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Carmen Primo^a & Elsa Vázquez^a

^a Dpto Ecología e Bioloxía Animal, Facultade de Ciencias do Mar, Universidade de Vigo, Vigo, Spain

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Ascidians collected during the Spanish Antarctic expedition CIEMAR 99/00 in the Bransfield and Gerlache Straits

CARMEN PRIMO & ELSA VÁZQUEZ

Dpto Ecología e Biología Animal, Facultade de Ciencias do Mar, Universidade de Vigo, Vigo, Spain

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Abstract

During the Spanish expedition CIEMAR 99/00, on board the *BIO-Hespérides*, 30 species of ascidians (distributed in 13 genera and eight families) were collected using a rock dredge in the Bransfield and Gerlache straits. Most of them were already known, but one species, *Tetrazona ciemari* sp. nov., is new for science. Additional morphological data are provided for six species. Five are reported for only the second time and the known distributions of five species are extended.

Keywords: *Ascidacea, Bransfield Strait, Gerlache Strait, taxonomy*

Introduction

The Antarctic marine fauna is relatively well known due to several expeditions, among which we may emphasize those of the *Challenger* (1872–1876), *Pourquoi Pas?* (1908–1910), *Discovery* (first third of the 20th century) and *Polarsten* (end of the 20th century). We can also cite the Spanish expeditions on board *Las Palmas* (several trips between 1988 and 1991) and the *Hespérides* (some expeditions from 1994 to the present). There is an abundant bibliography about the Antarctic ascidian fauna, a consequence of those oceanographic cruises, but the most important papers are those by Kott (1969, 1971) and Monniot and Monniot (1983). Among the most recent publications we may highlight those by Tatián et al. (2005), Ramos-Esplá et al. (2005) and Arntz et al. (2006). However, the Antarctic Region has been unequally studied, the best sampled areas being the Antarctic Peninsula and the South Shetland Islands, with 75 species described so far (Primo 2006), and especially Potter Cove (Sahade et al. 1998; Kowalke 1999; Kowalke et al 2001; Tatián et al. 1988a, 1998b, 2002). During the Spanish CIEMAR 99/00 expedition on-board RV *Hespérides*, the macrobenthos was sampled from the Bransfield and Gerlache Straits. The focus of this work was to study the ascidian fauna collected on this expedition.

Correspondence: Carmen Primo, Dpto Ecología e Biología Animal, Facultade de Ciencias do Mar, Universidade de Vigo, 36310 Vigo, Spain. Email: carprimo@uvigo.es

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Materials and methods

During the CIEMAR 99/00 expedition (December 1999), ascidians were collected at 14 stations in the Bransfield Strait using a rock dredge with 80 cm and 30 cm horizontal and vertical openings, and 10 mm mesh size (Figure 1; Table I). We did not find ascidians at the stations situated in Bahia Sur, Livingston Island; these stations were the shallowest (3–19 m depth) and the absence of ascidians could be due to the action of sea ice as well as the mechanical action of macroalgae movement by currents and waves (Tatián et al. 1998a).

Despite animals being anaesthetized with menthol crystals, many of them were very contracted when removed from the dredges and arrived on board in a bad state. All material was preserved in 4% formaldehyde in sea water. Taxonomic determinations were based on examination of external and internal morphological characters and on the descriptions and reports of Sluiter (1906), Millar (1960), Kott (1969, 1971), Monniot and

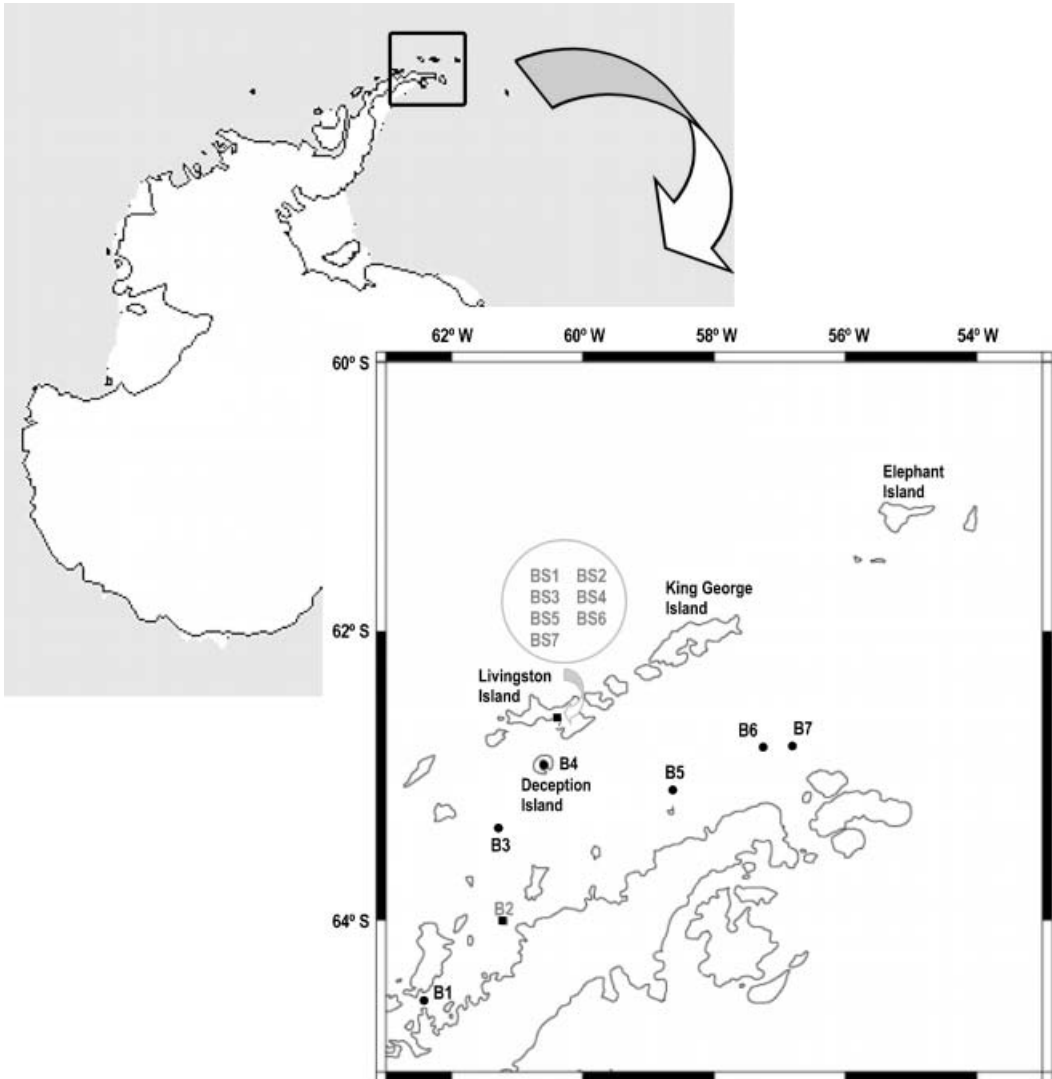


Figure 1. Sampling stations in Bransfield Strait (those without ascidians in grey and marked with a square).

Table I. Characteristics of the Bransfield Strait stations where ascidians were collected.

| Station | Date | Depth (m) | Coordinates | Substratum |
|---------|------------------|-----------|--|----------------|
| B1 | 19 December 1999 | 196 | 64°38'43"S, 62°48'01"W | Moraine rocks |
| B3 | 21 December 1999 | 112.8 | 64°38'33"S, 62°48'15"W 63°43'26"S, 61°08'52"W 63°42'36"S, 61°08'34"W | Basaltic rocks |
| B4 | 22 December 1999 | 104 | 62°58'42"S, 60°37'34"W | Fine mud |
| B5 | 23 December 1999 | 96 | 63°12'36.76"S, 58°56'20"W | Moraine rocks |
| B6 | 29 December 1999 | 138 | 62°54'33"S, 57°01'17"W 62°54'44"S, 57°02'15"W | Moraine rocks |
| B7 | 29 December 1999 | 142 | 62°53'04"S, 57°12'59"W 62°53'05"S, 57°12'46"W | Moraine rocks |

Monniot (1983, 1994), and Sanamyan and Sanamyan (2002). The given height for solitary ascidians expresses the length from the oral siphon to the base; in the colonies it is the maximum length for encrusting colonies and the length from the base to the upper part of the colony for massive colonies. Many specimens were also compared to specimens deposited in the Antarctic ascidian collection of the Muséum National d'Histoire Naturelle of Paris (MNHN hereinafter).

The holotype of the new species is deposited at Museo Nacional de Ciencias Naturales de Madrid. All other material is deposited at the Departamento de Ecología e Biología Animal, Universidade de Vigo.

Results and discussion

A total of 30 species, distributed in 13 genera and eight families, was identified.

Family POLYCLINIDAE

Aplidium balleniae Monniot and Monniot, 1983

(Figure 2)

Aplidium balleniae Monniot and Monniot, 1983.

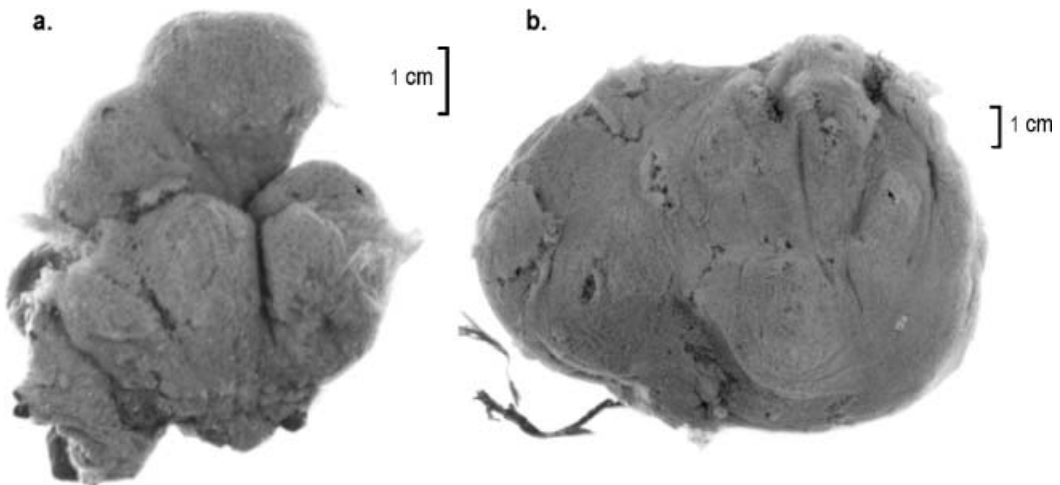


Figure 2. *Aplidium balleniae*. (a) Colony with lobes; (b) globular colony.

Distribution

New record: Bransfield Strait (Station B3: one specimen; Station B5: one specimen; Station B7: seven specimens). Previously recorded: Balleny Island, Ross Sea (Monniot and Monniot 1983). From 50 to 150 m depth.

Description

Variable colonies (from 27 to 52 mm height) from lobed and stalked to globular and massive (Figure 2). Brown tunic with incrustated sand, especially in the stalk (if present). Zooids (up to 10 mm) arranged in double-row systems; common cloacal openings not visible. Branchial siphon with six serrated lobes and oral siphon with a simple or tri-lobed cloacal languet. From 15 to 21 rows of ca. 15 stigmata per hemirow. Stomach with five poorly-marked folds. Variable post-abdomen. Poorly developed testes were found in one colony, distant from the gut loop, forming small vesicles separated one from the other; sperm conduits from each vesicle join in a common spermduct.

