

The performance of trait-based indices in an estuarine environment



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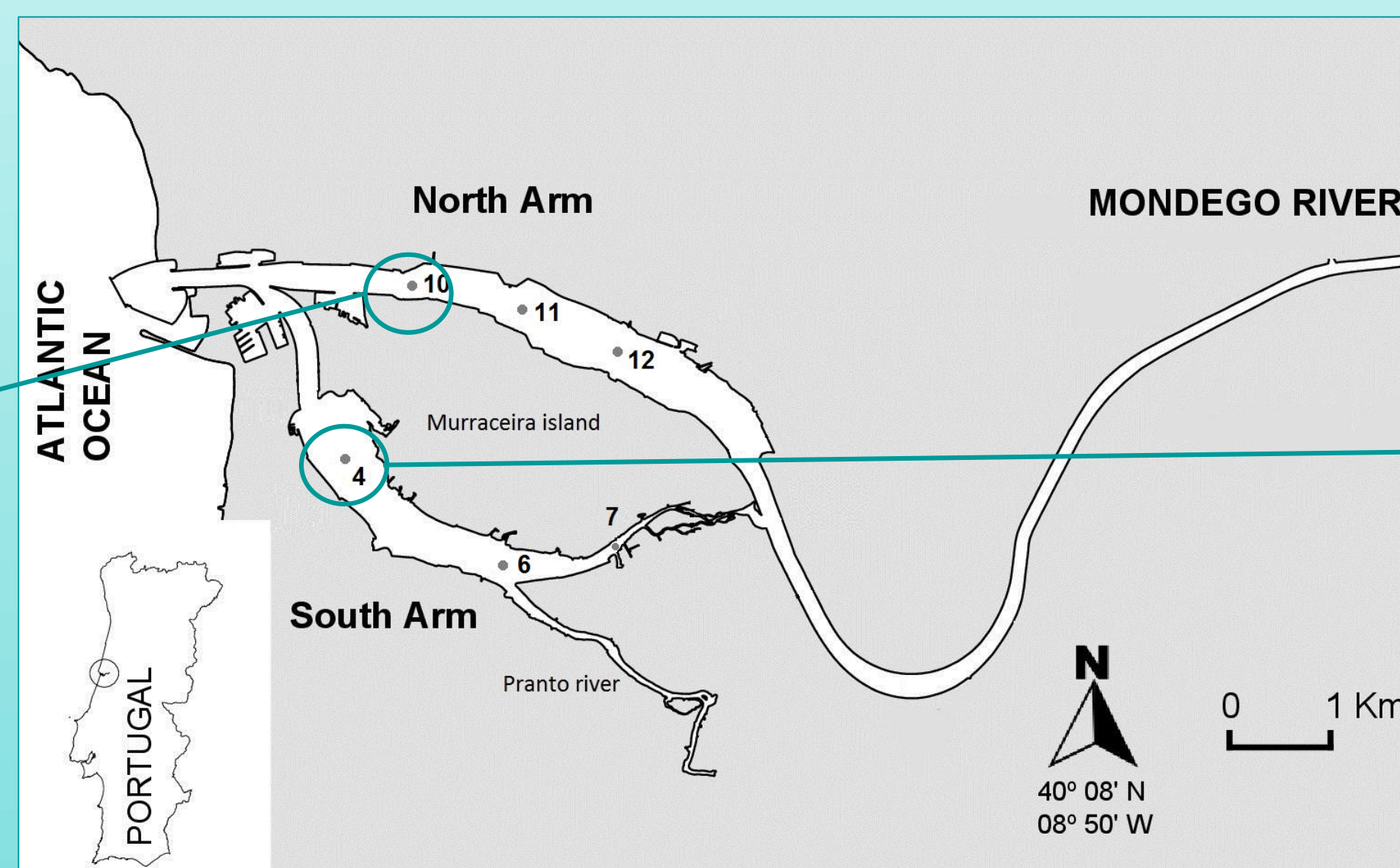
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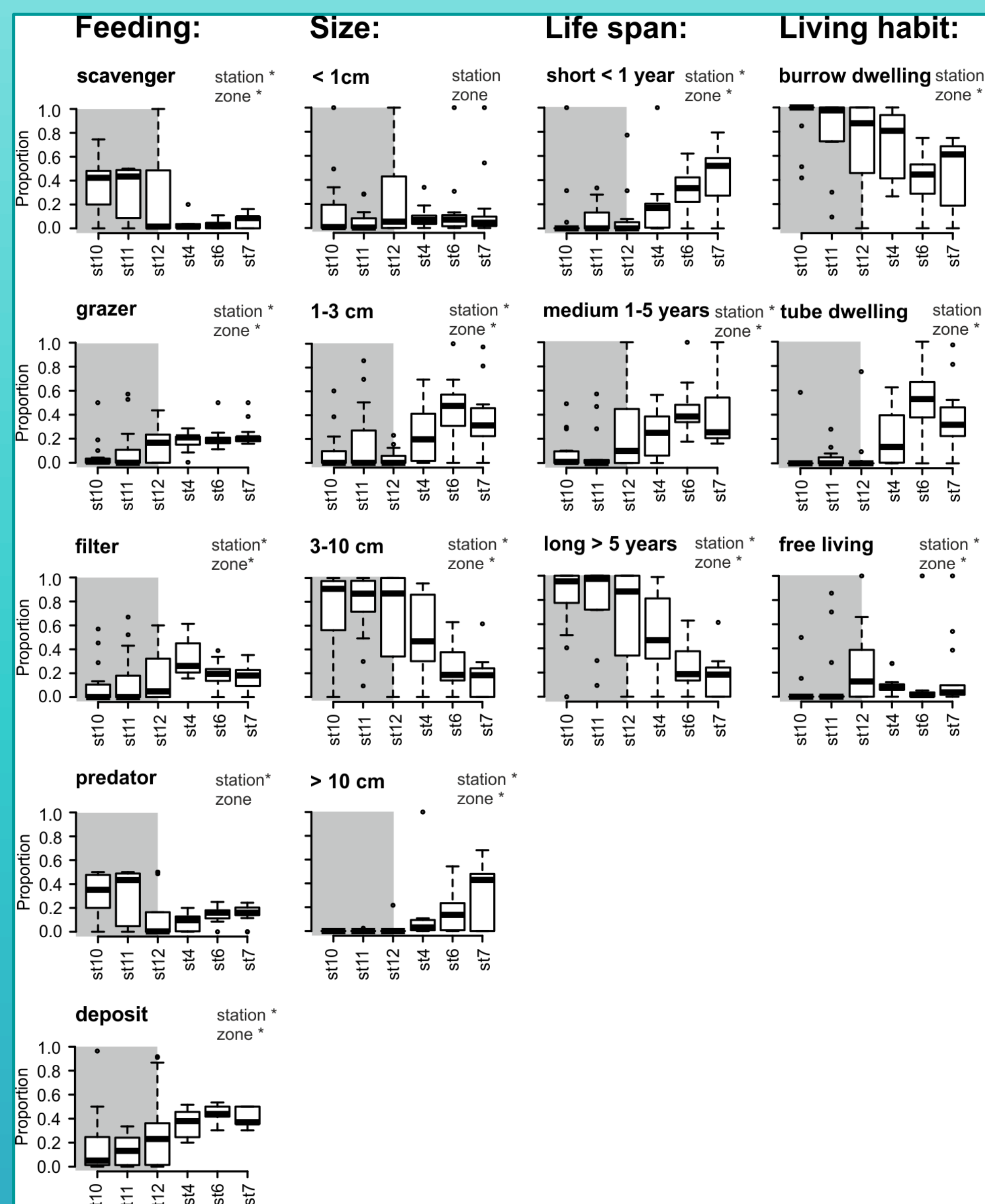
Abstract

