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Heterobranch Sea Slugs s.l. (Mollusca, Gastropoda) from the Southern Ocean: Biodiversity and Taxonomy

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Abstract: The Southern Ocean, located between Antarctica and the southern tips of South America, Africa and Australia, encompasses an immense area across the southern Atlantic, Pacific and Indian oceans with no clearly defined limits. For the purposes of studying marine heterobranch sea slugs, we consider the Southern Ocean to include all ocean areas located south of latitude 41° S. South of this latitude, we consider different areas and zones: the area of South America (the Patagonia/Magellanic area), the island of Tasmania, the southern island of New Zealand, the Subantarctic area (the Falkland Islands, South Georgia Island, the South Orkney Islands, South Sandwich Island, Bouvet Island, the islands of Crozet and Prince Edward, the Kerguelen Islands, and Macquarie Island) and the area of Antarctica, in which we consider four zones (Weddell Sea, West Antarctica, Ross Sea and East Antarctica). Reviewing all available references and unpublished data from the authors, in total, 394 species of heterobranch sea slugs have been recorded to date in the Southern Ocean > 41° S, with Nudibranchia standing out with 209 species and Cephalaspidea with 90 species. The marine heterobranchs of Tasmania (154 species) and southern New Zealand (120 species) have been well studied. Sea slug fauna of the Antarctic and Subantarctic regions have been the subject of several partial studies; however, there are still many gaps in knowledge across both areas. Eighty-nine different species of sea slug have been recorded so far in strictly Antarctic waters (West Antarctica, 45 species; Weddell Sea, 48 species; Ross Sea, 51 species; East Antarctica, 42 species), while in the various Subantarctic regions, there are 93 species (36 species from South Georgia, 17 species from the South Orkneys, 12 species from south Sandwich, 6 species from Bouvet, 10 species from Prince Edward and Crozet Islands, 15 species from Kerguelen, 3 species from Macquarie Island, 29 species from the Falkland Islands and 71 species from the coast of South America). In the taxonomic section, for each of the species, the location and the authors of the records are indicated, and for many of the species, interesting biological, taxonomic or biogeographic observations are also provided. The importance of sampling in underexplored areas is discussed, as well as greater-depth sampling for a better understanding of the sea slugs of the Southern Ocean.

Keywords: biodiversity; taxonomy; heterobranch sea slugs; Southern Ocean

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1. Introduction

The Southern Ocean is a vast marine area with no strictly defined boundaries, located south of Africa, South America and Australia. It supports some of the most productive and

unique marine ecosystems on the globe (Tynan, 1998) [1]. It is not universally accepted as a separate ocean, but in many studies the southernmost Atlantic, Pacific and Indian oceans are delimited using this name. Lawver et al. (2014) [2] carried out an interesting study on the reconstruction of the Southern Ocean from the late Cretaceous to the present day, based on magnetic anomalies and geological evidence from the seabed, and the physical and biological characteristics of the Southern Ocean are summarized in the work of Knox (2006) [3]. Briggs and Bowden (2012) [4] proposed a set of marine biogeographic regions and provinces, which was later accepted and expanded by Toonen et al. (2016) [5]. For the study of the biogeographic affinities of Heterobranchia sea slugs, we generally take into account in this work the biogeographic classification of Toonen et al. (2016) [5] and consider the limit of the Southern Ocean south of the Southern Subtropical Front (SSF), which tends to delimit the warmer and more saline marine waters located to the north from the colder and less saline waters located to the south.

Except for the Antarctic continent and the continental shelf of the southern tip of South America, most of the Southern Ocean is made up of bathyal and abyssal beds that have undergone little exploration. Consequently, there is a paucity of knowledge regarding the biodiversity of these vast areas. Brandt et al. (2007) [6] summarized much of the research activities carried out across deep-water ocean areas, including the biodiversity of the deep Southern Ocean. The results indicated that, depending on the taxonomic group, up to 90% of species observed in abyssal sediments were new to science. However, multiple oceanographic explorations have made it possible to partially understand the biodiversity that the Southern Ocean supports. Recent sections contained in De Broyer et al. (eds.) (2014) [7] distil much of the contemporary knowledge of the Southern Ocean's biodiversity, while Griffiths et al. (2008) make an approach to the general biogeography of benthos [8]. Among the main taxonomic groups recorded, there are, for example, macroalgae (124 Antarctic species; Wiencke et al., 2014) [9], poriferans (400 species; Janussen & Downy, 2014) [10], benthic hydroids (179 Antarctic species; Peña, 2014) [11], hexacorals (187 species; Rodríguez & Fautin, 2014) [12], polychaetes (588 Antarctic species; Schüller & Ebbe, 2014) [13], bryozoans (412 species south of the Polar Front; Barnes & Downey, 2014) [14], free-living nematodes (524 Antarctic species; Ingels et al., 2014) [15], pycnogonids (332 species; Soler-Membrives et al., 2014) [16], isopods (740 species; Kaiser, 2014) [17], decapod crustaceans (45 species; Griffiths et al., 2014; Basher & Costello, 2014) [18,19] and echinoderms (345 species, except holothurians and brittle-stars; Danis et al., 2014; Eleaume et al., 2014; Saucede et al., 2014) [20–22]. In another work, De Broyer and Jazdzewska (2014) [23] reported 853 species of amphipod crustaceans across the Southern Ocean (417 species recorded north of the Polar Front and 564 species to the south). Many of these taxa were sampled from deep water during the ANDEEP (ANtarctic Benthic DEEP-sea Biodiversity) expedition.

Although modern global climate change affects most of the planet, the Antarctic region is subject to some of the most extreme changes, particularly the effects of warming and losses of ice sheet cover (Turner et al., 2009) [24]. Antarctic marine species are highly sensitive to environmental change. As stenothermal life forms have adapted to temperatures around −1.8 to 2.0 °C, they may not survive elevated temperatures (Peck et al., 2004) [25]. This generates a serious threat to the biodiversity of this region, and thus it needs to be further documented before it is lost, especially in vulnerable taxa such as sea slugs.

The study of Southern Ocean mollusks has been the focus of many studies since the 19th century, including several works that assessed geographic biodiversity. For example, treatises have been generated by Carcelles (1953) [26], Dell (1990) [27] and Engl (2012) [28] on Antarctic mollusks; Martens and Pfeffer (1886) [29] on those from South Georgia; Thiele (1912) [30] on taxa collected from the German South Polar Expedition; Melville and Standen (1912) [31] on those from the Scottish National Antarctic Expedition;

Powell (1951 and 1960) [32,33] on Antarctic and Subantarctic mollusks; Powell (1957) [34] on the Kerguelen and Macquarie Islands; Powell (1958) [35] on Victoria-Ross in Antarctica; Rochebrune and Mabille (1889) [36] on those from Cape Horn, Chile; Strebel (1905) [37] and Forcelli (2000) [38] on the Magellan province of Chile; Aldea and Troncoso (2010) [39] on mollusks from the Bellingshausen Sea; Spencer et al. (2009, 2016) [40,41] on the mollusks of New Zealand; and Grove (2015) [42] on those from Tasmania, Australia. Linse et al. (2006) [43] studied the diversity and biogeography of shelled marine gastropods and bivalves at depths between 0 and 100 m and divided the Southern Ocean into 27 bioregions across the Antarctic, the Subantarctic, the southern tip of South America and the South Island of New Zealand. They reported a total of 895 species of shelled gastropods and 379 bivalve taxa. Jörger et al. (2014) [44] analyzed the diversity and abundance of abyssal mollusks found between 2732 and 4327 m in the Antarctic Polar Front (previously known as the Antarctic Convergence area). In that study, 58 separate taxa, of which 33 were identified as species, were reported. Moreau et al. (2013) [45] reported on the Mollusca of the Amundsen Sea with 97 morphospecies; Schiaparelli et al. (2006, 2014) [46] reported on 142 mollusk species from the Ross Sea and Zelaya (2005) [47], with 121 gastropod species from South Georgia. The recent development of the Southern Ocean Mollusc Database (SOMBASE) provides a useful taxonomic resource (Griffiths et al., 2003) [48]. This database provides information on the nomenclature, synonyms, morphology and ecology of species, including distributions. An extensive bibliography is also provided. At its launch, SOMBASE included information on 950 species of shelled gastropods and 136 species of bivalves.

Sea slugs (Gastropoda: Heterobranchia) are spectacular mollusks in their shapes, colors, lifestyles, and defense and reproduction methods that have attracted numerous researchers and divers from around the world (Wägele & Klussmann-Kolb, 2005) [49]. For the sea slugs, the first Southern Ocean records are found sporadically across the various reports produced from expeditions undertaken in the late 19th and early 20th centuries, including but not limited to Bergh (1884) [50] on the "Challenger"; Pelseneer (1887) [51], with the Gymnosomata from "Challenger"; Eliot in 1905 and 1909, from the "Scottish National Antarctic Expedition"; Vayssière (1906b) [52], with reports of the nudibranchs from "Charcot's Antarctic Expedition"; Odhner (1926) [53], from the "Swedish Antarctic Expedition", and in 1934 from the "British Antarctic Terra Nova Expedition"; and Marcus (1959) [54] with the "Lundy University Chile Expedition". More contemporary studies include Burn (1973) [55], with taxa from Macquarie and Heard Islands; Vicente and Arnaud (1974) [56], with sea slugs from Terra Adelia, Antarctica; Cattaneo-Vietti (1991) [57], with nudibranchs from the Ross Sea; Castellanos et al. (1993) [58], with sea slugs from the Argentine Magellanic region; Dadon and Chauvin (1998) [59], with the Gymnosomata from the Southwest Atlantic; Cárdenas et al. (2008) [60], reporting from northern Chilean Patagonia; Hunt et al. (2008) [61], with Pteropods of the Southern Ocean; Minichev (1972) [62], with sea slugs from the Davis Sea; Schrödl (2003) [63] on sea slugs of southern South America; and lastly Troncoso et al. (1997) [64], with sea slugs of the Scotia Sea. Pelagic sea slugs have also been subjects of studies by Dadon and Chauvin (1998) [59], Gilmer and Lalli (1990) [65], and Hunt et al. (2008) [61]. Additionally, there are several other studies that focus on the biology, taxonomy or distribution of particular species. In the present work, these studies are referenced in the taxonomic part.

The heterobranch sea slugs are a large and diverse group of specialized gastropods that are globally ubiquitous to most benthic marine environments (Wägele & Klussmann-Kolb, 2005) [49]. Some taxa are even limited to the pelagic realm. They are important members of many benthic communities due to their high species diversity (more than 6000 known species), abundance and direct influence on community structure as selective

predators of sessile filtering organisms (Clark, 1975; Todd, 1981) [66,67]. Morphologically, they are highly diverse. They are principally soft-bodied with a highly reduced shell, and in most taxa the shell is completely absent (at least in the adult stage). In order to compensate for shell loss, they have evolved alternative defense mechanisms which can include camouflage (homochromy and crypsis) and the secretion of acid materials or toxic/distasteful metabolites extracted from their food or formed by de novo biosynthesis (Johnson & Willows, 1999; Wägele et al., 2006; Cimino & Ghiselin, 2009) [68–70]. Some groups can acquire the cnidocysts from cnidarian prey organisms, which they are able to use for self-defense (Edmunds, 1966) [71]. Through a similar process, other groups can acquire functional chloroplasts from their algae food and use them to form, through photosynthesis, carbohydrates for their own nourishment (de Vries et al., 2014) [72]. Diets in sea slugs can be very specific, although across the "sea slugs" as a whole there are carnivores, detritivores and herbivores. As slow-moving, less motile life forms, sea slugs prey on mostly sessile or slowly moving food sources. All sea slugs are hermaphroditic and have complex reproductive strategies, typically involving mutual sperm transfer and storage until the eggs are ready for fertilization and release. They are also the only metazoan life form whose sperm and eggs are produced within the same follicles. Egg masses are laid in ribbons, sometimes arranged in spirals or bubble-shaped structures, held together by various mucus layers (Todd, 1981) [67]. Furthermore, some species are important model organisms in various disciplines of science, ranging from neurobiology to ecotoxicology and even pharmaceutical research (Wahidullah et al., 2006 [73]; Nimbs et al., 2017 [74,75]; Zhuo et al., 2022 [76]), In this work, we consider heterobranch sea slugs to include those taxa that once comprised the now obsolete and not monophyletic group "Opisthobranchia", but also to include the taxa Acteonoidea, Pteropoda and Ringiculoidea.

The sea slugs of the Southern Ocean, although well-known from some areas (i.e., the southern tip of South America, Tasmania, Australia, the South Island of New Zealand and parts of Antarctica), have not previously been studied at a whole-ocean scale. Consequently, the main objective of the present study was to generate a comprehensive list of sea slug taxa found across the entirety of the Southern Ocean and to quantitatively compare assemblages found within and among regions. Additionally, a taxonomic part has been developed to provide information on species records, including distributions and matters of note.

2. Materials and Methods

2.1. Data Collection

The data used in this study were distilled mainly from the published literature. Analyzing more than two hundred publications, we retrieved a substantial set of reports and studies with reference to opisthobranch species reported across the study area (the Southern Ocean). In addition to those mentioned above, many other publications were analyzed and are cited in the taxonomic part for each species. The databases of the ECOQUIM I expedition (2003–2004) carried out in the Weddell Sea aboard the RV Polarstern and ECOQUIM II (2006) carried out aboard the BIO Hespérides in the South Shetland area have also been analyzed (MB participated in both campaigns), also the Australian Antarctic Database [77]. Unpublished data are also provided on species collected by the first author in some of his campaigns in Antarctica. A presence/absence table was created using all species records which were collated into areas and zones.

2.2. Geographic Areas and Zones

In the biodiversity and taxonomy section, the following areas were taken into account to clarify the data on the presence of species in the different places of the Southern Ocean (Figure 1):

1. Patagonia/Magellan area, which includes the coasts of Chile and Argentina, south 41° S.
2. Subantarctic area, which includes the following zones: Falkland (Malvinas) Is., South Georgia Is., South Orkney Is., South Sandwich Is., Bouvet Is., Prince Edward and Crozet Is., Kerguelen Is., and Macquarie Is.
3. Tasmania Island area.
4. South Island, New Zealand area.
5. Antarctic area, considering the following four zones: the Weddell Sea, including the sea of the same name, the eastern part of the Antarctic Peninsula, the Lazarev Sea and the Riiser-Larsen Sea; West Antarctica, including the western part of the Antarctic Peninsula, the South Shetland Islands, the Bellingshausen Sea, Peter I Island and the Amundsen Sea; the Ross Sea, including the Ross Sea, the Somov Sea, Adélie Land and the D'Urville Sea; and East Antarctica, including Enderby Land, the Cosmonaut Sea, the Cooperation Sea, the Davis Sea and the Mawson Sea.

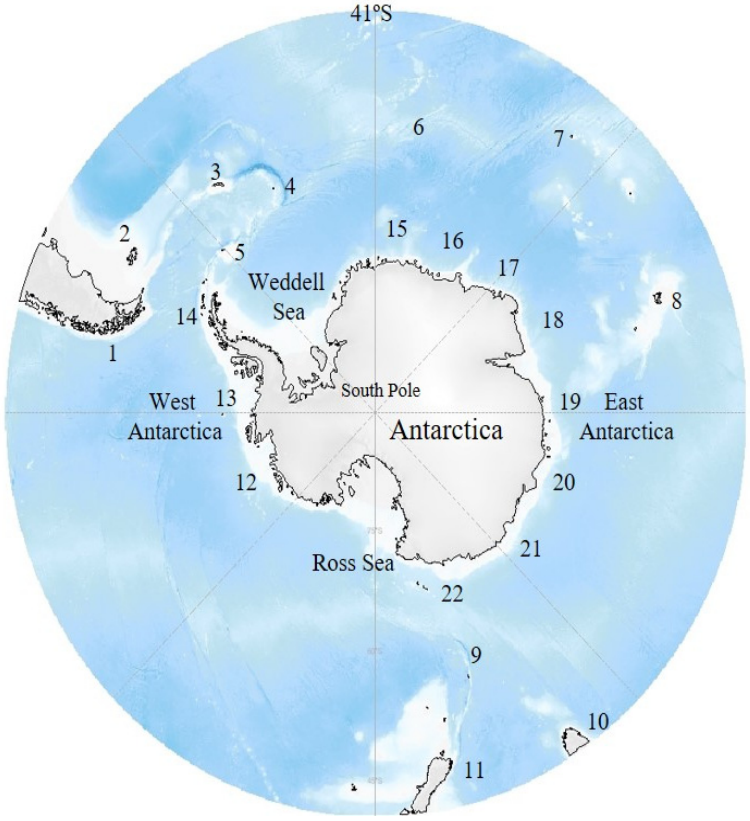


Figure 1. Biogeographic Southern Ocean zones considered in the present study: 1: Patagonia/Magellan; 2: Falkland (Malvinas) Is.; 3: South Georgia Is.; 4: South Orkney Is.; 5: South Sandwich Is.; 6: Bouvet Is.; 7: Kerguelen Is.; 8: Prince Edward/Crozet Is.; 9: Macquarie Is.; 10 Tasmania; 11: South Island, New Zealand. Names of other marine areas in Antarctica: 12: Amundsen Sea; 13: Bellingshausen Sa; 14: South Shetland Is.; 15: Lazarev Sea; 16: Riiser-Larsen Sea; 17: Cosmonaut Sea; 18: Cooperation Sea; 19: Davis Sea; 20: Mawson Sea; 21: D'Urville Sea; 22: Somov Sea.

3. Results

3.1. General Biodiversity Results

A total of 394 species of heterobranch sea slugs have been reported across the Southern Ocean. Species richness across the regions ranged from 154 in Tasmania to only 3 taxa at Macquarie Island (Figure 2). As found across much of the globe, where species richness tends to be higher in lower latitudes, here, locations north of ~45° S were found to exhibit the highest species diversity.

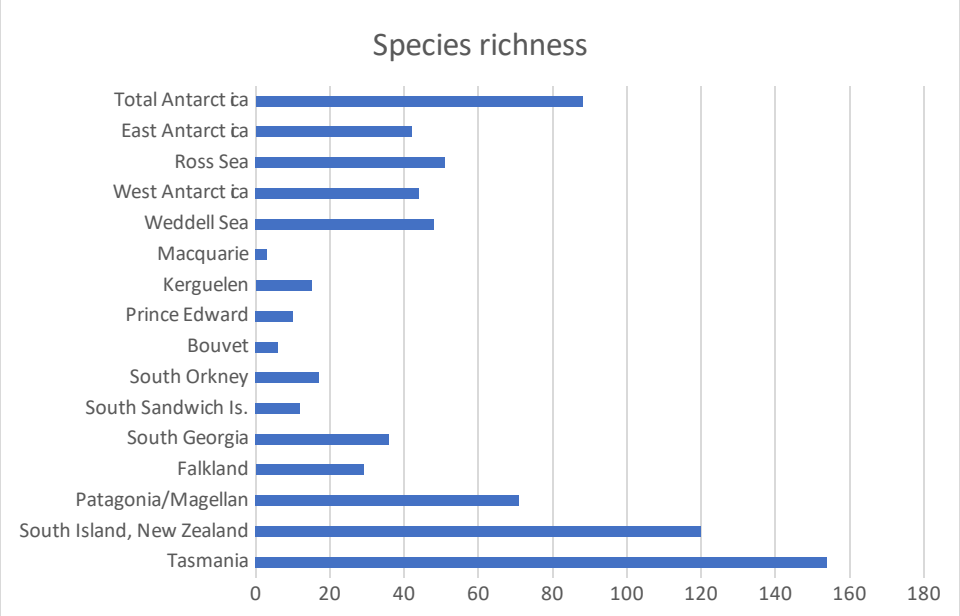


Figure 2. Numbers of species recorded in each of the areas and zones of the Southern Ocean.

Grouping the taxa in taxonomic order revealed that the Nudibranchia is the most diverse, with 209 species, followed by 90 in Cephalaspidea and 40 in Pteropoda. Other orders are represented by 17 or fewer species (Table 1). Tasmania and the South Island of New Zealand exhibit the highest numbers of species, with 154 and 120 species, respectively, followed by Antarctica with 89 species and the Patagonia/Magellan region with 71 species. The different Subantarctic zones record a lower number of species (Table 1 and Figure 2). It should be noted that sampling efforts are very uneven in the different areas studied, and this has a powerful impact on the knowledge of their biodiversity.

Table 1. Numbers of species grouped by taxonomic order from each zone.

Zone	Acteonimorpha	Ringiculimorpha	Nudibranchia	Pleurobranchida	Umbraculida	Pteropoda	Cephalaspidea	Runcinacea	Aplysiida	Sacoglossa	Total Species
Patagonia/Magellan	4	0	39	3	0	8	13	0	0	4	71
Falkland (Malvinas) Is.	1	0	15	1	0	3	9	0	0	0	29
South Georgia Is.	3	0	15	1	0	7	10	0	0	0	36
South Sandwich Is.	1	0	2	1	0	5	3	0	0	0	12
South Orkney Is.	1	0	9	3	0	1	3	0	0	0	17
Bouvet Is.	0	0	3	0	0	2	1	0	0	0	6
Prince Edward/Crozet Is.	0	0	2	0	0	6	2	0	0	0	10
Kerguelen Is.	2	0	5	0	0	0	8	0	0	0	15
Macquarie Is.	0	0	3	0	0	0	0	0	0	0	3
Tasmania	3	0	93	4	2	2	32	1	5	12	154
South Island, New Zealand	4	1	47	4	0	32	23	1	5	3	120
Weddell Sea	1	0	19	4	0	8	16	0	0	0	48
West Antarctica	3	0	19	1	0	13	9	0	0	0	45
Ross Sea	2	0	26	1	0	6	16	0	0	0	51
East Antarctica	2	0	22	1	0	8	9	0	0	0	42
Total Antarctica	4	0	40	4	0	14	27	0	0	0	89
Total by groups	14	1	209	13	2	40	90	2	6	17	394

3.2. The Sea Slugs of the Patagonia/Magellan Zone

A total of 71 species were recorded from the Patagonian/Magallanic zone (south of 41° S), of which more than half (n = 39) were nudibranchs, 13 were cephalaspideans, 8 were pteropods, 4 were acteonimorphs, 4 were sacoglossans and 3 were pleurobranchids. There were no records of species in the orders Ringiculimorpha, Umbraculida, Runcinacea and Aplysiida. The first opisthobranch records from this region were from the end of the 19th century. The earliest were from Bergh, 1884, and Pelseneer, 1887, with both works resulting from the "*Challenger*" Expedition, and later Rochebune and Mabille, 1889, published the mollusks from Cape Horn. At the beginning of the 20th century, Strebel (1905) [37] produced a monograph on the mollusks of the Magellanic region. More recently, "sea slugs" appear in general works on Magellanic mollusks by Carcelles and Williamson, 1951 [78]; Carcelles, 1953 [26]; Castellanos et al., 1987a, 1987b [79,80]; Cárdenas et al., 2008 [60]; Linse, 1999 [81] and Forcelli, 2000 [38]. The first work that focused on sea slugs was that of Castellanos et al. (1993) [58] with a descriptive catalogue of Magellanic species. This was followed by studies dealing with individual taxa (Muniain & Ortea, 1999 [82]; Valdés & Muniain, 2002 [83]; Price et al., 2011 [84]; Rosenfeld & Aldea, 2011 [85]; Zelaya et al., 2011 [86]; Valdés & McLean, 2015 [87]; Salvador & Cunha, 2020 [88]). The most complete study of Magellanic sea slugs was published by Schrödl, across several works (1999a, 1999b, 2000a, 2003) [63,89,90] which span both the Pacific and Atlantic Magellanic coasts; his inventory from 2003 includes a total of 65 species of Nudipleura (Nudibranchia and Pleurobranchida), 34 of them from south of 41° S (Chilean Patagonia, Strait of Magellan and the Argentine Magellan area). Schrödl also reviewed previous works, synonymizing 28 taxa, and determined 5 to be nomina dubia. Schrödl et al. (2005) [91] and Schrödl and Grau (2006) [92] also provided data on species from remote areas of the southern Chilean coast (Comau Fjord, Ipún Is. and the Chonos Archipelago). Images of most species in the Magellanic zone can be seen in Schrödl (2003) [63].

