Spatial patterns and trends in abundance of larval sandeels in the North Sea: 1950–2005

Early recruitment indices based on larval fish data from the Continuous Plankton Recorder (CPR) have the potential to inform stock assessments of Ammodytes marinus in the North Sea. We evaluate whether the CPR data are reliable for sandeel larvae. Spatially, CPR larval data were comparable with catches by dedicated larval samplers (Gulf and bongo nets) during ICES coordinated surveys in 2004 and 2009. ICES data are also used to explore environmental influences on sandeel distributions. Temporally, CPR data correlate with larval data from plankton surveys off Stonehaven (1999–2005), with sandeel 0-group trawl data at the east Fair Isle ground (since 1984), and with recruitment data (since 1983) for the Dogger Banks stock assessment area. Therefore, CPR data may provide an early recruit index of relative abundance for the Dogger Banks assessment area, where the majority of the commercial catch of A. marinus is taken, and the Wee Bankie area that is particularly important for seabird foraging. While warm conditions may stimulate the production of sandeel larvae, their natural mortality is typically greater, in the Dogger Banks and Wadden Sea areas, when the larvae are hatched in warm years and/or with abundant 1-year-old sandeel that are likely to be cannibalistic.