

**Report of the
Planning Group on the Implementation of
the Baltic Sea Regional Project**

**ICES Headquarters
28 March 2003**

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Palægade 2–4 DK–1261 Copenhagen K Denmark

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1 INTRODUCTION

1.1 Opening

This one-day meeting was opened at 0900 on 28 March 2003 by Co-Chairs Jan Thulin (ICES, BSRP Coordinator) and Brian MacKenzie (Denmark, and Chair of Baltic Committee).

1.2 Participants

Participants included representatives of all Baltic Sea countries except Estonia and Lithuania, and some of the Expert Groups of the Baltic Committee. The EuroGOOS project BOOS (Baltic Ocean Observing System) was also represented. The ICES Oceanographer, the Environment and Fishery Advisors, and the GLOBEC Coordinator were also present for parts of the meeting. A full list of participants is at Annex 1.

1.3 Terms of Reference

The terms of reference for this meeting are contained in Council Resolution C.Res 2002/2A:2. This states that:

A Planning Group on Implementation of the Baltic Sea Regional Project [PGIBSRP] (Co-Chairs: B. MacKenzie, Denmark and J. Thulin, BSRP Coordinator) will be established and will meet at ICES Headquarters on 28 March 2003 at GEF-BSRP expense to:

- a) define the responsibilities and roles of ICES Working Groups and Committees relative to the BSRP;
- b) identify ways that work done with and by the BSRP can facilitate achievement of the goals in the ICES Strategic Plan.

It was noted that although this Resolution was sponsored by the Consultative Committee, the Planning Group would report directly to both the Baltic Committee and ACE. Both ACE and the Consultative Committee would consider the conclusions of the meeting at their summer 2003 meetings.

In justifying this Resolution it was noted in particular that the roles and responsibilities of ICES Committees and their Expert Groups were presently undefined relative to the scientific infrastructure being established by BSRP. The Consultative Committee was of the opinion that these roles and responsibilities must be clarified so that value added to existing activities and the expected outputs of BSRP can be maximized.

The Consultative Committee further noted that an improved linkage between scientific activities within physical, chemical and biological oceanography as well as fish stock assessment was a pre-requisite for the ICES Strategic Plan and BSRP goals of developing and implementing a holistic approach to ecosystem and fisheries management in the Baltic. It also considered it necessary to identify how the BSRP can contribute to the ICES Strategic Plan and the improvement of science being conducted by ICES Committees and Working Groups.

In addition, the existence of the BSRP potentially will encourage the Baltic Committee and its Expert Groups to improve their science and the quality of the advice that depends on this science. This benefit addresses numerous other Goals of the Strategic Plan and elements bullets of the ICES Action Plan (e.g., understanding physical, chemical and biological functioning of marine ecosystems; understand and quantify human impacts on marine ecosystems and living resources).

1.4 Agenda

The members agreed to the draft agenda, based on the above Terms of Reference. This Agenda is at Annex 2.

1.5 Additional background to the meeting

Prior to the meeting the Co-Chairs provided background information in order to encourage a comprehensive and representative participation in this meeting, which they considered should include representatives of all Baltic Countries and the Chairs of key Expert Groups whose work is most relevant to the BSRP. They informed that The Baltic Sea Regional Project (BSRP) officially began on March 17, 2003. They identified this project as a major international effort to develop a holistic, integrated management of the Baltic Sea ecosystem in order to ensure its long-term sustainability. The project is designed to improve the research capacity of the eastern Baltic countries (Estonia, Latvia, Lithuania,

Poland and Russia) so that they can contribute fully to ecosystem, including fisheries, monitoring activities within the frameworks of ICES, HELCOM and IBSFC. They asked participants and potential participants to study a short summary of the project prior to coming to the meeting, as well as full documentation, which is available at <http://www.ices.dk/projects/balticsea.asp>. The key work programme documents they asked participants to familiarise themselves with included the PIP and Volume 2 Annex 7 and 10.

In establishing this Planning Group they noted the desire of ICES to develop a strategy for implementing this project and ensuring effective ways for ICES to contribute and benefit from the Project. A key component of the strategy will be the establishment of new Expert Groups under the Baltic Committee whose activities will lead to the development of ecosystem-level assessments, advice and management.

The Co-Chairs anticipated that one of the outputs of this meeting will be recommendations for new Expert Groups that will be considered intersessionally by ACE and the Consultative Committee and presented for approval at the next Statutory Meeting in Tallinn. In preparation for the meeting, they asked participants to consider which new activities and coordination steps are necessary to move towards integrated management and assessment of the Baltic Sea ecosystem.

