

## New data on trematodes (Plathelminthes, Trematoda) of fishes in the Ross Sea (Antarctic)

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**ABSTRACT:** Records of 13 trematode species, collected from bottom fishes from the western and northern parts of the Ross Sea, are given. Trematodes *Otodistomum cestoides* van Beneden, 1871, *Lecithaster micropsi* Zdzitowiecki, 1992, *Neolepidapedon trematomi* Prudhoe et Bray, 1973, *Postlepidapedon opisthobifurcatum* (Zdzitowiecki, 1990), *Discoverytrema gibsoni* Zdzitowiecki, 1990, *D. markowskii* Gibson, 1976, *Macvicaria muraenolepidis* Zdzitowiecki, 1990, *Helicometra rakusai* Zdzitowiecki, 1997 and *Proctophantastes* sp. are recorded from the Ross Sea for the first time. *Proctophantastes* sp. differs from other species of *Proctophantastes* Odhner, 1911 by the morphology of the ventral equatorial ridge of the ventral sucker.

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**KEY WORDS:** the Ross Sea, Antarctic, trematodes, Nototheniidae, Rajidae, Channichthyidae, Macrouridae, Muraenolepididae, Zoogonidae, *Proctophantastes*.

## Новые данные о трематодах (Plathelminthes, Trematoda) рыб моря Росса (Антарктика)

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**РЕЗЮМЕ:** Дан обзор 13 видов трематод, собранных от донных рыб западной и северной частей моря Росса. Трематоиды *Otodistomum cestoides* (van Beneden, 1871), *Lecithaster micropsi* Zdzitowiecki, 1992, *Neolepidapedon trematomi* Prudhoe et Bray, 1973, *Postlepidapedon opisthobifurcatum* (Zdzitowiecki, 1990), *Discoverytrema gibsoni* Zdzitowiecki, 1990, *D. markowskii* Gibson, 1976, *Macvicaria muraenolepidis* Zdzitowiecki, 1990, *Helicometra rakusai* Zdzitowiecki, 1997 и *Proctophantastes* sp. впервые указываются для моря Росса. *Proctophantastes* sp. отличается от других видов соответствующего рода морфологией вентрального экваториального гребня на брюшной присоске.

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КЛЮЧЕВЫЕ СЛОВА: море Росса, Антарктика, трематоды, Nototheniidae, Rajidae, Channichthyidae, Macrouridae, Muraenolepididae, Zoogonidae, *Proctophantastes*.

## Introduction

The first information on fish parasites from the Ross Sea were published by Leiper, Atkinson (1914, 1915) on the basis of material collected during the British Antarctic “Terra Nova” Expedition of 1910–1913. By the end of 2012 data on 17 species and forms of trematodes undetermined to the species level (taking into account generally recognized synonymy) were collected from 16 fish species in the Ross Sea (Byrd, 1963; Holloway, Bier, 1968; Holloway, Spence, 1980; Orecchia, Paggi, 1990; Moser, Cowen, 1991; Zdzitowiecki et al., 1999; Brickle et al., 2005; Laskowski et al., 2005). These investigations were conducted in Terra Nova Bay and McMurdo Sound near land stations. However, the ichthyofauna of the Ross Sea comprises more than 80 species of fishes (Andriyashev, 1986; Eastman, Hubold, 1999; Donnelly et al., 2004), suggesting a rich fauna of trematodes from fishes in this area.

The aim of the present work was to record and describe trematodes from bottom fishes caught during longline fishing for the Antarctic toothfish *Dissostichus mawsoni* Norman, 1937 in the western and northern parts of the Ross Sea.

## Materials and methods

Fishing was carried out by both the Russian longliner “Yantar-31” using autoline fishing gear from December 2011 to February 2012 and the Korean longliner “Insung No.7” using trotline fishing gear from December 2010 to February 2011. Eighty six specimens of *Dissostichus mawsoni* (fam. Nototheniidae) (total length [TL] 75–178 cm) were examined, as were six other species caught as by-catches. These were:

*Bathyraja meridionalis* Stehmann, 1987 (fam. Rajidae, seven specimens, TL = 53–131 cm), *Chionobathyscus dewitti* Andriyashev et Neyelov, 1978 (fam. Channichthyidae, 16 specimens, TL = 23–40 cm), *Macrourus whitsoni* (Regan, 1913) (fam. Macrouridae, 76 specimens, TL = 40–115 cm), *Trematomus hansonii* Boulenger, 1902 (fam. Nototheniidae, 49 specimens, TL = 15–29 cm), *Pogonophryne* sp. (fam. Artedidraconidae, 15 specimens, TL = 24–31 cm) and *Muraenolepis marmorata* Günther, 1880 (fam. Muraenolepididae, 56 specimens, TL = 27–51 cm). Because of the fact that the international community is concerned about the fate of skates, *B. meridionalis* individuals caught alive were picked up for examination only with if they had injuries incompatible with life, according to the CCAMLR (Commission for the Conservation of Marine Living Resources) Conservation Measures (CCAMLR, 2012). Fish identification was carried out using Fisher, Hureau (1985) and the “Scientific Observer Manual” (CCAMLR, 2011).

