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# PYCNOCLAVELLA TAUREANENSIS N.SP. (ASCIDIACEA) FROM THE MEDITERRANEAN SEA

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ASCIDIACEA  
MEDITERRANEAN

ABSTRACT – *Pycnoclavella taureanensis* n.sp. from the Mediterranean Sea is described, figured and compared with the other species of the same genus.

ASCIDIES  
MÉDITERRANÉE

RÉSUMÉ – *Pycnoclavella taureanensis* n.sp. de la Mer Méditerranée est décrit, figuré et comparé aux autres espèces du genre.

## INTRODUCTION

At the present state of our knowledge the genus *Pycnoclavella* Garstang, 1891 presents only four described species (Table 1). The general shape of the zooid is similar to that of *Clavelina* but the genus is clearly defined by the type of asexual reproduction which occurs by abdominal constriction (Trason, 1963), the modality of incubation (in the oviduct) and the morphology of the larva (which does not possess the anterior process and otolith).

In the present paper a new species is described from material collected at Palmi (about 30 km north of Reggio Calabria) in the south Tyrrhenian Sea and at Banyuls-sur-Mer (the latter material was kindly provided by F. Lafargue).

## DESCRIPTION OF THE SPECIES

*Pycnoclavella taureanensis* n. sp. (Plates I and II)

Table I. Comparison within *Pycnoclavella* species.

	<i>P. aurilucens</i> Garstang, 1891 English Channel	<i>P. diminuta</i> (Kott, 1957) Australia	<i>P. minuta</i> Millar, 1953 Gold Coast	<i>P. stanleyi</i> Berrill & Abbott, 1949 California	<i>P. taureanensis</i> n. sp. Mediterranean
Zooid length (mm)	5-6	10-20	4	10-20	8-11
Thorax length fraction of zooid length	1/4	1/4	1/6	1/4-1/6	1/4
n. of rows of stigmata	7-9	3	4	up to 7	up to 7
Ciliated groove	circular	transverse slit	?	circular	transverse slit
Tentacle arrangement	?	in 3 rows	on a narrow space	in 3 rows	on a wide space
Stomach shape	squared	ovoid-rectangular	squared	globular	ovoid-rectangular
Stomach surface	4-plicated	smooth-plicated	incomplete plications	smooth	4-plicated
Post-stomach	present	?	present	absent	present
Mid-intestine	vertical	?	curved	curved	curved
Larva: n. of papillae	3	3	2	3	3
n. of ampullae	absent	?	8	16	≅ 14



*Pycnoclavella aurilucens* : Pérès, 1953

? *Clavelina nana* : Monniot, 1970

### Examined materials

Palmi, on vertical rocks about 5-10 meters in depth. Several colonies (holotype) of the 12.V. 1980.

Banyuls-sur-Mer, on *Microcosmus* sp., 11.I.1988

Holotype : deposited in author's collection at the Department of Biology (University of Padua).

*Derivatio nominis* : from *Taureana*, ancient latin name of Palmi.

**Colonies** : Each zooid enclosed in separate test, joined basally by common test. The external layer of the test is firm, wrinkled, opaque, sand-encrusted and with epibionts, except for the soft, fragile, transparent terminal portion accomodating the thorax and the first part of the abdomen, which amounts to about 1/3 of the total length of the zooid.

In living specimens (Plate 2) the thoraxes are greenish-yellow or white. The zooids are very contractile and it is very difficult to have expanded animals.

**Zooids** : they are altogether 8-11 mm long, with the branchial sac being 2-3 mm long.

**Branchial sac** : both smooth-edged syphons are terminal at a short distance apart. Simple tentacles of several sizes are distributed on the posterior 2/3 of the syphon and are limited anteriorly by a ring of small atrial tentacles.

Dorsal tubercle near the globular neural complex. Ciliated groove as a simple transverse slit.

Five rows of stigmata, the first and the last dorsally divided in two : so there are 5 rows at the endostylar level and 7 at the dorsal one.

**Muscles** : about 30 large bands longitudinally arranged all around the thorax from the endostyle, peripharyngeal ring and intersyphonal line passing down into the abdomen where they divide into a large number of fibres. These fibres descend in parallel to the posterior end of the zooid, forming a resistant and opaque sheath which is responsible for the strong contraction of the animals when disturbed. It is interesting to note that also after several years of fixation with formol (5% in sea water) these fibres remain elastic.

**Gut** : oesophagus very long, stomach ovoid to square with four longitudinal folds. Post-stomach conical and vertical. Mid-intestine curved, followed by the ascending limb. Anal opening at the base of thorax.

