

Effect of Altitudinal Gradient on Reproductive and Feeding Activity of Endemics Freshwater Fish in the Zat Watershed (Morocco)

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Abstract

Freshwater fishes' phenotypic plasticity and adaptive capacity may result in morphological and structural changes in response to the environment. The study of these responses is crucial to understanding the vulnerability of these species to environmental perturbations, whether natural or anthropogenic. In this study, we used altitudinal gradient as an indicator of environmental variation and investigated its effects on fish reproductive and feeding activity. The barbel was chosen as a suitable bio-geographical sample inhabiting four different geographical stations. Water quality analysis showed clear improvements upstream, which favors the isolation of *Luciobarbus ksibi* in terms of its adaptation to higher elevations, while downstream, the disappearance of *Luciobarbus magniatlantis* highlights its sensitivity to variations in environmental quality. *Luciobarbus ksibi* emerges as the dominant species, while *Luciobarbus magniatlantis* exhibits a lower prevalence. The Zat population has a balanced diet, with a low feeding activity for females at Zerouane, contrasting with the highest for females at Mriouate. Sexual dimorphism is evident in females with early sexual maturation during the reproductive cycle, which indicates slower testicular maturation compared to ovarian maturation.

Keywords: Viscerosomatic index, Gonadosomatic Index, Scaled mass index, Sexual dimorphism, *Luciobarbus*