

The Eastern Deep Water Subspecies of *Zoila venusta* (G. B. SOWERBY 1846)(Gastropoda: Cypraeidae)

By FELIX LORENZ, D-Buseck-Beuern

With 13 Figures on Plates 1 + 2

Keywords

Zoila venusta morrisoni, new subspecies, *orientalis*, *profunda*, Great Australian Bight.

Abstract

Zoila venusta morrisoni n. ssp. from deeper water off the eastern part of the Great Australian Bight differs from its western relatives by a lower density of labral teeth, as well as differences in shape and the structure of the columellar teeth. The taxonomical history of this population is discussed.

Zusammenfassung

Zoila venusta morrisoni n. ssp. aus dem Tiefwasser des östlichen Great Australian Bight unterscheidet sich von ihren westlichen Verwandten durch eine geringere labrale Zahndichte, der Gehäuseform und der Struktur der Kolumellarzähne. Die taxonomische Geschichte dieser Population wird diskutiert.

Introduction

The following description shall provide a new, taxonomically valid, name for the eastern deep water population of *Zoila venusta*. It is popular under the varietal name *profunda* and the pre-occupied name *orientalis*, both proposed by Dr. LUIGI RAYBAUDI, who was the first to recognize the subspecies status of this population.

Abbreviations

CLSF CHIAPPONI LORENZ Seashell Foundation, Lecco, Italy
CTnl columellar teeth normalized
FL Collection FELIX LORENZ
H height (mm)
MB Collection MARTY BEALS, Inglewood, California, USA
MSF Collection Molluscan Science Foundation, Inc., Owings Mills, Maryland, USA
NMV National Museum of Victoria, Melbourne, Victoria, Australia
L length (mm)
LTnl labral teeth normalized
mR relative mass

RCR Collection ROBERTO COTTA RAMUSINO, Milano, Italy
ROV remote operated vehicle
W width (mm)

Material and Methods

Ten live collected specimens of the new subspecies, more than 500 specimens of *Z. venusta roseopunctata* RAYBAUDI 1985 and other subspecies in the collections of the CLSF, MB, MSF, RCR and FL. For shell measurement comparison, the revised formula to characterize cowry shells (BRIDGES & LORENZ, 2013) was used. Dimensions enumerated are: L×W×H in mm (counted labral : columellar teeth) [weight in grams]. The formula contains these elements: (L (W/L - H/L - H/W) LTnl : CTnl [mR].

Holotype: 68.6×49.8×42.6 (19: -) [60.0] NMV 20882

Paratype 1: 67.5×47.9×41.1 (16: -) [44.6] FL

Paratype 2: 65.5×49.1×39.6 (19: -) [34.0] CLSF 2699

Paratype 3: 68.1×49.9×43.3 (17: -) [56.7] MSF 4535

Paratype 4: 70.3×50.9×43.3 (16: -) [42.6] MSF 1868

Paratype 5: 75.0×53.0×43.8 (19: -) [47.5] CLSF 11125-3

Paratype 6: 72.3×49.5×43.4 (19: -) [57.0] CLSF 11125-2

Paratype 7: 63.9×46.7×37.7 (19: -) [32.2] FL

Paratype 8: 72.1×50.6×43.4 (17: -) [71.2] MB

Paratype 8: 69.2×49.8×42.5 (17: -) [64.6] MB

All available specimens are from the eastern part of the Great Australian Bight between Cape Adieu and Ceduna, South Australia, trawled at 90-160 m.

Formula: 69 (72 - 61 - 85) 13 : - [11.9]

Zoila venusta morrisoni n. ssp.

