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The intertidal gastropods of South Georgia. Part I: Patellidae, Scissurellidae, Trochidae and Cerithiidae

J. DAVOLOS & R.G. MOOLENBEEK

Zoölogisch Museum Amsterdam, P.O. Box 94766, 1090 GT Amsterdam, The Netherlands.
jdavolos@yahoo.com
moolenbeek@science.uva.nl

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Abstract: In the southern hemisphere, summer of 1986/87, the 'Nederlandse Wetenschappelijke South Georgia Expeditie' (Dutch Scientific South Georgia Expedition) initiated by the Foundation for '(Sub)Antarctic Onderzoek' took place. Samples were taken in the intertidal zone around Barff Peninsula. These samples were sorted for molluscs and the results will be published in 4 parts. In part I, eight species from the families **Patellidae**, **Scissurellidae**, **Trochidae** and **Cerithiidae** are discussed; one of the species is new to science.

Resumen: En verano del hemisferio sur en 1986/87 se llevo a cabo la expedición Holandesa a las Islas Georgias del Sur 'Nederlandse Wetenschappelijke South Georgia Expeditie' iniciada bajo la dirección de la Fundación de investigación (sub)Antártica (Foundation for (sub)Antarctic Research). Fueron tomadas muestras intertidales alrededor de la Peninsula Barff (Barff Peninsula). Dichas muestras fueron analizadas para la posterior identificación de los gastrópodos. Los resultados obtenidos seran publicados en cuatro partes.
En la parte I se mencionan ocho especies correspondientes a las familias: **Patellidae**, **Scissurellidae**, **Trochidae** y **Cerithiidae**, siendo una de estas especies nueva para la ciencia.

Introduction: South Georgia is an island in the southern Atlantic Ocean (37°S-54°W), about 2000 km east of southern Patagonia (Argentina) and 350 km south of the Antarctic convergence (Polar Front). Its length is about 170 km, width at least 30 km, and it is ruled by the Falkland Islands Dependencies (Great Britain). It is an isolated area in a deep water region, entirely influenced by the cold west wind drift and even land conditions are glacial.

The knowledge of the Antarctic marine molluscs, in particular from the littoral zone around South Georgia was scarce. In 1885 Von Martens published the first results of his study of the marine molluscs, collected in 1882/83 by the 'Deutschen Polar-Commission dem Naturhistorischen Museum Hamburg'. He mentioned 21 gastropods. Of these, Von Martens identified 12, of which seven were new to science, and two remained unidentified. In 1886 he published the complete results of this expedition together with G. Pfeffer and the number of gastropod species increased to 30, of which 18 were again new to science. They concluded that there was more affinity with the malacofauna of the Kerguelen Islands than with the nearby southern tip of South America. Unfortunately, most of the South Georgian type material described by Pfeffer and Von Martens and deposited in the 'Zoologisches Museum Hamburg' was destroyed during World War II (Engl, 2003; Hausdorf, in litt., 2003).

Gradually Antarctic and Subantarctic research received more interest and several expeditions were organized (Swedish, British, French, etc.). Strebel (1908) studied the material collected by the 'Schwedische Südpolar-Expedition 1901-1903'. He mentioned 59 gastropods from South Georgia of which 36 were new to science.

However, the knowledge about the malacofauna of South Georgia remained poor. A few additions were made by Powell (1951), Ponder (1983), Dell (1990), Ponder & Worsfold (1994), Harasewych & Kantor (1999), and Schrödl (1999; 2003).
Recently Zelaya (2000) published his 'Tesis de Licenciatura' (in order to receive his master degree) on the marine molluscs from South Georgia. However, nearly all his new information is based on deeper water samples collected around and off South Georgia. He listed 153 gastropods. *1

In the southern hemisphere, summer of 1986/87, the 'Nederlandse Wetenschappelijke South Georgia Expeditie' (Dutch Scientific South Georgia Expedition) initiated by the Foundation for '(Sub)Antarctic Onderzoek' took place (Van Bohemen & Gremmen, 1988; Gremmen et al., 1988). After one week on the Falkland Islands, the expedition spent one month on South Georgia for scientific research. The aim was to collect biological information on the island's ecosystems and the influence of man upon these. Mainly along the coast of the Barff Peninsula collections of the littoral fauna were made and littoral communities were described (Buizer, 1988). The marine samples were donated to the Zoölogisch Museum Amsterdam.

In 2003 we started sorting these samples. Most of them had been preserved in alcohol, some of them in formaldehyde. In this first part we will publish the results of the identifications of four families of intertidal gastropods.

In the synonymy-lists we only refer to reliable records from South Georgia. For distribution and depth-range records we refer to all available literature, where the species

is identified under that specific name. We have doubts about the correct identifications of species as mentioned in their 'Distribution' section in many articles and so we have to conclude for the distribution areas as given by SOMBASE (website British Antarctic Survey: "http://www.antarctica.ac.uk/BAS_Science/programmes2000-2005/ABPPF/SOMBASE/" http://www.antarctica.ac.uk/). This is often caused by a lack of reliable figures of the species and a lot of wrong identifications.

Abbreviations:

AMS	Australian Museum Sydney
MACN	Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires
LP	Museo de La Plata
SMNH	Naturhistoriska Riksmuseét, Stockholm
UNLP	Universidad Nacional de La Plata
ZMA	Zoölogisch Museum Amsterdam
ZMB	Zoologisches (Humboldt) Museum, Berlin
ZMH	Zoologisches Museum Hamburg

Material and methods: We studied about 60 station-samples of which 49 contained molluscs. All material was collected by hand sampling and by scratching with a net among rocks and between algae, often in tidal pools with a water temperature of 1.5°C, mainly by D.A.G. Buizer.

