

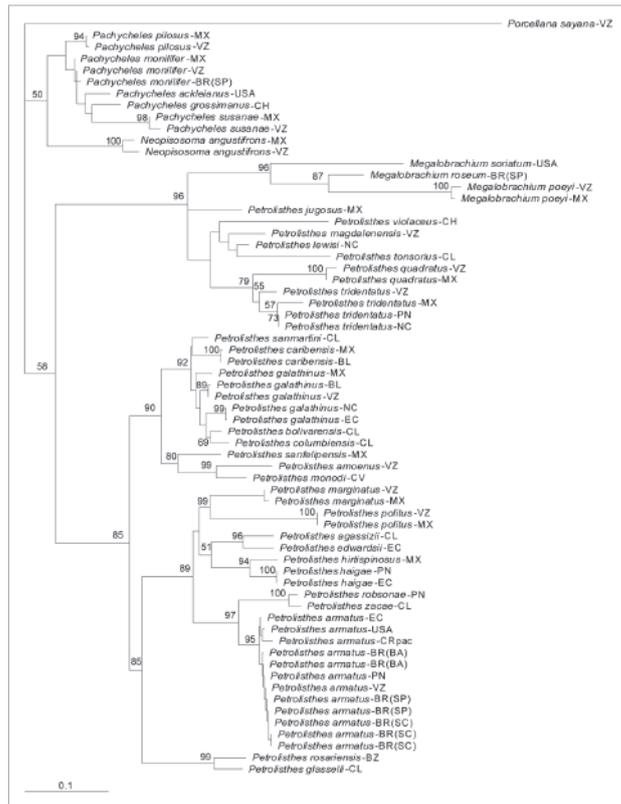
DECAPOD CRUSTACEANS: MULTIDISCIPLINARY CHARACTERIZATION OF THE STATE OF SÃO PAULO SEA COASTAL BIODIVERSITY (TAXONOMY, SPERMIOGAMETOTAXONOMY, MOLECULAR BIOLOGY, POPULATION DYNAMICS)

Fernando Luis Medina Mantellato

Ribeirão Preto School of Philosophy, Sciences and Literature / University of São Paulo (USP)

Main researchers: Antonio Leão Castilho, Fernando José Zara, Rogério Caetano da Costa

FAPESP Grant 2010/50188-8 | Term: Jan 2011 to Dec 2015



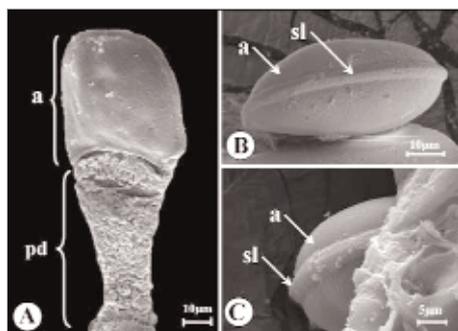
Dendrogram of the cluster analysis for species of *Petroliastes* and related groups, based on a distance analysis using the minimum evolution (ME) algorithm of 16S rDNA gene sequences. Numbers below are significance values for 1000 bootstraps; values 50% are not shown. (Source: Mantellato et al. 2011. *Zool. Stud.* **50**: 372-384)

This project searches new solutions for the analysis of some aspects of the biodiversity of the decapod crustaceans (crabs, ghost shrimps, hermit crabs, lobsters, and shrimps) of the São Paulo coast. The main objective is the optimization of molecular techniques applications (mitochondrial and nuclear DNA), morphological and ecological analyses (taxonomy, phylogeny, spermiotaxonomy, populational and reproductive dynamic) for accurate detailed taxonomic revision and identification of the biodiversity of São Paulo coast decapods crustaceous inhabitants of the estuarine, coastal and marine environments in a multidisciplinary and phylogenetic task.

The molecular genes used for taxonomy and DNA library will be integrated to the sperm/ spermatophore ultrastructure and ecological dynamic. This combination has been successfully employed in several recent studies on Crustacea taxonomy and phylogeny. Although the sperm ultrastructure has been carried out in numerous studies, the amount of knowledge on molecular systematic and sperm morphology is far from the Decapoda Brazilian biodiversity, which is estimated in more than 650 species. For instance, less than 10% of this fauna has its spermiomorphology and genetic sequences described a situation that has compromising the conduction of accurate studies on phylogeny, as well as, on the evolution of the reproductive system. Considering that about 50% of this decapod fauna is supposedly found in the São Paulo coastline, we are more than convinced that we have here a promising area to be studied and this motivated us to carry on our efforts in this project.

SUMMARY OF RESULTS TO DATE AND PERSPECTIVES

To achieve our goals on molecular phylogeny, DNA bar coding, spermiotaxonomy and population dynamic, the first sampling expedition along the coast of São Paulo was carried out in a less known area in terms of decapod diversity, i.e. the fauna of São Paulo southern region (Cananeia, Ilha Comprida and Iguape). As a preliminary result, we have obtained at least five new records of decapod for São Paulo region, including an alien species, and one new species, of snapping shrimp. In addition, during the sampling, the key species and genera of some taxa of all decapod groups were obtained and have already been processed in all three directions of our aims. In terms of molecular perspectives, new sequences have been obtained and deposited at the Genbank and are still in current analysis of phylogeny. Regarding spermiotaxonomy, samples have been processed for transmission and scanning electron microscopy and



Calcinus tibicen. Scanning electronic micrographs of spermatophores. A, General morphology of spermatophore, showing ampulla (a) and peduncle (pd). B, C, Detail of ampulla (a) and its suture line (sl). (Source: Amadio & Mantelatto 2009. *J. Crust. Biol.* **29**: 466-475)

different regions of the male reproductive system were chosen for both sperm and spermatophore analysis. On population dynamic, our preliminary results evidences interesting differences in terms of population

profile of some commercial penaeidean shrimps when compared with others at the northern area of São Paulo State.

Due the high complexity of our results, comparative studies with specimens from other Brazilian regions and outside of national boundaries will be essential to complete the major objectives.

Finally, the combination of all these efforts brought up to date the species of decapod crustaceans of the São Paulo coast, endorsed for a genomic library (DNA-bar coding) and a scientific collection of reference with samples available on-line.

MAIN PUBLICATIONS

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Fernando Luis Medina Mantelatto

Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto / Universidade de São Paulo (USP)

Departamento de Biologia
Avenida Bandeirantes, 3.900
CEP 14040-901 – Ribeirão Preto, SP – Brasil

+55-16-3602-3656
flmantel@usp.br