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Short Note
Gastrointestinal parasite fauna of gentoo penguins (*Pygoscelis papua*) from the Península Munita, Bahía Paraíso, Antarctica

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Introduction

An increase in interest in the diseases of seabirds has developed as a part of a worldwide strategy for environmental conservation (Clarke & Kerry 1993, Jones & Shellam 1999). According to Clarke & Kerry (1993) most studies on penguin enteroparasites were published before 1986 and most of them are post mortem diagnoses.

This paper provides new data on the intestinal parasitic fauna of gentoo penguins nesting on the Antarctic Península.

Materials and methods

Stool specimens were obtained from penguins nesting at Península Munita (64°49'S, 62°51'E). Birds were captured on an *ad hoc* basis using a hand held net and weighed. Individual faecal samples were collected directly from bird's cloacae to avoid contamination. Forty-six samples were obtained in January 1999 and 54 in February 2000. Gut samples were obtained from ten chicks within 24 hours of death. All samples were fixed with 10% formaldehyde and sent to the Parasitology Laboratory, Veterinary Medicine Faculty, Universidad de Chile.

Table I. Results obtained from the parasitological analysis of the faecal and organ samples from chicks and adults of gentoo penguins.

	Chicks		Adults	
	n	%	*n*	%
Faecal samples	69	100	31	100
Negative	50	72.5	23	74.2
Positive	19	27.5	8	25.8
Tetrabothrius spp.[f]	12	17.4	4	12.9
Ascaridia eggs[f]	3	4.3	1	3.2
Sporozoa oocists[f]	4	5.8	3	9.7
Organs				
Stomachs	9	100	-	-
Negative	7	77.7	-	-
Positive	2	22.2	-	-
Contracaecum spp.[d]	2	22.2	-	-
Intestines	8	100	-	-
Negative	7	87.5	-	-
Positive	1	12.5	-	-
Tetrabothrius spp.[d]	1	12.5	-	-

[f] Flotation [d] Direct observation

Samples were processed using flotation and sedimentation techniques (Thienpont *et al.* 1979, Soulsby 1987) and the Ziehl-Neelsen method for detection of *Cryptosporidium* spp. oocysts (Dubey *et al*. 1990). Even though these methods are not the most accurate for the detection of parasite structures, they were the only ones available. Size of parasite eggs was measured and microphotographs were taken for identification. Nine stomachs and eight complete intestines were macroscopically examined and the adult worms preserved in 10% formaldehyde. The frequency distribution, mean value and standard deviation of eggs and adult parasites were calculated. Finally, distributions were compared using Poisson theoretical distribution and χ^2 test (Thrusfield 1990).

Results and discussion

The results obtained from the faeces and organ analysis from chicks and adults are presented in Table I. The egg of Tetrabothrius spp. can be seen in Fig. 1. *Cryptosporidium* spp. was not found in the 52 samples tested by the Ziehl-Neelsen method, and all the faeces sedimentation samples were negative.

The frequency distribution of worms found in the organs of chicks fitted the Poisson's distribution. This was expected (Thrusfield 1990) and means that these parasitic diseases have a low probability of occurrence and the

Fig. 1. Egg of *Tetrabothrius* spp. found on the faeces of *Pygoscelis papua*.

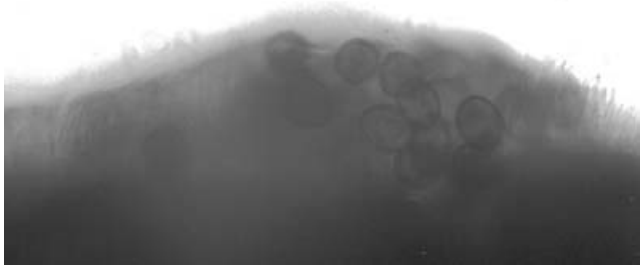

Fig. 2. Gravid proglotid of *Tetrabothrius* spp. found in the intestine of a *Pygoscelis papua* chick.

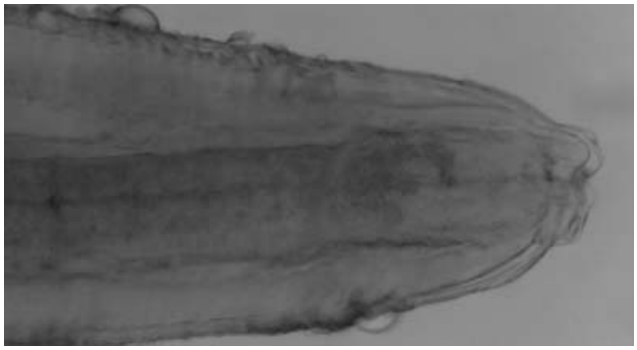

Fig. 3. *Contracaecum* spp. found in the stomach of *P. papua*.

worms were found in low numbers. Egg distribution was not Poisson which can be explained by the low sensitivity of the methodologies, the small number of samples, and the intermittent excretion of eggs by the adult parasites.

The examination of chick intestines revealed the presence of a cestode worm of the genus *Tetrabothrius* (Fig. 2). Species identification of this specimen was not possible because the scolex was not recovered and only a few segments of strobilae were found. Schmidt (1986) found *T. pauliani* and *T. wrighti* in gentoo penguins; the life cycle of these species are not known, but plerocercoid larvae can infect several orders of birds as a final host.

Ascarids eggs were probably excreted by *Contracaecum* (Fig. 3) worms found inside the stomachs. This worm species is acquired by penguins from fishes and cephalopods, which are intermediary hosts of the larvae. Commonly the worm requires two intermediate hosts. This anisakid lives attached to the proventriculus mucosa causing erosion and ulcers (Obendorf &McColl 1980). Santos (1984) described *C. hearti* in several penguin species, including gentoo. Two other species of nematodes were reported for gentoo penguins, *Stomachus* spp. and *Stegophorus paradeliae* (Mawson 1953).

Oocysts of *Cryptosporidium* spp. have been observed in several species of seabirds, but not so far in penguins. In this study all the samples were negative.

The sedimentation method applied to the 100 faecal samples gave negative results. In Clarke & Kerry's (1993) paper, Trematodes are not described in gentoo penguins.

Conclusions

No new intestinal parasites were found in these penguins. This suggests that the habitat conditions for this bird in relation to the enteroparasite fauna has not changed. However, to establish adequate databases on intestinal parasite populations monitoring with molecular identification of the species involved is required.

Acknowledgments

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