Remarks

This is the first record of this species since its description by Monniot and Monniot (1983). Our specimens agree in general with the holotype, except in some characters. Firstly, some of our specimens form lobed colonies with stalks (Figure 2a), not noted in the original description, where the colonies were said to form large masses, only partially lobed and attached by a wide base, a character also seen here (Figure 2b). Moreover, our zooids are shorter (10 mm versus 40 mm in those of Monniot and Monniot), and have fewer rows of stigmata (15–21 versus 18–22 in those of Monniot and Monniot).

Aplidium cyaneum (Sluiter, 1906)

(Figure 3)

Nom. nov. *Aplidium caeruleum* (Sluiter, 1906) preoccupied by *A. caeruleum* Lahille, 1890. *Amaroucium caeruleum* Sluiter, 1906; Hartmeyer 1911; Van Name 1945.

Aplidium caeruleum: Kott 1954, 1969, 1971; Millar 1960, 1968; Monniot F 1978; Monniot and Monniot 1982.

Aplidium cyaneum: Monniot and Monniot 1983, 1994; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B7: two specimens). Previously recorded: Antarctic continent (Kott 1969), South Shetland Islands (Ramos-Esplá et al. 2005), South Orkney Islands (Monniot and Monniot 1983), Bouvet Island (Millar 1968), Marion Island (Millar 1960). From 75 to 1000 m depth.

Remarks

The description agrees with that given by Millar (1960). However, in our specimens (colonies of 17 and 22 mm height and zooids up to 6 mm) we have found a very narrow union between abdomen and postabdomen, in some cases appearing even completely separated from the rest of the zooid (Figure 3), a characteristic of the genus *Aplidiopsis*.

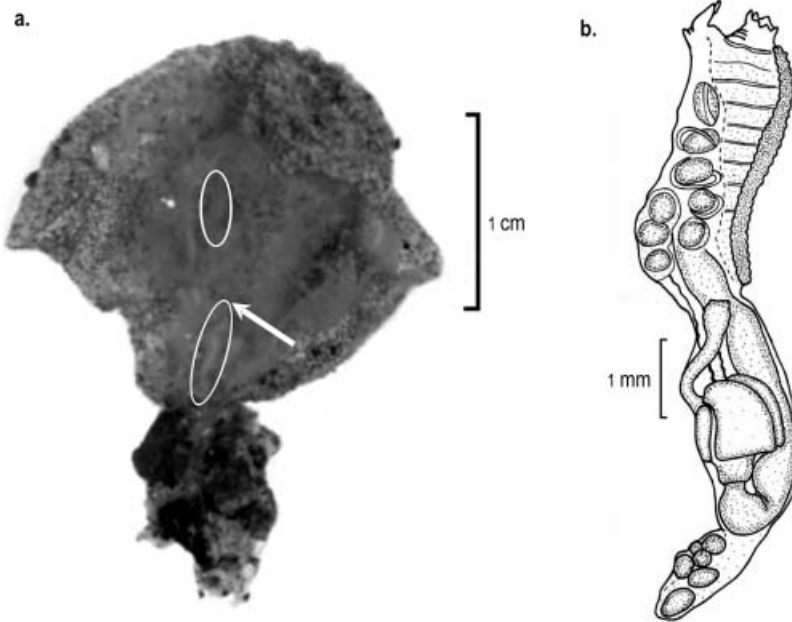


Figure 3. *Aplidium cyaneum*. (a) Open colony; the arrow shows the separation between abdomen and postabdomen (encircled); (b) zooid.

Aplidium lorincatum (Harant and Vernières, 1938)
(Figures 4, 5)

Amaroucium lorincatum Harant and Vernières, 1938.

Aplidium lorincatum: Kott 1969; Monniot and Monniot 1983; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B1: one specimen). Previously recorded: from the Antarctic Peninsula to Commonwealth Bay (Monniot and Monniot 1983); South Shetland

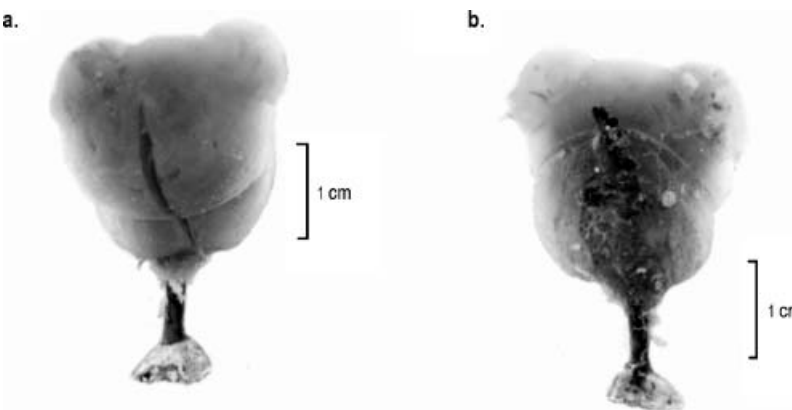


Figure 4. *Aplidium lorincatum*. (a) Frontal view of the colony; (b) posterior view of the colony.



Figure 5. *Aplidium loricatum*, zooid.

Islands (Monniot and Monniot 1983; Ramos-Esplá et al. 2005) and South Orkney Islands (Monniot and Monniot 1983; Ramos-Esplá et al. 2005). From 27 to 644 m depth.

Description

The colony (28 mm height) has grown enclosing the remnants of an algal holdfast and stalk, that maintains the colony raised over the bottom. It consists of two hemispherical heads on a globular mass (Figure 4). The tunic is translucent and of a pale pink colour; surface smooth but firm. Colourless zooids only present in the two hemispherical heads (although the postabdomens occupy the whole colony); not arranged in systems.

Zooids up to 12 mm, although they are much contracted. Oral siphon with the usual six branchial lobes; small atrial aperture surmounted by a small tri-lobed languet. We found 14

rows of stigmata (over 15 stigmata per semi-row); posterior dorsal languets longer than the anterior ones. The gut starts with a short oesophagus; the stomach is flattened but large, with more than 25 fine folds, sometimes interrupted. The gut loop forms a closed curve. Most of the zooids are males, with testes arranged in a single row only in the cardiac extreme of the postabdomen. In the female zooids, the ovary is located about the middle of the postabdomen. We also found both types of gonads simultaneously (Figure 5).

Remarks

The holotype is lost and there is a great variability of characters in the different descriptions, especially in the colony form and the arrangement of the zooids. The type description by Harant and Vernières (1938) is imprecise and the figures are not clear. They mention strangulation between thorax and abdomen and the presence of mineral particles in the branchial sac, characteristics not mentioned again nor observed here. They did not describe the gonads either. Kott (1969) described a stalked colony, dark zooids and the simultaneous presence of testis and ovary without drawing them. Monniot and Monniot (1983) described double-row systems of zooids and accessory denticles in the oral siphon, together with the alternation of male and female gonads. However, this species is well defined by the presence of more than 20 stomach folds and the particular position of the testis. Also, we want to point out that we found both the alternative presence of male and female gonads in some specimens, and the simultaneous occurrence of both types of gonads in others.

Aplidium meridianum (Sluiter, 1906)

Amaroicum meridianum Sluiter, 1906.

Aplidium meridianum: Monniot F 1978; Monniot and Gaill 1978; Monniot and Monniot 1982, 1983, 1994; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B3: three specimens; Station B5: three specimens; Station B6: 15 specimens). Previously recorded: Antarctic continent (Monniot and Monniot 1983; Ramos-Esplá et al. 2005); South Shetland, South Orkney, and South Georgia Islands (Monniot and Monniot 1983, 1994; Ramos-Esplá et al. 2005); Kerguelen, Heard and Crozet Islands (Monniot and Gaill 1978); Magellan Strait (Monniot and Monniot 1983). From 27 to 1000 m depth.

Description

Colonies from 11 to 46 mm height. The description agrees with that of Monniot and Gaill (1978).

Remarks

Aplidium meridianum was synonymized with several species, although none of these synonymies has been retained (Monniot F 1978). The most similar species is *Aplidium falklandikum* Millar 1960, but the shape of the colony and the arrangement of zooids are different.

Aplidium millari Monniot and Monniot, 1994

(Figure 6)

Aplidium millari Monniot and Monniot, 1994; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B5: one specimen; Station B7: two specimens). Previously recorded: Weddell Sea (Monniot and Monniot 1994); South Shetland Islands (Ramos-Esplá et al. 2005). From 96 to 407 m depth.

Description

Globular colonies from 17 to 25 mm height (Figure 6a) with incrusted sand in the external surface of the test; circular systems hardly visible. Small zooids (6–7 mm) with a six-lobed branchial aperture and a tubular atrial aperture with a simple or slightly lobed languet. The branchial sac is formed by 12–13 rows of stigmata. Asymmetrical stomach with five or six poorly marked longitudinal folds. Short postabdomen (3–4 mm), sometimes with short and numerous vascular processes at the cardiac end. Most zooids are immature, but some of them have cluster-grouped testes in the upper part of the postabdomen (Figure 6b).

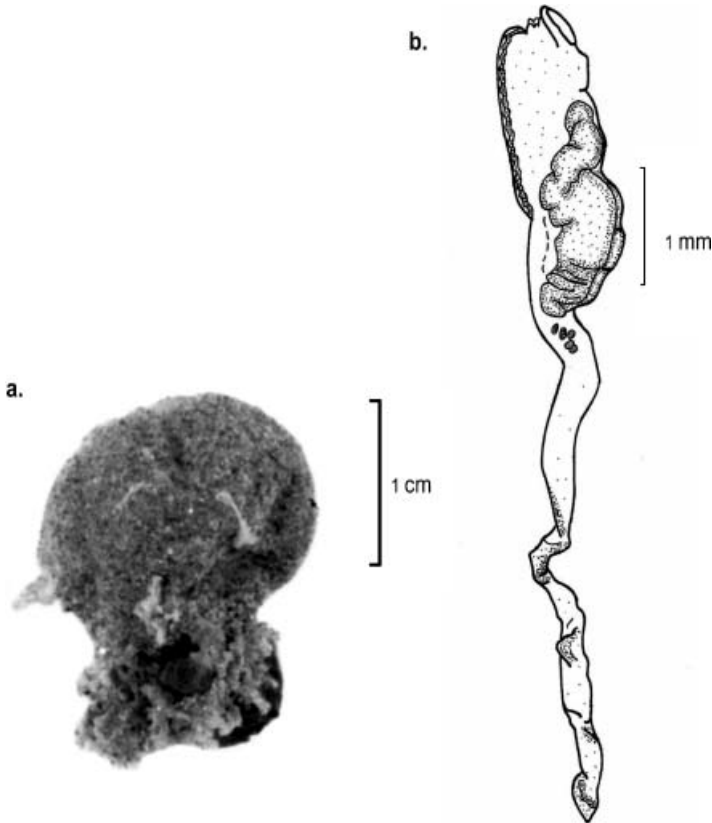


Figure 6. *Aplidium millari*. (a) Colony; (b) young specimen.

