

Jerzy ROKICKI¹⁾, Johann-Wolfgang WÄGELE²⁾ and Jarl-Ove STRÖMBERG³⁾

¹⁾ Department of Invertebrate Zoology,
University of Gdańsk,
Piłsudskiego 46
81 – 378 Gdynia, POLAND

²⁾ Fakultät für Biologie, Abt.2
University of Bielefeld
P.O.Box 8640
D–4800 Bielefeld, GERMANY

³⁾ Kristineberg Marine Biological Station,
The Royal Swedish Academy of Sciences,
S–45034 Fiskebäckskil, SWEDEN

Note on the occurrence and hosts of some parasitic Antarctic isopods (Crustacea, Isopoda)

ABSTRACT: Parasitic isopods (*Aega antarctica* and *Gnathia calva*) were discovered on fishes collected during Polish expeditions to the Atlantic sector of the Southern Ocean. Pranizae of *G.calva* infected 14.5% of *Notothenia corriceps neglecta* and 16% of *Notothenia rossi marmorata*. The infestation rates are probably underestimated.

K e y w o r d s: Antarctic, parasitic isopods.

Introduction

Isopod parasites of Antarctic fishes are not well studied. Most published data are taxonomic descriptions (often of poor quality) or reports on new localities. Studies on the biology of *Gnathia calva* and *Aega antarctica* were recently published by Wägele (1987, 1988, 1990). Individuals of the most frequent ectoparasitic genera *Aega* and *Gnathia* tend to detach from their host when the host fish gets entangled in a net. Therefore the hosts are usually unknown. The following note is based on a careful search for parasites on fishes collected during Polish expeditions in 1977–1979.

Material and methods

Fishes were collected with a bottom trawl from the shelf of subantarctic islands (Falklands, South Georgia, South Orkneys, King George Island) during a cruise of m/t „Gemini” in 1977/78 and during an expedition to the Admiralty Bay (King George Island) in 1978/79. Ectoparasitic isopods were detached from their hosts and preserved in 70% ethanol.

Results

1. *Gnathia calva* Vanhöffen, 1914 (Isopoda: Cymothoidea: Gnathiidae)

Only the larvae (pranizae) of this species can be found on fishes, adults do not feed (Wägele 1988). Larvae can be identified most easily by the setation of the tailfan and the form of uropods (see Wägele 1987). The uropodal exopod bears 6 simple setae on the lateral margin and 4 plumose setae on the medial margin. The endopod has 6 long plumose setae on the medial and distal margins.

Table 1

Distribution of *Gnathia calva*

Host species	No. of fishes		Degree of infestation	
	examined	infested	incidence %	intensity
<i>Notothenia coriiceps neglecta</i>	248	36	14.5	2.6
<i>Notothenia rossi marmorata</i>	50	8	16.0	2.5
<i>Trematomus hansonii</i>	28	1	(3.5)	1

Larvae found on *Notothenia* measured 1.6 – 4.0 mm in length (mean 2.7 mm) and 0.5 – 1.6 mm (mean 1.2 mm) in width, the smallest belonging to the first, the largest to the last (third) instar. A specimen from the mouth of *Trematomus hansonii* was 5.3 mm long. All other specimens were found laterally on the skin of their hosts.

Hosts: *Notothenia coriiceps neglecta* Nybelin, *N. rossi marmorata* Fischer, *Trematomus hansonii* Boulanger. These are new hosts for *G. calva*. Wägele (1988) reports that reared pranizae successfully attached to *N. nudifrons* Lönneberg in a laboratory experiment, but not to *N. gibberifrons* Lönneberg, and *Dolloidraco longedorsalis* Roule. In the present material *N. coriiceps neglecta* infested measured 28–44.5 cm (mean 34.7 cm), *N. rossi marmorata* measured 25–60 cm (mean: 36 cm). A single *T. hansonii* was 37 cm long.

Localities: Near South Shetland Islands.

Distribution: *G. calva* has been found mainly in depths between 200 and 300 m, in the Weddell Sea in 124–661 m. The species has a circumpolar distribution on the Antarctic shelf and until now has not been found north of the South Shetlands.

