

Colombia mangroves: recent advances towards their understanding

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Abstract

Throughout the last 14 years researchers at the National University of Colombia in Medellín, have developed several studies on mangrove ecosystems, particularly in San Andrés Island, La Guajira, the Cispatá Bay, the Gulf of Urabá and the Pacific coast of Colombia. They focused on species composition, structure and dynamics and their relationship with the physical environment in different time scales. We have applied remote sensing analysis, the importance of pollen deposited in superficial and deep sediments to understand the coastal vegetation dynamics in the Holocene, dating of sediments with ^{14}C and ^{210}Pb , the establishment of temporary plots and the time-space monitoring, rates of erosion, sedimentation, species recruitment as well as mortality, among other techniques. The expressions of vegetation and the epifauna associated to red mangrove roots in San Andrés Island (including vegetation, and the short term coverage dynamics), pollen of superficial sediments and mangrove vegetation, long-term coverage dynamics, and socio-economic aspects related to Colombian coastal Non Timber Forest Products showed that pollen spectra can be accurately used to describe different mangrove environments, and fossil based palaeoecological reconstructions. Our report on pollen in surface sediments - the first for the Colombian Caribbean - is valuable for further interpretations of marine records, and reconstruction of past environmental and climate changes. In respect to epifaunal communities we showed that geomorphological characteristics, presence or absence of freshwater currents, tides and rainfall mainly, as well as anthropogenic factors can influence their development. Larval dispersion and the proximity to other ecosystems are crucial to population variations, and only some organisms adapted to extreme conditions, settle down and maintain in the area. Our group will undertake more studies in the gulf of Urabá, the coastal vegetation dynamics and the fine interpretation of sea level rise through palynology, as well as conservation biology and carbon dynamics in these ecosystems.

Keywords

dynamics, palynology, coastal ecosystems, Colombia