Theme Sessions proposals for ASC 2010

Proposal originates from:	Theme Session	Conveners	Linked to EG/Committee	Status/notes
Proposed by WGPBI	Community level analyses and models	Ken Haste Andersen (Denmark) and Julia Blanchard (UK)	SSGEF/WGPBI	
	Three dimensional models and plankton: processes, scenarios and forecasts	Thomas Neumann (Germany) and Joe Silke (Ireland)	SSGEF	
Proposal for 2009 ASC updated with new title, description, conveners in line with SCICOM Strategy	Ecological response of microbial plankton to global change processes in ocean basins, shelf seas and coastal zones	William Li (Canada), Xosé Anxelu G. Morán (Spain), Philippe Lebaron (France)	SSGEF - Originates from PGPYME and submitted by William Li via email 4 August 2009	
Originally proposed for 2009, transferred to 2010	Evolution in the ocean: a missing perspective in fisheries science	Christian Jørgensen (Norway), Erin Dunlop (Austria), Esben Moland Olsen (Norway)	SSGHIE	Comment from WGPBI Co-Chair that there might be overlap with "Fisheries-induced adaptive changes"
Proposed by WGPBI, 2008	Operational Oceanography for Fisheries and Environmental Applications	Helge Sagen (Norway), Barbara Berx (UK), Dave Brickman (Canada)	WGPBI (SSGEF/SSGESST)	
Proposed by WGPBI	Combining spatially-explicit models of lower and upper trophic levels: integration and prediction in the context of global change	Pierre Petitgas (France), Bernard Megrey (USA), Myron A. Peck (Germany) Kenneth Rose (USA),	WGPBI and WGLESP (SSGEF)	Updated version submitted after WGPBI meeting.
Proposed by WGHABD,	Harmful Algal Blooms in the Baltic Sea	Bengt Karlson (Sweden), Emil Vahtera (USA)	WGHABD (SSGRSP/SSGEF)	Updated version submitted August09
Proposed during ASC 2008	North Atlantic Ecosystems: Basin-scale Analysis, Synthesis and Modelling	Roger Harris (UK), Peter Wiebe (USA), Erica Head (Canada)	WGZE/ SSGEF	Updated.
Proposed by F. Colijn and Gerd Kraus	"Economy, Ecology and Marine Spatial Planning Integration of Multiple Uses". Use of marine habitats (e.g. North Sea, Baltic Sea) for industrial purposes (e.g. wind parks), its effects on nature. Risks and chances	Usula Siebert, Stefan Garthe (Germany), (NN)	SSGHIE/SSGSUE	

Proposal originates from:	Theme Session	Conveners	Linked to EG/Committee	Status/notes
	Ecosystem role of phytobenthos assemblages in ICES waters	Hasse Kautsky (Sweden), Angel Borja (Spain), Inka Bartsch (Germany)	BEWG (SSGEF)	Submitted by email on 4 September 2008. Preference for having this TS in 2010. Conveners are not available in 2009.
	The risk of failing in integrated coastal zone management	Roland Cormier (Can), Beatriz Morales-Nin (Spain), Josianne Støttrup (Denmark)	WGICZM (SSGSUE)	
Proposed by John Pope	Standing on the Shoulders of the Giants: The living legacy of the work of Rodney Jones	John Pope (Norway), Daniel Pauly (Canada), and Steven Holmes (UK)	SSGEF	
Proposed by SIMWG08	Life-history, ecology and population structure of the European sea bass (Dicentrarchus labrax) in a changing ocean	Stefano Mariani (Ireland), Mike Pawson (UK), and Filip Volckaert (Belgium)	SSGEF	Conveners will consider a workshop since timing in 2009 is important
Proposed during ASC08	Results Based Management of Fisheries	Larence Kell, Sakari Kuikka and Doug Wilson	SSGSUE	
Proposed during ASC08	Fisheries-induced adaptive changes and their consequences: why should we care, and what can we do?	Mikko Heino (Norway), Ulf Dieckmann (Austria), Adrian Rijnsdorp (Netherlands)	SSGHIE	Overlap with "Evolution in the ocean Community-level"?
Proposed during ASC08	Risk management and the burden of proof	Anthony Charles, Doug Wilson, Poul Degnbol	SSGSUE	
Proposed duirng ASC08	Linking the history to the present : understanding the history of fish, fisheries and management	Andy Rosenberg, Martin Pastoors, Henn Ojaveer, Max Cardinale, Bo Poulsen	SSGSUE	
Proposed during ASC08	Causes and variation in natural mortality in Fish	Dave Reddin (Canada), Dan Dupliaea (Canada), Niels Hintzen (Netherlands)	SSGEF	
Proposed during ASC08 by Mark Tasker (UK)	Fisheries certification – is it any use?	NN	ACOM / SSGSUE	Conveners have been identified at the ASC 2009, I have been promised an updated version very soon!
	Upwelling events, coastal-offshore exchange and links to biogeochemical processes in various parts of the ocean	Kai Myrberg (Finland), Andreas Lehmann (Germany), Tom Anderson (UK)	SSGEF	
Proposed by WGFTFB	Elasmobranch Fisheries: Developments in stock assessment, technical mitigation and management measures	Dominic Rihan (Ireland); Jim Ellis (UK); Henk Heessen (The Netherlands)	WGFTFB and WGEF SSGESST/SSGSUE	