2. *Aega antarctica* Hodgson, 1910 (Isopoda: Cymothoidea: Aegidae)

A redescription of this parasite has recently been prepared (Brandt, *in press*). In comparison with other Antarctic species of the genus, *A. antarctica* is relatively slender and can be identified by the outline of the tailfan. The pleotelson tapers to a small point and has few (about 5) short sensory spines in notches on each distal margin (Fig. 11 in Brandt, *in press*).

Hosts: *Notothenia gibberifrons* Lönneberg, 1905.

Location on the host: skin.

Incidence and intensity of infestation: Out of 1400 *N. gibberifrons* examined only one fish was infested. One mature female of *Aega antarctica* (with oostegites, 22 mm of length) was caught.

Locality: Near King George Island (61°43'S, 58°36'W) in 282–300 m depth.

Distribution: *A. antarctica* occurs circumpolarly on the Antarctic shelf in depths between 5 and 710 m (see Brandt, *in press*).

Remarks: Of the Antarctic parasitic Isopoda *A. antarctica* seems to be most abundant species. The rare occurrence in fish catches indicates that the parasite detaches itself when the host is disturbed. Aegids are anyhow only temporary ectoparasites (Rokicki 1984); *A. antarctica* spends most of its life motionless on the sea floor, digesting the large reserve of fish blood (Wägele 1990). According to the results of laboratory experiments this species has no preference for a certain host. Specimens could be reared with plaice (*Pleuronectes platessa*) from the North Sea.

Further isopods collected with fish samples were *Aega glacialis* Tattersall, 1921 and *Natatolana* sp. Neither of these was attached to a fish. Species of *Natatolana* are necrophagous, they may occur on sick fishes (Nagano, Kawakami and Kajiura 1963, Clarc 1971, Johnson 1976, Bird 1981, Sekiguchi, Yamaguchi and Kobayashi 1981, Stepien and Brusca 1985).

Discussion

Gnathiidae are isopods with an extreme sexual dimorphism of the adult animals, while the juveniles are larvae with a different morphology, adapted to ectoparasitism on fishes. Wägele (1987) described the postembryonal stages of *Gnathia calva*. Since then it has been possible to identify also the pranza stage of *G. calva* from fish catches. *G. calva* is very frequent in the benthos of the upper 500 m of the Weddell Sea and S. Shetlands area (Wägele 1987), but

until now it was not known where it occurs as actoparasite at the praniza stage. The present investigation showed its presence on the skin of *Notothenia coriiceps neglecta* (14.5% ext) and *N. rossi marmorata* (16%). The similar infestation points to the same ecological niche of both fish species. The infestation is probably higher but isopods quickly detach from their host when fishes are caught in nets and hauled through the water column. Although 1–2 parasites were most commonly recorded from one fish the mean intensity for *Notothenia coriiceps neglecta* and *N. rossi marmorata* was similar (2.6 and 2.5 ind., respectively).

Amar and Roman (1973) found one male of *Gnathia calva* in the stomach of *N. coriiceps neglecta*: the host obviously can use the adult parasite as food. Sometimes species are discovered in invertebrates that eat benthos or fishes, as in the Weddell Sea (*pers. comm.* of Dr. J. Plötz – after Wägele 1987). Although one individual was recorded in the oral cavity of *Trematomus hansonii*, the standard place for the parasite is the skin. The intensity of infestation of *G. calva* on *Notothenia coriiceps neglecta* was 1–4/individ. Both big and small fishes are infested regardless the age of the host.

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Received December 11, 1991

Revised and accepted February 20, 1992

Streszczenie

Z czterech gatunków ryb antarktycznych: *Notothenia coriiceps neglecta*, *Notothenia rossi marmorata*, *Trematomus hansonii* i *Notothenia gibberifrons* zebrano pasożytnicze Isopoda. W materiale stwierdzono 2 gatunki równonogów: *Gnathia calva* (larwy – pranizae) oraz *Aega antarctica*.