

# Center for Community-Based Resource Management (CBRM)

Natural Resources Institute, University of Manitoba

## CBRM Database

<b>Date:</b>	<b>29/Sept/2014</b>	<b>Entry Number:</b>	<b>1333</b>
<b>Case Study Name:</b>	<b>Seagrass landscape-scale changes in response to disturbance created by the dynamics of barrier-islands: A case study from Ria Formosa (Southern Portugal)</b>		
Authors:	A.H. Cunha, R.P. Santos, A.P. Gaspar, M.F. Bairros		
Document Type:	Journal article		
Year:	2005		
Language:	English		
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Region:	Europe		
Country:	Portugal		
Ecosystem Type:	Estuary and lagoon		
Social Characteristics:	Coastal community		
Scale of Study:	Regional - Local scale.		
Resource Type:	Species conservation		
Type of Initiative:	Conservation		
Community-Based Work:	Environment health and education.		
Keywords:	coastal lagoon; inlet relocation; landscape; Ria Formosa; seagrass; <i>Zostera noltii</i>		

**Summary:**

This study documents long-term changes of a *Zostera noltii* landscape induced by a natural cyclic event in a coastal lagoon. The barrier-islands forming this system are very dynamic with drifting movements controlling ecological patterns and processes occurring in this area. Changes in the areal extent of the *Z. noltii* meadows were assessed using historical aerial photographs from 1940, 1980, 1989, 1996 and 1998. Landscape indices such as total patch area (TA), mean patch size (MPS), number of patches (NP), mean shape coefficient of variation (CV) and landscape fractal dimension (D) were calculated for each year and related to an index of disturbance intensity. The spatial distribution of the *Z. noltii* meadows varied greatly during the studied period and changes observed were related to the disturbance created by the barrier-islands' spatial dynamics. After an artificial inlet relocation the *Z. noltii* area, number of patches, patch mean size and coefficient of variation decreased. The fractal dimension of the *Z. noltii* landscape increased by 50% showing that besides a decrease in total area, number of patches, and patch mean area, patch fragmentation was an important consequence of this anthropogenic disturbance.

Seagrass natural distribution patterns changed in response to natural and human-induced activities. This study emphasizes the importance of the landscape approach and the historical perspective when studying seagrass changes and the importance of taking into consideration long-term changes in seagrass landscapes to avoid confusion between man-induced effects with natural cyclic events.