Description

The shell is large, heavy, inflated and slightly pyriform. The dorsum is humped in the posterior third. The aperture is narrow, slightly declivous anteriorly. The posterior extremity is slightly produced labrally, the columellar tip is less

developed. The anterior extremity is short, the terminal ridge short, forming a narrow anterior canal. The spire is large, slightly pointed, covered by callus. Five columellar teeth are large and distinct in the anterior third, whereas the mid-section of the columellar side is smooth, slightly callused, without discernible teeth or elevations. The fossula is concave, slightly projecting and smooth. The labral teeth are coarse, thickened, with an angular profile, especially in the mid-section. Anteriorly, they are somewhat narrower and denser. The ground color is cream, the area above the extremities darker brownish. The dorsum and the margins show sparse darker brown dots.

The paratypes all agree with the holotype in shape, the shortness of the extremities and in having coarse labral teeth whose profile is angular. The dorsal surface often displays a dimply structure like that of a hammered ("malleated") copper-pot, comparable to that of *Austrocypraea reevei* (SOWERBY 1832). Most paratypes do not show any darker coloration, but are plain cream. The spire is exposed in some shells.

Distribution and habitat

Little is known about the exact distribution of this subspecies as all specimens available to me have been trawled by commercial fishing boats operating at the 90-180 m depth range between Ceduna and Cape Adieu in the eastern part of the Great Australian Bight (Type locality). A captain of one of these vessels reported finding numerous *Umbilia armeniaca armeniaca* (VERCO 1912) in depths of 120 to 180 m, whereas *Zoila thersites contraria* IREDALE 1935 and *Z. v. morrisoni* n. ssp. were found only as they operated in shallower water of 90 to 150 m, which seems to be the preferential depth of these taxa. HART (1997) reports that several shells have been collected between 1991 and 1997 were taken by trawlers operating out of Port Lincoln, in a restricted area of 40 km around 33°30'S and 131°50'E, at 120-130 m.

Etymology

Named in honor of my friend HUGH MORRISON of Perth, Western Australia, expert in seashells, and associate of the Western Australian Museum.

Discussion

The first photo and brief discussion of a specimen of *Zoila venusta morrisoni* n. ssp. was

published by WILSON & MCCOMB (1967, p. 475 pl. 338), based on a shell from the "eastern part of the Great Australian Bight" in the National Museum of Victoria. This specimen is designated as holotype of *v. morrisoni* n. ssp. It has a label edited by several persons, purporting "off Albany" as locality. This erroneous collecting data was apparently added after WILSON and MCCOMB studied the shell for their treatise on the genus *Zoila* (1967).

Initially, the name "*profunda*" was only listed by RAYBAUDI (1985b), without an illustration. This varietal name was repeatedly used by him, for various species and subspecies of the genus *Zoila* (e.g. *marginata marginata* var. *profunda* and *marginata orientalis* var. *profunda* (RAYBAUDI, 1985b). He referred to his privately published "The Cowries Catalogue" of 1984 as original source of *profunda*. However, it is not found among the forms and variations of *Zoila venusta* in that booklet.

In the collector's community, "*venusta* var. *profunda*" became quite popular, although correctly identified specimens have been (and still are) hardly ever available. Undoubtedly, RAYBAUDI was the first to notice the differences in dentition, and realized that the subspecies needed a proper name. He re-described it formally as *venusta orientalis* in 1990. But his choice of the new name was unfortunate, as *orientalis* was preoccupied by his own *Zoila orientalis* RAYBAUDI 1985b, a taxon related to *Zoila marginata* (GASKOIN 1849). Perhaps RAYBAUDI recycled it in the belief that using it as a varietal name in The Connoisseur No. 1 had no impact. HART (1997) gave a more detailed review of the subspecies, based on the study of several specimens, calling them *venusta orientalis*.

However, *orientalis* RAYBAUDI 1985 is indeed a valid name according to the International Code of Zoological Nomenclature valid till 1985 (see LORENZ 2001, WILSON & CLARKSON 2004). It is, therefore, not available for a subspecies of *venusta*. There is *raybaudii* LORENZ 1992, a subspecies of the *Zoila orientalis* RAYBAUDI 1985 that set the starting point of all the confusion.