The samples studied were collected from January 3 until January 29 in shallow water around Barff Peninsula (South Georgia). The deepest samples are from 1.25 m. Full locality data are given in "../Localitis/localitis2.xls" table 1.

Most specimens were collected alive and all material is stored in the ZMA, unless otherwise stated.

They were separated and sorted under a Wild M3 stereomicroscope and partly preserved dry. Some unidentifiable juvenile specimens are not included in the number of specimens given.

Molluscs were identified, quantified and measured in the ZMA. Shell height is measured from apex to base and width is the widest diameter of a shell. Specimens belonging to the **Patelllidae** were measured by their width (widest diameter of the shell), height (narrowest diameter of the shell from ventral view) and depth (elevation of the shell from the base to the protoconch).

For identification of the specimens we used the original descriptions and if possible or necessary the type material. Intact and well preserved adult specimens were measured (height and width) using an eyepiece micrometer in a Wild M3 stereomicroscope and a vernier calliper gauge.

Shells covered by debris were treated in an ultrasonic cleaner. Small shells and protoconchs were washed with diluted bleach (NaClO), coated and mounted on stubs. Digitalized SEM-images were made on a JEOL Scanning Electron Microscope (SEM). Optical and SEM-images were processed using Photoshop Version 6.0 (Adobe).

Station	Position	Area	Description
06-07	54°21'S-36°20'W	Cumberland East Bay, near Sorling Valley	Tidal zone, under stones, attached to macrocystits
08	54°22'S-36°20'W	Cumberland East Bay, near Sorling Valley	Tidal zone, rocky area, under stones
10	54°21'S-36°20'W	Cumberland East Bay, near Sorling Valley	In tidal pools, under stones
14	54°19'S-36°22'W	Cumberland East Bay, near Sorling Valley	In tidal pools, under stones, 0.2-0.4 m
15	54°19'S-36°22'W	Cumberland East Bay, near Sorling Valley	In tidal pool, near melting freshwater, 1 m
17	54°21'S-36°20W	Cumberland East Bay, near Sorling Valley	On algae holdfast
19	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	Scratched from rocks with net, on north side, 1 m
20	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	Near wreck 'Bayard', scratched with net between stones and muddy sediment
23, 26-27	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	Sublittoral tidal pool, scratched from overhanging rocks and between stones, no brown algae, only small pieces of red algae
24	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	Southside entrance, sublittoral tidal pool, 0.5-1 m
25	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	Sublittoral tidal pool, scratched with net from and around stones, 1-1.25 m
31-39	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	Southside entrance, sublittoral tidal pool, scratched with net under and between stones, 100% covering of brown algae, 1-1.25 m
41-44	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	North of Lighthouse Peninsula, tidal zone
45-68, 70	54°20'S-36°14'W	Barff Peninsula, Penguin Bay	0.25-1 m
69	54°22'S-36°20'W	Barff Peninsula, Sorling Valley	0.25-1 m
78	54°20'S-36°15'W	Barff Peninsula, Ocean Harbour	North of Lighthouse Peninsula, beached
79	54°20'S-36°14'W	Barff Peninsula, Penguin Bay	Removed vegetation, scratched by net, 100% mainly *Durvillea*, 0.2 m
A	54°S - 37°W	South Georgia	
B	54°S - 37°W	South Georgia	
C	54°S - 37°W	South Georgia	

Table 1: Station numbers (Nederlandse Wetenschappelijke South Georgia Expeditie 1986/87)

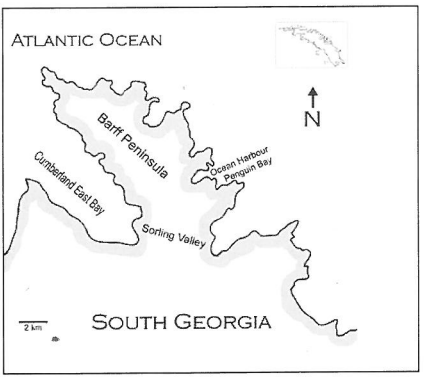

Fig.1: South Georgia, showing the collecting area

SYSTEMATIC PART

Family PATELLIDAE

Genus *Nacella* Schumacher, 1817

Type species (by subsequent designation Gray, 1847): *Patella mytilina* Helbling, 1779; Recent, 'See des südlichen Amerika'.

Nacella concinna (Strebel, 1908) Figs 1a-c, 11a-b

Patella polaris Hombron & Jacquinot, 1841 (non Röding, 1798)
Patella polaris: Von Martens, 1885: 93
Patella polaris: Von Martens & Pfeffer, 1886: 101-103, pl. 2, figs 11-13 b
Patinella polaris var. *concinna* Strebel, 1908: 82-83, pl. 5, figs 76 a-e, 78 a-b
Patinella polaris: Strebel, 1908: 81-82, pl. 5, figs 77, 79-82
Nacella (*Patinella*) *polaris*: Lamy, 1911: 20
Nacella (*Patinigera*) *concinna*: David, 1934: 127
Patinigera polaris: Powell, 1951: 82-83
Patinigera polaris concinna: Powell, 1951: 83-84
Nacella (*Patinigera*) *concinna*: Powell, 1973: 193-195, pl. 176, figs 1-3
Nacella concinna: Beaumont & Wei, 1991: 443-450, fig. 1
Nacella (*Patinigera*) *concinna*: Davenport, 1997: 39-48

Type locality: 'South Georgia', stations 19 C, 21 I, and 33.

Type material: SMNH 7 syntypes (no. 1347) [not studied].

Distribution: Antarctic Peninsula, South Shetland Islands, South Orkney Islands, South Georgia (see also SOMBASE distribution map).

