

# Review of *Axionice–Pista* complex (Terebellidae)

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- *Axionice/Pista* complex includes almost 100 species, it is the largest genus of Terebellidae
- Other large terebellids genera like *Polycirrus* and *Terebellides* almost two time smaller.
- The genus (genera) is world-wide distributed, and a lots of its (their) diagnoses has been published

1) What does the type species of the genus *Pista* — *Amphitrite cristata* Muller, 1776 — mean?

2) Are *Pista* and *Axionice* different genera, and if so, what are their diagnoses?

Tab. LXX.

## AMPHITRITE CRISTATA.

AMPHITRITE corniculis ramosis binis.

Zool. dan. pr. 2620.

*Corpus* elongatum, teres, flexuosum, rubro-flavum, articulatum, postice acuminatum. *Segmenta* septendecim anteriora verrucula et feta vtrinque instructa sunt.

Pars antica, seu *caput* papilla proboscidi instructa, supra seu fronte *cirris* pluribus, porrectis subaequalibus mobilibus corpore sextuplo brevioribus, ac dorso primi segmenti vtrinque *corniculo* apice ramoso. Stipitem arbusculi percurrit linea rubra.

*Tubulus* fragilis, flexuosus, vti corpus hospitis, e limo reiectamentisque testarum compositus.

*Ver-meduse* clarif. DICQUEMARE *journal de physique*, Mars 1777, p. 215, t. I, f. 10 et II. huius generis est, et quidem nostram Amphitritem cirratam, cincinni laterales licet deficient, offert.

In vetustis *Ostreis* finus *Teistholmen* Christianfandensis reperi.

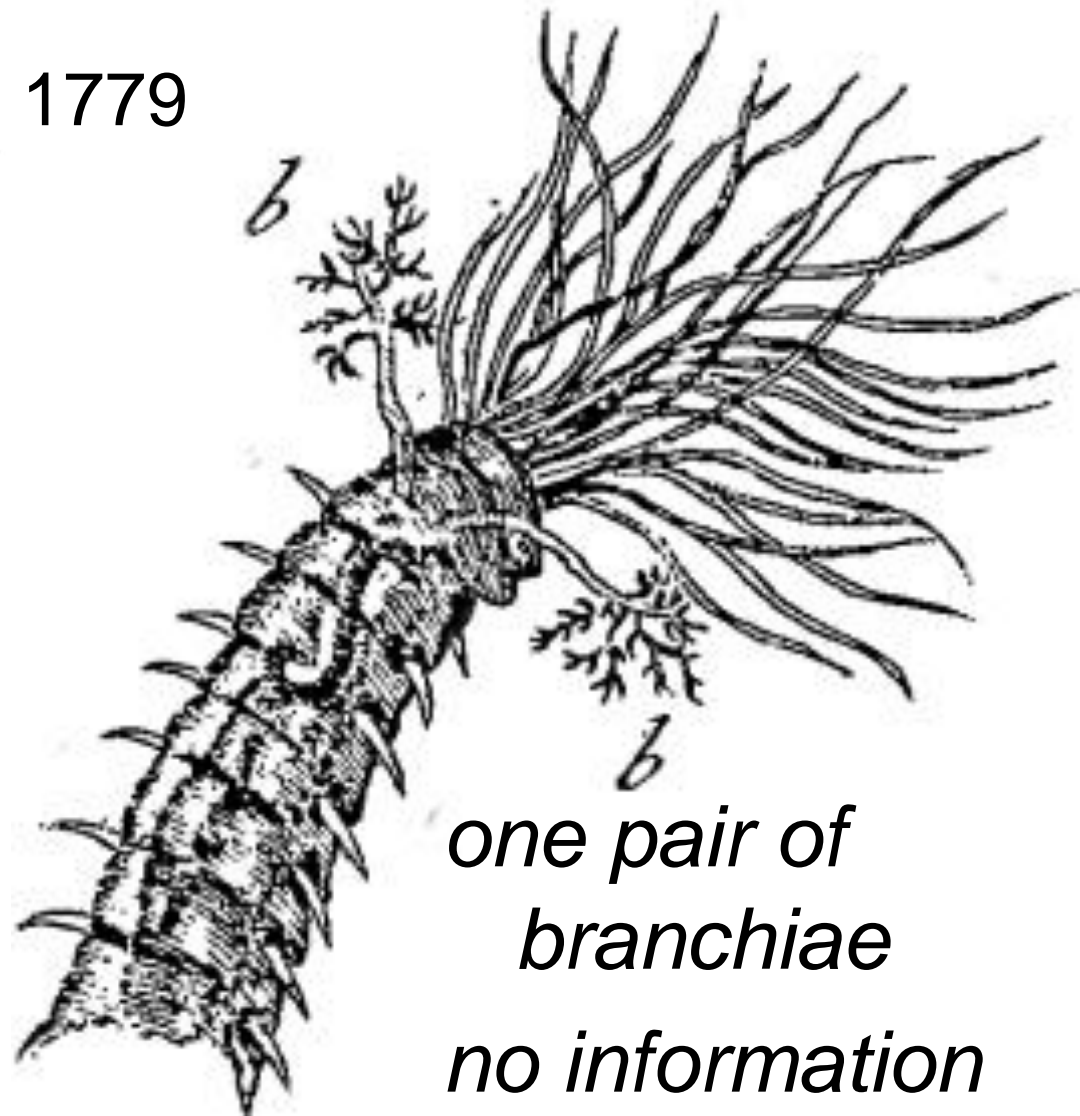
Fig. 1. Tubulum Amphitrites *cristatae*,

Fig. 2. hospitem tubulo extractum naturali,

Fig. 3. anticam partem a tergo; cirros frontales et cornicula ramosa,

Fig. 4. eandem a ventre, cirros et papillam proboscidalem aucta magnitudine exhibent.

1779



one pair of  
branchiae  
no information  
about uncini<sup>3</sup>

- First information about uncini came from Malmgren (1866)
- Banse (1980) showed that Malmgren had two species at hands:
  - (1) with two pairs of branchiae and TU1 with long-handled uncini and
  - (2) with single pair of branchiae and TU1 with uncini without manubrium

Type locality Christianfjord  $\approx$   
58°06'N 8°00' E

***Pista cristata***      **2 branchiae, no manubrium?**

*Pista unibranchia*      single branchia southern

*Pista bansei*      deep water northern

*Pista mediterranea*      4 branchiae, manubrium

*Pistella lornensis*      2 branchiae, no manubrium

- *Pistella lornensis* = *Pista cristata* s.str.
- *Pista cristata sensu* Malmgren and auctuorum  
= *Pista mediterranea*

# Diagnoses of *Pista* Malmgren, 1866

- Malmgren (1866)
- **number of segments and branchiae**
- Hesse (1917), Fauvel (1927), Day (1967), Hartmann-Schroeder (1971), Hilbig (2000)
- **lateral lobes, manubrium present or absent**
- Caullery (1915), Chamberlin (1919), Monroe (1936), Hartman (1969, 1971), Fauchald (1972, 1977)
- **lateral lobes, manubrium present**
- Caullery (1915), Chamberlin (1919), Monroe (1936), Hartman (1969, 1971), Fauchald (1972, 1977)
- **genus without manubrium — *Axionice***
- Benham (1916), Caullery (1944)
- **genus without manubrium — *Scione***
- Londoño-Mesa (2009), Nogueira, Hutchings & Carette (2015)
- **genus without manubrium — *Pistella***
- Holthe (1986), Hartmann-Schroeder (1996)
- **genera without manubrium — *Axionice* and *Pistella***

- *Scione* is preoccupied in Diptera
- *Pistella* is junior synonym of *Pista*
- thus we have in the rest only *Axionice*
- **2) Are *Pista* and *Axionice* different genera, and if so what are their diagnosis? OR**
- **is the presence/absence of TU1 manubrium character diagnostic for genera?**

To answer these questions we perform the phylogenetic analysis based on morphological characters

We use Neighbour-Joining multivariate cluster analysis. As a measure we used Chord distance.

