

SPATIAL VARIATION IN TROPHIC STRUCTURE OF DEMERSAL FISH COMMUNITIES IN THE MARINE ENVIRONMENT OF HONG KONG, SOUTH CHINA

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Hong Kong's western coastal waters (WW) situated at the Pearl River Estuary are heavily influenced by freshwater and sediment discharges from the Pearl River, while its eastern waters (EW) are mainly affected by oceanic and tidal currents. The southern waters (SW) are positioned along this estuarine-oceanic salinity gradient. Such variations in hydrography and salinity drive differences in trophic structure in local marine ecosystems. This study aimed to investigate the spatial variation in trophic structure of six demersal fish communities in WW (inner and outer estuary), EW (inner and outer Tolo Channel) and SW (waters in southeast and around Lamma). Stable isotopic ratios of $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ of all benthic fishes caught in trawl surveys during July-September and November 2012 were measured. $\delta^{15}\text{N}$ range (NR), $\delta^{13}\text{C}$ range (CR), total area (TA), mean distance to centroid (CD) and mean nearest neighbor distance (MNND) were calculated from $\delta^{13}\text{C}$ - $\delta^{15}\text{N}$ bi-plots to reveal trophic diversity and trophic redundancy. Preliminary results showed that the outer estuary in WW had the highest trophic diversity by having the largest NR, TA and CD, and the greatest niche diversification at the food web base as revealed by the largest CR. While inner Tolo in EW had the lowest trophic diversity as shown by the smallest NR, CR, TA and CD. The two communities in SW had the highest trophic redundancy by having the smallest MNND, which implied that more fishes in SW had similar trophic roles. The stable isotope library built in this study can serve as a baseline for evaluating the prospective recovery of demersal fishery resources brought by the territorial-wide trawling ban that has been imposed in Hong Kong's marine waters on 31 December 2012.