

STUDY OF ACOUSTIC COMMUNICATION FOLLOWING THE CONQUEST OF TERRESTRIAL HABITATS BY AMPHIBIOUS GOBIIDAE

Louise ECHE^{1*}, Eric PARMENTIER¹

¹ Laboratory of Functional and Evolutionary Morphology, Department of Biology, Ecology, Evolution, FOCUS, University of Liège, Bat. B6c Allée du six août 11, 4000 Liège, Belgium

***Presenting author.** louise.eche@uliege.be

Keywords: terrestrialsation, sound production, mechanism, morphology, mudskippers

The transition from water to land led to a series of adaptations necessary for the survival of species. These adaptations range from physiological modifications, to changes in the feeding apparatus and changes in respiration. Acoustic communication during this transition remains poorly studied. This type of communication persisted during the conquest of terrestrial habitats, highlighting its importance in species survival. Gobiidae have contemporary representatives living both underwater and on land called mudskippers. They make an excellent case study for understanding the evolution of acoustic communication during terrestrialsation. In order to achieve that, the study of mudskippers' sound production mechanism is essential. Sounds recorded in *Periophthalmus argentilineatus* show that mudskippers produce at least two types of sounds, both emitted underwater and on land. These sounds seem to be produced by two different sound production mechanisms. Mudskippers' pectoral girdle, as seen on 3D reconstructions of several species, is much more developed than that of exclusively aquatic Gobiidae since they are used to walk on land and is thought to be involved in sound production. Their transition to land might have helped mudskippers to develop a sound production mechanism that functions in both environments. These results are a first step towards the understanding of the adaptations necessary for the persistence of acoustic communication following the conquest of terrestrial environments.