Calculations have been made in Past3.

# characters used in the analysis

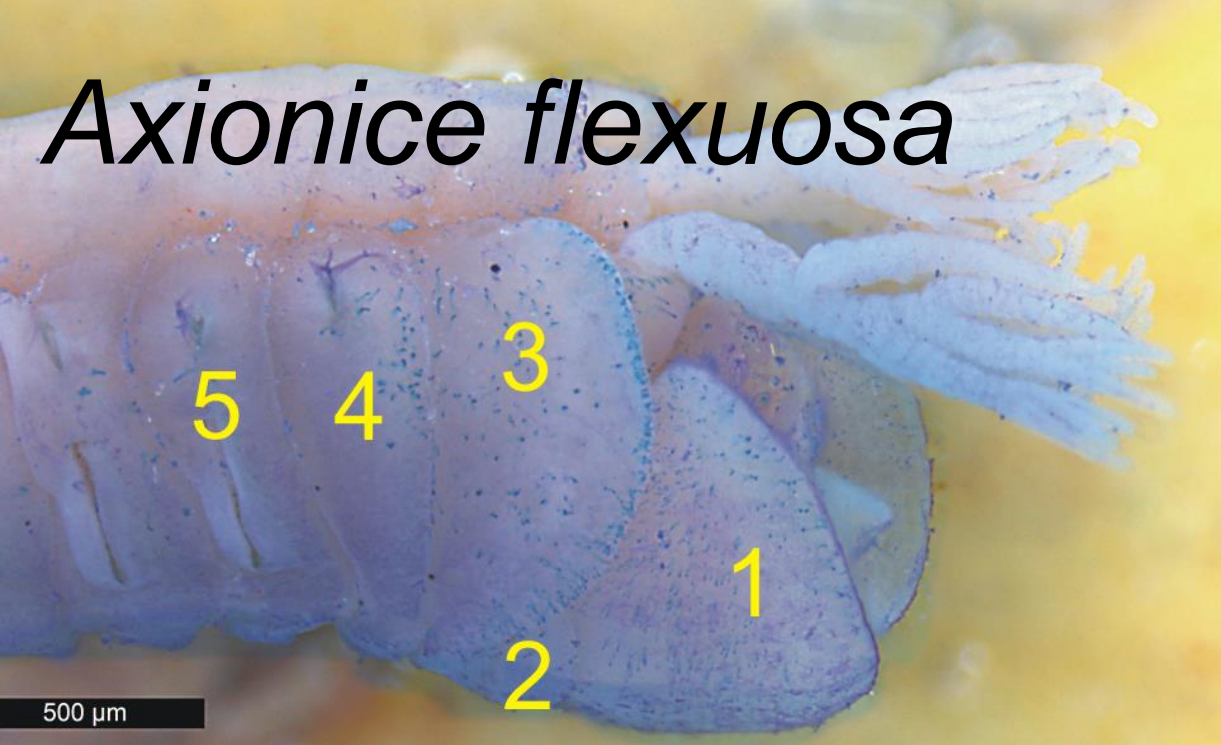
- 1. Branchiae, type:** 0. arborescent; 1. pompon-like.
- 2. Branchiae, number:** 1. one pair (or single); 2. two pairs; 3. three pairs.
- 3. Lateral lobes of S1:** 0. absent; 1. small; 2. large; 3. huge.
- 4. Lateral lobes of S2:** 0. absent; 1. small; 2. large; 3. huge.
- 5. Lateral lobes of S3:** 0. absent; 1. small; 2. large; 3. huge.
- 6. Manubrium of uncini:** 0. absent; 1. present at least in S5.
- 7. Ventral pads:** 0. coloration uniform, 1. posterior part white.