Remarks

This is the second record of this species since its description by Monniot and Monniot (1994). After re-examining the holotype deposited at the MNHN (registration number A1 APL.B 295), we can conclude that our specimens are juvenile colonies of this species. Although colonies (17–25 mm versus 45 mm height) and zooids (6–7 mm versus 11 mm length) are shorter, they agree in several significant characters: tunic, systems, cloacal languet, number of rows of stigmata and gonads. Some differences from the holotype (pink soft cushion-shaped colonies, six to seven incomplete stomach folds) may be attributed to the juvenile condition of our specimens. The most important difference is the lack in our specimens of parastigmatic vessels, which may be due to the great contraction of the branchial sac and/or the state of development of the zooids.

Aplidium miripartum Monniot and Monniot, 1983

(Figure 7)

Aplidium miripartum Monniot and Monniot, 1983.

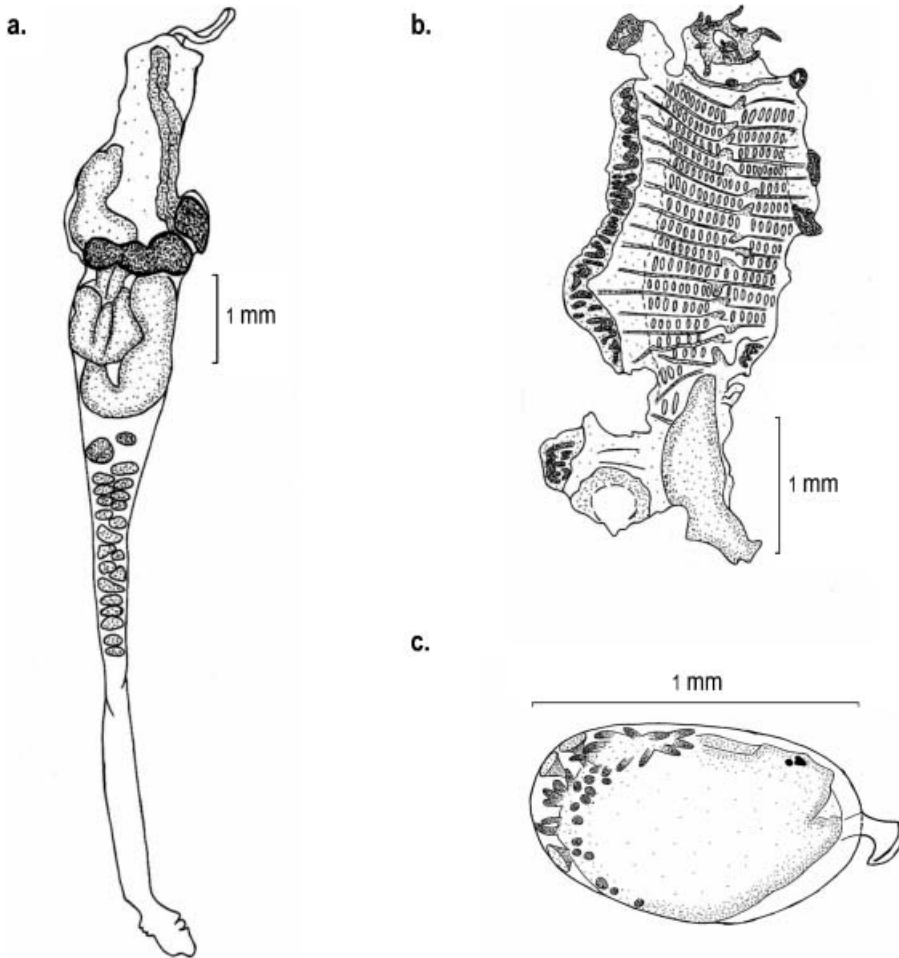


Figure 7. *Aplidium miripartum*. (a) Zooid; (b) branchial sac with part of the membrane without stigmata; (c) larva.

Distribution

New record: Bransfield Strait (Station B3: two specimens). Previously recorded: Antarctic Peninsula, South Shetland Islands (Monniot and Monniot 1983). From 0 to 300 m depth.

Description

Globular colonies (55 and 85 mm height) with a wide short stalk totally covered with sand. Dark orange tunic. Zooids about 15 mm length with a six-lobed branchial siphon and a simple or tri-lobed atrial languet. We found 17 rows of stigmata with eight or ten stigmata per hemirow; there is a region of non-perforated membrane at both sides of the endostyle (Figure 7b). At the base of the thorax is a structure, possibly formed by reserve material, as observed in other *Aplidium* species. Stomach with five poorly marked folds. Ovaries below the gut loop; testes, both grouped or arranged in rows, only in the first half of the postabdomen. Characteristic larvae incubated in the tunic with three adhesive papillae, two of them closer in the dorsal region and the third more separate in the ventral region.

Remarks

This is the first record of this species since its description by Monniot and Monniot (1983). Although there is no doubt about the identification because of its characteristic larva and the shape and coloration of the colony, we have found some characteristics not mentioned in the holotype description. Firstly, the zooid size (15 mm) is smaller and the number of rows of stigmata (17) is fewer here, despite the colony sizes being similar, but this may be within the range of variation of the species. On the other hand, we observed a portion of non-perforated membrane at both sides of the endostyle (Figure 7), a character not found by Monniot and Monniot (1983).

Aplidium radiatum (Sluiter, 1906)
(Figure 8)

Psammaphidium radiatum Sluiter, 1906.

Sidnyum radiatum: Monniot F 1978; Monniot and Monniot 1983.

Macroclinum pererratum Sluiter, 1912, 1914.

Sidnyum pererratum: Monniot F 1978; Monniot and Monniot 1983.

Aplidium circumvolutum (non Sluiter, 1900) parte Kott, 1969; Monniot and Monniot 1974.

Aplidium radiatum: ?Millar 1960; ?Tatián et al. 1998a, 1998b; Sanamyan and Sanamyan 2002; Ramos Esplá et al. 2005.

Non *Synoicum pererratum*: Hartmeyer 1909.

Distribution

New record: Bransfield Strait (Station B5: two specimens; Station B7: two specimens). Previously recorded: Antarctic Peninsula, Wilkes Land (Monniot and Monniot 1983); South Shetland, South Orkney, and South Sandwich Islands (Monniot and Monniot 1983, Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005). From 25 to 500 m depth.

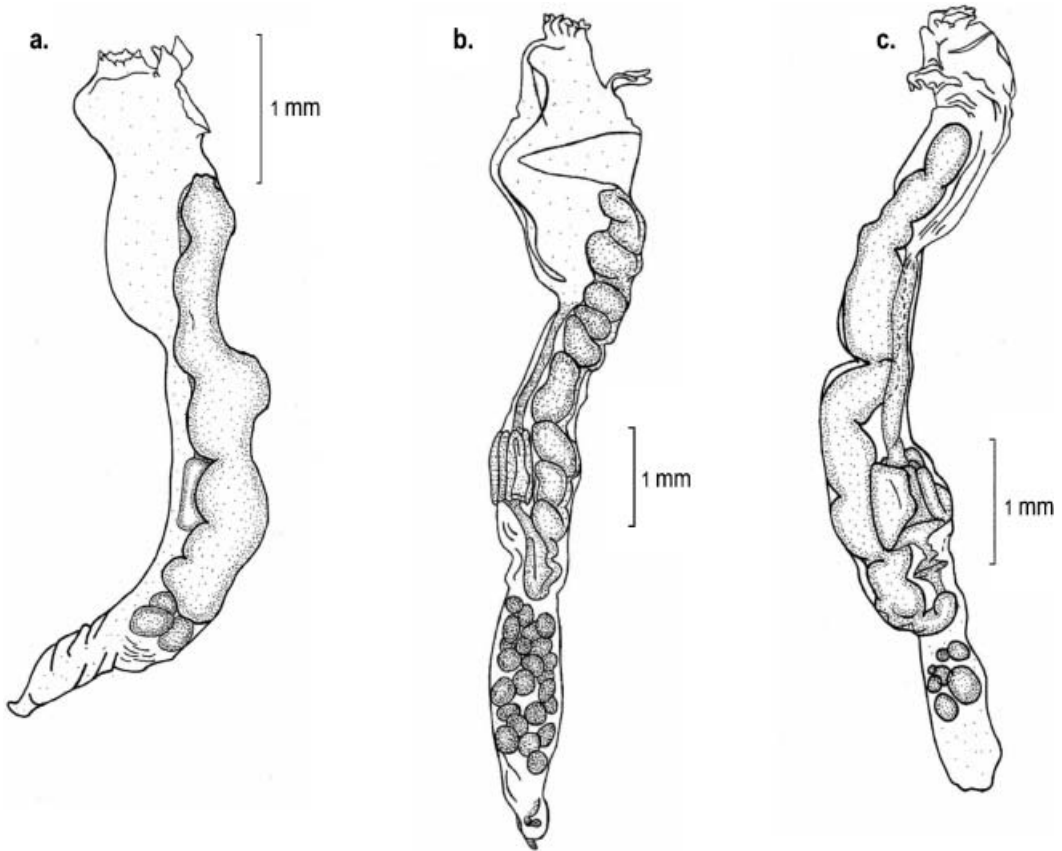


Figure 8. *Aplidium radiatum*. (a) Female zooid; (b) male zooid; (c) doubtful zooid.

Description

Flattened colonies (from 15 to 97 mm), with dense sand over the surface and throughout the test. Zooids are not visible, but their location is marked by an elevation of the tunic; they form double-row systems. Zooids up to 5 mm, closely surrounded by the tunic. The oral siphon has eight pointed lobes while the atrial one has a narrow but thick tri-lobed languet. The branchial sac has 10–12 rows of stigmata, with quite high transverse vessels. The gut loop forms a much closed curve and the stomach has five well-marked folds. Unisexual zooids with the gonads immediately below the gut loop; they occupy most of the short postabdomen (Figure 8a, b).

We have considered as uncertain some samples that show variations with regard to the above description: oral siphon with only six lobes, low transverse vessels, longer oesophagus, and more marked stomach folds (Figure 8c).

Remarks

Aplidium radiatum closely resembles *Aplidium circumvolutum* (Sluiter, 1900) and *Aplidium imbutum* Monniot and Monniot, 1983. *Aplidium imbutum* is clearly distinguished by a thoracic filiform extension. However, the descriptions of *A. circumvolutum* and *A. radiatum*

are practically identical. The absence of visible systems in the first one may be a consequence of the high density of incrustated sand, the difference in the number of oral lobes is not sufficient to separate the two species and, although most descriptions of *A. circumvolutum* mention the simultaneous presence of male and female gonads, Kott (1969) suggests that this may occur when gonads are not fully developed. The main problem is that very different descriptions have been provided for *A. circumvolutum*; the type is lost and the few fragments of colonies (re-examined in the MNHN of Paris (registration number A1 SID-B 12 and A1 SID-B 13)) do not show the characteristics of the species. Even more, the holotype description of *A. radiatum* does not agree with the specimens to which it is referred (Monniot F 1978).

***Ritterella mirifica* Monniot and Monniot, 1983**
(Figure 9)

Ritterella mirifica Monniot and Monniot, 1983.

Distribution

New record: Bransfield Strait (Station B7: one specimen). Previously recorded: Ross Sea (Monniot and Monniot 1983); South Shetland Islands (Monniot and Monniot 1983). From 142 to 365 m depth.

