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Determination of morphological characteristics and element concentration of otoliths in Black pomfret (*Parastromateus niger*) from Oman Sea

E. Esmaeilzadeh Roodsari[1], P. Hatami[2] and *M.R. Mirzaei[3]

[1]M.Sc. Graduate of Fisheries, Islamic Azad University, North Tehran Branch, Tehran, Iran,
[2]M.Sc. Graduate of Fisheries, University of Hormozgan, Bandar Abbas, Iran,
[3]Assistant Prof., in Offshore Fisheries Research Center, Iranian Fisheries Science Research Institute, Agricultural Research, Education and Extension Organization, Chabahar, Iran
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Abstract

This study aims to investigate the concentration of strontium, potassium, and sodium elements alongside chronological transects of sectioned sagittae otolith as well as to compare the otolith morphometric parameters of Black pomfret (*Parastromateus niger*) from May 2016 to June 2017 at North coast of Oman Sea (Sistan and Baluchistan province). Morphometric characteristics including total length, total weight of fish, and otolith morphometric parameters including otolith length and otolith weight were investigated. The age determination was based on the existence of annual growth rings (opaque and transparent layers) on the otolithic sections. The maximum age was 6 years old and belonged to Black pomfret with a mean weight and length of 1957 ± 28 g and 483.3 ± 2.3 mm, respectively. There was a significant relationship between total length and age of fish and total weight and age of fish ($p < 0.05$). Furthermore, a significant relationship was observed between otolith length and weight, fish length and ottolith length, and otolith length and fish weight. The strontium concentration generally increased by the increase distance from the otolith core (age). Sodium and potassium showed differences between the dark and bright regions of otolith between the ages of 4 and 6 years. But calcium and strontium did not show a seasonal difference. Also, the results of this study showed two parameters of otolith length and otolith weight as determinants of the species using otolith can be used. Also, the results of this study showed two parameters of otolith length and weight using as a species characteristic index.

Keywords: Otolith weight, Otolith dimensions, *Parastromateus niger*, Age determination, elemental analysis

*Corresponding author: mirzaei.mr@gmail.com