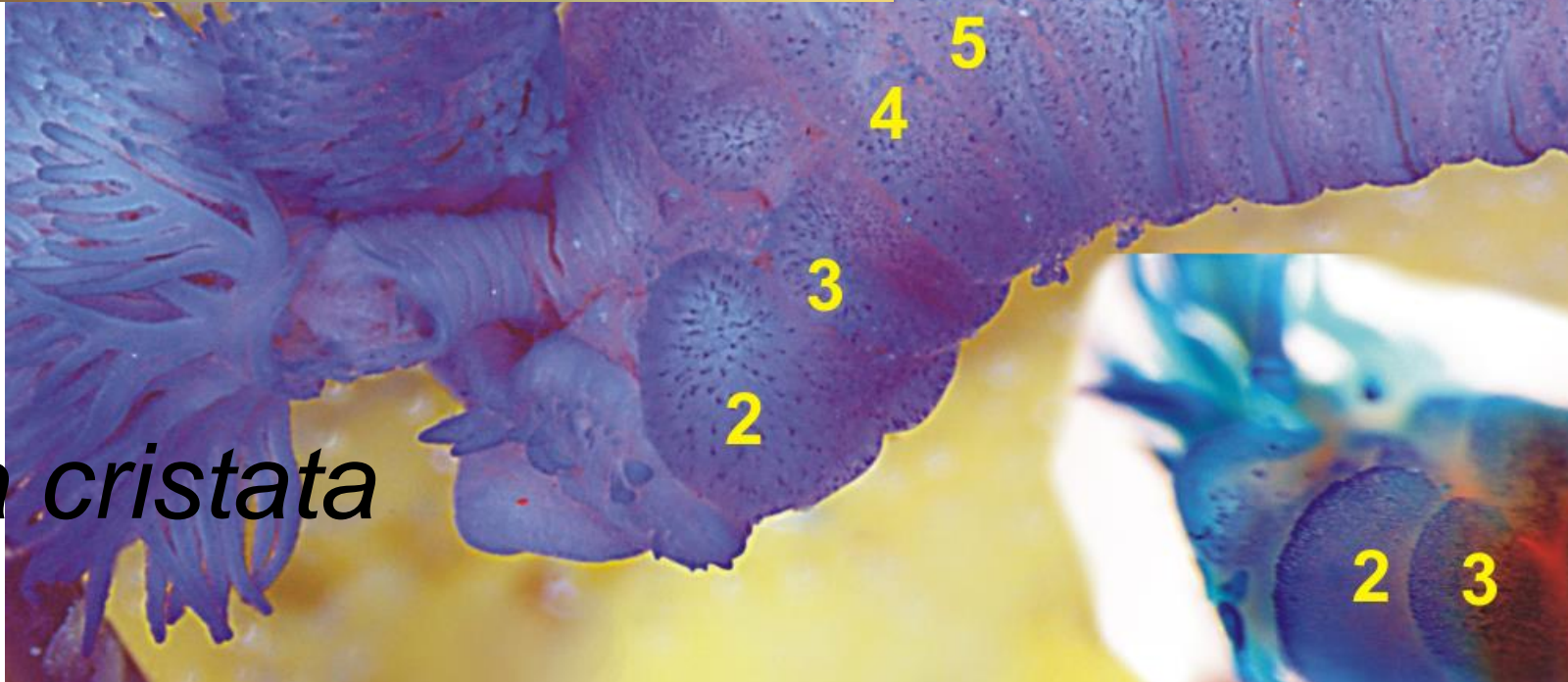
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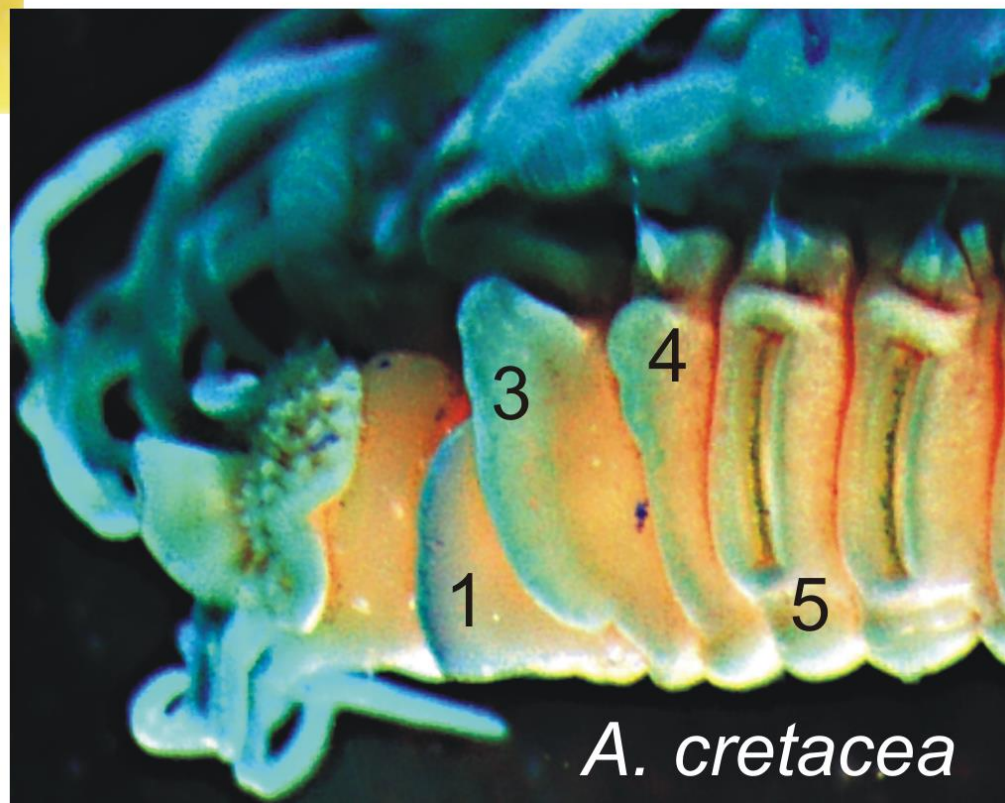
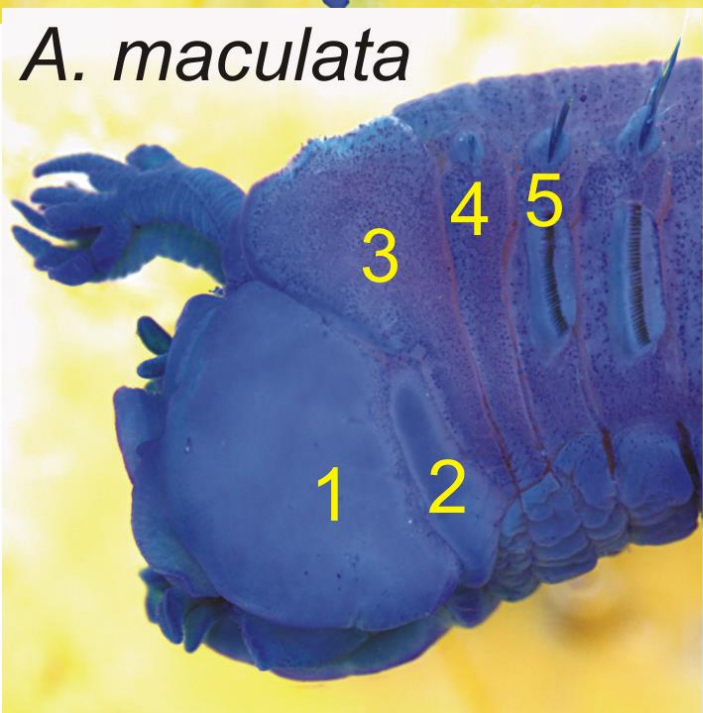
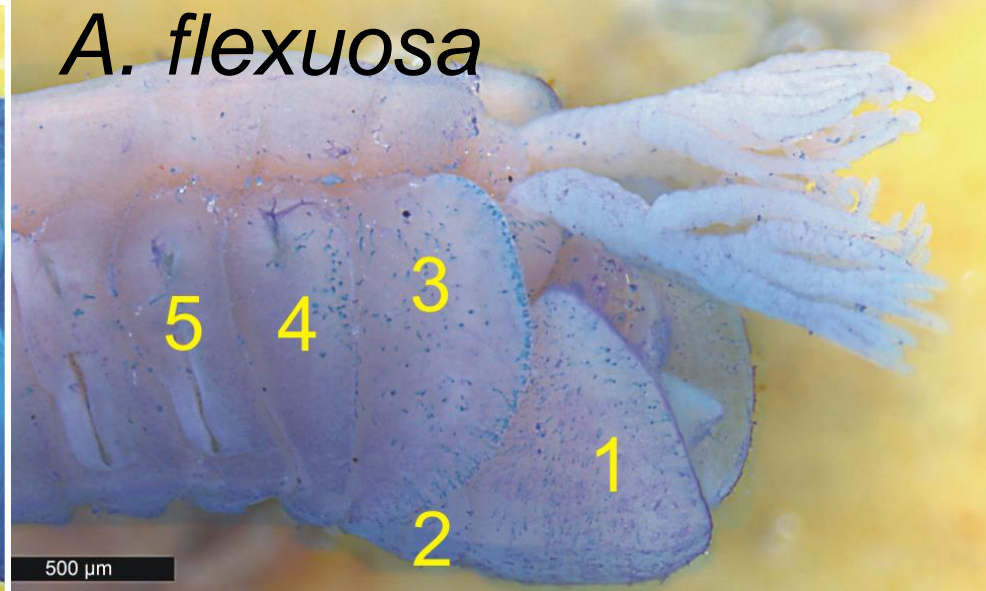
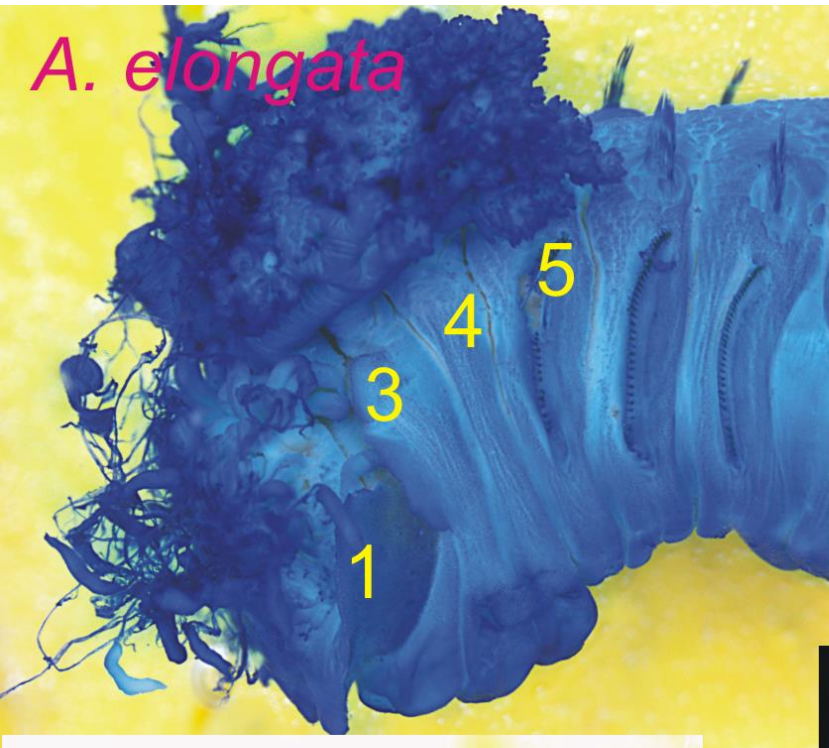
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# *Axionice flexuosa*

