生态学报 2007 27 (2007-06): 2342～2348 ISSN: 1004-616x CN: 44-1063/R

研究论文

东、黄海水团动态与夏季休渔效果间的关系

丁峰元[1, 2],程家骅[1, *]

1.中国水产科学研究院东海水产研究所，上海200090 2.河南省计量科学研究院，郑州450008

收稿日期 2006-5-15 修回日期 2006-11-28 网络版发布日期: 2007-6-25

摘要 用聚类分析法分析了2003年6月～2005年6月东、黄海水团的分布，并讨论了水团动态变化与夏季休渔效果间的关系。结果表明，6月表层水团主要包括东海表层水团、黄海水团、黄-东海混合水团和沿岸冲淡水，底层水团主要包括东海次表层水团、黄海冷水团和黄海水团。另外，各水团的分布面积存在年间差异。夏季休渔期间，中上层鱼类资源和底层鱼类资源的恢复速度均在2005年最快，在2003年最慢。9月东、黄海中上层鱼类的主要作业渔场在28°00′～32°30′N，125°30′E以西海域，该海域表层主要受东海表层水团所控制；底层鱼类的主要作业渔场在29°30′～33°00′N，127°00′E以西海域，该海域底层主要受东海次表层水团所控制。6月较强的东海表层水团有利于中上层鱼类资源的恢复；较强的东海次表层水团有利于底层鱼类资源的恢复，而较强的黄海冷水团不利于底层鱼类资源的恢复。

关键词 水团；鱼类资源；夏季休渔；东、黄海

分类号 Q143,Q178

Relationships between the dynamics of water masses and the effects of the summer fishing moratorium in the East China and Yellow Sea

DING Feng-Yuan[1, 2], CHENG Jia-Hua[1, *]

1 *East China Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, Shanghai* 200090, *China*
2 *Henan Institute of Metrology, Zhengzhou* 450008, *China*

Abstract The government of the People's Republic of China implemented a seasonal fishing moratorium annually from 16 June to 15 September in the East China and Yellow Sea from 26°00′ to 35°00′N since 1995. The fisheries resources could be restored during the moratorium. The major environmental factors affecting the distribution and productivity of exploited marine fishes include: temperature, salinity, food availability, and larval supply. These factors are dependent on the dynamics of water masses. As fishing is prohibited during the moratorium, the restoration of fish resources can reflect the effect of water masses on the exploited fishes. Using cluster analysis, this study analyzes the distribution of the water masses in the East China Sea region from June 2003 to June 2005. Their relationships with the effects of the seasonal fishing moratorium are discussed. The results show that the areas of the East China Sea Surface Water Mass are 3.86×10^4km^2, 6 64×10^4km^2, and 8.33×10^4km^2, while the Yellow Sea Surface Water Mass are 3.86×10^4km^2, 5.71×10^4km^2, and 2.32×10^4km^2. The areas of the Yellow Sea-East China Sea Mixing Water Mass are 5.87×10^4km^2, 7.41×10^4km^2, and 6 48×10^4km^2. The areas of the Coastal Diluted Water Mass are 2.78×10^4km^2, 1.39×10^4km^2, and 1.85×10^4km^2. For the Subsurface Water Mass, the areas are 9.57×10^4km^2, 8.64×10^4km^2, and 10.80×10^4km^2. The areas of the Yellow Sea Cold Water Mass are 10.03×10^4km^2, 7.41×10^4km^2, and 8.03×10^4km^2. The areas of the Yellow Sea Bottom Water Mass are 1.85×10^4km^2, 3.40×10^4km^2, and 1.54×10^4km^2. During the summer fishing moratorium, abundance of exploited pelagic fish stocks increased by 6.48 and 22.24 times in 2003 and 2005, respectively, which represent the slowest and fastest rates in 20

03 to 2005. The major fishing ground for pelagic fishes is from 28°00′ to 32°30′N, west of 125°30′E, where the East China Sea Surface Water Mass dominates in September. For the demersal fishes, the largest growth in abundance is 10.53 times recorded in 2005, while the lowest growth was 7.5 times recorded in 2003. The major fishing ground for the demersal fishes is from 29°30′ to 33°00′N, west of 127°00′E, where the East China Sea Subsurface Water Mass dominates in September. It is concluded that the rate of restoration of the demersal fish resources in June is positively related to the strength of the East China Sea Surface Water Mass, but negatively related to the strength of the Yellow Sea Cold Water Mass. As such, we can predict the effects of the summer fishing moratorium on the fish resources from the strength and distribution of water masses in the East China Sea and Yellow Sea.

Key words water mass _ fish resources _ summer fishing moratorium _ East China Sea _ Yellow Sea

DOI

通讯作者

程家骅

ziyuan@sh163.net