

THE NERVOUS END-CORPUSCLES OF THE ROSTRAL SENSE-ORGAN
OF THE HARBOUR PORPOISE *PHOCOENA PHOCOENA*

by

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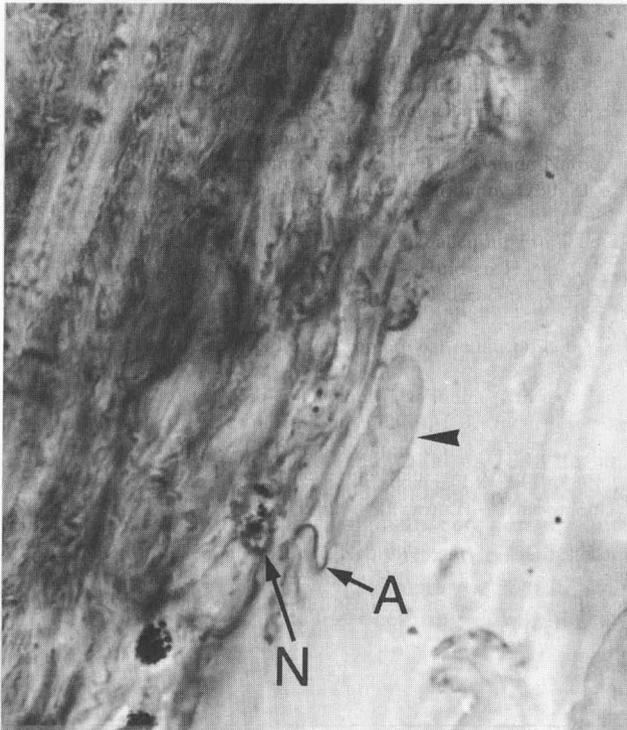
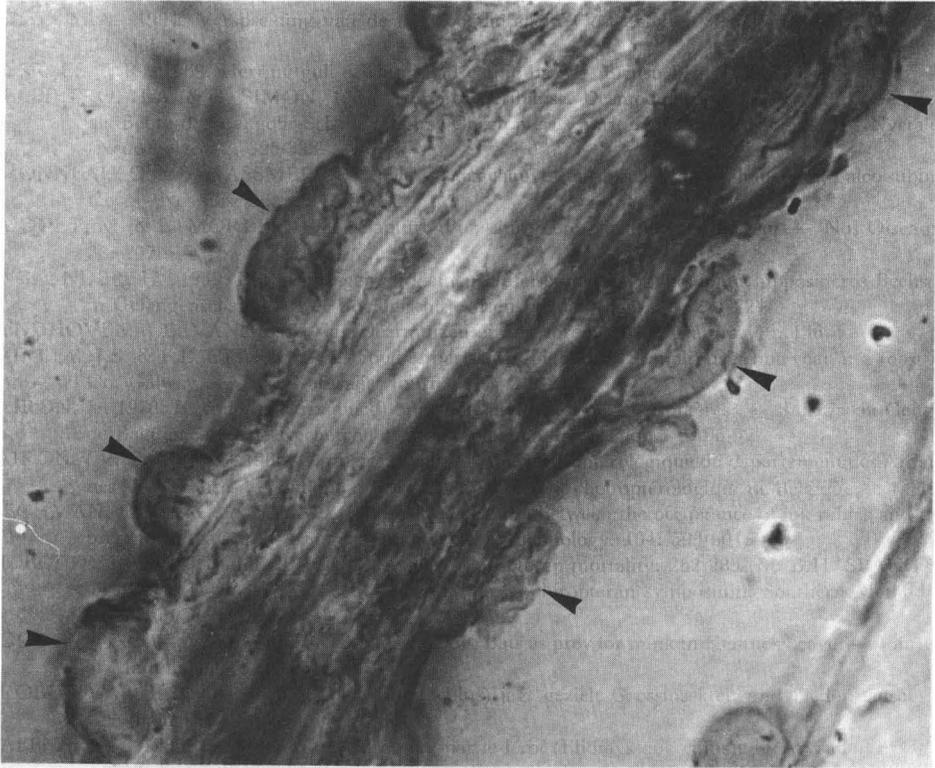
This is a supplement to the paper on the cartilaginous rostrum and associated rostral sense-organ of odontocetes, which was published earlier in this journal (Behrmann, 1989). A recent analysis of the nervous tissue in the rostral sense-organ using the staining method with toluidin/eosin and improved light microscopy, has led to a better insight into the morphology of the nervous end-corpuses in this organ.

