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Ascidians from Peru

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Among four species of Ascidiacea identified in the material collected by SCUBA divers in Peru, two are cosmopolitan, one is a widely distributed Pacific species, and one, *Aplidium peruvianum,* spec, nov., is described as new. Large colonies of *Aplidium peruvianum* constitute one of the most significant components of the benthic communities of wave exposed sublittoral rocky hard bottoms on the Ballestas Islands, Paracas.

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Introduction

Ascidians from coastal waters of Peru are virtually unknown. In August 2002 Thetis IBN (Germany) organized an expedition to the Paracas National Reserve of Peru and several specimens of ascidians were collected by SCUBA diving. Two of the newly recorded species, *Ciona intestinalis* (Linnaeus, 1767) and *Diplosoma listerianum* (Milne-Edwards, 1841), are cosmopolitan, one, *Botrylloides perspicuum* Herdman, 1886, is widely distributed in tropical and temperate Pacific waters, and one, *Aplidium peruvianum,* spec, nov, is one of the most common species observed on the open coast of Paracas, especially near Ballestas Islands. This species dominates benthic rocky communities in depths of 5-10 m. It was found frequently along the open coast in areas with strong wave exposure, where it competes for space with balanid barnacles. The species was never found deeper than 10 m; however sampling was restricted to (1) the Ballestas Islands and (2) sheltered bays of the Paracas Penninsula. Unfavorable conditions, especially heavy wave exposure precluded collecting at many locations. This species occurs in two different colours, a white form and a pink or red form. It has large, sometimes up to 1 m^2 characteristic colonies allowing easy recognition of the species in the field and on underwater photographs. All other newly recorded species were found at depths between 1 and 3 m in Laguna Grande, a sheltered lagoon of Paracas Peninsula.

Description of species

Aplidium peruvianum, spec. nov.
(Figs 1, 5)

Types. Holotype: KIE 1/1121, 17 August 2002, Peru, Paracas, San Gallвn Island. - Paratypes: KIE 2/1122, 17 August 2002, Peru, Paracas, San Gallвn Island. Types are in Kamchatka Branch of the Pacific Institute of Geography.

Description

Colonies are robust, large and thick. Examined colonies were about 6x4 cm (surface dimensions) and 1 to 2 cm thick, but underwater photographs show much larger specimens. They are attached to rocky substratum by the whole basal surface. Colonies are ridged and folded and have wide but usually low, irregular and fusing lobes. Zooids are in small, mostly circular or oval, systems opening into the base of test depressions that are separated from one another by wide and smooth surface ridges. The depressions are usually relatively deep and clearly visible

Figs l, 2. *Aplidium peruvianum*, spec. nov. Colonies (photos by D. Schories).

Fig. **3**. *Botrylloides perspicuum* Herdman, 1886 (photos by Y. Hooker).

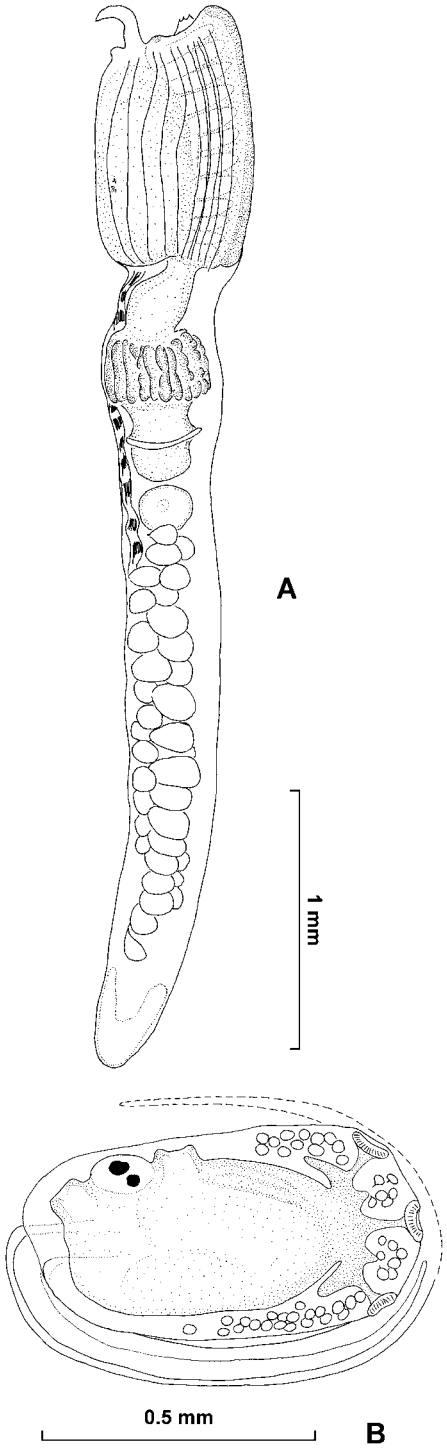

Fig. 5. *Aplidium peruvianum,spec.nov.* (a)zooid; (b) larva.

to the naked eye on both preserved and living colonies, but occasionally they are poorly developed and a part of the colony surface could be almost level. Each system consists of a single ring of zooids and has one central cloacal orifice, almost sessile or on a short siphon. Sometimes adjacent systems are joined and such joined systems may have two, rarely three cloacal openings.