All fishes were examined for parasitic infestation using the standard method of Bykhovskaya-Pavlovskaya (1985). Alive worms were fixated under slight coverslip pressure in 70% ethanol. Samples were stained with acetocarmine and mounted in Canada balsam.

Data on the species of trematodes are given with the host and site of infection. Values for prevalence and intensity are given in the parentheses following the locality data as: (number of fishes infected/number examined, intensity of infection) (Bush et al., 1997). The classification of trematodes follows the “Keys to the Trematoda” (Gibson et al., 2002; Jones et al., 2005; Bray et al., 2008), with additions from Bray, Cribb (2012). Families and species are listed in alphabetical order. For the species that are found

for the first time in the Ross Sea we provide original figures and body and organs metrical data. This confirms adequacy of species identification. Drawings were made with the aid of a drawing tube. Voucher specimens have been deposited in the Helminthological Museum of the Center of Parasitology (HMCP), IPEE RAS, Moscow.

## Results

We have found 13 species of trematodes.

### Family AZYGIIDAE Lühe, 1909

Subfamily AZYGIINAE Lühe, 1909

Genus *Otodistomum* Stafford, 1904

*Otodistomum cestoides* (van Beneden, 1871)  
Fig. 1A; Table 1.

Numbers of voucher specimens in HMCP:  
3987/Tr.

Host: *Bathyraja meridionalis*.

Site of infection: spiral valve.

Locality: Ross Sea, 77°S, 178°W (7/7, 1–57).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: near the South Shetland Islands (Zdzitowiecki, 1991), the Weddell Sea (Zdzitowiecki, 1997).

### Family DEROGENIDAE Nicoll, 1910

Subfamily GONOCERCINAE Skrjanin et Guschanskaja, 1955

Genus *Gonocerca* Manter, 1925

*Gonocerca phycidis* Manter, 1925

Numbers of voucher specimens in HMCP:  
3941/Tr.

Host: *Muraenolepis marmorata*.

Site of infection: intestine.

Locality: Ross Sea 75°S 174°W (1/9, 1).

Previous records from the Ross Sea: Byrd (1963), Orecchia, Paggi, (1990), Zdzitowiecki et al. (1999).

### Family LECITHASTERIDAE Odhner, 1905

Subfamily Lecithasterinae Lühe, 1901

Genus *Lecithaster* Lühe, 1901

*Lecithaster micropsi* Zdzitowiecki, 1992  
Fig. 1B; Table 1.

Numbers of voucher specimens in HMCP:  
3997/Tr – 3941/Tr.

Host: *Muraenolepis marmorata*.

Site of infection: intestine.

Locality: Ross Sea 75°S 174°W (1/9, 28).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: none; is known from the Atlantic sector of sub-Antarctic – near South Georgia Island (Zdzitowiecki, 1992; Zdzitowiecki et al., 1997).

### Family LEPIDAPEDIDAE Yamaguti, 1958

Genus *Lepidapedon* Stafford, 1904

*Lepidapedon garrardi* Leiper et Atkinson, 1914

Numbers of voucher specimens in HMCP:  
3985/Tr, 3986/Tr.

Host: *Trematomus hansonii*.

Site of infection: intestine.

Locality: Ross Sea 77°S 178°W (1/49, 5).

Previous records from the Ross Sea: Leiper, Atkinson (1914, 1915); Byrd (1963); Holloway, Spence (1980); Orecchia, Paggi (1990); Moser, Cowen (1991); Zdzitowiecki et al. (1999).

Genus *Neolepidapedon* Manter, 1954

*Neolepidapedon trematomi* Prudhoe et Bray, 1973

Fig. 1C; Table 1.

Numbers of voucher specimens in HMCP:  
3988/Tr.

Host: *Dissostichus mawsoni*, *Chionobathyscus dewitti*.

Table 1. Measurements of trematodes from fishes of the Ross Sea: Azygiidae, Lecithasteridae and Lepidapedidae.

Таблица 1. Измерения трематод из рыб моря Росса: Azygiidae, Lecithasteridae и Lepidapedidae.

