

ASSESSMENT OF THE ECOLOGICAL STATUS OF SLOVENIAN COASTAL WATERS WITH MACROBENTHIC BIOLOGICAL ELEMENTS

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Abstract

Benthic macrophytes on hard bottom and soft-bottom invertebrates are two important biological elements for the assessment of the ecological status (ES) in coastal waters, according to the European Water Framework Directive (WFD, 2000/60/EC). The aim of the study is to verify whether the monitoring results reconfirm the preliminary evaluation of the ES according to these biological elements. The ES was reconfirmed as *Good*.

Keywords: Monitoring, Coastal Waters, Biodiversity, Bio-Indicators, Adriatic Sea

Introduction

The results of a preliminary assessment of benthic macroalgae in Slovenian coastal waters [1], according to the WFD, led to a selection of 7 sampling sites on hard bottom for the surveillance monitoring programme. In the same way, a preliminary assessment of benthic invertebrates led to a selection of 6 sampling sites on soft bottom. The aim of the study was to verify whether the results of the first two years of monitoring programme confirm the preliminary assessment of benthic elements or indicate different conditions/situation of these organisms in Slovenian coastal waters.

Material and Methods

The Slovenian coastal sea covers the southern part of the Gulf of Trieste. Its coastline is approximately 46.7 km long. It is a shallow semi-enclosed gulf with a maximum depth of ca. 33 m in waters off Piran. During 2007 and 2008, benthic macroalgae were sampled in three water bodies (WB): SI5VT3, SI5VT4 and SI5VT5, while benthic invertebrates were sampled only in two WB: SI5VT3 and SI5VT5. SI5VT4 was characterised as "rocky shallow moderately exposed", while the other two (SI5VT3, SI5VT5) as "sedimentary shallow moderately exposed". All sites were sampled twice: in spring and in late summer. Macroalgae were sampled and their status assessed according to the national methodology, which includes the use of EEI (Ecological Evaluation Index) [2]. Samples of benthic invertebrates were collected and assessed according to the national methodology [3] using *M-AMBI* (Multivariate Azti Marine Biotic Index) [4, 5].

Results and Discussion

During the 2007-2008 period, 5 sampling sites for macroalgae were evaluated as *High*, one as *Good* and one as *Poor* ES. After the application of the spatial scale weighted EEI, the WBs ES was evaluated as *High* in SI5VT4 and as *Good* in SI5VT5, which reconfirm those from the preliminary study [1]. The macroalgae monitoring revealed seasonal differences in species composition and coverage. At almost all sites, the ES was higher in summer than in spring. The ES evaluation of benthic invertebrates in 2007 and 2008 classified both SI5VT3 and SI5VT5 as *Good* ES, which is in accordance with the preliminary ES evaluation. In both years the situation was better in late summer. There are slight discrepancies in the Ecological Quality Ratios (EQRs) for SI5VT3. The overall EQR value for both monitoring years lies on the border between Good and Moderate class (0.62), while in the preliminary study, the EQR value lies in the middle of the EQR range for Good class (0.70). The results of the assessment from 2006 to 2008 show a Good ES of Slovenian coastal waters. Further samplings and studies need to be carried out in order to rise confidence of the obtained results and applied methods.

References

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