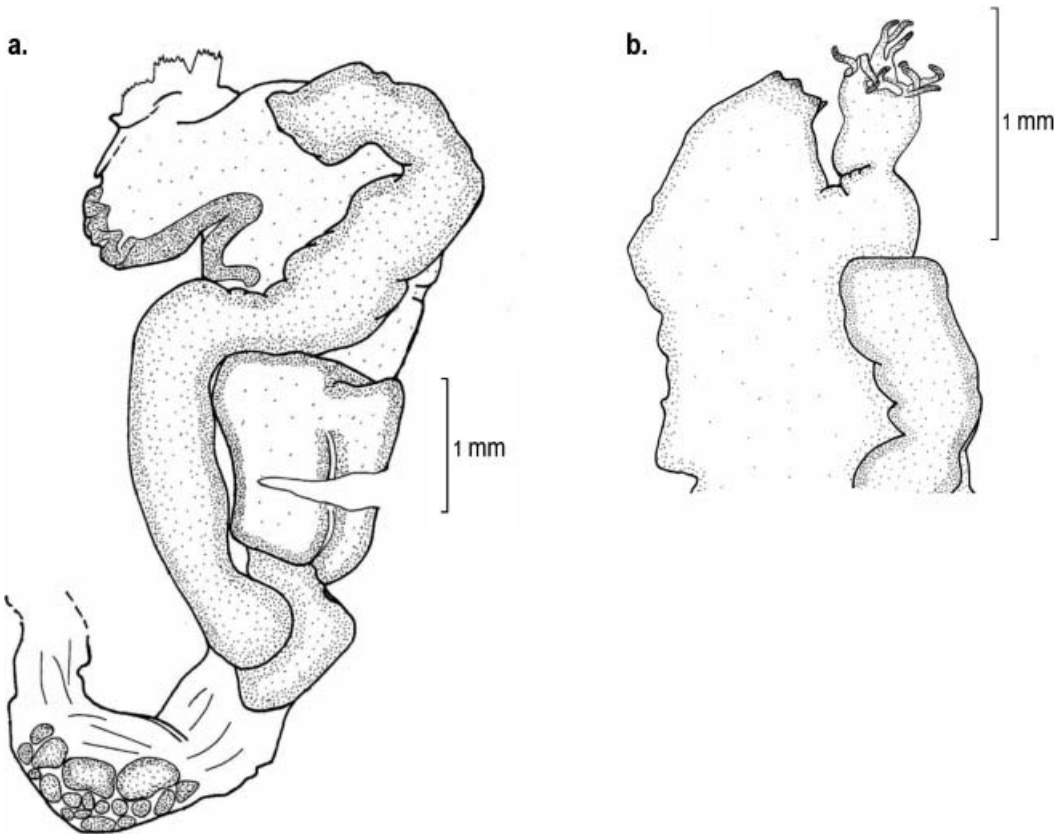


Figure 9. *Ritterella mirifica*, zooid.

Description

We found only one very damaged stalked colony (50 mm height). Zooids with tubular siphons; the atrial one has numerous lobes (Figure 9b). Twelve to 13 rows of stigmata in the branchial sac. Stomach with five or six longitudinal folds. Testes slightly below the gut loop (Figure 9a). It was impossible to extract a complete postabdomen, so the length of zooids is unknown.

Remarks

The only Antarctic species of the genus *Ritterella* is *R. mirifica*, the paratype of which has been re-examined at the MNHN (MNHN A1 RIT 5). The characteristic atrial siphon, the grouped testes slightly below the gut loop, and the number of rows of stigmata are similar. The shape of the colonies is rather different (stalked here, globular in the holotype), but in both cases they are quite damaged.

Synoicum adareanum (Herdman, 1902)

Polyclinum adareanum Herdman, 1902; Sluiter 1906.

Atopogaster elongata non Herdman, 1886 *A. fuegiense*; Herdman, 1902.

Atopogaster incerta Hartmeyer, 1911.

Macroclinum incertum: Hartmeyer 1909.

Synoicum steineni Michaelsen, 1907; Hartmeyer 1921.

Amaroucium (*Synoicum*) *steineni*: Michaelsen 1921.

? *Oxycorymia mawsoni* Harant and Vernières, 1938.

Lissamaroucium magnum Sluiter, 1906; Hartmeyer 1911; Herdman 1912, 1915.

Macroclinum magnum Sluiter, 1914.

Synoicum adareanum: Hartmeyer 1921; Van Name 1945; Kott 1954, 1969, 1971; Millar 1960, 1968; Monniot F 1970, 1978; Monniot and Monniot 1973, 1974, 1983, 1994; Vasseur 1974; Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B3: one specimen; Station B5: 32 specimens; Station B6: 28 specimens; Station B7: 66 specimens). Previously recorded: Antarctic Region (Millar 1960, 1968; Kott 1969, 1971; Monniot and Monniot 1983; Tatián et al. 2005; Ramos-Esplá et al. 2005); South Shetland Islands (Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005); Kerguelen Island (Monniot and Monniot 1974). From 25 to 796 m depth.

Description

Although most of the specimens are immature, the colonies (from 18 to 230 mm height) have the characteristic aspect of the species: stalk with incrustated sand and rounded head, circular systems of zooids.

Remarks

Morphology of our specimens coincides with those described by F. Monniot (1970).

Synoicum georgianum Sluiter, 1932

(Figure 10)

Synoicum georgianum Sluiter, 1932; Millar 1960, 1968; Monniot F 1970; Vasseur 1974; Monniot and Gaill 1978; Monniot and Monniot 1983; Sanamyan and Sanamyan 2002; Tatián et al. 2005.

Aplidiopsis georgianum: Kott 1969, 1971.

Distribution

New record: Bransfield Strait (Station B7: four specimens). Previously recorded: Antarctic Peninsula, Wilkes Land (Monniot and Monniot 1983); Scotia Arc Islands (Monniot and Monniot 1983; Tatián et al. 2005); Kerguelen Island (Monniot and Gaill 1978); Magellan Strait (Monniot and Monniot 1983). From 20 to 552 m depth.

Description

Small colonies (up to 31 mm in our specimens) with basal processes (Figure 10a) to attach to substrata. Few systems of zooids (usually one) per colony; small zooids (about 5 mm) with few rows of stigmata (15 in our specimens) and gonads a little separated from the gut loop (Figure 10b).

Remarks

Frequently confused with *Synoicum adareanum* (Herdman, 1902). After re-examining the holotype (no. 489 T) we conclude that, despite the great variety of shapes, our

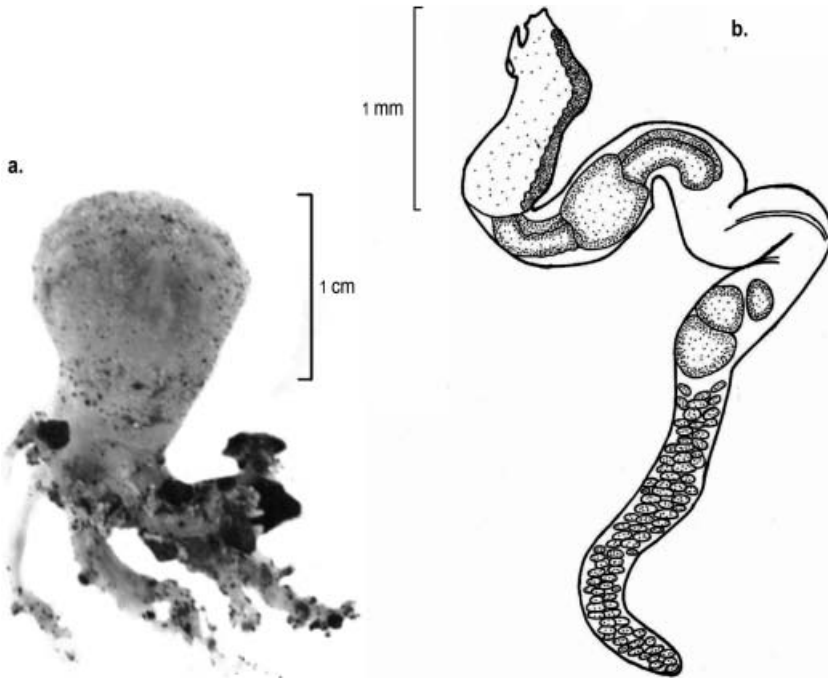


Figure 10. *Synoicum georgianum*. (a) Colony; (b) zooid.

specimens belong to this species because of the few zooid systems, the root-like processes of the colony, the small size of zooids, few rows of stigmata and the location of the gonads.

Synoicum ostentor Monniot and Monniot, 1983

(Figure 11)

Synoicum ostentor Monniot and Monniot, 1983; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B6: four specimens). Previously recorded: Wilkes Land (Monniot and Monniot 1983); South Shetland Islands (Ramos-Esplá et al. 2005); Balleny and South Orkney Islands (Monniot and Monniot 1983). From 0 to 350 m depth.

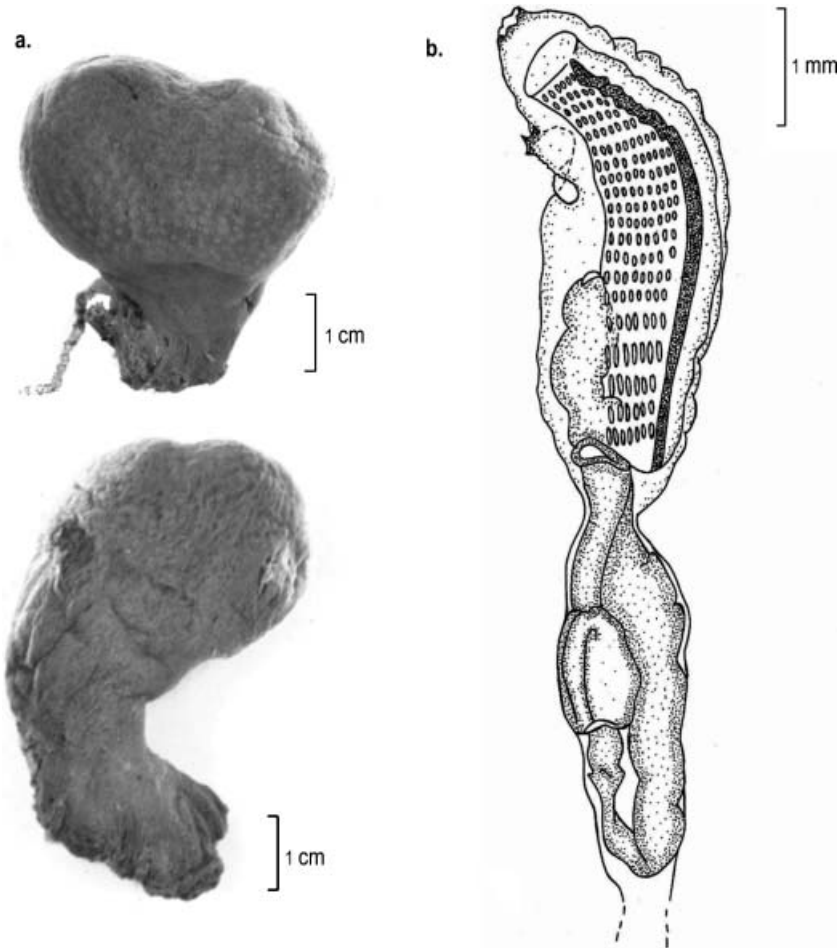


Figure 11. *Synoicum ostentor*. (a) Colonies; (b) thorax and abdomen.

