A new pleurotomariid (Gastropoda: Pleurotomariidae) from Tonga Islands, South Pacific, *Bayerotrochus poppei* sp. nov.

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Abstract. *Bayerotrochus poppei* sp. nov. is hereby described and compared with other species of *Bayerotrochus* from the South Pacific.

Résumé. *Bayerotrochus poppei* sp. nov. est décrite et comparée avec les autres espèces de *Bayerotrochus* du Pacifique Sud.

INTRODUCTION. During a first examination of the ***Bayerotrochus*** *boucheti* material from several French exploratory campaigns in the South Pacific, two specimens of a small *Bayerotrochus*-species were found to be clearly distinct.
The two specimens preserved with animal in 70% ethanol have been forwarded by Dr. Philippe Bouchet of the MNHN, Paris. They show a number of characteristics which distinguish them from the many specimens of *B. boucheti* that have been studied and published earlier (Anseeuw & Poppe, 2001). They also differ from any hitherto known species of *Bayerotrochus* from the South Pacific. The main distinguishing features are sculpture, general shape, aperture and colour pattern.

SYSTEMATICS

Order **VETIGASTROPODA** Salvini-Plawen, 1980
Superfamily **PLEUROTOMARIOIDEA** Swainson, 1840
Family **PLEUROTOMARIIDAE** Swainson, 1840
Genus ***Bayerotrochus*** Harasewych, 2002

Bayerotrochus poppei sp. nov.
Figs 1-17

Type Material. Holotype and one paratype MNHN. Trawled alive by N/O *Alis*, Campagne BORDAU 2, sta. CP1644, off the Tonga Islands (South Pacific), NW of Tongatapu (21°05'S, 175°23'W), 501 m. Leg.

Measurements. Holotype: Maximum basal diameter: 53.57 mm; minimum basal diameter: 43.35 mm.
Height: 45.07 mm; depth of slit along upper margin: 32.06 mm; depth of slit along lower margin: 25.75 mm. Width of slit: 3.47 mm.
Mean spire angle: 90°; operculum maximum diagonal size: 14.41 mm.
Weight empty shell: 10 g.
Dry shell. Soft parts with operculum transferred in ethanol 98 %.
Teleoconch and base were partly covered by a thin layer of greyish Hexactinellidae (Figs 7-8).

Paratype: Maximum basal diameter: 62.53 mm; minimum basal diameter: 51.06 mm. Shell with soft parts inside preserved in ethanol 70 %.
Height: 52.57 mm; depth of slit along upper margin: 39.82 mm; depth of slit along lower margin: 29.58 mm. Width of slit: 2.90 mm.
Mean spire angle: 91°. Operculum maximum diagonal size: 18.25 mm.

Description. Shell of rather small to medium size compared to other species in the genus. Small growth repair on the body whorl below the selenizone and reaching basal disc. Otherwise in perfect condition, with apex, protoconch and slit edges in natural condition. The overall shape is distinctly gradate, with a clearly impressed suture and a rather inflated body whorl. Light but solid shell construction. Mean spire angle 90°. The teleoconch has 7 postnuclear whorls and about 2.5 whorls of an intact turbiniform protoconch. Very characteristic is the presence of dominant, well marked axial growth plicae above the selenizone on the entire teleoconch. No radial ribs are observed above the selenizone. Below the selenizone, most marked on the body whorl, fine, round, pearl-shaped beading is present. The slit is about 20 % of the circumference of the body whorl and is situated around midwhorl position. The fasciole is slightly concave with slightly raised edges. No radial cords are running on its surface, which is smooth macroscopically but shows very fine semicircular lunulae under enlargement. The periphery is distinctly angular.
The basal disc is distinctly convex. It has numerous distinct and dominant, very fine, axial growth lines, giving an almost smooth appearance macroscopically, with a few, fine spiral cords in the central area towards the umbilical callus.
The crossing of both sculptural patterns forms a discrete network pattern in the centre of the basal disc only. The aperture is quadrangular in shape and the columellar lip is gently curved, nacreous and a

little thickened. The umbilical callus pad is nacreous and slightly edged by a pinkish, raised margin and covers about one fifth (18.3 %) of the surface of the basal disc. A few protruding ivory white, radial cords are merging out at the suture from the first down to the fifth whorl.

