Estimation of experienced environment of jack mackerel in the East China Sea

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Jack mackerel *Trachurus japonicus* is distributed on the continental shelf waters along the subtropical Kuroshio Current and the Tsushima Warm Current in the western North Pacific. The East China Sea (ECS) is one of major region for jack mackerel and understanding the recruitment processes of jack mackerel into the fishing grounds in the ECS is important. However, marine environment such as water temperature that jack mackerel actually experiences is not directly observed yet. In this study, oxygen ($\delta^{18}O$) and carbon ($\delta^{13}C$) stable isotope of jack mackerel otolith were analyzed and the experienced environment was estimated. When we compared $\delta^{18}O$ of otolith caught in between three different station with different temperature, average of $\delta^{18}O$ varied and was negatively correlated with water temperature of sampling station. Most of individual indicated that $\delta^{13}C$ relatively increased from core part to edge in otolith. Thus, these results suggest that otolith of jack mackerel recorded experienced environment. However, because jack mackerel migrate vertically, it needs to consider vertical profile of seawater temperature and other parameters such as salinity and prey availability. A combination with fish distribution information and ecological modeling may help the improvement of estimation for detail experienced environment.

Keywords: fish otolith, isotope analysis, experienced environment, fish migration