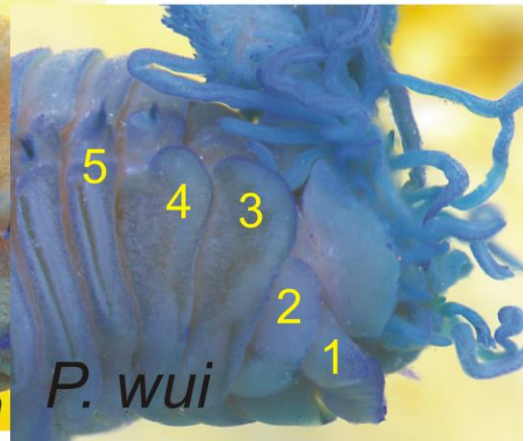
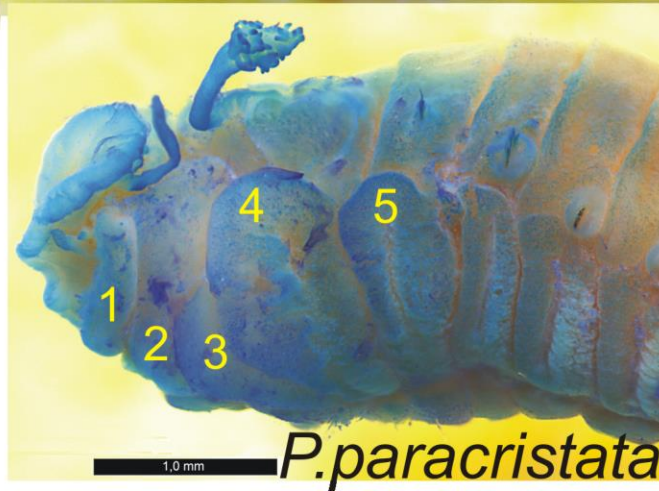
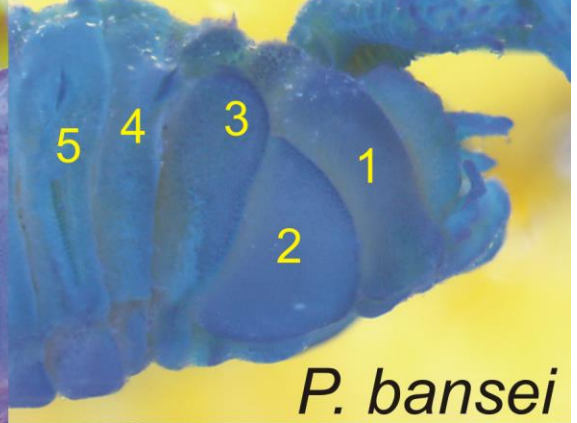
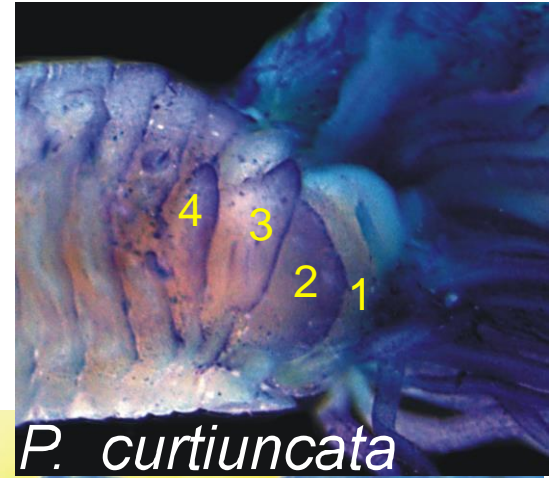
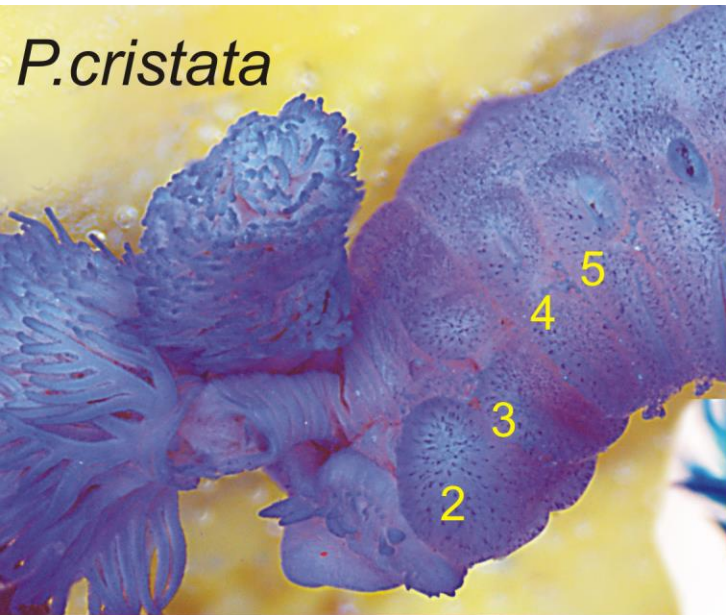


