



Figure 1. Conceptual model of the food web off Central Chile in a low jack-mackerel year.

HCS084 - Relating the distribution and abundance of zooplankton in the Peruvian Humboldt Current System from 1983-2005 to environmental factors, including the proximity of major fish predators

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Predator prey dynamics play a major role in upwelling-based coastal marine ecosystems, yet direct effects of predation through prey reduction are difficult to observe over larger areas due to the patchy nature of biological distributions and the difficulty of separating predation and production effects while transecting these systems. Our study combines data from zooplankton sampling and acoustic observations on fish from 40 pelagic surveys conducted by the Peruvian Marine Research Institute (IMARPE) along the Peruvian coast from 1983 to 2005. We modelled zooplankton bio-volume as a function of location (latitude and distance from the 200-m isobath), environmental (sea surface temperature; SST), temporal (year, month and time of day) and biological (acoustic anchovy and sardine biomass within 5 km of each zooplankton sample) using classification and regression trees (CART) and generalized additive models (GAM). CART results showed a strong impact of anchovy but not sardine biomass on zooplankton bio-volume, with significantly reduced levels of bio-volume for higher levels of anchovy in the region. This effect was the most important for zooplankton bio-volume. Additionally, zooplankton bio-volume was higher offshore than on the shelf and was higher when SST was above 21.2°C (for some years and months). GAM results corroborated the CART findings, also showing a clear diel effect on zooplankton bio-volume, probably due to diel migration.

HCS128 - Life cycles of the copepods *Calanus chilensis* and *Centropages brachiatus* in the northern coastal upwelling Chilean of the Humboldt Current system

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Life cycles of copepods have become a critical issue to assess the role of dominant zooplankton in the functioning and productivity of the highly productive Humboldt Current ecosystem. Based on time series study, we analyzed the annual life cycles of *Calanus chilensis* and *Centropages brachiatus*. These species are very abundant in the coastal zone, comprising an important fraction of the zooplankton biomass. The study was based on weekly sampling during 2002 at fixed coastal station (90 m depth) off Mejillones Bay (23° S) in which upwelling may occur year round. Zooplankton samples were obtained along with data on the oceanographic variables temperature, salinity, dissolved oxygen, Chlorophyll-a, nutrients and phytoplankton composition. All copepod stages (including eggs), for both species, were analyzed to describe their life cycles, identify the reproductive events and cohorts, and to estimate generation time (GT) and the expected number of generations a year (GY).

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