3.3. The Sea Slugs of the Subantarctic Zones

Knowledge of species across Subantarctic areas is very patchy. Some areas are highly remote and thus difficult to access, and, as a result, their diversity is very poorly known. Comparatively well-researched areas include the Falkland Islands (Malvinas) and the islands that comprise the Scotia Arc. A total of 29 species have been recorded from the Falklands, mainly Nudibranchia (15 species) and Cephalaspidea (9 species) (Bergh, 1884 [50]; Eliot, 1907b [93]; Powell, 1951 [32]; Dadon & Chauvin, 1998 [59]), with 4 species using *falklandica* as a specific epithet.

The South Georgia group forms part of the Scotia Arc that is closest to the southern tip of South America and the Falklands, and various expeditions have studied their sea slug biodiversity, with 36 taxa recorded, mainly Nudibranchia (n = 15) and Cephalaspidea (n = 10) (Martens & Pfeffer, 1886 [29]; Strebel, 1908 [94]; Powell, 1951 [32]; Seager, 1978 [95]; García et al. 1993 [96]; Troncoso et al., 1997 [64]; Schrödl, 2000a [97]; Zelaya, 2005 [47]; Schächinger et al., 2022 [98]).

In the South Orkney Islands, 17 species have been recorded, with Nudibranchia comprising 9 of those species (Bergh, 1884 [50]; Eliot, 1905 [99]; Powell, 1951, 1960 [32,33]; Wägele et al., 1995 [100]; Troncoso et al., 1997 [64]; Schächinger et al., 2022 [98]).

In the South Sandwich Islands, 12 species have been recorded, of which 5 are Pteropoda (Willan & Bertsch, 1987 [101]; Powell, 1951 [32]; Dell, 1990 [27]; Linse, 1999 [81]; Schrödl et al., 2016 [102]; Schächinger et al., 2022 [98]; Peralta-Serrano et al. 2025 [103]).

In the Kerguelen Islands, there are records by Watson (1883) [104], Bergh (1884) [50], Thiele (1912) [30], Powell (1951) [32], Vicente (1973) [105], Wägele (1989) [106], Schrödl

(2000a) [97] and Troncoso et al. (2001) [107], with a total of 15 species known: Cephalaspidea (n = 8), Nudibranchia (n = 5) and 2 Acteonimorpha.

On the remote island of Bouvet, halfway between the Cape of Good Hope, South Africa, and the Antarctic Sea ice limit, low survey efforts have resulted in few records. Here, six species are known, three of them Nudibranchia, with one species, *Myrella dantarti* (Ballesteros & Avila, 2006), considered endemic to the island (Ballesteros & Avila, 2006 [108]; Linse, 2006 [109]; Moles et al., 2016a, b [110,111]).

Only ten species have been recorded for Prince Edward and Crozet Islands; six of them are Pteropoda (Branch et al., 1991 [112]; Hunt et al., 2008 [61]).

The only studies from Macquarie Is. were published by Powell (1955 [113]) and Merilees and Burn (1969) [114], with only three species of Nudibranchia reported.

3.4. The Sea Slugs of Tasmania

Of all the Southern Ocean regions, the Tasmanian sea slug fauna is the most diverse, with 154 listed species, of which 93 are nudibranchs and 3 are cephalaspideans. Proximity to the Australian mainland and the transport of warmer waters via several south-flowing boundary currents over millennia has generated a regionally rich and highly endemic fauna (Phillips, 2001 [115]; Butler et al., 2010 [116]). Tasmania's documented diversity is indicative of the relatively high level of effort given to studying the region's sea slug fauna, which reflects the relatively high accessibility of the region and the larger population.

Records and descriptions of Tasmanian mollusca were scattered amongst the early literature but united into a singular inventory or "census" by Tenison Woods in 1877 [117]. This was later expanded by Tate and May in 1901 [118], again by May (1921) [119], by Kershaw in 1955 [120], by Grove et al. in 2006 [121], and, lastly, by Grove in 2018 [122]. Shelled mollusks were reviewed by Richmond (1992) [123]. Tasmanian species diversity, distributions and general biology were considered as part of the entire Australian fauna by Beesley et al. (1998) [124].

In the early 20th century, Bergh (1904, 1905) [125,126] described several species of sea slugs using material collected from northern Tasmania: the nomen dubium *Aeolidiella faustina* Bergh, 1900, which was considered by Burn (2006) [127] to be synonymous with *Baeolidia macleayi* (Angas, 1864)); *Alloiodoris marmorata* (Bergh, 1904); *Discodoris dubia* Bergh, 1904, and *D. egena* Bergh, 1904 (both last names now synonymous with *Paradoris dubia* (Bergh, 1904) by Dayrat (2010) [128] and MolluscaBase (2025a) [129]); *Chromodoris tasmaniensis* Bergh, 1905 (now *Goniobranchus tasmaniensis* (Bergh, 1905) according to Johnson & Gosliner, 2012 [130]); *Aphelodoris luctuosa* Bergh, 1905 (now considered by MolluscaBase (2025b) [131] to be a junior homonym of *A. berghi* Odhner, 1934); and *Acanthodoris metulifera* Bergh, 1905. Rudman described several species in the 1980s, [132–135] including *Cadlina tasmanica* Rudman, 1990; *Chromodoris ambigua* Rudman, 1987; *Chromodoris multimaculosa* Rudman, 1987 (now *Goniobranchus multimaculosus* (Rudman, 1987) according to Johnson & Gosliner, 2012) [130]; *Noumea aureopunctata* Rudman, 1987 (now *Verconia aureopunctata* (Rudman, 1987) according to MolluscaBase (2025f) [136]; and *Noumea closeorum* Rudman, 1986 (now *Verconia closeorum* (Rudman, 1986) according to MolluscaBase (2025g) [137]. The sea slugs of the north coast and Bass Strait Islands were consolidated into a regional checklist, along with those from Victoria, Australia, by Burn in 2006 [127], which lists some 91 Tasmanian species, of which 14 have their type locality in Tasmania.

Southeastern Australia is a global-warming hot spot (Bowen et al., 2005 [138]; Ridgway & Hill, 2009 [139]; Suthers et al., 2011 [140]; Cresswell et al., 2016 [141]), with the south-flowing Eastern Australian Current pushing warm water further into the Bass Strait and onto the northern and eastern coasts of Tasmania, which have become the leading edges of range-shifting taxa (Pitt et al., 2010 [142]; Ramos et al., 2015 [143]). Many sea

slug species have been gradually shifting their ranges poleward in response to latitudinal shifts in sea surface temperature isotherms, particularly on the east coast of the Australian mainland (Nimbs et al., 2015, 2016 [144,145]; Nimbs & Smith, 2016; 2017a, 2017b, 2018 [74,146–148]; Smith & Nimbs, 2022 [149]). As a result, it is only a matter of time before warm-temperate taxa begin to appear in Tasmanian waters. This means that sea slug diversity in Tasmania is likely to increase at a greater rate than elsewhere in the Southern Ocean. Images of heterobranch sea slugs from Tasmania can be seen on the website https://molluscsoftasmania.org.au/ (accessed on 12 November 2024) which are also published in Grove, 2011 [150].

3.5. The Sea Slugs of the Southern Island of New Zealand

The rich marine mollusk fauna of New Zealand has been documented in several publications, with a comprehensive manual authored as early as 1913 by Suter [151], later superseded by the final expansive work of Powell (1979) [152]. With a view to providing workers with an updated taxonomic reference, a modern, comprehensive checklist of New Zealand marine mollusca was compiled by Spencer and Willan (1996) [153], listing a total of 5486 species for the entire country.

Early New Zealand sea slug descriptions were published in the 19th century by taxonomists including but not limited to Cheeseman (1881) [154], Rang (1828) [155], Abraham (1876) [156] and Hutton (1880) [157], and in the 20th century by Eliot (1903, 1907b) [93,158], Suter (1909) [159], Powell (1955) [113], Challis (1969) [160], Miller (1977) [161] and Rudman (1980) [132]. The first separate treatment of the sea slugs was subsequently given by Willan and Morton (1984) [162], listing some 30 species from the South Island and other southern islands.

There are 120 species of sea slugs in southern New Zealand waters, with all major groups represented. The most diverse group are the Nudibranchia (n = 47), followed by the Cephalaspidea (n = 23), Thecosomata and Gymnosomata (n = 20 and 12, respectively), 5 species of Aplysiida, 4 acteonimorphs, 4 sacoglossans, 1 runcinid and 1 ringiculid. It is in New Zealand that the pelagic "pteropods" have been most well documented, with approximately 30 species recorded, 20 of which were listed by Powell (1979). Images of New Zealand sea slugs can be seen in Willan and Davey (2020) [163].

3.6. The Antarctic Sea Slugs

A total of 89 species have been recorded from Antarctica, including the Pteropoda. Regionally, the most well-known area is the Ross Sea, with 51 species reported, whereas the other three Antarctic regions support just over 30 species each. The most diverse orders are the Nudibranchia with 40 species and the Cephalaspidea with 27. There are no records of species from the Ringiculimorpha, Umbraculida, Runcinacea, Aplysiida and Sacoglossa.

The earliest records of Antarctic sea slugs were published using data from research expeditions conducted at the end of the 19th century and the beginning of the 20th century. Specimens were collected and preserved by early workers, with descriptions generated by Vayssière (1906a and 1906b, 1917) [52,164,165], Eliot (1907a, 1909) [166,167], Thiele (1912) [30], Hedley (1916) [168] and Odhner (1934) [169]. There are numerous recent works that record or describe new species from the Ross Sea (Powell, 1958 [35] Vicente & Arnaud, 1974 [56]; Wägele, 1989 [106]; Cattaneo-Vietti, 1991 [57]; Brueggeman et al., 1999 [170]; Valdés et al., 2011, 2012 [171,172]; among others); the Weddell Sea (Hain, 1990 [173]; Wägele, 1990a and 1990b [174,175]); the Antarctic Peninsula (Troncoso et al., 1996 [176]; Troncoso et al., 1999 [177]; Millen & Martynov, 2005 [178]); the Bellingshausen Sea (Aldea & Troncoso, 2010 [179,180]); the Amundsen Sea (Moreau et al., 2013 [45]); and the Davis Sea (Minichev, 1972 [62]; Martynov, 2006 [181]). Other recent publications that

deal with gastropods more broadly also include references to some of the sea slugs from Antarctica (Dell, 1990 [27]; Engl, 2012 [28]). Figures 3–11 provide photographs of live specimens of some of the most important species of Antarctic sea slugs. Images of Antarctic sea slugs can be seen in Brueggeman et al. (1999 [170], Engl (2012) [28] and Rauschert and Arntz (2015) [182].

3.7. The Pteropoda of the Southern Ocean

All species in this group are pelagic. As a result, many species have a broad geographical distribution since they are entrained in ocean currents and are unable to alter their movements on a large scale. Several authors have recorded up to 40 species of Pteropoda, including Pelseneer, 1887 [51]; Smith, 1902 [183]; Hedley, 1916 [168]; Powell, 1951, 1960 [32,33]; Minichev, 1972 [62]; Van der Spoel et al., 1992 [184]; Dadon and Chauvin, 1998 [59]; Brueggeman et al. al., 1999 [170]; Linse, 1999 [81]; Forcelli, 2000 [38]; Hunt et al., 2008 [157]; Würzberg et al., 2009 [185]; Moreau et al., 2013 [45]; and Schrödl et al., 2016 [102]. Of the Southern Ocean Pteropods, 26 species are Euthecosomata, 2 are Pseudothecosomata and 12 are Gymnosomata. The most well documented region is the southern islands of New Zealand, with 32 species recorded (Spencer et al., 2016 [41]). In Section 4, the importance of the Pteropoda to pelagic ecosystems in the Southern Ocean is briefly discussed.

3.8. Taxonomy and Records

This section provides taxonomic data on all Southern Ocean heterobranch sea slug species recorded south of the 41° S parallel. For the records of the species, the different zones considered in this work and indicated in previous sections were taken into account, and they are ordered as follows: Patagonia/Magellan, Falkland Is., the other Subantarctic areas, Tasmania Is., the South Island of New Zealand and, finally, the different Antarctic zones. Within each zone, the records are arranged chronologically. Interesting remarks are made about the biology, particular taxonomy or biogeography of many species. Unidentified species cited simply as sp. have not been included in this section. For the taxonomy and nomenclature of the species, the indications of the World Register of Marine Species (WoRMS) and of various recently published articles have been followed.

Phyllum Mollusca.
Class Gastropoda Cuvier, 1795.
Subclass Heterobranchia Burmeister, 1837.
Infraclass Mesoneura Brezinger, Schrödl & Kano, 2021.
Superfamily Tjaernoeioidea Warén, 1991.
Family Parvaplustridae Brenzinger, Schrödl & Kano, 2021.
Genus ***Parvaplustrum*** A. W. B. Powell, 1951.

***Parvaplustrum tenerum* A. W. B. Powell, 1951.**

Records: Falkland Is. (Powell, 1951; Forcelli, 2000).

Infraclass Euthyneura Spegel, 1881.
Subterclass Acteonimorpha.
Superfamily Acteonoidea d'Orbigny, 1843.
Family Acteonidae d'Orbigny, 1843.
Genus ***Acteon*** Montfort, 1810.

***Acteon antarcticus* Thiele, 1912.**

Records: South Sandwich Islands (Dell, 1990); South Georgia Is. (Powell, 1951; South Orkney Is. (Carcelles, 1953); Kerguelen Is. (R. B. Watson, 1883, as *Acteon (Acteonina) edentulus*; Powell, 1957; Dell, 1990); South Shetland Is. (Powell, 1951; Dell, 1990; Aldea & Troncoso, 2008; Troncoso & Aldea, 2008 [186]); Antarctica (Powell, 1958); Bellingshausen

Sea (Aldea et al., 2008 [179]; Aldea et al., 2009 [187]; Aldea & Troncoso, 2010); Peter I Is. (Aldea et al., 2009 [187]); Ross Sea (Dell, 1990; Ghiglione et al., 2013); Davis Sea (Thiele, 1912; Dell, 1990); Enderby Land, East Antarctica (Powell, 1958).
Remarks: Dell (1990) maintains that the presence of an operculum and *Acteon* type radula in a specimen collected from the Ross Sea confirms that this species belongs in *Acteon*, in contrast to Marcus' (1976, p25) [188] tentative suggestion that this taxon may belong in *Toledonia*.

***Acteon fasuloi* Crocetta, Romani, Simone & Rolán, 2017.**
Records: Patagonia (Castellanos et al., 1987a and b; Linse, 1999; Forcelli, 2000).
Remarks: This species was originally described as *Acteon elongatus* Castellanos, Rolán & Bartolotta, 1987, however, *A. elongatus* was already occupied by a fossil species, so it was renamed *A. fasuloi* (Romani et al., 2017) [189].

***Acteon retusus* Verco, 1907.**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Neactaeonina*** Thiele, 1912.

***Neactaeonina argentina* Zelaya, Schejter & Ituarte, 2011.**
Records: North Argentinian Patagonia (Zelaya et al., 2011).
Remarks: The southernmost limit distribution of this species is 43°14.18′ S, 59°37.27′ W at the Argentinian continental shelf, 100 m depth.

***Neactaenonina cingulata* (Strebel, 1908).**
Records: South Georgia Is. (Strebel, 1908; Zelaya, 2005); South Shetland Is. (Powell, 1951); Bransfield Strait (Engl, 2012).

***Neactaeonina edentula* (R. B. Watson, 1883).**
Records: South Georgia Is. (Powell, 1951); South Orkney Is. (Carcelles, 1953); Kerguelen Is. (R. B. Watson, 1883, as *Acteon (Acteonina) edentulus*; Powell, 1957; Dell, 1990); South Shetland Is. (Powell, 1951; Dell, 1990; Aldea & Troncoso, 2008; Troncoso & Aldea, 2008 [186]); Bellingshausen Sea (Aldea et al., 2008; Aldea et al., 2009; Aldea & Troncoso, 2010); Peter I Is. (Aldea et al., 2009); Ross Sea (Dell, 1990).
Remarks: Engl (2012) claims that Aldea & Troncoso's *N. edentula* record from Bellingshausen Sea is potentially another *Neactaeonina* species.

***Neactaeonina fragilis* Thiele, 1912.**
Records: Ross Sea (Powell, 1951); Adelie Land (Hedley, 1916); Davis Sea (Thiele, 1912); Enderby Land (Powell, 1958).

***Neactaeonina inexpectata* Dell, 1956.**
Records: South Island and Chatham Island, New Zealand (Spencer et al., 2016).

Genus ***Lanayrella*** Salvador & Cunha, 2020.

***Lanayrella vagabunda* (Mabille, 1885).**
Records: Cap Horn (Rochebrune & Mabille, 1889, as *Tornatella vagabunda*); Patagonia (Linse, 1999; Forcelli, 2000; both as *Acteon vagabundus*).
Remarks: The records of this species cited as belonging to the genera *Tornatella* or *Acteon* have recently been included within the new genus *Lanayrella* (Salvador & Cunha, 2020) included in the family Acteonidae.

***Lanayrella ringei* (Strebel, 1905).**
Records: Argentinean Tierra del Fuego (Strebel, 1905, as *Acteon ringei*).
Remarks: This species had been synonymized with *L. vagabunda* until the recent work by Salvador & Cunha (2020) considered it as valid.

Genus ***Puntacteon*** Kuroda & Habe, 1961.
***Puntacteon cratericulatus* (Hedley, 1906).**
Records: South Island, New Zealand (Spencer et al., 2016).

Genus ***Obrussena*** Iredale, 1930.
***Obrussena bracteata* (Iredale, 1925).**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Pupa*** Röding, 1798.
***Pupa affinis* (A. Adams, 1855).**
Records: South Island, New Zealand (Spencer et al., 2016).

Family Aplustridae Gray, 1847.
Genus ***Bullina*** A. Férussac, 1822.
***Bullina lineata* (J. E. Gray, 1825).**
Records: Tasmania, Australia (Grove, 2018).

Subterclass Ringipleura.
Superorder Ringiculimorpha.
Superfamily Ringiculoidea R. A. Philippi, 1853.
Family Ringiculidae R. A. Philippi, 1853.
Genus ***Microglyphis*** Dall, 1902.
***Microglyphis curtula* (Dall, 1890).**
Records: Magellan Strait (Dall, 1902, as *Actaeon (Mycroglyphis) curtulus*) [190]).

Genus ***Ringicula*** Deshayes, 1838.
***Ringicula delecta* Murdoch & Suter, 1906.**
Records: South Island, New Zealand (Powell, 1979).

Superorder Nudipleura Wägele & Willan, 2000.
Order Pleurobranchida.
Superfamily Pleurobranchoidea Gray, 1827.
Family Pleurobranchidae Gray, 1827.
Genus ***Bathyberthella*** Willan, 1983.
***Bathyberthella antarctica* Willan & Bertsch, 1987 (Figure 3A).**
Records: South Georgia Is. (Wägele & Willan, 1994 [191]; Zelaya, 2005); Shag Rocks (SOMBASE, 2024); South Sandwich Is. (Willan & Bertsch, 1987); South Orkney Is. (Garcia et al., 1994) [192]; Bouvet Island (Arntz et al., 2006); Weddell Sea (Wägele & Willan, 1994 [191]; Troncoso et al., 1996; Rauschert & Arntz, 2015; present work); Antarctic Peninsula (Wägele & Willan, 1994) [191]; South Shetland Is. (Willan & Bertsch, 1987); Bellingshausen Sea (Aldea et al., 2008; Aldea et al., 2009); Ross Sea (Brueggeman et al., 1999; Schiaparelli et al., 2006; Ghiglione et al., 2017 [193]).
Remarks: This species can reach 20 cm in length (personal observation by the first author).

***Bathyberthella orcadensis* (F. J. García, García-Gómez, Troncoso & Cervera, 1994).**
Records: South Orkney Is. (García, et al., 1994, as *Parabathyberthella orcadensis*; Troncoso et al., 1997).

***Bathyberthella tomasi* (F. J. García, Troncoso, Cervera & García-Gómez, 1996).**
Records: South Orkney Is. (García et al., 1996, as *Polyctenidia tomasi*) [194].

***Bathyberthella zelandiae* Willan, 1983 (Figure 3B).**
Records: Weddell Sea (Menacho, 2011) [195]; South Island, New Zealand (Spencer et al., 2016).
Remarks: Of this species, reported at 1640 m on the continental slope of the Bounty Trough (SW New Zealand), only one specimen has been caught in the deep waters (1600 m) of the Weddell Sea.

Genus ***Berthella*** Blainville, 1824.

***Berthella medietas* Burn, 1962.**
Records: Northern and eastern Tasmania, Australia (Grove, 2018); South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

***Berthella patagonica* (A. d'Orbigny, 1835).**
Records: Patagonia (Powell, 1960, as *Bouvieira patagonica* (A. d'Orbigny, 1836); Linse, 1999; Argentina, Forcelli, 2000).; Falkland Islands (Powell, 1960).

***Berthella platei* (Bergh, 1898).**
Records: Patagonia (Powell, 1960; Linse, 1999; Argentina, Forcelli, 2000; Chile, Schrödl, 1999a, Schrödl et al., 2005); Falkland Is. (Schrödl, 1999b).

***Berthella ornata* (Cheeseman, 1878).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Berthella serenitas* (Burn, 1962).**
Records: Northern Tasmania, Australia (Grove, 2018).

Genus ***Pleurobranchus*** Cuvier, 1804.

***Pleurobranchus hilli* (Hedley, 1894)**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Tomthompsonia*** Wägele & Hain, 1991.

***Tomthompsonia antarctica* (Thiele, 1912).**
Records: Weddell Sea (Wägele & Hain, 1991, as *T. spiroconchalis*) [196]; Davis Sea (Thiele, 1912).
Remarks: This species was initially described by Thiele (1912) based on empty shells as *Adeorbis antarcticus* and belonging to the "prosobranch" mollusks. Wägele and Hain (1991) discovered live specimens of this pleurobranchid and carried out an extensive anatomical study, finding that it has a spiraled internal shell and describing the new genus *Tomthompsonia*.