# *Pista cristata*



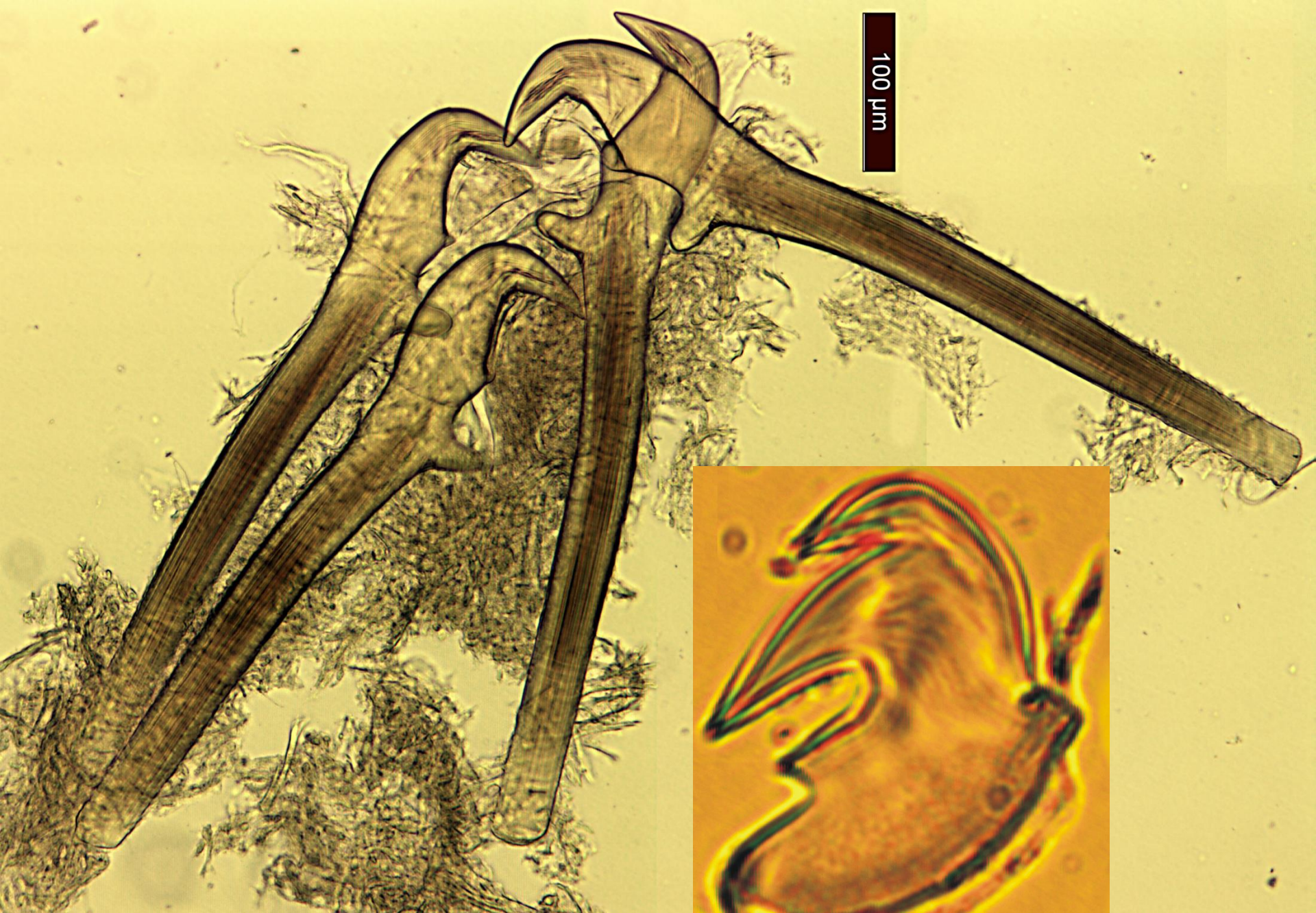


# Lobes of *Pista* spp.

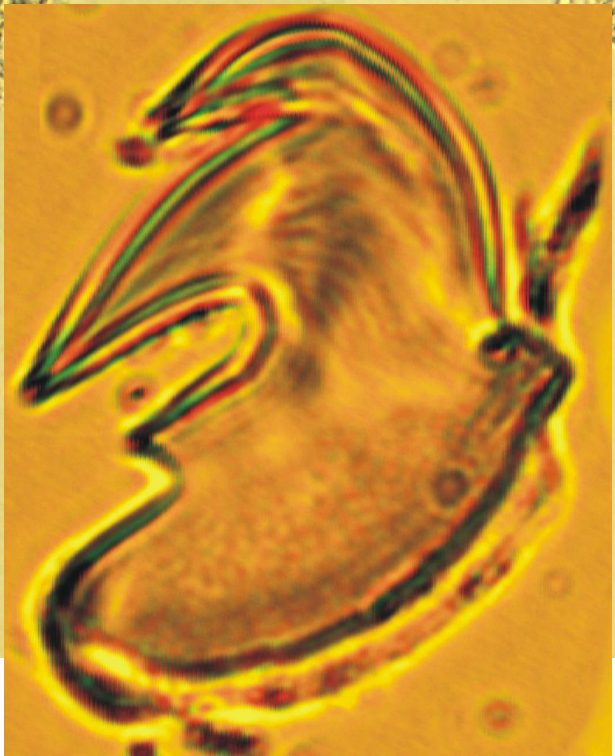


# characters used in the analysis

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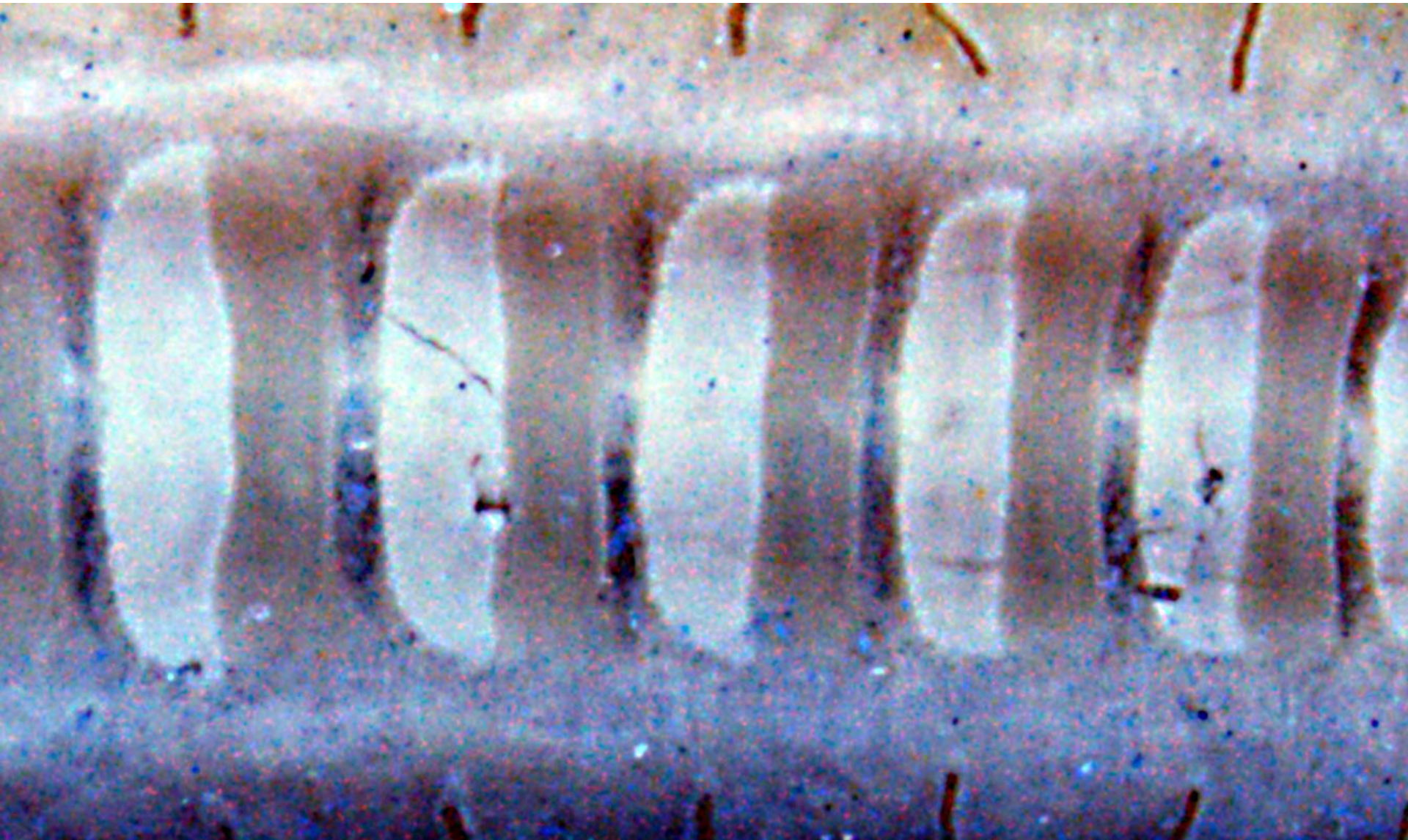
100 μm