Material studied: South Georgia, stations 10, 17, 19, 20, 25, 26, 32, 34, 38, 39, 41, 44, 45, 52, 60, 61, 67, 68, 69, 79, A and C.

Description: A thin, moderately elevated shell, with narrow, crisp radials crossed by dense concentric growth lines. Largest specimen we studied measures 28.86 mm length (the greatest distance between anterior and posterior end), 40.22 mm width (the greatest aperture distance perpendicular to the anterior – posterior axis) and 13.61 mm height (the greatest vertical distance from the apex of the shell to the plane of the aperture). Colour buff, blotched or variously marked in reddish brown and grayish at the base. It commences with crisp radials on a normally conic shell, but later flattens out, the radials become either obsolete or are present as very weak corrugations, but the concentric growth lines persist over the entire shell.

Remarks: The name *Patella polaris* was first used by Röding, 1798 for a species figured by Gualtieri (1742, Pl. 9, fig. f). However, that figure has nothing to do with our species from South Georgia, and it probably represents a South African species. Therefore *P. polaris* Hombron & Jacquinot, 1841 is a junior homonym. The first available name is *P. concinna*, originally described as a variety of *P. polaris* by Strebel, 1908. It was Powell (1973) who solved this taxonomical problem and placed this taxon in the genus *Nacella*, in accordance with David (1934). The genus *Nacella* with its type species *Patella mytilina* does not show much resemblance with the South Georgian *Nacella concinna*, but it is beyond the scope of this study to solve this generic problem. During the last decade several articles were published about the variation and biology of *N. concinna* (see Beaumont & Wei, 1991; Davenport, 1997). Significant genetic and morphological differences were apparent between samples from different Sub- and Antarctic localities. For this reason it is recommended to designate a lectotype of *Patinella polaris* var. *concinna.* According to K. Sindemark (SMNH) this designation will be done by W. Engl (Germany) soon.

Family SCISSURELLIDAE

Remark: So far, only one species of this family is known from South Georgia, being *Anatoma euglypta* (Pelseneer, 1903), a deep water species described from west of the Antarctic Peninsula (Zelaya, 2000). We did not find this species in our samples.

Genus *Scissurella* D'Orbigny, 1824

Type species (by subsequent designation Gray, 1847): *Scissurella laevigata* D'Orbigny, 1824; Recent, Mediterranean.

Scissurella* cf. *medioplicata Thiele, 1925 Figs 7a-d

Scissurella medioplicata Thiele, 1925: 42, pl. 1,

Type locality: 'Gazelle-Bucht, Kerguelen'.

Type material: 3 syntypes in Zoologisches (Humboldt) Museum, Berlin [not studied].

Distribution: Kerguelen Islands.

Material studied: South Georgia, station 08.

Description: Height 1.0 mm, width 1.3 mm. Skeneiform, spire low, summit almost horizontal; white. Protoconch 1.5 whorls sculptured with an irregular flocculent pattern. First part of postnuclear whorl smooth, at high magnification it consists of fine axial growth lines. After less than half a whorl, rather strong axial ribs are formed. These prosocline ribs are only on the central part of the whorl so they do not reach the upper suture nor the umbilical area. Umbilicus open but narrow. Selenizone above periphery. Before start of selenizone the whorl has 9 axial ribs and after start of selenizone and slit below it another 9 prosocline ribs. Area above selenizone with fine axial growth lines. Slit about one third of body whorl. Aperture subcircular.

Remarks: This specimen shows much resemblance to the figures of *Scissurella petermannensis* Lamy, 1911, described from 'Île Petermann' (65°10.0'S 64°10.0'W). However, that type specimen seems to lack a selenizone and is more rounded. We do not exclude that it is an immature specimen. Our specimen has about half a whorl more and due to that it has a more oval outline. When more material becomes available a better comparison can be made. Provisionally we identify it as *S.* cf. *medioplicata.*
Melvill & Standen (1912) described *S. timora* from the South Orkneys, however, that species lacks the axial ribs at the lower part of the body whorl.
The nominate of *S. medioplicata* from the Kerguelen Islands shows relationship in shell characters but has more axial ribs before the selenizone and lacks them on the last half part of the body whorl. However, since the differences with our taxon are small, we provisionally link it with some doubt to *S. medioplicata.*

Scissurella georgica sp. nov. Figs 8a-d

Type locality: South Georgia, 54°20'S 36°14'W, Barff Peninsula, Penguin Bay, 0.25-1 m, January 1987 (station 68).

Type material: Only the holotype.

Description: Shell depressed naticiform, wider than high, with a low spire, apex

flattened, a narrow, rather deep umbilicus. Sutures rather deep. Colour off-white. Protoconch of 1.5 whorls, sculptured with about 25 axial ribs that occupy more than half of the exposed part of the protoconch. In between these ridges a fine microsculpture of irregular pustules. At the end of the protoconch two rather strong terminal varixes. First postnuclear whorl with rather smooth axial ribs, in between a sculpture of irregular pustules. Gradually the axial sculpture is mixed with spiral threads and on the last half part of the body whorl only numerous fine spirals are present. Above selenizone about 8 spirals, below more than 25. Around the umbilicus these spirals are more prominent and with wider interspaces. Selenizone commencing after 1.2 whorls of the postnuclear whorls and indistinct, with very low keels and ending in a small open slit (partly broken in our specimen). Aperture ovoid.

Remarks: This new species differs from *Scissurella eucharista* Melvill & Standen, 1912 from deeper water around Burdwood Bank by having a more oval shape. *S. eucharista* with its more naticoid shape also has a more prominent striated sculpture and a partly covered umbilicus. *Schismope subantarctica* Hedley, 1916 (= *Sinezona subantarctica*) differs by having a closed anal slit forming a foramen. The sculpture of the protoconch reminds of the genus *Incisura*, but more material is needed to make a final conclusion. *Scissurella obliqua* Watson, 1886 from the Kerguelen Islands differs by lacking the spiral sculpture.