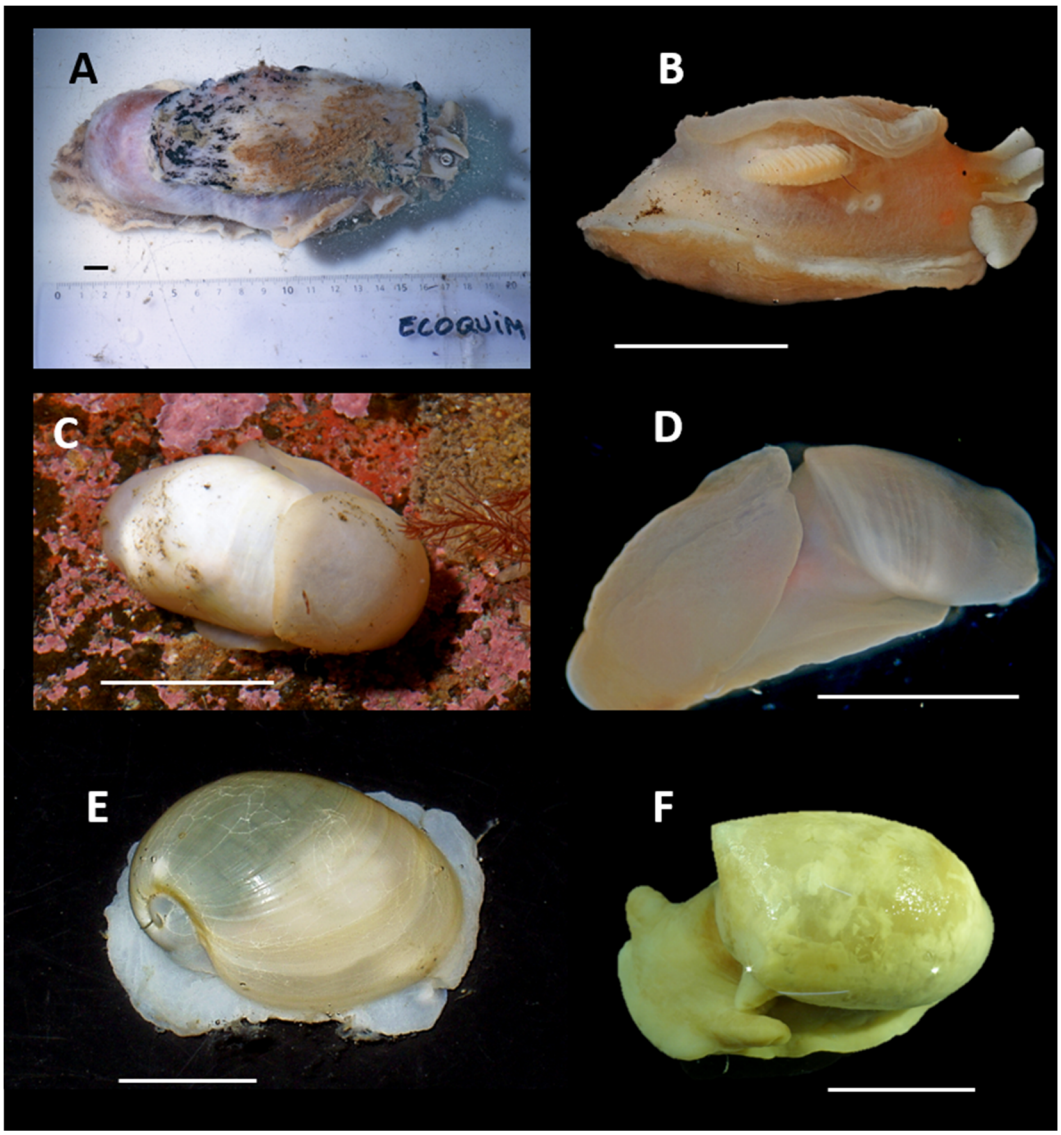


Figure 3. (**A**): *Bathyberthella antarctica*, specimen from the Weddell Sea; (**B**): *Bathyberthella zelandiae*, specimen from the Weddell Sea; (**C**,**D**): *Antarctophiline alata*, specimen from the South Shetland Islands; (**E**): *Newnesia antarctica*, specimen from the South Shetland Islands; (**F**): *Hocius joani*, preserved specimen from the Weddell Sea. Original photographs by M. Ballesteros. Scale bars are 10 mm.

Family Pleurobranchaeidae Pilsbry, 1896.

Genus ***Pleurobranchaea*** Leue, 1813.

Pleurobranchaea inconspicua **Bergh, 1897.**

Records: Argentine Patagonia (San Matias Gulf, 41°6′ S; San José Gulf, 42°25′ S; Muniain et al., 2007).

Remarks: This species is distributed from Cape Hatteras, North Carolina (35° N), to San José Gulf, Argentina (42° S) (Muniain et al., 2007) [197]. It may exhibit an amphiatlantic distribution due to records on the western coast of Africa and the eastern Mediterranean (Marcus & Gosliner, 1984) [198].

Pleurobranchaea maculata **(Quoy & Gaimard, 1832).**

Records: Tasmania, Australia (Grove, 2018); South Island, New Zealand (Spencer et al., 2016); Argentine Patagonia (Puerto Madryn, 42°46′5″ S, Farias et al., 2015; Battini et al., 2021 [199]).

Remarks: This species, native to Australia and New Zealand, has invaded the Argentine coasts since 2009 (Farias et al., 2015) [200]. It is a toxic species that can accumulate a powerful tetrodotoxin.

Order Nudibranchia Cuvier, 1817.
Suborder Doridina.
Superfamily Polyceroidea Alder & Hancock, 1845.
Family Aegiridae P. Fischer, 1883.
Genus ***Aegires*** Lovén, 1844.

***Aegires albus* Thiele, 1912 (Figure 4A,B).**
Records: Weddell Sea (Wägele, 1987 [201]; Rauschert & Arntz, 2015); King George Is., South Shetland Is. (Schrödl et al., 2016); Ross Sea (Hedley, 1916; Odhner, 1934, as *Aegires protectus*; Schiaparelli et al., 2006; Ghiglione et al., 2013 [202]); Leopols III Bay, Princess Ragnhild coast (Troncoso et al., 1996); Davis Sea, East Antarctica (Thiele, 1912; Wägele, 1987).

***Aegires execches* Fahey & Gosliner, 2004.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Superfamily Onchidoridoidea Gray, 1827.
Family Onchidorididae Gray, 1827.
Genus ***Acanthodoris*** J. E. Gray, 1850.

***Acanthodoris falklandica* Eliot, 1907.**
Records: Patagonia (Linse, 1999; Argentina; Forcelli, 2000; Chile; Linse, 1999; Schrödl et al., 2005, Aldea et al. 2011 [203]); Falkland Is. (Eliot, 1907b; Linse, 1999).

***Acanthodoris metulifera* Bergh, 1905.**
Records: Tasmania, Australia (Grove, 2018); southern Tasmania, Australia (Burn, 2015).

***Acanthodoris mollicella* Abraham, 1877.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Acanthodoris pilosa* (Abildgaard, 1789).**
Records: Subantactic islands of New Zealand (Spencer et al., 2016).

***Acanthodoris vatheleti* Mabille and Rochebrune, 1889.**
Records: Punta Arenas, Orange Harbour, Cape Horn (Rochebrune & Mabille, 1889).
Remarks: This species is considered in WoRMS as nomen dubium.

Genus ***Idaliadoris*** Furfaro and Trainito, 2022.

***Idaliadoris maugeansis* (Burn, 1958).**
Records: Tasmania, Australia (as *Onchidoris maugeansis*) (Burn, 2015; Grove, 2018).

Genus ***Diaphorodoris*** Iredale & O'Donoghue, 1923.

***Diaphorodoris mitsuii* (Baba, 1938).**
Records: Tasmania, Australia (Grove, 2018) (as *Diaphorodoris* sp. in Burn, 2015).

Family Akiodorididae Millen and Martynov, 2005.
Genus ***Armodoris*** Minichev, 1972.

***Armodoris antarctica*, Minichev, 1972.**

Records: King George Is. (Millen & Martynov, 2005); Davis Sea, East Antarctica (Minichev, 1972).

***Armodoris anudeorum* Á. Valdés, Moran & H. A. Woods, 2011.**
Records: McMurdo Sound, Ross Sea (Cattaneo-Vietti et al., 2000, as *A. Antarctica* [204]; Valdés et al. 2011).

Genus ***Doridunculus*** G.O. Sars, 1878.
***Doridunculus punkus*, Moles, Wägele, Uhl & C. Ávila, 2017 (Figure 4C,D).**
Records: Weddell Sea (Moles et al., 2016b; this work).
Remarks: A single specimen of this species was collected in the Eastern Weddell Sea from a genus that contains two other species that are distributed in cold or deep waters of the northern hemisphere (Moles et al., 2016b).

Genus ***Prodoridunculus*** Thiele, 1912.
***Prodoridunculus gaussianus* Thiele, 1912.**
Records: Ross Sea (Ghiglione et al., 2013; Schiaparelli et al., 2014 [205]); Davis Sea, East Antarctica (Thiele, 1912).

Family Corambidae Bergh, 1871.
Genus ***Corambe*** Bergh, 1869.
***Corambe lucea* Er. Marcus, 1959.**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl et al., 2005).

Family Goniodorididae H. Adams & A. Adams, 1854.
Genus ***Ancula*** Lovén, 1846.
***Ancula fuegiensis* Odhner, 1926.**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Linse, 1999).

***Ancula mappae* (Burn, 1961).**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Bermudella*** Odhner, 1941.
***Bermudella mija* (Burn, 1967).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018; as *Okenia mija*); South Island, New Zealand (Spencer et al., 2016, as *Okenia mija*).
Remarks: Burn (2006) suggests that the larger size of Tasmanian animals compared to those animals from the type locality (*Okenia mija*; Torquay, Victoria, Australia) may suggest the presence of another species.

***Bermudella angelensis* (Lance, 1966).**
Records: Patagonia (Chile, Linse, 1999).
Remarks: Until the work of Paz-Sedano et al. (2024) [206] this species was included within the genus *Okenia*.

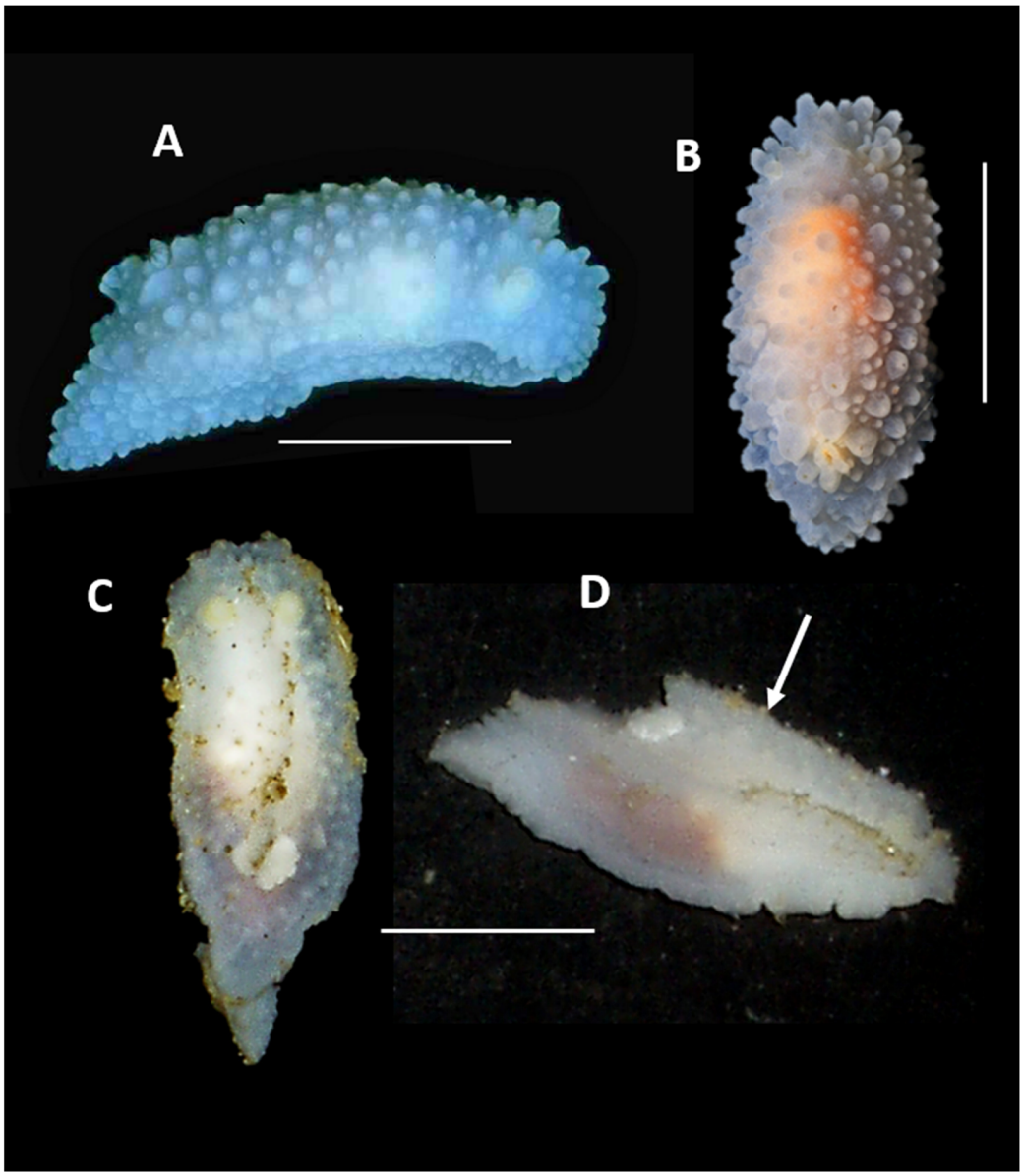


Figure 4. *Aegires albus* (**A**) in lateral view and (**B**) in dorsal view, specimen from the Weddell Sea; photographs by M. Rauschert. *Doridunculus punkus*, specimen from the Weddell Sea, (**C**) in dorsal view and (**D**) in lateral view, with the dorsal crest of the animal shown with an arrow; original photographs by M. Ballesteros. Scale bars are 10 mm.

Genus ***Pelagella*** J. E. Gray, 1850.

***Pelagella castanea* (Alder & Hancock, 1845).**

Records: South Island, New Zealand (Spencer et al., 2016, as *Goniodoris castanea*).

Remarks: This species, native to European Atlantic waters and also present in the Mediterranean, is considered an alien species in New Zealand waters. Until the work of Paz-Sedano et al. (2023) [207], this species was included within the genus *Goniodoris*.

***Pelagella punctata* (Bergh, 1905).**

Records: South Island, New Zealand (as *Goniodoris punctata*) (Spencer et al., 2016).

Remarks: See taxonomic commentary of *P. castanea.*

Genus ***Trapania*** Pruvot-Fol, 1931.

***Trapania brunnea* Rudman, 1987.**

Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Trapania rudmani* M. C. Miller, 1981.**
Records: South Island, New Zealand (Spencer et al., 2016).

Superfamily Polyceroidea Alder & Hancock, 1845.
Family Polyceridae Alder & Hancock, 1845.
Genus ***Crimora*** Alder & Hancock, 1845.

***Crimora multidigitalis* (Burn, 1957).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Gymnodoris*** W. Stimpson, 1855.

***Gymnodoris alba* (Bergh, 1877).**
Records: Tasmania, Australia (Grove, 2018).

***Gymnodoris arnoldi* (Burn, 1957).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Holoplocamus*** Odhner, 1926.

***Holoplocamus papposus* Odhner, 1926.**
Records: Patagonia (Argentina; Powell, 1960; Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003).

Genus ***Kaloplocamus*** Bergh, 1880.

***Kaloplocamus ramosus* (Cantraine, 1835).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Paliolla*** Burn, 1958.

***Paliolla cooki* (Angas, 1864).**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Plocamopherus*** Rüppell and Leuckart, 1828.

***Plocamopherus imperialis* Angas, 1864.**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Polycera*** Cuvier, 1816.

***Polycera capensis* Quoy & Gaimard, 1824.**
Records: Eastern Tasmania, Australia (Grove, 2018).

***Polycera hedgpethi* Er. Marcus, 1964.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).
Remarks: *P. hedgpethi* is a cosmopolitan species originating from the coasts of California. It has been recorded in almost all seas, such as the North American Pacific, and Costa Rica, West Africa, South Africa, New Zealand, Australia, Japan, Northern Europe, the Northern Iberian Peninsula, the western Mediterranean and the Adriatic Sea (Pontes, 2023) [208]. It is assumed that this wide distribution and presence near commercial ports is due to transportation via ship fouling.

***Polycera janjukia* Burn, 1962.**

Records: Tasmania, Australia (Grove, 2018), southeastern Tasmania, Australia (Burn, 2015).

***Polycera maddoxi* M. C. Miller, 2005.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Polycera marplatensis* Franceschi, 1928.**
Records: Patagonia (Argentina, Linse, 1999; Forcelli, 2000).

***Polycera priva* Er. Marcus, 1959.**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Schrödl, 2003; Schrödl et al., 2005).

Genus ***Tambja*** Burn, 1962.

***Tambja morosa* (Bergh, 1877).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Tambja tenuilineata* M. C. Miller & Haagh, 2005.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Tambja verconis* (Basedow & Hedley, 1905).**
Records: Northern and eastern Tasmania (Burn, 2015; Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

Genus ***Thecacera*** Fleming, 1828.

***Thecacera darwini* Pruvot-Fol, 1950.**
Records: Patagonia (Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003; Schrödl et al., 2005).

Superfamily Doridoidea Rafinesque, 1815.
Family Dorididae Rafinesque, 1815.
Genus ***Aphelodoris*** Bergh, 1879.

***Aphelodoris berghi* Odhner, 1924.**
Records: Tasmania, Australia (Burn, 2006; Burn, 2015; Grove, 2018).

***Aphelodoris greeni* Burn, 1966.**
Records: Northern and eastern Tasmania, Australia (Burn, 1966; Grove, 2018).

***Aphelodoris juliae* Burn, 1966**.
Records: Tasmania, Australia (Burn, 1966; Grove, 2018).

***Aphelodoris lawsae* Burn, 1966.**
Records: Tasmania, Australia (Grove, 2018).

***Aphelodoris luctuosa* (Cheeseman, 1882).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Aphelodoris rossquicki* Burn, 1966.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Aphelodoris varia* (Abraham, 1877).**
Records: Tasmania, Australia (Grove, 2018); northeastern Tasmania, Australia (Burn, 2015).

Genus ***Doris*** Linnaeus, 1758.

***Doris cameroni* (J. K. Allan, 1947).**
Records: Tasmania, Australia (Burn, 2006; Burn, 2015; Grove, 2018).

***Doris claurina* (Er. Marcus, 1959).**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Schrödl, 2003).
Remarks: In all cases, cited as *Neodoris claurina*.

***Doris chrysoderma* Angas, 1864.**
Records: Northern Tasmania, Australia (Burn, 2015; Grove, 2018).

***Doris falklandica* (Eliot, 1907).**
Records: Falkland Is. (Eliot, 1907b, as *Staurodoris*).

***Doris fontainii* A. d'Orbigny, 1837.**
Records: Patagonia (Argentina, Linse, 1999; Forcelli, 2000; Valdés & Muniain, 2002; Chile, Linse, 1999; Valdés & Muniain, 2002; Schrödl, 2003; Schrödl et al., 2005; Schrödl & Grau, 2006).
Remarks: Cited as Archidoris fontaini, Anisodoris fontaini or Doris carvi.

***Doris granulatissima* (Vayssière, 1917).**
Records: Almirantazgo Bay, King George Is., South Shetland Is. (Vayssière, 1917); Ross Sea (Odhner, 1934); Adelie Land (Vicente & Arnaud, 1974).
Remarks: In all cases, cited as *Austrodoris granulatissima*. This species is considered uncertain and nomen dubium in Wägele (1990b) and in WoRMS (2024). It is likely that it belongs to the *Doris kerguelenensis* species complex.

***Doris kerguelenensis* (Bergh, 1884) (Figure 5).**
Records: Patagonia (Linse, 1999; Argentina, Odhner, 1926, as *Austrodoris crenulata* Odhner, 1926, and *Austrodoris michaelseni* Odhner, 1926; Forcelli, 2000; Chile, Bergh, 1884, as *Austrodoris kerguelenensis*; Bergh, 1898 [209], as *Archidoris rubescens* Bergh 1898; Schrödl, 2003); Falkland Is. (Odhner, 1926, as *Archidoris rubescens* Bergh, 1898; Linse, 1999); Shag Rock-Bank (Odhner, 1926, as *Archidoris rubescens* Bergh, 1898); South Georgia Is. (Odhner, 1926, as *Archidoris rubescens* Bergh, 1898; Wägele, 1990b; García et al., 1993, as *Austrodoris georgiensis* F. J. García, Troncoso, García Gómez & Cervera, 1993; Troncoso et al., 1997; Linse, 1999; Zelaya, 2005); South Orkney Is. (Wägele, 1987; García et al., 1993; Barnes & Bullough, 1996 [210]; Troncoso et al., 1997; Aldea et al., 2008); Bouvet Island (Arntz et al., 2006); Marion Is. (Linse, 1999); Kerguelen Islands (Bergh, 1884, as *Archidoris kerguelenensis* Bergh, 1884, and *A. australis* Bergh, 1884; Powell, 1960, as *Archidoris australis* Bergh, 1884, *Austrodoris tomentosa* Odhner, 1934, and *Austrodoris nivium* Odhner, 1934; Vicente, 1973, as *Austrodoris tomentosa* Odhner, 1934, and *Austrodoris nivium* Odhner, 1934); Heard Is. (Merilees & Burn, 1969; Linse, 1999); Macquarie Is. (Merilees & Burn, 1969); Weddell Sea (Wägele, 1990b; Linse, 1999; Rauschert & Arntz, 2015); Antarctic Peninsula (Vayssiére, 1906, as *Archidoris tuberculata* (Müller, 1778) sensu Cuvier, 1804; Wägele, 1990b; Aldea et al., 2009, as *Austrodoris georgiensis* F. J. García, Troncoso, García Gómez & Cervera, 1993); South Shetland Is. (García et al., 1993;

Troncoso et al., 1997; Linse, 1999; Troncoso et al., 1999; Arnaud et al. 2001 [211]); King George Is., South Shetland (Schrödl et al., 2016; present work, some animals collected by scuba diving during the BENTART 2006 Spanish Research Expedition); Peter I Is. (Aldea et al., 2009, as *Austrodoris georgiensis* F. J. García, Troncoso, García Gómez & Cervera, 1993); Ross Sea (Smith, 1902; Odhner, 1934, as *Austrodoris macmurdensis*; Odhner, 1934; *Austrodoris nivium* Odhner, 1934; *Austrodoris tomentosa* Odhner, 1934; Dayton et al., 1974 [212], as *Austrodoris macmurdensis*; Odhner, 1934; Cattaneo, 1991; Brueggeman et al., 1999; Linse, 1999; Cattaneo-Vietti et al., 2000; Schiaparelli et al., 2006 [213]; Ghiglione et al., 2013; Schiaparelli & Linse, 2014); Princess Ragnhild coast (Troncoso et al., 1996); Davis Sea, East Antarctica (Thiele, 1912, as *Archidoris nivalis* Thiele, 1812; Minichev, 1972, as *Austrodoris nivium*; Odhner, 1934, *Austrodoris grandis*; Minichev, 1972, *Archidoris stellata*; Minichev, 1972 y *Austrodoris longa* Odhner, 1926); Marguerite Bay, Adelie Land, East Antarctica (Vayssière, 1917, as *Archidoris tuberculata* var. *antarctica* Vayssière, 1917).
Remarks: This species has a long list of synonyms that are indicated in the records section. In almost all recent records, it is listed as *Austrodoris kerguelenensis* or *A. kerguelensis.* It is the most common and widely distributed marine heterobranch species, having been cited from both coasts of the South American cone, the Subantarctic islands and almost all the Antarctic coasts. Wägele (1990b) carried out a complete morphological and anatomical study on the genus *Austrodoris*. Moles et al. (2017b) conducted a study on spawning, embryonic development and juveniles of this species in vitro; these authors indicate that *D. kerguelenensis* has direct development with intracapsular embryonic development estimated to last about 13 months, with the juveniles hatching with a size of 3 mm. Ballesteros (2024) has graphically represented the different stages of the life cycle of this species. Due to its direct development, without a larval form and therefore a poor capacity for geographical dispersion, several authors have questioned whether *D. kerguelenensis* is a single species. Recently, due to a wide representation of specimens from very diverse localities, from Antarctic, Subantarctic and Magellanic environments, molecular analyses have shown that *D. kerguelenensis* comprises a complex of 59 different species (Wilson et al., 2009 [214]; Maroni & Wilson, 2022 [215]; Maroni et al., 2022 [216]). There may also be more species of this complex in unstudied areas of the Southern Ocean. Because putative species in the *D. kerguelenensis* complex remain to be described, we consider all records to be those of *D. kerguelenensis* sensu lato.

***Doris luteola* Couthouy in Gould, 1852.**
Records: Orange Harbour, Cape Horn (Gould, 1852 [217]; Rochebrune & Mabille, 1889).
Remarks: This species is considered nomen dubium in WoRMS.

***Doris nanula* (Bergh, 1904).**
Records: South Island and Subantarctic islands of New Zealand (Spencer et al., 2016).

***Doris nivalis* (Thiele, 1912).**
Records: Ross Sea (Hedley, 1916); Davis Sea, East Antarctica (Thiele, 1912, as *Archidoris nivalis*).
Remarks: This species is considered by WoRMS as nomen dubium.

