

{rokbox title=|Location of the sampled stations and satellite chlorophyll concentration (mg m⁻³) during the survey carried out in April 2015 :: Image:

Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-diel-vertical-migration-puelles-2023-thumb-et-al.jpg|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-diel-vertical-migration-puelles-2023-et-al.jpg{/rokbox}

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[Diel vertical migration of copepods in the tropical and subtropical Atlantic Ocean.](#)

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Abstract: The vertical distribution of the zooplankton community was analyzed from the surface to 800 m depth in the tropical-subtropical Atlantic Ocean in a transect of 12 stations during day and nighttime from Brazilian waters (10°S) to the Canary Islands (27°N). A depth stratified opening-closing 1 m² mouth MOCNESS was used and 8 layers analyzed. Besides this net, the epipelagic layer (0–200 m) was sampled for microzooplankton (53 µm Calvet net) and mesozooplankton (200 µm WP2 net) communities. An increasing gradient of mesozooplankton abundance was observed from the oligotrophic waters off Brazil to the oceanic upwelling off Northwest Africa. Copepods were always the most abundant group (86 %) and 241 species identified, although only 60 were >1 %. Smaller species predominated and *Oncaea* was the dominant group (18 %) followed by *Clausocalanus* (14 %) with *C. furcatus* dominating.

Paracalanus

and

Oithona

were also quite abundant (12 and 9 % respectively). Small copepods such as

C. furcatus

and *Euchaeta marina* predominated in the oligotrophic waters while

Calanus helgolandicus

,

Calanoides carinatus

,

Temora stylifera

,

Paracalanus parvus

, and

Pleuromamma robusta

dominated in the upwelling area. In the epipelagic layer large copepods (e.g.,

Rhincalanus, *Pleuromamma*

,
Euchirella

, and

Metridia

) were numerous during nighttime and in the mesopelagic zone during day were quantitatively less abundant. The vertical distribution of the dominant copepods (>1 %) showed multiple diel patterns but at least five were distinguished and their dominant taxa defined: (1) Species living in the twilight zone with slight up and down motion. (2) Species dominating the epipelagic layers with weak vertical movements. (3) Strong migrants living in the mesopelagic zone during day and moving upward towards the surface or (4) migrating to the subsurface layer at nighttime, and (5) those organisms characterizing the oceanic upwelling where the calanoids predominated (e.g.,

C. helgolandicus

and

C. carinatus

). Our findings highlight the complexity in the diel vertical migration patterns of copepods in the tropical-subtropical Atlantic Ocean and the relevant role of the deep-sea copepods and their diel vertical migration. These results could be used as baseline information for low latitudes of the Atlantic Ocean in future studies of the biological carbon pump.

Keywords:Zooplankton,Copepod composition,Diel vertical distribution,Spatial variability,Tropical and subtropical,Atlantic Ocean.