Scissurella* cf. *petermannensis Lamy, 1911 Figs 9a-d

Scissurella petermannensis Lamy, 1911: 16, pl. 1, figs 14-16

Type locality: 'Ile Petermann, anse nord'.

Type material: Holotype in Muséum national d'Histoire naturelle, Paris.

Distribution: Petermann Island.

Material studied: South Georgia, station 68.

Description: Height 1.0 mm, width 1.3 mm. Skeneiform, spire low, summit almost horizontal; white. Protoconch 1.5 whorls, sculptured with an irregular pattern, partly eroded. Nearly the entire first postnuclear whorl smooth, immediately followed by rather strong axial ribs. These prosocline ribs are only on the central part of the whorl so do not reach the upper suture nor the umbilical area. Umbilicus open but narrow. Selenizone above periphery. Before start of selenizone the whorl has 6 axial ribs and after start of selenizone and slit below it another 9 prosocline ribs. Area above selenizone only with fine, irregular axial growth lines. Selenizone and slit more than one third of body whorl. Aperture subcircular.

Remarks: This specimen shows resemblance to the figures of *Scissurella petermannensis* Lamy, 1911. However, the type seems to have no selenizone and is more rounded but could be an immature specimen. Our specimen has one third of a whorl more and due to that it gives a more oval impression. *Scissurella timora* Melvill & Standen, 1912 from the South Orkneys differs by lacking the axial ribs at the lower part of the body whorl. *S. medioplicata* Thiele, 1925 from the Kerguelen Islands shows relationship but has more axial ribs before the selenizone and lacks them on the last half part of the body whorl. It is also close to *Scissurella* cf. *medioplicata* Thiele, 1925 mentioned above, but that species has the axial ribs starting directly after the protoconch. When more material becomes available, a more detailed study is needed. Provisionally we identify this specimen as *S.* cf. *petermannensis.*

Family TROCHIDAE

Genus *Margarella* Thiele, 1893

Type species (by subsequent designation Thiele, 1924): *Margarita expansa* Sowerby, 1838; Recent, 'ad fretum Magellanicum (Port Famine)' [= Puerto Hambre, Chile].

Remarks: There is confusion about the type species of the genus *Margarella*. Powell (1960) mentioned *Margarita violacea* King & Broderip, 1831 to be the type species by original designation. We checked the original publication and have to conclude that Powell proved to be wrong since Sowerby mentioned three taxa in this genus. Zelaya (2004) indicated *Trochus (Photinula) expansus* Sowerby, 1838 [sic.!] to be the type species by subsequent designation by Thiele (1924).

Margarella steineni (Strebel, 1905) Figs 5a-b, 12a-b

Margarita (*Photinula*) *expansa* Von Martens & Pfeffer, 1886: 100-101 pl. 2, figs 10a-d (non Sowerby I, 1838)
Photinula steineni Strebel, 1905: 158-160, pl. 5, figs 16a-d (*nomen novum*)
Photinula steineni: Strebel, 1908: 73-74
Margarella (*Margarella*) *steineni*: David, 1934: 127
Margarella steineni: Powell, 1951: 97
Margarella steineni: Zelaya, 2004: 112-120, figs 6, 11, 20

Type locality: 'Südgeorgien (no. 6957, 7523, 7522 etc.)' [South Georgia].

Type material: Originally in the Zoologisches Museum Hamburg (material destroyed during World War II [Hausdorf, in litt., 2003]).

Distribution: Endemic to South Georgia (Von Martens & Pfeffer, 1886; Strebel, 1908, David, 1934; Powell, 1951 & 1960), 0-35 m depth.

Material studied: South Georgia, stations 7, 10, 15, 34, 39, 42, 60, 61 and 78.

Description: Altogether 61 specimens were taken; the largest measures 15.5 mm in height and 19.5 mm in width. Protoconch smooth and glossy. Shell pale cream, yellowish coloured, pearly externally and inside the aperture. Shell axis dorsoventrally depressed. Four whorls rapidly increasing, well rounded at periphery. Aperture large, oval and oblique. The outer lip is thin and its columella is thick. Open umbilicus, covered by the columellar callus. Operculum corneous, circular, thin and brownish with concentric spiral lines.

Remarks: According to Dell (1990) the generic classification of this taxon is not satisfactorily solved. It is often assigned to the genus *Margarella* Thiele, 1893, which he considered a junior synonym of *Margarites* Gray, 1847. Recently, Zelaya (2004) analyzed the status of the genus *Margarella* in the southwestern Atlantic and assigned this and the next taxon to the genus *Margarella.* Unfortunately he did not figure nor extensively discuss the status and distribution of this species.

Margarella achilles (Strebel, 1908) Figs 2-4, 13a-b

Photinula achilles Strebel, 1908: 73, pl. 5, figs 69a-b
Margarella (*Promargarita*) *achilles*: Powell, 1951: 99

Type locality: 'Station 36, Süd Georgien, Cumberland Bai, 54°22' s.B., 36°28' w.L., 1-2 Met., 13.6.1902'.

Type material: SMNH 2 syntypes (no. 1036).

Distribution: Endemic to South Georgia, depth 1-35 m (Strebel, 1908; Powell, 1951 & 1960).

Material studied: South Georgia, stations 35 and 78.