***Doris plumulata* Couthouy in Gould, 1852.**
Records: Orange Harbour, Cape Horn (Gould, 1852; Rochebrune & Mabille, 1889).
Remarks: This species is considered by WoRMS as nomen dubium.

***Doris wellingtonensis* Abraham, 1877.**
Records: Eastern Tasmania, Australia (as *Archidoris wellintonensis* in Burn, 2006; Burn, 2015; Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

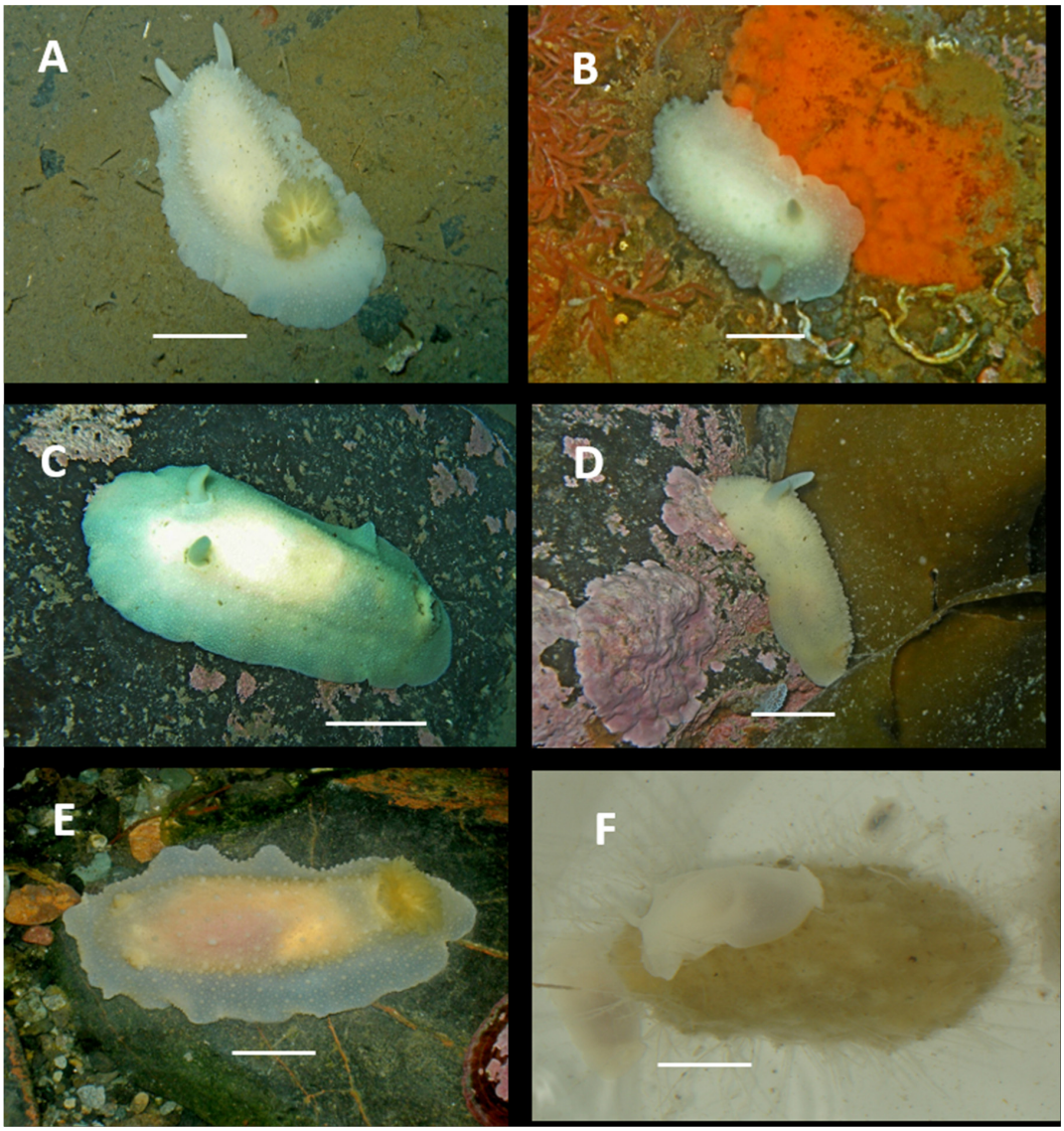


Figure 5. *Doris kerguelenensis*: (**A**–**E**): underwater images of the animal alive in its environment, specimens from King George Island; (**F**): a juvenile specimen from the Weddell Sea photographed in the laboratory on a sponge of the genus *Rosella*. Original photographs by *M. ballesteros*. Scale bars are 10 mm.

Family Dendrodorididae O'Donoghue, 1924 (1864).
Genus ***Dendrodoris*** Ehrenberg, 1831.

***Dendrodoris albopurpura* Burn, 1957.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Dendrodoris arborescens* (Collingwood, 1881).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Dendrodoris citrina* (Cheeseman, 1881).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Dendrodoris maugeana* Burn, 1962.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Dendrodoris nigra* (W. Stimpson, 1855).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Doriopsilla*** Bergh, 1880.

***Doriopsilla carneola* (Angas, 1864).**
Records: Northern and eastern Tasmania, Australia (Grove, 2018).

***Doriopsilla miniata* (Alder & Hancock, 1864).**
Records: Tasmania, Australia (Grove, 2018).

***Doriopsilla peculiaris* (Abraham, 1877).**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018).

Family Discodorididae Bergh, 1891.

Genus ***Alloiodoris*** Bergh, 1904.

***Alloiodoris lanuginata* (Abraham, 1877).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

***Alloiodoris marmorata* Bergh, 1904.**
Records: Northern Tasmania, Australia (Grove, 2018).

Genus ***Atagema*** Gray, 1850.

***Atagema albata* (Burn, 1962)**
Records: Northern Tasmania, Australia (Grove, 2018, as *Trippa albata*).
Remarks: WoRMS lists this species as taxon inquirendum, and Innabi et al. (2023) [218] indicate that without molecular data it cannot be confirmed whether *A. albata* is synonymous with *A. papillosa* (Risbec, 1928).

***Atagema carinata* (Quoy & Gaimaard, 1832).**
Records: South Island, New Zealand (Spencer et al., 2016).

Genus ***Diaulula*** Bergh, 1878.

***Diaulula hispida* (A. d'Orbigny, 1836).**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2000b [219]; Schrödl, 2003); Orange Bay, Cape Horn (Rochebrune and Mabille, 1889, as *Doris hispida* A. d'Orbigny, 1836); Strait of Magellan (Powell, 1960, as *Trippa hispida* (A. d'Orbigny, 1836).

***Diaulula punctuolata* (A. d'Orbigny, 1836).**
Records: Patagonia (Powell, 1960, as *Doris vestita* Abraham, 1877; Linse, 1999, as *Anisodoris punctuolata* (A. d'Orbigny, 1836) and *Diaulula vestita* (Abraham, 1877); Argentina, Forcelli, 2000, as *A. punctuolata*; Chile, Osorio & Reid, 2004 [220]; Linse, 1999, as *A. punctuolata*; Valdés & Muniain, 2002; Schrödl, 2003; Schrödl & Grau, 2006; Aldea et al., 2011 [203]); Falkland Is. (Eliot, 1907b, as *Doris vestita* Abraham 1877; Linse, 1999, as *D. vestita*).

***Diaulula variolata* (A. d'Orbigny, 1836).**
Records: Patagonia (Chile; Aldea et al., 2011 [203]).
Remarks: This species is distributed from Arica (N of Chile) to the Bernardo O'Higgins National Park (51 °S), which is the current limit of its southernmost distribution.

Genus ***Gargamella*** Bergh, 1894.

***Gargamella immaculata* Bergh, 1894.**
Records: Patagonia (Powell, 1960; Linse, 1999; Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003); Burdwood Bank (Linse, 1999).

Genus ***Geitodoris*** Bergh, 1891.

***Geitodoris patagonica* Odhner, 1916.**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Schrödl, 2000b; Schrödl, 2003); Falkland Is. (Powell, 1960, as *G. falklandica* Odhner, 1926; Linse, 1999; Schrödl, 2000b; Schrödl, 2003).

Genus ***Carminodoris*** Bergh, 1889.

***Carminodoris nodulosa* (Angas, 1864).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018; as *Hoplodoris nodulosa*).

Genus ***Jorunna*** Bergh, 1876.

***Jorunna hartleyi* (Burn, 1958).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Paradoris*** Bergh, 1884.

***Paradoris dubia* (Bergh, 1904).**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Rostanga*** Bergh, 1879.

***Rostanga calumus* Rudman & Avern, 1989.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Rostanga crawfordi* (Burn, 1969).**
Records: Northern Tasmania, Australia (Burn, 2015; Grove, 2018).

***Rostanga pulchra* MacFarland, 1905.**
Records: Patagonia (Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003; Schrödl & Grau, 2006).

Genus ***Sclerodoris*** Eliot, 1904.

***Sclerodoris tarka* Burn, 1969.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Thordisa*** Bergh, 1877.

***Thordisa verrucosa* (Crosse in Angas, 1864).**
Records: Tasmania, Australia (Grove, 2018).
Family Cadlinidae Bergh, 1891.

Genus **Cadlina** Bergh, 1879.

***Cadlina affinis* Odhner, 1934.**
Records: Ross Sea (Odhner, 1934; Schrödl, 2000a).

***Cadlina georgiensis* Schrödl, 2000.**
Records: South Georgia (Schrödl, 2000a, 2003).

***Cadlina kerguelensis*, Thiele, 1912.**
Records: Kerguelen Is. (Thiele, 1912; Schrödl, 2000a).

***Cadlina magellanica* Odhner, 1926.**
Records: Patagonia (Schrödl, 2003); Falkland Is. (Odhner, 1926, as *C. falklandica;* Schrödl, 2003).

***Cadlina sparsa* (Odhner, 1922).**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Schrödl, 2003; Schrödl et al., 2005).

***Cadlina tasmanica* Rudman, 1990.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

***Cadlina willani* M. C. Miller, 1980.**
Records: South Island, New Zealand (Spencer et al., 2016).

Superfamily Chromodoridoidea Bergh, 1891.
Family Actinocyclidae O'Donoghue, 1929.
Genus ***Hallaxa*** Eliot, 1909.

***Hallaxa gilva* M. C. Miller, 1987.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Hallaxa michaeli* Gosliner & S. Johnson, 1994.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Ceratosoma*** Gray, 1850.

***Ceratosoma amoenum* (Cheeseman, 1886).**
Records: Northern Tasmania, Australia (Burn, 2015; Grove, 2018).

***Ceratosoma brevicaudatum* Abraham, 1876.**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Chromodoris*** Alder & Hancock, 1855.

***Chromodoris alternata* (Burn, 1957).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Chromodoris ambigua* Rudman, 1987.**
Records: Northern Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Diversidoris*** Rudman, 1987.

***Diversidoris sulphurea* (Rudman, 1986).**
Records: Northern Tasmania, Australia (Grove, 2018).

Genus ***Doriprismatica*** A d'Orbigny, 1839.

***Doriprismatica kulonba* (Burn, 1966).**
Records: Northern Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Goniobranchus*** Pease, 1866.

***Goniobranchus annulatus* (Eliot, 1904).**
Records: Tasmania, Australia (Grove, 2018).

***Goniobranchus aureomarginatus* (Cheeseman, 1881).**
Records: South Island, New Zealand (Spencer et al., 2009).

***Goniobranchus epicurius* (Basedow & Hedley, 1905).**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018).

***Goniobranchus multimaculosus* (Rudman, 1987).**
Records: Northern Tasmania, Australia (Grove, 2018).

***Goniobranchus tasmaniensis* (Bergh, 1905).**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018; as *Chromodoris tasmaniensis*).

***Goniobranchus* cf. *tinctorius* (Rüppell & Leuckart, 1830).**
Records: Tasmania, Australia (Maynard, 2014 [221]; Burn, 2015; Grove, 2018; as *Goniobranchus tinctorius*).

Genus ***Mexichromis*** Bertsch, 1977.

***Mexichromis macropus* Rudman, 1983.**
Records: Northern Tasmania, Australia (Grove, 2018).

Genus ***Thorunna*** Bergh, 1878.

***Thorunna arbuta* (Burn, 1961).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Thorunna perplexa* (Burn, 1957).**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Tyrinna*** Bergh, 1898.

***Tyrinna delicata* (Abraham, 1877).**
Records: Patagonia (Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003; Schrödl et al. 2005; Aldea et al., 2011 [203]).
Remarks: Records from Patagonia as *T. nobilis* Bergh, 1898.

Genus ***Verconia*** Pruvot-Fol, 1931.

***Verconia aureopunctata* (Rudman, 1987).**
Records: Northern Tasmania, Australia (Burn, 2015; Grove, 2018).

***Verconia closeorum* (Rudman, 1986).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018; as *Noumea closeorum*).

***Verconia haliclona* (Burn, 1957).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Verconia verconis* (Basedow & Hedley, 1905).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Infraorder Bathydoridoidei.
Superfamily Bathydoridoidea Bergh, 1891.
Family Bathydorididae Bergh, 1891.
Genus ***Bathydoris*** Bergh, 1884.

***Bathydoris hodgsoni*, Eliot, 1907 (Figure 6A).**
Records: South Shetland Is. (Troncoso et al., 1999; Arnaud et al., 2001); Weddell Sea (Powell, 1960, as *Bathydoris browni* T. J. Evans, 1914; Avila et al., 2000 [222]; Rauschert & Arntz, 2015); Ross Sea (Eliot, 1907a, as *B. hogdsoni* and *B. inflata* Eliot, 1907; Hedley, 1916; Wägele, 1987; Brueggeman et al., 1999; Ghiglione et al., 2017); Davis Sea, East Antarctica (Hedley, 1916).
Remarks: *B. hodgsoni* is a large nudibranch, reaching a size of more than 15 cm in length. This species, with direct development, deposits the largest egg capsules known for a mollusk, of about 50 mm; it has an extremely long embryonic development of about 10 years, with the juveniles of the capsule hatching with a size of 29 mm (Moles et al., 2017b). Ballesteros (2024) has graphically represented the different stages of the life cycle of this species.

Genus ***Prodoris*** Baranetz & Minichev, 1995.

***Prodoris clavigera* (Thiele, 1912) (Figure 6B).**
Records: Falkland Is. (Kaiser, 1980, as *Bathydoris argentina* Kaiser, 1987) [223]; South Georgia Is. (Wägele, 1987; Troncoso et al. 1997; Zelaya, 2005); South Orkney Is. (Wägaele, 1987; Troncoso et al., 1997); Weddell Sea (Wägele, 1987); Antarctic Peninsula (Wägele, 1987); South Shetland Is. (this work); West Antarctica (Rauschert & Arntz, 2015); Ross Sea (Odhner, 1934, as *Bathydoris obliquata* Odhner, 1934; Schiaparelli et al., 2006; Ghiglione et al., 2017); Davis Sea, East Antarctica (Thiele, 1912; Minichev, 1972, as *Bathydoris obliquata* Odhner, 1934).
Remarks: Most records as *Bathydoris clavigera*.

Suborder Cladobranchia Willan et Morton, 1984.
(Unassigned) Superfamily.
Family Embletoniidae Pruvot-Fol, 1954.
Genus ***Embletonia*** Alder & Hancock, 1851.

Embletonia gracilis Risbec, 1928.
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Superfamily Arminoidea Iredale & O'Donoghue, 1923 (1841).
Family Arminidae Iredale & O'Donoghue, 1923 (1841).
Genus ***Armina*** Rafinesque, 1814.

***Armina cygnaea* (Bergh, 1876).**
Records: Tasmania, Australia (Grove, 2018).

***Armina rubida* (A. Gould, 1852).**

Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Remarks: This species has been recorded as belonging to the genus *Diphyllidia* in the original description and later as *Dermatobranchus rubidus*.

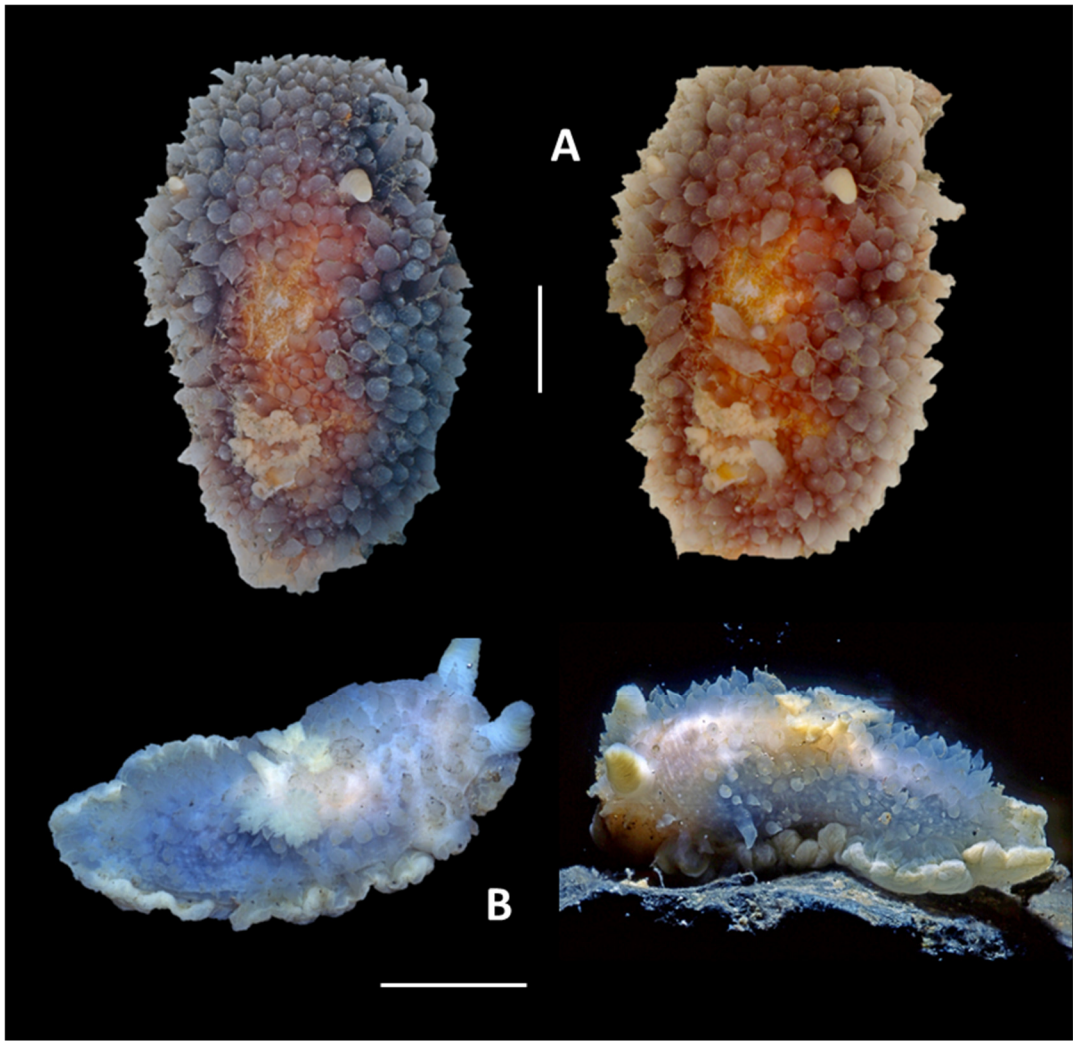


Figure 6. (**A**): *Bathydoris hogdsoni*, specimen from the Weddell Sea; (**B**): *Prodoris clavigera*, specimen from the South Shetland Islands. Original photographs by M. Ballesteros. Scale bars are 10 mm.

Family Heterodoridídae A. E. Verrill & Emerton, 1882.

Genus ***Heterodoris*** A. E. Verrill & Emerton, 1882.

Heterodoris antipodes Willan, 1981.

Records: Tasmania, Australia (Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

Superfamily Proctonotoidea Gray, 1853.

Family Madrellidae Preston, 1911.

Genus ***Madrella*** Alder & Hancock, 1864.

***Madrella* cf. *sanguinea* (Angas, 1864).**

Records: Tasmania, Australia (Burn, 2015, as *Madrella* sp. RB1; Grove, 2018, as *Madrella sanguinea*).

Remarks: This scarlet-red *Madrella* is often confused with the tropical *Madrella ferruginosa* Alder & Hancock, 1864, which exhibits swimming larvae, whereas this

cool–temperate species exhibits direct development and crawling juveniles.

Family Proctonotidae Gray, 1853.
Genus ***Caldukia*** Burn & M. C. Miller, 1969.

***Caldukia affinis* (Burn, 1958).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Caldukia albolineata* M. C. Miller, 1970.**
Records: South Island, and Subantarctic islands of New Zealand (Spencer et al., 2016).

Family Janolidae Pruvot-Fol, 1933.
Genus ***Galeojanolus*** M. C. Miller, 1971.

***Galeojanolus ionnae* M. C. Miller, 1971.**
Records: South Island, New Zealand (Spencer et al., 2016).

Genus ***Janolus*** Bergh, 1884.

***Janolus ignis* M. C. Miller & Willan, 1986.**
Records: South Island, New Zealand (Spencer et al., 2016).

Genus *Antiopella* Hoyle, 1902.

***Antiopella novozealandica* Eliot, 1907.**
Records: South Island, New Zealand (Spencer et al., 2016).

Family Curnonidae d'Udekem d'Acoz, 2017.
Genus ***Curnon*** d'Udekem d'Acoz, 2017.

***Curnon granulosa* (Vayssière, 1906) (Figure 7A).**
Records: South Orkney Islands (Wägele et al. 1995; Barnes & Bullough, 1996); Weddell Sea (Rauschert & Arntz, 2015); Wandel Island, Antarctic Peninsula (Vayssière, 1906a; Powell, 1960); South Shetland Is. (Troncoso et al., 1999; Arnaud et al., 2001); King George Is. (present work, a 13 mm long specimen collected by scuba diving on the *Himantothalus grandifolius* (A. Gepp & E. S. Gepp) Zinova, 1959 algae at a depth of 10 m during the Spanish BENTART 2006 expedition; Schrödl et al., 2016); Wandel Is., Antarctic Peninsula (Vayssiére, 1906).
Remarks: In all previous records, recorded as *Charcotia granulosa* Vayssière, 1906a. The Curnonidae was known until 2017 as the Charcotidae, and *Charcotia granulosa* was transferred to the new genus *Curnon* d'Udekem d'Acoz, 2017.

Genus ***Pseudotritonia*** Thiele, 1912.

***Pseudotritonia antarctica* (Odhner, 1934).**
Records: Antarctic Peninsula (Australian Antarctic Data Centre, 2024, as *Telarma antarctica*); Ross Sea (Odhner, 1934, as *Telarma antarctica*); Adelie Land (Vicente & Arnaud, 1974, as *Telarma antarctica*).
Remarks: This species, originally described as *Telarma antarctica*, was included until 2017 within the Charcotidae; since then, considered synonymous with the Curnonidae.

***Pseudotritonia gracilidens* Odhner, 1944.**
Records: South Orkney Islands (Barnes & Bullough, 1996); Weddell Sea (Rauschert & Arntz, 2015, as cf.); King George Is. (Schrödl et al., 2016); Ross Sea (Odhner, 1934; Cattaneo-Vietti, 1991; Cattaneo-Vietti et al. 2000).
Remarks: See remarks for *P. antarctica*.

***Pseudotritonia quadrangularis* Thiele, 1912 (Figure 7B).**
Records: Antarctic Peninsula, South Shetlands Is. and South Orkneys Is. (Rudman, 2007) [224]; Davis Sea, East Antarctica (Thiele, 1912).
Remarks: See remarks of *P. antarctica*.

Superfamily Dendronotoidea Allman, 1845.
Family Scyllaeidae Alder & Hancock, 1855.
Genus ***Scyllaea*** Linnaeus, 1758.