Description

Stalked colonies (from 19 to 112 mm height) with a slight constriction between head and stalk (Figure 11a). Circular systems. About 20 rows of branchial stigmata with 20 stigmata per half-row (Figure 11b). Zooids are immature.

Remarks

Our specimens coincide with the holotype described by Monniot and Monniot. (1983) except for few stigmata per half row (20 in our specimens versus 35 in the holotype). *Synoicum ostentor* is close to *Synoicum adareanum*, but *S. ostentor* has a constriction between head and stalk and a more marked difference in the texture of both parts. Zooids are similar size, but differ in a greater number of rows of stigmata, and stigmata per row, and greater distance between abdomen and ovary in *S. ostentor*. This is the second record of this species since its description by Monniot and Monniot (1983).

***Synoicum polygyna* Monniot and Monniot, 1980**
(Figure 12)

Synoicum polygyna Monniot and Monniot, 1980; Monniot and Monniot 1983, 1994.

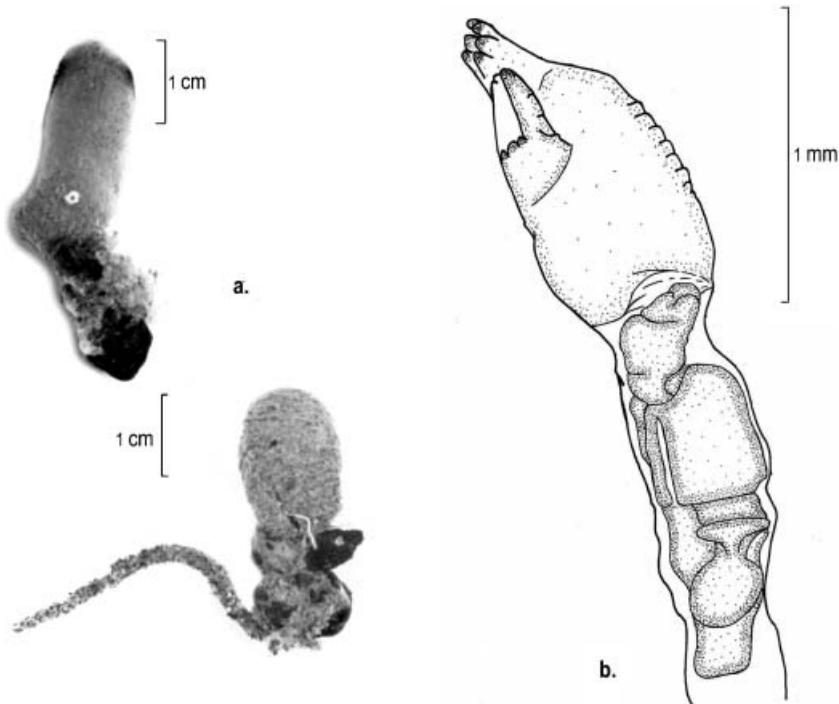


Figure 12. *Synoicum polygyna*. (a) Colonies; (b) thorax and abdomen.

Distribution

New record: Bransfield Strait (Station B7: two specimens). Previously recorded: Weddell and Ross seas (Monniot and Monniot 1980, 1994). From 20 to 252 m depth.

Description

Cylindrical colonies up to 30 mm with irregular basal processes (Figure 12a). Strong tunic with embedded sand. One system per colony with the common cloacal opening in the upper part. Zooids up to 15 mm. Long branchial siphon with six lobes; tubular atrial siphon with three lobes from the dorsal border and three minute lobes more from the ventral border (Figure 12b). Branchial sac with 14 rows of stigmata. Initial constriction of the oesophagus (hardly visible because of the great contraction of the animals). Smooth, large, rounded stomach. The gut loop does not show torsion. All the specimens are immature.

Remarks

The description agrees with the holotype re-examined at MNHN (registration number A1 711-716 and A1 SYN-29) (the atrial siphon, and the constriction of the oesophagus being characteristic) except for the fact that in this case the whole colony is incrustated with sand and is not naked on the upper part. The zooids are shorter, but this may be due to the absence of gonads.

Synoicum polygyna is similar to *Synoicum ramulosum* Kott, 1969. The only differences are smaller colonies and zooids, fewer rows of stigmata and absence of constriction of the oesophagus in *S. ramulosum*. It could be possible that Kott's specimens were juveniles of *S. polygyna*.

***Synoicum* sp.**
(Figures 13, 14)

Distribution

New record: Bransfield Strait (Station: B6 one specimen). 138 m depth.

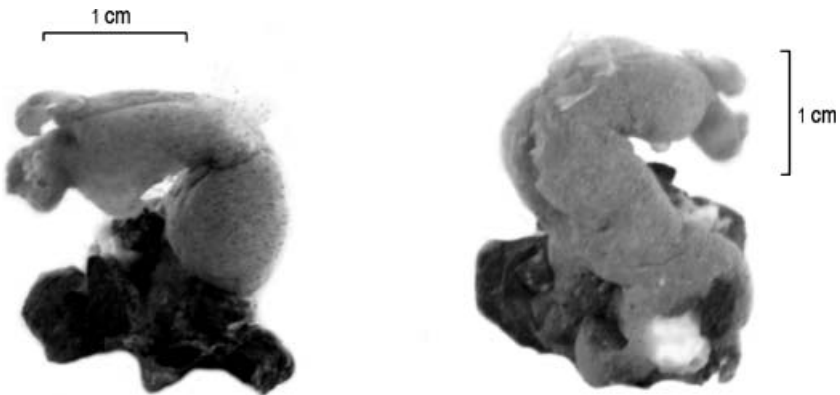


Figure 13. *Synoicum* sp., colony from two perspectives.

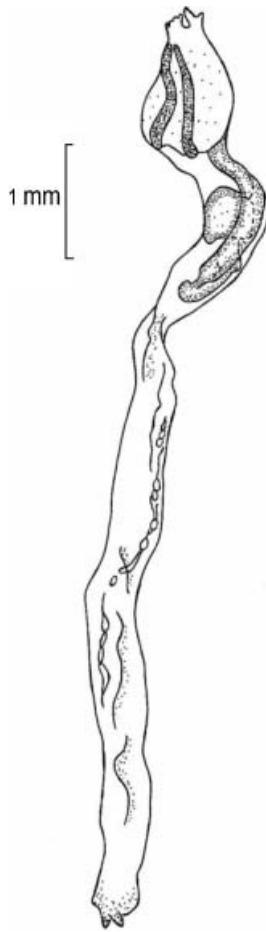


Figure 14. *Synoicum* sp., zooid.

Description

The colony (28 mm height) has a curious cylindrical form, attached to small rocks by its basal half, with two extensions (probably common cloacal openings) at the top, so that it could be confused with a solitary ascidian (Figure 13). Tunic is soft, pink, with some incrustated sand.

The small zooids (up to 7 mm) have a six-lobed oral siphon and a tubular cloacal one with a dorsal tri-lobed languet (Figure 14). The thorax is much contracted and it contains a lot of reserve material, so it was impossible to count the number of rows of stigmata. The stomach is smooth-walled and the gut seems not to be differentiated. All of them are immature.

Remarks

Because of the low number of zooids in the colony and their bad preservation it was impossible to identify them to species level.

Family POLYCITORIDAE

***Tetrazona ciemari* sp. nov.**

(Figures 15, 16)

Distribution

New record: Bransfield Strait (Station B6: one specimen; Station B7: two specimens). From 138 to 142 m depth. Holotype: MNCN 31.01/78, Museo Nacional de Ciencias Naturales, Madrid (Spain).

Description

Small colonies (up to 24 mm of maximum length), rounded but flattened (Figure 15). The tunic is rather soft, resistant and practically free from sand, except for some dispersed particles inserted irregularly among the zooids. The zooids are scattered without apparent order for the whole colony.

The zooids measure 4 mm on average, the abdomen being a little shorter than the thorax. Both siphons are tubular and six-lobed, the atrial one slightly longer. They are located at the same level on the dorsal part. There are about 20 simple branchial tentacles of several sizes. The branchial sac has four rows of about 20 stigmata per semi-row, without parastigmatic vessels (Figure 16b). The first two rows are smaller. The languets of the dorsal lamina are long and pointed.

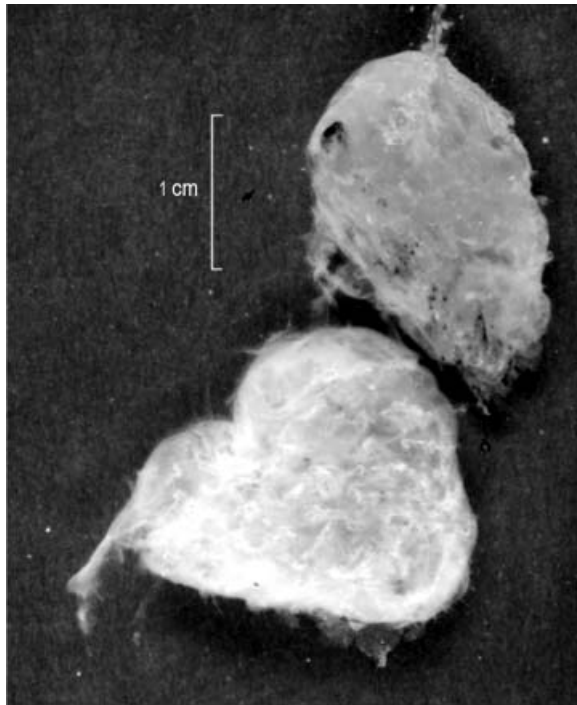


Figure 15. *Tetrazona ciemari* sp. nov., colonies.

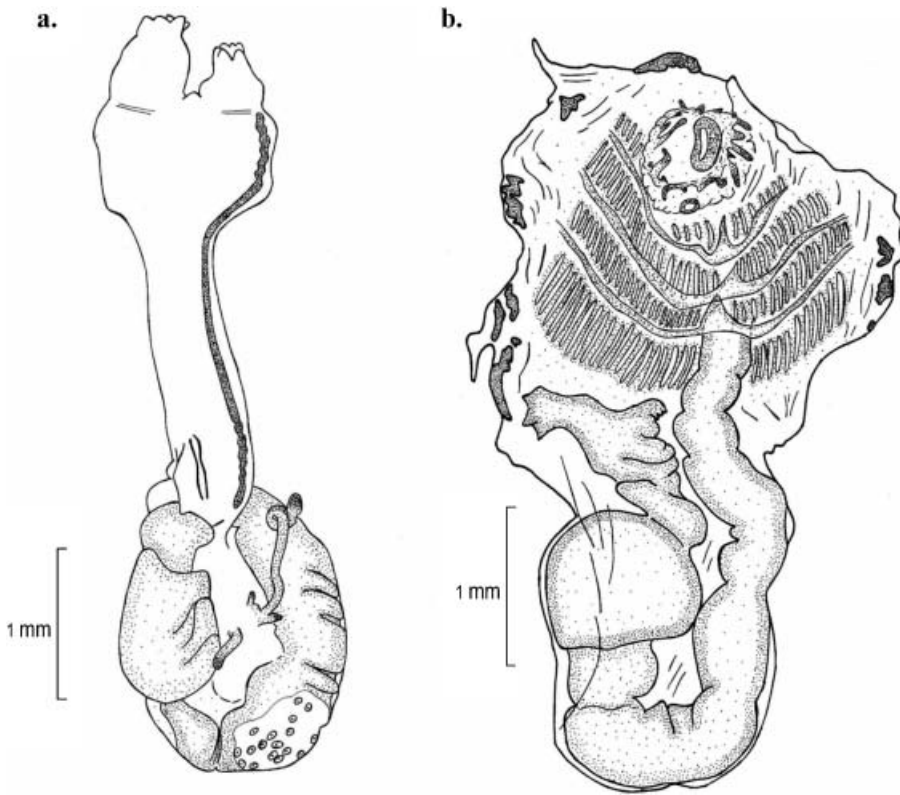


Figure 16. *Tetrazona ciemari* sp. nov. (a) Zooid; (b) zooid with open thorax.

