Ascidians from the Strait of Magellan

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Abstract
In the Magellan region, Ascidiacea appear to be a dominant invertebrate group at depths from 5 - 20 m. Most of the present collection, made by scuba divers in the Strait of Magellan, have a geographic range limited to Patagonia, the Falkland Islands, South Georgia, the South Shetland Islands and north of the Antarctic Peninsula. The exceptions are two circumpolar species: Distaplia cylindrica (Lesson, 1830) and Didemnum studeri Hartmeyer, 1911. One new species is described.

Zusammenfassung
In der Magellanregion scheint Ascidiacea (Seescheiden) die dominierende Wirbellosengruppe in Tiefen von 5 bis 20 Metern zu sein. Die meisten der gegenwärtigen Sammlungen, die von SCUBA-Tauchern in der Magellanstraße gemacht worden sind, haben eine geografische Verbreitung die sich auf Patagonien, den Falklandinseln, Südgeorgien, den südlichen Shetland-Inseln und auf nördlich der antarktischen Halbinsel beschränkt. Die Ausnahmen sind zwei zirkumpolare Arten: Distaplia cylindrica (Lesson, 1830) und Didemnum studeri Hartmeyer, 1911. Eine neue Art wird beschrieben.

Résumé
Dans la région du Détroit de Magellan, les Ascidiaies apparaissent comme un groupe dominant d'invertébrés à des profondeurs de 5 à 20 m. La majorité des présentes collectes, réalisées en plongée autonome dans le Détroit de Magellan, ont pour limites géographiques la Patagonie, les îles Falkland, la Géorgie du sud, les îles Shetland du sud et le nord de la péninsule antarctique. Deux espèces circumpolaires font exception: Distaplia cylindrica (Lesson, 1830) et Didemnum studeri Hartmeyer, 1911. Une nouvelle espèce est décrite.

Sommaro
Nella regione dello Stretto di Magellano, gli Ascidiacei rappresentano il gruppo di invertebrati dominante a profondità comprese tra i 5 e i 20 m. La maggior parte della collezione qui illustrata, frutto di immersioni nello stretto, comprende un’area geografica delimitata da Patagonia, Isole Falkland, South Georgia, Isole Shetland Meridionali e regione settentrionale della Penisola Antartica. Le eccezioni sono rappresentate da due specie circumpolari, Distaplia cylindrica (Lesson, 1830) e Didemnum studeri Hartmeyer, 1911. Una specie viene descritta come nuova.

Introduction
The paper describes ascidians collected in September 2002 in the Strait of Magellan in the vicinity of Punta Arenas, Puerto Del Hambre and Fuerte Bulnes (XII Region, Chile) during an expedition organized by Thetis IBN (Germany). The specimens were collected by scuba diving. Most species occurred at depths down to 20 m, and only Distaplia cylindrica (Lesson, 1830) was never collected at less than 20 m.

In the Magellan region, macroalgae, mussels, and barnacles tend to cover rocks down to 5 m. Between 5 and 20 m, ascidians appear to be the dominant group, because there are a lot of unused areas of rock suitable for them. Distaplia colligans Sluiter, 1932, Aplidium species and Didemnidae colonies (sometimes 1-3 m² in size) are very common in the locations sampled.

Only specimens initially fixed in formalin are described here. The morphology of other specimens photographed in situ was obscured by freezing after collection and these are not reported on in this work.
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Description of species

*Aplidium fuegiense* Cunningham, 1871
(Fig. 2a)

Material examined
Puerto del Hambre and Fuerte Bulnes, 13 colonies (KIE 1/1090 - 13/1102).

Description
The colonies are large and variable in shape, from wide, thick and irregular to compact, oval masses. The test may be hard and opaque or soft and translucent, probably depending on maturity: colonies with poorly-developed or partly-degenerated zooids are darker and harder. Such colonies often (but not always) have a thin, firm superficial layer containing numerous small, oval reddish pigmented bodies. The colonies have only sparse sand grains in the basal test and otherwise are free from sand.

Zooids are strongly contracted and, in many colonies, degenerate. The atrial languet is usually divided into three but some zooids within the same colony may be undivided. The position of the atrial languet also varies, sometimes arising from the body wall slightly anterior to the small atrial aperture, or from the upper rim of the opening. The number of rows of stigmata is obscured by contraction but there appear to be from 14 to 18. The stomach has five folds.

