Biodiversity differences across marine social-ecological systems

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Problem

Cumulative anthropogenic activities in coastal marine systems (Halpern et al 2008)

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Lack of biodiversity assessment in coastal social-ecological systems (Rissman & Gillon, 2017)

Consequences

Ecosystem depletion

↓ Marine biodiversity

↓ Societies' life quality

Study aim

To answer the question:

Do biodiversity differs between coastal marine social-ecological systems (CMSES)?

Material and methods

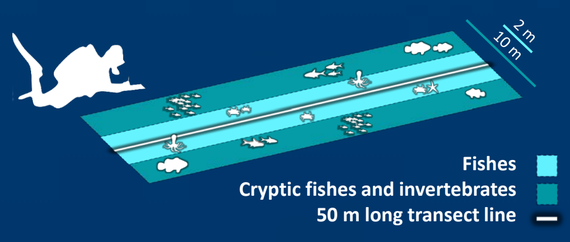
Study site

Mediterranean coast of Andalusia, southern Spain. Six CMSES characterized by different social-ecological characteristics: **Gibraltar Countryside**, **Sun Coast**, **Almuñecar-Almeria**, **Tropical Coast**, **West Almeria** and **Metropoltan Region of Almeria**

Data analysis

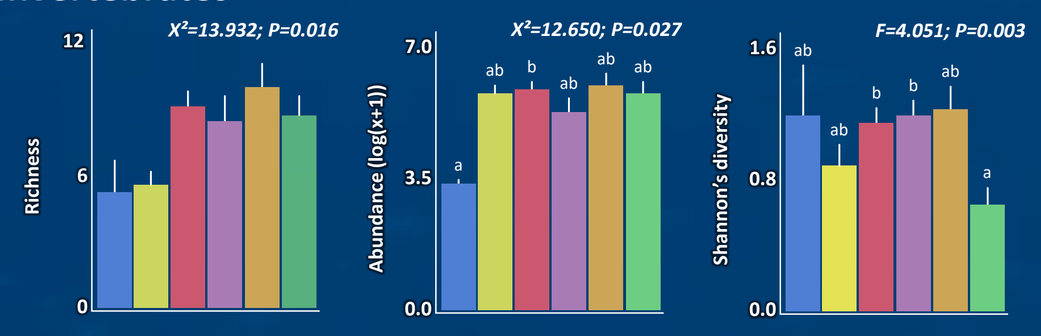
Collection of biological data using the RLS method (Graham & Stuart-Smith, 2014). Nine biodiversity indices were estimated: richness, abundance and Shannon's diversity of invertebrate community, and richness, abundance, Shannon's diversity , functional evenness, functional dispersion and redundancy (RaoQ) of fish community.

To test whether the biodiversity indices varied between CMSES, we performed ANOVA and Kruskal-Wallis tests

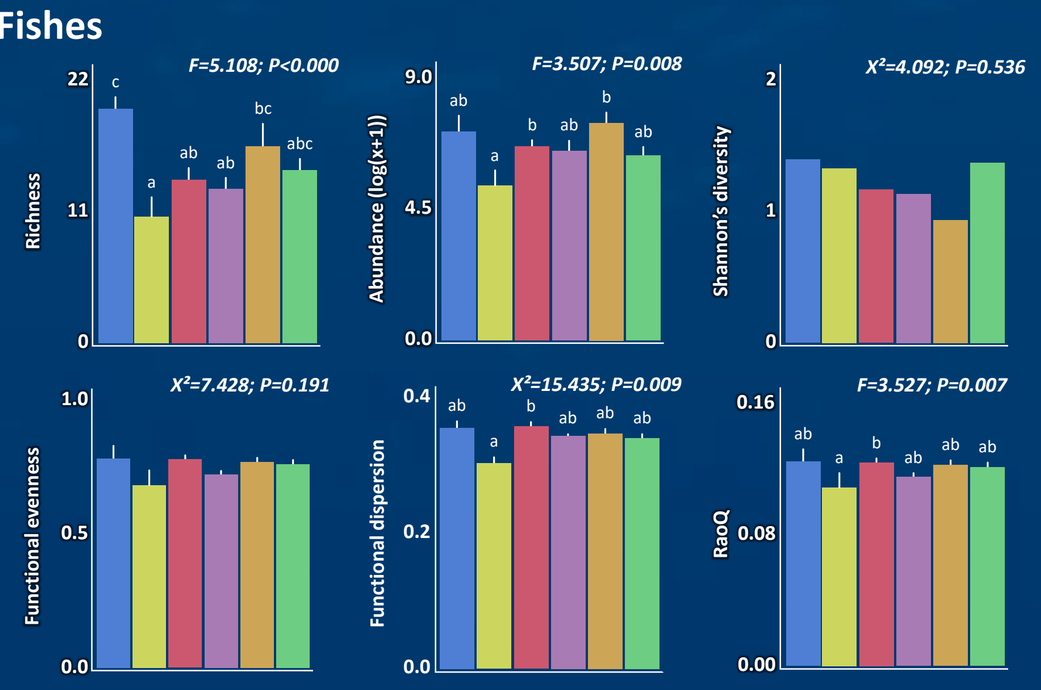


Results

Invertebrates



Fishes



Mean values with error bars of the biodiversity indices quantified for invertebrate community and fish community in each CMSES. Letters (a, b or c) indicate significant differences (Dunn's and multiple comparison tests or pairwise comparison t-test with Bonferroni correction)

Conclusions

Incorporating biodiversity metrics in social-ecological studies can be a promising strategy to design and develop more effective conservation actions in coastal and marine systems

- This research demonstrates that biodiversity of fish and invertebrates varied among CMSES
- We hope to stimulate the interdisciplinary thinking with the aim to improve the marine biodiversity conservation
- Conservation of marine biodiversity should consider the existing biodiversity, social and environmental differences in the Andalusian coastline

Acknowledgment

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