

## ECOLOGICAL PROCESSES AND CONSERVATION OF THE MANGROVE: A REVIEW AT THE CANANÉIA REGION, SÃO PAULO STATE, BRAZIL

Cunha-Lignon Marília<sup>1,2</sup>; Clemente Coelho Jr.<sup>2</sup>; Renato de Almeida<sup>2</sup>; Ricardo Palamar Menghini<sup>2</sup>; Yara Schaeffer-Novelli<sup>2</sup>; Gilberto Cintrón<sup>3</sup> & Farid Dahdouh-Guebas<sup>1,4</sup>

<sup>1</sup> Complexité et Dynamique des Systèmes Tropicaux, Département de Biologie des Organismes, Université Libre de Bruxelles (ULB), CP 169, Avenue F.D. Roosevelt 50, 1050 Brussels, Belgium  
E-mail: [marilia.cunha@ulb.ac](mailto:marilia.cunha@ulb.ac)

<sup>2</sup> Instituto BiomaBrasil, Rua Laboriosa, 80, 05434-060, São Paulo - SP - Brazil

<sup>3</sup> US Fish and Wildlife Service, 4401 N Fairfax Drive Rm 11Q, Arlington, VA, 22203-1622 USA

<sup>4</sup> Biocomplexity Research Focus, c/o Laboratory of General Botany and Nature Management, Mangrove Management Group, Vrije Universiteit Brussel (VUB), Pleinlaan 2, 1050 Brussels, Belgium

Wetlands, including mangroves, perform several functions, besides generating products and services, which have a fundamental importance for the human society. It is possible to manage mangrove areas, making use of opportunities for recreation, tourism, fishing, education and research, without the need of a considerable manipulation of the system. Such management can be done for instance while preserving the flow of material and nutrients that sustain ecosystem production and while maintaining control of the quality of the water. The study of physiographic types could be of help in the comprehension of the large variability of structural development, as a result of the response of mangrove plant species to the innumerable abiotic components that interact in this environment. With the aim of improving the understanding of mangrove vegetation structure dynamics and to help the management of the Cananéia region, located in the South coast of the São Paulo State (25°S), data from the 1980's to present on the structural development of mangrove forests of different physiographic types, were analyzed. The **fringe forests** studied in the region presented a predominance of *Rhizophora mangle* and high structural development due to the high inundation frequency, in stable sites, where there are no important sedimentary processes. On the other hand, fringe forests, located in progradation areas with low tidal energy, were dominated by *Laguncularia racemosa* with low structural development. As a rule, the **riverine forests** are dominated by *R. mangle*, with a high structural development in function of the high inundation frequency and a continuous flow of fresh water, this permitting a larger input of nutrients, oxygen and dissipation of noxious substances from the sediment. **Riverine forests**, located in progradation areas with high river energy, were dominated by *R. mangle* with low structural development and were associated to the smooth cordgrass *Spartina alterniflora*. The **basin forests** were also seen to be dominated by *R. mangle*, presenting, however, reduced structural development in function of the low inundation frequency, a predominantly sandy sediment and low salinity. However, some areas showed to be well developed due to the structural characteristics of the dominant arboreal mangrove species (*Avicennia schaueriana*). The results presented here indicate that variations in the quality and intensity of forcing functions are infinite, the structural variability being limited by the plasticity of the species involved and their capacity to adjust themselves to the environment in which they develop. The main objective of management should be limited to the protection of those processes which act upon the system, and the control of the fulfillment of services. Studies of the different physiographic types, dynamics, zonation patterns, and responses to abiotic characteristics are essential to help to define conservation policies for the mangroves in the Cananéia region.