Characters	Species				
	<i>Otodistomum cestoides</i> , n=1	<i>Lecithaster micropsi</i> , n=5	<i>Neolepidapedon trematomi</i> , n=2	<i>Paralepidapedon cf. dubium</i> , n=6	<i>Postlepidapedon opisthobifurcatum</i> , n=4
Host	<i>Bathyraja meridionalis</i>	<i>Muraenolepis marmorata</i>	<i>Dissostichus mawsoni</i>	<i>M. marmorata</i>	<i>Macrourus whitsoni</i> and <i>M. marmorata</i>
Body: Length (L, mm)	38.78	1.20–1.69	2.20–2.39	1.76–2.61	1.94–2.49
Body: Width (W, mm)	3.45	0.52–0.79	0.79–0.90	0.47–0.57	0.52–0.71
Forebody: % of body length	12.0	18.0–25.5	32.2–39.2	25.3–28.7	25.7–31.6
Posttesticular space: % of body length	46.6	34.5–36.4	20.8–23.8	17.2–20.8	18.4–22.8
Oral sucker: L	1.114	0.179–0.221	0.200–0.210	0.135–0.175	0.210–0.252
Oral sucker: W	1.190	0.168–0.231	0.210–0.221	0.153–0.188	0.200–0.257
Prepharynx: L	–	–	0.011–0.063	0.074–0.110	0.074–0.195
Pharynx: L	0.576	0.147–0.153	0.116	0.135–0.161	0.126–0.180
Pharynx: W	0.422	0.117–0.141	0.084–0.085	0.080–0.121	0.095–0.137
Oesophagus: L	0.422	–	0.210–0.221	0.074–0.190	0.300–0.347
Ventral sucker: L	1.555	0.294–0.420	0.242	0.178–0.202	0.200–0.263
Ventral sucker: W	1.670	0.336–0.420	0.247–0.252	0.190–0.215	0.200–0.289
Anterior or left testis: L	1.286	0.153–0.215	0.210–0.221	0.153–0.235	0.200–0.301
Anterior or left testis: W	1.114	0.141–0.276	0.221–0.252	0.153–0.215	0.231–0.326
Posterior or right testis: L	1.440	0.172–0.245	0.252–0.273	0.184–0.242	0.242–0.368
Posterior or right testis: W	1.056	0.153–0.251	0.257–0.315	0.172–0.215	0.210–0.368
Cirrus sac: L	–	–	–	0.137–0.168	0.153–0.186
Cirrus sac: W	–	–	0.116	0.079–0.088	0.044–0.061
Ovary: L	1.152	0.245–0.307	0.179–0.242	0.172–0.258	0.147–0.189
Ovary: W	1.094	0.264–0.405	0.168–0.179	0.153–0.221	0.137–0.179
Vitellarium: L	–	0.258–0.393	–	–	–
Vitellarium: W	–	0.288–0.466	–	–	–
Eggs: L, $\mu\text{m}$	72	31	82–85*	64–73*	88–93*
Eggs: W, $\mu\text{m}$	49	18	–	–	–

\* eggs are deformed in balsam

Site of infection: intestine.

Locality: Ross Sea 75°S 174°W (*D. mawsoni* — 1/25, 3 and *C. dewitti* — 1/16, 2) and 75°S 175°W (*D. mawsoni* — 1/22, 24).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: near the South Shetland Islands (Zdzitowiecki, 1987, 1988, 1991, 1999; Zdzitowiecki et al., 1997;