2 PRESENTATION OF CURRENT STATUS OF THE BSRP

Jan Thulin made a Powerpoint presentation which outlined the current status of the BSRP. This presentation is available from the ICES web site at the address stated above. Jan emphasised his conviction that the role of ICES should focus on the various priority issues that had been formulated as part of the case for the BSRP. These priority issues relate to three of the five modules* of the BSRP, viz., the Productivity Module, Pollution and Ecosystem Health Module and Fish and Fisheries Modules. These modules are the well-known fundamental elements of the Large Marine Ecosystems (LME) concept. Details of these priorities are:

Productivity Module

- Assessment of productivity levels in the adversely affected coastal and offshore ecosystems of the Baltic Sea.
- Application of innovative technologies and buoy systems in environmental assessments.
- Identification of links between land-based nutrient inputs and long-term changes of both productivity and biodiversity in selected areas.

Pollution and Ecosystem Health Module

- Application of ecological quality criteria for the Baltic Sea
- Implementation of COMBINE
- Eutrophication and biological effects
- Chemical pollution and biological effects
- Invasive species and biodiversity
- Multiple marine ecological disturbances (MMED)

Fish and Fisheries Module

- Improvement of assessment and management scheme for main commercial fish stocks in the Baltic Sea.
- Improvement and implementation of assessment and management measures for sustainable exploitation of coastal fish resources.
- Implementation of IBSFC Salmon Action Plan
- Evaluation of the impact of fisheries upon ecosystems of the Baltic Sea

Jan Thulin further explained that the work of these three modules would be coordinated through three “Coordination Centers” addressing each of these Modules, viz:

* The GEF’s LME initiative has five modules: productivity, fish resources and fisheries, pollution and ecosystem health, socioeconomics, and governance.

Productivity – Riga, Latvia
Ecosystem Health – Gdynia, Poland
Fisheries – Riga, Latvia.

Jan Thulin asked the Planning Group to consider whether these three Modules should be the focus of the proposed new Study Groups, and if so, whether the Chairs of these Groups should be selected from among those individuals in key positions at the Coordination Centers. He also informed the Group that a Coordination Center addressing the fourth module (on socioeconomics) would be set up within the BSRP in due course. He suggested that a decision on how best to handle socioeconomics issues within the framework of the proposed new Study Groups should await the establishment of this Coordination Center.

In the ensuing extensive discussion it was noted that the breadth and depth of BSRP activities implied the need for a much wider participation by Baltic scientists in any new ICES activities which addressed the BSRP. It noted in particular a very broad pool of more than 500 marine scientists in the Baltic area, most of whom had little or no knowledge of ICES. Recruitment to any of the new Expert Groups would have to focus on this broad pool, and that is where the funding opportunities offered by BSRP could help this to happen, in particular so far as the BSRP donor countries are concerned.

The Group was satisfied that the above focus was the correct one, noting that module priorities correctly reflected the fact that issues of assessment in an ecosystem framework would be a high priority for quite some time to come. It was important however to consider whether these new requirements should be taken on board in a way that was complementary to the existing structure of ICES (e.g., by absorbing the requirements into existing ICES Expert Groups), or as completely separate structures in ICES.

3 EXPERT GROUP CONTRIBUTIONS AND NEEDS TO/FROM BSRP

The Planning Group discussed in detail the case for the creation of new Expert Groups for the BSRP. Above all, the Group concurred with Jan Thulin's suggestion that his proposed three new Groups should be oriented around the three modules of the BSRP. The Group was of the opinion that the case to integrate these activities into existing ICES groups could not be made for a number of reasons. In particular all of the most appropriate Groups already had overloaded agendas. Furthermore, it would certainly be a requirement for all meetings to be held in the Baltic area if BSRP funding was to be used for the participation of the GEF recipient countries in these activities. The participation of other Baltic Countries would be seen as an "in-kind" contribution to the BSRP. They emphasised the need for the Groups to have integrated and overlapping terms of reference.

The discussion also identified the additional need for an integrating Study Group on modelling issues, including the identification of the data requirements for ecosystem modelling work in the Baltic area.

4 DISCUSSION OF TERMS OF REFERENCE FOR PROPOSED NEW GROUPS

Given the very short time available for this meeting, and given that no outline terms of reference for new Groups had been prepared prior to the meeting, the Planning Group decided to concentrate on reaching an agreement on the general remit for the Groups, with the detailed preparation of the Draft Resolutions being delegated to specific participants who would circulate their drafts to the Group within two weeks of the meeting.

