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**Recovery of benthic nematodes assemblages after a major collapse in seagrass beds of *Zostera noltii*.**

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During 2008, *Zostera noltii* seagrass beds of the Mira estuary (SW coast of Portugal) suffered a total collapse. During 2009 symptoms of early recovery were observed. The availability of pre-collapse data and the sequence of sudden collapse followed by early and gradual recovery create a rare natural experiment on recovery and resilience of seagrass ecosystems.

The principal goal of this study is to assess the evolution and resilience of the benthic nematodes assemblages during the natural recovery of the seagrass beds through analysis of the spatial and seasonal differences in structural and functional characteristics of the communities. The horizontal macroscale (km) and small scale (m) variability will be evaluate. We hypothesize that the new environmental conditions of the early recovery, with sparsely distributed and small-sized seagrass patches, will increase the spatial heterogeneity of nematode communities and significantly affect community diversity, both taxonomic and functional.

The sampling design was follows: Samples were collected in four “occasions”, (June, September, December 2010 and February 2011), at randomly “stations” located over a distance 50 m, at two “sites”, 2km distance. In order to test the hypothesis that the composition of nematodes assemblages changes spatially and seasonally a two–way PERMANOVA analysis was performed.

Mean nematode densities varied between 2 ind.10 cm<sup>-2</sup> and maximum of 4735 ind.10 cm<sup>-2</sup>, both at station B, 89 species were identified. The PCO ordination based on abundance and composition of nematode genera clearly reflected the discrimination of the two sampling sites, and “*Permanova*” analysis showed significant differences across “sites”, and sampling stations, nevertheless no significant differences was observed between “sampling occasions. The increase of spatial heterogeneity was clear identified.

The response of the nematode assemblages after an extreme event as the collapse of the seagrass bed, both in terms of density and diversity, highlight a substantial resilience and recovery potential.

Keywords: Benthic Nematodes, Habitat Loss, Natural recovery, *Zostera noltii* seagrass beds