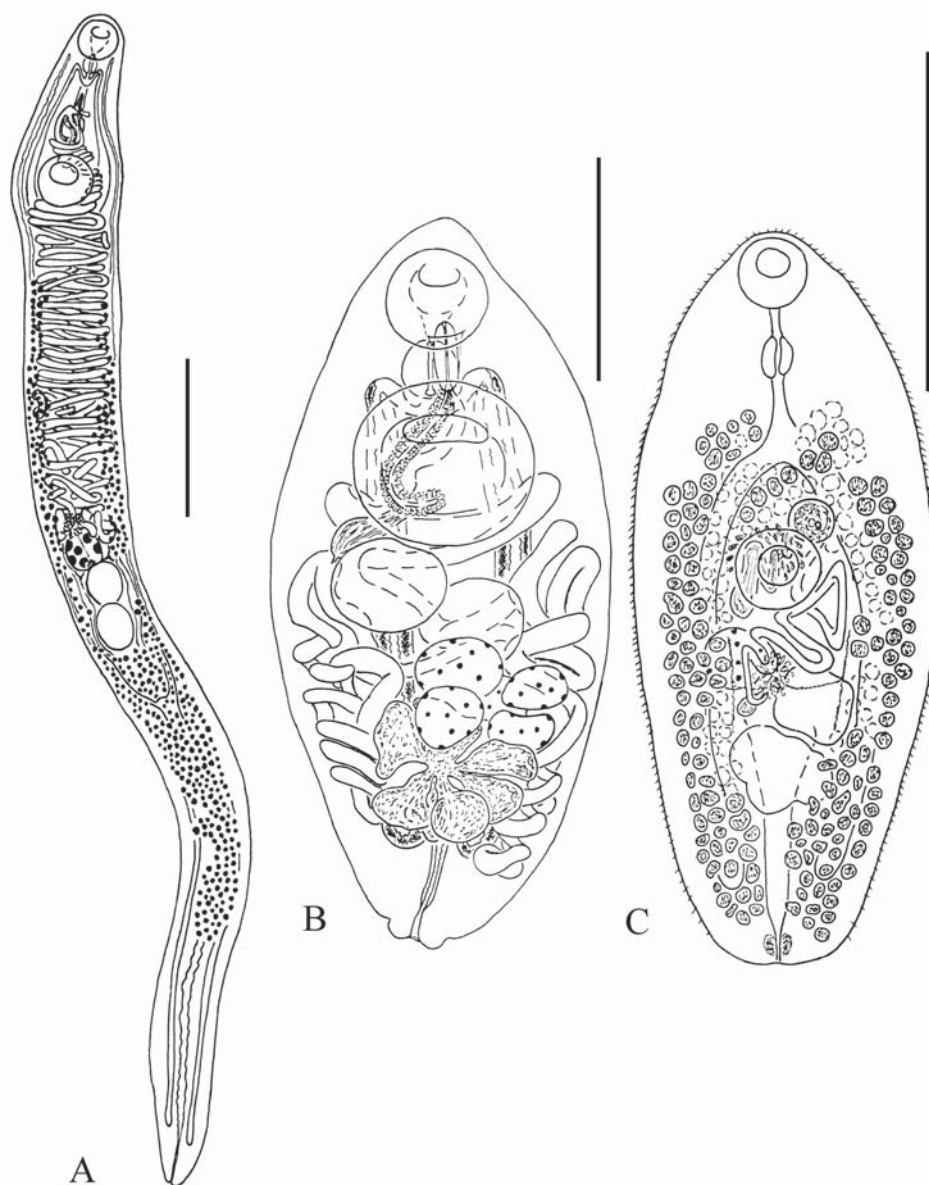


Fig. 1. Trematodes of fam. Azygiidae, Lecithasteridae and Lepidapedidae.

A — *Otodistomum cestoides*, general view; B — *Lecithaster micropsi*, general view; C — *Neolepidapedon trematomi*, general view. Scale bars: A — 5 mm; B — 0.5 mm; C — 1 mm.

Рис. 1. Трематодеы семейств Azygiidae, Lecithasteridae и Lepidapedidae.

A — *Otodistomum cestoides*, общий вид; B — *Lecithaster micropsi*, общий вид; C — *Neolepidapedon trematomi*, общий вид. Масштаб: A — 5 мм; B — 0,5 мм; C — 1 мм.

Zdzitowiecki, Laskowski, 2004), off Adelie (Zdzitowiecki, Cielecka, 1997b); the Indian Land (Zdzitowiecki, 2001), the Weddell Sea Ocean sector (Prudhoe, Bray, 1973).

Genus *Paralepidapedon* Shimazu et Shimura, 1984

*Paralepidapedon* cf. *dubium* Prudhoe et Bray, 1973

Fig. 2A; Table 1.

Numbers of voucher specimens in HMCP: 3995/Tr, 3996/Tr.

Host: *Muraenolepis marmorata*.

Site of infection: intestine.

Locality: Ross Sea 72°S 175°W (1/42, 5) and 75°S 174°W (1/9, 10).

Previous records from the Ross Sea: none.

REMARK. Morphological characters of *Paralepidapedon* cf. *dubium* correspond to the description of *Paralepidapedon dubium* Prudhoe et Bray, 1973 except the structure of an external seminal vesicle. The external seminal vesicle in studied specimens is surrounded by prostatical cells which are enclosed in membranous sac. The external seminal vesicle with no associated prostatical cells in *P. dubium*. Species *P. dubium* was described from *Macrourus whitsoni* from the Collaboration Sea (the Indian Ocean sector of Antarctic) (Prudhoe, Bray, 1973).

Genus *Postlepidapedon* Zdzitowiecki, 1993

*Postlepidapedon opisthobifurcatum* (Zdzitowiecki, 1990)

Fig. 2B; Table 1.

Numbers of voucher specimens in HMCP: 3996/Tr.

Host: *Muraenolepis marmorata*, *Macrourus whitsoni*.

Site of infection: intestine.

Localities: Ross Sea 72°S 175°W (*M. marmorata* — 2/42, 1) and 75°S 175°W (*M. whitsoni* — 1/38, 4).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: the Weddell Sea (Zdzitowiecki, Cielecka, 1997a; Walter et al., 2002).



Fig. 2. Trematodes of fam. Lepidapedidae.

A — *Paralepidapedon* cf. *dubium*, general view; B — *Postlepidapedon opisthobifurcatum*, general view. Scale bars: A, B — 0.5 mm.

Рис. 2. Трематоды семейства Lepidapedidae.