# characters used in the analysis

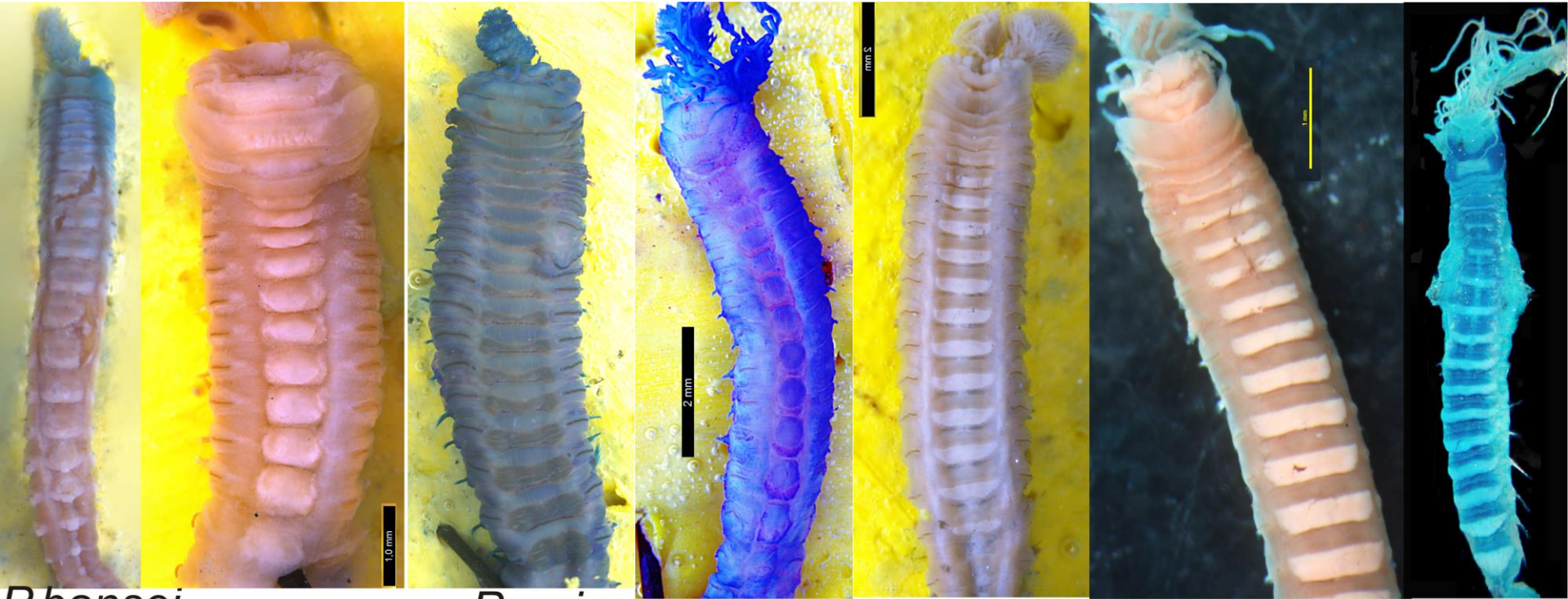
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# Ventral pads of *Pista cristata*





