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THE ROLE OF THE MARINE BIOLOGY STATION PIRAN (NIB) IN THE PREPARATION OF THE SLOVENIAN MARINE ENVIRONMENT MANAGEMENT PLAN

Martina Orlando Bonaca & Janja Francé

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THE ROLE OF THE MARINE BIOLOGY STATION PIRAN (NIB) IN THE PREPARATION OF THE SLOVENIAN MARINE ENVIRONMENT MANAGEMENT PLAN

*Martina Orlando Bonaca & Janja Francé*¹*

The Water Framework Directive (WFD, 2000/60/EC) is one of the key European documents which establishes a frame for the protection of all waters (inland surface water, groundwater, transitional and coastal waters), being its major issue to prevent further deterioration of water resources and to ensure their improvement if necessary. The overall aim of the WFD is to achieve good ecological status of all waters by 2015. Since 2004, the Marine biology station (MBS) of the National Institute of Biology is taking part of the WFD implementation process, assessing the ecological quality of Slovenian coastal waters up to 1 NM distance from the coastline.

After the initial assessment in 2006, three biological quality elements are being monitored from 2007 onwards: 1) phytoplankton in the water column, 2) macroalgae and 3) benthic invertebrates on the sea floor. In 2007, these three elements were intercalibrated among Mediterranean European counties in order to ensure the comparability of the classification results. Each of these three elements responds differently to environmental pressures, therefore the final assignment of a certain water body (WB) to one of the five ecological quality classes (high, good, moderate, poor and bad) depends on the lowest value among the three elements. The results of the first assessment and the successive monitoring in the period 2007-2010 are very similar, mostly confirming the good if non high ecological status of Slovenian coastal waters. Benthic invertebrates were the most selective biological element

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that determined the ecological quality status in two WBs in which this element was followed: in the Bay of Koper (SI5VT3, candidate to become a heavily modified WB) the ecological quality was moderate to good and in the Bay of Piran the status was good. In the biggest WB extending from Žusterna to Bernardin (SI5VT4), the ecological quality was high, as assessed both with phytoplankton and macroalgae elements. In the WB around the cape Debeli rtič (SI5VT2) the only element assessed was phytoplankton and the resulting ecological quality status was high. However, from 2008 onward, the second intercalibration phase has been in progress, since the results of the first phase showed a number of gaps. Especially were difficulties found in assessing the phytoplankton parameter of chlorophyll *a* biomass. After modifications, which are still in progress, the ecological quality status based on phytoplankton will probably result lower than the one considered presently. These findings stress the importance of assessing more than one biological element in each WB contemporarily, in order to obtain relevant and more meaningful results.

There are still some methodologies for the assessment of the ecological quality of coastal waters that have not been fully developed up to now. There is a need to improve the methodology for the assessment of phytoplankton at the Mediterranean level, and to ensure proper assessment of physico-chemical parameters, that in turn affect the biological ones. Moreover, there is a need to develop new methodologies for the assessment of the ecological status of rocky bottom invertebrates in relation to hydromorphological parameters and for the assessment of the ecological potential of the heavily modified WB of the Bay of Koper.

The MBS is also an active partner in the implementation of another European directive, the Marine Strategy Framework Directive (MSFD, 2008/56/EC), as well as in preparation of the Slovenian Marine Environment Management Plan. This plan, which is closely linked to MSFD, will be the result of the cooperation among the Ministry of environment and spatial planning, the Institute for Water, MBS, the Fisheries Research Institute, the Institute of Occupational Safety, the Institute for Nature Conservation and other minor institutions. The MBS has therefore a strong influence on the documents which will be part of the future legislation. One of the main goals of this cooperation is to achieve and maintain a Good environmental status (GES), based on the guidelines of the MSFD.

Since 2009 the MBP is undertaking the analysis of the principal characteristics, pressures and impacts on Slovenian marine waters, in order to complete, before June 2012, the initial

assessment of the current status of the sea water under the sovereignty of Republic of Slovenia in the Adriatic Marine Sub-Region of the Mediterranean Marine Region. The overview of the main pressures and impacts and the evaluation of some biological elements are also in accordance with the WFD. Starting from these analyses the researchers involved in the project will determine a set of characteristics for good environmental status, on the basis of 11 qualitative descriptors introduced by the MSFD. These descriptors are dealing with: the maintenance of biological diversity, the effects of non-indigenous species, populations of all commercially exploited fish and shellfish, marine food webs, human-induced eutrophication, sea floor integrity, permanent alteration of hydrographical conditions, concentrations of contaminants, contaminants in seafood, marine litter, and underwater noise. The researchers are also developing criteria and methodological standards to ensure consistency and to allow for comparison among Marine Regions and/or Sub-Regions, on the extent to which good environmental status will be achieved. The next step toward the achievement of the good environmental status will be the establishment of a series of environmental targets and associated indicators. In 2014 the preparation of methodologies should be completed, as well as the establishment of monitoring programmes for ongoing assessment, enabling the state of marine waters to be evaluated on a regular basis. Some of the most important biological features (associated with predominant habitat types) that have to be described are phytoplankton and zooplankton communities, including seasonal and geographical variability. Moreover, information on angiosperms, macroalgae, invertebrate bottom fauna, fish populations, marine mammals, seabirds, and reptiles has to be collected.

Unfortunately, the MBS is proceeding slowly with the planned work for the implementation of the two directives dealing with seawaters, since the Ministry of environment and spatial planning has not signed the new contracts for 2011, yet. Since the deadline for the preparation of the initial assessment is spring 2012, such financial problems need to be solved as soon as possible.