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Methylmercury effect on migration propensity and metabolism in European glass eels (*Anguilla anguilla*) from South Bay of Biscay, France

Presentation: Poster

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Abstract

Glass eels migrate up estuaries to join rivers for a long period of growth. However, several studies have suggested that some glass eels may not reach rivers but rather complete their life cycle in coastal or estuarine waters. This might affect the sex ratio and population dynamics of this threatened species because individuals remaining downstream mostly develop in males, whereas those colonizing upstream mainly develop in females. Since most glass eels fast during their estuary migration, their propensity to migrate could be, at least in part, linked to their energy stores and metabolism. In addition, autophagy (a process of cellular self-eating) plays a major role in mobilizing diverse cellular energy and nutrients stores during starvation. To migrate up estuaries, glass eels use selective tidal transport, swimming during the flood and possibly hiding in the substratum during ebb tide. During migration, they might be exposed to several anthropic pressures such as pollution. This study aims to investigate the effect of methylmercury (MeHg) on glass eels' migration propensity, in relation to their energetic metabolism and autophagic activity. For this purpose, glass eels caught in Moliets were individually tagged using visible implant elastomer and exposed to two MeHg concentrations (100 ng.L⁻¹ and 1000 ng.L⁻¹) during 7 days. Then, swimming activity and tactics (synchronization with or against the water current) of each glass eel were assessed in experimental installations that mimic tides using water current reversal. Relationships between body MeHg concentrations, swimming activity, different genes expression and proteins activity involved in metabolism, autophagy, and oxidative stress were investigated.

Key words: glass eels, estuarine migration, methylmercury, metabolism, autophagy