***Scyllaea fulva* Quoy & Gaimard, 1824.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).
Remarks: Pola et al. (2012) [225] studied the Scyllaeidae and found significant differences (7%) between specimens of *Scyllaea pelagica* Linnaeus, 1758, from the Atlantic and the Indo-Pacific and suggested that this cosmopolitan species is probably two different species. Consequently, this name should refer only to specimens from the Atlantic, while those from the Indo-Pacific would belong to *Scyllaea fulva* Quoy & Gaimard, 1824, an opinion also shared by Burn (2015).

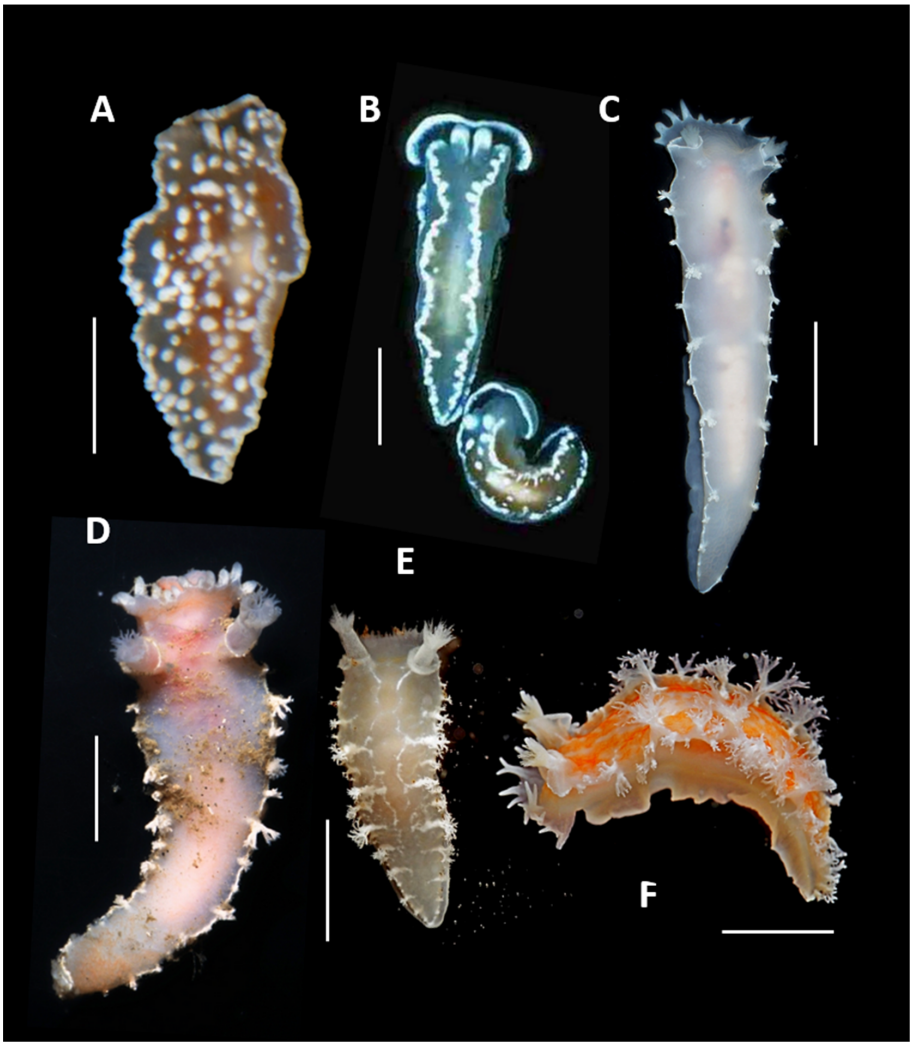


Figure 7. (**A**): *Curnon granulosa*, specimen from King George Island; (**B**): *Pseudotritonia quadrangularis*, specimen from the Antarctic Peninsula, photo M. Rauschert; (**C**–**E**): *Myrella challengeriana*, specimens from south Shetland (**D**,**E**) and the Weddell Sea (**C**); (**F**): *Myrella dantarti*, specimen from Bouvet Island. Photographs (**A**,**C**–**F**) by M. Ballesteros. Scale bars are 10 mm.

Family Tethydidae Rafinesque, 1815.
Genus ***Melibe*** Rang, 1829.

***Melibe australis* (Angas, 1864).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Melibe maugeana* Burn, 1960.**
Records: Tasmania, Australia (Grove, 2018).

Family Dotidae Gray, 1853.
Genus ***Doto*** Oken 1815.

***Doto antarctica* Eliot, 1907 (Figure 8A,B).**
Records: Bouvet Island (Arntz et al. 2006, as *Doto* sp. [226]; Moles et al., 2016a); Weddell Sea (Rauschert & Arntz, 2015; Moles et al., 2016a; present work); Ross Sea (Eliot, 1907a; Odhner, 1934; Brueggeman et al. 1999; Schiaparelli et al., 2006; Ghiglione et al., 2013).

***Doto* cf. *bella* Baba, 1938.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Doto carinova* Moles, C. Àvila & Wägele, 2016 (Figure 8C,D).**
Records: Eastern Weddell Sea (Moles et al., 2016a; present work).
Remarks: The only specimen known so far was collected during the ANTXXI/2 campaign of the R.V. *Polarstern* by means of an Agassiz dredge on a bottom located at a depth of 277 m above the gorgonian *Primnoisis antarctica* (Studer, 1878), on which it was also spawning (Moles et al., 2016a).

***Doto ostenta* Burn, 1958.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Doto pita* Er. Marcus, 1955.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

***Doto uva* Er. Marcus, 1955.**
Records: Patagonia (Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003, Schrödl et al., 2005).

Superfamily Tritonioidea Lamarck, 1809.
Family Tritoniidae Lamarck, 1809.
Genus ***Marionia*** Vayssière, 1877.

***Marionia cucullata* (Couthouy, 1852).**
Records: Patagonia (Argentina, Forcelli, 2000; Chile, Schrödl, 2003); Adelie Land, East Antarctica (Vicente & Arnaud, 1974).

***Marionia platyctenea* (Willan, 1988).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018, as *Marioniopsis platyctenea*).
Remarks: Obligate associate of the encrusting octocoral *Erythropodium hicksoni* (Utinomi, 1971) (Burn, 2015).

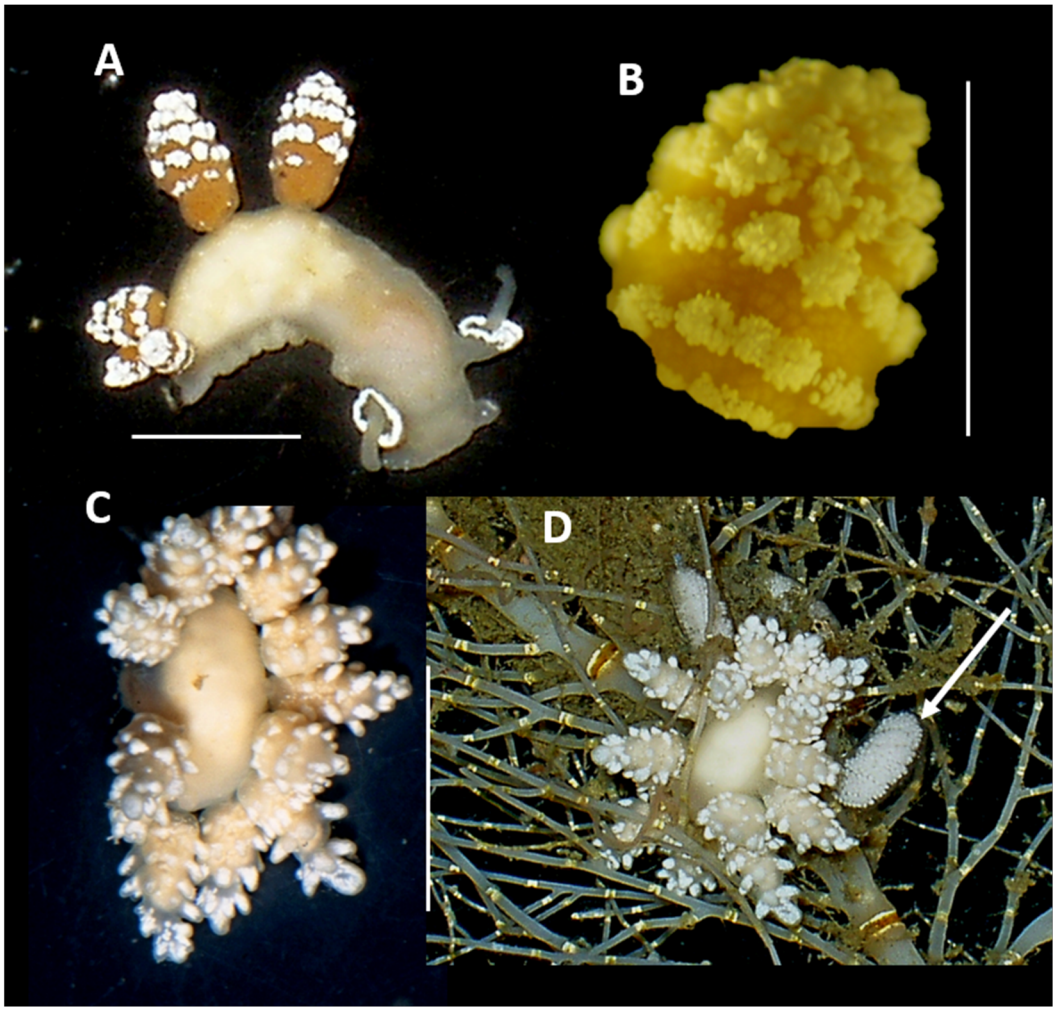


Figure 8. *Doto antarctica*: (**A**): specimen from the Weddell Sea with some cerata; (**B**): detail of a cerata with granular tubercles. (**C**,**D**): *Doto carinova* from the Weddell Sea, in D on the gorgonian *Primnoisis antarctica*, which is its substrate, the arrow indicates the spawn. Original photographs by M. Ballesteros. Scale bars are 10 mm.

Genus ***Myrella*** Odhner, 1963.

***Myrella challengeriana* (Bergh, 1884) (Figure 7C–E).**

Records: Punta Arenas, Orange Harbour (Rochebrune & Mabille, 1889, as *Microlophus poirieri* Mabille & Rochebrune, 1889); Patagonia (Bergh, 1884; Argentina, Linse, 1999, as *Tritonia australis* (Bergh, 1898); Forcelli, 2000; Chile, Reid & Osorio, 2000 [227]; Linse, 1999, as *Tritonia australis* (Bergh, 1898); Schrödl, 2003, Schrödl et al., 2005, Aldea et al., 2011 [203]); Falkland Is. (Eliot, 1907b; Linse, 1999; Schrödl, 2003); South Georgia Is. (Powell, 1951, as *Tritonia antarctica* Pfeffer, 1886; Troncoso et al., 1997; Linse, 1999; Zelaya, 2005); South Orkney Is. (Eliot, 1909, as *Tritonia appendiculata* Eliot, 1905; Barnes & Bullough, 1996, as *Tritonia antarctica* Pfeffer, 1886; Wägele, 1995, as *Tritonia antarctica* Pfeffer, 1886 [228]; Troncoso et al., 1997, as *Tritonia antarctica* Pfeffer, 1886; Linse, 1999); Bouvet Island (Arntz et al., 2006; Ballesteros & Avila, 2006); South Shetland Is. (Troncoso et al., 1999; Linse, 1999; Arnaud et al., 2001, as *Tritonia antarctica* Pfeffer, 1886; present work); Weddell Sea (Wägele, 1995; Linse, 1999; Rauschert & Arntz, 2015; present work); Antarctic Peninsula (Wägele, 1995); Bellingshausen Sea (Aldea et al., 2008, as *Tritonia antarctica* Pfeffer, 1886); Peter I Is. (Aldea et al., 2009); Ross Sea (Eliot, 1907a; Brueggeman et al. 1999; Linse, 1999; Schiaparelli et al., 2006); Adélie Land (Linse, 1999); Davis Sea, East Antarctica (Minichev, 1972).

Remarks: Until the recent work of De Vasconcelos et al. (2023) [229], records of this species referred to the genus *Tritonia*, but these authors, through anatomical and molecular studies, reinstated the genus *Myrella* to include *Tritonia* species from Antarctic and Subantarctic areas. Schrödl (2003) remarked that *Tritonia australis* (Bergh, 1898) and *T. poirieri* (Mabille & Rochebrune, 1889) can be synonymous species of *M. challengeriana*, an opinion that we follow here. This species is one of the most abundant and most widely distributed of the marine heterobranch species of the Southern Ocean.

***Myrella dantarti* (Ballesteros & C. Àvila, 2006) (Figure 7F).**
Records: Bouvet Island (Arntz et al., 2006, as *Tritonia* sp.; Ballesteros & Avila, 2006; Rauschert & Arntz, 2015, as *Tritoniidae gen.* sp.; present work).
Remarks: Since its description in 2006, this spectacular species has not been recorded again outside its original area, the island of Bouvet.

***Myrella vorax* (Odhner, 1926).**
Records: Patagonia (Powell, 1960; Linse, 1999; Argentina, Forcelli, 2000; Chile, Odhner, 1926; Schrödl, 2003); Burdwood Bank (Linse, 1999); South Georgia (Wägele, 1995; Linse, 1999; Zelaya, 2005).
Remarks: In all cases, recorded as *Tritonia vorax*.

Genus ***Tritonia*** Cuvier, 1798.

***Tritonia odhneri* Er. Marcus, 1959.**
Records: Patagonia (Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003).

Genus ***Tritoniella*** Eliot, 1907.

***Tritoniella belli* Eliot, 1907 (Figure 9A–C).**
Records: Falkland Islands (Powell, 1960); South Orkney Islands (Barnes & Bullough, 1996; Troncoso et al., 1997); South Georgia (Powell, 1960; Wägele, 1989); Kergueen Is. (Wägele, 1989); Weddell Sea (Rauschert & Arntz, 2015; Schächinger et al., 2022; present work); western Antarctic Peninsula (Aldea et al., 2009); South Shetlands Is. (Troncoso et al., 1999; Arnaud et al., 2001); King George Is. (Schrödl et al., 2016); Bellingshausen Sea (Aldea et al., 2008); Ross Sea (Eliot, 1907a, as *T. belli* and *T. sinuata* Eliot, 1907; Hedley, 1916, as *T. sinuata* Eliot, 1907; Odhner, 1934, as *T. sinuata* Eliot, 1907; Powell, 1960; Cattaneo-Vietti, 1991; Brueggeman et al., 1999; Cattaneo-Vietti et al., 2000; Schiaparelli & Linse, 2014; Ghiglione et al., 2017; Schächinger et al., 2022); Adelie Land (Vicente & Arnaud, 1974, as *T. sinuata*); Tokarev Is., East Antarctica (Minichev, 1972); Enderby Land (Wägele, 1989); MacRobertson Is., East Antarctica (Wägele, 1989).
Remarks: *Tritoniella sinuata* Eliot, 1907 is considered synonymous with *T. belli* by Wägele (1989), while, recently, Schächinger et al. (2022) indicated that it would be necessary to study more material from the *sinuata* morph to clarify its status. These last authors have studied a significant number of *Tritoniella* specimens from various locations in the Scotia Arc and the South Shetlands, collected by scuba diving or at great depths using dredgers, and through molecular analysis have discovered the existence of five new species. These taxa are morphologically similar to *T. belli*. Some of the records of *T. belli* indicated above may belong to one of these new species.

***Tritoniella gnathodentata* Schächinger, Schrödl, N. G. Wilson & Moles, 2022.**
Records: Shag Rocks and South Georgia (Schächinger et al., 2022).
Remarks: This species can reach a size of 38 mm in length and has been caught at depths of up to 751 m.

***Tritoniella gnocchi* Schächinger, Schrödl, N. G. Wilson & Moles, 2022.**
Records: Burdwood Bank, South to Falkland Is. (Schächinger et al., 2022).
Remarks: Only the 21 mm length specimen used to describe the species is known, captured between 561 and 572 m deep.

***Tritoniella heideae* Schächinger, Schrödl, N. G. Wilson & Moles, 2022.**
Records: Ardley Is., King George Is., South Shetland Archipelago and Montagu Is., South Sandwich Is. (Schächinger et al., 2022).
Remarks: Specimens of this species can reach up to 53 mm in length.

***Tritoniella prinzess* Schächinger, Schrödl, N. G. Wilson & Moles, 2022.**
Records: Ardley Is., King George Is., South Shetland Archipelago (Schächinger et al., 2022).
Remarks: Only one specimen measuring 17 mm in length is known, which was used to describe the species and was collected between 20 and 40 m deep.

***Tritoniella schroriesi* Schächinger, Schrödl, N. G. Wilson & Moles, 2022 Figure 9D–F).**
Records: Ardley Is., South Shetland Archipelago, Coronation Is., South Orkney Is. (Schächinger et al., 2022); Albatros Is., Fildes Bay, King George Is., South Shetland Archipelago (this work).
Remarks: Only three specimens are known, the two used to describe the species and the specimen collected by the authors on Albatros Island. This species can reach a size of 54 mm in length.

Superfamily Aeolidioidea Gray, 1827.
Family Aeolidiidae Gray, 1827.
Genus ***Aeolidia*** Cuvier, 1798.

***Aeolidia campbelli* (Cunningham, 1871).**
Records: Patagonia (Powell, 1960; Linse, 1999; Chile, Kiekenberger et al., 2016 [230]); Falkland Is. (Eliot, 1907b, as *A. serotina* Bergh, 1873; Powell, 1951, as *A. serotina*; Linse, 1999; Schrödl, 2003; Kienberger et al., 2016 [230]).
Remarks: This species has been recorded by different authors as *Aeolidia papillosa* Linnaeus, 1761. Kienberger et al. (2016) [230] has shown that *A. papillosa* is a cryptic species complex and that the records of *A. papillosa* from South America belong to a different species, *A. campbelli* (Cunningham, 1871), a senior synonym of *A. serotina* Bergh, 1873.

Genus ***Aeolidiella*** Bergh, 1867.

***Aeolidiella drusilla* Bergh, 1900.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Baeolidia*** Bergh, 1888.

***Baeolidia australis* (Rudman, 1982).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Baeolidia macleayi* (Angas, 1864).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Berghia*** Trinchese, 1877.

Berghia rissodominguezi **Muniain & Ortea, 1999.**

Records: Patagonia (Argentina, Muniain & Ortea, 1999).

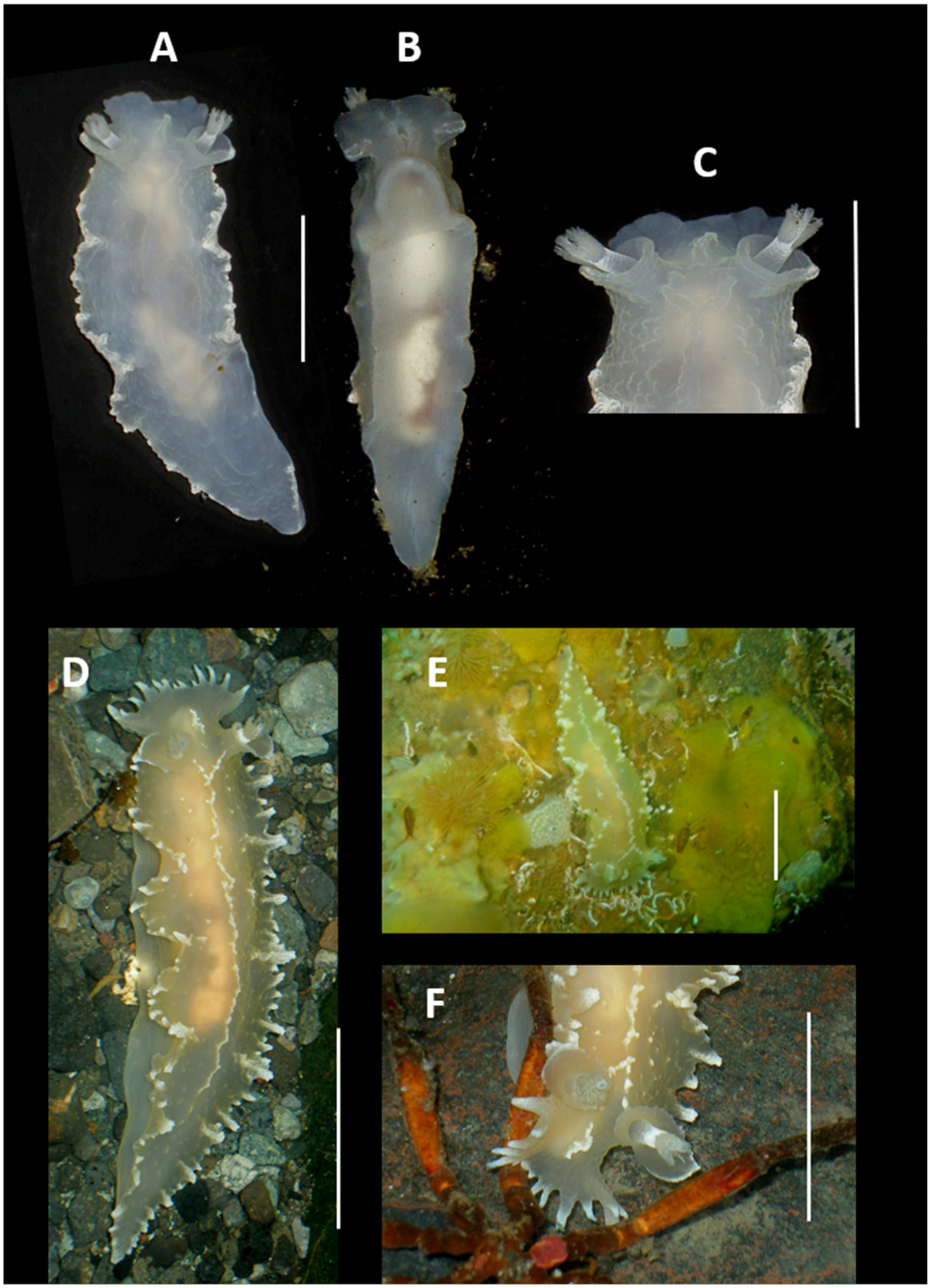


Figure 9. *Tritoniella belli*, specimen from the Weddell Sea: (**A**): dorsal view; (**B**): ventral view; (**C**): detail of the head and rhinophores; *Tritoniella schroriesi* from King George Island. (**D**,**E**): Animal in its natural environment. (**F**): Detail of the anterior area with the frontal veil and the rhinophores. Original photos by M. Ballesteros. Scale bars are 10 mm.

Genus ***Cerberilla*** Bergh, 1873.

***Cerberilla incola* Burn, 1974**.
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Spurilla*** Bergh, 1864.

***Spurilla braziliana* MacFarland, 1909.**
Records: Patagonia (Forcelli, 2000, as *S. neapolitana* Delle Chiaje, 1841).
Remarks: Forcelli (2000) does not indicate the place of observation of *S. neapolitana*, rendering it uncertain, and claims that the specimens attributed to it on the Argentine coasts may belong to another species or even to another genus, an idea supported by other authors (Schrödl, 2003). Carmona et al. (2014) [231], in their work on the *Spurilla neapolitana* species complex, confirm with molecular data that the specimens attributed to *S. neapolitana* in the western Atlantic are actually *S. braziliana* and that this species isalso found living in the eastern Pacific.

Family Facelinidae Bergh, 1889.

Genus ***Austraeolis*** Burn, 1962.

***Austraeolis ornata* (Angas, 1864).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Burnaia*** M. C. Miller, 2001.

***Burnaia helicochorda* (M. C. Miller, 1988).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Facelina*** Alder & Hancock, 1855.

***Facelina hartleyi* Burn, 1962.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Facelina newcombi* (Angas, 1864).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Genus ***Jason*** M. C. Miller, 1974.