Description: We studied 3 specimens. The largest specimen measures 8.4 mm in height and 10.5 mm in width. Shell smooth, thin, depressed turbinate, body whorl weakly biangulate. Teleoconch with 4 whorls. Colour light brown and some yellowish. Umbilicus covered by columellar callus and a white area around the umbilicus. Occasionally there is a narrow white band around the periphery. Shell sculptured with white lines on the early whorls and around the umbilical area. The aperture is large oval. Operculum thin and brownish, sculptured with spiral lines.

Remarks: Dell (1999) assigned this species to the subgenus *Promargarita.*

Genus *Photinastoma* Powell, 1951
Type species: *Trochus taeniatus* Wood, 1828 (by original designation); Recent, Falkland Islands.

Photinastoma taeniata (Wood, 1828) Figs 6a-b, 14

Trochus taeniatus Wood, 1828: 56, pl. 5, fig. 12
Photinula taeniata: Strebel, 1905b: 135-137, pl. 5, figs 28a-b, 29
Photinula taeniata var. *elata* Strebel, 1905b: 138, pl. 5, fig. 28c
Photinula taeniata: Strebel, 1908: 71
Photinastoma taeniata: Powell, 1951: 95, figs H, 25 (radula)

Type locality: Not mentioned by Wood (1828). Powell (1951) designated 'Port Stanley, Falkland Islands' to be the type locality.

Type material: According to Dance (1986) type material from the Wood collection might be in the British Museum of Natural History in London. K. Way (in litt., 4.2005) confirmed that the holotype is in their collection.

Distribution: Falkland Island (Strebel, 1905, Melvill & Standen, 1907, Strebel, 1908, Melvill & Standen, 1914, Powell 1951), Patagonia (Powell, 1951) and Strait of Magellan, Patagonia and Falkland Islands (Powell, 1960).

Material studied: South Georgia, station 68.

Description: We found 3 specimens. The largest specimen measures 3.5 mm height and 4.5 mm width. Shell conoid, white-yellowish, convex to straight outlines, spire whorls moderately convex, periphery of last whorl rounded. Two and a half rapidly expanding whorls. Protoconch sculptured with rather scattered, spirally aligned, elongate granules. First teleoconch uniform yellowish with rather strong spiral grooves. Gradually two reddish-yellow spiral grooves become prominent on the penultimate whorl. On the body whorl with 4 reddish-yellow spirals above periphery and 5 below. Umbilicus closed and surrounded by a white area. Aperture oval, outer lip thin.

Remarks: This is a new record for South Georgia. The three specimens are small, probably immature.

Family CERITHIIDAE

Genus *Cerithiopsilla* Thiele, 1912

Type species: *Cerithiopsilla cincta* Thiele, 1912 (by original designation); Recent, 'Gauss Station', [Davis Sea].

Cerithiopsilla georgiana (Pfeffer, 1886) Figs 4a, 15

Cerithium georgianum Pfeffer in Von Martens & Pfeffer, 1886: 97-98, pl. 2, fig. 7

Type locality: 'Süd-Georgien' [South Georgia].

Type material: Holotype originally in the Zoologisches Museum Hamburg (material destroyed during World War II [Hausdorf, in litt., 2003]). Neotype in the Zoölogisch Museum Amsterdam (ZMA Moll. 2.86.003) designated from station 38 (Barff Peninsula, Ocean Harbour, 54°20'S-36°15'W, Southside entrance, sublittoral tidal pool, scratched under and in between stones, 100% covering of brown algae, 1.0-1.25 m). Height 3.7 mm, width 1.5 mm (Fig. 4a).

Distribution: South Georgia (Von Martens & Pfeffer, 1886; Thiele, 1912; Carcelles, 1953; Powell, 1960), South Orkneys (Melvill & Standen, 1907; Carcelles, 1953; Powell, 1960), Scotia Bay (Melvill & Standen, 1907).

Material studied: South Georgia, stations 35, 38, 59 and 68.

Description: We found 5 specimens. The largest specimen measures 4.1 mm in height and 1.8 mm in width. The shell is fusiform with a cream, yellowish colour. Protoconch initially smooth, gradually after first whorl ribs appear. Transition to teleoconch not marked by an axial rib. The body whorl has 2-4 spiral cords increasing in number from the protoconch to the aperture. Between the spiral ribs there is a weak axial sculpture. The aperture is circular and about a quarter of the shell height. The outer lip is thin and undulating in correspondence to the external ribs and interspaces.

Remarks: Originally described in the genus *Cerithium*. Thiele (1912: 202) already mentioned his doubts about the correct genus for this taxon. According to Powell (1951) it belongs to the genus *Cerithiopsilla* which was adopted by Carcelles (1953) and Zelaya (2000). Although we have some doubts about the generic placement (it might also be a *Cerithiella*-species for example), we use the systematics of Powell (1951). Most probably this species has direct development. From nearby islands several related taxa are known and described. For stability of nomenclature and to prevent confusion we designate a specimen with height 3.7 mm from station 38 to be the neotype of *Cerithium georgianum* Pfeffer in Von Martens & Pfeffer, 1886 (Fig. 10).

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Literature

Beaumont, A R. & J.H.C. Wei, 1991. Morphological and genetic variation in the Antarctic limpet *Nacella concinna* (Strebel, 1908). The Journal of Molluscan Studies 57: 443-450.

Buizer, D.A.G., 1988. Mariene Biologie. Circumpolar Journal 3(1-2): 16-21.

Carcelles, A., 1953. Catalogo de la Malacofauna Antarctica Argentina. Anales del Museo Nahuel Huapai 3: 150-250.

Dance, S.P., 1986. A history of shell collecting. Leiden: 1-265.

Davenport J., 1997. Comparisons of the biology of the intertidal subantarctic limpets *Nacella concinna* and *Kerguelenella lateralis*. The Journal of Molluscan Studies 63: 39-48.