The short oesophagus ends in a globular smooth-walled stomach, quite voluminous and clearly separated from the gut loop that forms an open curve. The anus opens in the middle of the thorax. A vascular appendix is present at the level of the gut loop.

There are no developed gonads, but we observed the sperm duct in the lower part of the thorax of some zooids and the presence of small oocytes in the basal part of the abdomen (Figure 16a). There are no larvae.

Remarks

The genus *Tetrazona* was created by Michaelsen (1930) to include those species close to *Cystodytes*, but without calcareous spicules. Currently, only two species of this genus are known: *T. porrecta* Millar, 1962 and *T. glareosa* (Sluiter, 1906).

Tetrazona porrecta is a South African species that differs both in the colony structure (upright, long and narrow, with irregular lobes and protuberances) and in the zooids, with a similar size but with an abdomen longer than the thorax, fewer stigmata, folds on the stomach wall and gonads immediately below the lower bend of the gut loop. Furthermore, we have had access to a specimen from South Africa (collected by the Coral Reef Research Foundation), so we can affirm that this is not the same species.

On the other hand, we examined some specimens deposited at the MNHN of the Antarctic species *T. glareosa*, and it presents a similar structure of the colony. However,

there are important differences. First, *T. glareosa* has asterisk-like spicules irregularly scattered in the tunic; although Kott (1969) commented that these spicules, described by Sluiter (1906) as siliceous, could be artefacts of preservation, Monniot and Monniot (1983) and Tatián et al. (2005) found this species again and described calcareous spicules. Another significant difference is the size of the zooids, up to 2 mm, which seems to be a constant character independently of the colony size in *T. glareosa*, and up to 4 mm in our specimens. Also, while in *T. glareosa* the proportion thorax/abdomen is similar, in our specimens the thorax is always longer, sometimes twice the size of the abdomen. Another difference is the number of oral tentacles: 12 in the specimens of *T. glareosa* described by Sluiter (1906) and only four in those described by Monniot and Monniot (1983), short and pointed in both cases, while we have found 20 longer oral tentacles. As for the gut loop, there is no net transition between stomach and intestine in *T. glareosa*, whereas it exists in our specimens. Finally, Monniot and Monniot (1983) mentioned long postabdominal vascular appendix, crossed in every direction in the tunic; however, instead of these prolongations, we found a relatively long vascular appendix close to the gut loop.

Family CIONIDAE

Tylobranchion speciosum Herdman, 1886

Tylobranchion speciosum Herdman, 1886; Arnback-Christie-Linde 1926; Kott 1954, 1969, 1971; Millar 1960, 1968; Vasseur 1974; Monniot and Monniot 1974, 1983, 1994; Monniot C 1978; Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005; Arntz et al. 2006.

Tylobranchion antarcticum Herdman, 1902; Sluiter 1906, 1914; Hartmeyer 1911; Arnback-Christie-Linde 1926, 1950; Van Name 1945.

Tylobranchion weddelli Arnback, 1926; Arnback-Christie-Linde 1950.

Pharyngodictyon reductum Sluiter, 1906; Van Name 1945; Kott 1969.

?*Stereoclavella antarctica* Herdman, 1910.

Distribution

New record: Bransfield Strait (Station B5: five specimens 28–50 mm height). Previously recorded: Antarctic Region (Millar 1960, 1968; Kott 1969; Monniot and Monniot 1983; Ramos-Esplá et al. 2005); South Georgia (Tatián et al. 1998a, 1998b, 2005); Bouvet Island (Arntz et al. 2006); Kerguelen Island (Monniot C 1978); Magellan Strait (Monniot and Monniot 1983). From 25 to 437 m depth, although it has also been collected at 2897 m (Kott, 1971).

Description

Our specimen agrees with the description by Kott (1969).

Remarks

Three *Tylobranchion* Antarctic species were described in function of their different size, stomach folds, and the shape of musculature and papillae (Arnback-Christie-Linde 1950). They were synonymized by Kott (1954), supported by Millar (1960) who found that these characters overlap. Monniot and Monniot (1983) considered the problem still unresolved,

but they admitted that these differences might be due to age or physiological stage of the colony.

Family CORELLIIDAE

Corella eumyota Traustedt, 1882

Corella eumyota Traustedt, 1882; Traustedt 1885; Herdman 1891, 1910; Michaelsen 1898, 1900, 1907, 1915, 1918, 1922, 1934; Sluiter 1898, 1914, 1932; Hartmeyer 1911, 1913, 1920; Bovien 1922; Arnback-Christie-Linde 1929, 1938; Van Name 1945; Brewin 1946, 1948, 1950, 1951, 1952, 1956, 1957, 1958, 1960; Kott 1952, 1954, 1969, 1971, 1985, 1997; Millar 1955a, 1960, 1962, 1966, 1967, 1968, 1982; Vinogradova 1962; Monniot C 1969–70, 1978; Monniot and Monniot 1974, 1983, 1994; Turón 1988; Lambert et al. 1995; Tatián et al. 1998a, 1998b; Sanamyan and Sanamyan 1999, 2002; Monniot et al. 2001; Lambert 2004; Ramos-Esplá et al. 2005.

Corella novarae Drasche, 1884.

Corella japonica non Herdman, 1880: Sluiter, 1900 .

Corella antarctica Sluiter, 1905; Sluiter 1906.

Corella benedeni Beneden and Longchamps, 1913; Arnback-Christie-Linde 1938.

Corella dohrni Beneden and Longchamps, 1913; Herdman 1923; Arnback-Christie-Linde 1938.

Distribution

New record: Bransfield Strait (Station B5: 14 specimens (36–160 mm height); Station B6: one specimen; Station B7: three specimens). Previously recorded: widely distributed in the Southern Hemisphere (Kott 1969); north-western France (Lambert 2004). From 7 to 1376 m depth.

Description

Our specimens coincide with those described by Kott (1969).

Family ASCIDIIDAE

Ascidia challengerii Herdman, 1882

Ascidia challengerii Herdman, 1882; Herdman 1891, 1923; Arnback-Christie-Linde 1938; Van Name 1945; Kott 1954, 1969, 1971, 1985; Millar 1960, 1968, 1970; Vinogradova 1962; Monniot and Monniot 1974, 1982, 1983, 1994; Monniot C 1978; Turon 1988; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005.

Ascidia vasculosa Herdman, 1880; Herdman 1882?

Ascidia despecta Herdman, 1880; Herdman 1882.

Ascidia placenta Herdman, 1880; Herdman 1882, 1923.

Ascidia charcoti Sluiter, 1905; Sluiter 1906; Herdman 1912, 1915, 1923.

Phallusia charcoti: Hartmeyer 1911; Hartmeyer 1912; Sluiter 1914.

Phallusia challengerii: Hartmeyer 1912.

Ascidia dispar Arnback, 1938.

Ascidia meridionalis Kott, 1954?; Kott 1969.

Ascidia parameridionalis Vinogradova, 1962.

Ascidia tenera Monniot and Monniot, 1974.

Distribution

New record: Bransfield Strait (Station B4: three specimens; Station B5: 15 specimens; Station B6: four specimens; Station B7: five specimens. From 20 to 210 mm height). Previously recorded: Antarctic Region (Kott 1969; Millar 1960; Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005); Kerguelen and Heard Islands (Vinogradova 1962); Tasmania (Kott 1985); Namibia (Turon 1988). From 7 to 2350 m depth.

Remarks

Although species of the genus *Ascidia* can be difficult to distinguish, only three species are recognized from the Antarctic Region. *Ascidia translucida* Herdman, 1880 is clearly distinct because of its size (see Table II), and because the dorsal tubercle fills the peritubercular area and is very convoluted, while *Ascidia challengerii* Herdman, 1882 and *Ascidia meridionalis* Herdman, 1880 are more similar. We summarize distinguishing characters in Table II.

***Ascidia meridionalis* Herdman, 1880**

Ascidia meridionalis Herdman, 1880; Herdman 1882; Monniot 1969–70; parte Kott 1971; Monniot and Monniot 1983; Tatián et al. 2005.

Phallusia meridionalis: Hartmeyer 1909.

Ascidia tenera Herdman, 1880; Herdman 1882; Michaelsen 1898, 1900.

Ascidia sp. Monniot C, 1970.

Table II. Differences between *Ascidia challengerii*, *A. meridionalis*, and *A. translucida*.

| | <i>Ascidia challengerii</i> | <i>Ascidia meridionalis</i> | <i>Ascidia translucida</i> |
|--------------------|---|---|---|
| External colour | Usually orange-coloured. Also purplish-black | | Transparent to semi-transparent |
| Shape | Oblong to elongate. Laterally flattened | Oval, flattened | Oval, laterally flattened |
| Size | Up to 21 cm long | Up to 15 cm long | Up to 30 cm long |
| Test | Firm and smooth with shallow longitudinal or irregular furrows | Thick and gelatinous; smooth but deep longitudinal wrinkles | Firm, gelatinous but not very thick |
| Branchial siphon | Terminal, 8-lobed | Terminal, 8-lobed | Terminal, 8-lobed |
| Atrial siphon | Dorsally, 1/3 of body length; 6-lobed | Dorsally, 1/2 of body length; 6-lobed | Dorsally, 1/2 to 1/3 of body length; 6-lobed |
| Oral tentacles | 11–60; two sizes at two levels; they extend in ribs from the base | 30–60 at one level; they do not extend in ribs | 10–36 in one level; they do not extend in ribs |
| Dorsal tubercle | U-shaped slit; horns turned in or out | Crescentic slit; horns pointed forward or in; sometimes simple convolutions | Big (filling the peritubercular area) and very convoluted |
| Branchial sac | 6–10 stigmata in each mesh | Variable (5–8, 8–9, 12–13 in each mesh) | 30 stigmata in each mesh |
| Branchial papillae | Spatulate; intermediate papillae present | Only occasionally conical intermediate papillae | Spatulate; intermediate papillae present |
| Anus | Lobed and anterior to the gut loop | Smooth or slightly lobed | Anal border with shallow lobes |

Distribution

New record: Bransfield Strait (Station B5: one specimen; Station B6: six specimens; Station B7: four specimens; from 32 to 92 mm height). Previously recorded: South Orkney and South Georgia Islands (Monniot and Monniot 1983); Magellan Strait (Monniot and Monniot 1983); Buenos Aires (Herdman 1880). From 100 to 1060 m depth.

