Natural and Engineering Sciences

Abstracts Book of International Grouper Workshop, 07-08 October 2016, Bodrum, Turkey.

An Automatic Otolith Shape Analysis Tool for Otolith Image of Some Grouper Species

Yakup Kutlu[1]*, Bilal Iscimen[2], Cemal Turan[3]

[1]Engineering Faculty, Iskenderun Technical University, Hatay, Turkey
[2]Institute of Natural and Applied Sciences, Mustafa Kemal University, Hatay, Turkey
[3]Marine Sciences and Technology Faculty, Iskenderun Technical University, Hatay, Turkey
yakup.kutlu@iste.edu.tr, bilaliscimen@gmail.com, cemal.turan@iste.edu.tr

Abstract

Objective: Otoliths contain specific characteristics of stock so are considered as a good subject for morphometric analysis. Otoliths contain finite extent of individual variability in growth, relative to variability in somatic growth. Therefore, the aim of study is developed a tools for automatically analysis otolith image of six grouper species. Using image analysis methods, otolith shape analysis tools are developed. There are five main steps in image analysis methods of tool which are data acquisition, pre-processing, segmentation, marking landmarks and reporting. As a result, in this study it is aimed to develop a computer package program to facilitate shape analyses of otolith of fish, populations and species of grouper. The application can be used to get independent measurements on otolith shape, on the other hand in this study, four landmarks are determined for constructing network system. The program is automatically determines these landmarks by using image processing techniques and reported some statistical measures such as mean, standard deviation etc. To get morphological measurements, first photos were taken then measurements are obtained from digital photos. But the process of marking landmarks is still made manually by scientist. The aim of this work was to develop tool which marks landmark automatically and determines morphological measurements of otoliths.

Keywords:
Image analysis, landmark detection, otolith, biometric measurement, grouper