Remarks
The seas around the southern end of South America contain several very similar *Aplidium* species that are readily distinguished only by larval morphology. The reported range of variation in the main distinguishing characters of many of these species is great, making identification difficult. Monniot & Monniot (1983) suggested that hybridisation is the cause of this variability, but there is no evidence that this occurs. Unfortunately, the quality of the present material does not allow us to resolve this problem. Reddish pigmented bodies in the surface layer of the test help to distinguish *A. fuegiense* when no larvae are present (see Millar, 1960, 1970).

The species is very common in the Magellan region, the Patagonian Shelf and the Falkland Islands.

*Aplidium magellanicum* n. sp.
(Fig. 1a, 2b-d)

Holotype: KIE 1/1086 (Kamchatka Branch of the Pacific Institute of Geography), part of the colony collected at Fuerte Bulnes, XII Region, Chile, 06 September 2002

Description
The colonies are cushions up to about 10 cm in diameter, with a wide attachment area (Fig. 2d) or are egg-shaped and attached by a relatively small basal area (Fig. 2b). The colour in life varies from red to orange or yellow-orange. Colonies preserved in formalin have an extremely soft, slimy, gelatinous, transparent, colourless test, sometimes disintegrating, with the zooids readily falling out. A small amount of sand is present near the attachment area and the surface and internal test are otherwise free from sand and other foreign matter. Living colonies have numerous plain-rimmed cloacal apertures protruding from the surface as short transparent siphons. In preserved specimens these completely disappear, and the sur-
Fig. 2a-f. (a) *Aplidium fuegiense* (KIE 8/1097); (b - d) *Aplidium magellanicum* n. sp. (b - Holotype KIE 1/1086, c and d - Paratype KIE 3/1088); (e, f) *Aplidium variabile* (e - KIE 1/1085). Photos by D. Schories.
Aplidium variabile: longer zooids. has similar stomachs but very different colonies and stigmata in each row (Kott, 1969). Further, (Monniot & Monniot, 1983) and wider, with up to 30 but larger zooids, and a thorax up to 7 mm long, including 13 colonies of Herd-man’s type material); 1960 who examined many specimens of this species, but similar number of stomach folds and rows of stigmata, Aplidium loricatum including 13 colonies of Herd-man’s type material). Kott, 1969: 51. Millar, 1960: 32. The small colonies are about 1-2 cm high. Each has a short yellow peduncle and a colourless or bluish yellow inverted cone-shaped zooid-bearing head. In life the inflated and terminally expanded heads are distinctly demarcated from the peduncles. In preservative they are contracted and of the same diameter as the peduncle. Fixed colonies become colourless, translucent cushions or small upright lobes. The test is smooth, soft and without sand. Zooids are parallel to each other and open on the upper surface of the head. Each colony has one to four systems, each with a large central common cloacal aperture on a short thin-walled siphon, a peripheral circle of zooids and others in a few short double rows converging on the cloacal opening. In preservative, the strongly contracted zooids are short, 2.5 - 3 mm long and withdrawn to the bottom of the colony. The simple and relatively long atrial languet is on the upper rim of the small round atrial opening. The branchial sac has 13 rows of stigmata; the number per row obscured by contraction. The abdomen is much shorter than the thorax. The wide, symmetrical stomach has 14 or 15 deep, well-defined longitudinal folds, only few of them broken. The post-abdomen, up to 2 mm long, is usually half the zooid length, rarely longer. In most zooids it is filled with parenchyma. Rarely, a few male follicles are present in a double row in the middle and posterior part of the post-abdomen. Larvae are not present in the material examined.

Remarks
Aplidium variabile is widely distributed in Antarctic and sub-Antarctic waters.

The present specimens conform to existing descriptions of the species, especially in the structure of the zooid. However, although colonies of A. variabile are reported to have short stalks, the form of the systems has not been definitely and clearly described. Millar (1960: 32) reports only that the zooids are sometimes “grouped into small, indistinct systems”. The present specimens have characteristic systems resembling those of some warm-water species (A. griseum Kott, 1992 for example), and it is not known if the form of systems in the present colonies corresponds to those of A. variabile. The identification of this material is therefore in doubt, since the larvae that might confirm it are not available.

Aplidium variabile (Herdman, 1886)
(Figs. 1b, 2e and f)

Amaroucium variabile Herdman, 1886: 216.

Material examined
Fuerte Bulnes, several small colonies (KIE 1/1085).

Description
The small colonies are about 1-2 cm high. Each has a short yellow peduncle and a colourless or bluish...
Fig. 3a-e. (a, b) Didemnum studeri (a - KIE 1/1104); (c, d) Distaplia colligans (c - KIE 2/1081, d - KIE 1/1080); (e) Distaplia cylindrica (KIE 1/1082). Photos by D. Schories.
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gonads, and identification is provisional. The species was originally described from Punta Arenas, close to the locality of the present specimen. The distribution is limited to the Magellan-Falkland Islands region.