Proposal originates from:	Theme Session	Conveners	Linked to EG/Committee	Status/notes
	Applications of Optical and image based technologies in the ecosystem approach to fisheries management	Eirik Tenningen (Norway) and Bill Michaels (USA).	WGFAST (SSGESST)	
Proposed during ASC 2008	Quantifying all fishing mortality – putting the pieces together	Philip MacMullen, Ellen Kenchington**, Coby Needdle/Nick D?	SSGHIE	
	Monitoring biological effects and contaminants in the marine environment: where do we go from here?	John Thain (United Kingdom), Catherine Couillard (Canada), Dick Vethaak (The Netherlands).	SSGHIE	Was on the reserve list for 2009. SCICOM decided to transfer for consideration for the ASC 2010.
	Evolution of Community Interactions: Answering the Call for Management and Advice	Mike St. John, University of Hamburg, Germany, and Laurie Kell, CEFAS, England	SSGSUE	
ASC 2007	Methods to describe changes, patterns and relationships in fisheries and environmental data	Carmen Fernandes (Spain), C. Needle (UK), M.-J. Rochet (France)	SSGHIE	
	Ichthyoplankton Surveys – value added beyond assessment	Cindy van Damme (The Netherlands), Matthias Kloppmann (Germany), Steve Milligan (UK)	SSGESST	Updated
Proposed by BEWG09	Benthic indicators: responding to different human pressures and assessing integrative quality status	Ángel Borja (Spain), Daniel Dauer (USA) and Antoine Grémare (France)	BEWG (SSGHIE)	
Proposed by IGSG	ICES and the Ocean Observing Community: Making Tools, Observations, and Products in Support of Marine Management	To be determined.	IGSG (J. Hare), WGOH, WGOOFE, WKOOP (SSGESST)	Tentative title. Conveners to be determined.
Proposed by WGOH	The Arctic Ocean – North Atlantic connection – a vital, and fatal link in the Atlantic meridional circulation.	Bert Rudels (Finland), Robert Pickart (USA), Hendrick van Aken (the Netherlands), Kjell-Arne Mork (Norway).	WGOH (SSGEF)	

Proposal originates from:	Theme Session	Conveners	Linked to EG/Committee	Status/notes
Proposed by WGPBI and WGHABD	Physics and biology in modelling harmful algal blooms (HABs): validation and application for forecasting and climate change	Donald M. Anderson (USA), Geneviève Lacroix (Belgium)	SSGEF	
Proposed by SGPOT	Fish behaviour and Low Impact Fuel Efficient (LIFE) fishing gears	Bjarti Thomson (Faroe Islands), Svein Løkkeborg (Norway; not confirmed), and Michael Pol (USA).	SSGESST	Updated 7 September '09
WGDIM	Data for the Masses: Recent advances in the application of Marine Data and Information Management	Bernard Megrey (PICES TCODE, USA), Neil Holdsworth (ICES DC, Denmark), Edward Vanden Berghe (OBIS, USA)	WGDIM and the PICES Technical Committee on Data Exchange propose a Theme Session for the 2010 Annual Science Conference	Submitted on 6 August '09.
SGBIODIV	Marine biodiversity: have we halted its loss by 2010 and what do we need to do now?	Jake Rice (Canada) and Heye Rumohr, (Germany)	SGBIODIV (SSGSUE)	Building on the theme session entitled 'Marine biodiversity: a fish and fisheries perspective', convened at the 2007 ASC in Helsinki