A — *Paralepidapedon* cf. *dubium*, общий вид; B — *Postlepidapedon opisthobifurcatum*, общий вид. Масштаб: A, B — 0,5 мм.

## Family OPECOELIDAE Ozaki, 1925

### Subfamily OPECOELINAE Ozaki, 1925

#### Genus *Discoverytrema* Gibson, 1976

*Discoverytrema gibsoni* Zdzitowiecki, 1990

Fig.3 A, B; Table 2.

Numbers of voucher specimens in HMCP: 3942/Tr – 3944/Tr.

Host: *Muraenolepis marmorata*.

Site of infection: intestine.

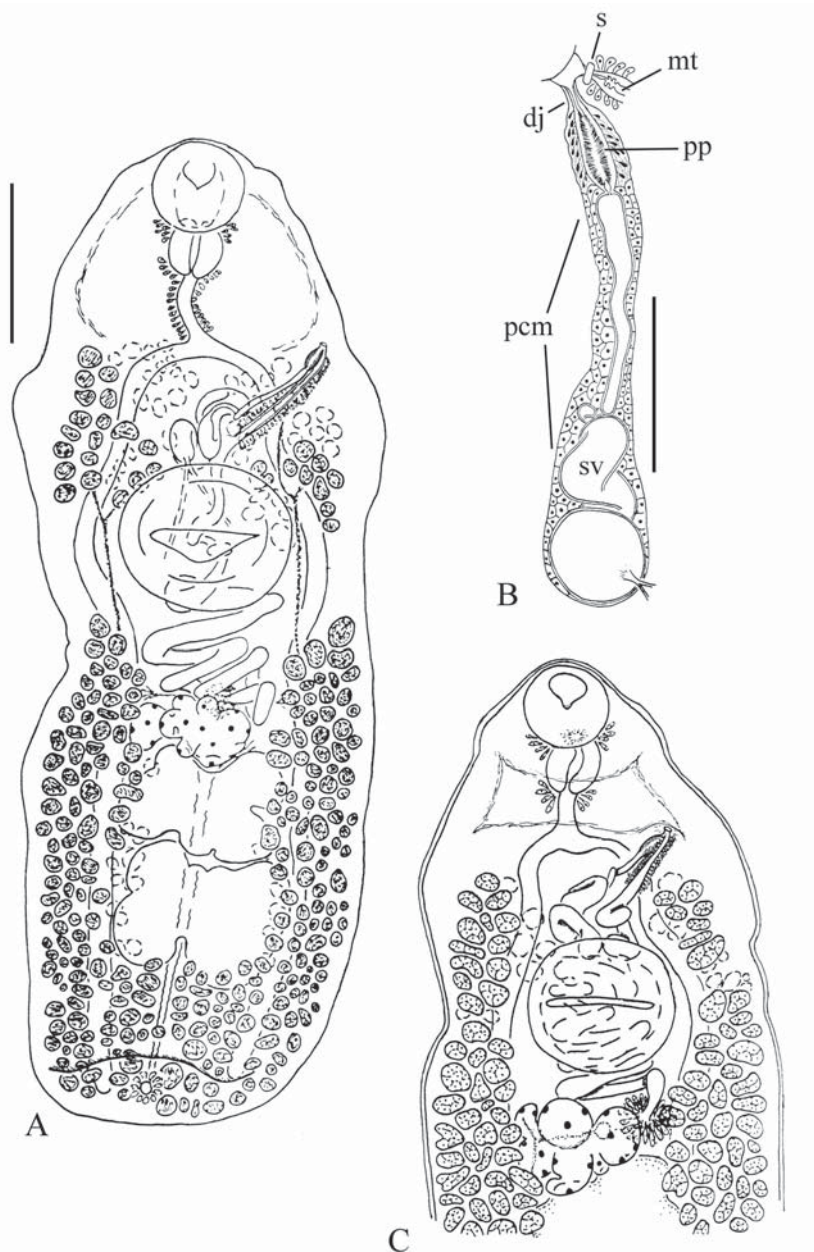


Fig. 3. Trematodes of gen. *Discoverytrema*.

A — *D. gibsoni*, general view; B — terminal genital apparatus of subadult specimens *D. gibsoni*; C — *D. markowskii*, general view. Scale bars: A — 0.5 mm; B — 0.15 mm; C — 0.6 mm. Abbreviations: s — sphincter, mt — metraterm, pp — pars prostatica, dj — ejaculatory duct, sv — seminal vesicle, pcm — prostatical cells which are enclosed in membranous sac.

Fig 3. Трёматоды рода *Discoverytrema*.

A — *D. gibsoni*, общий вид; B — терминальная часть полового аппарата молодой мариты *D. gibsoni*; C — *D. markowskii*, общий вид. Масштаб: A — 0,5 мм; B — 0,15 мм; C — 0,6 мм. Обозначения: s — сфинктер, mt — метратерм, pp — простатическая часть, dj — семяизвергательный канал, sv — семянный пузырек, pcm — простатические клетки, заключенные в пленчатый мешок.

