

Abstract

We examined the interannual variations in distribution and abundance of Japanese jack mackerel *Trachurus japonicus* larvae, 5 mm standard length (SL), based on sampling surveys over a broad area of the shelf break region of the East China Sea (ECS) during late winter and spring for 12 years from 2001 to 2012. Larval abundances in late winter were higher than those in spring. In late winter, ratios (expressed as %) of larval abundance in the southern ECS south of 28°N to the whole study area were highest during the study period, with values ranging from 80.0 to 95.8%. In spring, the ratios in the southern ECS were still high (34.3 - 88.8%), although the values increased slightly in the northern and central ECS. There was no significant interannual variation in the centre of distribution of the larvae, suggesting that the formation of spawning grounds would be related to topographic rather than hydrographic conditions. Habitat temperature of larvae in the central and southern ECS was ~3 - 5°C higher than that in the northern ECS throughout the study period, indicating that larval growth and survival processes may differ between the two areas. In the southern ECS, larval abundances fluctuated largely from year-to-year, and the interannual variations were closely correlated with water temperature and chlorophyll a concentration. However, larval abundance did not correlate with an index of recruited juveniles (~50 - 75 mm SL) in the ECS, suggesting that mortality during the late larval and early juvenile stages is responsible for recruitment success or failure.

摘要

我們在2001~2012這十二年間的晚冬和春季，在東海(ECS)大陸棚斷裂處進行抽樣，調查日本竹筴魚魚苗(標準長度5mm)的分布及數量的逐年變化。魚苗數量在晚冬時較春季來的高。

在整個研究期間，冬末時，魚苗在低於28°N的ESC南方海域是佔所有研究海域中最高的，有將近80.0%~95.8%的比率；春季時，在ECS南方海域的比例依舊相當高(34.3%~88.8%)，然而在中部和北部海域的比例有些微增加。

魚苗分布的集中處並沒有明顯的逐年變化，這顯示了產卵地的狀況取決於地理因素而非水文因素。研究期間，魚苗的棲息地溫度，在東海中部和南部比北部高了3~5°C，這指出魚苗在這兩個海域的生長與生存過程將較為艱辛。在東海南方海域，魚苗數量每年的變動相當大，這逐年的變化情形與海溫和葉綠素濃度有非常大的關係。然而，在東海，魚苗數量和幼魚(標準長度50~75mm)的採樣指標並沒有關係，顯示了魚苗長至幼魚階段的死亡率取決於採樣的成功與否。