Proposal originates from:	Theme Session	Conveners	Linked to EG/Committee	Status/notes
Contacts: psnelgro@mun.ca, c.heip@nioo.knaw.nl, thomas.noji@noaa.gov	Biodiversity Science for Ecosystem-Based Management and Policy	Paul Snelgrove (Canada), Carlo Heip (Netherlands), Thomas Noji (USA)		Comment from Tom Noji: There is strong overlap with the proposal sent (more recently) by Jake and Heye. Personally I think it might be worthwhile having two related sessions in 2010 on biodiversity. It might be worthwhile considering a session focused more on biodiversity science (the attached proposal could be adjusted to accommodate that) and a second session linking the science to policy and mgt (Jake and Heye might be willing to reduce the scope of theirs). OR it might be be better to have one likely very large session covering the whole thing but schedule the talks, as suggested above. But then we would be faced with a situation of too many conveners.
Submitted by Darlene Smith, 14 August 2009	Environmental Sustainability of Aquaculture Activities in Coastal Zones	Karin K. Boxaspen (Norway), Ingrid Burgetz (Canada), Einar Dahl (Norway).	SSGHIE/SSGSUE	
Submitted by Erik Olsen, IMR, Norway, on 1 September.	MPAs in heavily exploited cold water regions of the continental shelf	Erik Olsen (Norway), Susanne McDermott (USA), Dvora Hart (USA).	SSGSUE	NOAA (USA) and IMR(Norway): propose a Theme Session for the 2010 Annual Science Conference.
Submitted by email, 10 September	Global change and marine bioinvasions	Henn Ojaveer (Estonia), Stephan Gollasch (Germany) and NN (preferably from the North America)	WGITMO, WGBOSV (SSGEF, SSGHIE, ACOM)	

Proposal originates from:	Theme Session	Conveners	Linked to EG/Committee	Status/notes
Submitted by Pauline Kamermans, WGMASC Chair by email, 10 September and updated on 20 September	Marine Spatial Planning for Multiple Uses of Marine Wind Farms	Barry Costa-Pierce (USA), Bela H. Buck (Germany), Gesche Krause (Germany), Flemming Möhlenberg (Denmark), Edward Black (Canada)		
Received by email on 17 September	Strengthening the links between marine fisheries science and fisheries management..	John Lock (UK), Maurice Heral (France)	SSGSUE	
Proposed by J. Populus, France, 18 September	Habitat mapping for better assessment and monitoring of our seas	Jacques Populus (France) and Roger Coggan (UK)	SSGSUE	
Proposed by SSICC (former SGCC)	Joint ICES/PICES Theme Sessions on “Responses to climate variability: comparison of northern hemisphere marine ecosystems”	Jürgen Alheit (Germany), Harald Loeng (Norway), NN (PICES), NN (PICES)	SSGEF	

Theme Session Descriptions

Title: Community level analyses and models

Conveners: Ken Haste Andersen (Denmark) and Julia Blanchard (UK)

Rationale: In recent years there has been an increase in focus on changes taking place in an ecosystem as a whole as a response to fishing, climate change or other types of anthropogenic forcing. These perturbations of one part of the system can lead to system-wide effects, like trophic cascades, changes in stability and regime shifts. Recent progress in size- and trait-based models of marine ecosystem and new initiatives into developing multi-species simulation models for specific ecosystems lends hope to throw light on the mechanisms behind system-wide changes. This session will bring together analysis of community-wide patterns and processes with ecosystem models to form a synthesis of our current understand of the dynamics of the marine ecosystem as a whole.

Title: Three dimensional models and plankton: processes, scenarios and forecasts

Conveners: Thomas Neumann (Germany), and Joe Silke (Ireland)

Rationale: Coupled models of the ocean circulation and plankton continue to improve their representation of the spatial and temporal variability of the marine environment. These models provide a solid basis for describing the current state of the ocean and predicting future states. Future challenges include improving the process detail at very small scales, representing how the diversity of the plankton provides flexibility of the response to external forcing, representing benthic pelagic coupling, and using data assimilation to improve short term predictability. Presentations are encouraged on the following topics addressing model parameterization, the use of coupled models for exploring climate change and nutrient load scenarios and the operational forecasting of algal blooms and larval growth and condition.

Title: Ecological response of microbial plankton to global change processes in ocean basins, shelf seas and coastal zones

Conveners: William Li (Canada), Xosé Anxelu G. Morán (Spain), Philippe Lebaron (France)

Description: Microbial plankton which comprise unicellular algae, bacteria, archaea and protists are sensitive to climate change, ocean acidification, eutrophication, and other environmental pressures. These systemic pressures act at scales of space and time that are much larger than those relevant to individual unicells. Thus, local and contemporary observations of microbial populations and communities must be made extensive in order to discern ecological response to systemic change. Comparative analysis of long term time series observations across ecosystems lays a strong empirical foundation for understanding patterns of global ecological change.