The dominant colour of the teleoconch and base is a solid deep salmon-orange, with a clear metallic lustre. The protoconch is ivory white (Fig. 10). Rising, deep orange colour lines border the rims of the selenizone, only distinctly visible on the body whorl but not on the upper whorls (see plate). The apertural lips are nicely covered by a nacreous layer inside. This nacre has a pinkish-green suffusion, leaving only a fine discrete orange, porcellaneous layer uncovered around the inner slit margins and the upper lip extremity. The dominant axial growth riblets covering the outside of the slit lips are clearly visible on the inside of the shell (see plate).

Large nacreous areas are present on the roof of the aperture, with a more opaque glaze towards the center of the basal disc.

The operculum is light brown in colour, chitinous, multispiral and covers 54% of the diameter of the aperture (Figs. 9, 11).

The paratype, somewhat larger in size than the holotype, has a growth repair on the body whorl producing a protruding extra keel just above the periferal notch between the area below the slit and the selenizone and above the basal disc. It has the same coloration and sculpture on teleoconch and base than the holotype.

Comparisons. *Bayerotrochus tangaroana* (Bouchet & Métivier, 1982) from the South Fiji Ridge seems the closest species in general outline of shell, absence of marked colour flammules on the teleoconch and base, and axial sculpture on apical whorls.

It differs from *B. poppei* sp. nov. by its lighter colour on teleoconch and base, a more circular apertural shape and the distinct spiral cords on the basal disc compared to the more dominant, fine, sinuous, axial growth lines in *B. poppei* sp. nov.

B. boucheti (Anseeuw & Poppe, 2001) from New Caledonia, Loyalty Islands and the New Hebrides has several shell characters which are similar to the present species. Such are, the metallic lustre on teleoconch and base, the same callus pad surface area, about the same mean spire angle and the same ivory-white, turbiniform protoconch. *B. boucheti* differs from the new species by its much larger adult size, a more solid-red, pink-coloured teleoconch and base, a more flattened ovaloid, apertural shape, a different slit length and a slightly different slit position on the body whorl. The dominant spiral sculptural pattern on teleoconch and base is different from the dominant axial sculpture in this new species.

At first sight *B. poppei* somewhat resembles *Perotrochus vicdani* (Kosuge, 1980) from the Philippines in its general shell profile, its shell size and distinct gradate construction with angular periphery. It differs however by its sculptural pattern on teleoconch and base, a different colour pattern, body whorl coloration contrasting with basal disc coloration and the straighter conical apical whorls in *P. vicdani*.

Remarks. The present new species is attributed here to the newly defined genus *Bayerotrochus* (Harasewych, 2002) awaiting molecular genetic studies on the preserved soft parts. A number of shell morphological characters like a thin turbiniform shell, with inflated convex whorls and a relatively large operculum lean towards the genus *Bayerotrochus*. However, the smaller size, the more conical profile of apical whorls and the slit position around mid-whorl are also features attributed to the genus *Perotrochus* s.s. by Harasewych (2002).

This new species is the third light-shelled *Bayerotrochus* species described from South Pacific waters after *B. tangaroana* (Bouchet & Métivier, 1982) and *B. boucheti* (Anseeuw & Poppe, 2001). The other three species present hitherto in South Pacific waters (*P. caledonicus* Bouchet & Métivier, 1982; *P. deforgesi* Métivier, 1990 and *Mikadotrochus salmianus* (Rolle, 1899) (cf. Anseeuw & Goto, 1996) are all clearly different in shell construction.

The limited sampling of these three light-shelled *Bayerotrochus* species show a characteristic allopatric distribution limited to distinct oceanographic ridges. *B. tangaroana* is distributed along three oceanic submarine ridges: the South Fiji (Lau) Ridge from which the holotype originates (Bouchet & Métivier, 1982), the North Cape Rise towards North Island, New Zealand (Anseeuw & Goto, 1996) and the Lord Howe Rise (Courtesy material & data loan B. Marshall, New Zealand).

Explorations in New Caledonia and adjacent territories show *B. boucheti* to live from the Loyalty Islands towards the south of New Caledonia and on the Norfolk Ridge. Two specimens were trawled off the western New Hebrides.

