{rokbox title=|Eledone cirrhosa :: Image: Ana Morillas (COB-IEO)| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-variabilidad-estacional-cefalopodos-mar-balear-puerta-et-al-2016-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-variabilidad-estacional-cefalopodos-mar-balear-puerta-et-al-2016.jpg{/rokbox}

Patricia Puerta, **Antoni Quetglas** and **Manuel Hidalgo**, 2016. **Seasonal variability of cephalopod populations: a spatio-temporal approach in the Western Mediterranean Sea**. Fisheries Oceanography. Volume 25. Issue 4, pages 373–389. July 2016

Abstract: Cephalopod populations show wide temporal fluctuations in abundance, which have usually been investigated at inter-annual scales related to environmental variability. However, cephalopods are also strongly linked to seasonal environmental fluctuations owing to their short life cycles and single seasonal breeding. Therefore, population abundance critically depends on the success of breeding and recruitment from the previous year and the optimization of resources in a narrow period of favorable conditions. This adaptation of population dynamics is paramount in marked oligotrophic systems, such as the western Mediterranean Sea. We used monthly landings per unit effort (LPUE) to explore the spatio-temporal variability in seasonal patterns of three cephalopod species (*Illex coindetii*, *Eledone cirrhosa* and *Octopus vulgaris*). Common trends across the study area were characterized for each species. In all cases, seasonal patterns were geographically aggregated in relation to differences in local environment (i.e., primary production and surface hydro-climatology). Variability in the mean seasonal pattern over time was also investigated under contrasting environmental or population regimes. The mean seasonal trend was more pronounced in regimes of high-population densities, suggesting a density-dependent control that can modify the strength of the environmental forcing in the seasonal patterns. Our study also evidences a spatial synchrony in the seasonal fluctuations of LPUEs. Scales of synchrony ranged from 70 to 200 km, indicating a patchy-aggregated spatial pattern as a part of complex population structures in the western Mediterranean. Improving our understanding of seasonal dynamics of cephalopods across temporal and spatial scales may lead to improved forecasts and management strategies.

Keywords: cephalopods, environmental variability, Mediterranean, population dynamics, seasonality, spatio-temporal trends