Across ocean basins, shelf seas and coastal zones, papers are welcome on the following topics:

- Time series observations of prokaryotic and eukaryotic microbial plankton at any level of the genealogical hierarchy (e.g. genes, organisms, species, monophyla) or of the ecological hierarchy (e.g. macromolecules, organisms, populations, functional groups, communities).
- Propagation of ecological signals (abundance, productivity, diversity) through bottom-up forcing of microbes or top-down cascades from higher trophic levels, including abrupt state transitions (regime shifts).
- Conceptual, mathematical, statistical and modelling approaches that serve to elucidate linkages between environmental drivers and microbial responders.

Title: Evolution in the ocean: a missing perspective in fisheries science? (OCC/LRC)

Conveners: Christian Jørgensen (Department of Biology, University of Bergen, Norway), Erin Dunlop (Adaptive Dynamics Network, International Institute for Applied Systems Analysis, Laxenburg, Austria) and Esben Moland Olsen (Centre for Ecological and Evolutionary Synthesis, University of Oslo, Norway)

Description: Human intervention is a dominating force in marine ecosystems: climate change, pollution, and harvest are changing the environment at unprecedented rates. Ecology and evolution operate in concert, and both perspectives are often necessary to describe changes that are qualitative as well as quantitative. As an example, an increasing number of studies suggest that fisheries not only affect the numbers of fish, but that the mortality imposed by fisheries also has consequences for life history traits, phenology, distribution, and behaviour. Although recent theoretical, experimental, and field-based results indicate that evolution can take place within decades, the potential for evolution on contemporary time-scales depends on the species, its genetics, and how mortality and the environment changes. In this session we welcome papers that discuss to what degree an evolutionary perspective can or cannot shed light on the rapid changes observable in marine ecosystems.

Title: Operational Oceanography for Fisheries and Environmental Applications

Conveners: Helge Sagen (Norway), Barbara Berx (UK), Dave Brickman (Canada)

In an ICES context, operational oceanography refers to products and tools that can be incorporated into the decision making process. Thus products may not need to be produced in real time, seasonal and annual analysis may suffice. During 2008-09 the ICES WG on Operational Oceanography for Fisheries and Environment (WGOOFE) will be working with users to define operational products that would be useful for fisheries and environmental applications. For this theme session presentations are encouraged on numerical model products and observational analyses that provide synthesis across space, time and/or trophic levels that have the potential to be useful to the ICES community. This includes, but would not be limited to, 'state of the ocean' reports based on observational or numerical models, multiyear oceanographic re-analyses (hindcasts), nutrient load reduction simulations, indices appropriate for relating to fish recruitment variability, harmful algal bloom forecasting, climate change scenario downscaling, and model products useful for prediction of climate change impacts at the local scale.

WGPBI, WGDIM, WGOOFE, WGOH, SGCC

Title: Combining spatially-explicit models of lower and upper trophic levels: integration and prediction in the context of global change

Conveners: Pierre Petitgas (France), Bernard Megrey (USA), Kenneth Rose (USA), Myron A. Peck (Germany)

Mechanistic tools are necessary to increase predictability of changes in fish distribution and productivity under global change scenarios and for fishery management and/or restoration plans. Climate-driven processes can act on all life stages of marine fish species to impact life cycle closure and recruitment strength. For example, the ability to project changes in the spatiotemporal extent of habitats suitable for high rates of survival and growth as well as those enabling connectivity among life stages is essential for estimating the potential impacts of climate variability on fish stocks. One approach has been to utilize biophysical NPZD (nutrient, phytoplankton, zooplankton detritus) models to generate climate-forced variability in prey fields and link these to bioenergetics, displacement and/or feeding models of planktivorous fish at individual and population levels. Ongoing challenges in linking spatially-explicit lower and upper trophic level models include tradeoffs between the needs for biological realism and model simplicity.

In this session, presentations are welcome that focus on :

- methodological advancements (e.g., simulation platforms, novel life cycle modeling, trophic coupling strategies)
- mature applications of linked models projecting spatially-explicit trophodynamic climate impacts

- demonstrative use of models and approach in applied fisheries cases

Title: Harmful Algal Blooms in the Baltic Sea

Conveners: Bengt Karlson (Sweden), Emil Vahtera (USA)

Description: Harmful Algal Blooms (HABs) have effects on the whole ecosystem in the Baltic Sea. Observations of known and entirely new types of HABs in the Baltic have inspired studies on the ecology and oceanography of the blooms and their effects on other trophic levels. The introduction(s) of new gelatinous zooplankton species (ctenophores Mnemiopis leidyi and Mertensia ovum) are likely to have effects on the structure of the plankton community including HAB species.

