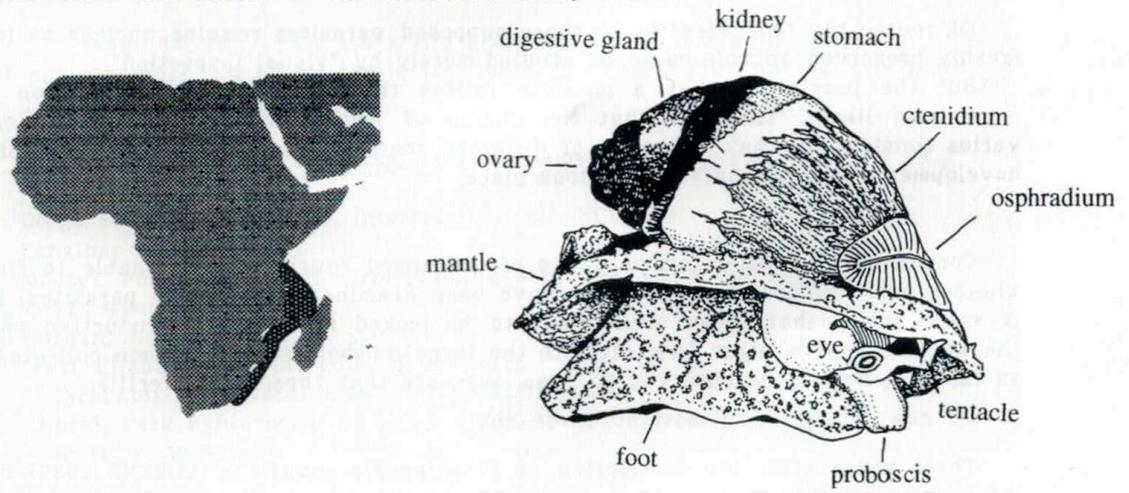
On the identity of *Cypraea tortirostris* SOWERBY III 1906. Parasitism as a possible reason for malformations in Cypraeidae and some new facts on *E. chinensis*.

By
FELIX LORENZ jun., Lauenburg.

Abstract: A freshly collected animal of the southeast African *Erronea chinensis violacea* monstr. *tortirostris* was studied. Its digestive gland contained tiny objects, which were most probably parasites (Trematodes).

Several species of Cypraeidae have spectacular dwarf varieties in limited areas of their distributions. These dwarfs (their size is often less than 25 % of normal shells) are found sporadically among typical shells of the same species (sympatrically). They are also characterized by rostrated extremities and abnormal growth of the labrum, and they are often slightly melanistic. The best known example is *Erronea chinensis violacea* whose dwarf variety has been named *tortirostris*. Shells of this variety may range from 7 to 14 mm, but usually they are larger. The shape may range from "typical *chinensis*" to "absolutely weird". My friend BILL LILTVED speculated that either mutation or parasitic infestation may cause the "*tortirostris* phenomenon" (LILTVED 1989, 95-96).

Recently I have had the opportunity of studying a freshly collected 23 mm specimen of *Erronea "tortirostris"* taken by SCUBA at Park Rynie, Natal, in 35 m depth, along with deep water *chinensis*. The shell was of the "absolutely weird" category, with a wide, flaring labral flange, the pattern fully developed and melanistic labrally, but absent on the columellar half of the dorsum. The animal was in such a good state of preservation that details of the internal anatomy could be studied.



Text-fig. 1: Distribution map

Text-fig. 2: Animal (shell removed)

1. The animal of the examined *E. "tortirostris"* has a surprisingly large osphradium. This organ is the "nose" of most molluscs, situated near the siphon. In Cypraeidae it is a rather triangular structure, easily seen near the proboscis on the internal mantle. It operates as a highly sensitive receptor for chemical stimuli carried in by the water influx of the siphon. Normally the dimensions of the osphradium are strictly correlated with the size of the shell. It seems that the osphradium of the examined animal was twice as big as usual. Also eyes and tentacles seemed too large in proportion to the rest of the animal.

2. Mantle structure and colour as well as features of foot and siphon were typically those of *E. chinensis violacea*.

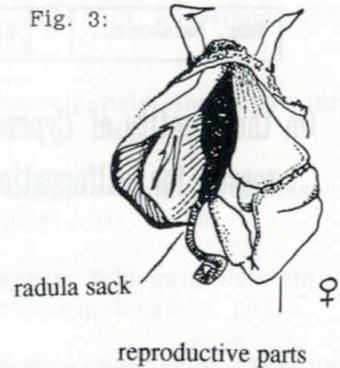
3. The examined animal was a female specimen, the reproductive system seemed well developed, with a fully mature ovary.

