

Bone mineralization in European eel (*Anguilla anguilla*) during maturation from the yellow eel stage to the silver eel stage

Ide C.¹; Badiola Azpeitia T.¹, Palstra A.², Van den Thillart, G.³ & Adriaens D.¹

¹ Evolutionary Morphology of Vertebrates, Ghent University, K.L. Ledeganckstraat 35, 9000 Ghent, Belgium

² Departament de Fisiologia, Universitat de Barcelona

³ Leiden University, Van der Klaauw Laboratorium, Kaiserstraat 63, 2311 GP Leiden, The Netherlands

The lifecycle of European eel (*Anguilla anguilla*) has long been a mystery, until Schmidt came along. He suggested that the Sargasso Sea was the spawning location for *Anguilla* species (Van Ginneken et al, 2005). With his research the central mystery of the life cycle was elucidated, but there still remains a lack of knowledge on many aspects of the life cycle of the European eel, *Anguilla anguilla*. One of those aspects is a good knowledge on the phenotypic transformations that are linked to this shift from the yellow eel stage to the migrating silver eel stage. Drastic changes are known to occur, but a quantitative and qualitative characterization is still lacking. Additionally, it has already been shown that broad- and narrow headed phenotypes exist during the yellow eel stage. The different head shapes have been related to different diets, where broad-headed eels would feed on bigger and harder preys (Proman & Reynolds, 2000). Although some research has been focusing on this dimorphism, still very little is known about this dimorphism. For example, does this dimorphism still persist during the silvering phase, when extensive cranial transformations are known to occur (demineralization of bone, loss of teeth, increase of eye size, etc)?

To test the hypothesis of differential remodeling of bone tissue during this maturation in broad- and narrow-headed eels, we calculated a "collagen stretching index" based on histological sections that were stained with Masson's trichrome. This index was evaluated as a potential indicator of bone mineralization to test both for changes during maturation as for differences between phenotypes.