In the Baltic Sea blooms of nitrogen fixing cyanobacteria that form surface accumulations have been a recurrent phenomenon for a long time. The blooms are connected to increased phosphate concentrations which in turn may be related to the release of phosphate from sediment in hypoxic deep basins. These blooms, which include toxic species, are of great concern to the public and affect the regions tourism in summer. A new phenomenon in the Baltic in the recent years is small scale blooms of the dinoflagellate Alexandrium ostenfeldii which has been shown to produce paralytic shellfish toxins (PST) in the area. The toxins may accumulate in the food chain and can be a danger to humans. Other toxin producing dinoflagellates in the Baltic include the genus Dinophysis. Members of this mixotrophic genus produce diarrhetic shellfish toxins (DST). Recently a breakthrough in the investigations of the ecology of Dinophysis has been made since it is now possible to maintain it in laboratory culture. Blooms formed by dinoflagellates are elusive; they often occur in thin layers and have a strong physical regulatory component in addition to the complex biology of the organisms.

The fish killing species Pseudochattonella farcimen (Dictyochophyceae) has formed blooms in the southern Baltic Proper during the last few years. This organism was first observed in the eastern North Sea-Skagerrak-Kattegat in 1998 where it subsequently has become an established species. It has affected fish farms in the Danish part of the Kattegat in a few occasions. In 2008 and 2009 persistent winter blooms of the harmful species Chrysochromulina polylepis (Haptophyta) were observed in the Baltic Proper. No harmful effects were reported. This species formed a devastating bloom in the Skagerrak-Kattegat area in 1988 but no blooms have been observed in the Baltic up until the last few years.

Climate change may influence the future frequency and types of Harmful Algal Blooms affecting the Baltic. Changed temperature, salinity and input of nutrients, humic substances etc. as well as changes in turbulence conditions will influence the plankton community structure. Also possible changes in the carbonate system (pCO2, alkalinity and pH) may have effects. Scientists in the Baltic Sea area have been forerunners in the use of ships of opportunity and satellites to observe HABs. Recent developments include new sensors and the inclusion of new types of sensor platforms.

Focus of session

- Ecology and oceanography of HABs in the Baltic Sea area
- Introduced species – effects on pelagic ecosystem structure including HABs
- Bioactive compounds produced by harmful algae - their biotransformation (including food chain transport and biodegradation) and effect on other trophic levels
- Climate change effects of HABs
- Eutrophication effects on HABs
- Automated HAB observing systems – results and new technology
- HAB forecasting

Title: North Atlantic Ecosystems: Basin-scale Analysis, Synthesis and Modelling

Conveners: Roger Harris (UK), Peter Wiebe (USA), Erica Head (Canada)

Rationale: It is timely to coordinate studies at the basin scale, including connections with shelf seas such as the North Sea and the Newfoundland and Labrador shelves, given the importance of the North Atlantic for climate change and for exploited resources such as fisheries. The goal of this session is to advance understanding of the changes occurring in marine ecosystems of the North Atlantic and associated shelf seas and their relevance to resource management strategies. The session will focus on topics including

1) Changes in: temperature, stratification, transport, acidification, and their influence on the seasonal cycle of primary productivity, trophic interactions, and fluxes of carbon to the benthos and the deep ocean;

2) Changes in life history strategies of target organisms, population dynamics and community structure; and the dynamics of exploited species.

We welcome contributions, both retrospective and future scenarios, that present analysis and modelling studies of oceanographic plankton, benthos and fisheries data that provide insight into the basin-scale changes that are now taking place.

Title: Economy, Ecology and Marine Spatial Planning: Integration of Multiple Uses. Use of marine habitats (e.g. North Sea, Baltic Sea) for industrial purposes (e.g. Wind parks), its effects on nature. Risks and chances.

Conveners: Ursula Siebert, Stefan Garthe, NN.

In the near future large scale wind parks will be established in the North Sea. The construction of these wind parks will alter several elements in the North Sea. Noise may affect the behaviour of marine mammals, wind turbines may obstruct the migratory pathways of birds, the underwater part of the turbines will offer a new hard substrate for many plants and animals, therefore many studies have been made to describe the present status. Within this session an overview should be given on the current state of the area and the biota, together with expectations on what will probably occur during and after the construction phase.