David, L., 1934. Zoologische Ergebnisse der Reisen von Dr Kohl-Larsen nach den subantarktischen Inseln bei Neuseeland und nach Südgeorgien. Senckenbergiana 16: 126-137.

Dell, R.K., 1990. Antarctic Mollusca with special reference to the fauna of the Ross Sea. Bulletin of the United States National Museum 3: 42-48.

Engl, W., 2003. Antarctic Mollusks: Part 3 *Prosipho sindemarkae* n.sp. La Conchiglia (The Shell) 306: 31-35.

Gremmen, N.J.M., 1988. South Georgia: Algemene Beschrijving. Circumpolar Journal 3(1-2): 7-11.

Gremmen, N.J.M., J. de Korte, D.A.G. Buizer, H.D. van Bohemen & A.F. van Olphen, 1988. Dutch South Georgia Expedition 1986/87: Summary of Expedition Report. Circumpolar Journal 3(1-2): 46-53.

Gualtieri, N., 1742. *Index testarum conchyliorum quae adversantur in museo Nicolai Gualtieri ..., et methodice distributae exhibentur tabulis CX. Florentiae* 7- 23.

Harasewych, M.G. & Y.I. Kantor, 1999. A revision of the Antarctic genus *Chlanidota* (Gastropoda: Neogastropoda: Buccinulidae): Proceedings of the Biological Society of Washington 112(2): 253-302.

Hombron, J.B. & H. Jacquinot, 1841. Description de quelques Mollusques, provenant de la campagne de l'Astrolabe et de la Zélée. Annales des Sciences Naturelles Zoologie 16: 62–64.

Lamy, E., 1911. Gastropodes prosobranches, Scaphopode et Pélécypodes. Deuxiéme Expédition antarctique française (1908-1910). Sciences Naturelles, Document Scientifiques 1-32.

Melvill, J.C. & R. Standen, 1907. The marine Mollusca of the Scottish National Antarctic Expedition. Transactions of the Royal Society of Edinburgh 46: 119-157.

Melvill, J.C. & R. Standen, 1912. The marine Mollusca of the Scottish National Antarctic Expedition. Part II. Transactions of the Royal Society of Edinburgh 48: 333-366.

Melvill, J.C. & R. Standen, 1914. Notes on Mollusca collected in the North-West Falklands by Mr Rupert Vallentin, F.L.S., with descriptions of six new species. Annals and Magazine of Natural History 13(8): 110-136.

Ponder, W.F., 1983. Rissoaform gastropods from the Antarctic and Sub-Antarctic. British Antarctic Survey Scientific Reports 108: 1-96.

Ponder, W. F. & T.M. Worsfold, 1994. A review of the Rissoiform gastropods of southwestern South America (Mollusca, Gastropoda). Contributions in Science, Los Angeles County Museum of Natural History 445: 1-63.

Powell, A.W.B., 1951. Antarctic and Subantarctic Mollusca: Pelecypoda and Gastropoda. Discovery Reports 26: 47-196.

Powell, A.W.B., 1960. Antarctic and Subantarctic Mollusca. Records of the Auckland Institute and Museum 5: 117-193.

Powell, A.W.B., 1973. The Patellid Limpets of the World (Patellidae). Indo-Pacific Mollusca 3(15): 75-205.

Schrödl, M., 1999. Zoogeographic relationships of Magellan Nudibranchia (Mollusca: Opisthobranchia) with special reference to species of adjacent regions. Scientia Marina 63 (Supplement 1): 409-416.

Schrödl, M., 2003. Sea Slugs of Southern South America. Systematics, biogeography and biology of Chilean and Magellanic Nudipleura (Mollusca: Opisthobranchia): 1-165. ConchBooks, Hackenheim.

Sowerby, G.B., 1838. A descriptive catalogue of the species of Leach's genus *Margarita*. The Malacological and Conchological magazine 1: 23-27.

Strebel, H., 1905. Beiträge zur Kenntnis der Molluskenfauna der Magalhaen-Provinz. Zoologische Jahrbücher 21: 173-248.

Strebel, H., 1908. Die Gastropoden. Wissenschaftliche Ergebnisse der schwedische Südpolar- Expedition, 1901-1903. 6(1): 1-112.

Thiele, J., 1912. Die antarktischen Schnecken und Muscheln. Deutsche Südpolar-Expedition 1901–1903. 13: 185-285.

Thiele, J., 1924. Revision des Systems der Trochacea. Mitteilungen aus dem Zoologischen Museum, Berlin 11(1): 49-74.

Thiele, J., 1925. Gastropoda der deutschen Tiefsee-Expedition. Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition 17: 36-382.

Van Bohemen, H.D. & N.J.M. Gremmen, 1988. Nederlandse Wetenschappelijke South Georgia Expeditie, Inleiding. Circumpolar Journal 3(1-2): 3-6.

Von Martens, E., 1885. Vorläufige Mittheilungen über die Molluskenfauna von Süd-Georgien. Sitzungs-Bericht der Gesellschaft Naturforschender Freunde zu Berlin 88-95.

Von Martens, E. & G. Pfeffer, 1886. Die Mollusken von Süd-Georgien nach den Ausbeute der Deutschen Station. Jahrbuch der Hamburgischen Wissenschaftlichen Anstalten 3: 65-135.

Wood, W., 1828. Supplement to the Index Testaceologicus; or a Catalogue of Shells, British and Foreign. Illustrated with 480 figures, London 1-59.

Zelaya, D., 2000. Moluscos de las South Georgia: Sistemática, biogeografía y ecología. Tesis de Licenciatura, Universidad de Buenos Aires, Facultad de Ciencias Exactas y Naturales, Departamento de Biología 1-144.

