



# State of knowledge of the Acotylea (Polycladida, Platyhelminthes) from the Mediterranean coasts of Spain: new species and new records.



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## Introduction

Although the order Polycladida is known for the Mediterranean Sea for nearly 200 years, most of the studies have been focused in a few locations in the Adriatic Sea and the Gulf of Naples (Lang, 1884). On the east, south and west coasts, works of Bulnes (2009), Gammoudi *et al.* (2009) and Novell (2003), respectively, have been carried out, showing high species diversity, and proving that there is insufficient knowledge about total diversity, distribution and ecology of the order in the Mediterranean Sea.

In this study, we focus on the Mediterranean coasts of the Iberian Peninsula, from Castellón to Almuñecar (Granada), and various Spanish Islands (Formentera, Columbretes, Hormigas and Alborán).

## Materials and methods

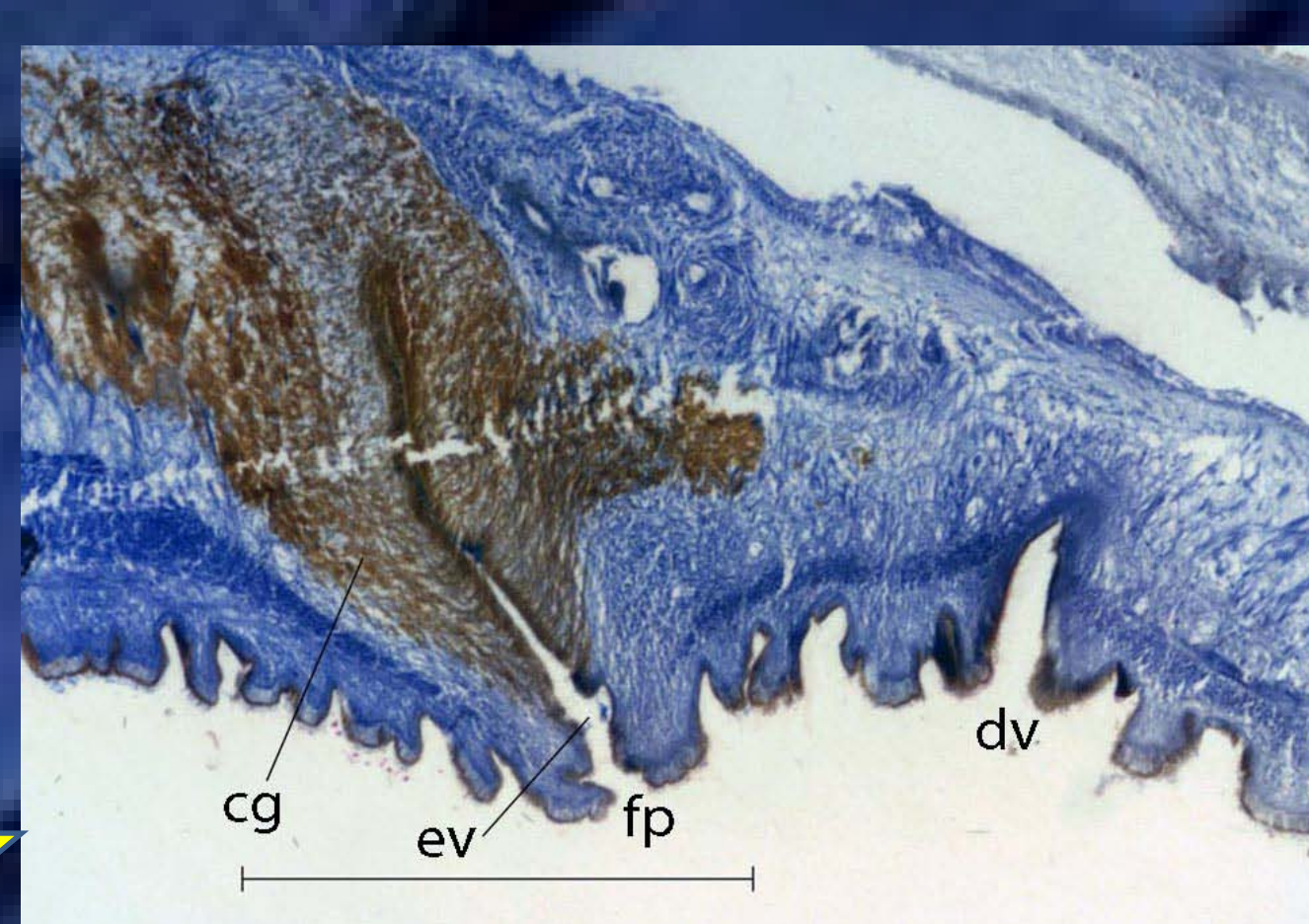
The specimens were collected by two different methods: first, by dredging, in depths from 2 to 134 metres, and second, by SCUBA diving, scratching the rocks' surface, in depths from 0 to 44 metres. Exemplars were fixed in Bouin's fluid or formaldehyde 4% and preserved in ethanol 70%. Photographs were taken in order to retain maximum information about shape, colour and external anatomy. Specimens were subsequently embedded in paraplast, serially sectioned at intervals between 7 to 10 µm and stained with AZAN (trichrome staining method). Reconstructions of internal anatomy were derived from serial sagittal sections.