The performance of several indices of benthic functioning, based on the traits of estuarine macro-invertebrates, was tested in the lower Mondego estuary (Portugal), whose two arms exhibit different disturbance levels related to hydromorphology. The results showed that some indices responded clearly to this type of disturbance and others not so well. We argue that the community-weighted mean trait values (CWM) in combination with the newly developed SR-FRED index provided the best overall picture of how the benthic communities might have been affected by hydrodynamic disturbance. This study also showed that certain indices should be used with caution when dealing with communities with few and dominant species, such as in estuarine environments.

Study site



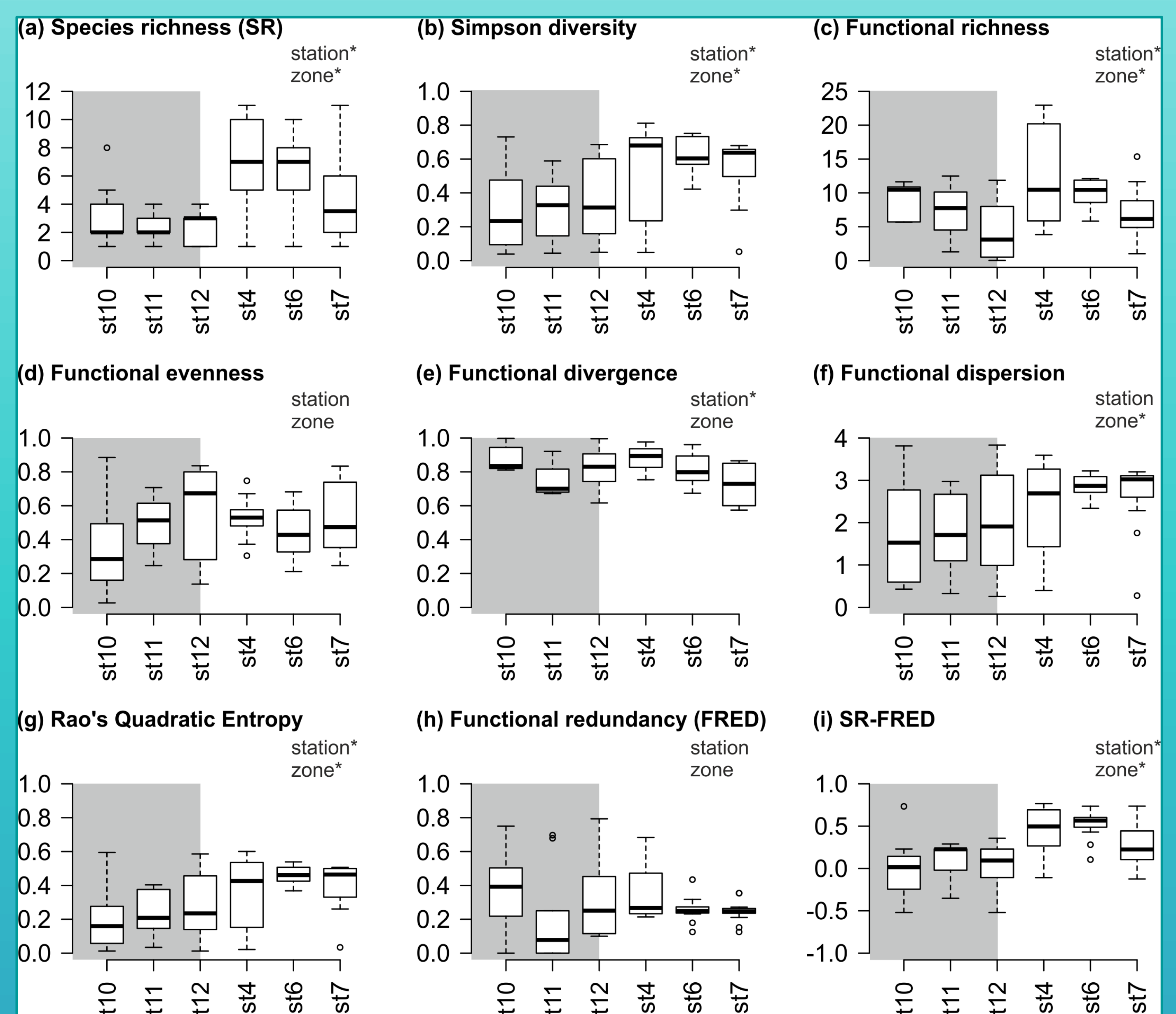
Results



The spatial variability of Community-weighted mean trait values (CWM). The grey background indicates the three stations in the north arm; the white background indicates the three stations in the south arm. * indicates significant differences between the stations and/or the two zones: north and south arm (p-value: ≤ 0.05).

Conclusions

- 'Deposit-feeders' and 'grazers' seem to be the best indicators of hydrodynamic disturbance in this estuarine system, whereas 'size' and in particular 'life-span' are not.
- CWM and the new developed SR-FRED index provided the best overall picture regarding disturbance. (CWM is useful for revealing patterns in the spatial distribution of the traits, while the SR-FRED index makes it possible to combine and synthesize the taxonomic and functional structure of the communities).
- Trait-based indices should be used with caution when dealing with communities with few and dominant species.



The spatial variability of the index values. The grey background indicates the three stations in the north arm; the white background indicates the three stations in the south arm. * indicates significant differences between the stations and/or the two zones: north and south arm (p-value: ≤ 0.05).

Acknowledgements

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