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AN INVESTIGATION OF NORTH ATLANTIC WHALES FOR TRICHINOSIS

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Abstract: In 1971, 81 finback (*Balaenoptera physalus*), 119 sei (*B. borealis*), two piked (*B. acutorostrata*), 15 humpback (*Megaptera novaeangliae*) and one sperm whale (*Physeter catodon*) taken in the North Atlantic off the Newfoundland and Nova Scotia coasts were examined for the presence of *Trichinella spiralis*. All 218 whales were negative for trichinosis.

INTRODUCTION

In 1971, the author initiated investigations on the prevalence of sylvan and urban trichinosis in the Atlantic Provinces of Canada. At that time, whaling was carried out in the North Atlantic Ocean off the coasts of Newfoundland and Nova Scotia and the meat processed for human and animal food. The opportunity was taken to examine tissue frm these whales for the presence of trichinosis.

Rausch[3] in 1970 reviewed the prevalence of trichinosis in whales and showed that there was a very low rate of infection in these marine mammals. The disease has been found in one of 49 white whales (*Delphinapterus leucas*) from the Arctic coast of Alaska[4] and white whale meat has been suspected in at least one outbreak of trichinosis in settlements in Greenland.[6] The few baleen whales that have been examined included 15 *Balaena* sp. (bowhead) from the Arctic coast of Alaska, 26 *Balaenoptera physalus* (finback) from the waters north of Norway and six from near Greenland and two *Balaenoptera musculus* (blue) also from Greenland waters.[3] One might expect the infection to be present in the killer whale, *Orcinus orca*, since this species feeds on seals, sea lions and other animals. To date, few killer whales have been examined.

MATERIALS AND METHODS

From May 15 to November 15, 1971, samples of diaphragm muscle were collected by Health of Animals Branch inspectors from 119 *Balaenoptera borealis*, 36 *B. physalus* and two *Megaptera novaeangliae* captured in the North Atlantic off the Nova Scotia coastline and from 45 *B. physalus*, two *B. acutorostrata*, 13 *M. novaeangliae* and one *Physeter catodon* taken off the northeastern coast of Newfoundland.

Examination for the presence of *Trichinella spiralis* larvae was carried out by the pepsin digestion method.[2] Fifty grams of muscle were finely chopped or ground, digested in 500 ml of a digest mixture (0.6% pepsin-0.8% HCL in distilled H^2O) at 37 C, with frequent stirrings, for 20 to 24 hrs, followed by another 24 hrs in a Baermann apparatus before examination of the digest.

RESULTS AND DISCUSSION

Trichinella larvae were not found in the 218 whales examined.

There is much interest and speculation on the mode of *Trichinella* transmission in marine mammals, since trichinosis occurs throughout the Arctic in ringed and bearded seals and walruses.[3] Infection in walruses can be explained since some

walruses have been shown to be either obligatory (prey regularly upon seals) or facultative (feed upon seals when usual food is unavailable) carnivores.[7] Vibe[7] has suggested that seals become infected through inadvertent ingestion of fragments of mammalian tissue when feeding upon marine amphipods attracted to mammalian carcasses in the sea. Fay[1] demonstrated this method of transmission was possible by feeding a dog a large number of marine amphipods after they had begun to feed upon infected black bear meat. Transport of *Trichinella* larvae in feces of birds which feed on infected animals has been suggested.[3]

The opportunities for non-carnivorous marine mammals, particularly whales, to become infected with trichinosis are limited by their range, diet and dilution factor of the sea. Also the number of viable trichinae required to establish an infection in whales is not known. Schmid[5] reported that 2 to 3 larvae are required to establish an infection in the guinea pig, 40 to 50 larvae in the pig, and 50 to 75 in man. The results of this study suggest trichinosis is unlikely to occur in baleen whales.

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