Title: Ecosystem role of phytobenthos assemblages in ICES waters

Conveners: Hasse Kautsky (Sweden), Angel Borja (Spain), Inka Bartsch (Germany)

The phytobenthic assemblages, inhabiting the border between land and sea, are important parts of the marine ecosystem with their flora and fauna components. This phytobenthic seascape provides human society with important goods and services, e.g. nursery grounds and spawning areas for commercially important fish; direct food and industrial components from harvested algae; and mariculture of both plants and animals and last but not least as stabilizing means that prevent coastal erosion.

The phytobenthic assemblages also serve as filters for the antropogenic effluents and pollutants that reach the ocean, through rivers and estuaries. Phytobenthos is well suited to detect anthropogenic impacts, such as eutrophication. Hence, in recent years, their role as indicators of the quality status of the sea has increased dramatically, in relation to legislation worldwide (e.g. in the European Water Framework Directive).

Finally, their fast response to environmental variables (e.g. temperature, salinity, irradiance, etc).by changes in composition and distribution makes them an adequate indicator for climate change.

The Theme session "Ecosystem role of the phytobenthic assemblages in ICES waters" welcomes contributions covering the following topics:

- Long-term changes of phytobenthic assemblages, associated to climate change, and latitudinal gradients in ICES waters (Europe and North America)
- Implication of these changes in gained/loss of ecosystem goods and services
- Role of the phytobenthic zone as shelter and nursery ground for young fishes
- The role of phytobenthos in assessing the ecological health status in estuaries and coasts: new methodologies, comparison of methodologies, and response of phytobenthos to anthropogenic impacts
- The role of phytobenthos in structuring benthic communities: ecological interactions and ecosystem engineers
- Conservation and protection of phytobenthic habitats: mapping and managing coastal ecosystems (including recovery of degraded habitats), and methods to investigate changes in composition and distribution

Title: The risk of failing in integrated coastal zone management

Conveners: Roland Cormier (Canada), Beatriz Morales-Nin (Spain), Josianne Strottup (Denmark).

Economic, environmental and demographic pressures are converging sharply in the coastal regions, creating a complex situation that presents a multi-dimensional challenge to their effective and sustainable management and governance from the social, economic, cultural and environment perspective. Tools are needed to effectively assist in the decision making processes given that traditional users and interests are now being joined in the coastal area by new industries, recreational opportunities and development interests.

With the implementation of ecosystem-based approach to integrated management of the aquatic environment, risk analysis decision-making tools and processes are being developed with the aim of assessing human activity against ecosystem component vulnerabilities. In this context, it is considered important that indicator systems be developed within the context and in conjunction with management frameworks that will ensure their implementation. In order for this to occur, decision-makers at all levels must be involved at all stages of the process. Using classical risk analysis processes, these tools may provide a systematic way of gathering, evaluating, recording and disseminating information leading to recommendations for management consideration in response to an identified ecosystem vulnerabilities.

Across the integrated coastal zone management, papers are welcome on the following topics:

- Bringing together the risk characterisation and the indicator characterisation approaches within an integrated decision-making framework.
- Developing a general framework for the indicator selection process for ICES countries. Within that framework should be the clear definition of objectives and the integration of the indicator system into the overall management process.
- Investigate the usefulness of assessing ecosystem goods and services as a tool to link the ecosystem approach to management, the assessment of human impacts and subsequent decision making.
- investigate how the type of integrated assessment processes can be included in "Ecosystem-based Management" and thus also be included in a decision making framework for ocean and coastal management.

Title: Standing on the shoulders of Giants: The living legacy of the work of Rodney Jones

Conveners: John Pope (Norway), Daniel Pauly (Canada), and Steven Holmes (UK)

From time to time it is useful to remind ourselves of the work and legacy of our predecessors at ICES. Not as a study of history but to see where their ideas are living and growing in our work of understanding the sea. Such sessions might perhaps have a general title STANDING ON THE SHOULDERS OF GIANTS followed by a subtitle for our particular hero.

Rodney Jones of the Aberdeen Laboratory was a man whose work we would do well to recall. Rodney Jones was a prolific ideas man but frequently his interesting ideas only saw light as ICES mimeos and the like and are a little forgotten. However, often after I have had a "new idea" I fall over an ICES paper of Rodney's from 30 years back that captured the same idea! It would make a nice theme session and make a nice tribute to him to see where his ideas have lead! It would be good to do this while some of the generation who knew him are still around.