Comparison

Zoila venusta morrisoni n. ssp. differs from the southwestern *venusta roseopunctata* RAYBAUDI 1985 and all other taxa associated with *venusta* by having coarser and less numerous labral teeth.

It shows superficial resemblance to immaculate specimens of *v. roseopunctata*. The columellar teeth are absent in the mid-section in adult shells, whereas, in *v. roseopunctata* they are usually present at least as weak elevations. The shape is more globular and the anterior extremity shorter than in the other subspecies of *venusta*.

The feature of the "malleate" sculpture giving most *v. morrisoni* a more "irregular" dorsal appearance is also observed in occasional specimens of *v. roseopunctata*. On the other hand, the lower number and the shape of the labral teeth are highly constant features setting *v. morrisoni* apart from all of its western relatives.

The shell formulae of the two taxa ascertain this difference, but they also show that the greater weight noted by RAYBAUDI as a feature of this subspecies is a subjective impression, as *v. morrisoni* is not convincingly heavier than *v. roseopunctata*:

venusta roseopunctata (Esperance, based on 35 shells): 76 (66 - 58 - 87) 16 : 12 [10.5]

venusta morrisoni (Ceduna area, based on 8 shells): 69 (72 - 61 - 85) 13 : - [11.9]

The second shell illustrated by RAYBAUDI (1990a) in the description of *v. orientalis*, now in the collection of Mr. R. COTTA RAMUSINO, is evidently *v. roseopunctata*, as its formula reveals: 84 (66 - 58 - 88) 16 : 13 [9,6] (Plate 2 fig. 3). It has several exceptional split labral teeth (counted as single teeth in the formula). The irregular callus-accumulations along the margins are probably pathological. Its weight is also lower than that of typical *v. roseopunctata*. The shell shows a discernible columellar dentition throughout, which is characteristic of *v. roseopunctata*, but not of *v. morrisoni*. The origin is supposedly "off Eucla, 150 m", according to its original label issued by an Australian dealer. For several reasons, there is considerable doubt that this data is correct. The shell itself does not show an inflated dorsum typically observed in *venusta* from deeper water (see below), and it has a wide aperture characteristic of shells from shallower water. There seem to be no findings of *venusta* from the area between Israelite Bay and the west of Cape Adieu.

At the 100 m depth-range off the western part of the Great Australian Bight, from the Recherche Archipelago to Cape Leeuwin, a smaller, heavy-shelled variation of *v. roseopunctata* occurs (Plate 2 fig. 4). Several shells were recently found by the ROV of RAY WALKER off Windy

Harbour, Albany area, to The Cape Naturaliste area (Plate 2 fig. 5). These lack darker pattern, are slightly rostrate but otherwise typical for the southwestern subspecies *roseopunctata*.

Shells from deep waters off the western coast, from the Perth area (Plate 2 fig. 6) to Bernier Island, differ considerably in shape and dentition. The posterior extremity is produced, in northern shells the anterior extremity short (Plate 2 fig. 7). The aperture is narrow anteriorly and widens slightly in the posterior half. The pattern, when present, usually shows a distinct dorsal line. The name *bakeri* (GATLIFF 1916) may be used for such shells, as the holotype of that taxon was reported to originate from the west coast and shows the features of the extremities and the aperture well.

Generally, all populations of *venusta* from deep water have an inflated dorsum and a narrow aperture. Those from the western part half of Australia also have a rostrate posterior extremity. The status of these populations is still under study.

Acknowledgements

Many thanks to Dr. MARCO CHIAPPONI, Dr. MICHAEL A. MONT, ANTONELLA CRIPPA, RAY WALKER, MARTY BEALS, ROBERTO COTTA RAMUSINO, BEN SCHNEIDER, SIMONE PFUETZNER, HUGH MORRISON, and JANA KRATZSCH.