# Ventral pads of *Pista* spp.



*P. bansei*

*P. paracristata*

*P. wui*

*P. mediterranea*

*P. cristata*

*P. unibranchia*

*P. papillosa*

Londoño-Mesa, 2009

# Ventral pads of *Axionice* spp.



*A. flexuosa*



*A. elongata*



*A. maculata*

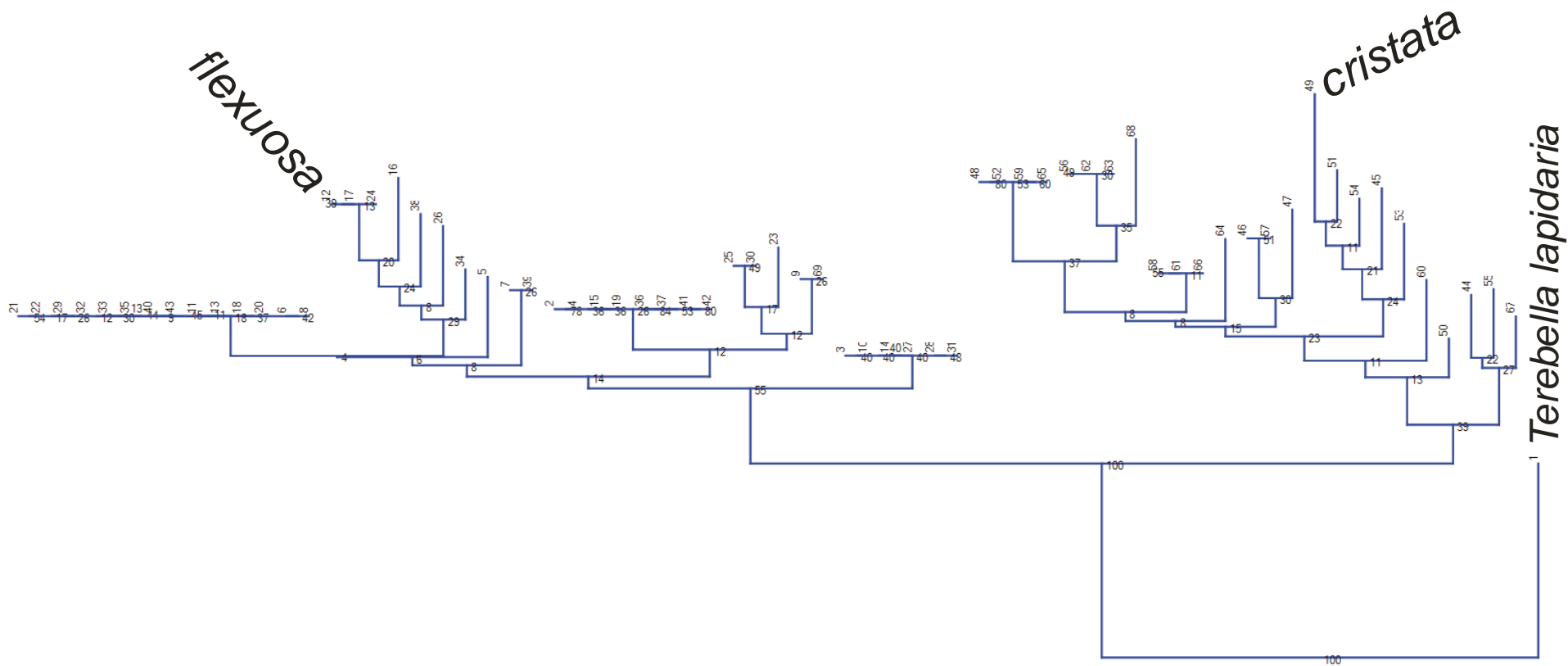


*A. palmata*

# w/o pads (67 species)

*Axionice*

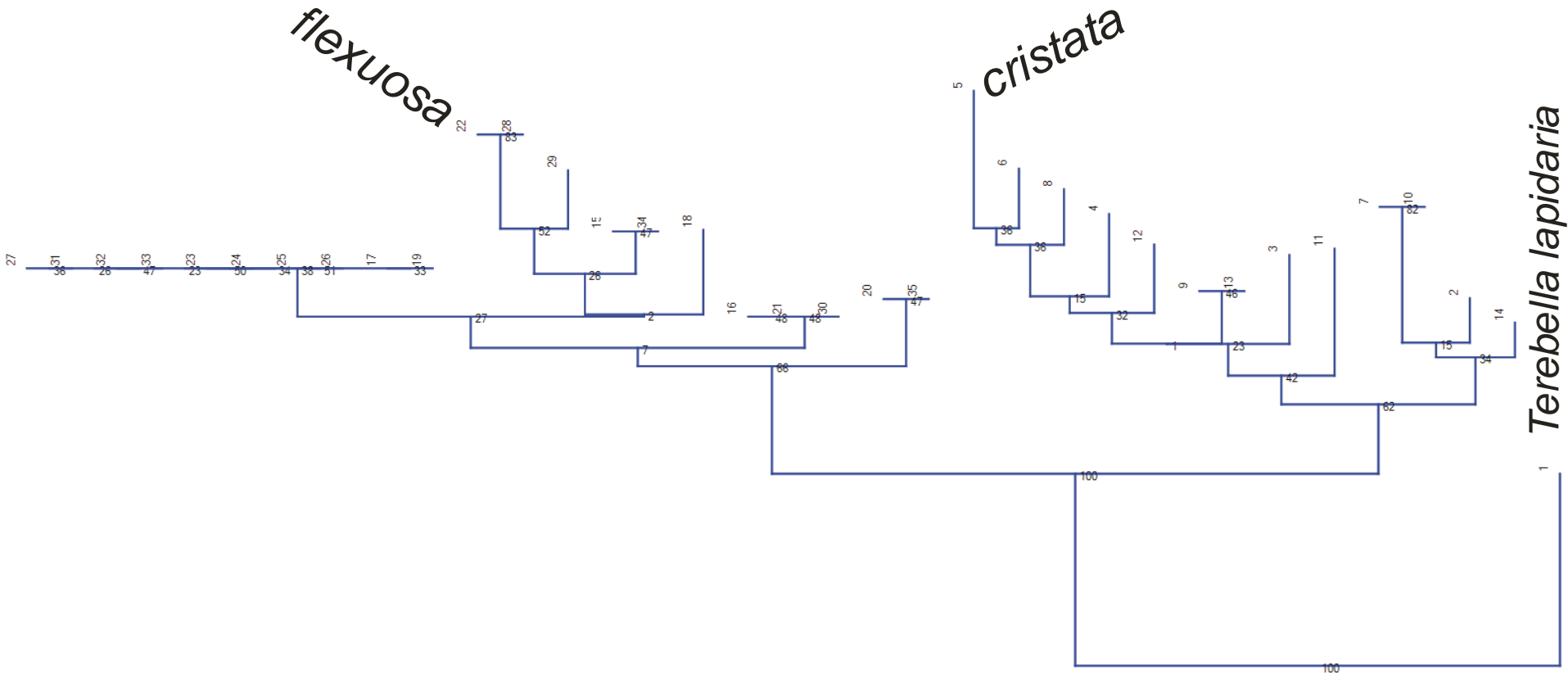
*Pista*



# with pads (33 species)

*Axionice*

*Pista*



***Axionice*** Malmgren, 1866.

Lobes of S1 the largest, usually at least twice as large as largest lobes of other segments, directed anteriorly and covering the upper lip; lobes of S3 smaller, but still large, lobes of other segments much smaller or absent, especially peculiar trait is small or absent lobes of S2; branchiae arborescent; ventral pads do not subdivided; uncinal manubrium, if present develops from uncinal base. Uncini in double rows face-to-face. Notochaetae laterally smooth.

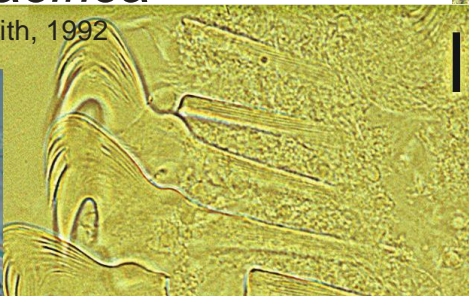
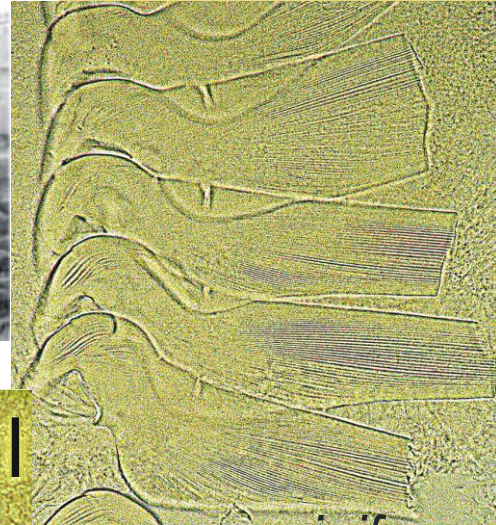
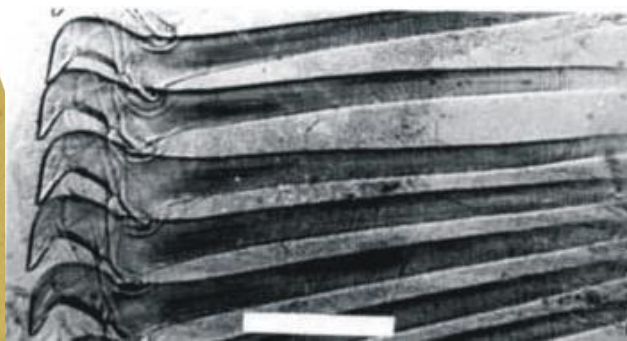
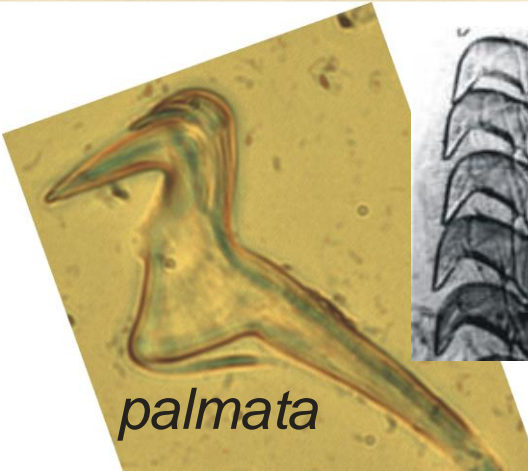
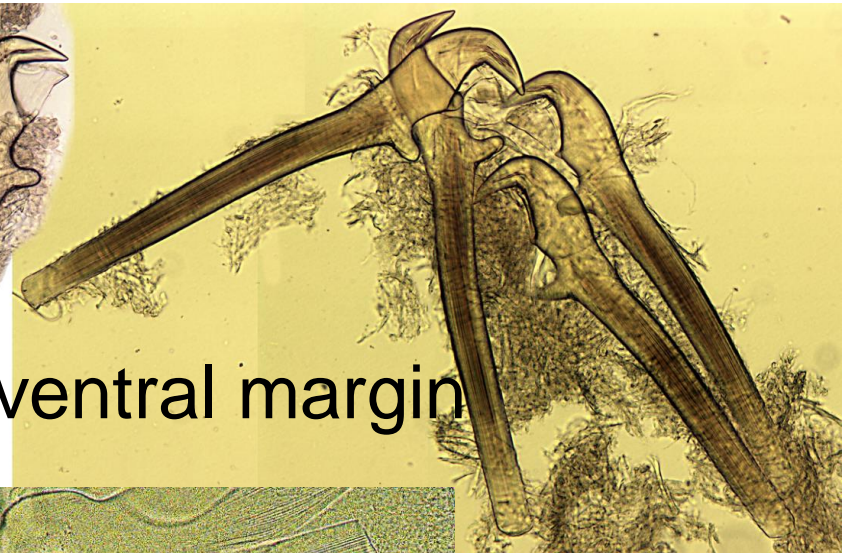
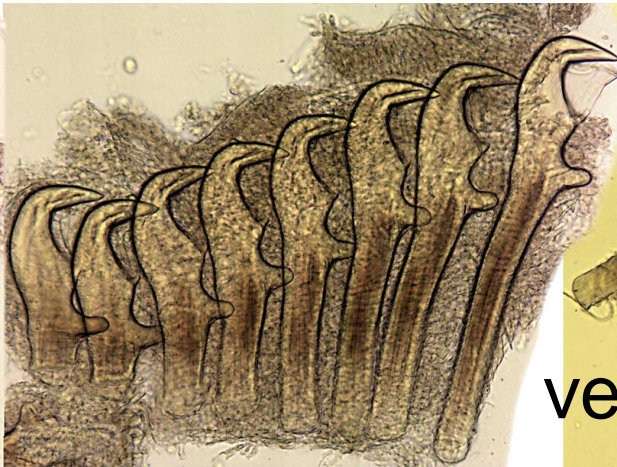
***Pista*** Malmgren, 1866.

Lobes of S1 are small, just lateral to mouth or absent at all, lobes of S2 and S3 always well developed; branchiae pompon-like = bottle-brush = club-shaped = plumose (branching filaments in a spiralled arrangement); ventral pads subdivided in posterior and anterior parts with different colour; uncinal manubrium, if present develops always from uncinal tendon. Uncini in double rows face-to-face. Notochaetae laterally smooth.