## Results

Between the fifteen species now known for the Mediterranean Sea, nine were found in this study –two of them new species.

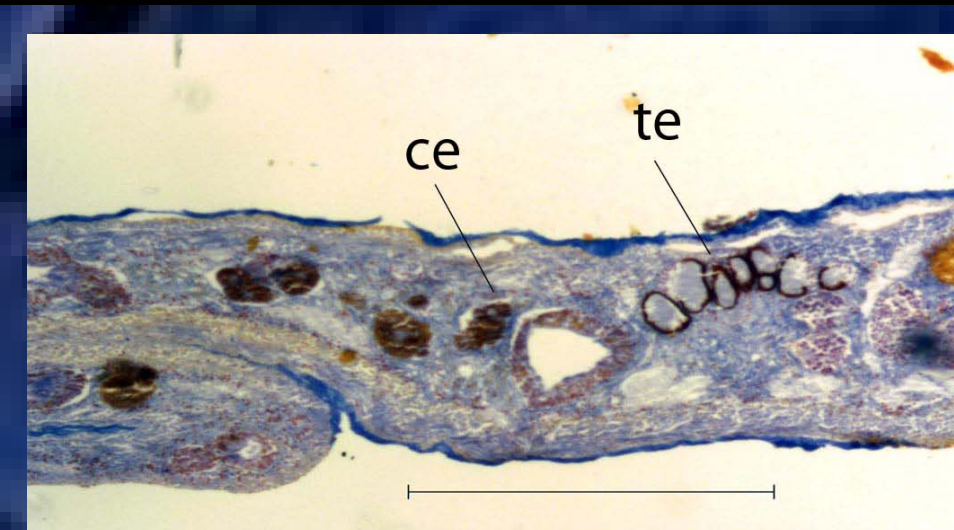
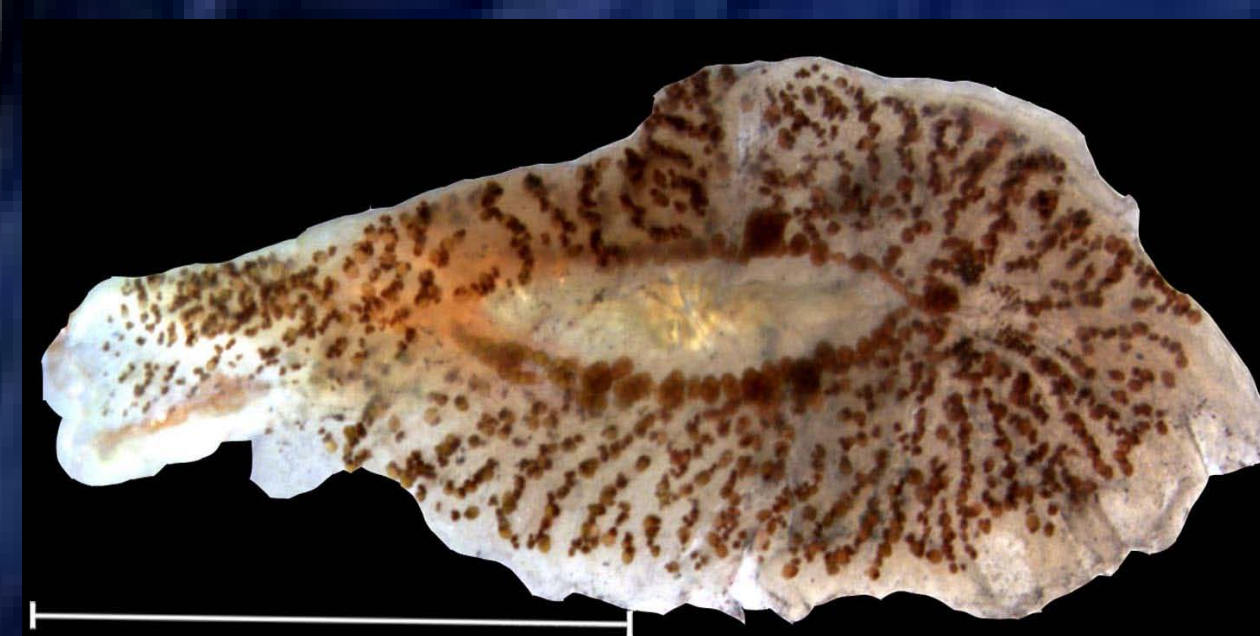
### FIRST TIME CITED AFTER ITS DISCOVERING