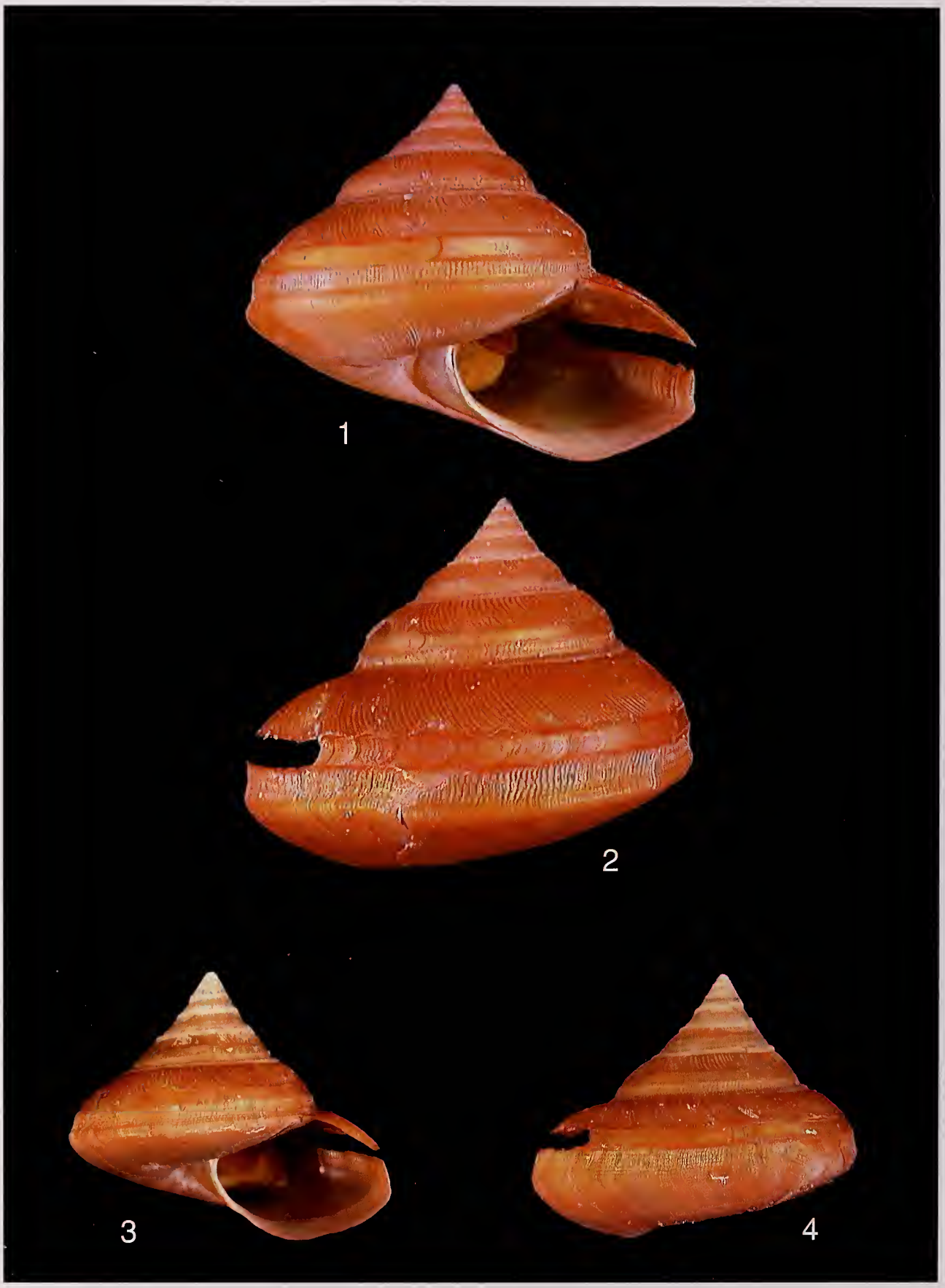
This new species is based on one positive haul along Tonga Island Rise, which is separated from Lau ridge (with a *B. tangaroana* population) by very deep water.