Table 2. Measurements of trematodes from fishes of the Ross Sea: Opcoelidae and Zoogonidae.  
Таблица 2. Измерения трематод из рыб моря Росса: Opcoelidae и Zoogonidae.

Characters	Species				
	<i>Discoverytrema gibsoni</i> , n=6	<i>D. markowskii</i> , n=3	<i>Helicometra rakusai</i> , n=1	<i>Macvicaria muraenolepidis</i> , n=3	<i>Proctophantastes</i> sp., n=3
Host	<i>Muraenolepis marmorata</i>	<i>M. marmorata</i>	<i>Dissostichus mawsoni</i>	<i>M. marmorata</i>	<i>M. marmorata</i>
Body: Length (L, mm)	2.11–3.39	2.51–2.76	1.79	1.12–1.23	1.94–2.35
Body: Width (W, mm)	0.77–1.37	1.03–1.12	0.46	0.35–0.39	0.93–1.21
Forebody: % of body length	29.6–37.8	30.7–35.6	26.8	29.1–34.6	43.4–46.5
Posttesticular space: % of body length	15.3–20.6	12.3–21.4	24.4	8.4–9.4	22.9–23.1
Oral sucker: L	0.200–0.273	0.226–0.252	0.186	0.121–0.137	0.294–0.378
Oral sucker: W	0.200–0.315	0.231–0.279	0.236	0.126–0.137	0.357–0.389
Prepharynx: L	~0.040	–	–	~0.006	–
Pharynx: L	0.137–0.184	0.158–0.179	0.107	0.084–0.090	0.129–0.144
Pharynx: W	0.131–0.189	0.147–0.168	0.122	0.060–0.072	0.074–0.080
Oesophagus: L	0.126–0.263	0.116–0.158	0.063	0.060	0.129–0.147
Ventral sucker: L	0.336–0.452	0.305–0.389	0.179	0.221–0.273	0.279–0.393x
Ventral sucker: W	0.357–0.531	0.252–0.452	0.179	0.326–0.0331	0.788–0.967
Anterior or left testis: L	0.184–0.399	0.258–0.337	0.193	0.147–0.189	0.245–0.374x
Anterior or left testis: W	0.399–0.570	0.429–0.540	0.157	0.179–0.221	0.258–0.368
Posterior or right testis: L	0.313–0.460	0.288–0.429	0.215	0.200	0.368–0.374
Posterior or right testis: W	0.356–0.570	0.466–0.527	0.157	0.189–0.200	0.245–0.307
Cirrus sac: L	–	–	0.350	0.279–0.294	0.494–0.541
Cirrus sac: W	–	–	0.107	0.067–0.072	0.189–0.231
Ovary: L	0.184–0.270	0.305–0.389	0.164	0.116–0.147	0.221–0.319
Ovary: W	0.331–0.410	0.252–0.452	0.150	0.158–0.200	0.215–0.273
Eggs: L, $\mu$ m	58–64*	54–62*	68–70* (without a filament)	41–44*	37–40

\* eggs are deformed in balsam

Locality: Ross Sea 72°S 175°W (2/42, 4–5) and 75°S 174°W (1/9, 18).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: near the South Shetland Islands (Palm et al., 2007).

*Discoverytrema markowskii* Gibson, 1976  
Fig. 3C; Table 2.

Numbers of voucher specimens in HMCP: 3943/Tr, 3944/Tr.

Host: *Muraenolepis marmorata*.



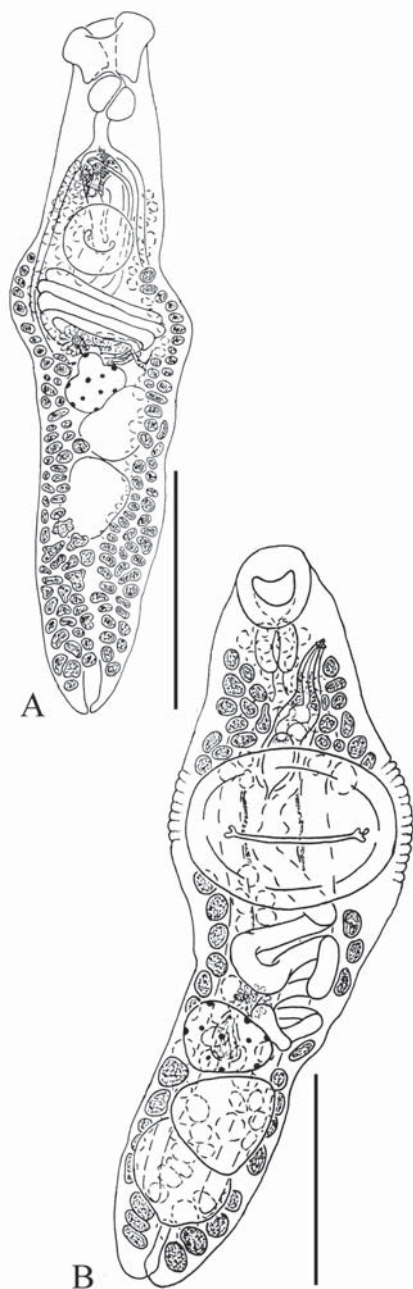


Fig. 4. Trematodes of fam. Opcoelidae.

