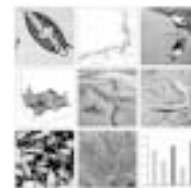


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The Trilateral Monitoring and Assessment Program (TMAP) – Status and Developments



Introduction

The Trilateral Monitoring and Assessment Program (TMAP) is an integral part of the Wadden Sea cooperation between the Netherlands, Germany and Denmark. The TMAP has the aim to provide a scientific assessment of the status of the ecosystem and to assess the status of implementation of the Targets, as laid down in Wadden Sea Plan. It consists of a "Common Package" of monitoring parameters including an associated data handling system adopted in 1997 (see WSNL 1998). Additionally, the TMAP aims at providing a framework for a concomitant research to further optimize the monitoring for future challenges (Kellermann 2000). Four years after the last Trilateral Governmental Conference in Stade 1997, the experiences with the monitoring program is evaluated – what has been achieved and what are the future tasks.

Difficulties and Achievements

The establishment of the TMAP and the implementation of the "Common Package" have faced a lot of difficulties since 1993. Not all of the parameter groups, which have been selected based on issues of concern and scientific hypotheses, could be implemented on a common basis in all three countries. For financial and practical reasons, only the most important parameter groups were included in a common package covering a broad range of basic information directed toward the requirements of the Wadden Sea Plan. However, it is obvious that gaps exist which hamper a comprehensive assessment especially with regard to functional and process related parameters. A current evaluation of the experiences with the Common Package revealed that these gaps also concern monitoring requirements of the Habitat Directive (Natura 2000) and the new Water Framework Directive (TMAG 2001). Possibilities have been investigated how these requirements can be fulfilled in light of limited resources. This task will be the major challenge of the TMAP in the coming years.

In spite of all difficulties, the TMAP has now been established as the common monitoring pro-

gram in all three Wadden Sea countries. It has been proven successful as an integrated, multi-sectoral program also compared to other international programs and entails physico-chemical, morphological, hydrological, biological and human use aspects and covers all Wadden Sea habitats. Common monitoring guidelines are available for the different parameter groups and were implemented in the national programs resulting in an extension or modification of running programs or the establishment of new programs in one or two countries. A complete new program for all three countries is the monitoring of contaminants in bird eggs, which was implemented trilaterally in 1998. It enables an assessment of the biota contaminant level and the possible effects on the breeding success of birds. A trilateral assessment covering the whole Wadden Sea including data of 2000 is currently under preparation (Becker 2001).

The establishment of a harmonized, de-central organized data handling system is a major achievement of the TMAP. The technical concept was developed in 1997 (EU-project Demowad) and is currently being implemented in the three countries. Since 2000, two TMAP data units have been installed in Germany (Schleswig-Holstein/Hamburg and Lower Saxony) and are accessible via the Internet. The technical part of the data bases have been installed for several parameter groups, whereas for others a trilateral solution is under preparation. In the Netherlands and Denmark, the work has started last year and is currently in progress. However, the implementation of the data handling system is still behind schedule, mainly because of lacking or non-continuous financial and personnel support. Further efforts are necessary to develop the existing system into a fully operational data exchange system until the Governmental Conference in October 2001 and to guarantee a steady data flow into the TMAP assessment work in future.

Monitoring of Blue Mussels, Salt Marshes and Dunes

The TMAP is based on common monitoring guidelines, which have been developed in the Demow-

ad Project in 1997 (TMAP Manual, December 1997). Since then, the guidelines have been reviewed and updated continuously. In 2000, two TMAP workshops were held to further develop technical details of the TMAP guidelines and to improve the assessment procedure. In October 2000, the blue mussel workshop developed a trilateral definition of a mussel bed taking into account that several difficulties exist to describe this highly variable habitat in quantitative terms. Furthermore, the application of different remote sensing techniques, intercalibration of field sampling methods and strategies of recruitment monitoring was addressed (TMAP Blue Mussel Workshop, 2000). A follow-up workshop will be held in autumn 2001.

A salt marsh workshop in November 2000 was also successful in developing common criteria for the classification of salt marsh vegetation based on the different existing national classification systems and prepared recommendations concerning future topics for monitoring and research. Unfortunately, Danish salt marsh experts could not attend the workshop because of unforeseen organizational difficulties. Therefore, not all proposals could yet be included in the TMAP guidelines. A second workshop will be organized in November 2001 to test the proposed classification system, discuss experiences with different remote sensing techniques and develop a common assessment procedure with regard to the trilateral targets (TMAP Salt Marsh Workshop 2000).

Concerning monitoring of dunes and beaches, the applicability of the European habitat classification (EUNIS classification) was investigated (Petersen 2001). From about 30 different habitats listed in the EUNIS classification for coastal habitats, 14 habitat types of dunes, dune slacks and beaches can be distinguished in the Wadden Sea. Most of them can easily be identified using aerial photographs.

Making the Monitoring Results Available

During the last years, ten monitoring reports have been published in the "Wadden Sea Ecosystem" series entailing mainly results of already implemented programs like the monitoring of breeding and migratory birds which have been working successfully trilaterally for about 10 years. A comprehensive overview about the state of the Wadden Sea was presented in the QSR 1999. Because the TMAP is still in its implementation phase the QSR revealed several deficiencies with regard to

monitoring which will hopefully being solved after the TMAP is fully operational. The QSR also shows that monitoring, data compilation, scientific analysis, expert assessment and publication of the results, requires two – three years of preparation, an intensive coordination, as well as high personnel and financial efforts. The needed time span is comparable to other international assessment work, e.g., on OSPAR or EU level, but may not be sufficient for managers, scientists or the broader public.

A trilateral assessment covering the whole Wadden Sea requires, as a precondition, a functioning trilateral expert working structure to analyze the data and publish the results in a suitable way, e.g., as reports, brochures, via the Internet or a public information system. The reports on monitoring of breeding and migratory birds are good examples of such a well functioning structure. Also workshops on the trilateral and national level, like the yearly TMAP monitoring workshop in Schleswig-Holstein, makes the TMAP results better available and improves the collaboration between scientists and managers.

It will be a future challenge of the TMAP, to make the monitoring results also available for the whole Wadden Sea – for all topics, in a high quality, as fast as possible, and for all different users.

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