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NOTES ON THE DEVELOPMENT OF PARASITIC COPEPODA *EUBRACHIELLA ANTARCTICA* (QUIDOR, 1906)

ABSTRACT

Parasitic copepod *Eubrachiella antarctica* was studied in different phases of it's development. The copepods were collected from *Champsocephalus gunnari* and *Chionodraco rastrospinosus*.

INTRODUCTION

Copepods in different phases of development were observed on *Champsocephalus gunnari* and *Chionodraco rastrospinosus* throughout the summer. In Siegel's (1980) opinion the maturity of female parasites takes places in autumn (March/April), and the fact that infestation is not dependent upon stock densities indicates that infestation depends to a large degree upon the spawning season of the channichthyid hosts.

In the present work, differences in the number of particular development phases of copepod obtained in November, December and February were observed.

The development of *E. antarctica* throughout the summer with the periods of intensive reproduction.

Most of the works concerned the occurrence of parasitic copepods [Kock and Möller (1977), Siegel (1980), Skóra (1986), Sosiński (1986)] in antarctic fish did not pay attention to the reproduction of this copepod.

MATERIAL AND METHODS

The material being studied was collected in:

November, 1983, South Georgia (54°39'S-38°19'W) where 1787 *Ch. gunnari* were caught.

December, 1986, Joinville Island (62°34'S-54°55'W) where 108 *Chionodraco rastrospinosus* were examined.

February, 1987, Elephant Island (61°10'S-56°06'W) there were 2205 investigated *Ch. gunnari*.

February, 1988 South Georgia (54°39'S-38°19'W), 425 *Ch. gunnari* were examined. The *E. antarctica* were preserved in 70% ethanol.

RESULTS

According to Heegaard (1947), Shotter (1971) and our own observations, four subsequent developmental phases of the females can be distinguished:

1-First phase „young adult"; as the transparent envelop around the pereon is clearly visible. The cephalothorax is a little bit larger than maxilla (Fig. 1).

Measurements (mm.)	Mean for 10 individuals
Cephalothorax length	3.5
Maxillae length	2.7
Pereon length	4.1
Pereon width	1.7

2-Second Phase „mature adult"; bigger than phase I, the envelop is oftenly less visible, pereon is better developed, cephalothorax almost is two times longer than maxilla, lacking ovisacs (Fig. 2).

Measurements (mm.)	Mean for 10 individuals
Cephalothorax length	4.0
Maxillae length	2.2
Pereon length	4.3
Pereon width	2.3

3-Third phase „adult"; ovisacs contain white-transparent, premature eggs (Fig. 3).

Measurements (mm.)	Mean for 10 individuals
Cephalothorax length	3.9
Maxillae length	2.3
Pereon length	4.4
Pereon width	2.5

4-Fourth phase „adult with nauplii"; ovisacs of yellowish-brown color with embryo of advanced development (Fig. 4)

Measurements (mm.)	Mean for 10 individuals
Cephalothorax length	4.2
Maxillae length	2.5
Pereon length	4.5
Pereon width	2.7

On some females the presence of dwarf males was also noticed. They were attached to the females of the I phase of development on the posterior part of the pereon.

In the investigated materials, the most females of *Eubrachiella antarctica* were found in the I phase of development, collected in November 1988 (37.6%) from South Georgia found on *Champsocephalus gunnari* (Tab. 1). In February (1988) a great number of III and IV phases was noticed.

Table 2 shows the number schedule of the development phase of *E. antarctica* on *Ch. rastrospinosus*, captured in December (1986) near Joinville Island. All the phases of development were strongly represented. On the other hand, among the copepods collected from *Ch. gunnari* from Elephant Island in February (1987), I and II phases of development dominated in (38.8%) and (28.2%) in sequence.

DISCUSSION

On investigated *Champsocephalus gunnari* and *Chionodraco rastrospinosus* there were found females *Eubrachiella antarctica,* on different stages of development. According to the differences of their morphology, they could be divided into four phases (Fig. 1-4).

The occurrence of a definite phase in greater number, or the lack of others could give a suggestion about the intensity of reproduction in definitive season of the year. Females *E. antarctica* collected on fish caught in November, December and February reveal the fluctuation in intensity of reproduction.

In February (1987, 1988) phase were prevailed whose coincide with reproduction of the host. The reproduction of *Ch. gunnari* takes place in the end of March and in the beginning of April.

Siegel (1980) considered that the reproduction of copepods, leaving the ovisacs by nauplii, is synchronized with the spawning season of *Ch. gunnari.*

Theoretically, the massive spawning season of the fish, makes it easier for the nauplii to reach new hosts. The shown fluctuation in the number of definite phases of development of *E. antarctica* seems to support this view.

However, the reproduction takes place throughout the whole summer, the existence of particular numerous copepods in the IV phase of development indicates the fluctuation of the intensity of this reproduction.

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NOTA DO ROZWOJU PASOŻYTNICZEGO WIDŁONOGA *EUBRACHIELLA ANTARCTICA* (QUIDOR, 1906)

Streszczenie

Pasożyty były zebrane z ryb *Champsocephalus gunnari* i *Chionodraco rastrospinosus* i były badane w różnych etapach rozwoju.

Tab. 1. Occurrence of females *Eubrachiella antarctica* depending on developmental phases from Champsocephalus gunnari

Developmental phase	November 1983		February 1988	
	Specimens	%	Specimens	%
I	61	57.5	138	37.6
II	34	31.8	98	26.7
III	-	-	81	22.1
IV	12	11.2	50	13.6

Tab. 2. Occurrence of females *Eubrachiella antarctica* depending on developmental phases.