4. The radula and digestive system were in right proportion to the shell. The radula was typical for *Erronea*. Incidentally, in some species the radula length may not follow the shell's length. In a dwarf *Prolyncina reevei* the radula was almost twice the length of the shell while in a normal *P. reevei* it attains no more than 2/3 of the length of the shell.

5. The stomach contents were similar to that found in typical *E. chinensis violacea* from the same area, i.e. Porifera-spicules betraying the sponge eater.

6. Samples of the cellular matter of the digestive gland and kidney were studied under magnification. In these samples tiny translucent fingerlike structures were found in great number, irregularly distributed inbetween the brownish or yellowish cellular matter of these glands (rather colourful and well distinguishable parts of the animal). These all had the same size and shape. They are most likely parasites, probably of the order Digenea (Trematodes), a group of tiny parasites with more than 7000 species of which all change their host during development with the first host always being a mollusc, the second mostly a fish.

Fig. 3:



half row of radula
1 μ m

Text-fig. 4:

Text-fig. 5:



scetch of cellular structure of digestive gland with finger-like objects assumed to be parasites of Digenea (x 100)

Of course the true identity of these supposed parasites remains unclear as long as freshly preserved animals could be studied merely by "visual inspection".

But the possibility that a parasite causes the phenotypical malformation seems more than likely. The fact that the degree of malformation and reduction of size varies considerably may be result of different degree of infestation and state of shell development when the infestation took place.

Concerning the other famous group of malformed cowries, I was unable to find out whether New Caledonian niger forms have been examined for possible parasites. If not, it seems likely that these would have to be looked for in the reproductive parts of the animal. That a niger form (despite the large number that have been collected) was as far as I now never observed on eggs, suggests that these are infertile.

Three years after the description of *E. chinensis somaliana* (LORENZ 1989) further information on this poorly known subspecies has become available. Specimens identical to those from Somalia have been found in an undetermined spot at Socotra and southern Sri Lanka, extending the range of this subspecies. These shells confirm the intermediate position of *somaliana* between *E. chinensis* (LINNAEUS 1758) and *E. coloba* (MELVILL 1888).

Divers have collected specimens of *E. chinensis* similar to those belonging to *somaliana* from deep water off Natal. Unlike typical *E. chinensis violacea* from shallow water in Natal, these deep water specimens have orange margins and base (typical for *E. coloba* and *E. ch. somaliana*) and a more inflated, less callous appearance. The

dense and dark dorsal pattern of these shells resemble Hawaiian *E. chinensis whitworthi* (CATE 1964) [*amiges* (MELVILL-STANDEN 1915)].

Another strange specimen unlike any variety of *E. chinensis* has been taken in 50 m depth at Mt. Vema, a submerged volcanic peak situated approximately 900 kms west of the Cape of Good Hope in the Atlantic (31°38'S 08°20'E). Apparently there is still a lot to discover about *Erronea chinensis*.

For more information or comments, please, write to me.

Acknowledgements: Many thanks to Mr. WERNER MASSIER of Margate, Natal who supplied the freshly preserved animal and to Mr. MARTIN VERDERBER of Gießen, Germany, who obtained the microscopic results.

Literature:

LILTVED, W. R. (1989): Cowries and their relatives of southern Africa. A study of the southern African Cypraeacean and Velutinacean gastropoda fauna. -- 208 pp., (Seacomber Publications).

Address of the author:

FELIX LORENZ jun., Ginsterweg 6, D-2058 Lauenburg.

Explanations of plate 19.