A number of issues were identified as relevant to support the BSRP's goals to enhance the Baltic Sea multispecies/ecosystem management process. In particular the following issues were identified as basic objectives of the new Groups:

- a) Improvement of temporal and spatial coverage of physical oceanographic factors (coarse and fine scale) and assessment of plankton community (pelagic fish growth and feeding).
- b) Improved acoustic estimates of pelagic species abundance and spatial distribution.
- c) GIS data Centre and GIS-database.
- d) Development of environmental-fisheries integrated models for management.
- e) Development of ecosystem health indicators versus indices.
- f) Coordination of joint abundance surveys including stomach sampling (e.g. from market sampling and survey sampling).
- g) Objective to move from single species assessment/management to multispecies assessment/management.

- h) Workshops to develop management models and indicators for sustainable fisheries (both open sea and coastal).
- i) Coordination of Baltic Sea multispecies issues (BSRP, ACFM, ACE, BC, SGMAB, WGBFAS, 6th Framework Task 8).
- j) Promoting the use of Baltic herring and sprat for human consumption (e.g., dioxin issues); EU regulation and exception until 2006).

4.1 Proposed Group to address Fisheries Module issues.

The Chair of the Study Group on Multispecies Assessment in the Baltic (SGMAB) informed the Group that his Group considered that an improved linkage between scientific activities within physical, chemical and biological oceanography as well as fish stock assessment is a pre-requisite not only for the ICES Strategic Plan but also for the BSRP goals of developing and implementing a holistic approach to ecosystem and fisheries management in the Baltic. In order to progress this work, SGMAB needs additional information related to the incorporation of environmental variability and spatial heterogeneity in fish stock modelling in the Baltic and this should be the central remit of the proposed BSRP Group for the Fisheries Module.

The Group agreed with this approach, and asked SGMAB to develop a draft resolution for this new Group, in cooperation with the Latvian Coordination Center for Fisheries which was also represented on SGMAB.

4.2 Proposed Group to address Pollution and Ecosystem Health Module.

Ecosystem-based assessment and management in the Baltic Sea has been identified as an important issue by the BSRP. In particular it has called for an ecosystem health concept for the Baltic Sea which should be developed and offered to managers in order to ensure sustainable management.

The Planning Group is aware that the traditional approach in the assessment and management of the Baltic Sea is currently based mainly on the assessment of water and sediment quality. Thus, the structure and function of the whole Baltic ecosystem as well as ecosystem health is not covered sufficiently. At present, there are not even any appropriate scientific tools available to use in ecosystem health assessment. Consequently when developing the concept of ecosystem health, the Planning Group considered that the following issues should be included in the remit for the Group:

- Identification of natural sub-systems in coastal areas
- Monitoring the biological effects of eutrophication, contamination and fisheries
- Ecological Quality Criteria (EcoQCs) for assessing ecosystem health
- Environmental Reference Systems (including reference values, historical reference points and reference areas)
- Classification lists of endangered species for different Baltic sub-regions
- Update and continue developing existing biotope/habitat classification
- Biological diversity (including xenodiversity/invasive species)
- Nature conservation areas [including management/protection plans]
- Effects of pollution on the functioning and structure of the ecosystem
- Multiple Marine Ecological Disturbances (MMED)

The implementation of this concept will require decision-maker- friendly tools [practical approach] including decision-maker- friendly assessments, therefore it will be necessary to develop a scheme for providing timely and “user friendly” advice to management. This should be done through developments of DPSIR* Indicators/Indices, Quality scoring/classification systems and Ecological Quality Objectives (EcoQOs).

The ecosystem-based approach concept [ecosystem health concept] as well as appropriate management tools should be developed and offered to Baltic Sea management.

* The work of the EEA is built around a conceptual framework known as the DPSIR assessment framework. DPSIR stands for Driving forces, Pressures, States, Impacts and Responses. Particularly useful for policy-makers, DPSIR builds on the existing OECD model and offers a basis for analysing the inter-related factors that impact on the environment.

The Planning Group agreed that these ideas should be incorporated into the remit of the Study Group to address this module. The representative of the Gydria Coordination Center agreed to draft the appropriate resolution, and also agreed to Chair the Group.