Developmental phase	*Ch. rastrospinosus* Joinville I. December 1986		*Ch. gunnari* Elephant I. February 1987	
	Specimens	%	Specimens	%
I	22	24.7	85	38.8
II	17	19.1	62	28.2
III	18	20.2	35	16.0
IV	32	36.0	37	17.0

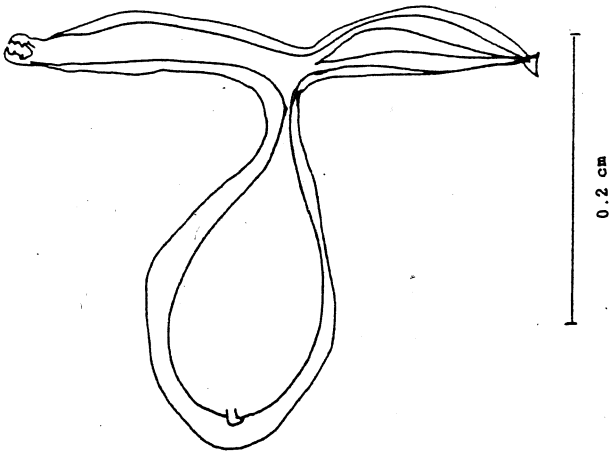

Fig. 1. Eubrachiella antarctica " young adult".

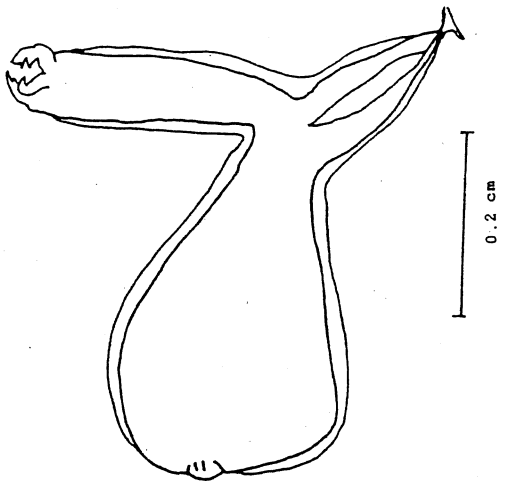

Fig. 2. Eubrachiella antarctica " mature adult".

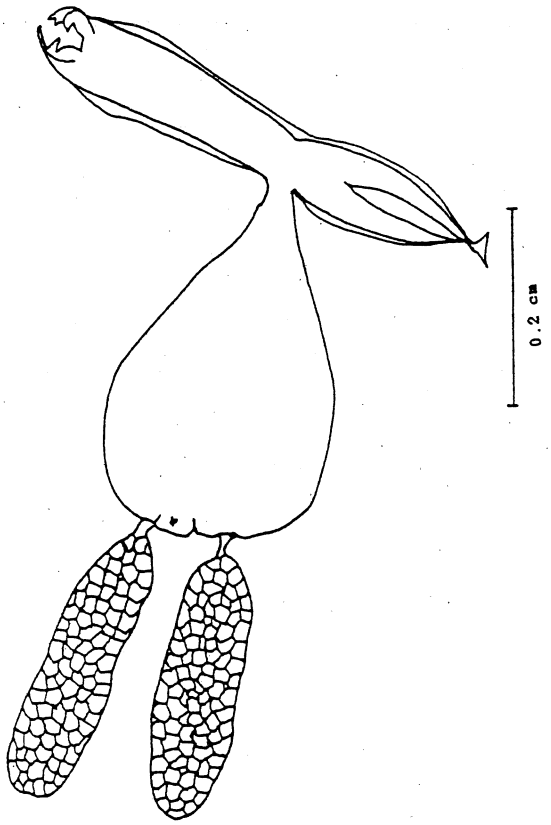

Fig. 3. Eubrachiella antarctica " adult".

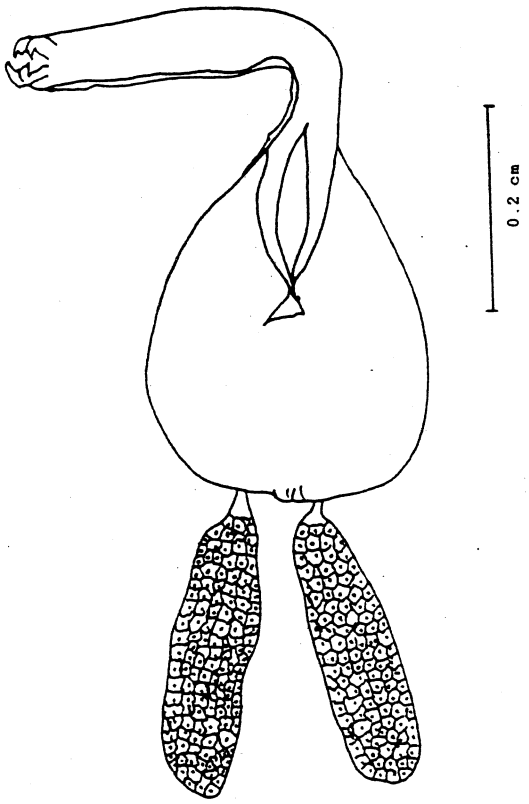

Fig. 4. Eubrachiella antarctica "adult with nauplii".