Derivatio nominis. The present species is dedicated to Guido T. Poppe, Belgium for his long and continuous efforts to promote conchology through fieldwork, resulting in numerous discoveries of new species and for his many contributions to the knowledge of major molluscan families.

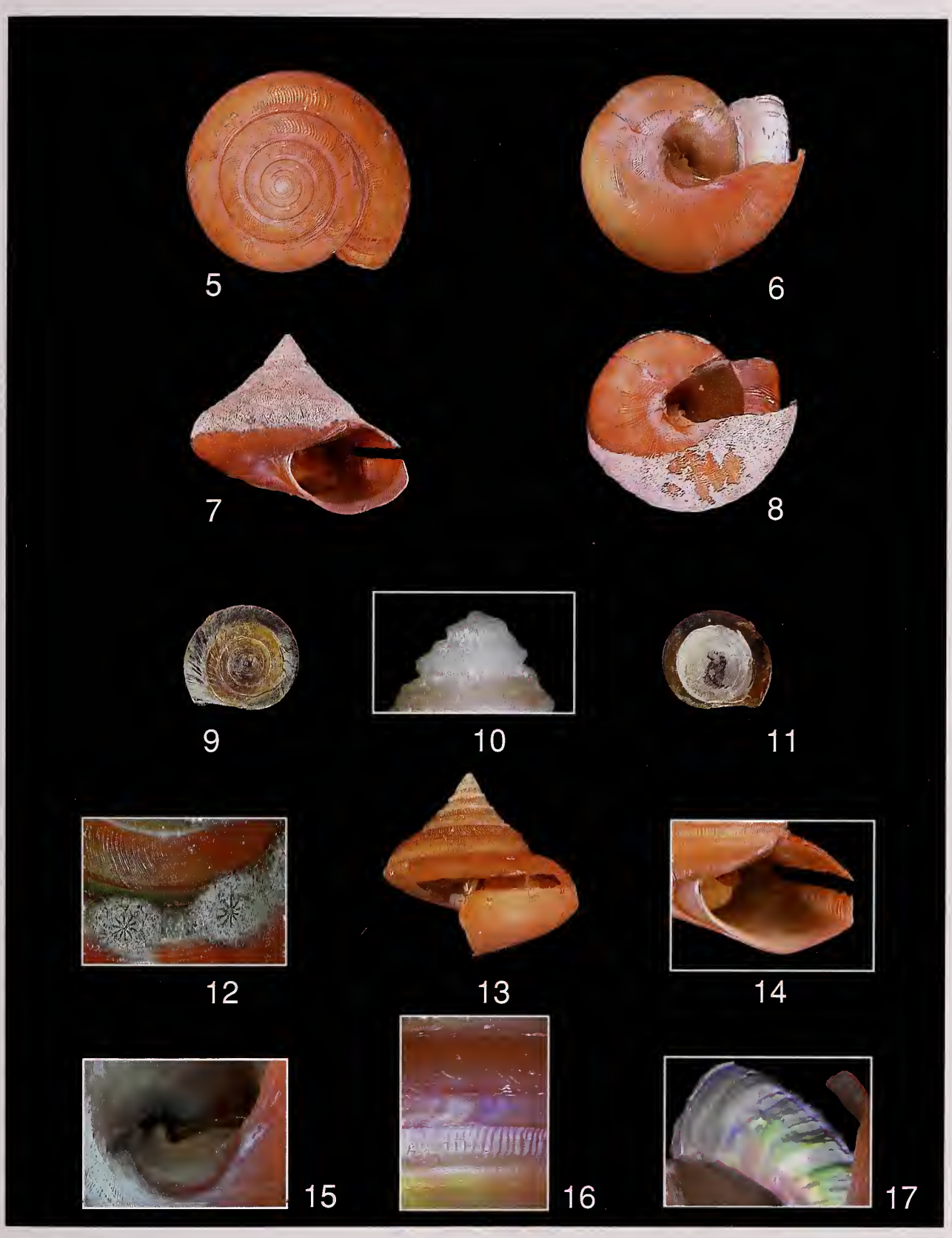
Comparative shell characters	*B. africanus* (Tomlin, 1948)	*B. teramachii* (Kuroda, 1955)	*B. diluculum* (Okutani, 1979)	*B. westralis* (Whitehead, 1987)	*B. tangaroana* (Bouchet & Métivier, 1982)	*B. indicus** (Anseeuw, 1999)	*B. boucheti** (Anseeuw & Poppe, 2001)	*B. poppei* sp. nov.
1. Shell thickness construction (weight empty shell/basal diameter)	+++	+	+	+	+	++	++	++
2. Apertural shape max. diam/max. height	1.39	1.26	1.26	1.17	1.20	1.24	1.26	1.14
3. Macroscopic sculpture on basal disc	spiral ribs	spiral ribs	smooth	smooth	spiral ribs	smooth	spiral ribs	fine axial growth lines
4. Callus pad surface area (extension) in umbilical region basal disc	32%	18%	17%	18%	16%	16%	20%	22%
5. Mean spire angle	88°	94°	110°	89°	85°	97°	92°	91°
6. Axial colour flammulations on teleoconch	Present, variable in intensity	present, generally crowded, dense solid golden	absent	present, variable in intensity	absent	present, crowded, dense solid venetian red	present, dense, solid pinkish golden	not obvious (very few)
7. Lustrous shell surface of teleoconch and basal disc	dull	often lustrous (golden orange shine)	clearly lustrous (silvery iridescent)	dull	slightly lustrous	clearly lustrous	slightly lustrous	metallic lustre
8. Rising red line bordering rims of selenizone	always present on all whorls	generally contrasting (not as deep as in *africanus*)	occasional faint pink staining	only marked on deep-orange specimens	not present	occasionally present on body whorl	present on apical whorls (not on body whorl)	only clearly visible on body whorl
9. Slit length and position	1/5.6 slightly below midwhorl	1/6.1 around midwhorl	1/5.7 midwhorl or just above	1/6.0 around midwhorl	1/5.7 around midwhorl	1/5.9 midwhorl or just above	1/5.7 slightly above midwhorl	1/5.2 around midwhorl
10. Size range of specimens (mm)	53-145	65-140	71-111	44-130	43-114	68-74	39-108	54-63

