12th Panhellenic Symposium of Oceanography & Fisheries

BLUE GROWTH FOR THE ADRIATIC-IONIAN MACROREGION & THE EASTERN MEDITERRANEAN

IONIAN UNIVERSITY, CORFU

30 MAY - 3 JUNE 2018

Photo: Thanos Dailianis | Poster Design: mk@hcmr.gr

Book of Abstracts

PATTERNS OF BIODIVERSTIY AND COMMUNITY ORGANIZATION ACROSS SALINITY GRADIENT IN CORFU ISLAND AQUATIC ECOSYSTEMS (GREECE)

Gjoni V[1*], Mazzotta L[1], Pinna M[1], Marini G[1], Sangiorgio F[1], Vignes F[1], Vasiliou I[2], Papadopouluo E[2], Galavou E[2], Lomis A[2], Chatzicharistou E[2], Kavvadia E[2], Metallinou M[2], Pagkrati E[2], Tzafesta E[2], Ghinis S[2], Basset A[1]

[1] Department of Biological and Environmental Sciences and Technologies, Salento University, Via Monteroni, 73100 Lecce, Italy

[2] Region of Ionian Islands, Theotokou Ioanni, 71, 49100 Corfu, Greece

Key words: macroinvertebrate guilds, Corfu Island, community organization, biodiversity, aquatic ecosystems

Introduction/Aim: The study is focused on functional community organization of the macroinvertebrate guilds in the aquatic ecosystem complexes of the Corfu Island, including the freshwater, lagoon and marine components. The study is drawing implications on energy flows and organization (White et al., 2007)of such ecosystem types extending previous investigations performed on existing data by expanding the knowledge base to functionally of different types of aquatic ecosystems through field experiments (Basset et al. 2008, Arim et al. 2011, Gjoni et al. 2017).

Methods: The study has been performed through synoptic samplings carried out 33 sampling sites at six ecosystem complexes, 3 mainly freshwater and 3 mainly lagoonal ecosystems, including anyway at least the marine component. The leaf-pack techniques were used for the sampling. At each site, macroinvertebrate guild has been analyzed as: i. taxonomic composition and population abundance ii. trophic guilds (according Cummins et al. 2005); and iii. body size spectra.

Results: Overall, the study includes 16.020 individuals belonging to 6 phyla, 9 classes, and 74 lower taxa, 4 main trophic guilds and to 21 body size classes. In terms of community structure, the, taxonomic composition was more similar between lagoon and marine ecosystems than with freshwater ones, while trophic guilds and size spectra compositions were more similar between freshwater and lagoon ecosystems than with marine ones. Finally, the analysis of size density relationships showed significant higher body size specific density of the individuals in lagoon than in freshwater and marine ecosystems.

Main Conclusions: Direct comparison of different aquatic ecosystem categories within ecosystem complexes of the Corfu Island emphasized the body size structure, and the functional one, which is much more conservative/invariant across the salinity gradient, than the taxonomic one, highlighting a community organization hierarchy. Moreover, the data analyses performed have demonstrated high-energy concentration and flow in lagoon ecosystems, than in freshwater and marine ecosystems, extending previous observations to the inter-ecosystem types and inter-dominion comparison.

Acknowledgments: The data used in this study were originally collected as part of the PhD fellowship of Vojsava Gjoni at the University of the Salento, in the contest of the Strategic INTERREG BIG Project.

References:

White EP, Ernest SM, Kerkhoff AJ, Enquist BJ (2007) Relationships between body size and abundance in ecology. Trends in ecology & evolution 22(6): 323-330.

Basset A, Sabetta L, Sangiorgio F, Pinna, et al. (2008) Biodiversity conservation in Mediterranean and Black Sea lagoons: a trait-oriented approach to benthic invertebrate guilds. Aquatic Conservation: Marine and Freshwater Ecosystems 18(S1).

Cummins KW, Merritt RW, Andrade PC (2005) The use of invertebrate functional groups to characterize ecosystem attributes in selected streams and rivers in south Brazil. Studies on Neotropical Fauna and Environment 40(1): 69-89.

Gjoni V, Cozzoli F, Rosati I, Basset A (2017) Size–Density Relationships: a Cross-Community Approach to Benthic Macroinvertebrates in Mediterranean and Black Sea Lagoons. Estuaries and Coasts 40(4): 1142-1158.

Arim M, Berazategui M, Barreneche JM, Ziegler L, Zarucki M, et al. (2011) Determinants of density–body size scaling within food webs and tools for their detection. Advances in Ecological Research 45: 1-39.