4.3 Proposed Group to address Productivity Module

Productivity is one of the five key elements of the ecosystem approach concept on marine systems, hence it represents one of the important work directions in the BSRP. It provides information on the effects of eutrophication for ecosystem-based assessment and, moreover, characterizes the trophic structure of the biological system, allowing conclusions on the carrying capacity and stability of the Baltic Sea ecosystem. In order to meet the requirements of the BSRP Implementation Plan, productivity has to be integrated into ecosystem-based marine management. Therefore this Group is seen as an integral part of the BSRP-related Study Groups.

It was clear that the Productivity Coordination Center of BSRP would be the clear beneficiary of the results of such a Group. It will be required to quantify the role of productivity in an ecosystem-based approach to marine assessment and management, to assess data needs and efficient data collection strategies, as well as to identify existing data on Baltic Sea productivity.

Currently, Baltic Sea productivity-related data are collected at several separate trophic levels (primary production, phytoplankton, meso-zooplankton, macrozoobenthos, phytobenthos, and fish biomass). These data are only rarely interpreted in the context of trophic interactions.

Within the BSRP the current system of productivity data collection will be evaluated, and it could be the role of this Group to undertake that evaluation. In addition indicators have to be developed that allow the following of material and energy flows from producers to consumers, including also abiotic resources necessary to primary producers. The stability of these flows with respect to external disturbances should to be assessable from the indicator system. It will be important that the Group is aware of indicator developments in other parts of ICES and takes heed of the guidelines prepared by ACE.

So far, productivity data have been collected mainly based on organism size, habitat type or taxonomic entity. The Group should analyse existing data with respect to functional groups of organisms, fulfilling specific functions within trophic flows in the Baltic Sea. Gaps where the current data do not cover relevant pathways should be identified by the Group and adaptations to the data collection and analysis strategy should be recommended for implementation by the BSRP.

During the past decades, novel automated techniques for the collection of productivity information have become available, for example automated samplers, environmental data-collecting systems on ships of opportunity, stationary or mobile profiling instrument platforms, automated plankton recorders, and the use of remotely sensed data. The use of these techniques in collecting marine productivity data should be evaluated and the need for unified standards within the Baltic Sea region should be addressed, in particular in partnership with BOOS whose main concern is in the field of operational monitoring systems.

The Planning Group noted that this Group would be the one in particular to attract broad interest as its subject area is very relevant to the interests of a number of Global and Regional Projects such as BOOS, GLOBEC, GEOHAB, and Algaline.

The representative of the Productivity Coordination Center, agreed to take on board the drafting of the terms of reference for this Group, based on the above points, and also identify an appropriate scientist to Chair this Group.

4.4 Proposed Group to address Ecosystem Modelling issues

It is clear that the successful outcome of the BSRP depends much on the successful development and operation of more complete ecosystem models of the Baltic covering the food web from nutrients to zooplankton. In current models the top-down control is truncated and parameterised in terms of mortality. These models are able to deal with eutrophication and HAB issues. Fishery models ignore the bottom-up effects. A first step to link ecosystem models and fish aspects is addressed in larvae drift models, but a lot more work has to be done to develop models that link bottom-up and top-down controls. The Planning Group noted that the Study Group on Modelling of Physical-Biological Interactions (SGPBI) had a very similar goal, and it was therefore very important that this new Group interacts closely with SGPBI in order to benefit from the best available expertise, and to ensure complementary activities. It was also

clear that the work of this Group complements the modelling work of SGMAB, and close association with that Group was also necessary.

The representative of SGPBI undertook to develop the terms of reference of this Group, taking into account the work of this Group, and would also ensure a close working relation between the Groups.

5 RECOMMENDATIONS FOR NEW GROUPS

The Chairs asked those responsible for developing the terms of reference to circulate their drafts to all participants as soon as possible. These would be annexed to this report (see Annexes 3, 4, 5 and 6) as soon as all members have approved them.

6 CLOSE

The Co-Chairs thanked all participants for their interest and hard work, and especially for taking the trouble of travelling to Copenhagen at such short notice.