* *Perotrochus indicus* Anseeuw, 1999 and *P. boucheti* Anseeuw & Poppe, 2001, are hereby replaced under the newly installed genus *Bayerotrochus* (Harasewych, 2002) on basis of morphological shell character similarities the other species of the so called "*P. africanus* complex" (Anseeuw & Poppe, 2001) which were reattributed by Harasewych to *Bayerotrochus* (2002) (*B. africanus*; *B. teramachi*; *B. diluculum*; *B. westralis*; *B. tangaroana*).

COMPARATIVE TABLE



Figures 1-4
Bayerotrochus poppei Anseeuw, sp. nov.
1. Paratype, 62.53 x 52.57 mm: apertural view. **2.** Paratype, 62.53 x 52.57 mm: profile view. **3.** Holotype, 53.57 x 45.07 mm: apertural view. **4.** Holotype, 53.57 x 40.07 mm: profile view.



Figures 5-17
Bayerotrochus poppei Anseeuw, sp. nov.
5. Paratype, 62.53 x 52.57 mm: apical view. **6.** Paratype, 62.53 x 52.57 mm: basal view. **7-8.** Holotype, 53.57 x 45.07 mm: shell in its natural condition, covered with *Corallistes*, Hexactinellidae. **9.** Paratype: operculum (exterior). **10.** Paratype: protoconch. **11.** Paratype: operculum (interior). **12.** Paratype: with Hexactinellidae on the suture. **13.** Holotype: side view. **14.** Paratype: aperture. **15.** Paratype: umbilicus. **16.** Paratype: selenizone and sculpture of the last whorl. **17.** Paratype: inside of the upper part of the aperture.

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SELECTED REFERENCES

Anseeuw P. & Goto Y. 1996. *The Living Pleurotomariidae.*: 1-202. Elle Scientific Publication, Osaka, Japan

Anseeuw P. & Poppe G. T. 2001. Description of a New *Perotrochus* from the South Pacific (Gastropoda: Pleurotomariidae). *Novapex* 2(2): 125-131.