A — *Helicometra rakusai*, general view; B — *Macvicaria muraenolepidis*, general view. Scale bars: A — 0.6 mm; B — 0.5 mm

Fig. 4. Трёматоды семейства Орекоелиды.

A — *Helicometra rakusai*, общий вид; B — *Macvicaria muraenolepidis*, общий вид. Масштаб: A — 0,6 мм; B — 0,5 мм

Site of infection: intestine.

Locality: Ross Sea 72°S 175°W (1/42, 4).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: near the South Shetland Islands (Gaevskaya, Rodjuk, 1997; Palm et al., 2007).

#### Family OPECOELIDAE Ozaki, 1925

Subfamily PLAGIOPORINAE Manter, 1947

Genus *Helicometra* Odhner, 1902

*Helicometra antarcticae* Holloway et Bier, 1968

Numbers of voucher specimens in HMCP: 3989/Tr – 3993/Tr.

Host: *Dissostichus mawsoni*.

Site of infection: intestine.

Localities: Ross Sea 75°S 174°W (3/25, 7–1182), 75°S 175°W (1/22, 8) and 76°S 170°W (1/25, 3).

Previous records from the Ross Sea: Holloway, Bier, (1968); Holloway, Spence (1980); Brickle et al., (2005).

*Helicometra rakusai* Zdzitowiecki, 1997  
Fig. 4A; Table 2.

Numbers of voucher specimens in HMCP: 3945/Tr.

Host: *Dissostichus mawsoni*.

Site of infection: intestine.

Locality: Ross Sea 75°S 174°W (1/25, 1).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: the Weddell Sea (Zdzitowiecki, 1997).

Genus *Macvicaria* Gibson et Bray, 1982

*Macvicaria muraenolepidis* Zdzitowiecki, 1990

Fig. 4B; Table 2.

Numbers of voucher specimens in HMCP: 3995/Tr.

Host: *Muraenolepis marmorata*.

Site of infection: intestine.

Locality: Ross Sea 72°S 175°W (1/42, 9).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: none; is known from the Atlantic sector of sub-Antarctic — near South Georgia Island (Zdzitowiecki, 1990).

### Family ZOOGONIDAE Odhner, 1902

Subfamily LEPIDOPHYLLINAE Stossich, 1903

Genus *Proctophantastes* Odhner, 1911

*Proctophantastes* sp.

Fig. 5; Table 2.

Numbers of voucher specimens in HMCP: 3994/Tr.

Host: *Muraenolepis marmorata*

Site of infection: intestine.

Locality: Ross Sea 75°S 174°W (1/9, 3).

Previous records from the Ross Sea: none.

Other localities in Antarctic waters: none.

REMARK. Body of the examined trematodes pyriform, with numerous tegumental spines and subtegumentary glands. Oral sucker globular or subglobular, subterminal. Large ventral sucker equatorial, transversely elongate, with horizontal median dorsal cleft and ventral ridge; latter composed of subglobular or oblong muscular protrusions closely adjacent to one another. Prepharynx not visible; pharynx present; oesophagus short. Pharynx and oesophagus surrounded by glandular cells. Intestinal bifurcation slightly posterior to mid-forebody. Caeca end blindly near testes in hindbody. Testes two in hindbody. suboval, symmetrical. Cirrus sac claviform, transversal; proximal end of cirrus sac at level of junction of first and second thirds of ventral sucker length, or just posterior to this. Cirrus sac together with metraterm opens into common genital atrium, which is surrounded by lobed periatrial gland together with metraterm opens into common genital atrium, which is surrounded by lobed periatrial gland. Genital pore submarginal on left side of body, slightly

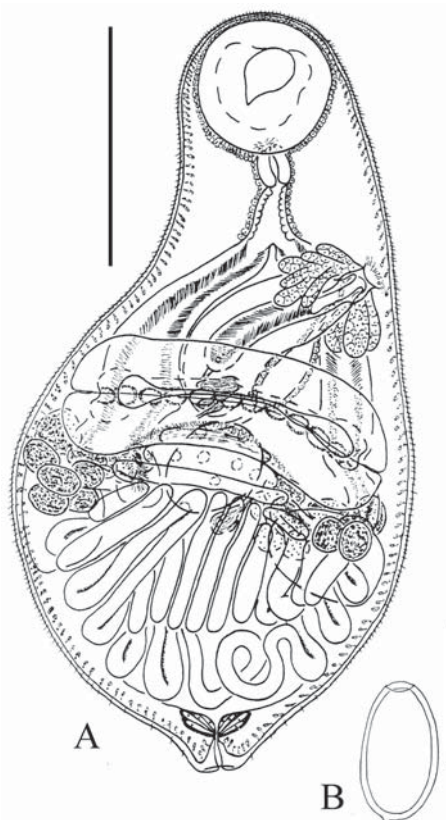


Fig. 5. *Proctophantastes* sp.

