



Assessment of the European flounder responses to chemical stress in the English Channel, considering biomarkers and life history traits



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ABSTRACT

A multi-biomarker approach was developed to evaluate responses of European flounder (*Platichthys flesus*) in three contrasted estuaries over the English Channel: the Canche (pristine site), Tamar (heavy metals and PAHs contamination) and Seine (heavily pollution with a complex cocktail of contaminants). The condition factor and several biomarkers of the immune system, antioxidant enzymes, energetic metabolism and detoxification processes were investigated in young-of-the-year (0+) and one-year-old (1+) flounder. Results underlined the difference between the pristine site and the Seine estuary which showed a lower condition factor, a modulation of the immune system, a higher Cytochrome C oxidase activity, and an up-regulation of BHMT expression. The moderate biomarker responses in the Tamar fish could be linked to the specific contamination context of this estuary. Flounder life history traits were analyzed by otolith microchemistry, in order to depict how the fish use their habitat and thus respond to chemical stress in estuaries.

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