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ELUCIDATING THE FOOD WEB STRUCTURE OF DEMERSAL CRUSTACEANS IN HONG KONG'S COASTAL WATER USING STABLE ISOTOPE ANALYSIS

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Bottom trawling has been demonstrated to be one of the most destructive fishing methods to marine benthic communities. Since the 1970s, marine fishery resources in Hong Kong, especially large predatory species, have been overexploited by nonselective fishing gears including bottom and pelagic trawlers. This fishing down the trophic level has resulted in a benthic ecosystem primarily dominated by small herbivorous and omnivorous fishes and crustaceans. To mitigate such impacts, the Government of the Hong Kong Special Administrative Region has implemented a territory-wide trawling ban in local waters since 31 December 2012. This study aims to investigate whether crustacean resources, in particular of the orders Decapoda and Stomatopoda, could recover after the implementation of the trawling ban in Hong Kong waters. During July to November 2012 (before trawl ban) and June 2013 to November 2014 (after trawl ban), 60 surveys were conducted at eastern, western and southern coastal water zones of Hong Kong using a commercial shrimp trawler (with scientific research permit). A total of 210 crustacean species from 36 families were recorded. Community structures of crustaceans significantly differed among the three zones with a salinity gradient being low at the western waters and high at eastern water. Species richness, evenness index and Shannon's diversity index were the lowest during both wet (July to September) and dry (October to November) seasons in the eastern zone, and a lower biomass was recorded in the eastern zone during the wet season. Differences of community structure were identified among years 2012 (before trawl-ban), 2013 and 2014 (after trawl-ban) based on the results of multivariate statistical analysis. During the wet season, overall abundance of crustaceans from all three zones in 2014 was higher than that in 2012, while biomass, species richness, species diversity and evenness indices, and Warwick statistic remained unchanged. The current study will be continued until May 2016. Trophic levels and population dynamics of selected crustaceans will also be studied in order to evaluate the effectiveness of the trawl-ban policy in facilitating ecosystem recoveries.