In preservative the test is firmand opaque white. However photographs of living specimens show two colour varieties, one white and one red; the latter with bright red zooids and pink or sometimes almost white test ridges around them, giving the colony a very characteristic spotted appearance. Both colour varieties occasionally occur in close contact with each other (Fig. 1). Surface and internal test never have either adherent or embedded sand or other foreign matter.

Contracted zooids are from 2.5 to 5 mm long. In rare relaxed zooids the thorax is long and narrow, but in most zooids it is contracted and the same length as the abdomenThorax and abdomen together are 2 mm long. The short branchial siphon has six lobes; the atrial aperture is small, usually on a short siphon, with a short, simple atrial languet arising from its upper margin. About 15-20 relatively thick longitudinal muscles are on each side of the thorax and extend in two bands along each side of the abdomen and the posterior abdomen. Stigmata are in 12 or 13 rows of about 10 per row. A short, wide and symmetrical stomach halfway down the abdomen has 14 or 15 deep, but not very regular and sometimes interrupted longitudinal folds. The ovary is in anterior part of the postabdomen, just behind the gut loop. Large testis follicles, in a double row, occupy nearly whole length of the postabdo-men.

A well developed tailed larva and up to three embryos are in the atrial cavity of many zooids. The larval trunk is 0.75 mm long. Three antero-median adhesive organs alternate with single short conical median papillae, each with a with a clusters of epidermal vesicles branching off into the larval test between the apertures. Epidermal vesicles also branch from a dorsal and a ventral epidermal ampulla on the median line respectively dorsal and ventral to the adhesive organs. These epidermal vesicles are not numerous and are relatively large.

Remarks. The characteristic colony of this species allows easy identification both in the field and in underwater photographs. Several colonial ascidian species belonging to different genera and families have similar colonies: *Botryllus closionis* Monniot, 2001, *Eudistoma reginum* Kott, 1990 (see photographs in Monniot and Monniot 1996, Pl. 5C,D), *Lissoclinum*

patella (Gottschaldt, 1898) (see Kott 2001, PL 19H) and *Synoicum castellatum* Kott, 1992.

Tropical *Aplidium gelasinum* Kott, 1992, known from single specimen from the Great Barrier Reef appears to have a similar colony and zooids, but has more rows of stigmata (16) and stomach folds (16-18) and the atrial lip sometimes has three points. The larva of this species not known and conspecificity with the present species is unlikely. Among other *Aplidium* species, with a similar colony the western Pacific *A. crateriferum* (Sluiter, 1909) differs in its zooids: they have more rows of stigmata (18-21), only five stomach folds, a different position of the atrial languet and a larger larva. The larva of the present species is reminiscent those of *A. caelestis* Monniot, 1987, *A. distaplium* Kott, 1992, *A. macrolobatum* Kott, 1992, *A. filiforme* Kott, 1992 and other species, all with different colonies and zooids.

Diplosoma listerianum (Milne-Edwards, 1841)

Diplosoma listerianum: Kott 2001: 339 (description and extensive list of synonyms).

Material examined: 20 August 2002, Peru, Paracas, Laguna Grande, 1 colony.

Remarks. The species is truly cosmopolitan, recorded from tropical and temperate waters of Pacific, Atlantic and Indian Oceans and the Mediterranean and North Seas (Kott, 2001: 340).

Ciona intestinalis (Linnaeus, 1767)

Ciona intestinalis: Hoshino & Nishikawa, 1985: 63 (full synonymy).

Material examined: 20 August 2002, Peru, Paracas, Laguna Grande, 1 specimen.

Remarks. This is one of the most widely distributed, almost cosmopolitan ascidian species especially abundant along coasts of northern Europe where it often forms large populations of hundreds and thousands of specimens. It is recorded also in the Mediterranean Sea, Atlantic coasts of North America, parts of the Atlantic and Pacific coasts of South America (where it is not abundant), California, Hawaii, South Africa, Australia, New Zealand, and Japan.

Botrylloides perspicuum Herdman, 1886
Fig. 3

Botrylloides perspicuum Herdman, 1886: 45; Kott 1985: 278 (synonymy), Sanamyan 1999: 1860. *Botryllus perspicuus:* Monniot & Monniot, 2001: 313. *Botryllus firmus* Monniot & Monniot, 1996: 238.

Material examined: 20 August 2002, Peru, Paracas, Laguna Grande, 3 colonies.

Remarks. The species shows great range of colour variations. Underwater photos of the present specimens show red and bluish colonies. *Botrylloides perspicuum* was previously recorded from the Red Sea, Indonesia, the Philippines, Papua New Guinea and from the waters around Australia, including Tasmania.

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