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Title:

Intercalibration of coastal intertidal macroalgae assessment methods in the NE Atlantic region within the European Water Framework Directive context

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Within the European Water Framework Directive (WFD2000/60/EEC), Member States (MSs) have developed different methods for the assessment of waterbodies based on biological quality elements. In order to ensure comparability among MSs, an intercalibration exercise has been implemented to guarantee that all methods provide equivalent quality assessments -Ecological Quality Status (EQS)- for the same level of anthropogenic pressure. In the NE Atlantic region, 10 macroalgae assessment indices, from 7 MSs, were intercalibrated following the Comparability Criteria for setting quality class boundaries. The intercalibration was divided in two biogeographic areas (North, and South) due to differences in environmental conditions, and assessment concepts of the proposed methods. In both cases intercalibration was carried out through the use of a selected common metric (CFR index for the South area, and macroalgae species richness for the North area), and a standardized anthropogenic pressure assessment procedure, based on a semiquantitative scale. A total of 406 data values from sampling sites in the 7 MSs, were included in the analysis. Most of methods showed significant ($p<0.05$) correlation with the common metrics and pressure gradients. Pearson correlation coefficients between methods, and common metrics ranged from 0.71 to 0.93 in the South area, and from 0.63 to 0.87 in the North area. National quality class boundaries were translated to a common metric scale using these linear regressions. Excessive (±0.25 class equivalents) class boundary bias was obtained in four of the five methods proposed in the South area but they were corrected through an iterative boundary adjustment protocol to an acceptable bias level. All methods from the North area obtained an acceptable bias level without any adjustments. As a result of the intercalibration exercise, harmonized EQR boundaries were set for all methods, ensuring the comparability of the quality assessments obtained by different MSs undertaking the WFD in the NEA region.