**Didemnum studeri** Hartmeyer, 1911
(Fig. 3a and b)


**Material examined**
Puerto del Hambre and Fuerte Bulnes, two colonies (KIE 1/1104, 2/1103).

**Remarks**
The underwater photographs show large colonies with characteristic appearance (Fig. 4a and b): a generally smooth, white surface, with sparse, small cloacal openings, each with two to five short, cylindrical cloacal canals converging on them. However, as in the above species, the identification is only provisional, because the zooids in the newly-recorded specimens are in poor condition and lack gonads. The larvae resemble those shown in Monniot & Monniot 1983, (Pl.4, Fig. E).

The species has a circumpolar sub-Antarctic distribution and is common in the Magellan region.

**Distaplia colligans** Sluiter, 1932
(Figs. 3c and d, 4)


**Material examined**
Fuerte Bulnes, two incomplete colonies (KIE 1/1080, 2/1081).

**Description**
The two pieces examined are flat sheets about 5 cm in diameter, one 0.5 cm thick, attached by the whole of the lower surface; the other, a flat lobe 1 cm thick has zooids opening on both surfaces and no apparent attachment area. Preserved specimens are dark-brown and quite smooth, though the colony is yellow in an underwater photograph of the living specimen. The test is soft, opaque and spongy. The zooids are slightly darker than the test and are indistinctly visible through it. Numerous small common cloacal apertures are scattered over surface of the colony. Zooids are in irregular short and sometimes branched double rows, but the actual form of the systems was not determined. The zooids are 2 - 2.5 mm long. The thorax bears about 10 fine longitudinal muscles. A transverse atrial aperture with a short, simple atrial languet is present at the level of the second row of stigmata. A thick parastigmatic vessel crosses each of the four...

Fig. 4a-b. *Distaplia colligans* Sluiter, 1932: (a), zood; (b), larva.
rows of about 15 or 16 long stigmata. The number of stigmata in a row could not be counted precisely. The relatively long oesophagus bends ventrally to enter an oblique, asymmetrical stomach. In most zooids the stomach wall has fine longitudinal folds, but is sometimes smooth. The gut loop encloses a compact spherical gonad comprising numerous large dark brown or nearly black male follicles and up to three small immature ova.

Several incubatory pouches, detached from the zooids and each containing one or two larvae, were found in the test. The larval trunk is 1.3 mm long.

**Remarks**

The specimens conform to the existing descriptions (see especially the detailed description by Millar, 1960). The species was previously recorded from South Georgia, the South Orkney Islands and the Antarctic Peninsula.

*Distaplia cylindrica* (Lesson, 1830)

(Fig. 3e)

*Holozoa cylindrica* Lesson, 1830: 439.  
Monniot & Monniot, 1983: 36 synonymy).

**Material examined**

Puerto del Hambre, small part of a colony (KIE 1/1082).

**Remarks**

This is probably the largest known ascidian species, with colonies up to 7 m long and 8 cm in diameter. This is the only species in the present material not found above 20 m. At King George Island we found the same species at depths of 32 to 45 m.

The distribution is completely circumpolar in the Antarctic and the species is common in the Magellanic area.

*Sycozoa gaimardi* (Herdman, 1886)  
(Fig. 5a)

*Colella gaimardi* Herdman, 1886: 103.  
*Sycozoa gaimardi*: Van Name, 1945: 150 (synonymy).  

**Material examined**

Puerto del Hambre, many colonies (KIE 1/1084).

**Remarks**

The species has characteristic, readily identifiable colonies. As with other species reported here, it is present all the year round, often found on brown algae (*Lessonia trabeculata*) in summer (January), and also on pebbles.

*Sycozoa gaimardi* was recorded from the Strait of Magellan, Tierra del Fuego, the Falkland Islands, the South Shetland Islands, the Antarctic Peninsula, South Georgia, and possibly from Kerguelen Island (see Monniot & Monniot, 1974).

*Pyura legumen* (Lesson, 1830)  
(Fig. 5b)

*Boltenia legumen* Lesson, 1830: 433.  

**Material examined**

Puerto del Hambre, one specimen (KIE 1/1083).
Pyura legumen is not common in the area studied. This may be because its habitat appears to be restricted to the pebble fields between 10 and 25 m where they were collected. This well-known species is recorded from the Magellan region, the Patagonian shelf and the Falkland Islands.

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