**Gonads** : on the left side of the intestinal loop : one-three eggs with few testicular follicles.

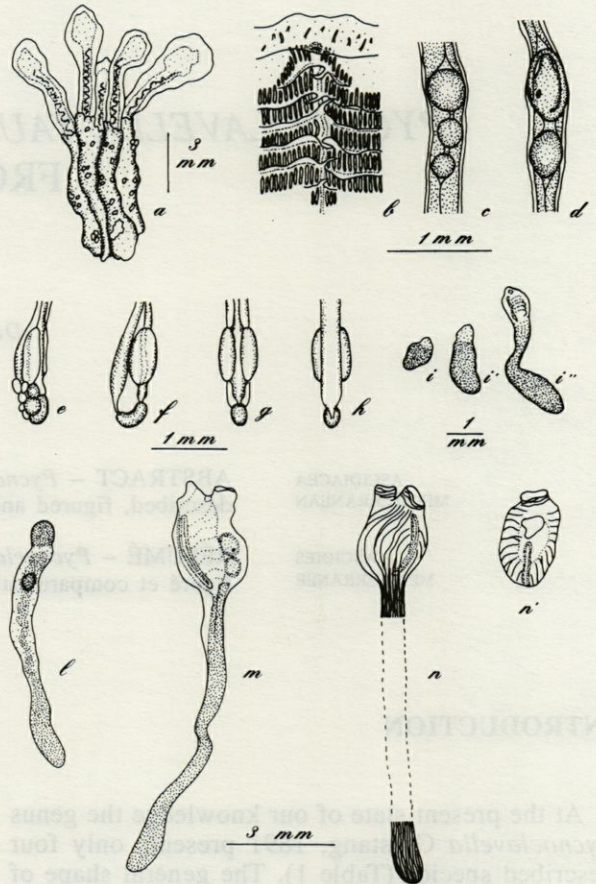


Plate I. *Pycnoclavella taureanensis* n. sp. a : colony; b : branchial sac; c and d : abdomens with eggs and embryos in the oviduct; e : intestinal loop with gonads; f, g, h : left, dorsal and ventral site respectively of the intestinal loop; i, i', i'' : developing zooids; l : regressing zooid, the apical body consists of fecal material, the dark body is an egg; m : zooid from Banyuls material with embryo and larva in the peribranchial chamber; n : muscle arrangement; n' : the same zooid seen from above.

**Larvae** : in the material collected at Palmi in mid-May developing embryos (two-three) were present in the oviduct. Mature tadpoles present three papillae, two dorsally and one ventrally, of the deeply invaginated type described by Trason (1963) in the larva of *P. stanleyi*, and about 14 ampullae. The larval body, including test, is about 0.7 mm long.

**Ecology**. In the material from Banyuls, collected in January, no embryos were found in the oviduct but in one zooid a mature tadpole and an egg were present in the peribranchial chamber. They were probably bloched there by the winter temperature and represent the last product of the end of the reproductive season.

Some regressing zooids were also found (Plate 1, 1).

Moreover in the colonies from Banyuls new developing zooids were more abundant than in the



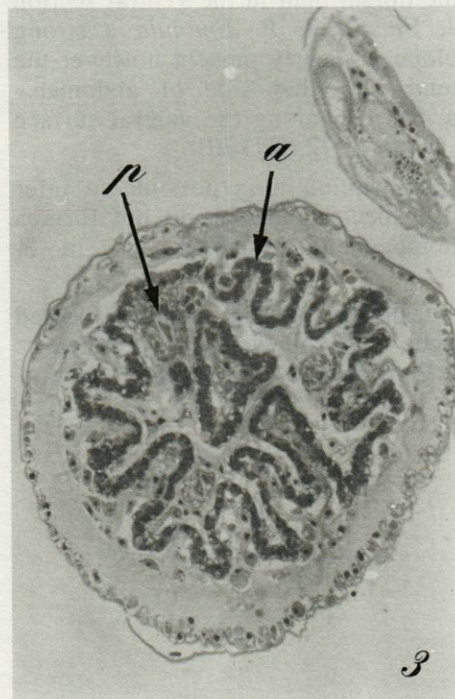
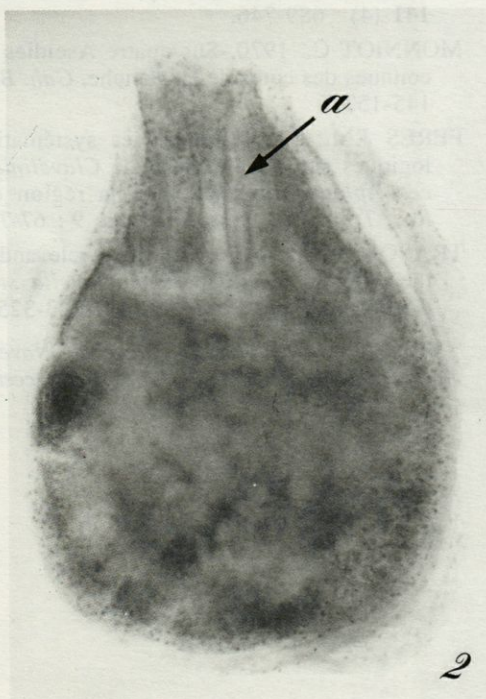


Plate II. *Pycnoclavella taureanensis* n. sp. 1 : living colony; 2 : tadpole; 3 : anterior transverse section of the same. a : ampulla; p : papilla.



material collected at Palmi in May. This could be an indication of an alternation between sexual and asexual reproduction.

## DISCUSSION

The present species clearly differs from others of the genus (Table 1). In particular it differs from *P. aurilucens* in the shape of the ciliated groove, in the position of the mid-intestine and overall for the presence of ampullae in the larva.

Other differences of minor systematic relevance (because they could be due to environmental factors) are the distribution of pigmented cells which, in *P. taureanensis*, are not addensed in bands.

The strong muscular envelope of the present species is probably also a distinctive characteristic. In the description of *P. minuta* no mention of muscles was made (Millar, 1953) and this probably indicates that they are not well developed in this species. Similar considerations may be made on *P. stanleyi* and *P. aurilucens* for which Berrill (1947, 1950) and Berrill & Abbott (1949) only refer the presence of longitudinal muscles. In the latter species Garstang (1891, p. 55) notes that «longitudinal muscle-bundles are somewhat more numerous in the dorsal than in the ventral section of the body». Finally in *P. diminuta* a strong muscular envelope is clearly present however the muscles «extend on either side of abdomen» (Kott, 1957, p. 89) or «along the ventral surface of abdomen» (Kott, 1972, p. 170).

From these description it is possible to infer that in all these species muscles do not form a dense and homogeneous envelope as in *P. taureanensis*.

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