Zelaya, D., 2004. The genus *Margarella* Thiele, 1893 (Gastropoda: Trochidae) in the southwestern Atlantic Ocean. The Nautilus 118(3): 112-120.

*1. During the proof stage of this paper, Zelaya (2005) published an article in Spixiana 28: 109-139 on the marine gastropods from South Georgia. In this paper he recognized only 121 species. In part II of this series, we will comment on his publication in detail.

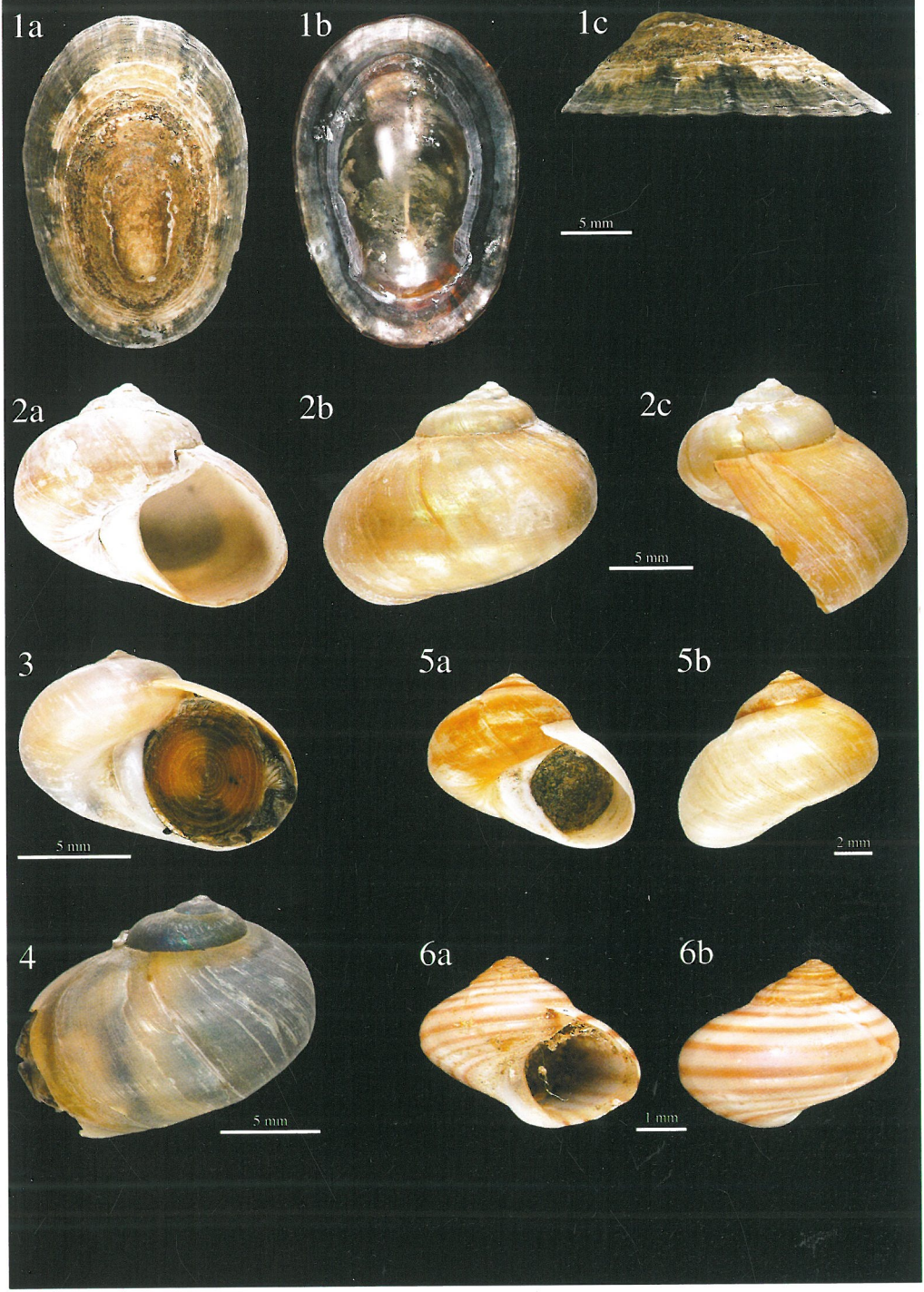
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Plate 1 (over)

Fig. 1: ***Nacella concinna*** (Strebel, 1908), station 20. Width 24.5 mm, height 16.1 mm, depth 7.5 mm.

a. dorsal view.
b. ventral view.
c. lateral view.

Fig. 2: ***Margarella achilles*** (Strebel, 1908), station 78. Height 15.5 mm, width 18.3 mm.

a. ventral view.
b. dorsal view.
c. lateral view.

Figs 3-4: ***Margarella achilles*** (Strebel, 1908), syntypes 1036 (SMNH).

3. ventral view. Height 9.9 mm, width 12.5 mm.
4. dorsal view. Height 12.9 mm, width 13.5 mm.

Fig. 5: ***Margarella steineni*** (Strebel, 1905), station 7. Height 10.1 mm, width 11.9 mm.

a. ventral view.
b. dorsal view.

Fig. 6: ***Photinastoma taeniata*** (Wood, 1828), station 68. Height 2.8 mm, width 3.6 mm.

a. ventral view.
b. dorsal view.

Plate 2 (right)

Fig. 7: ***Scissurella*** cf. ***medioplicata*** Thiele, 1925, station 8. Height 1.0 mm, width 1.3 mm

a. dorsal view.
b. ventral view.
c. protoconch (scale: 0.2 mm).
b. teleoconch microsculpture.

Fig. 8: ***Scissurella georgica*** n.sp., station 68. Height 0.9 mm, width 1.0 mm.

a. dorsal view.
b. ventral view.
c. protoconch (scale: 0.2 mm).
b. teleoconch microsculpture.