Remarks

See *Ascidia challengerii*.

Family STYELIDAE***Cnemidocarpa pfefferi*** (Michaelsen, 1898)

Styela pfefferi Michaelsen, 1898; Michaelsen 1900, 1907; Kott 1969.

Tethium serpentina Sluiter, 1912.

Styela serpentina: Sluiter 1914; Van Name 1945; Kott 1969.

? *Styela subpinguis* Herdman, 1923.

Styela paessleri: Kott 1954; Vinogradova 1962.

Cnemidocarpa pfefferi: Millar 1960; Monniot and Monniot 1983, 1994; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B6: one specimen: 24 mm height; Station B7: one specimen; 25 mm height). Previously recorded: Antarctic Peninsula; South Shetland Islands; Davis, Ross, and Weddell seas (Millar 1960; Vinogradova 1962; Monniot and Monniot 1983, 1994; Ramos-Esplá et al. 2005); South Georgia Islands (Monniot and Monniot 1983); Kerguelen Island (Kott 1954). From 66 to 433 m depth.

Description

This species, with transparent, soft and smooth tunic and four branchial folds, is easily recognizable by the gonad structure. There are two on each side of the body, formed by a tubular ovary with numerous short biramous branches; the testis follicles are intimately associated with the tips of these branches. The sperm ducts join the vas deferens on the medial surface of the ovary, running parallel to the oviduct.

Remarks

Although it has sometimes been confused with *Styela paessleri* Michaelsen, 1898, the gonad structure is quite different since testis and ovary are not enclosed in a common envelope.

Cnemidocarpa verrucosa (Lesson, 1830)

Cynthia verrucosa Lesson, 1830; Cunningham 1871.

Ascidia verrucosa: Dujardin 1840.

Styela verrucosa: Michaelsen 1898, 1900, 1907; Sluiter 1914.

Styela lactea Herdman, 1881; Herdman 1882, 1891, 1912, 1923; Hartmeyer 1927.

Styela grandis Herdman, 1881; Herdman 1882, 1891.

Styela spirifera Michaelsen, 1898; Michaelsen 1900, 1907.

Styela steineni Michaelsen, 1898; Michaelsen 1900, 1907.

Styela flexibilis Sluiter, 1905; Sluiter 1906.

Styela spectabilis Herdman, 1910.

Tethyum lacteum: Hartmeyer 1911, 1912.

Tethyum spectabile: Hartmeyer 1911.

Tethyum spiriferum: Hartmeyer 1911.

Tethyum steineni: Hartmeyer 1911.

Tethyum verrucosum: Hartmeyer 1911.

Cnemidocarpa verrucosa: Van Name 1945; Arnback-Christie-Linde 1950; Pérès 1952; Vinogradova 1962; Kott 1954, 1969, 1971; Millar 1960, 1968; Monniot C 1970, 1978; Vasseur 1974; Monniot and Monniot 1974, 1983, 1994; Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005.

Cnemidocarpa zenkevitchi Vinogradova, 1958; Vinogradova 1962; Kott 1969.

Distribution

New record: Bransfield Strait (Station B5: 18 specimens from 25 to 95 mm height). Previously recorded: Antarctic Region (Kott 1954, 1969; Millar 1968; Monniot and Monniot 1983; Ramos-Esplá et al. 2005); Scotia Arc (Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005); Kerguelen (Monniot and Monniot 1983) and Crozet Islands (Millar 1960); Magellan Strait, Patagonia and Falkland Islands (Millar 1960; Monniot and Monniot 1983). From 15 to 836 m depth.

Remarks

Cnemidocarpa verrucosa is easy to identify through the tunic that, although it can be very variable, is resistant and opaque (generally light pink or yellowish), but thin and flexible. The surface is covered by papillae (with spines in the young specimens). Other characters such as the body wall close to the tunic but separated, and four poorly marked branchial folds are characteristic of the species too. Two gonads on each side; one on the left is between body wall and gut loop. This species clearly differs from *C. pfefferi* because of the biramous branches of the ovaries of the last one.

Dicarpa insinuosa (Sluiter, 1912)

Styela grahami Sluiter, 1905; Sluiter 1906, 1914; Kott 1969.

Tethyum insinuosum Sluiter, 1912.

Styela insinuosa: Sluiter 1914; Herdman 1923; Van Name 1945; Kott 1954, 1969; Millar 1960.

Dicarpa insinuosa: Monniot and Monniot 1983, 1994; Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B3: four specimens; Station B7: one specimen; from 12 to 28 mm height). Previously recorded: Antarctic Peninsula, Weddell Sea, Wilkes Land (Kott 1954; Monniot and Monniot 1983, 1994; Ramos-Esplá et al. 2005); South Shetland

Islands (Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005); South Georgia Islands (Monniot and Monniot 1983). From 18 to 620 m depth.

Remarks

Our specimens agree with the description by Kott (1969) under the name of *Styela insinuosa*. The genus *Dicarpa*, created by Millar (1955b), was initially described for only one species, *D. simplex*, the distinctive characters being: four-lobed siphons, endocarps in the whole body wall, simple oral tentacles, smooth dorsal lamina, three to four branchial folds and one *Polycarpa*-like gonad on each side. Later, more species were included and the characters that define the genus are the type of branchia and the presence of only one gonad on each side, although the morphology is variable. *Dicarpa insinuosa* has a tubular ovary and several groups of testicular follicles surrounding the ovary, especially abundant at the posterior end.

Dicarpa tricostata (Millar, 1960)

(Figure 17)

Cnemidocarpa tricostata Millar, 1960.

Styelopsis tricostata: Kott 1969.

Dicarpa tricostata: Monniot and Monniot 1980, 1994.

Distribution

New record: Bransfield Strait (Station B7: one specimen). Previously recorded: Weddell Sea (Monniot and Monniot 1994), Ross Sea (Monniot and Monniot 1980), South Georgia Islands (Millar 1960). From 35 to 462 m depth.

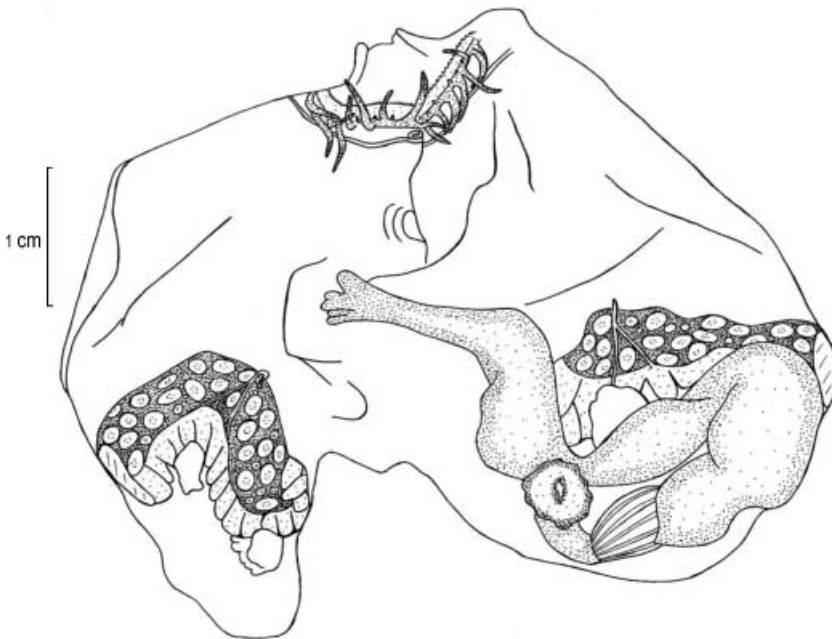


Figure 17. *Dicarpa tricostata*, open specimen without branchial sac; cut gonad.

Description

Ovoid shape, 17 mm high and 9 mm across at the widest point. The lower part of the body narrows towards the base, which is covered by test hairs with a little adhered sand. No test hairs or foreign particles are present on the rest of the body, which is yellowish pink, smooth, very thin but tough.

Siphons, short, four-lobed, both dorsal and close to each other. There are over 32 simple branchial tentacles, of two sizes. The small dorsal tubercle is a simple oval transverse slit. The dorsal lamina, with a plain margin, is wider on the posterior part. The branchial sac has three longitudinal vessels on each side; up to 30 stigmata per mesh, with parastigmatic vessels. A short oesophagus is followed by the stomach, with internal folds and a small pyloric caecum. The intestine forms a closed gut loop after the stomach, and then bends anteriorly near the oesophagus. The anus has eight well-marked lobes. Only one gonad has been found, mainly situated on the left side, but it crosses the endostyle line, thus also occupying the right side (Figure 17). The testes are located on the posterior side of the ovary. They are long narrow follicles arranged in a series along the length of the gonad. There are two long sperm ducts, one on each side of the body, projecting from both ends of the gonad, but not terminal. The oviducal opening was not observed.

Remarks

Our specimen is the largest collected up to now and agrees perfectly with the description of the holotype except in small details such as external appearance of the tunic—covered with wart-like swellings according to Millar (1960)—or the number of oral tentacles, which probably depends on the size. Monniot and Monniot (1980) described one gonad on each side, with the same general structure. The presence of two sperm ducts in the specimens with only one gonad may be a sign of the fusion of two initial gonads.

Styela wandeli (Sluiter, 1911)

Part *Styela grahami*: Sluiter, 1905; Sluiter 1906.

Tethyum (Styela) wandeli Sluiter, 1911; Hartmeyer 1911.

Tethyum (Styela) quidni Sluiter, 1912.

Styela quidni: Sluiter 1914; Van Name 1945.

Styela wandeli: Sluiter 1914; Van Name 1945; Kott 1969, 1971, 1972; Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005.

Styela magalhaensis Millar, 1968.

Non *Styela* sp. aff. *wandeli* Monniot C, 1970.

Distribution

New record: Bransfield Strait (Station B3: one specimen; Station B7: seven specimens from 15 to 34 mm height). Previously recorded: Bellingshausen Sea (Kott 1969); Antarctic Peninsula, South Shetland and South Orkney Islands (Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005).

Remarks

In general our specimens agree with the description by Kott (1969). They have two gonads on each side although one specimen has a single gonad on the left side. Characteristic pointed already by Kott (1969).

Family PYURIDAE***Bathypera splendens*** (Michaelsen, 1904)

(Figure 18)

Bathypera splendens Michaelsen, 1904; Hartmeyer 1911; Herdman 1923; Van Name 1945; Vinogradova 1962; Millar 1960; Kott 1954, 1969, 1971; Monniot and Monniot 1982, 1983, 1994; Ramos-Esplá et al. 2005.

Pyura liouwillia Sluiter, 1912; Sluiter 1914.

Bathypera hastaefera Vinogradova, 1962; Kott 1969.

Distribution

New record: Bransfield Strait (Station B3: one specimen). Previously recorded: Antarctic continent, South Shetland and South Orkney Islands (Kott 1954, 1969; Monniot and Monniot 1983; Ramos-Esplá et al. 2005); Tierra de Fuego (Kott 1971).

Description

One ovoid colony, 21 mm height. The test is thin, but firm and tough. The surface is covered with minute papillae which contain, in the dorsal half of the body, calcareous spicules, typical of the species. Each spicule has numerous short spines in a slanting plane; near the siphons, the spicules are arranged with the oblique plane toward the siphon apertures. In the middle line of the body may be found a regular series of spine sizes, increasingly larger ones higher up.

