

IMPACTS OF GLOBAL CHANGES ON DIADROMOUS FISH DISTRIBUTION A MODELISATION APPROACH AT CONTINENTAL SCALE

SUMMARY:

Diadromous fishes live in an environment disturbed, at global scale, by climate change and at regional scale, by anthropogenic pressures such as dams and river pollution.

This study, performed at continental scale, aimed to assess, understand and predict the impacts of global changes on the distribution of this group. To address this issue, empirical distribution models were built for each of the 28 species studied. Their distributions were described at the beginning and the end of the twentieth century, in terms of presence-absence and abundance. Different types of explanatory variables were used, *i.e.* physical, climatic, biotic and anthropogenic.

On the one hand, it was demonstrated that the distribution of diadromous fishes around 1900 was constrained by their biogeographical history and by the thermal and hydraulic characteristics of the continental habitat.

Projection of these distributions, at the end of the twenty-first century, under climate change, highlighted the sensitivity of this group to climatic modifications. Responses were species-specific but could be classified into three categories: expansion of the distribution range, contraction of the distribution range and little or no change.

On the other hand, for the first time at continental scale, the importance of large dams and human population density to explain the current diadromous fish distribution was demonstrated. The relationships seemed complex and to be dependent on the species' ecological characteristics, particularly the position of their essential habitats along the river network and their place within the food web.

KEY WORDS:

Biogeography; macroecology; global change; static modelisation; realised niche; diadromous fish.