A — general view; B — egg. Scale bars: A — 0.7 mm; B — 0.04 mm.

Рис. 5. *Proctophantastes* sp.

A — общий вид; B — яйцо. Масштаб: A — 0,7 мм; B — 0,04 мм.

posterior to level of intestinal bifurcation. Ovary round or suboval, median or submedian, dorsal to posterior margin of ventral sucker. Seminal receptacle sinistral to ovary. Laurer's canal not visible. Hindbody filled with numerous uterine loops. Metraterm surrounded by glandular cells. Eggs operculate. Vitellium follicular, in two symmetrical lateral clusters, located just posterior to posterior margin of ventral sucker; left and right clusters containing 8–10 follicles each. Excretory pore terminal; posterior part of excretory bladder surrounded by wide ring of glandular cells.

This parasite is allocated to *Proctophantastes* Odhner, 1911 because of the presence of two lateral clusters of vitelline follicles, the

position of testes at the level of vitellarium, the position of the posterior end of the intestinal caeca at the level of testes and the presence an equatorial dorsal cleft and ventral ridge at the ventral sucker (Bray et al., 2008). This genus includes six valid species: *P. abyssorum* Odhner, 1911, *P. brayi* Mouahid et al., 2008, *P. gillissi* (Overstreet et Pritchard, 1977), *P. glandulosum* (Byrd, 1964), *P. infundibulum* Kamegai, 1973 and *P. nettastomatis* Machida et al., 2006 (Byrd, 1964; Kamegai, 1973; Overstreet, Pritchard, 1977; Bray, 1987; Bray, Gibson, 1986; Machida et al., 2006; Mouahid et al., 2008). This *Proctophantastes* sp. differs from all of the other species in the morphology of the ventral equatorial ridge of the ventral sucker. This ridge, in known species is in the form of a continuous muscle torus, but ridge of *Proctophantastes* sp. is a transverse row of closely adjusted subglobular or oblong muscular protrusions. The taxonomical status of *Proctophantastes* sp. requires additional material to be provided for further analysis.

## Discussion

Trematodes were found in six of the seven species of fishes examined during the investigation. Only *Dissostichus mawsoni* and *Trematomus hansonii* have previously been examined in the Ross Sea (Byrd, 1963, Holloway, Bier, 1968; Holloway, Spence, 1980; Zdzitowiecki et al., 1999). We recorded four species of trematodes from *D. mawsoni* and *T. hansonii*, only two of which were previously known from the Ross Sea. Only one species, *Postlepidapedon opisthobifurcatum*, was recorded from *Macrourus whitsoni*. This parasite was known from this host only in the Weddell Sea (Zdzitowiecki, Cielecka, 1997a; Walter et al., 2002). Published data on parasites of *Muraenolepis marmorata* exist only for the Indian Ocean sector of the sub-Antarctic waters (Parukhin, Lyadov, 1979; Parukhin, 1989; Gaevskaya, Rodjuk, 1997), although another species of this genus, *M. microps*, has been examined from the Antarctic waters (the Atlantic sector) (Zdzitowiecki, 1991; Gaevskaya, Rodjuk, 1997; Palm et al., 2007 and others). In the present study,

*M. marmorata* is described as a new host for the following six species: *Lecithaster micropsi*, *P. opisthobifurcatum*, *Discoverytrema gibsoni*, *Discoverytrema markowskii*, *Macvicaria muraenolepidis* and *Proctophantastes* sp. With regard to *Bathyraja meridionalis* and *Chionobathyscus dewitti*, there are no previous records of these species as host of trematode species.

Twenty-seven determined or undetermined species of trematodes are now known from the present and literature data to occur in fishes from the Ross Sea (Holloway, Bier, 1968; Holloway, Spence, 1980; Zdzitowiecki et al., 1999; Brickle et al., 2005 etc). *Otodistomum cestoides*, *Lecithaster micropsi*, *Neolepidapedon trematomi*, *Postlepidapedon opisthobifurcatum*, *Discoverytrema gibsoni*, *D. markowskii*, *Macvicaria muraenolepidis* and *Helicometra rakusai* are now known to be distributed in Antarctic waters more widely than previously believed.

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