

**P18: Spatial linkages in the early life history of north eastern Atlantic herring populations: Can early signals in the otoliths move us closer towards the origin?****Geffen, A.J., Chang, M.-Y., Johannessen, A., Maneja, R.H., Clemmesen, C., and Nash, R.D.M.**

Natal signatures in otoliths can provide crucial information to link individuals to areas, and reveal population connectivity. However, these signals are not always straightforward to interpret. As geotags, the otolith chemical composition should track spatial processes, such as dispersal from spawning areas, residence in nursery areas, and mixing at feeding grounds. In herring larvae, there is some evidence of maternal effects on otolith composition. We have combined laboratory and experiments with field studies of herring larvae to help to distinguish between maternal and geographic influences. Herring larvae from different females were reared in common-garden conditions and their otolith composition analysed. Individual families of larvae can have a strong signal of presumably maternal origin. We then analysed otoliths from field sampled larvae, representing different scenarios: 1) dispersal of larvae from the west coast of Scotland into the North Sea, and 2) mixing of local and migratory population components along the west coast and fjords of Norway. The spatial differences in larval otolith chemistry were consistent with what is known about drift patterns.

**P19: Identifying essential juvenile habitat for sardine along the Portuguese coast and Gulf of Cádiz****Rodríguez-Climent, S., Marques, V., Angélico, M.M., and Silva, A.**

Understanding fish distribution, including juvenile fish distribution, is essential for sustainable fisheries management, where the protection of the juveniles (i.e. assuring first spawn) is required. The distribution of juvenile sardine (*Sardina pilchardus*; Walbaum, 1972) was mapped along the Portuguese coast and Gulf of Cádiz for the springs of the years 2005-2010 using data obtained during the acoustic surveys. The abundance of juveniles was then related with six environmental variables: sea surface temperature, salinity, fluorescence, zooplankton volume and depth, using Generalized Additive Models. Our results highlighted three key locations for the residence of juveniles: the Northern Portuguese shelf (centred off Aveiro), the coastal region in the vicinity of the Tagus Estuary and the Eastern Gulf of Cádiz. Enriched by the river runoff during the winter months, these areas are characterized by higher productivity in spring and lower salinities, factors cited to be crucial for the presence of juvenile stages. Moreover the combination of mesoscale and submesoscale physical processes and features occurring in these waters, have been reported to promote retention mechanisms for early life stages.

**P20: Integrating field data to parameterize a larval transport model of sole and improve knowledge on recruitment in the North Sea****Barbut, L., Delerue-Ricard, S., Vanden Bavière, A., Robbens, J., Volckaert, F.A.M., and Lacroix, G.**

Inter-annual recruitment variability of sole (*Solea solea*) in the North Sea is high. Among many fish taxa, the early life stages are critical in determining recruitment. With a Lagrangian larval transport model, coupling a physical model with an Individual-Based Model (IBM), it has been shown that hydrodynamics explains part of this variability in sole (Lacroix *et al.*, 2013). IBMs require a good knowledge of the biological processes governing larval dispersal. However, it is difficult to obtain observations of life history traits; their estimates may strongly influence larval connectivity / retention and successful migration as predicted by the model. Various assumptions about these traits can be tested by comparing simulation results with field data. Several datasets, from the literature and from a 2-year-long monthly sampling at 13 stations in the southern North Sea, will be used to identify the most plausible model parameterisation. It represents a first step towards the calibration and improvement of a larval dispersal model of sole in the North Sea and the development of a tool for fisheries management.

**P21: Aspects of the European hake ecology in the North Sea and Norwegian waters****Staby, A., and Skjæraasen, J.E.**

The distribution of the European hake (*Merluccius merluccius*) extends from northern African waters into the North Sea and off the coast of Norway. In the latter area commercial catches have in recent years increased and the same trend is observed in scientific research surveys of the North Sea. This has prompted the need