References

- BRIDGES, R. & LORENZ, F. (2013) A revised morphometric formula for the characterization of Cowries. – *Conchylia*, **43** (1-4) p. 27-40.
- HART, M. (1997) *Zoila venusta orientalis* RAYBAUDI, 1990. – *World Shells*, **23**: 37-39.
- LORENZ, F. (2001): Monograph of the living *Zoila*. – 187 pp., 28 figs., 54 pls.; Hackenheim Germany (ConchBooks).
- RAYBAUDI MASSILIA, L. (1984): The Cowries. – 40 pp.; Roma (Privately published).
- RAYBAUDI MASSILIA, L. (1985a): Genus *Zoila*. – *The Connoisseur of Seashells*, **1**: 9.
- RAYBAUDI MASSILIA, L. (1985b): Genus *Zoila*. – *The Connoisseur of Seashells*, **2**: 7.
- RAYBAUDI MASSILIA, L. (1990a): An unknown subspecies or deep-water variation from the Great Australian Bight of *Zoila* (*Zoila*) *venusta* G. B. SOWERBY II, 1846. – *La Conchiglia*, **22** (257): 40-42. [Reprinted in *The Connoisseur of Seashells*, **25** (1992): 20-22]

RAYBAUDI MASSILIA, L. (1990b): *Zoila venusta roseopunctata* f. *profunda*. – The Connoisseur of Seashells, **23**: 26f, figs. 284, 285.

RAYBAUDI MASSILIA, L. (1995): *Zoila venusta* (SOWERBY, 1846). – World Shells, **15**: 13 ff.

WILSON, B. R. & MCCOMB, J. A. (1967): The genus *Cypraea* (subgenus *Zoila* JOUSSEAUME). – Indo-Pacific Mollusca, **1**(8): 457-488, pls. 329-344.

WILSON, B. & CLARKSON, P. (2004) Australia's spectacular Cowries. A review and field study of two endemic genera: *Zoila* and *Umbilia*. – 396 pp., 383 pls; El Cajon, CA, USA (Odyssey Publishing).

Address of the author:

Dr. FELIX LORENZ
Friedrich-Ebert-Straße 12
D-35418 Buseck-Beuern, Germany
E-mail: felix.lorenz@t-online.de

Plate 1 (on opposite page)

Fig. 1: *Zoila venusta morrisoni* n. ssp., 69 mm, Holotype. NMV 20882, photos BEN SCHNEIDER

Fig. 2: *Zoila venusta morrisoni* n. ssp., 68 mm, Paratype 3. MSF 4535

Fig. 3: *Zoila venusta morrisoni* n. ssp., 68 mm, Paratype 1. FL

Fig. 4: *Zoila venusta morrisoni* n. ssp., 75 mm, Paratype 5. CLSF 11125-3

Fig. 5: *Zoila venusta morrisoni* n. ssp., 66 mm, Paratype 2. CLSF 2699

Fig. 6: *Zoila venusta morrisoni* n. ssp., 72 mm, Paratype 6. CLSF 11125-2

All from the eastern part of the Great Australian Bight. The paratypes were trawled off 90-120 m.

Plate 2 (on p. 29)

Fig. 1: *Zoila venusta roseopunctata*, 74 mm, Esperance, SW Australia, off 40 m. CLSF 11222

Fig. 2: *Zoila venusta roseopunctata*, 75 mm, Esperance, SW Australia, off 50 m. MSF 7116

Fig. 3: *Zoila venusta roseopunctata*, 82 mm, "off Eucla", probably Esperance area. RCR

Fig. 4: *Zoila venusta roseopunctata*, 61 mm, Windy Harbour, Albany area, SW Australia, by ROV off 135 m. FL

Fig. 5: *Zoila venusta roseopunctata*, 61 mm, Margret River, Cape Naturaliste area, SW Australia, by ROV off 134 m. FL

Fig. 6: *Zoila venusta bakeri*, 61 mm, Perth Canyon, SW Australia, by ROV off 210 m. FL

Fig. 7: *Zoila venusta bakeri*, 68 mm. Dirk Hartog Is., W. Australia, deep water. MB

Plate 1



Plate 2