ANNEX 1: LIST OF PARTICIPANTS

Name	Address	Telephone	Telefax	E-mail
Brian R. MacKenzie Co-Chair	Danish Institute for Fishery Research Charlottenlund Slot DK-2920 Charlottenlund Denmark			brm@dfu.min.dk
Jan Thulin Co-Chair	ICES Palægade 2-4 1261 Copenhagen K Denmark	+45 33 38 67 00	+45 33 93 42 15	jan@ices.dk
Eero Aro	Finnish Game and Fisheries Research Institute P.O. Box 6 FI-00721 Helsinki Finland	+ 358 205751253	+358-205751201	eero.aro@rktl.fi
Eugene Andrulewicz	Sea Fisheries Institute ul. Kollataja 1 PL-81-332 Gdynia Poland	+48 58 620 17 28 ext. 146	+48 58 620 28 31	eugene@mir.gdynia.pl
Andris Andrushaitis	Institute of Aquatic Ecology Latvian University Miera 3 2169 Salaspils Latvia			andris@hydro.edu.lv
Erik Buch	Head of Operational Oceanography Division Danish Meteorological Institute Lyngbyvej 100 2100 Copenhagen Ø Denmark	+45 39 15 75 00/ +45 39 15 72 10	+ 45 39 27 06 84	ebu@dmu.dk
Peter Ernst	Bundesforschungsanstalt f. Fischerei Institut für Ostseefischerei An der Jägerbäk 2 D-18069 Rostock- Marienehe Germany	+49 381 810 352	+49 381 810 445	peter.ernst@ior.bfa-fisch.de
Wolfgang Fennel	Institut für Ostseeforschung Seestrasse 15 D-18119 Warnemünde Germany	+49 381 5197 110	+49 381 5197 114	wolfgang.fennel@io-warnemuende.de
Chris Hopkins	AquaMarine Advisers Granvägen 20 S-265 32 Åstorp Sweden	+46 42 50 528		aquamarine@telia.com
G. Kornilovs	Latvian Fish. Res. Inst. Daugavgrivas Street 8 LV-1007 Riga Latvia			georgs_k@latfri.lv

Name	Address	Telephone	Telefax	E-mail
F.W. Köster	Danish Institute for Fishery Research Charlottenlund Slot DK-2920 Charlottenlund Denmark			fwk@dfu.min.dk
Maris Plikshs	Latvian Fish. Res. Inst. Daugavgrivas Street 8 LV-1007 Riga Latvia			maris@latfri.lv
Harry Dooley	ICES Palægade 2-4 1261 Copenhagen K Denmark	+45 33 38 67 00	+45 33 93 42 15	harry@ices.dk
Valery Feldman	AtlantNIRO 5, Dmitry Donskogo Street 236000 Kaliningrad Russia			feldman@atlant.baltnet.ru
Hans Lassen	ICES Palægade 2-4 1261 Copenhagen K Denmark	+45 33 38 67 00	+45 33 93 42 15	hans@ices.dk
Janet Pawlak	ICES Palægade 2-4 1261 Copenhagen K Denmark	+45 33 38 67 00	+45 33 93 42 15	janet@ices.dk
Keith Brander	ICES Palægade 2-4 1261 Copenhagen K Denmark	+45 33 38 67 00	+45 33 93 42 15	keith@ices.dk

ANNEX 2: AGENDA

- 1) Welcome and Introduction of participants; presentation of meeting Terms of Reference.
- 2) Presentation of current status of Baltic Sea Regional Project.
- 3) Presentation and discussion: participant's responses regarding working group contributions and needs to/from BSRP.
- 4) Discussion of Terms of Reference and how to carry BSRP forward in relation to ICES Strategic Plan and Baltic Committee.
- 5) Proposals and recommendations for new study and working groups.
- 6) Conclusions and wrap up.
- 7) Close of meeting

ANNEX 3: DRAFT RESOLUTION ON FISHERIES MODULE

A **Study Group on Baltic Fish and Fisheries Issues in the BSRP** [SGBFF] (Chair: Maris Plikshs, Latvia) will be established and will meet in Riga, Latvia from 27–29 October 2003 to:

- a) review existing knowledge on environmental processes affecting fish stock dynamics in both the open sea and coastal areas of the Baltic;
- b) determine those oceanographic processes and their temporal and spatial variability in the Baltic that influence the distribution and productivity of the fish, including consideration of open sea-coastal interactions;
- c) integrate the above mentioned processes into enhanced assessment models for commercial fish stocks and new models of coastal fish community structure (in collaboration with SGMAB)

SGFEI will report by 30 November 2003 for the attention of the Baltic Committee.

