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A TREMATODE FROM THE ROUND WINDOW OF AN ATLANTIC BOTTLENOSED DOLPHIN'S EAR[1]

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Abstract: A trematode from the family Nasitrematidae Yamaguti 1951 was found adhered to the round window in the inner ear of a Bottlenosed Dolphin (*Tursiops truncatus*). The possibility that parasites could be responsible for changes in acoustic behavior and hearing loss is discussed.

INTRODUCTION

Interest in parasitic diseases of marine mammals has increased greatly during the last few years. There are a number of reports on helminth parasites causing disease in cetaceans.[2,3,4,8]

Dolphins have been shown to possess a very sensitive sonar or echolocation system. Animals have been able to discriminate with 100% accuracy between two steel balls, 5.40 cm and 6.35 cm in diameter.[7] Evans and Powell[5] have demonstrated that even when the object reflectivity is made equal, *T. truncatus* can successfully discriminate between different targets.[1] The auditory system thus takes on a very important role during feeding and navigation in situations of darkness or low light intensities.

CASE REPORT

The procedure developed by McCormick *et al.*,[9] necessitated surgical exposure of the round window and middle ear structures in dolphins prior to certain electrophysiological studies. During one of these experiments some material, supposed at the time to be tissue, had to be removed from the round window of the cochlea to facilitate proper placement of an electrode for recording cochlear potentials. The material was fixed in 10% formalin and processed for histologic study. Duplicate slides were stained with Hematoxylin-eosin and periodic acid-Schiff.

Histologic examination revealed the material to be an adult trematode (Fig. 1). Speciation was difficult with the limited material available, but the occurrence of the parasite in the head, the presence of large cuticular spines, lack of cirrus pouch, ova that are triangular in cross-section (Fig. 2), placement and size of the acetabulum suggested the fluke to be a member of the family Nasitrematidae Yamaguti 1951. A diagrammatic reconstruction of the means by which the trematode attached (Fig. 3) to the round window illustrates how the auditory response could be impaired.

DISCUSSION

Following removal of the trematode, the dolphin's ear responded well to acoustic stimuli. It is possible that the poor responses prior to removal could have

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been caused by problems other than the parasite, such as mechanical interference in optimum placement of the electrode or by actual interference with hearing. However, investigators working on the auditory system and acoustic behavior of dolphins and whales should be aware of the possibility that parasites could contribute to loss of hearing and thus affect the accuracy of accumulated data.



FIGURE 1. Section of adult trematode taken from the round window of the cochlea of a dolphin (X35).

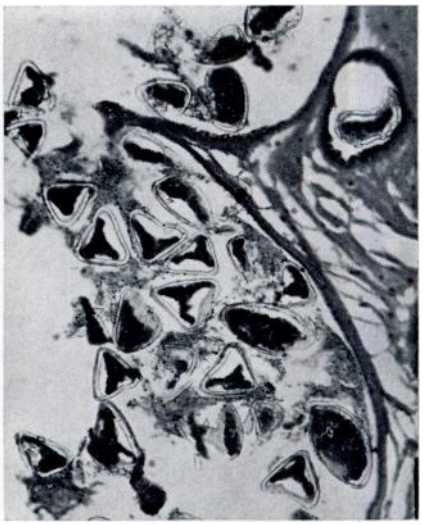


FIGURE 2. Ova in cross section of uterus (X250).

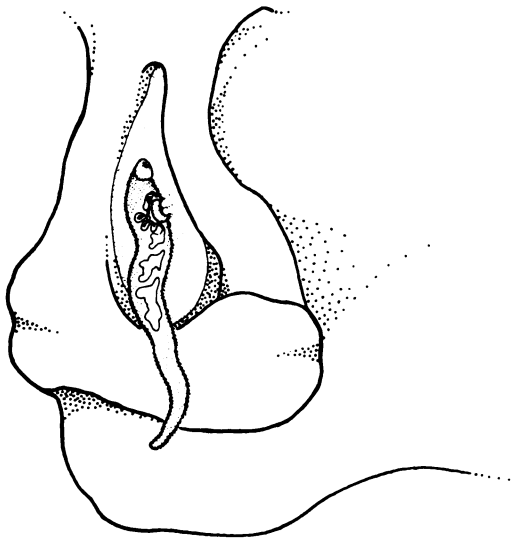


FIGURE 3. Diagrammatic illustration of trematode attached to round window.

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