*Trigonoporus cephalophtalmus* Lang, 1884

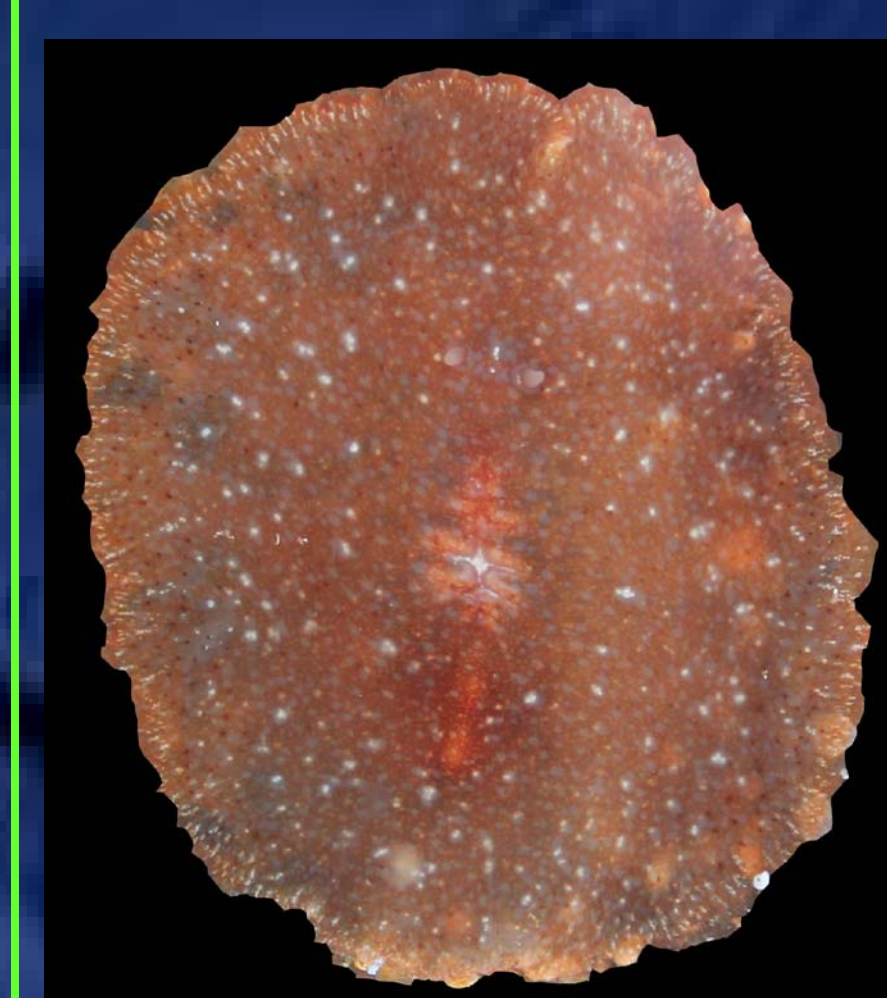


### FIRST TIME CITED IN THE MEDITERRANEAN SEA

*Notoplanella inarmata* Bock, 1931



*Planocera pellucida* (Mertens, 1833) (Mediterranean synonymus: *P. graffi* Lang, 1879)



## ENDEMIC SPECIES

*Leptoplana mediterranea* (Bock, 1913) ★ *Stylochus neapolitanus* (Delle Chiaje, 1841-1844) Lang, 1884 ★