Supporting information

Priority:	A GEF-World Bank funded project ("Baltic Sea Regional Project" BSRP) on improving the marine ecosystem research infrastructure of eastern Baltic countries started in march 2003 with the ICES Secretariat responsible for hosting component 1, the Large Marine Ecosystem Activities of the project. In order to support these mechanisms and procedures must be put in place in order to incorporate and integrate these new activities into the ICES structure, and provide an interface with existing ICES activities.
Scientific Justification:	An improved linkage between scientific activities within physical, chemical and biological oceanography as well as fish stock assessment is a pre-requisite for the ICES Strategic Plan and BSRP goals of developing and implementing a holistic approach to ecosystem and fisheries management in the Baltic. This Group provides an essential interface with the Study Group on Multispecies Assessments in the Baltic. Its terms of reference are specifically part of the Implementation plan for Component 1 of the BSRP.
Relation to Strategic Plan:	The GEF-BSRP project has the long-term objective to develop the basis for implementation of a holistic approach to management of the Baltic Sea ecosystem. This is also an element of the ICES Integrated Action Plan (Goal 4.11: "Develop the scientific basis for an ecosystem approach to management, including assessments and the provision of scientific advice."). The planning group will start this process. In addition, the BSRP potentially will allow the Baltic Committee and Expert Groups to improve their science and the quality of the advice that depends on this science. This benefit addresses numerous other Goals and bullets of the ICES Strategic Plan (e.g., understanding physical, chemical and biological functioning of marine ecosystems; understand and quantify human impacts on marine ecosystems and living resources).
Resource Requirements:	The BSRP will provide all necessary resources so far as the eastern Baltic countries are concerned.
Participants:	All Baltic countries specifically should provide relevant experts, and also participants from outside of the Baltic region.
Secretariat Facilities:	None
Financial:	Any finance funded Via BSRP
Linkages To Advisory Committees:	ACE, ACFM
Linkages To other Committees or Groups:	SGMAB, WGBIFS, WGBAFS, WGBITS, the other BSRP Study Groups

Linkages to other Organisations	HELCOM, IBSFC
Secretariat Cost Share	BSRP 100%

ANNEX 4: DRAFT RESOLUTION ON ECOSYSTEM HEALTH MODULE

A **Study Group on Baltic Ecosystem Health Issues in support of the BSRP** [SGEH] (Chair: E. Andruliewicz, Poland) will be established and will meet in Gdynia, Poland from 3-5 November 2003 to:

- a) prepare a review of developments regarding ecosystem-based approaches to the monitoring, assessment and management of fisheries and the marine environment, with particular reference to progress in ICES, HELCOM, OSPAR and the North Sea Conference process, keeping in mind the aim of establishing and implementing the ecosystem approach in the Baltic Sea;
- b) further develop the concept of an ecosystem approach particularly adapted to Baltic Sea needs and applications, including at the coastal sub-systems levels, as appropriate for the aims of the BSRP;
- c) elaborate a scheme for the delivery of research and scientific advice for ecosystem-based management in the Baltic Sea area, that is timely and user friendly:
 - i) involving: the development and application of a system of ecological indicators and related reference points reflecting the objectives, constraints and state of key elements of the ecosystem in a coherent picture; and
 - ii) supported by the application of appropriate conservation measures necessary to protect threatened or vulnerable species and habitats.

SGEH will report by 15 December 2003 for the attention of the Baltic Committee.

Supporting information

Priority	Ecosystem-based assessment and management in the Baltic Sea has been identified as an important issue by the Baltic Sea Regional Project (BSRP). In order to meet the requirements of the BSRP PIP (Project Implementation and Procurement Plan), an ecosystem health concept for the Baltic Sea must be developed and offered to managers in order to ensure sustainable management.
Scientific Justification:	<p>The traditional approach in the assessment and management of the Baltic Sea is mainly based mainly on the assessment of water and sediment quality. Thus the structure and function of the whole Baltic ecosystem as well as ecosystem health is not covered sufficiently. At present, there are not even any appropriate scientific tools available to use in ecosystem health assessment.</p> <p>When developing the concept of ecosystem health, the following issues should be included:</p> <ul style="list-style-type: none">• Identification of natural sub-systems in coastal areas• Monitoring the biological effects of eutrophication, contamination and fisheries• Ecological Quality Criteria (EcoQCs) for assessing ecosystem health• Environmental Reference Systems (including reference values, historical reference points and reference areas)• Classification lists of endangered species for different Baltic sub-regions• Update and continue developing existing biotope/habitat classification• Biological diversity (including xenodiversity/invasive species)• Nature conservation areas [including management/protection plans]• Effects of pollution on the functioning and structure of the ecosystem• Multiple Marine Ecological Disturbances (MMED) <p>The implementation of this concept will require decision-maker- friendly tools [practical approach] including decision-maker- friendly assessments; therefore it will be necessary to develop a scheme for providing timely and “user friendly” advice to management. This should be done through developments of DPSIR Indicators/Indices, Quality scoring/classification systems and Ecological Quality Objectives (EcoQOs).</p> <p>The ecosystem-based approach concept [ecosystem health concept] as well as</p>

