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Does glass eels migration propensity depends on metabolism and autophagy?

Presentation: Oral

Speaker: Liu Hengtong

Liu Hengtong¹, Seiliez Iban², Coste Pascale¹, Rives Jacques¹, Huchet Emmanuel¹, Plagnes-Juan Elisabeth², Bolliet Valérie¹

1 - UMR Ecologie Comportementale et Biologie des Populations de Poisson (France)

2 - UMR 1419 Nutrition Métabolisme Aquaculture (France)

Contact: valerie.bolliet@univ-pau.fr

Abstract

European eel, a catadromous species, has encountered a sharp population decline in the last few decades. Glass eels migrate up estuaries using flood, and probably hide in the substratum during ebb tide. However, migration is known to be facultative and its determinism is far from being understood. Based on the fact that most glass eels starve during estuarine migration, energy might be an essential factor, which shapes glass eel's propensity to migrate. In this regard, how energy store drives the species migratory movement, how various energy expenditure rate between individuals play a role in their different patterns of colonization and how different strategies for the energy mobilization emerge between migratory and non-migratory groups are central questions in our study. To address these questions, we collected 148 wild marine (Moliets) and estuarine (Urt) glass eels in November and March, presenting different energetic status. All fish were weighed, measured and tagged with Visible Implant Elastomer. Their individual swimming activity level and tactic (swimming with and/or against the current) were observed in experimental installations that mimic the water current reversal of tide. Then, the metabolism of all glass eels was assessed by measuring oxygen consumption as well as the expression of 61 genes, involved in metabolism and autophagy, a major energy mobilization process. The relationships between swimming activity and metabolic markers were analyzed depending on the season and the sampling site.

Key words: autophagy, metabolism, migration, glass eel