Temporal Patterns of Settlement and Dietary Changes of 0-group Cod, Haddock and Whiting

ABSTRACT
Juvenile gadoid settlement, the transition from pelagic to demersal habitat, has been identified as a critical stage for the survival of juveniles and consequently for recruitment. It is crucial to understand whether certain factors, based on the timing of arrival to nursery areas, fish size, condition, etc. favour specific subsets of the population. From May to August 2004, weekly sampling was conducted at an inshore site off the east coast of Scotland. Comprehensive morphometric and dietary analyses of the samples were carried out on almost 3000 0-group cod, haddock and whiting. The results show clear differences in the patterns of settlement between the different species and progressive changes in the diet composition of the juvenile fish.

INTRODUCTION
Cod (Gadus morhua), haddock (Melanogrammus aeglefinus) and whiting (Merlangius merlangus) are among the most economically important species in the Scottish demersal fishery. Juvenile settlement, the transition from pelagic to demersal habitat, has been identified as an important milestone for this species, but about which there is insufficient knowledge and data. The objective of this study is to investigate the behaviour and ecology of 0-group cod, haddock and whiting in this crucial developmental stage.

METHODS
The study site was an inshore nursery area (Stonehaven Bay, south of Aberdeen, Scotland – lat. 56°59.10N, lon. 2°09.15W) in the proximity of a FRS plankton and environmental monitoring site.

Samples were collected weekly from May to August 2004, using a juvenile fish demersal trawl.

Juvenile gadoids were subject to detailed morphometric and dietary analysis.

RESULTS
(Monthly analyses over the sampling season.)

Figure 1. Changes in fish abundance

Figure 2. Size distribution in the samples

Figure 3. Diet composition (benthic vs. pelagic prey)

CONCLUSIONS
- Cod was present in the analysed samples only at the beginning of the sampling season.
- For whiting there was continuous income of new settlers.
- Haddock settled in one pulse at the beginning of the season.
- Fish abundance, length distribution, and juvenile diet were all consistent with these patterns.
- The relative importance of benthic versus pelagic prey in the juvenile diet increased throughout the season.