

## A note on the occurrence of *Pelagonema obtusicauda*, a free-living nematode inside bryozoans

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**KURZFASSUNG:** Eine Notiz über das Vorkommen von *Pelagonema obtusicauda*, eines freilebenden Nematoden in Bryozoen. In Zooiden der marinen Bryozoa *Electra pilosa* (L.) wurden zahlreiche Exemplare des freilebenden Nematoden *Pelagonema obtusicauda* FILIPJEV gefunden. Die Nematoden besiedeln offensichtlich die noch jungen Kolonien, in denen sie auch zur Fortpflanzung gelangen. Die Art der Beziehung zwischen den beiden Organismen bedarf noch weiterer Klärung.

### INTRODUCTION

During a study of the effects of acclimation temperatures on growth, feeding and oxygen consumption of North Sea bryozoans, numerous colonies of *Electra pilosa* were reared and maintained in laboratory cultures at the Marine Station of the Biologische Anstalt Helgoland (MENON 1972). The colonies were settled on glass or PVC plates exposed and stationed at a submarine station at "N/C Tonne" at Helgoland in the North Sea. While examining the colonies for growth and activity it was noticed that a few colonies of *E. pilosa*, maintained at 12° C harboured very active nematodes *Pelagonema obtusicauda* FILIPJEV. The colonies which contained the nematodes were isolated and kept under observation for a period of 24 weeks.

### OBSERVATIONS

The majority of the colonies of *Electra pilosa* used for growth studies were young (usually possessing 8 to 10 zooids) and devoid of any nematodes. These young colonies were fed with *Cryptomonas*. As no nematode was noticed in the young colonies, and since all cultures were devoid of other organisms (culture media consisted of 4 to 5 l aerated, millipore, 0.22  $\mu$ , filtered sea water) it is quite likely that the eggs of the nematodes were present in the young colonies before they were brought to the laboratory.

Although nematodes of different sizes and stages of sexual maturity were noticed, eggs were never observed in the culture. The majority of the specimens, which ranged from 1.8 mm to 2.8 mm in length, contained well-developed ova. The specimens of *Pelagonema obtusicauda* were very long and occupied practically the whole zooecia

(Fig. 1a, b). Usually they were whorled 2 to 3 times. They are reddish white when young, and red upon attaining sexual maturity.

During the observations it was noticed that *Pelagonema obtusicauda* moves from one zooid to the next through the pore plate, thereby destroying the zooecial walls, resulting in degeneration of many zooids. The fact that the nematodes were found in

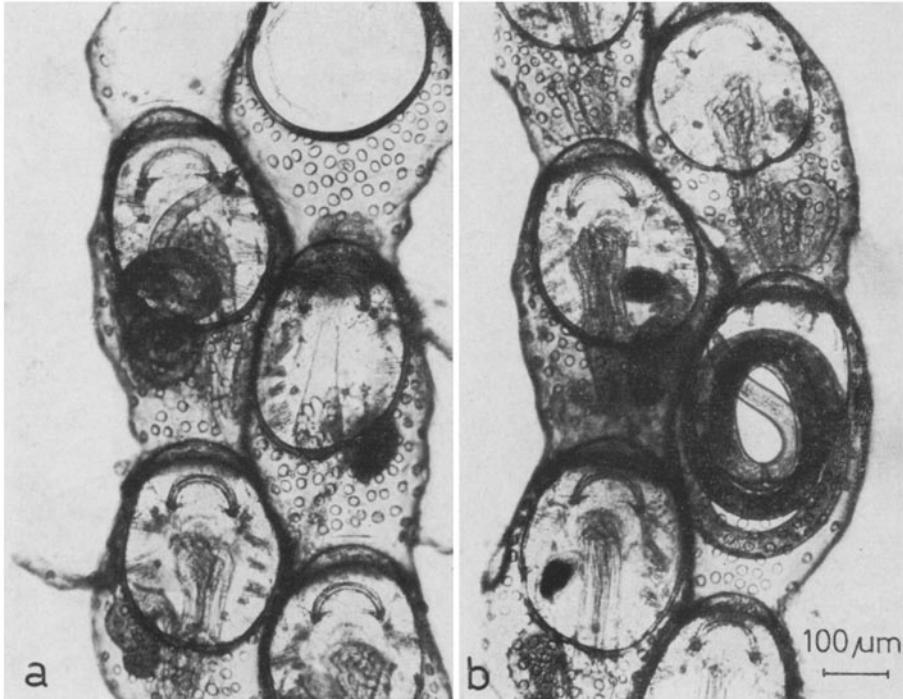


Fig. 1: *Pelagonema obtusicauda*. a Curled, juvenile specimen inside live zooid of *Electra pilosa*.  
b Gravid nematode female inside a *E. pilosa* zooid

intact zooecia without rupture of the frontal membrane indicates that they had entered through the pore-plate. Although the nematodes recorded here are free living (courtesy of Dr. RIEMANN, Bremerhaven), by entering and occupying a zooecium they kill the zooids. Regeneration is arrested owing to the destruction of the pore-plates and congestion of the coelom. It is possible, however, that the entry of nematodes is accidental; it will eventually result in the total destruction of the colony; after the living zooids are killed, the non-living part of the colony functions as living quarters for the nematodes.

#### DISCUSSION

According to Dr. RIEMANN, Bremerhaven (personal communication), our finding represents a zoological peculiarity. Detailed aspects on the life history of *Pelagonema*

*obtusicauda* are being studied by RIEMANN and his colleagues; the results of their study will be published elsewhere. It is possible, but unlikely, that the nematodes entered the colonies subsequently.

No literature exists on the occurrence of free-living nematodes inside marine bryozoans. In fact, RYLAND (1970) did not mention anything about the occurrence of any invertebrates inside live bryozoan colonies. It is not clear whether the nematodes found feed on the zooids. Although the coelom has no permanent opening to the exterior, during maturity the formation of intertentacular organs would help eggs or juveniles to enter the coelomic cavity. Once access is achieved, the worms can move from zooid to zooid using the pore-plates for entry.

Rate of growth of "infested" colonies is considerably reduced. Growth reduction became obvious as the nematodes "moved" towards the periphery of the colonies.

#### SUMMARY

1. This is the first record of occurrence of a free-living nematode, *Pelagonema obtusicauda* FILIPJEV, inside the colonies of the bryozoan *Electra pilosa* (L.).
2. As many as 26 nematodes were recovered from a single *E. pilosa* colony.
3. The nematodes attained sexual maturity and many females harboured well-developed eggs.

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