



XIII Congresso de ECOLOGIA

III International Symposium of Ecology and Evolution

Múltiplas ecologias: evolução e diversidade

08 a 12 de outubro de 2017 • UFV - VIÇOSA | MG

THE MORE, THE BETTER? RELATIONSHIP BETWEEN SPECIES DIVERSITY AND FUNCTIONAL DIVERSITY IN AN ESTUARINE LAGOON

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Tema/Meio de apresenta o: Ecologia de comunidades/Painel

Functional diversity (FD) has emerged as a crucial component of ecological studies. More precisely, FD has allowed researchers to identify priority areas for conservation planning, especially in the face of the current loss of biodiversity that many ecosystems have undergone. Nevertheless, the relationship between the number of species in an ecosystem and its functional diversity is still poorly understood, particularly for estuarine systems in tropical regions. Thus, the present study aimed to identify the relationship between functional diversity and the number of fish species in a tropical estuarine lagoon. Fishes were monthly sampled between November 2013 to October 2014 with a block-net seine in the Munda  estuarine lagoon, Alagoas, Brazil. All specimens collected were taken to the laboratory for identification and measurements: standard length, body height, body width, caudal fin height, caudal peduncle length, caudal peduncle height, eye diameter, mouth height and mouth width. Twelve functional traits related to food acquisition and swimming performance were estimated using the morphological measurements mentioned above. Species diversity was expressed as the number of species (species richness) and the Rao's quadratic entropy index (RaoQ) was used to estimate functional diversity. The relationship between species number and functional diversity was tested by a linear regression. All analyses were carried out in the software R statistics. A total of 8448 individuals, belonging to 39 species and 16 families were collected during the studied period. Species richness was highly correlated to functional diversity ($p < 0.001$, $r^2 = 0.84$). The results found herein show that the current degradation of estuarine habitats, which has resulted in a huge decrease of species diversity, may lead ecosystem to instability as functional diversity is extremely related to species diversity. Therefore, effective conservation planning and management of estuarine ecosystems are extremely necessary to avoid future consequences.

The authors thank the Coordination for the Improvement of Higher Education Personnel (CAPES) for providing grants and scholarships.