ICES/PICES 6ZPS 2016/S3, W6 **Poster**

Seasonal sucession of zooplankton taxonomic groups through a weekly time series (2014–2015) at Cabo Pulmo Natural Reserve, Mexico

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Zooplankton play ecological services for Cabo Pulmo National Park (CPNP) as food source for numerous zooplanktophagous predators and provide eggs and larvae (meroplankton) that become recruited on populations of benthic and nektonic species. This recruitment likely helped the spectacular recovery of fish biomass (>463%) since it foundation in 1995. However, its seasonal and interannual biovolume and taxonomic diversity is currently unknown. During Jan 2014–Dec 2015, in collaboration with people responsible for maintaining healthy CPNP, zooplankton was sampled weekly at 24°17.8N,-110°20.7W to infer the diversity and breeding periods for fish pelagic spawning by morphology and genetics of their eggs and larvae. We also quantified the seasonal variability of abundance, biovolume and taxonomic diversity in order to infer weekly changes in the succession of the community structure of zooplankton. The mean zooplankton biovolume (ml 1000m-3) in subtropical Cabo Pulmo was lower (305, max=1768) than at central region and Mid-Rift Archipelago of the Gulf of California (533, max= 3900), but considerably higher than at tropical Islas Marías Archipelago (62, max=159). The time series included 24 zooplankton taxa numerically dominated by holoplankton [copepods (64%), chaetognaths (18%), gastropods (1%), appendicularians (1%) and euphausiids (1%)] reporting higher abundances in 2015 than in 2014. The seasonality in the abundance of meroplanktonic taxa [Decapods (3%), fish eggs and larvae (1.4%), larvae of echinoderms (0.09%) and cephalopods (0.004%)] represents new recruits pulses produced within and outside the PNCP. Cabo Pulmo is a mesotrophic subtropical region that can sustain populations comparable to those of the most productive areas in the Gulf of California.

Keywords: High-frequency time series, fish eggs, genetic, community succession.

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