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Notes on Parasites in Penguins (Spheniscidae) and Petrels (Procellariidae) in the Antarctic and Sub-antarctic

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ABSTRACT: Blood smears were examined from 143 penguins of four species (*Aptenodytes patagonicus, Eudyptes chrysolophus, E. schlegeli,* and *Pygoscelis gentoo*) from Sub-antarctic Macquarie Island and Heard Island. No blood parasites were reported. The vectors of *Hepatozoon albatrossi* (reported from three species of albatross) are probably shared by penguins, and it is suggested that the latter are not susceptible to infection with this protozoan. Cestodes of the genus *Tetrabothrius* were present in large numbers in the intestines of 17 Antarctic petrels (*Thalassoica antarctica*), and evidence is presented indicating that euphausiid crustaceans may be intermediate hosts.

Key words: Antarctic, hematozoa, krill, penguins, Procellariiformes, *Tetrabothrius* spp.

This report presents the results of two parasitological studies on Antarctic and Sub-antarctic seabirds; one on the hematozoa of penguins, the other on the gastrointestinal helminths of petrels.

Blood was collected from 34 king penguins (*Aptenodytes patagonicus*), 28 royal penguins (*Eudyptes schlegeli*) and 15 Gentoo penguins (*Pygoscelis gentoo*) at Macquarie Island (54°30′S, 158°57′E) on 26–28 October 1982, and from eight king penguins and 12 Macaroni penguins (*Eudyptes chrysolophus*) at Heard Island (53°05′S, 73°30′E) on 10–20 November 1985. In addition, blood smears taken from 46 royal penguins on Macquarie Island in 1980 were examined. Blood was drawn from the brachial vein of each bird, a thin smear prepared, air dried, fixed in 100% methanol and subsequently stained with Giemsa. Smears were examined for between 20 and 30 min with an Olympus BA microscope using 40× and 100× objectives. Parasites were not seen.

Laird (1952) found no parasites in the blood of 121 penguins (*A. patagonicus, E. schlegeli, E. crestatus* and *P. gentoo*) from Macquarie Island, nor in the blood of 94 Adélie penguins (*P. adeliae*) from Cape Royds (Laird, 1961). Becker and Holloway (1968) failed to find any blood parasites in 18 Adélie penguins, one emperor penguin (*A. forsteri*), 11 snow petrels (*Pagodroma nivea*), 17 south polar skuas (*Catharacta maccormicki*) and one Wilson's petrel (*Oceanites oceanicus*) from McMurdo Sound and Hallett Station, and none were found in the blood of one chinstrap penguin (*P. antarctica*), 44 king penguins and 50 Gentoo penguins on South Georgia (Peirce and Prince, 1980). Laird (1961) attributed this lack of blood parasites to the absence of suitable vectors in the Antarctic, since penguins are susceptible to hematozoan infections in captivity in temperate climates.

However Peirce and Prince (1980) recorded a new species of hematozoan (*Hepatozoon albatrossi*, Eucoccida: Hepatozoidae) in the blood of three species of albatross (grey headed albatross, *Diomedea chrysostoma*; wandering albatross, *D. exulans*; and black browed albatross, *D. melanophris*) on South Georgia. They considered this parasite to have been locally transmitted, probably by the tick *Ixodes uriae* or by a species of mite. *Ixodes uriae* is widely distributed on polar birds, having been recorded from 45 host species (Block, 1984), and is particularly abundant on royal penguins (Murray and Vestjens, 1967). Mites are common inhabitants of nests, and fleas in the genus *Parapsyllus* occur on many species of penguins and Procellariiformes throughout the Antarctic and Sub-antarctic (Dunnet, 1964).

The vector of *H. albatrossi* is probably shared by penguins and albatrosses. Therefore, the absence of this parasite in penguins suggests that these birds are not susceptible to infection.

Seventeen Antarctic petrels (*Thalassoica antarctica*) were taken at Prydz Bay

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(67°31'S, 74°39'E) on 16 December 1982. The gastrointestinal tracts were removed, stored frozen, and subsequently examined in normal saline. Cestodes in the genus *Tetrabothrius* were present in large numbers throughout the length of the small intestine in all birds. Their length, friability and state of preservation made estimates of numbers and specific diagnosis difficult. Other helminth species were not found.

Cestodes in the genus *Tetrabothrius* are the only gastrointestinal helminths recorded from Antarctic petrels; four species have been identified from this host (Baer, 1954). The present report indicates a high prevalence, at least at Prydz Bay in the austral summer. Their life cycles are not yet known. The stomach contents of the 17 birds examined consisted predominantly of krill (*Euphausia superba*), with some fish and cephalopod remains (Montague, 1984). Krill are planktonic feeders, and may ingest cestode eggs contained in the birds' droppings. Cysticerci were not noted in histological sections taken at the level of the gonads in 270 *E. superba* (S. Harrington, pers. comm.), although Shimazu (1975) reported cestode cysticerci and plerocercoids from euphausiids in the northern Pacific Ocean. It is possible that this crucial species in the Antarctic food chain will prove to be the intermediate host of the tetrabothriid cestodes infecting these petrels.

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