	appropriate management tools should be developed and offered to Baltic Sea management.
Relation to Strategic Plan:	Scientific objectives: 1c, 2b, 3b, 3e
Resource Requirements:	
Participants:	<p>Participants should be scientists primarily but not exclusively from the Baltic area, with experience in monitoring and assessments. Scientists with a broad knowledge of ecology systems, scientists with a strong interest in socio-economics and its applications)</p> <p>All Baltic countries must be represented.</p> <p>Members of WGPE who overview similar issues in a more global framework should be involved where appropriate.</p>
Secretariat Facilities:	
Financial:	
Linkages to Advisory Committees:	ACE, ACMP. In the consideration of indicator issues, the group will closely follow the guidelines prepared by ACE.
Linkages to other Committees or Groups:	MHC, WGECO, WGMHM, WGEXT, MCWG, WGITMO, SGBOSV
Linkages to other Organisations:	HELCOM, OSPAR, IBSFC, EEA, IMO, IUCN, Agenda 21, BMB
Cost share:	BSRP 100%

ANNEX 5: DRAFT RESOLUTION ON PRODUCTIVITY MODULE

A **Study Group on Baltic Sea Productivity Issues in support of the BSRP** [SGPROD] (Chair: Bärbel Müller-Karulis, Latvia) will be established and will meet in Riga, Latvia from 29 –31 October 2003 to:

- a) summarise the evidence for links between land-based nutrients inputs and long-term changes of both productivity and biodiversity in eutrophied areas of the Baltic Sea;
- b) commence development of a system of indicators that characterize productivity at different trophic levels in the Baltic Sea that are important to ecosystem-based management;
- c) establish an inventory of available productivity data and characterize their use;
- d) identify information gaps along important trophic transfers in the Baltic Sea ecosystem;
- e) study the feasibility and efficiency of automated methods for productivity data collection (e.g. satellite imagery, ships of opportunity, profiling instrument platforms etc.), in collaboration with BOOS;
- f) recommend measures to adapt the existing measurement programmes to improve the assessment of Baltic Sea productivity within the framework of ecosystem-based marine management.

SGPROD will report by 15 November 2003 for the attention of the Baltic Committee

Supporting information

Priority	Productivity is one of the four key elements of the ecosystem approach concept on marine systems; hence it represents one of the important work directions in the Baltic Sea Regional Project (BSRP). It provides information on the effects of eutrophication for ecosystem-based assessment and, moreover, characterizes the trophic structure of the biological system, allowing conclusions on the carrying capacity and stability of the Baltic Sea ecosystem. In order to meet the requirements of the BSRP Project Implementation Plan, productivity has to be integrated into ecosystem-based marine management.
Scientific Justification:	<p>The Study group will provide scientific advice to the Productivity Coordination Centre, Component 1 of BSRP, in order to establish the role of productivity in an ecosystem-based approach to marine assessment and management, to assess data needs and efficient data collection strategies, as well as to identify existing data on Baltic Sea productivity.</p> <p>Currently, Baltic Sea productivity-related data are collected at several separate trophic levels (primary production, phytoplankton, meso-zooplankton, macrozoobenthos, phytobenthos, and fish biomass). These data are only rarely interpreted in the context of trophic interactions.</p> <p>Within the Baltic Sea Regional Project (BSRP) the current system of productivity data collection should be evaluated. Indicators have to be developed that allow following material and energy flows from producers to consumers, including also abiotic resources necessary to primary producers. The stability of these flows with respect to external disturbances should to be assessable from the indicator system.</p> <p>So far, productivity data have been collected mainly based on organism size, habitat type or taxonomic entity. The existing data should be analysed with respect to functional groups of organisms, fulfilling specific functions within trophic flows in the Baltic Sea. Gaps where the current data do not cover relevant pathways should be identified and adaptations to the data collection and analysis strategy should be recommended.</p> <p>During the past decades, novel automated techniques for the collection of productivity information have become available, for example automated samplers, environmental data-collecting systems on ships of opportunity, stationary or mobile profiling instrument platforms, automated plankton recorders, and the use of remotely sensed data. The use of these techniques in collecting marine productivity data should be evaluated and the need for unified standards within the Baltic Sea region should be addressed.</p> <p>The Baltic Sea looks back on a long tradition of environmental monitoring. Existing measurement programs therefore benefit from long-term data series and detailed scientific knowledge of the sub-area sampled. Adaptations towards a</p>

