

BIODIVERSITY, EVOLUTION, ENDEMISM AND CONSERVATION OF THE MEDUSOZOA FROM THE SOUTHWESTERN ATLANTIC

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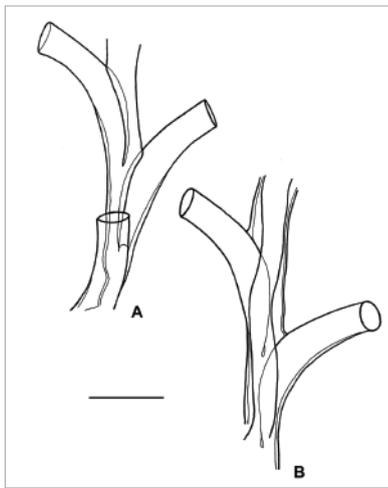


Portuguese man-of-war (photo A. E. Migotto)

Medusozoa is a diverse and widely distributed group, with complex life histories. Species of medusozoans inhabit different seas and oceans around the world. In a regional scale, some species are widespread along the Southwestern Atlantic Ocean (Brazilian and Argentinean shores), with populations distributed along a heterogeneous and structured environment. There are few biogeographical and phylogeographical studies for the group, either under descriptive or interpretative approaches, and the relation between the distribution of the species and most of the biological and environmental factors are still largely unknown. This lack of studies precludes a better understanding of its evolution and proposal for conservational actions. The present project aims to study the diversity of medusozoans in the Western South Atlantic, from Cabo Frio (RJ, Brazil) to Tierra del Fuego (Argentina), correlating distribution and life cycles. The study has two complementary approaches: a) to determine the pattern of present distribution of species and the recognition of areas of endemism and b) to provide explanations for the patterns of distribution observed and to understand the factors affecting species distribution and evolution, particularly related to the biology and the life history of the groups under study. More specific goals are: 1) to survey and evaluate the biodiversity of Medusozoa in the area under study, 2) to identify the areas of endemism, based on parsimony analyses of endemism, in order to understand the general patterns of macro-distribution, 3) to promote phylogeographic studies that, together with life cycle and biology studies, aims to understand the general and specific patterns of micro-distribution. The project will carry out benthic and planktonic surveys along the area under study, and will also consider the available previous collections undertaken between Cabo Frio and the southern Brazilian coast. The coast of Uruguay and Argentina will also be surveyed with the collaboration of Argentinean researchers.

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

We carried out taxonomical studies focusing planktonic and benthic stages of Medusozoa. The surveys, still ongoing, resulted in the description of new species and several new records for the region. The plankton study resulted in a fauna of 20 species for which some distributions are associated to specific water mass. The parsimony analyses of endemicity resulted in two different areas, the first located between 50 and



Acryptolaria sp.
(illustrated by A.L. Peña Cantero)

200 m deep with predominance of the South Atlantic Coastal Water; the second located eastern to the 200 m bathymetric line, along the occurrence of Tropical Water, as the main water mass. In the morphometrical multivariate analyses carried out with populations of several species of medusozoans, viz. *Thyroscyphus ramosus*, *Physalia physalis*, *Pinauay ralphi*, *Chrysaora lactea*, and *Olindias sambaquiensis*, we found no geographical patterns or population

structure. Ecological studies on the specificity of animal and plant substrata, acting as a constraint for the distribution of the benthic species of medusozoans, were also carried out and very few species seem to be specifically related to a given substrate. In the phylogeographical study, we gathered data on the ecology and natural history of *Olindias sambaquiensis* and *Liriope tetraphylla*, and carried out phylogeographic analyses using CO1 and 16S DNA markers. Our results have shown similar phylogeographical patterns and genetic structures for both species. The Brazilian populations are basal and have a higher nucleotidic diversity than the apical Argentinean populations. The Rio De La Plata River is not an effective barrier, and introgression possibly occurs for both species and might be related to the circulation of the water masses.

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