We therefore propose a theme session for the ASC 2010 and possible a dedicated edition of either the ICES Journal or of Fisheries Research.

Rodney's work covered a wide range of topics. Particular themes might be:

- Rodney's approach to the Y/R question including methods suitable for length based and tropical systems. (He developed forms of Y/R analysis at about the same time as Beverton and Holt with a distinctive flavour. He proposed analyses suitable for low information systems)
- Rodney and VPA type analyses (He developed one of the precursors to VPA)
- Rodney and Fish growth studies/models (He was before his time in growth studies)
- Rodney and ecosystem models (He developed mass balance models of the North Sea and other areas and thought in multispecies terms before it became fashionable).

All these themes have an abiding place in fisheries science. Let us celebrate where they have lead us.

John Pope 23/9/2008

Title: Life-history, ecology and population structure of the European sea bass (*Dicentrarchus labrax)* in a changing ocean

Conveners: Stefano Mariani (Ireland), Mike Pawson (UK), Filip Volckaert (Belgium)

The sea bass, *Dicentrarchus labrax*, has long been regarded as an important resource in the Mediterranean, where more than 60,000 tonnes are now produced in aquaculture every year. Farmed sea bass considerably outnumber wild-caught fish, which are much sought-after in Northern Europe both as a valuable commercial resource and as a prized target for recreational anglers.

Sea bass populations are undergoing important changes in distribution and abundance in North East Atlantic shelf habitats. Yet, despite considerable knowledge of the physiology and the genetics of this species, gained mainly on behalf of aquaculture interests, the life-history and demographics of wild sea bass are still poorly understood. As a result, current management tends not to be based on sufficiently robust scientific evidence. Furthermore, there is a lack of information on the ecological role of this key coastal predator in Northern Europe.

In order to facilitate a thorough understanding of the ecology, life-history and stock structure of sea bass, and its ecological role in the context of Atlantic fisheries, this sessions aims to attract scientists from a broad range of disciplines to present and discuss their research, with the goal of yielding a clear and concerted appraisal of sea bass biology and identifying the key issues that need to be addressed to conserve and manage this species sustainably.

- We welcome presentations on sea bass across the following topics:
- Life history and population dynamics
- Ecology, physiology and behaviour
- Population, ecological and evolutionary genetics
- Fishery management and aquaculture
- Socio-economic aspects
- Implications of climate change

with the intention to peer-review and formally publish as many papers as possible.

Title: Results Based Management of Fisheries

Conveners: Laurence Kell, Safari Kuikka and Doug Wilson

Traditional fishery management approaches have mainly evolved from control theory which may not be appropriate to control unpredictable and complex systems such as fisheries. Such an approach often results in a layering of advice and regulation that is large relative to the size of the industry but still fails to deliver the desired results. An alternative to such over-centralised and top-down legislative processes is results based management, where strategic decisions continue to be taken centrally by an authority, but decisions relating to delivery and implementation are delegated to regional bodies, subject to central auditing of outcomes. An important part of devising such schemes will be for scientists to mobilise their skills in interactive and participatory policy development summarising and clarifying complex and uncertain information in a way that facilitates participatory decision-making.

The theme session invites papers on case studies and approaches that attempt to implement results based management for fisheries. Of particularly interest will be papers that deal with conflicting stakeholder objective and the involvement of stakeholders in the development and evaluation of management strategies.

Title: Fisheries-induced adaptive changes and their consequences: why should we care, and what can we do?

Conveners: Mikko Heino (Norway), Ulf Dieckmann (Austria), Adriaan Rijnsdorp (Netherlands).

Observations suggesting fisheries-induced evolution (FIE) in exploited fish stocks have become so common that, despite the inherently circumstantial nature of most of the evidence, FIE can no longer be ignored as a potential threat to sustainability. Yet, much uncertainty remains as to how serious the consequences of FIE will

be, whether FIE warrants management measures, and how those management measures should ideally be designed.

While the tools and evidence for documenting that FIE is likely occurring in specific stocks are now in place, new challenges arise from a desire to assess its ecological and economic consequences. Negative consequences for yield have been documented in some experiments, and strategic models support these results. However, serious attempts to evaluate the costs and benefits of FIE for any particular fish stock are only gradually emerging. Furthermore, the consequences of FIE potentially go much beyond simple implications for productivity and yield, and include changes in stock stability, resilience, and recovery potential. If costs of FIE outweigh benefits, suitable management measures should be considered. In that case, how would the present management practices need to be adjusted? And are the present approaches to ensure sustainable exploitation sufficient, or does managing FIE require some novel approaches?