	more ecosystem-based approach to Baltic Sea management should therefore strongly be based on the existing measurement programs.
Relation to Strategic Plan:	<p>Objective of the SG is directly related to ICES SP Goal 1., strategic activities: “describe, understand, and quantify the state and variability of the marine environment in terms of its physical, chemical, and biological processes”, and “modernize technologies and sampling designs for collecting, measuring, and enumerating marine organisms, and improve the precision and accuracy of resource survey”, and</p> <p>Goal 2, strategic activity: “evaluate the ecosystem consequences of contaminants and eutrophication”.</p> <p>Proposed SG will also contribute to ICES SP Goal 4, strategic activities: “maintain and enhance access to the best scientific expertise relevant to advisory needs”, and “improve the basis for assessment of environmental conditions, and the status and outlook of marine ecosystems”.</p> <p>By collaboration with relevant international programmes to develop integrated approaches to marine science in regional seas, making ICES expertise accessible to countries in transition, coordination of monitoring and data management programmes, and establishing arrangements for gathering broad input going beyond the organizations that have traditionally had an interest in ICES, SP will also facilitate achieving of ICES SP Goals 5 and 7.</p>
Resource Requirements:	None
Participants:	<p>Participants should be scientists primarily but not exclusively from the Baltic area, with experience in productivity issues.</p> <p>All Baltic countries must be represented.</p> <p>Members of WGPE who overview similar issues in a more global framework should be involved where appropriate.</p>
Secretariat Facilities:	None
Financial:	Costs to be met by BSRP
Linkages to Advisory Committees:	ACE, ACME. In the consideration of indicator issues, the group will closely follow the guidelines prepared by ACE.
Linkages to other Committees or Groups:	BEWG, SGG00S, PGIBSRP(?), WGMDM, WGPE, WGSaEM, WGZE, the other BSRP Study Groups
Linkages to other Organisations:	HELCOM
Secretariat Cost share:	BSRP 100%

ANNEX 6: DRAFT RESOLUTION ON ECOSYSTEM MODELLING

A **Study Group on Baltic Ecosystem Model Issues in support of the BSRP [SGBEM]** (Chair: Wolfgang Fennel, Germany) will be established and will meet in Warnemuende, Germany from 17-19 November 2003 to:

- a) analyse the scientific basis of ecosystem and fishery models of the Baltic and explore possible connections of them in future generations of Baltic Sea models;
- b) define needs for data to initialise and validate models and identify gaps in process descriptions to stimulate targeted measurements;
- c) recommend variables included in the BSRP – monitoring to support future modelling activities.

SGFEI will report by 15 December 2003 for the attention of the Baltic Committee

Supporting Information

Priority:	The BSRP aims at improvement of infrastructure for science driven monitoring. The data are needed for assessment and modelling. To support future generations of models of the Baltic Sea the requirements for data set needs to be defined in order to make best use of the invested funds.
Scientific justification	Ecosystem models of the Baltic covering the food web from nutrients to zooplankton. The top down control is truncated and parameterised in terms of mortality. These models are able to deal with eutrophication and HAB issues. Fishery models ignore widely the bottom up effects. A first step to link ecosystem models and fish aspects is addressed in larvae drift models. Future generation of models can be envisaged which link bottom up and top down controls.
Relation to Strategic Plan	The expected new generations of Baltic Sea model addresses the goal of better understanding physical chemical and biological functioning of the marine ecosystem, understanding and quantifying human impacts on the marine ecosystem and living resources. Ultimately the anticipated models provide a scientific basis for improved quality of advice.
Resource requirements:	The BSRP will provide all necessary resources so far as the eastern Baltic countries are concerned.
Participants:	Participants should be scientists primarily but not exclusively from the Baltic area, with experience in modelling ecosystems or fish stock dynamics, and scientists with strong interest to interact with modelling. All Baltic Countries must be represented Members of SGPBI who overview similar issues in a more global framework should be involved where appropriate.
Secretariat	N/a
Financial:	Via BSRP as necessary
Linkage to advisory committees	ACE
Linkage to other Committees or Groups	Strong linkage to the SGPBI SG for implementation of the Baltic GEOHAB, the other BSRP Study Groups
Linkage to other organisations	
Secretariat Cost Share	BSRP: 100%