

Ecomorphologic comparisons of otolith sagittae in Nototheniidae

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A quantitative ecomorphological study was carried out in the sagitta otoliths of Antarctic and Subantarctic nototheniids, a particularly interesting family because of its fast adaptive radiation into different life strategies. We analysed the otolith shape and size of 18 nototheniid species (the main Teleostean family in Southern waters) with the aim of testing the relationship between phylogeny, otolith characters and trophic niche. Size (weight) and shape, (biometric warp analysis based in homologous and pseudo-homologous landmarks) measurements was compared with phylogenetic, habitat dwelling and food composition analyses.

The results of the multivariate analysis of these factors indicates a weak relationship between otolith shape in nototheniids and phylogeny, instead there is a clear correspondence between relative otolith size and shape with their trophic niche. The most benthic feeders members of the family had largest sagittae in relation of the body size; instead pelagic species have smaller and rounder shape than benthic species. The rounded shape of pelagic species, as *Pleuragramma antarcticum*, is considered as a paedomorphic characteristic as many young nototheniids have rounded sagittae that become elongated as they grow.

The present results indicate that the relative size of the sagittae would appear to have a greater functional significance than their overall shape than the overall sagitta shape. Consequently, in ecomorphological studies of the otolithic end organs, sagitta size is a suitable morphological trend to be analyzed.