Atrial and branchial siphons are almost sessile, bilabiate and directed anteriorly. There are 33 branched branchial tentacles of three sizes. The branchial sac has six very high folds on each side. The right gonad has split into two, although the ovaries are still fused together. The larger gonad has a double gonoduct (Figure 18). There is a large testis lobe on the distal end of each ovary and smaller lobes along it, arranged without order.

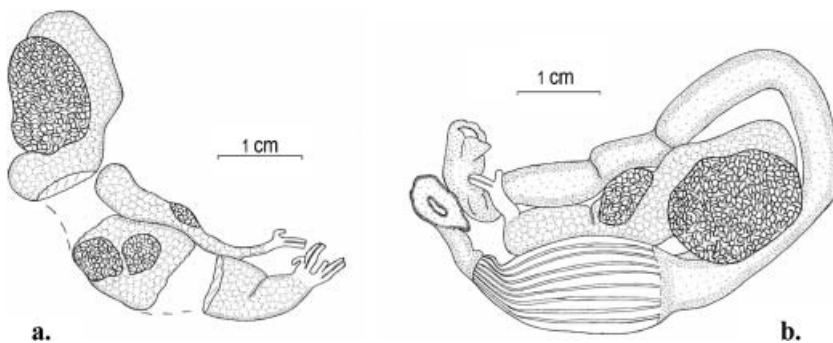


Figure 18. *Bathypera splendens*. (a) Right gonad; (b) left gonad in curve of gut. Dark structures are the testes.

Remarks

Our specimen differs from the type specimen in the number of ovaries (one on each side in the type) and the testis arrangement (many small lobes distributed along both sides of the ovary), but these kinds of variations are not unusual in deep-sea species. However, in spite of these differences and after examining some specimens deposited at the MNHN, we concluded that our specimen belongs to *B. splendens*.

Pyura bouvetensis (Michaelsen, 1904)

Boltenia bouvetensis Michaelsen, 1904.

Boltenia salebrosa Sluiter, 1905; Sluiter 1906.

Boltenia turqueti Sluiter, 1905; Sluiter 1906.

Pyura turqueti: Hartmeyer 1909; Sluiter 1914; Arnback-Christie-Linde 1938; Van Name 1945.

Boltenia scotti Herdman, 1910.

Boltenia antarctica Beneden and Longchamps, 1913; Herdman 1923.

Pyura legumen Kott, 1954; Vinogradova 1962.

Pyura bouvetensis: Millar 1960, 1968; Monniot and Monniot 1982, 1983, 1994; Tatián et al. 1998a, 1998b; Sanamyan and Sanamyan 2002; Ramos-Esplá et al. 2005; Arntz et al. 2006.

Pyura georgiana Kott, 1969; part Kott 1971; Monniot and Monniot 1974.

Distribution

New record: Bransfield Strait (Station B3: eight specimens; Station B5: 10 specimens; Station B6: two specimens; Station B7: seven specimens). Previously recorded: Antarctic continent (Kott 1969; Monniot and Monniot 1983; Ramos-Esplá et al. 2005); South Shetland, South Orkney (Kott 1969; Monniot and Monniot 1983; Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005), and Bouvet Islands (Millar 1968; Arntz et al. 2006); Antipodes Island (Monniot and Monniot 1982). From 30 to 1555 m depth.

Description

Up to 38 mm plus a stalk of 243 mm.

Remarks

Four closely related species of stalked *Pyura* are recognized in Antarctica and the subantarctic: *Pyura legumen* (Lesson, 1830), *Pyura georgiana* (Michaelsen, 1898), *Pyura bouvetensis* (Michaelsen, 1904), and *Pyura lycoperdon* Monniot and Monniot, 1983, with minor but constant differences (Monniot and Monniot 1983).

The characteristics that separate *P. bouvetensis* from the other species are: globular body, long stalk located over a third of the ventral face at the level of the gut loop, tunic with variable small spines, weak musculature, right gonad divided in two to nine lobes, left gonad in the gut loop, endocarps over the gonads, quite small parietal organs distant from gonads and gut, and no atrial organs. Some of these characteristics are not exclusive to the species, but as a whole they are definitive.

Pyura discoveryi (Herdman, 1910)

Halocynthia discoveryi Herdman, 1910; Herdman 1923.

Pyura discoveryi var *septemplicata* Sluiter, 1914.

Pyura discoveryi: Hartmeyer 1911; Arnback-Christie-Linde 1938; Van Name 1945; Kott 1954, 1969, 1971; Millar 1960; Vinogradova 1962; Vasseur 1974; Monniot C 1978; Monniot and Monniot 1982, 1983, 1994; Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B1: three specimens; Station B3: one specimen; Station B6: one specimen; Station B7: two specimens; from 9 to 52 mm height). Previously recorded: Antarctic continent; South Shetland, South Orkney, and South Georgia Islands (Vinogradova 1962; Kott 1954, 1969; Monniot and Monniot 1983, 1994; Tatián et al. 1998a, 1998b, 2005; Ramos-Esplá et al. 2005). From 30 to 2350 m depth.

Remarks

This is a common Antarctic species with a characteristic aspect. The most significant character is the presence of a strong membrane at the base of both siphons, possibly a sphincter to close the openings, maybe as a defence mechanism (Kott 1969). Other important characteristics are: poorly developed seventh branchial fold, arborescent liver, and *Polycarpa*-like gonads.

Pyura obesa Sluiter, 1912

Pyura obesa Sluiter, 1912; Sluiter 1914; Van Name 1945; Kott 1969, 1971; Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005 (non Hartmeyer 1919).

Distribution

New record: Bransfield Strait (Station B7: one specimen). Previously recorded: South Shetland and South Orkney Islands (Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005). From 22 to 220 m depth.

Description

We found one colony 98 mm height plus a stalk of 45 mm. The tunic is thick and fleshy. The branchial siphon is directed downward and the atrial one, sessile, is just above. The dorsal tubercle is a double cone and the horns, both of them forming a spiral towards the right, have a convoluted course. One gonad on each side. There are two endocarps that cover the right gonad and the gut together with the left gonad, respectively. The gonoducts are very long and they open near the atrial siphon.

Remarks

Although variable in external appearance, this large species has a series of distinctive characteristics. We agree with Monniot and Monniot (1983) that there is only one gonad

on each side and that probably Kott (1969) confused the heart, well developed and covered with an endocarp too, with a second right gonad.

Pyura setosa (Sluiter, 1905)

Halocynthia setosa Sluiter, 1905; Sluiter 1906; Herdman 1910, 1912, 1923.

Pyura setosa: Hartmeyer 1911; Van Name 1945; Kott 1954, part 1969; Millar 1960, 1968; Vasseur 1974; Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005.

Distribution

New record: Bransfield Strait (Station B1: five specimens; Station B3: two specimens; Station B7: two specimens; from 15 to 50 mm height). Previously recorded: Antarctic continent, South Shetland and South Orkney Islands (Kott 1954; Millar 1960; Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005). From 18 to 400 m depth.

Remarks

The description of our specimens agrees with that of Monniot and Monniot (1983), except for the specimens from Station B3, both small (up to 20 mm) and very damaged. Although the external characteristics coincide, one of the specimens has eight branchial folds on the left side (on the right it has the six branchial folds characteristic of the species), the fourth being not well developed. The other one is internally smashed and no structure can be recognized.

Family MOLGULIDAE

Molgula hodgsoni Herdman, 1910

Molgula hodgsoni Herdman, 1910; Monniot and Monniot 1983, 1994; Ramos-Esplá et al. 2005.

Molgula concomitans Herdman, 1910; Herdman 1923.

Molgula angulata Arnback, 1938; Monniot C 1978.

Molgula sabulosa (non Quoy and Gaimard, 1834) Kott 1954; Vinogradova 1962.

Molgula setigera (non Arnback, 1938) Kott, 1954.

Molgula pedunculata (non Herdman, 1881) Millar, 1960; Kott 1969, 1971.

Distribution

New record: Bransfield Strait (Station B5: six specimens; Station B6: four specimens; Station B7: four specimens; from 14 to 28 mm height). Previously recorded: Antarctic continent, South Shetland, South Orkney, and South Georgia Islands (Kott 1971; Monniot and Monniot 1983, 1994; Ramos-Esplá et al. 2005). From 46 to 650 m depth.

Remarks

Identification of several Antarctic *Molgula* species, especially small-sized species and frequently covered with sand, is difficult without a meticulous examination.

The two species found in the present collection, *Molgula hodgsoni* and *M. pedunculata*, can be differentiated by several characteristics summarized in Table III. Some untailed embryos were observed incubating in the atrial cavity.

***Molgula pedunculata* Herdman, 1881**

Molgula pedunculata Herdman, 1881; Herdman 1882; Van Name 1945; Monniot C 1978; Monniot and Andrade 1983; Monniot and Monniot 1983, 1994; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005; Arntz et al. 2006).

Ascopera gigantea Herman, 1881; Herdman 1882, 1891; Hartmeyer 1911; Arnback-Christie-Linde 1938; Van Name 1945; Millar 1960, 1968; Vinogradova 1962.

Ascopera pedunculata: Herdman 1881, 1882, 1891; Hartmeyer 1909; Arnback-Christie-Linde 1938.

Ascopera bouvetensis Michaelsen, 1904; Hartmeyer 1911.

Molgula maxima Sluiter, 1905; Sluiter 1906.

Molgula bacca Herdman, 1910; Herdman 1911; Arnback-Christie-Linde 1938; Van Name 1945; Millar 1960, 1968.

Molgula longicaulis Herdman, 1910.

Caesira maxima: Hartmeyer 1911.

Caesira bacca: Hartmeyer 1911.

Caesira pedunculata: Sluiter 1914.

Ascopera mawsoni Herdman, 1923.

Molgula gigantea sens Ascopera gigantea (non Herdman, 1881) Kott, 1969, 1971; Monniot and Monniot 1974.

Distribution

New record: Bransfield Strait (Station B5: five specimens; Station B7: three specimens; up to 70 mm height plus a stalk of 83 mm). Previously recorded: Antarctic continent (except Queen Maud Land coasts); South Shetland Islands (Kott 1969; Monniot and Monniot 1983; Tatián et al. 1998a, 1998b; Ramos-Esplá et al. 2005); Bouvet Island (Arntz et al. 2006); Kerguelen Island (Monniot C 1978); Magellan Strait (Monniot and Monniot 1983); Coquimbo (Monniot and Andrade 1983). From 15 to 870 m depth.

Remarks

Untailed embryos were present in the atrial cavity.

Table III. Differences between *Molgula hodgsoni* and *Molgula pedunculata*.

| | <i>Molgula hodgsoni</i> | <i>Molgula pedunculata</i> |
|------------|---|--|
| Size | Up to 3.5 cm | Up to 12 cm plus a stalk up to 20 cm |
| Test | Covered with filaments, specially on the siphon region | Slightly granulated, stalk included |
| Stalk | No | Always present |
| Siphons | Prominent; both in the dorsal region and directed upwards | Slightly prominent; the cloacal one or both often directed to the substratum |
| Left gonad | In the secondary gut loop | From the primary gut loop; elongated ovaries |

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