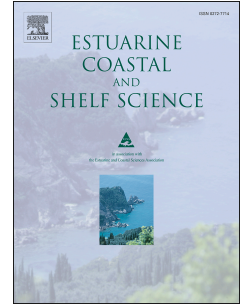


# Accepted Manuscript

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Nekton communities of tidally restored marshes: a whole-estuary approach

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Abstract

Intertidal marshes and mudflats of estuaries support a wide range of ecological functions and ecosystem services, including provision of food and refuge to nekton organisms. Habitat destruction, in particular reduction of intertidal areas, is one of the main anthropogenic causes of the erosion of biodiversity in coastal and estuarine ecosystems. However, although a growing number of tidal restoration projects have been implemented to counteract the loss of intertidal wetlands, few studies have so far described nekton assemblages of restoring sites in Europe. In addition, the attraction of tidally restored sites for nekton has rarely, if ever, been compared with a set of alternative habitats on a whole-estuary scale. This paper aims to describe nekton assemblages and their main abiotic drivers on a range of dyked, restored and natural habitats. Nekton assemblages were sampled during five seasons (2011-2012) in the Gironde estuary (France) among a set of 13 dyked and intertidal habitats including two marshes, tidally restored one and 12 years ago. Nekton assemblage structure and taxonomic composition clearly differentiated tidally restricted marshes from natural intertidal habitats. Nekton assemblages of natural intertidal habitats were shaped by position along the longitudinal gradient (i.e. salinity gradient) of the estuary, with a steep change in assemblage composition around a salinity of 10. The two tidally restored marshes were highly similar to natural intertidal habitats and greatly departed from tidally restricted marshes. A slower rate of community change was observed in a post-breach ponding area of the 1-year-old restored marsh. The study shows some original features of the restored marshes, including high occurrence and biomass of the limno-benthofagous *Liza ramada*. Furthermore, based on our feedback from the Gironde estuary, storm-breach tide restoration proved to be a valuable means to control the exotic freshwater species that thrived in dyked marshes.

Keywords

Fish; Decapod; Indicator species; Wetlands; Intertidal environment; Restoration; Europe

1. Introduction

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