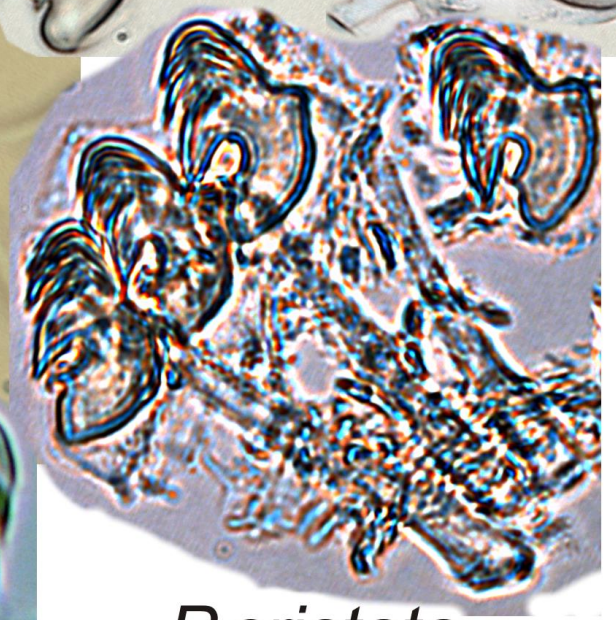
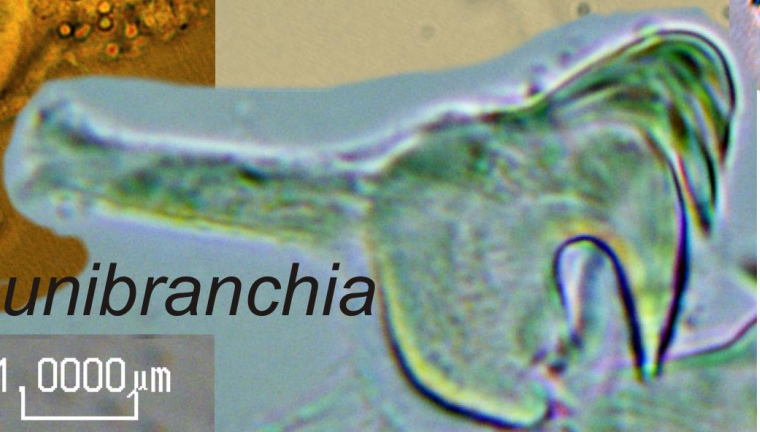
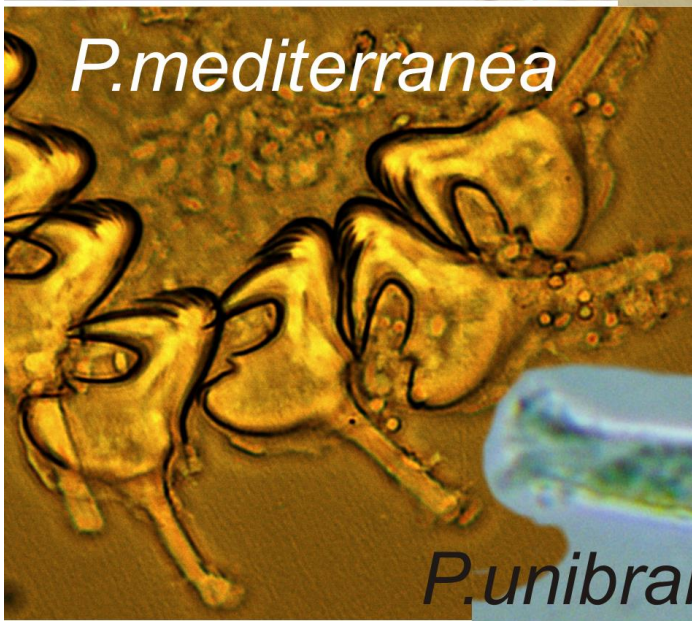
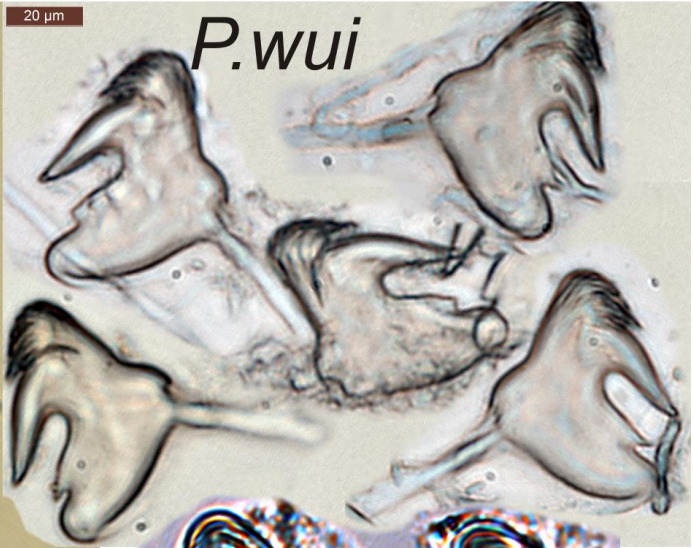
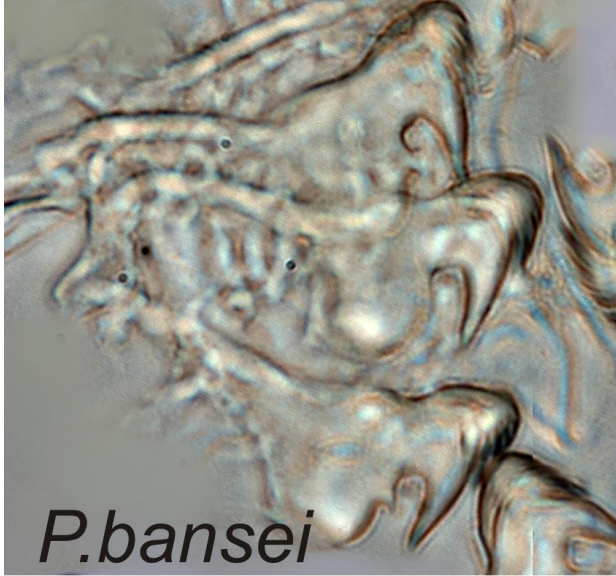
Both diagnoses do not require obligatory presence/absence of uncinal manubrium: it can be present or absent, if present the origin of manubrium is different

# Source of manubrium in *Axionice*

development of uncini TU1 in *Axionice elongata*



# Source of manubrium in *Pista*



1,0000  $\mu$ m



<http://dx.doi.org/10.11646/zootaxa.4019.1.18>

<http://zoobank.org/urn:lsid:zoobank.org:pub:906BB67C-F137-4CDA-A26B-77A025725800>

## **Terebellidae (Annelida, Terebelliformia) from Lizard Island, Great Barrier Reef, Australia**

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<sup>1</sup>*Laboratório de Poliquetologia (LaPol), Departamento de Zoologia, Instituto de Biociências, Universidade de São Paulo, Rua do Matão, travessa 14, n. 101, 05508-090, São Paulo, SP, Brazil.*

<sup>2</sup>*Australian Museum Research Institute, Australian Museum, 6 College Street, 2010, New South Wales, Australia.*

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### **Key to the genera *Axionice* and *Pista***

- |    |  |                 |
|----|--|-----------------|
| 1. | Large lobes on segments 1, directed anteriorly and covering the upper lip; arborescent branchiae . . . . . | <i>Axionice</i> |
| -  | Short lobes on segment 1, just lateral to mouth; plumose branchiae . . . . .                               | <i>Pista</i>    |

# Thank you for your attention