

## Analyses of the mangrove's recover process in abandoned salt pounds constructed areas, in the Ceará river, Northeast Brazil

A.S. Reis-Neto<sup>1</sup>, M. Cunha-Lignon<sup>2,3</sup>, A.S. Reis Filho<sup>3</sup> & A.J.A. Meireles<sup>5</sup>

<sup>1</sup>PRODEMA, Universidade Federal do Ceará Fortaleza, 60455-900, Brazil. E-mail:

[armandoreisneto@live.com](mailto:armandoreisneto@live.com)

<sup>2</sup>National Institute for Space Reseach-INPE, São José dos Campos (SP) 51512246-970, Brazil. E-mail:

[cunha.lignon@gmail.com](mailto:cunha.lignon@gmail.com)

<sup>3</sup>Université Libre de Bruxelles, 1050, Belgium. E-mail : [marilia.cunha@ulb.ac.br](mailto:marilia.cunha@ulb.ac.br)

<sup>4</sup>Instituto Mauá de Tecnologia-IMT, Chemical Engeneering, São Caetano do Sul-SP 09580-900, Brazil. E-mail:

[armando@leroy.com](mailto:armando@leroy.com)

<sup>5</sup>Universidade Federal do Ceará , Departamento de Geografia, Fortaleza, 60455-900, Brasil. E-mail:

[meireles@ufc.br](mailto:meireles@ufc.br)

### Abstract

The mangroves are among the most productive and biologically important ecosystems in the world supplying unique conditions and services to all tropical coastal system and the population living in their vicinities. In the Ceará River, Northeast Brazil, during the last century, mangrove ecosystems lost extensive areas, due the exploitation of salt pounds. With the decline of this economic activity, the salt pounds have been abandoned, and mangroves recovered part of these areas. The current study focus on how did the mangrove recovered the area of the Ceará river estuary in this last years by analyses of aerial photographs from 1968 and 1980, and Landsat satellite image from 2009, using remote sensing techniques and the open source software gvSIG<sup>®</sup>. Thematic maps were elaborated, showing the temporal mangrove recover and the expansion of the urban area. The space-temporal analyses revealed important anthropogenic changes in the landscape during the last four decades. Semi-structured interviews were used to understand the relations between human local community and mangrove ecosystem. The population that lives near the river suffers the impacts from the degradation of the mangrove area. The inadequate garbage dumping in the river's bank causes the accumulation of waste material, trapped in the mangrove's roots system, deteriorating the environment quality in flood areas. These facts expose the continued human pressures on the mangrove ecosystem and their consequences, reverberating the deficiencies of the urban development process that interfere directly in social welfare of the community and the health of the mangrove ecosystem.

### Keywords

urban development, human pressure, remote sensing, semi-structured interviews, tropical ecosystem