***Jason mirabilis* Miller, 1974.**
Records: South Island, New Zealand (Spencer et al., 2016).

Genus ***Phidiana*** Gray, 1850.

***Phidiana lottini* (Lesson, 1831).**
Records: Patagonia (Argentina, Forcelli, 2000; Chile, Linse, 1999; Schrödl, 2003, Schrödl et al., 2005).

***Phidiana milleri* Rudman, 1980.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Phidiana patagonica* (A. d'Orbigny, 1836).**
Records: Patagonia (d'Orbigny, 1835–1846; Rochebrune & Mabille, 1889; Linse, 1999).
Remarks: According to Schrödl (2003), the specimens illustrated by Forcelli (2000, pp. 130) are not *Ph. patagonica* but rather *Flabellina falklandica* (Eliot, 1907).

Family Flabellinidae Bergh, 1889.
Genus ***Coryphellina*** O'Donoghue, 1929.

***Coryphellina albomarginata* (M. C. Miller, 1971)**.
Records: South Island, New Zealand (as *Flabellina albomarginata*) (Spencer et al., 2016).

***Coryphellina rubrolineata* O'Donoghue, 1929.**
Records: Tasmania, Australia (as *Flabellina rubrolineata*) (Burn, 2015; Grove, 2018; Maynard, 2014).

***Coryphellina poenicia* (Burn, 1957).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018; as *Flabellina poenicia*).

Genus ***Flabellina*** Gray, 1833.

***Flabellina falklandica* (Eliot, 1907).**
Records: Patagonia (Linse, 1999; Argentina; Forcelli, 2000; Chile; Reid & Osorio, 2000 [227]; Schrödl, 2003; Aldea et al., 2011); Falkland Is. (Eliot, 1907b, as *Coryphella falklandica*; Linse, 1999; Schrödl, 2003); South Georgia Is. (Powell, 1960; Schrödl, 2003; Zelaya, 2005); Shag Rocks (Linse, 1999); Crozet Is. (Odhner, 1926; Linse, 1999).

Family Notaeolidiidae Eliot, 1910.
Genus ***Notaeolidia*** Eliot, 1095.

***Notaeolidia depressa* Eliot, 1905 (Figure 10D).**
Records: Bouvet Island (Arntz et al., 2006); Weddell Sea (Wägele, 1990a; Rauschert & Arntz, 2015; present work); Antarctic Peninsula (Wägele, 1990a); Ross Sea (Eliot,1907a; Hedley, 1916; Odhner, 1934, as *N. robsoni* Odhner, 1934; Brueggeman et al., 1999); Davis Sea, East Antarctica (Thiele, 1912, as *Notaeolidia rufopicta* Thiele, 1912; Minichev, 1972, as *Notaeolidia alutacea* Minichev, 1972, and *Notaeolidia flava* Minichev, 1972); Adelie Land, East Antarctica (Vicente & Arnaud, 1974, as *N. robsoni* Odhner, 1934).
Remarks: Wägele (1990a) performs an excellent and complete morphological and anatomical redescription of the species and synonymizes other described species of *Notaeolidia* (*N. rufopicta*; *N robsoni*; *N. subgigas* Odhner, 1944; *N. alutacea*; and *N. flava*) with *N. depressa*.

***Notaeolidia gigas* Eliot, 1905 (Figure 10E).**
Records: Wandel Is., Antarctic Peninsula (Vayssiére, 1906); South Sandwich Is. (Powell, 1951); South Orkney Islands (Eliot, 1905, as *Notaeolidia purpurea* Eliot, 1905; Barnes & Bullough, 1996); South Shetland Is. (Troncoso et al., 1999; present work); King George Is. (Wägele, 1990a; Troncoso et al., 1996; Schrödl et al., 2016); Weddell Sea (Eliot,1905); Ross Sea (Brueggeman et al., 1999).
Remarks: This species can reach 124 mm in length (personal observation).

***Notaeolidia schmekelae* Wägele, 1990.**
Records: Weddell Sea (Wägele, 1990a); Ross Sea (Brueggeman et al., 1999, as probably).
Remarks: This species can reach 135 mm in length (Wägele, 1990a).

Family Myrrhinidae Bergh, 1905.
Genus ***Phyllodesmium*** Ehrenberg, 1831.

***Phyllodesmium macphersonae* (Burn, 1962).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Phyllodesmium serratum* (Baba, 1949).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Family Glaucidae Gray, 1827.
Genus ***Glaucilla*** Bergh, 1861.

***Glaucilla bennettae* (Churchill, Á. Valdés & Ó Foighil, 2014).**
Records: Tasmania, Australia (Grove, 2018, as *Glaucus bennettae* Churchill et al., 2014 [232]; northern Tasmania, Australia (Burn, 2015, as *Glaucus marginatus* (Reinhardt & Bergh, 1864)).
Remarks: This pelagic species is frequently observed in beach wrack after storms (Burn, 2015). Churchill et al. (2014) [232] studied the anatomy and molecular structure of the "*marginatus*" morphospecies complex and concluded that only *Glaucus atlanticus* and the new species *Glaucilla bennettae* (described as *Glaucus bennettae*) are found in the South Pacific gyre, while *Glaucilla marginata* is limited to the North Pacific and Indian Oceans.

Genus ***Glaucus*** Forster, 1777.

***Glaucus atlanticus* Forster, 1777.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).
Remarks: This pelagic species is frequently observed in beach wrack after storms (Burn, 2015). It has a wide geographical distribution in tropical and subtropical waters of the Atlantic, Pacific and Indian Oceans. The pain caused by its "sting" is well known, as are the side effects that it causes due to its diet based on siphonophores, such as the Portuguese man-of-war *Physalia physalis* (Linnaeus, 1758), and pelagic chondrophore hydroids, such as *Velella velella* (Linnaeus, 1758) and *Porpita porpita* (Linnaeus, 1758), all of which have stings, especially *Ph. physalis*, which the nudibranch itself incorporates and which it can use for its own defense or attack.

Superfamily Fionoidea Gray, 1857.
Family Fionidae Gray, 1857.
Genus ***Fiona*** Alder & Hancock [in Forbes & Hanley], 1853.

***Fiona pinnata* (Eschscholtz, 1831).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018); South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

Family Apataidae Korshunova, Martynov, Bakken, Evertsen, Fletcher, Mudianta, Saito, Lundin, Schrödl & Picton, 2017.
Genus ***Tularia*** Burn, 1966.

***Tularia bractea* (Burn, 1962).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Family Eubranchidae Odhner, 1934.
Genus ***Eubranchus*** Forbes, 1838.

***Eubranchus adarensis* Odhner, 1934.**
Records: Adare Cape, Ross Sea (Odhner, 1934); Adelie Land (Vicente & Arnaud, 1974).

***Eubranchus agrius* Er. Marcus, 1959.**
Records: New Zealand (Powell, 1979); Patagonia (Linse, 1999; Forcelli, 2000).
Remarks: Forcelli (2000) indicates that it is very uncommon in the Magellanic Province.

***Eubranchus arnaudi* Vicente, 1973.**
Records: Kerguelen Is. (Vicente, 1973).
Remarks: After its description, this species has not been recorded again.

***Eubranchus falklandicus* (Eliot, 1907).**
Records: Falkland Is. (Eliot, 1907b, as *Galvina falklandica* Eliot, 1907; Powell, 1951).

***Eubranchus fuegiensis* Odhner, 1926.**
Records: Patagonia (Odhner, 1926; Linse, 1999; Schrödl, 2003).

***Eubranchus glacialis* (Thiele, 1912) (Figure 10C).**
Records: South Shetland Is. (present work, one animal, 9 mm in length, collected during the Bentart 2006 expedition); Ross Sea (Valdés et al., 2012); Davis Sea (Thiele, 1912, as *Galvinella glacialis*).
Remarks: *E. glacialis* is a very poorly known species that has been reported as distant as the Davis Sea (East Antarctica), the Ross Sea and the South Shetlands (West Antarctica). A specimen captured in the South Shetlands considerably widened the distribution of the species in Antarctic waters.

***Eubranchus rubeolus* Burn, 1964.**
Records: South Island, New Zealand (Burn, 2015; Spencer et al., 2016).

Genus ***Galvinella*** Eliot, 1907.

***Galvinella antarctica* Eliot, 1907.**
Records: Kapp Norvegia, Eastern Weddell Sea (SOMBASE, 2024, as *Amphorina antarctica*) [233]; Ross Sea (Eliot, 1907a).
Remarks: This species is only known from the 20 mm animal of the original description in 1907 and from the SOMBASE record from 1996. WoRMS considered it as taxon inquirendum.

Family Cuthonidae Odhner, 1934.

Genus ***Cuthona*** Alder & Hancock, 1855.

***Cuthona antarctica* (Pfeffer, 1886).**
Records: South Georgia Is. (Martens & Pfeffer, 1886, as *Aeolis antarctica*).
Remarks: This species has not been recorded again after its original description.

***Cuthona claviformis* Vicente, 1973.**
Records: Adelia Land, East Antarctica (Vicente & Arnaud, 1974).
Remarks: This species has not been recorded again after its original description.

***Cuthona crinita* Minichev, 1972 (Figure 10A).**
Records: Bouvet Island (Odhner, 1934, as *Cuthona schraderi* var. *bouvetensis* Odhner, 1944; Arntz et al. 2006, as *Cuthona* sp. [226]); Weddell Sea (present work, one animal, 9 mm long, collected at 228 m depth); Ross Sea (Valdés et al., 2012); Queen Mary Land, East Antarctica (Minichev, 1972).
Remarks: This species can measure up to 45 mm in length preserved (Minichev, 1972).

***Cuthona georgiana* (Pfeffer, 1886).**
Records: Patagonia (Linse, 1999; Forcelli, 2000; Schrödl, 2003); South Georgia (Pfeffer in Martens & Pfeffer, 1886, as *Aeolis georgiana*; Powell, 1951); Kerguelen Is. (Thiele, 1912, as

Cratena exigua Thiele, 1912; Linse, 1999; Powell, 1960, as *Cratena exigua* Thiele, 1912); Ross Sea (Cattaneo-Vietti, 1991; Linse, 1999; Cattaneo-Vietti et al. 2000; Schiaparelli & Linse, 2014); David Sea, East Antarctica (Minichev, 1972).
Remarks: Minichev (1972) described *C. georgiana longipapillata* from the Davis Sea, which up to now has not been recorded elsewhere for Antarctic waters.

***Cuthona giarannae* Á. Valdés, Moran & H. A. Woods, 2012.**
Records: Ross Sea (Valdés et al., 2012).
Remarks: This species (preserved animals) can reach up to 8 mm in length (Valdés et al., 2012).

***Cuthona odhneri* Er. Marcus, 1959.**
Records: Patagonia (Linse, 1999; Schrödl, 2003).

***Cuthona paucicirra* Minichev, 1972.**
Records: Davis Sea, East Antarctica (Minichev, 1972).

***Cuthona valentini* (Eliot, 1907).**
Records: Patagonia (Linse, 1999; Forcelli, 2000; Schrödl, 2003); Falkland Is. (Eliot, 1907b; Powell, 1951; Linse, 1999; Schrödl, 2003).
Remarks: This species has been recorded as *Cratena valentini*, *Tergipes valentini* or *Catriona valentini*. Schrödl (1999b) transferred the "*valentini*" species to the genus *Cuthona* due to the short radula and the angular tooth shape.

Family Cuthonellidae M. C. Miller, 1977.
Genus ***Cuthonella*** Bergh, 1884.

***Cuthonella elioti* (Odhner, 1944).**
Records: Ross Sea (Eliot, 1907a as *Cuthonella antartica* Eliot, 1907; Valdés et al., 2012).
Remarks: For the nomenclature of this species, described by Eliot (1907a), see Valdés et al. (2012).

***Cuthonella modesta* Eliot, 1907 (Figure 10B).**
Records: South Shetland Is. (present work, one animal of 12 mm, alive, collected during the Bentart 2006 expedition); Ross Sea (Eliot, 1907a; Valdés et al., 2012).
Family Murmaniidae Korshunova, Martynov, Bakken, Evertsen, Fletcher, Mudianta, Saito, Lundin, Schrödl & Picton, 2017.

Genus ***Guyvalvoria*** Vayssière, 1906.

***Guyvalvoria francaisi* Vayssière, 1906.**
Records: Wandel Is., Antarctic Peninsula (Vayssiére, 1906a).
Remarks: This species has not been recorded after its description.

***Guyvalvoria gruzovi* Martynov, 2006.**
Records: Amery Ice Shelf, Davis Sea (Martynov, 2006).
Remarks: This species has not been recorded after its description.

***Guyvalvoria paradoxa* (Eliot, 1907).**
Records: South Georgia Is. (Pfeffer in Martens & Pfeffer, 1886, as *Aeolis schraderi*); Ross Sea (Eliot, 1907a, as *Cuthonella paradoxa*; Valdés et al., 2012).
Remarks: The species *Cuthona schraderi* (Pfeffer, 1886) is recorded in WoRMS as nomen

dubium, and Valdés et al. (2012) stated that the description and redescription (Odhner, 1934) of *C. schraderi* display many similarities to specimens that they studied as *Guyvalvoria paradoxa*, an opinion that we follow here. The egg masses of this species are laid on the giant solitary hydroids *Corymorpha microrhiza* (Hickson & Gravely, 1907) or *Zyzzyzus parvula* (Hickson & Gravely, 1907) (Valdés et al., 2012), which are probably the food of the adults.

***Guyvalvoria savinkini* Martynov, 2006.**
Records: Kerguelen Is. (Martynov, 2006).
Remarks: This species has not been recorded after its description.

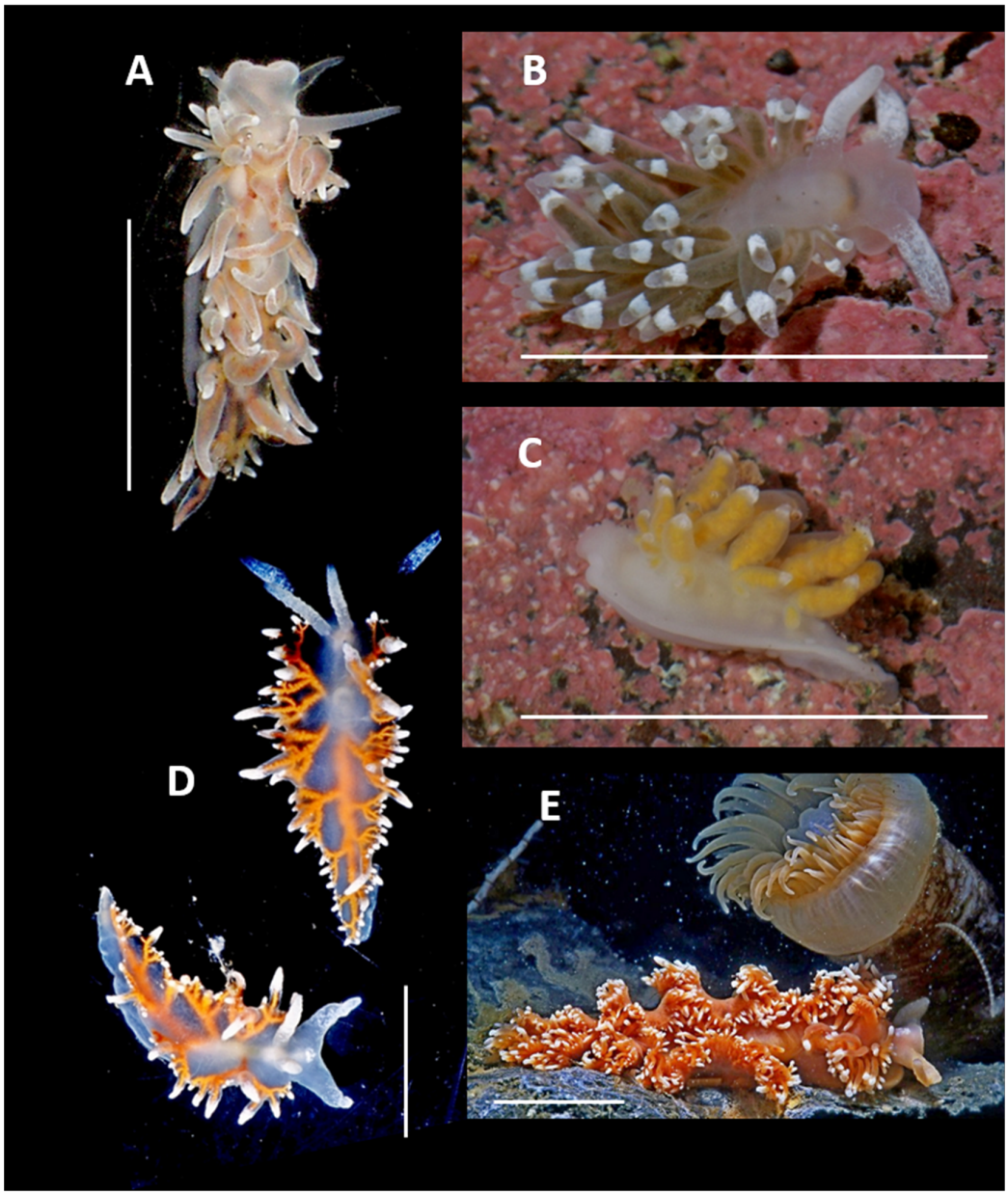


Figure 10. (**A**): *Cuthona crinita*, specimen from the Weddell Sea. (**B**): *Cuthonella modesta*, specimen from South Shetland. (**C**): *Eubranchus glacialis*, specimen from South Shetland. (**D**): Two specimens of *Notaeolidia depressa* from the Weddell Sea. The brown hepatic branches that extend into the cerata are clearly visible. (**E**): *Notaeolidia gigas* from South Shetland. Original photos by M. Ballesteros. Scale bars are 10 mm.

Family Tergipedidae Bergh, 1889.
Genus ***Tergipes*** Cuvier, 1805.

***Tergipes antarcticus* Pelseneer, 1903.**
Records: Weddell Sea (Kiko et al., 2008); Charcot Island, Bellingshausen Sea, West Antarctica (Pelseneer, 1903) [234]; East Antarctica (Kiko et al., 2008).
Remarks: This unique nudibranch species develops all its vital phases in ice, adult, egg masses, larva and juveniles (Kiko et al., 2008).

Family Trinchesiidae F. Nordsieck, 1972.
Genus ***Trinchesia*** Ihering, 1879.

***Trinchesia macquariensis* Burn, 1973.**
Records: Macquarie Is. (Burn, 1973).

***Trinchesia reflexa* (M. C. Miller, 1977).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Trinchesia sororum* Burn, 1964.**
Records: Tasmania, Australia (Grove, 2018).

***Trinchesia viridiana* (Burn, 1962).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

***Trinchesia zelandica* (Odhner, 1924).**
Records: Subantarctic islands of New Zealand (Spencer et al., 2016).

Clade Tectipleura Schrödl et al., 2011.
Order Umbraculida.
Superfamily Umbraculoidea Dall, 1889 (1827).
Family Tylodinidae Rafinesque, 1814.
Genus ***Tylodina*** Rafinesque, 1814.

***Tylodina corticalis* (Tate, 1889).**
Records: Tasmania, Australia (Burn 2015; Grove, 2018).

Family Umbraculidae Dall, 1889 (1827).
Genus ***Umbraculum*** Schumacher, 1817.

***Umbraculum umbraculum* ([Lightfoot], 1786).**
Records: Tasmania, Australia (Burn 2015; Grove, 2018).
Remarks: This species has a long list of synonyms due to its wide geographical distribution on both shores of the Atlantic, the Indian Ocean, the Pacific and the Mediterranean. Due to this wide geographical distribution, some authors have suggested (Arias & Crocetta, 2016 [235]) that *U. umbraculum* could be a species complex. Molecular studies using individuals from multiple locations are necessary to clarify its taxonomic status.

Order Aplysiida.
Superfamily Aplysioidea Lamarck, 1809.
Family Aplysiidae Lamarck, 1809.
Genus ***Aplysia*** Linnaeus, 1767.

***Aplysia argus* Rüppell & Leuckart, 1830.**

Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018; Nimbs et al., 2017).

***Aplysia concava* G. B. Sowerby I, 1833.**
Records: Northern and eastern Tasmania, Australia (Burn 2015, as *Aplysia parvula* Mörch, 1863; Grove, 2018, as *Aplysia parvula*) (Nimbs, 2021 [236]; Nimbs & Wilson, 2021); South Island, New Zealand (Spencer, Willan, Marshall, & Murray, 2016).
Remarks: Until the review of the *Aplysia parvula* species complex by Golestani et al. (2019), *Aplysia concava* had been considered a morphotype of *A. parvula*.

***Aplysia extraordinaria* (J. K. Allan, 1932).**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Nimbs et al., 2017; Grove, 2018).

***Aplysia keraudreni* Rang, 1828.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Aplysia juliana* Quoy & Gaimard, 1832.**
Records: Tasmania, Australia (Willan, 1998 [237]; Burn, 2015; Grove, 2018; Nimbs, et al., 2017); South Island, New Zealand (Spencer et al., 2016).

***Aplysia sydneyensis* G. B. Sowerby I, 1869.**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018; Nimbs, et al., 2017).

Order Cephalaspidea P. Fischer, 1883.
{Family (unassigned)}.
Genus ***Noalda*** Iredale, 1936.
***Noalda exigua* (Hedley, 1912).**
Records: Tasmania, Australia (Grove, 2018; Burn 2015).
Superfamily Bulloidea Gray, 1827.

Family Bullidae Gray, 1827.
Genus ***Bulla*** Linnaeus, 1758.
***Bulla quoyii* J. E. Gray, 1843.**
Records: Northern Tasmania, Australia (Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

Family Retusidae Thiele, 1925.
Genus ***Relichna*** Rudman, 1971.
***Relichna murdochi* (Suter, 1913).**
Records: Chatham Islands, New Zealand (Spencer et al., 2016).

***Relichna pachys* (R. B. Watson, 1883).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

Genus ***Retusa*** T. Brown, 1827.
***Retusa amphizosta* (R. B. Watson, 1886).**
Records: Tasmania, Australia (Grove, 2018).

***Retusa atkinsoni* (Tenison Woods, 1876).**
Records: Northern and eastern Tasmania, Australia (Grove, 2018).

***Retusa opima* (H. J. Finlay, 1926).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Retusa oruaensis* (W. H. Webster, 1908).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

***Retusa pelyx* Burn in Burn & Bell, 1974.**
Records: Northern and eastern Tasmania, Australia (Burn, 2015; Grove, 2018).

***Retusa protumida* (Hedley, 1903).**
Records: Tasmania, Australia (Grove, 2018).

***Retusa pygmaea* (A. Adams, 1850).**
Records: Tasmania, Australia (Grove, 2018).

***Retusa sculpta* (Gatliff & Gabriel, 1913).**
Records: Tasmania, Australia (Burn, 2006).
Remarks: This species, of which very few specimens are known and which was initially described as a subspecies of Retusa pygmaea, is considered enigmatic by Burn (2006).

***Retusa striata* (F. W. Hutton, 1873).**
Records: South Island and Chatham Islands, New Zealand; Subantarctic islands of New Zealand (Spencer et al., 2016).

Family Rhizoridae Dell, 1952.
Genus ***Volvulella* R. B.** Newton, 1891.

***Volvulella nesentus* (H. J. Finlay, 1926).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Volvulella rostrata* (A. Adams, 1850).**
Records: Northern and eastern Tasmania, Australia (Grove, 2018).

***Volvulella tragula* (Hedley, 1903).**
Records: Tasmania, Australia (Grove, 2018).

***Volvulella truncata* Dell, 1956.**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

Family Tornatinidae P. Fischer, 1883.
Genus ***Acteocina*** J. E. Gray, 1847.

