

Simposio I

**Strategie di dispersione, colonizzazione
e persistenza degli animali**

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Contributi

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DISPERSAL, COLONIZATION, AND PERSISTENCE STRATEGIES OF
COASTAL MARINE ZOOPLANKTON. 20 YEARS OF EXPERIENCEG. BELMONTE

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Zooplankton is an ecological compartment composed by different single entities (species). In coastal areas of temperate seas, it is present all over the year as a compartment, but single species show seasonal presence/absence cycles. Traditionally, planktonologists considered that species, when absent, were somewhere else, or simply that specimens were so rare and spatially separated that they were not collected with common sampling devices. Marine planktonologists for long time simply ignored that dinoflagellates, diatoms, ciliates, rotifers, cladocerans, and copepods, in temperate coastal seas, produce resting stages (cysts). These differ morphologically from the corresponding active stages, and are surprisingly diverse. About the 80% of them show a sculptured covering. This trait is a sort of constraint being typical of resting stages belonging to different Biologic Realms. The sculptures a) extend the contact surface with the environment, b) avoid the scraping by mineral particles in the sediment, c) avoid the predation, d) allow the survival of the first embryonic stages retarding its sinking in water layers with low Oxygen content. Resting stages accumulate mostly in confined coastal areas whose sediments are “marine seed banks” like those of terrestrial forests. As a consequence of the above mentioned situation, the evaluation of each community structure cannot avoid to consider the seed bank which is responsible of its recruitment. A recent study showed that sediments hosted a number of cyst types about double than the active stages collected in the water column. The rest period can extend even over dozen years without any apparent consequences on the organism viability. This fact means that a) disappeared populations can return to be present in the same environment even after long periods of absence, b) embryos encysted centuries ago, when allowed to complete their development, can re-combine their DNA with present day individuals, c) the long time rest allows the organisms to pass over adverse conditions also in space, and to maintain gene flow also among distant populations. The future of our research will be addressed in a) preparing an atlas of known resting stages from the neritic zooplankton, b) understanding the biology of diapause in different *taxa*, c) searching for the species which possibly “eats” cysts, and e) reconstructing the story of zooplankton in basins where cysts accumulate without germination.