The rostral sense-organ surrounds the cartilaginous rostrum over its entire length. It consists of connective tissue and longitudinal tubes. On the inside the membranes of the tubes are covered with sensory cells (fig. 1). In the previous paper these were described as sensory cells carrying stereociliae. As I used stranded animals only, the material had somewhat collapsed so that the sensory cells had lost their cell fluid and looked like sensory hairs. A recent analysis of fresh material of the harbour porpoise *Phocoena phocoena* (L., 1758) has shown, however, that these "hairs" are in fact unlamellated nervous end-corpuses. They are up to 25 μm long, with a diameter of approximately 10 μm . A nerve terminal is situated in the centre of these corpuses, connected by an axon to a nerve cell (fig. 2) in the perineural tissue surrounding the tube. Each end-corpuse is entered by a capillary and several neurites, the fibres of which end into nerve cells (fig. 3).

The presence of clusters of end-corpuses in the tubes was confirmed (fig. 1). In the central part of the rostral sense-organ, a tube section of 1 cm long with a diameter of 1 mm contained about 35.000 nervous end-corpuses. In the caudal part of the sense-organ a similar section contained as many as 200.000 corpuses. The presence of numerous tactile corpuses lends support to the conclusion that harbour porpoises and other odontocetes are able to perceive sound waves of high frequencies through the rostral sense-organ (Behrmann, 1989).

Fig. 1. Harbour porpoise *Phocoena phocoena*: cross-section of the tissue between two tubes of the rostral sense-organ, carrying clusters of nervous end-corpuses (arrows). Staining method: toluidin/eosin, 1000 \times .

Fig. 2. A single nervous end-corpuse of the rostral sense-organ. The axon (A) leads to a nerve cell (N) of the neural network surrounding the tubes. Staining method: toluidin/eosin, 1000 \times .



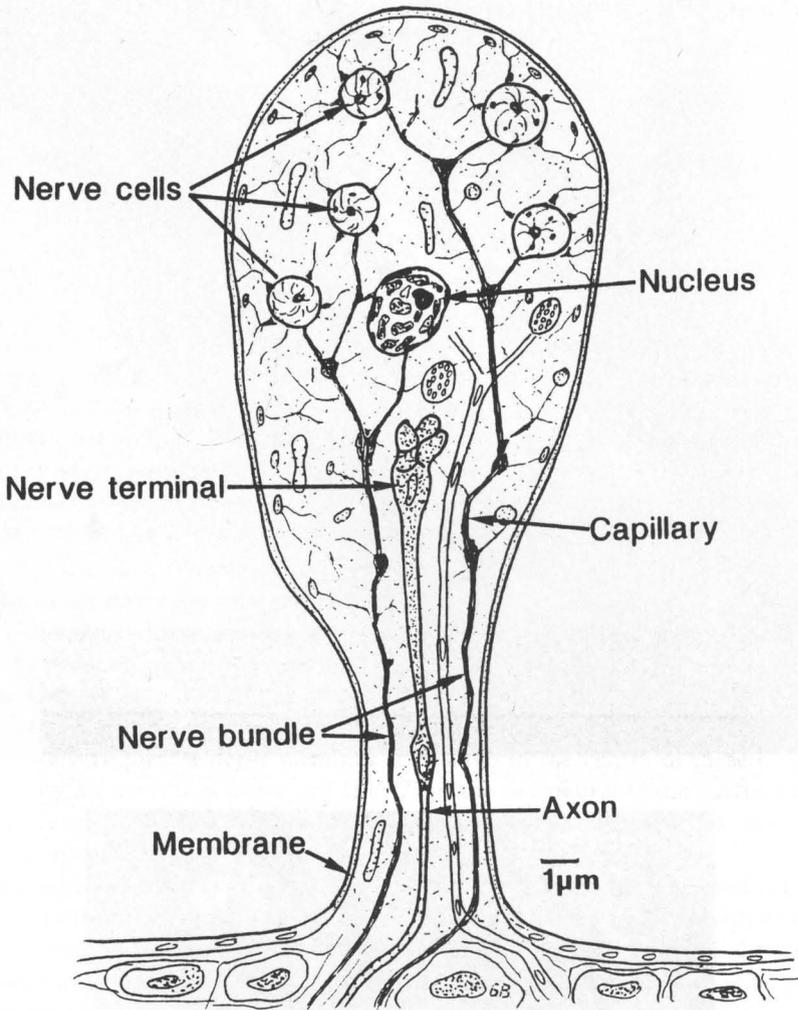


Fig. 3. Detail of a nervous end-carpuscle of the rostral sense-organ.

REFERENCE

- BEHRMANN, G., 1989. The cartilaginous rostrum and the associated rostral sense-organ of toothed whales (Odontoceti). — *Lutra*, 32: 152-163.

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