***Acteocina apicina* (A. Gould, 1859).**
Records: Northern and eastern Tasmania, Australia (Grove, 2018).

***Acteocina excerta* (Hedley, 1903).**
Records: Northern and eastern Tasmania, Australia (Grove, 2018).

***Acteocina* cf. *hacketti* (Cotton & Godfrey, 1933).**
Records: Northern Tasmania, Australia (Grove, 2018).

Superfamily Cylichoidea H. Adams & A. Adams, 1854.
Family Cylichnidae H. Adams & A. Adams, 1854.
Genus **Cylichna** Lovén, 1846.

***Cylichna bulloidea* Dell, 1956.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Cylichna cumberlandiana* (Strebel, 1908).**
Records: Patagonia (Linse, 1999; Forcelli, 2000); South Georgia Is. (Strebel, 1908; Powell, 1951; Linse, 1999; Zelaya, 2005).

***Cylichna gelida* (E. A. Smith, 1907).**
Records: Antarctic Polar Front (Jörger et al., 2014, as cf.); Weddell Sea (Engl, 2012); Elephant Is. (Engl, 2012); Decepcion Is., South Shetland Is. (Orrell, 2024) [238]; Ross Sea (Smith, 1907; Schiaparelli et al., 2006; Ghiglione et al., 2013); Davis Sea (Thiele, 1912).

***Cylichna georgiana* (Strebel, 1908).**
Records: Patagonia (Argentina; Castellanos et al., 1987b; Bastida et al., 1992 [239]; Linse, 1999; Forcelli, 2000; Chile, Tierra del Fuego, SOMBASE, 2024); Falkland Is. (Bakker et al., 2024 [240]) South Georgia Is. (Strebel, 1908; Powell, 1951; Linse, 1999; Zelaya, 2005); Antarctic Polar Front (Jörger et al., 2014, as cf,); Kapp Norvegia, Weddell Sea (Gutt et al. 2000) [241].

***Cylichna zealandica* T. W. Kirk, 1880.**
Records: South Island, New Zealand (Spencer et al., 2009).

Genus ***Toledonia*** Dall, 1902.

***Toledonia biplicata* (Strebel, 1908).**
Records: Patagonia (Linse, 1999; Argentina, Forcelli, 2000; Chile, Cárdenas et al., 2008, Aldea et al., 2011 [203]); Falkland Is. (Strebel, 1908; Linse, 1999).
Remarks: In all cases, recorded as *Acteon biplicatus* (Strebel, 1908).

***Toledonia brevior* Eales, 1923.**
Records: Ross Sea (MolluscaBase eds., 2025c) [242].

***Toledonia bullata* (A. Gould, 1847).**
Records: Patagonia (Gould, 1847, as *Tornatella bullata* [243]; Rochebrune & Mabille, 1889, as *Tornatella bullata*; Castellanos et al., 1987b; Forcelli, 2000, as *Acteon bullatus*); Falkland Is. (Powell, 1951, as *Acteon bullatus*).

***Toledonia circumrosa* (Thiele, 1904).**
Records: Kerguelen Is. (MolluscaBase eds., 2025d) [244].

***Toledonia elata* Thiele, 1912.**
Records: Marion & Prince Edward Is. (Branch et al., 1991; Kerguelen Is. (Thiele, 1912; Troncoso et al., 2001); Weddell Sea (Engl, 2012); South Shetland Is. (Engl, 2012); Bransfield Strait (Engl, 2012); Amundsen Sea (Moreau et al., 2013, as cf.); Ross Sea (Ghiglione et al., 2013); Enderby Land, East Antarctica (Powell, 1958).

***Toledonia globosa* Hedley, 1916.**
Records: Weddell Sea (Engl, 2012); Adelie Land (Hedley, 1916; Vicente & Arnaud, 1974; Dell, 1990; Ghiglione et al., 2013); Enderby Land, East Antarctica (Powell, 1951); Ross Sea (Powell, 1951).

***Toledonia limnaeaeformis* (E. A. Smith, 1879).**
Records: Patagonia (Linse, 1999; Argentina, Castellanos et al., 1987a; Forcelli, 2000); Budwood Bank, Falkland Is. (SOMBASE, 2024), Marion & Prince Edward Is. (Branch et al., 1991; Kerguelen Is. (Smith, 1879, as *Admete limnaeformis* E. A Smith, 1877; Thiele, 1912; Linse, 1999); Bouvet Is. (Linse, 2006, as cf.); Antarctic Peninsula (Bouchet, 2010 [245]); Ross Sea (Linse, 1999; Ghiglione et al., 2013).

***Toledonia major* (Hedley, 1911).**
Records: South Sandwich Is. (Dell, 1990); South Shetland Is. (Powell, 1951; Dell, 1990); Weddell Sea (Hain, 1990, as *Toledonia* cf. h*edleyi* A. W. B. Powell, 1958); Ross Sea (Hedley, 1916; Schiaparelli et al., 2006; Ghiglione et al., 2013); Adelie Land (Powell, 1958, as *T. hedleyi* A. W. B. Powell, 1958; Vicente & Arnaud, 1974); Davis Sea, East Antarctica (Thiele, 1912; Eales, 1923; Minichev, 1972).

***Toledonia media* Thiele, 1912.**
Records: Kerguelen Is. (Thiele, 1912; Dell, 1990).

***Toledonia palmeri* Dell, 1990.**
Records: Antarctic Peninsula (Thiele, 1912; Dell, 1990); Ross Sea (Ghiglione et al., 2013; Schiaparelli et al., 2014).

***Toledonia parelata* Dell, 1990.**
Records: Patagonia (Linse, 1999); Magellan Strait and Beagle Channel (Dell, 1990; Rosenfeld & Aldea, 2011); Eastern Weddell Sea (SOMBASE, 2024).

***Toledonia perplexa* Dall, 1902.**
Records: Magellan Strait (Dall, 1902; Dell, 1990); Patagonia (Linse, 1999; Aldea et al., 2011 [203]); Falkland Is. (Powell, 1951; Linse, 1999); Ross Sea (Schiaparelli et al., 2006, as aff.; Ghiglione et al., 2013 recorded as cf.; Schiaparelli et al. 2014, as cf.).

***Toledonia punctata* Thiele, 1912.**
Records: Patagonia, Tierra del Fuego (Dell, 1990; Linse, 1999); Burdwood Bank, Falklans Is. (SOMBASE, 2024); Antarctic Polar Front (Jörger et al., 2014); South Georgia Is. (Powell, 1951; Dell, 1990; Linse, 1999; Zelaya, 2005); Kerguelen Is. (Thiele, 1912; Dell, 1990; Linse, 1999); Ross Sea (Dell, 1990; Linse, 1999; Ghiglione et al., 2013).

***Toledonia striata* Thiele, 1912.**
Records: Antarctic Polar Front (Jörger et al., 2014); Bransfield Strait (Engl, 2012); Weddell Sea (Engl, 2012); Ross Sea (Dell, 1990; Schiaparelli et al., 2006; Ghiglione et al., 2013); Davis Sea (Thiele, 1912).

***Toledonia succineaformis* A. W. B. Powell, 1955.**
Records: South Island, New Zealand; Subantarctic islands of New Zealand (Dell, 1990; Spencer et al., 2016).

Family Mnestiidae Oskars, Bouchet & Malaquias, 2015.
Genus ***Mnestia*** H. Adams & A. Adams, 1854.

***Mnestia arachis* (Quoy & Gaimard, 1833).**
Records: Northern and Eastern Tasmania, Australia (Grove, 2018, as *Adamnestia arachis* (Quoy & Gaimard, 1833).

Family Diaphanidae Odhner, 1914 (1857).
Genus ***Diaphana*** T. Brown, 1827.

***Diaphana anderssoni* (Strebel, 1908).**
Records: South Georgia (Strebel, 1908; Powell, 1951, as *Retusa anderssoni* Strebel, 1908; Linse & Schiotte, 2002 [246]).

***Diaphana brazieri* Angas, 1877.**
Range: Tasmania, Australia (Grove, 2018).

***Diaphana haini* K. Linse & Schiotte, 2002.**
Records: South Scotia Ridge (Engl, 2012); Weddell Sea (Linse & Schiotte, 2002); Antarctic Polar Front (Jörger et al., 2014, as cf.).

***Diaphana inflata* (Strebel, 1908).**
Records: South Georgia (Strebel, 1908; Linse & Schiotte, 2002); South Scotia Ridge (Engl, 2012); Bouvet Is. (Linse, 2006, as cf.); North South Shetland Is, (Linse et al., 2002, as cf. [247]); Antarctic Polar Front (Jörger et al., 2014); Weddell Sea (Linse & Schiotte, 2002).

***Diaphana paessleri* (Strebel, 1905).**
Records: Patagonia (Strebel, 1905, as *Tornatina* (*Utriculus*) *paessleri* Strebel, 1905; Linse, 1999; Argentina (Forcelli, 2000); Falkland Is. (Powell, 1951; Linse, 1999; Linse & Schiotte, 2002); South Georgia (Strebel, 1908; Linse & Schiotte, 2002; Zelaya, 2005); South Orkney Is. (Melvill & Standen, 1912, as *Retusa antarctica* Melville & Standen, 1912; Powell, 1951, as *Retusa antarctica* Melville & Standen, 1912; Linse & Schiotte, 2002); Marion & Prince Edward Is. (Branch et al., 1991, as *Diaphana kerguelensis* Thiele, 1912); Kerguelen Is. (Thiele, 1912, as *Diaphana kerguelensis* Thiele, 1912); Weddell Sea (Linse & Schiotte, 2002; Engl, 2012); South Shetland Is. (Engl, 2012); Ross Sea (Powell, 1960, as *Retusa frigida* Hedley, 1916; Dell, 1990, as *Retusa frigida* Hedley, 1916; Linse & Schiotte, 2002; Ghiglione et al., 2013); Davis Sea (Thiele, 1912, as *Diaphana extrema* Thiele, 1912).

***Diaphana pfefferi* (Strebel, 1908).**
Records: South Georgia (Strebel, 1908; Powell, 1951; Linse & Schiotte, 2002; Zelaya, 2005).

***Diaphana tasmanica* (C. E. Beddome, 1883).**
Records: Tasmania, Australia (Burn, 2015; Grove, 2018).

Superfamily Haminoeoidea Pilbry, 1895.
Family Haminoeidae Pilsbry, 1895.
Genus ***Aliculastrum*** Pilsbry, 1896.

***Aliculastrum tumidum* (Burn, 1978).**
Records: Northern and eastern Tasmania (Burn, 2015; Grove, 2018, as *Nipponatys tumidus* Burn, 1978).

Genus ***Cylichnatys*** Habe, 1952.

***Cylichnatys campanula* Burn, 1978.**

Records: Northern and eastern Tasmania (Burn, 2015; Grove, 2018).

Genus ***Papawera*** Oskars & Malaquais, 2019.

***Papawera maugeansis* (Burn, 1966).**

Records: Tasmania, Australia (Burn, 2015; Grove, 2018; as *Haminoea maugeansis* Burn, 1966 [248]).

***Papawera zelandiae* (J. E. Gray, 1843).**

Records: South Island, New Zealand (Spencer et al., 2016, as *Haminoea zelandiae* (J. E. Gray, 1843).

Genus ***Roxaniella*** Monterosato, 1884.

***Roxaniella exigua* (A. Adams, 1850).**

Records: Tasmania, Australia (Burn, 2015, as *Austrocylichna exigua* (A. Adams, 1850).

Genus ***Liloa*** Pilsbry, 1921.

***Liloa brevis* (Quoy & Gaimard, 1833).**

Records: Northern and eastern Tasmania (Burn, 2015; Grove, 2018).

Superfamily Newnesioidea Moles, Wägele, Schrödl & C. Àvila, 2016.

Family Newnesiidae Moles, Wägele, Schrödl & C. Àvila, 2016.

Genus ***Newnesia*** E. A. Smith, 1902.

***Newnesia antarctica* E.A. Smith, 1902 (Figure 3E).**

Records: South Georgia (Zelaya, 2005); South Scotia Ridge (Engl, 2012); South Orkney Is. (Carcelles, 1953); Weddell Sea (Hedley, 1916; Hain, 1990; Schiaparelli et al., 2006; Engl, 2012); Antarctic Peninsula (Strebel, 1908, as *Anderssonia sphinx* Strebel, 1908; Aldea & Troncoso, 2008); Neumayer Channel, West Antarctica (Vayssière, 1917); South Shetland Is. (SOMBASE; this work); Ross Sea (Smith, 1902; Dell, 1990); Adelie Land (Hedley, 1916); Davis Sea (Minichev, 1972; Dell, 1990).

Remarks: Vayssière (1917) carried out a complete anatomical study of this species.

***Newnesia abyssalis* Moles, C. Àvila & Malaquias, 2017.**

Records: Drake Passage (North South Shetlands Is.) (Moles et al., 2017a) [249].

Remarks: As indicated by its specific name, this species occurs at great depths.

Genus ***Hocius*** Moles, C. Àvila & Malaquias, 2017.

***Hocius joani* (Moles, Wägele, Schrödl & C. Àvila, 2017) (Figure 3F).**

Records: North South Shetlands Is. (Moles et al., 2017c) [250]; Weddell Sea (Rauschert & Arntz, 2015, as *Newnesia* sp.; this work).

Remarks: Initially described as *Newnesia joani* (Moles et al., 2017c) [250]. It differs from the type of the genus *Newnesia* because it has an internal rather than an external shell.

Superfamily Philinoidea Gray, 1850 (1815).

Family Aglajidae Pilsbry, 1895 (1947).

Genus ***Melanochlamys*** Cheeseman, 1881.

***Melanochlamys cylindrica* Cheeseman, 1881.**

Records: South Island, New Zealand (Spencer et al., 2016).

***Melanochlamys handrecki* Burn, 2010.**
Records: Tasmania, Australia (Grove, 2015).

***Melanochlamys lorrainae* (Rudman, 1968).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Melanochlamys queritor* (Burn, 1957).**
Records: Tasmania, Australia (Grove, 2015).

Genus ***Philinopsis*** Pease, 1860.
***Philinopsis gigliolii* (Tapparone Canefri, 1874).**
Records: Tasmania, Australia (Grove, 2015, as *Philinopsis taronga* J. K. Allan, 1933).
Remarks: Recently, Chaban et al. (2024) [251] studied by molecular methods specimens of *P. gigliolii* from the coasts of Japan and specimens attributed to *Ph. taronga* from Australia. They concluded that the latter species is synonymous with *Ph. gigliolii*. This species has an unusual antitropical distribution in temperate and subtropical waters of both hemispheres.

Family Gastropteridae.
Genus ***Sagaminopteron*** Tokioka & Baba, 1964.
***Sagaminopteron ornatum* Tokioka & Baba, 1964.**
Records: Tasmania, Australia (Grove, 2018).
Family Antarctophilinidae Moles, C. Àvila & Malaquias, 2019.

Genus ***Antarctophiline*** Chaban, 2016.

***Antarctophiline abyssalis* Peralta-Serrano, Schrödl, N. G. Wilson & Moles, 2025.**
Records: South Atlantic Ridge between South Sandwich Is. to Bouvel Is. (Peralta-Serrano et al., 2025).
Remarks: This new species is described based on six specimens collected between 2892 and 4547 m deep.

***Antarctophiline alata* (Thiele, 1912) (Figure 3C,D).**
Records: Patagonia (Argentina, Forcelli, 2000); South Sandwich Is. (Powell, 1951); South Orkney Is. (Powell, 1951); Kerguelen Is. (Thiele, 1912, as *Philine amoena* Thiele, 1925; Troncoso et al., 2001, as *Philine* cf. a*moena* Thiele, 1925); Bouvet Island (Arntz et al., 2006); Weddell Sea (Hain, 1990; Engl, 2012; this work); South Shetland Is. (Powell, 1951; Troncoso et al., 1996; Troncoso et al., 1999; Arnaud et al., 2001; Aldea & Troncoso, 2008; Engl, 2012; this work); Palmer Archipelago (Powell, 1951); Bellingshausen Sea (Aldea et al., 2008; Aldea et al., 2009; Aldea & Troncoso, 2010); Ross Sea (Ghiglione et al., 2013; Schiaparelli et al., 2014); Enderby Land (Powell, 1958); Adelie Land (Vicente & Arnaud, 1974); Davis Sea, East Antarctica (Thiele, 1912);
Remarks: This species was recorded under *Philine*. Based on differences in penial and gizzard plate morphology, Chaban (2016) [252] established the new genus *Antarctophiline*, which includes *alata* and *gibba* species and the recently described *easmithi* and *amundseni*. Based on morphological and molecular data, Moles et al. (2019) [253], erected the new family Antarctophlinidae to include most of the Philinoidea species from the Southern Ocean, including those mentioned above.

***Antarctophiline amundseni* Moles, C. Àvila & Malaquias, 2019.**
Records: Eastern Weddell Sea (Moles et al., 2019).
Remarks: Lives at depths between 736 and 910 m (Moles et al., 2019) [253].

***Antarctophiline apertissima* (E. A. Smith, 1902).**
Records: Antarctic Polar Front (Jörger et al., 2014, as cf,); Ross Sea (Smith, 1902; Powell, 1960; Dell, 1990; Cattaneo-Vietti et al., 2000).
Remarks: Until the revision of the Antarctic Philinoidea (Moles et al., 2019) [253], this species was included within the genus *Philine*.

***Antarctophiline easmithi* Moles, C. Àvila & Malaquias, 2019.**
Records: Eastern Weddell Sea (Moles et al., 2019) [253].
Remarks: Known so far to live in depths between 173 and 463 m (Moles et al., 2019) [253].

***Antarctophiline falklandica* (A. W. B. Powell, 1951).**
Records: Patagonia (Linse, 1999; Argentina, Castellanos et al., 1987b; Forcelli, 2000); Falkland Is. (Powell, 1951; Linse, 1999).
Remarks: Until the revision of the Antarctic Philinoidea (Moles et al., 2019) [253], this species was included within the genus *Philine*.

***Antarctophiline gibba* (Strebel, 1908).**
Records: South Georgia Is. (Strebel, 1908; Powell, 1951; Carcelles, 1953; Seager, 1978; Zelaya, 2005); South Orkney (Doello-Jurado, 1918) [254]; Eastern Weddell Sea (SOMBASE, 2024); East Antarctica (Chaban, 2016); Ross Sea (Chaban, 2016).
Remarks: As for *A. alata*, *A. gibba* is the type species of the new genus *Antarctophiline*. Chaban (2016) found this species to be very abundant in Prydz Bay (East Antarctica) on muddy bottoms between 5 and 37 m deep, accounting for 5–40 individuals per square meter.

***Antarctophiline malaquiasi* Peralta-Serrano, Schrödl, N. G. Wilson & Moles, 2025.**
Records: Bransfield Strait, West Antarctica (Peralta-Serrano et al., 2025).
Remarks: This new species was described based on two specimens collected between 150 and 247 m deep.

Genus **Waegelea** Moles, C. Àvila & Malaquias, 2019.
***Waegelea antarctica* (E. A. Smith, 1902).**
Records: Weddell Sea (Moles et al., 2019); Ross Sea (Smith, 1902; Powell, 1960; Cattaneo-Vietti et al., 2000; Ghiglione et al., 2017).
Remarks: Until the revision of the Antarctic Philinoidea (Moles et al., 2019), this species was included within the genus *Philine*.

Family Philinidae Gray, 1850 (1815).
Genus ***Philine*** Ascanius, 1772.
***Philine angasi* (Crosse, 1865).**
Records: Tasmania, Australia (Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

***Philine auriformis* Suter, 1909.**
Records: Tasmania, Australia (Grove, 2018); South Island, New Zealand (Spencer et al., 2016).

***Philine beachportensis* Verco, 1909.**
Records: Tasmania, Australia (Grove, 2018).

***Philine columnaria* Hedley & May, 1908.**
Records: Tasmania, Australia (Grove, 2018).

***Philine constricta* Murdoch & Suter, 1906.**
Records: South Island & Chatham Islands, New Zealand (Spencer et al., 2016).

***Philine powelli* Rudman, 1970.**
Records: South Island, New Zealand (Spencer et al., 2016).

***Philine teres* Hedley, 1903.**
Records: Tasmania, Australia (Grove, 2018).

***Philine umbilicata* Murdoch & Suter, 1906.**
Records: South Island & Chatham Islands, New Zealand (Spencer et al., 2016).

Genus ***Praephiline* Chaban & Soldatenko, 2009.**
***Praephiline thurmanni* (Ev. Marcus & Er. Marcus, 1969).**
Records: Patagonia (Argentina; Forcelli, 2000; Price et al., 2011).
Remarks: This species has been recorded as *Philine thurmanni* Ev. Marcus & Er. Marcus, 1969, and *Laona thurmanni* (Ev. Marcus & Er. Marcus, 1969).

Genus ***Spiraphiline*** Moles, C. Àvila & Malaquias, 2019.
***Spiraphiline bathyalis* Moles, C. Àvila & Malaquias, 2019.**
Records: Eastern Weddell Sea (Moles et al., 2019).
Remarks: Its specific name indicates the great depth (2004 m) at which the only specimen that served to describe the species was found.

***Spiraphiline kerguelensis* (Thiele, 1925).**
Records: Falkland Is. (Powell, 1960); Kerguelen Is. (Powell, 1951); Kapp Norvegia, Eastern Weddell Sea (SOMBASE, 2024).
Remarks: Until the revision of the Antarctic Philinoidea (Moles et al., 2019), this species was included within the genus *Philine*.

Family Scaphandridae G. O. Sars, 1878.
Genus ***Kaitoa*** Marwick, 1931.
***Kaitoa scaphandroides* A. W. B. Powell, 1951.**
Records: South Georgia Is. (Powell, 1951; Carcelles, 1953; Zelaya, 2005).

Genus ***Scaphander*** Montfort, 1810.
***Scaphander illecebrosus* Iredale, 1925.**
Records: Tasmania, Australia (Grove, 2018).

***Scaphander interruptus* Dall, 1889.**
Records: Patagonia (Argentina, Forcelli, 2000; Chile, Valdés & McLean, 2015).

***Scaphander otagoensis* Montfort, 1810.**
Records: South Island, New Zealand (Spencer et al., 2016).

Order Runcinida.
Superfamily Runcinoidea H. Adams & A. Adams, 1854.
Family Runcinidae H. Adams & A. Adams, 1854.
Genus ***Runcina* Forbes [in Forbes & Hanley], 1851.**
***Runcina australis* Burn, 1963.**
Records: Northern Tasmania, Australia (Grove, 2018).

***Runcina katipoides* (M. C. Miller & Rudman, 1968).**
Records: South Island, New Zealand (Spencer et al., 2016).

Order Pteropoda Cuvier, 1804.
Suborder Euthecosomata Meisenheimer, 1905.
Superfamily Cavolinioidea J. E. Gray, 1850 (1815).
Family Cavoliniidae J. E. Gray, 1850 (1815).
Genus ***Cavolinia* Abildgaard, 1791.**
***Cavolinia gibbosa* (A. d'Orbigny, 1836).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Cavolinia inflexa* (Lesueur, 1813).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Cavolinia tridentata* (Forsskål, 1775).**
Records: South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

***Cavolinia uncinata* (A. d'Orbigny, 1835).**
Records: South Island, New Zealand (Spencer et al., 2016).

Genus ***Diacavolinia*** van del Spoel, 1987.
***Diacavolinia longirostris* (Blainville, 18212).**
Records: West Antarctica (Powell, 1960).

Genus ***Diacria*** J. E. Gray, 1847.
***Diacria trispinosa* (Blainville, 1821).**
Records: South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Family Cliidae Jeffreys, 1869.
Genus ***Clio*** Linnaeus, 1767.
***Clio recurva* Children, 1823.**
Records: Antarctic Peninsula, Weddell Sea, East Antarctica (Australian Antarctic Data Centre, 2024, as *Clio balantium* Rang, 1834).

***Clio chapalii* Gray, 1950.**
Records: Antarctic Peninsula, Weddell Sea, East Antarctica (Australian Antarctic Data Centre, 2024).

***Clio cuspidata* (Bosc, 1802).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

***Clio piatkowskii* van der Spoel, Schalk & Bleker, 1992.**
Records: Weddell Sea (Van der Spoel et al., 1992); Lazarev Sea (Hunt et al., 2008).

