{rokbox title=|Location of the study area :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-active-flux-seasonality-small-dominant-migratory-crustaceans-mesopelagic-fishes-gulf-california-sarmineto-et-al-2022-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-active-flux-seasonality-small-dominant-migratory-crustaceans-mesopelagic-fishes-gulf-california-sarmineto-et-al-2022.jpg{/rokbox}

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2022. **Active flux seasonality of the small dominant migratory crustaceans and mesopelagic fishes in the Gulf of California during June and October.** Progress in Oceanography. Volume 208, November 2022, 102894. https://doi.org/10.1016/j.pocean.2022.102894

Abstract: The biological carbon pump is the process that transports carbon vertically out of the mixed layer in the ocean. Besides the sinking flux of organic particles, active flux due to the daily vertical migration of zooplankton and micronekton promotes a significant carbon transport not fully accounted for or understood in the world's oceans. The diversity and abundance of epipelagic and mesopelagic species in the Gulf of California has been extensively studied, but the role of micronekton in carbon export has not yet been investigated. We studied the carbon flux promoted by juvenile and adult mesopelagic fishes and crustaceans (Decapoda and Euphausiidae) during the transition from the cold to warm period (June) and the onset of the warm season (October) in 2018. We provide the first estimation of migrant biomass and respiratory flux of the most abundant migratory species of mesopelagic fishes, decapods and euphausiids in the Gulf of California. The micronekton species collected accounted for a large biomass of mesopelagic fishes and pelagic crustaceans. The average migrant biomass estimates were 151.5 ± 101.2 mg C·m−2 during June and 90.9 ± 75.3 mg C·m−2 during October. The enzymatic activity of the electron transfer system (ETS) was measured as an estimate of their respiratory rates. Average specific ETS activity was significantly different between fishes and decapods, and between fishes and euphausiids (p minor than 0.05). The respiratory flux of fishes was predominant in the Gulf of California, followed by pelagic decapods and euphausiids. Seasonal changes in respiratory flux were observed for fishes (June: 6.1 ± 1.5 mg C·m−2·d−1; October: 3.2 ± 1.8 mg C·m−2·d−1) and decapods (June: 0.4 mg C·m−2·d−1; October: 0.7 ± 0.05 mg C·m−2·d−1). Respiratory flux estimation by crustaceans (decapods and euphausiids) and fishes together was 6.86 mg C·m−2·d−1 during June, and 4.21 mg C·m−2·d−1 during October 2018, suggesting a functional role of this large micronektonic fauna in the biological carbon export in this region.

Keywords: Active flux, Biological carbon pump, Diel vertical migration, Electron Transfer System, Mesopelagic organisms