

7th International Flatfish Symposium

The impact of environmental changes on flatfish productivity

WORKSHOP II

HABITAT MAPPING OF FLATFISHES POPULATIONS

A case study : Habitat suitability for the juvenile common sole (*Solea solea*, L.) in the Bay of Biscay (France): a quantitative description using indicators based on physical factors

Workshop Chair: Olivier Le Pape

November 2nd, 2008.

After a brief description of the goals of nursery habitat mapping, this case study aims to describe the spatial distribution of young-of-the-year (YOY) common sole *Solea solea* based on beam trawl surveys conducted in late summer on the coastal and estuarine parts of the Bay of Biscay (France).

We will test how habitat suitability for juvenile common sole varies according to physical factors, and notably bathymetry and sediment structure. Descriptors of physical factors and benthic fauna will be used in generalized linear models (GLM) of habitat suitability in order to characterize the distribution of juvenile common sole. Young sole CPUE are characterized by a large number of zero and some rare very high values. Such a distribution disables the use of a simple linear approach to model these data. Hence, the models assume a delta distribution for juvenile common sole, coupling a binomial sub-model, testing for the presence of YOY, with a distribution for CPUE when YOY are present.

During this session we will try to analyze if these models provide a reliable method to develop indicators of nursery habitat suitability from trawl survey data aiming to assess and survey their quality.

A last part of the course will consist in an overview of the use of such models to develop habitat suitability index and for habitat mapping:

- First, we will overview several alternative methods for modeling habitat suitability
- Then, we will see how these tools can be used to develop quantitative maps of nursery habitats
- And last, as the use of physical descriptors alone to model habitat suitability led to an important unexplained variability in juvenile common sole distribution, we will see how to improve these models by introducing other variables. The use of benthic fauna to improve models of habitat suitability for these juvenile flatfish will especially be investigated.

Personal laptop required.

<http://www.flatfish2008.fc.ul.pt>