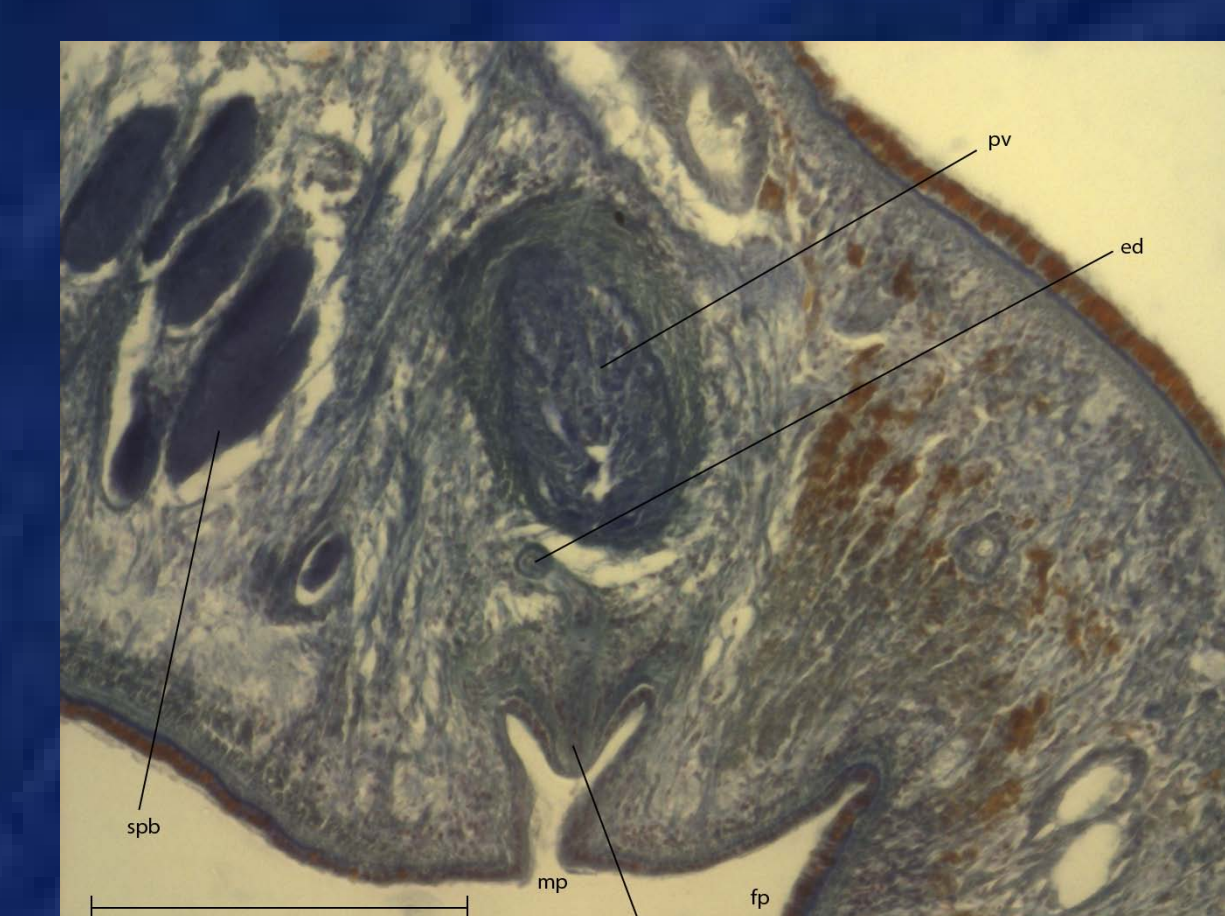
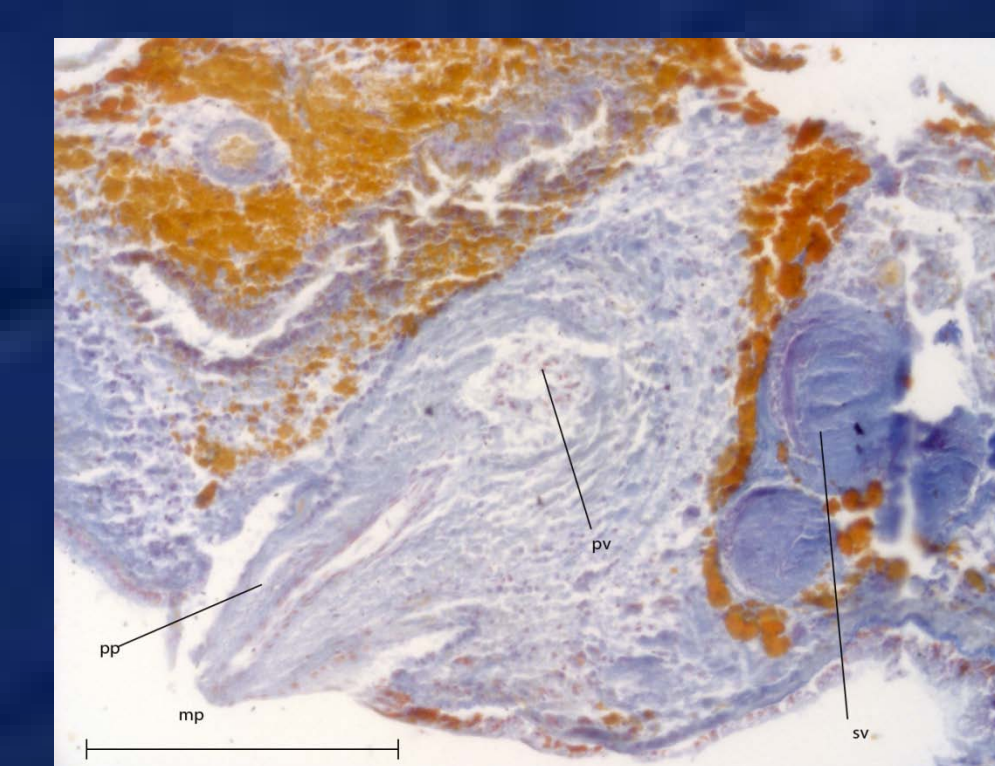
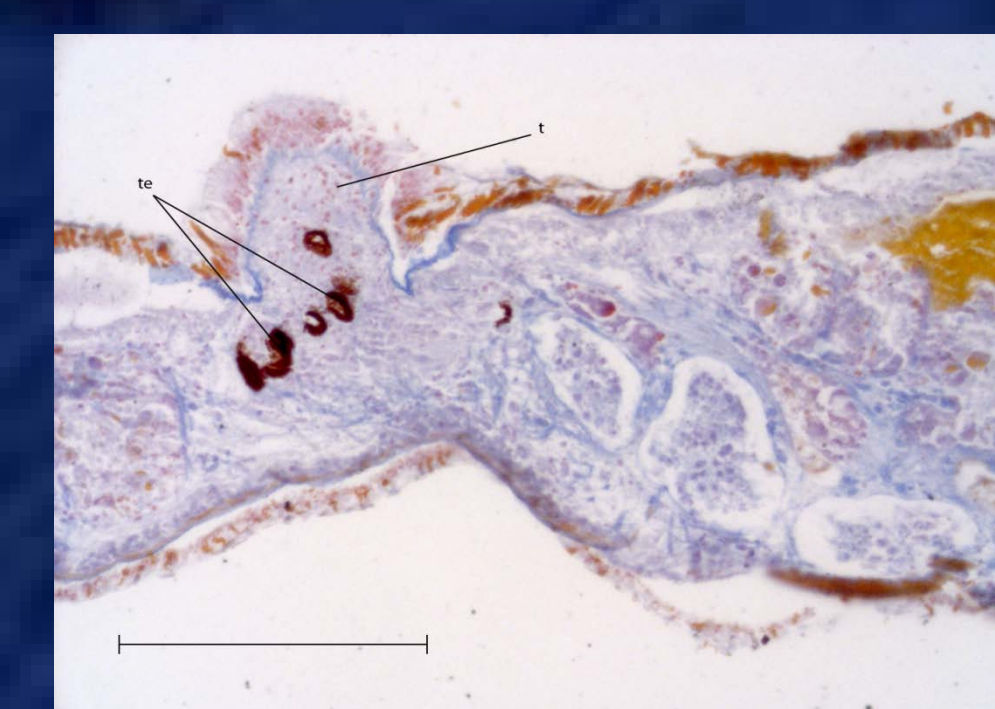
*Imogine mediterranea* Galleni, 1976

*Stylochus pilidium* Goette, 1881



## NEW SPECIES

★ ★ ★ *Notoplanella estelae* sp. nov. *Imogine stellae* sp. nov.



## Conclusions

The Spanish coast of the Mediterranean Sea is a species rich area referring to Acotylea polyclad flatworms. In general, two types of distribution patterns can be distinguished: endemic species (*Leptoplana mediterranea*, *Imogine mediterranea*, *Imogine stellae* sp. nov., *Stylochus neapolitanus*, *Stylochus pilidium*, *Trigonoporus cephalophtalmus* and *Notoplanella estelae* sp. nov.) and cosmopolitan species (*Planocera graffi*, synonymised with *Planocera pellucida*).

Nevertheless, the distribution of the polyclads is deeply influenced by the dispersion of the planktonic larval stage or the adult specimen (e.g. through vessels). Thus, species never found before in the Mediterranean Sea can be found in its shores (as happened with *Notoplanella inarmata*), or an endemic species could get out to the Atlantic Ocean or the Red Sea.