Fig. 9: ***Scissurella*** **cf** ***petermannensis*** Lamy, 1911, station 68. Height 1.0 mm, width 1.3 mm.

a. dorsal view.
b. ventral view.
c. protoconch (scale: 0.2 mm).
d. teleoconch microsculpture.

Fig. 10: ***Cerithiopsilla georgiana*** (Pfeffer, 1886), neotype (ZMA Moll. 2.86.003), station 38. Height 3.7 mm, width 1.5 mm.

a. ventral view.
b. protoconch (scale: 0.1 mm).

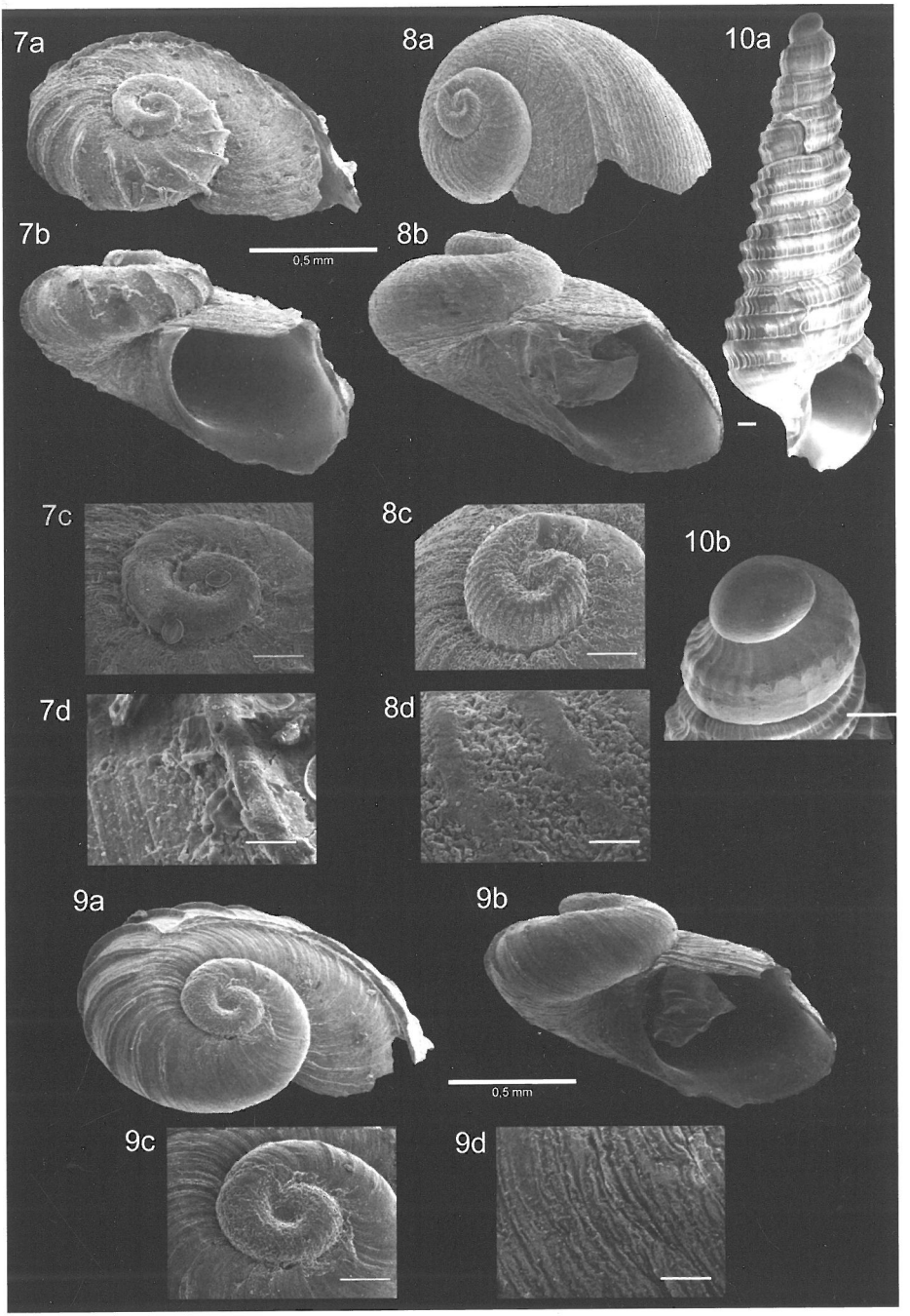
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Plate 3

Fig. 11: ***Nacella concinna*** (Strebel, 1908), figured syntype 1347 (SMNH) after Strebel 1908. Width 32.0 mm, height 21.5 mm, depth 7.7 mm

a. dorsal view.

b. lateral view.

Fig. 12: ***Margarella steineni*** (Strebel, 1905), figured syntypes after Strebel, 1905.

a. dorsal view. Width 10.3 mm, height 11.5 mm (Strebel, 1905, fig. 16c).

b. dorsal view. Width 11.5 mm, height 12.2 mm (Strebel, 1905, fig. 16d).

Fig. 13: ***Margarella achilles*** (Strebel, 1908), figured syntype 1036 (SMNH) after Strebel, 1908.

a. dorsal view. Original image size: width 12 mm, height 9 mm.

b. dorsal view. Original image size: width 15 mm, height 11 mm.

Fig. 14: ***Photinastoma taeniata*** (Wood, 1828), holotype after Wood, 1828. Width 2.5 mm. Ventral view.

Fig. 15: ***Cerithiopsilla georgiana*** (Pfeffer, 1886), holotype after Pfeffer, 1886. Width 2 mm, height 5 mm. Ventral view.