Bouchet P. & Métivier B. 1982. Living Pleurotomariidae (Mollusca: Gastropoda) from the South Pacific. *New Zealand Journal of Zoology* 9: 309-317, figs 1-4.

De Forges B. & Jaffre T. & Chazeau J. 1998. La Nouvelle Calédonie, vestige de Gondwana. *Le Courrier de l'environnement de l'INRA – 'Sauve qui peut!'* 10 (1998).

Harasewych M. G. 2002. Pleurotomarioidean Gastropods. *Advances in Marine Biology* 42: 235-292.

Salvini-Plawen L. 1980. A reconsideration of systematics in the Mollusca (phylogeny and higher classification). *Malacologia* 19: 249-278.

Description of *Spectamen rikae* n.sp. (Gastropoda: Trochidae: Solariellinae) from the Philippine Islands

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KEYWORDS. Gastropoda, Trochidae, Solariellinae, Philippines, *Spectamen rikae* n. sp.

ABSTRACT. A new trochid species from the Philippines is described and provisionally classified in the genus *Spectamen*, subfamily Solariellinae, under the name *Spectamen rikae*.

RESUME. Une nouvelle espèce de Trochidae des Philippines est décrite et placée provisoirement dans le genre *Spectamen*, sous-famille des Solariellinae, sous le nom de *Spectamen rikae*.

INTRODUCTION

About one year ago, Fernand De Donder, a well known shell collector who use to travel with his wife Rika Goetheals all around the Philippine Islands, entrusted me with some trochids specimens. It was not easy, at first sight, to find a genus and a subfamily to whom these shells could belong, nor even to decide if they were really Trochidae and not Turbinidae or others. Numerous research and further studies showed finally that these shells were Solariellinae, that the genus *Spectamen* could be suitable for them and that they belong to a species different from all described species.

Abbreviations

Repository
IRSNB : Institut royal des Sciences naturelles de Belgique, Bruxelles.
MNHN : Muséum national d'Histoire naturelle, Paris.

Other abbreviations
D : diameter
H : height
HA : height of aperture
P1, P2, P3, ... : primary cords (P1 is the most adapical)
Pi : all primary cords
S1, S2, S3, ... : secondary cords (S1 is the most adapical)
lv : live-taken specimens present in sample
dd : no live-taken specimens present in sample

SYSTEMATICS

Family: **TROCHIDAE** Rafinesque, 1815
Subfamily : **SOLARIELLINAE** Powell, 1951
Genus: ***Spectamen*** Iredale, 1924

Type species: *Trochus philippensis* Watson, 1881 (by original designation) – Recent, New South Wales, Australia.

***Spectamen rikae* n.sp.**
Figs 1-5

Type material. Philippine Islands, Bohol, Balicasag Island, 140 m, fished by tangle nets, holotype IRSNB IG 29828/514, 7.3 x 8.0 mm (lv); paratype MNHN, 7.2 x 8.0 mm (dd); paratype, 7.4 x 7.9 mm (dd), in the author's collection; paratype, 8.4 x 8.6 mm (lv), collection F. De Donder*; paratype, 6.7 x 7.3 mm (dd), collection F. De Donder.

Diagnosis. Shell globose turbiniform, with a narrow umbilicus; whorls convex, bearing smooth spiral cords, body whorl with a periphery obviously angular and carinated; brown with white maculations or flames.

Description. *Shell* of medium size for the genus (height up to 8.4 mm, width up to 8.6 mm), almost as high as wide, rather thin, globose turbiniform; spire moderately high, 2.1x to 2.4x higher than aperture, narrowly umbilicate.
Protoconch of about 1.25 whorl, large for the genus (from 800 to 900 µm), dome shaped, without apical beak, sculptured by irregular reticulation; 2 or 3 spiral threads only slightly visible but most often lacking; terminal lip straight, not thickened.
Teleoconch of 4.5 convex whorls, bearing smooth spiral cords, with obvious angular carinated periphery. Suture visible, not canaliculated.

* Melsbroeksestraat, 21, 1800, Vilvoorde-Peutie, Belgium.

