

# Comparison of Morphological Variations among Populations of the Crested Loach, Genus *Paracobitis*, in the Southeast Caspian Sea Basin using Geometric Morphometric Method

Sharifiniya, Maryam<sup>1\*</sup>; Mousavi Sabet, Hamed<sup>2</sup>

1- PhD Candidate of Fisheries, Faculty of Natural Resources, University of Guilan, Sowmeh Sara, Iran. Email: maryam.sharifiniya93@yahoo.com

2- Assistant Professor, Department of Fisheries, Faculty of Natural Resources, University of Guilan, Sowmeh Sara, Iran. Email: mosavii.h@gmail.com

Received Date: September 10, 2016

\*Corresponding Author

Accepted Date: December 10, 2016

---

## Abstract

This study was conducted to determine the body shape variation among the populations of the Crested loach, genus *Paracobitis*, in the southeast Caspian Sea basin using landmark-based geometric morphometrics. In this research, 113 fish samples from *Paracobitis* genus were sampled from the Tajan, Babolrood, Atrak, Gorganrood rivers in summer using electroshocker. Then, the left sides of the fish samples were photographed by a digital camera. Fifteen landmark-points were digitized on two-dimensional images using TpsDig2 software. The obtained results from Landmark data were analyzed and multivariate statistical analyses such as PCA, CVA and cluster analysis (CA) were used and eventually, the Phenotype plasticity patterns of each population related to the shape of overall average of populations were illustrated. The results demonstrated that there was a significant difference among the four studied populations in terms of morphological features ( $P < 0/0001$ ). The conclusions of the present study can improve understanding of growing phenotype patterns plasticity of these fishes in the water bodies of different river systems from the southeast basin of the Caspian Sea as well as of identifying species of *Paracobitis* populations in the Tajan and Babolrood rivers.

Keywords: *Phenotype plasticity, Geometric morphology, Paracobitis, Southeast Caspian Sea basin.*

---