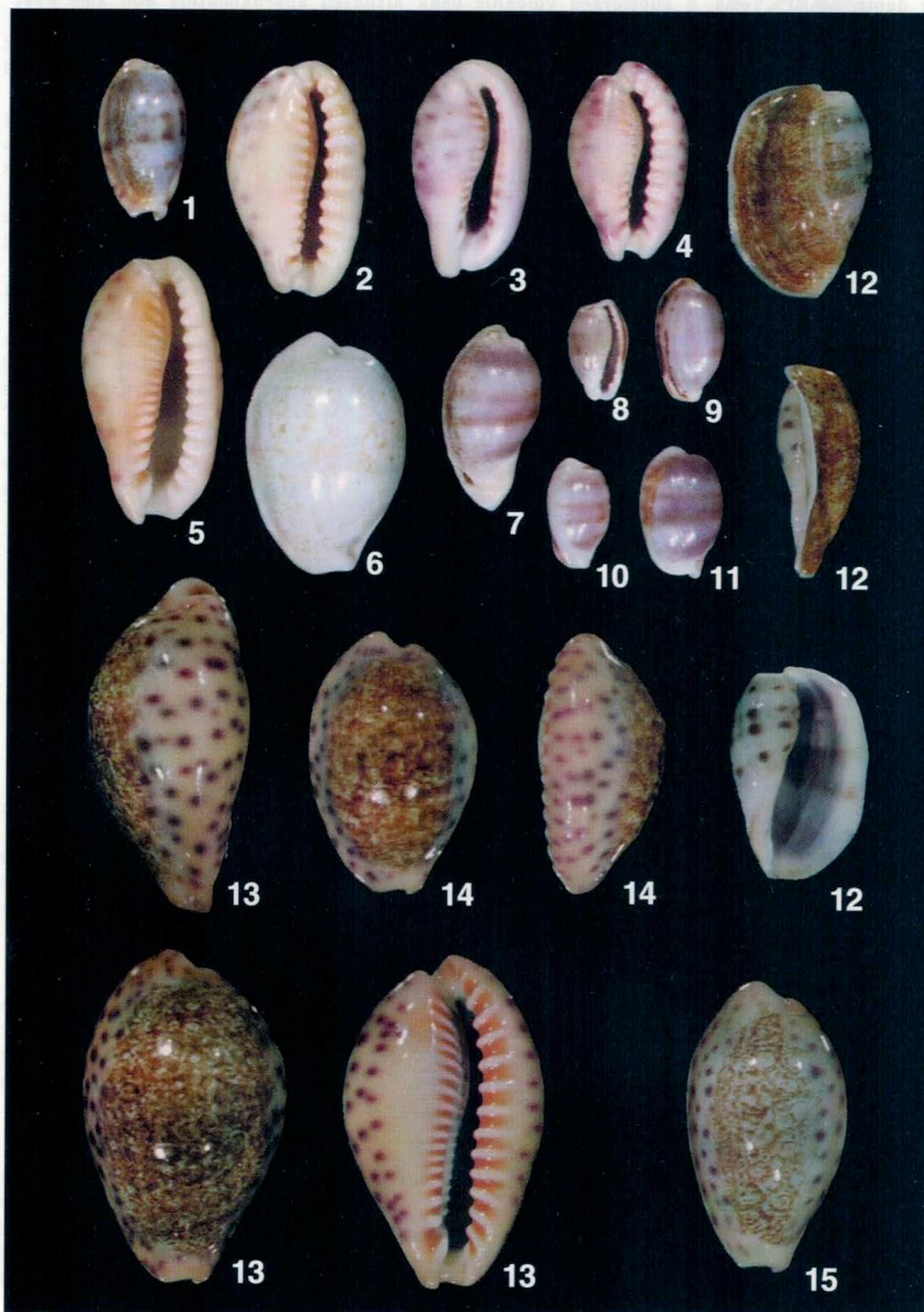
(page 66, fig. 1-11: 1,8 x life size; fig. 12-15: 1,3 x life size)
(if not otherwise stated all shells from coll. F. LORENZ jun.; photos V. WIESE)

Erronea chinensis violacea monstr. *tortirostris*

- Fig. 1: Diego Suarez, Madagascar, intertidally (coll. HUBERT).
Fig. 2: Zanzibar Island.
Fig. 3: Mbotyi, Pondoland (shell corresponding with SOWERBY's holotype).
Fig. 4, 7-11: Mbotyi, Pondoland,
Fig. 5: Durban, Natal, ex pisce.
Fig. 6: "Port Elizabeth" ex old coll. of C. CATE,
(probably from Natal area, coll. LORENZ jun.).
Fig. 12: Natal, Park Rynie area, 35 m by diver; specimen from which animal was taken
(coll. W. MASSIER).

Erronea chinensis var.

- Fig. 13-14: Natal, Park Rynie area, 35 m by diver.
Fig. 15: Seamount Vema, 900 kms west of Cape of Good Hope, Atlantic, 50 m.



F. LORENZ jun.: Identity of *Cypraea tortirostris* SOW. and new facts on *E. chinensis*.