***Clio pyramidata* Linnaeus, 1767.**
Records: Patagonia (Argentina, Forcelli, 2000; Dadon & Chauvin, 1998); Falkland Is. (Dadon & Chauvin, 1998); South Georgia Is. (Powell, 1960, as *Clio sulcata* (Pfeffer, 1879); Hunt et al., 2008); South Sandwich Is. (Powell, 1951, as *Cleodora sulcata* Pfeffer, 1879); Prince Edward Is. (Hunt et al., 2008); Lazarev Sea (Hunt et al., 2008); Weddell Sea (Würzberg et al., 2009); Antarctic Peninsula (Hunt et al., 2008); Amundsen Sea (Moreau et al., 2013); Ross Sea (Hunt et al., 2008); East Antarctica (Hunt et al., 2008).
Remarks: In most records, it is recorded as *Clio antarctica* Dall, 1908.

Family Hyalocylidae A. W. Janssen, 2020.
Genus ***Hyalocylis*** Fol, 1875.
***Hyalocylis striata* (Rang, 1828).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016); West Antarctica (Powell, 1960).

Family Creseidae Rampal, 1973.
Genus ***Creseis*** Rang, 1828.
***Creseis acicula* (Rang, 1828).**
Records: South Island, New Zealand (Spencer et al., 2016).
Remarks: Frequently recorded as *Creseis clava* (Rang, 1828).

***Creseis conica* Eschscholtz, 1829.**
Records: South Island, New Zealand (Spencer et al., 2016).
Remarks: Recorded in WoRMS as uncertain/taxon inquirendum.

Genus ***Styliola*** Gray, 1850.
***Styliola subula* (Quoy & Gaimard, 1827).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

Family Cuvierinidae van der Spoel, 1967.
Genus ***Cuvierina*** Boas, 1886.
***Cuvierina columnella* (Rang, 1827).**
Records: South Island, New Zealand (Spencer et al., 2016).

Superfamily Limacinoidea Gray, 1840.
Family Limacinidae Gray, 1840.
Genus ***Limacina*** Bosc, 1817.
***Limacina bulimoides* (A. d'Orbigny, 1836).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

***Limacina costulata* Preston, 1916.**
Records: South Shetland Is. (Powell, 1951).
Remarks: This species is recorded in WoRMS as uncertain/taxon inquirendum.

***Limacina helicina* (Phipps, 1774) (Figure 11C,D).**
Records: Patagonia (Dadon & Chauvin, 1998; Linse, 1999); South Georgia Is. (Powell, 1951; Hunt et al., 2008); South Sandwich Is. (Powell, 1951); Prince Edward Is. (Hunt et al., 2008); south New Zealand (Powell, 1960); Lazarev Sea (Hunt et al., 2008; Würzberg et al., 2009); Weddell Sea (Hunt et al., 2008; present work); Antarctic Peninsula (Hunt et al., 2008); Bellingshausen Sea (Hunt et al., 2008); Amundsen Sea (Moreau et al., 2013); Ross Sea (Hunt et al., 2008); East Antarctica (Hunt et al., 2008).
Remarks: In many publications, it is recorded as *Spiratella helicina* (Phipps, 1774).

***Limacina lesueurii* (A. d'Orbigny, 1836).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

***Limacina rangii* (A. d'Orbigny, 1834).**
Records: Patagonia (Argentina, Forcelli, 2000**;**); King George Is. (Schrödl et al., 2016); Ross Sea (Smith, 1902; Brueggeman et al., 1999); South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).
Remarks: In most records, it is recorded as *Limacina antarctica* S. P. Woodward, 1854.

***Limacina retroversa* (J. Fleming,1823).**
Records: Patagonia (Dadon & Chauvin, 1998; Linse, 1999); South Georgia Is. (Powell, 1951, as *L. balea*; Hunt et al., 2008); South Sandwich Is. (Powell, 1951, as *Limacina balea* Moller, 1841); Prince Edward Is. (Hunt et al., 2008); Antarctic Peninsula (Hunt et al., 2008); Ross Sea (Hunt et al., 2008); East Antarctica (Australian Antarctica Data Centre, 2024).

***Limacina trochiformis* (A. d'Orbigny, 1836).**
Records: South Island, New Zealand (Spencer et al., 2016).

Family Heliconoididae Rampal, 2019.
Genus ***Heliconoides*** A. d'Orbigny, 1835.
***Heliconoides inflatus* (A. d'Orbigny, 1835).**
Records: Southern New Zealand (Powell, 1960); Ross Sea (Powell, 1960)

Family Thieleidae Rampal, 2019.
Genus ***Thielea*** Strebel, 1908.
***Thielea helicoides* (Jeffreys, 1877).**
Records: Patagonia (Powell, 1960; Linse, 1999; both as *Thilea procera* Strebel, 1908); Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016); Antarctic Peninsula, Weddell Sea, East Antarctica (Australian Antarctic Data Centre, 2024, as *Limacina helicoides* Jeffreys, 1877).

Family Peraclididae.
Genus ***Peracle*** Forbes, 1844.
***Peracle diversa* (Monterosato, 1875).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016).

Suborder Gymnosomata Blainville, 1824.
Superfamily Clionoidea Rafinesque, 1815.
Family Clionidae Rafinesque, 1815.
Genus ***Clione*** Pallas, 1774.

***Clione antarctica* E. A. Smith, 1902 (Figure 11A).**
Records: Patagonia (Argentina, Forcelli, 2000; Linse, 1999); South Georgia Is. (Powell, 1951; Linse, 1999; Hunt et al., 2008); South Sandwich Is (Powell, 1951; Linse, 1999); Bouvet Is. (Linse, 1999); Prince Edward Is. (Hunt et al., 2008); Weddell Sea (present work, one animal, 13 mm in length, collected during the 2003–2004 ANT XXI/2 Polarstern expedition; Hunt et al., 2008; Würzberg et al., 2009); Lazarev Sea (Hunt et al., 2008); Antarctic Peninsula (Hunt et al., 2008); King George Is. (Schrödl et al., 2016); Ross Sea (Smith, 1902; Hedley, 1916; Brueggeman et al., 1999; Linse, 1999; Hunt et al., 2008); Adélie Land (Linse, 1999); Davis Sea, East Antarctica (Minichev, 1972; Hunt et al., 2008).
Remarks: Recorded in some records as *Clione limacina antarctica* E. A. Smith, 1902. Gilmer and Lalli (1990) carried out a comparative morphological and anatomical study of *Clione* specimens from the northern hemisphere and Antarctic waters and concluded that there are enough differences for the existence of two species, *Clione limacina* (Phipps, 1774), distributed in the northern hemisphere, and *Clione antarctica*, distributed in the southern hemisphere. Molecular studies are needed to confirm this.

Genus ***Thliptodon*** Boas, 1886.

***Thliptodon diaphanus* (Meisenheimer, 1902).**
Records: South Island and Subantarctic islands of New Zealand (Spencer et al., 2016).

***Thliptodon gegenbauri* Boas, 1886.**
Records: South Island, New Zealand (Spencer et al., 2016).

Family Cliopsidae O. G. Costa, 1873.
Genus ***Cliopsis*** Troschel, 1854.

***Cliopsis krohniii* Troschel, 1854.**
Records: South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Family Hydromylidae Pruvot-Fol, 1942 (1862).
Genus ***Hydromyles*** Gistel, 1848.

***Hydromyles globulosus* (Rang, 1825).**
Records: South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Family Pneumodermatidae Latreille, 1825.
Genus ***Pneumodermopsis*** W**.** Keferstein, 1862.

***Pneumodermopsis macrochira* Meisenheimer, 1905**.
Records: South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

***Pneumodermopsis paucidens* (Boas, 1886).**
Records: Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Genus ***Schizobrachium*** Meisenheimer, 1903.

Schizobrachium polycotylum **Meisenheimer, 1903.**

Records: Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Genus ***Spongiobranchia*** A. d'Orbigny, 1836.

Spongiobranchia australis **A. d'Orbigny, 1836 (Figure 11B).**

Records: Patagonia (Argentina; Pelseneer, 1887; Linse, 1999; Forcelli, 2000); South Georgia Is. (Powell, 1951; Linse, 1999; Hunt et al., 2008); South Sandwich Is (Powell, 1951; Linse, 1999); Bouvet Island (Powell, 1960); Prince Edward Is. (Hunt et al., 2008); Antarctic Peninsula (Hunt et al., 2008); Weddell Sea (present work, two animals, 15 and 18 mm in length, collected during the 2003–2004 ANT XXI/2 Polarstern expedition; Hunt et al., 2008; Würzberg et al., 2009); Lazarev Sea (Hunt et al., 2008); Ross Sea (Smith, 1902; Hedley, 1916, as *Cliodita caducens* Quoy & Gaimard, 1825; Linse, 1999); East Antarctica (Hunt et al., 2008); South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Remarks: Species in this genus have sometimes been erroneously referred to as *Spongiobranchaea*.

Spongiobranchia intermedia **Pruvot-Fol, 1926.**

Records: South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Family Notobranchaeidae Pelseneer, 1886.

Genus ***Notobranchaea*** Pelseneer, 1886.

Notobranchaea macdonaldi **Pelseneer, 1886.**

Records: South Island, Chatham Islands and Subantarctic islands of New Zealand (Spencer et al., 2016).

Notobranchaea tetrabranchiata **Bonnevie, 1913.**

Records: South Island, New Zealand (Spencer et al., 2016).

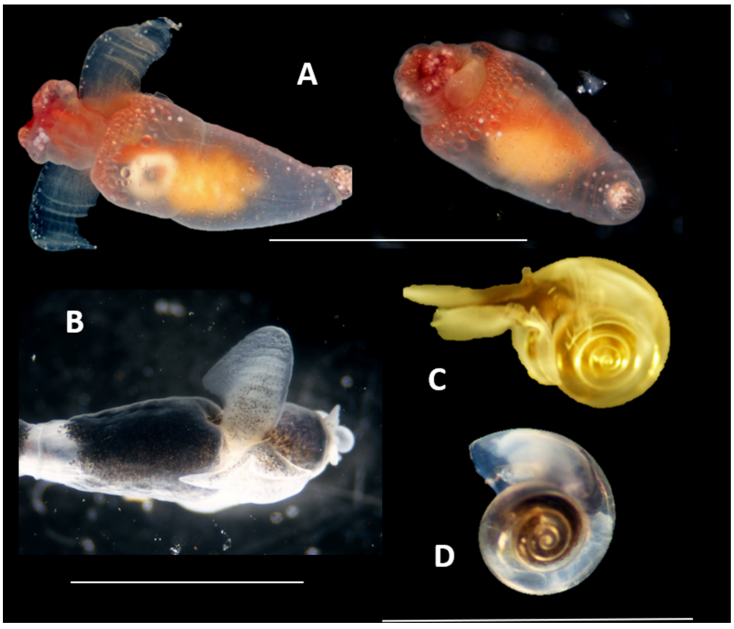


Figure 11. Pteropoda. *Clione antarctica*, specimen from the Weddell Sea. (**A**): On the left, ventral view

of the animal with the parapodia extended; on the right, the animal curled up. (**B**): *Spongiobranchia australis* from the Weddell Sea; *Limacina helicina* from the Weddell Sea. (**C**): Animal swimming. (**D**): Animal retracted inside its shell. Original photos by M. Ballesteros. Scale bars are 10 mm.

Suborder Pseudothecosomata Meisenheimer, 1905.
Superfamily Cymbulioidea Gray, 1840.
Family Peraclidae Tesch, 1913.
Genus ***Peracle*** Forbes, 1844.

***Peracle diversa* (Monterosato, 1875).**
Records: South Island and Chatham Islands, New Zealand (Spencer et al., 2016, as *Peracle apicifulva* Meisenheimer, 1906).

Family Cymbuliidae Gray, 1840.
Genus ***Cymbulia*** Péron & Lesueur, 1810.

***Cymbulia parvidentata* Pelseneer, 1888.**
Records: South Island, New Zealand (Spencer et al., 2016).

Superorder Sacoglossa Ihering, 1876.
Superfamily Plakobranchoidea Gray, 1840.
Family Hermaeidae H. Adams & A. Adams, 1854.
Genus ***Polybranchia*** Pease, 1860.

***Polybranchia pallens* (Burn, 1957).**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Aplysiopsis*** deshayes, 1853.

***Aplysiopsis brattstroemi* (Er. Marcus, 1959).**
Records: Patagonia (Linse, 1999; Chile, Forcelli, 2000).

Family Limapontiidae Gray, 1847.
Genus ***Ercolania*** Trinhese, 1872.

***Ercolania boodleae* (Baba, 1938).**
Records: Tasmania, Australia (Grove, 2018).

***Ercolania evelinae* (Er. Marcus, 1959).**
Records: Patagonia (Chile, Forcelli, 2000; Linse, 1999).

***Ercolania felina* (F. W. Hutton, 1882).**
Records: South Island, New Zealand (Spencer et al., 2016).

***Ercolania margaritae* Burn, 1974.**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Placida*** Trinchese, 1876.

***Placida aoteana* (A. W. B. Powell, 1937).**
Records: New Zealand (Powell, 1937 [255]; Willan, 1984 [256]).

***Placida dendritica* (Alder & Hancock, 1843).**
Records: Tasmania, Australia (Grove, 2018).
Remarks: This species is native to the coast of the United Kingdom and is also present in numerous locations in the Mediterranean Sea. Furthermore, it has been reported in

temperate and cold–temperate waters globally, although there is some doubt as to whether it is a species complex, as has been revealed for other sacoglossans, such as *Placida cremoniana* (Trinchese, 1892), according to Mccarthy et al. (2017) [257].

Genus ***Sacoproteus*** Krug, Wong, M. R. Medina, Gosliner & Á. Valdés, 2018.
***Sacoproteus browni* Krug, Wong, M. R. Medina, Gosliner & Á. Valdés, 2018.**
Records: Tasmania, Australia (Grove, 2018, as *Stiliger smaragdinus* Baba, 1949).

Family Plakobranchidae Gray, 1840.
Genus ***Elysia*** Risso, 1818.
***Elysia* cf. *hedgpethi* Er. Marcus, 1961.**
Records: Patagonia (Chile, Forcelli, 2000).

***Elysia patagonica* Muniain & Ortea, 1997.**
Records: Patagonia (Linse, 1999; Chile, Forcelli, 2000).

Superfamily Oxynooidea Stoliczka, 1868 (1847).
Family Juliidae E. A. Smith, 1885.
Genus ***Berthelinia*** Crosse, 1875.
***Berthelinia australis* (Burn, 1960).**
Records: Tasmania, Australia (Grove, 2018).

***Berthelinia babai* (Burn, 1965).**
Records: Tasmania, Australia (Grove, 2018).

***Berthelinia typica* (Gatliff & Gabriel, 1911).**
Records: Tasmania, Australia (Grove, 2018).

Family Oxynoiidae Stoliczka, 1868 (1847).
Genus ***Oxynoe*** Rafinesque, 1814.
***Oxynoe jacksoni* Krug, Berriman & Á. Valdés, 2018.**
Records: Tasmania, Australia (S. Grove, 2015).

***Oxynoe viridis* (Pease, 1861).**
Records: Tasmania, Australia (Grove, 2018).

Genus ***Roburnella*** Ev. Marcus, 1982.
***Roburnella wilsoni* (Tate, 1889).**
Records: Tasmania, Australia (Grove, 2018).

Family Volvatellidae Pilsbry, 1895.
Genus ***Ascobulla*** Ev. Marcus, 1972.
***Ascobulla fischeri* (A. Adams & Angas, 1864).**
Records: Tasmania, Australia (Grove, 2018).

4. Discussion and Conclusions

Of the nearly 250,000 known species from the marine environment (WoRMS, 2024), a little over 50,000 are extant species of marine mollusks, with many new species described each year (6656 species in the period 2000–2014; Bouchet et al., 2023) [258]. A study similar to the present work was carried out by Primo and Vazquez (2014) [259], who

explored the diversity of ascidians occurring south of the subtropical front. That study reported a total diversity of 245 species, with 50–60% of those found to occur at depths <2000 m. Deep-sea biodiversity across most of the global ocean remains poorly studied, and there are likely numerous species yet to be discovered, in both the benthic and pelagic realms. This is certainly the case for benthic mollusks, as demonstrated by Peñas and Rolan (2010, 2016, 2017) [260–262], with recent descriptions for several hundred new species of deep-water tropical Pacific pyramidellids. In the case of sea slugs, most species of the Cephalaspidea group live in soft sediments, where they can bury themselves to search for food (Oskars et al., 2015) [263]; it is highly likely that large numbers of unknown species are yet to be found across the vast expanse of unexplored deep-benthic sediments of the Southern Ocean.

Many works have been published regarding the composition and diversity of sea slug fauna, particularly in regard to specific geographic areas, for example, the Caribbean Sea (Valdés et al., 2006) [264], the southern tip of South America (Schrödl, 2003) [63], South Africa (Gosliner, 1987) [265], Australia (Burn, 2015 [266]; Cobb & Willan, 2006 [267]; Coleman, 2001, 2008 [268,269]; Nimbs et al., 2020 [270,271]; Nimbs & Smith, 2017a [147]), the western Indian Ocean (Rudman, 1984, 1986, 1988 [133–135]; Yonow, 2000, 2012, 2015 [272–274]) and the central and eastern Indian Ocean (Apte, 2009 [275]; Apte et al., 2010 [276]). There are a few works that have explored sea slug diversity across oceans: the broad Indo-Pacific (Coleman, 2001, 2008, 2015 [268,269,277]; Gosliner et al., 2015) [278] and the Pacific coast from Alaska to Central America (Behrens et al., 2022) [279]. Garcia and Bertsch (2009) [280] studied the global sea slug fauna of the Atlantic Ocean. These last authors estimated a diversity of 1066 species of Cephalaspidea, Aplysiida, Sacoglossa and Nudibranchia in the Atlantic Ocean. Diversity in the Indo-Pacific is thought to be much higher, with some 6000 species thought to be present (Gosliner & Draheim, 1996) [281]. Certainly, across most oceans, there is a pattern of increasing species richness from the polar to the tropical regions (Rudman & Willan, 1998 [282]; García & Bertsch, 2009) [280]. The diversity for the Southern Ocean (394 species) presented here may seem low in comparison to the larger oceans but it is important to recognize that in most of the Southern Ocean (>41 ° S) there are few shallow coastal areas and large ice masses around Antarctica, so the vast majority of the area of the Southern Ocean comprises unknown bathyal and abyssal benthoses.

Of the known 81 species of Ringiculimorpha (MolluscaBase, 2025e) [283], only one has been recorded in the Southern Ocean below 41 °S (South Island of New Zealand; Powell, 1979) [152]; species in this group live on sandy and muddy sediments, many of them at great depths. This suggests how little is known about this group in bathyal and abyssal areas of the Southern Ocean. The Umbraculida and Runcinacea are two groups of sea slugs with few known species (11 and 76 species, respectively), and the 4 species reported in this work for the Southern Ocean have been found in the lower latitudes of the study area: Tasmania and the South Island of New Zealand. This indicates that these groups prefer temperate or warm waters. No species have been recorded for the Southern Ocean from two enigmatic and little-known groups of marine Heterobranchia, the Acochlidiimorpha and Rhodopoidea. These groups, with few species, live preferably in the interstitial environment or among algae, are generally very small in size, and some species resemble turbellarians. All these characteristics and the methodological problems associated with the study of interstitial fauna in vivo mean that very little is known about the biodiversity and biology of these groups. Their absence from high latitudes in the southern hemisphere may simply be due to the lack of specific studies.

The colder waters south of the south subtropical convergence appear to be unfavorable for marine heterobranch species in the Ringiculimorpha, Umbraculida, Runcinacea,

Aplysiida and Sacoglossa. Species from these groups have only been reported from the Patagonian/Magellanic zone, Tasmania and the South Island of New Zealand. The first three groups have already been discussed above, and species in Aplysiida and Sacoglossa are more common in warm and tropical waters, where the vast majority of species live, with the polar areas being devoid of them (Jensen, 2007; Nimbs et al., 2017) [147,284]; the species in these two groups are herbivorous, and it is possible that these polar environments do not have the suitable types of algae that these sea slugs can feed on. Nudibranchs and cephalaspideans appear to be well adapted to the cold waters of the Southern Ocean, where 209 and 90 species have been recorded, respectively. The biodiversity of nudibranchs is particularly notable on the island of Tasmania, with 93 species cited, possibly due to the subtropical species that reach the island, favored by the warm-water marine currents that flow southwards from the eastern coasts of Australia. Nudibranchs, with 40 species, have been shown to be the most diverse of all groups in the waters of Antarctica, living from a few meters to bathyal depths of more than 1000 m. This adaptation to very cold waters has led to the evolution of very long biological cycles with an extreme duration of embryonic development (for example, *Bathydoris hodgsoni* and *Doris kerguelenensis*; Moles et al., 2017b [285] and Ballesteros, 2024 [286]). Indeed, *Tergipes antarcticus* spends its entire life cycle on ice (Kiko et al., 2008) [287]. An interesting point is the distribution of *Doris kerguelenensis*, which has been recorded in Antarctic areas, in all Subantarctic areas and in the Patagonian/Magallanes region, both on the Pacific side of Chile and on the Atlantic coast of Argentina. Morphological and molecular studies that are in progress may reveal multiple speciation attributed to this species.

Regarding cephalaspideans, although their found biodiversity is relatively high with 90 cited species, we consider that this figure does not correspond to their possible real biodiversity; most species live on soft bottoms down to great depths, which have not been sufficiently studied at the microfauna level. A very large part of the Southern Ocean is made up of abyssal plains that have not been scientifically explored; it is assumed that future studies of these deep areas will bring to light numerous unknown species of marine heterobranchs, mainly small-shelled cephalaspidean species that inhabit abyssal bottoms, as has occurred with other groups of mollusca, such as the Pyramidelloidea, in the deep tropical Central and South Pacific (Peñas & Rolan, 2010, 2016, 2017) [260–262].

With regard to the Pteropoda, it is recognized that many species have a wide distribution due to their pelagic life histories, but the recent work of Burridge et al. (2017) [288] has identified that, in the Atlantic Ocean at least, pteropod abundance and biomass is significantly higher in latitudes >40 °S. The pteropods are a highly important component of pelagic ecosystems, where they can reach very high densities (up to 800 individuals/m^3 for *Limacina retroversa* and up to 2681 individuals/m^3 for *Limacina helicina*) (Hunt et al., 2008) [61]. There are concerns that ocean acidification will generate an undersaturation of dissolved carbonate ions, meaning that the Thecosomata will have reduced capacity to form their aragonite shells and may possibly disappear from the Southern Ocean by the year 2100 (Orr et al., 2005; Hunt et al., 2008) [61,289]. The Thecosomata are thought to be the preferred food of the Gymnosomata, and, in turn, both groups are an important food source for a wide variety of pelagic and demersal fish. Given the potential collapse of thecosome populations due to ocean acidification, Southern Ocean food webs may undergo a trophic cascade, resulting in major changes to both biodiversity and food-chain biomass.

Although some areas may be considered well-worked with regard to sea slug biodiversity (i.e., Tasmania, the Southern Island of New Zealand, the Patagonia/Magellan area, the Ross Sea and the Weddell Sea), many knowledge gaps remain, such as the distributional statuses of some species thought to be broadly distributed but with little dispersive capacity (for example, *Doris kerguelenensis*). Current knowledge of very remote areas such

as Prince Edwards Is., the New Zealand Subantarctic islands (Chatham, Bounty, Antipodes, Campbell, Auckland and The Shares), Bouvet Is., Macquarie Is., the Amundsen Sea, the East Antarctica, and bathyal and abyssal depths may represent a small portion of species diversity from these locations. It is likely that efforts to further sample these locations may yield large numbers of species, many of which may be novel. Information derived from these regional and remote studies may provide important detail on community composition and biogeographic connectivity across the vast Southern Ocean.

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