First teleoconch whorl convex, entirely smooth or occasionally with up to 5 very fine smooth spiral cords, usually so indistinct that the whole surface seems to be smooth.
On second whorl, 5 primary cords becoming distinct and S4 appearing early between P4 and P5; cords evenly distributed, all similar in size, rounded in profile, much thinner than intervals between them, adapical cord forming a weak angle of shoulder with sutural ramp; weak prosocline axial ribs visible between cords, of same size as intervals between them.
On third whorl, P6 emerging from suture; all cords becoming prominent, similar in shape; P1 weaker than other Pi that are similar in size; angle of shoulder becoming weaker.
On body whorl, axial ribs evanescent and angle at shoulder disappearing; secondary spiral cords appearing between Pi; tertiary ribs may appear on large specimens; periphery obviously angular, carinated by P6.
Base convex, bearing 7 or 8 spiral cords poorly marked, intervals between cords wider than cords, except for most external cords.
Umbilicus deep but not wide; no spiral cord around it.
Aperture subcircular, peristome almost complete; outer and columellar lip slightly flattened.
Colour of protoconch whitish brown; whorls of teleoconch light brown to dark purplish brown, with large white dashes that can be aligned, forming flames; umbilical area lighter.
Operculum horny, multispiral, with short growing edge and about 10 volutions.

	H	D	HA	H / HA	H / D
holotype	7,3	8,0	3,1	2,4	0,9
paratype 1	7,2	8,0	3,4	2,1	0,9
paratype 2	7,4	7,9	3,4	2,2	0,9
paratype 3	8,4	8,6	3,5	2,4	1,0
paratype 4	6,7	7,3	2,9	2,3	0,9

Table 1. - *Spectamen rikae* : Shells measurements in mm – sample of 5 specimens.

Discussion. The main problem was to find an appropriate genus for this new species. Without soft parts nor radula, only a provisional genus could be chosen. The protoconch is typically solarielline and the relationship with subfamily Solariellinae is confirmed by subcircular aperture and nearly complete peristome.
The lack of a spiral cord around the umbilicus, the large protoconch coupled with the reduced observed number of whorls led me, following Herbert (1987) and Wilson (1993), to the genus *Spectamen* Iredale, 1924, although Marshall (1999) seems to consider a possible synonymy of this genus with *Solariella* Wood, 1842.
Anyway, *Spectamen rikae* n.sp. is very peculiar and no other known species from the Indo-Pacific area can be confused with it. Especially, the angular periphery is highly discriminating. *Spectamen ruthae* Herbert, 1987 or *S. semisculptum* (von Martens, 1904) from the Indian Ocean (South Africa) are only weakly similar in shape and spiral ornament. The new species can be also compared to *Minolia cinerea* Preston, 1909 from North Queensland, but this latter has a more rounded periphery and a strongly beaded spiral cord around the umbilicus.

Etymology. The new species is named after the first name of Fernand De Donder's wife Rika, faithful member of the Belgian Malacological Society and enthusiastic collector of Pectinidae.

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Figures

1-3. *Spectamen rikae* n.sp. holotype IRSNB IG 29828, Philippine Islands, Bohol, Balicasag Island, 7.3 x 8.0 mm.
4. *S. rikae* n.sp., paratype MNHN, Philippine Islands, Bohol, Balicasag Island, 7.2 x 8.0 mm.
5. *S. rikae* n.sp., paratype, Philippine Islands, Bohol, Balicasag Island, coll. F. De Donder, 8.4 x 8.6 mm.


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SELECTED BIBLIOGRAPHY

Herbert, D.G. 1987. Revision of the Solariellinae in Southern Africa. *Annals of the Natal Museum* 28(2): 283-382.

Herbert, D.G. 1992. Revision of the Umboniinae in Southern Africa and Mozambique. *Annals of the Natal Museum* 33(2): 379-459.

Hickman, C.S. & Mc Lean, J.H. 1990. Systematic revision and supragenerie classification of trochacean gasteropods. *Natural History Museum of Los Angeles County Science Series* VI+169 pp.

Marshall, B.A. 1999. A revision of the recent Solariellinae of the New Zealand region. *The Nautilus* 113(2): 4-42.

Wilson, B. 1993. *Australian Marine Shells. Prosobranch gastropods* – part one. Odyssey Publishing, Kallaroo, Western Australia. 408 pp. 44 plates.