

Ichthyoplankton transport from the African coast to the Canary Islands

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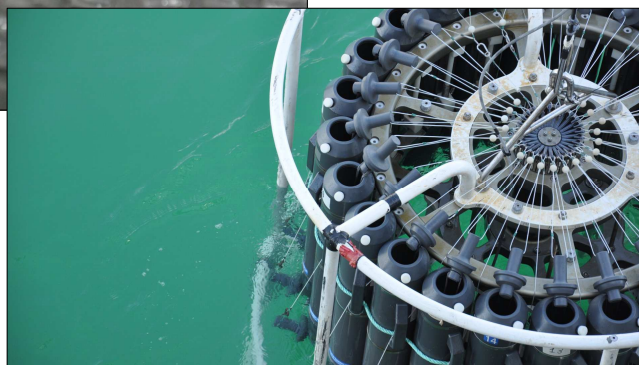
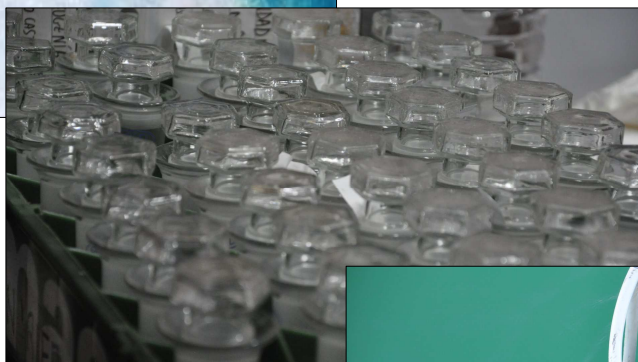
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Abstract

The Canary Upwelling System (CUS), a major eastern boundary upwelling system, sustains large cross-border fisheries of small pelagic fish, which poses the question of stock connectivity. Studies suggest that ichthyoplankton transport from the northwest African coast to the Canary Islands (CI) is facilitated by coastal- upwelling associated filaments. Here we analyze connections between larval supply to the CI and sardine and anchovy populations that spawn over the continental shelf. For both species, ichthyoplankton observations (1) at the shelf and (2) near the island of Gran Canaria (GC) are used. Predictions of ichthyoplankton transport to GC are obtained from the Ichthyop Lagrangian transport model, which is forced by a high-resolution hydrodynamic model (ROMS) that reproduces the regional circulation. Results show that upwelling filaments play an important role in the transport of larvae to GC. However, (1) filaments are not the only mechanism, and (2) filament presence does not necessarily imply larval transport. Anchovy and sardine larval presence at GC appears to be independent of the respective adult spawning seasonality. Combining of observed and modeled data does not succeed in reproducing the observed larval patterns at GC. Various hypotheses are proposed to explain this discrepancy in larval transport to GC.



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