Evolutionary Impact Assessments (EvoIAs) provide a framework for evaluating the consequences of FIE. Fishing influences the heritable traits of fish. These changes, in turn, influence the utility of fish stocks to humans, either directly or indirectly, through processes that often involve ecological feedbacks. Evolutionary impacts of fishing on utility can then be assessed, with current management regimes or some other well-defined management scenarios serving as the baseline for comparing alternative impacts.

FIE is currently subject to vibrant research, and we are confident that the Theme Session will be well attended. This expectation is strengthened by the success of the ICES Study Group on Fisheries Induced Adaptive Change (SGFIAC), a forum for discussions and the exchange of scientific ideas that currently works towards establishing the management implications of FIE.

The year 2009, being the bicentennial anniversary of the birth of Charles Darwin, is particularly suited for exploring the Darwinian dimensions of modern fisheries management.

Papers are welcome on all aspects of research on FIE and in particular on the following topics:

- Implications of FIE for biological yield and economic revenue
- Influence of FIE on stock stability and recovery potential
- Reversibility of FIE in theory and practice
- Model-based evaluations of FIE and its impacts
- Linking FIE to current management objectives
- Metrics and reference points for managing FIE
- Utility functions for quantifying impacts of FIE
- Evolutionary impacts assessments

Title: Risk management and the burden of proof

Conveners: Anthony Charles , Doug Wilson and Poul Degnbol

Human activities create environmental and health risks in many different areas and fisheries is only one of hundreds of regulated industries. In the large majority of these other industries the burden of proof is on commercial interests to show that they are keeping risks within acceptable levels. This is closely linked to the idea of introducing results based management to marine management. This is in many ways desirable, but it is not an unalloyed good as it often leads to questionable, industry controlled science. ICES as a body creating scientific advice for industrial regulation can learn from many sources about the advantage and difficulties of placing the burden of proof on user groups. This theme session invites papers from both fisheries management and other arenas to discuss issue of burden of proof and its implications for management, science and scientific advice.

Papers are welcome on the following topics:

- Calculating risk and burden of proof
- Case studies of risk management
- Reversing the burden of proof in fisheries
- Impact of burden of proof on management and exploitation possibilities
- Impact of burden of proof on the monitoring and research
- Legal aspects of turning the burden of proof

Title: Linking the history to the present: understanding the history of fish, fisheries and management

Conveners: Andy Rosenberg, Martin Pastoors, Henn Ojaveer, Max Cardinale, Bo Poulsen

The theme session would follow-on from the HMAP conference on Oceans Past (May 26-28 2009, Vancouver. http://hmapcoml.org/oceanspast/). The theme session would link the results from the historical studies with the work carried out in several of the advisory functions of ICES. It would also provide a common interface where historical scientists, ecosystem scientist and fisheries scientists could meet to exchange results that can improve the understanding of the long term dynamics of marine ecosystems.

Title: Causes and Variations in Natural Mortality in Fish

Conveners: Dave Reddin (Canada), Dan Duplisea (Canada), Niels Hintzen (Netherlands)

It is essential to understand natural mortality (M) in fish if we are to be able to model communities and plan appropriate measures to conserve and restore stocks. For many marine fish, including both demersal and pelagic species, changes in natural mortality are thought to have played a relatively minor role, compared to fishing mortality (F), in the decline and collapse of stocks. However, now that fishing pressures have been greatly reduced, the ratio of M to F has increased, and natural mortality has become a far more important factor controlling the size of populations. In addition, the collapse of some stocks, such as Atlantic cod on the Grand Banks, has been followed by significant changes in the ecosystems in which they live, including changes in the abundance of other species and in trophic interactions. Although little is known about the potential for these changes to affect the ability of the stocks to recover, there is growing evidence that the restoration of stocks is often much slower that had previously been anticipated. On the other hand, for a number of diadromous species, including high profile species such as eel and salmon, increases in natural mortality during the marine phase of the life cycle are thought to have been an important contributor to the significant stock declines that have been observed in recent years. There is some evidence that changes in environmental conditions may have accounted for this increased mortality, although a wide range of other factors have also been considered, including changes in predator and prey abundance, diseases and parasites, and various anthropogenic factors, including aquatic contaminants. Understanding these processes is essential to support the development of ecosystem approaches and stock recovery plans which are now required for a large number of marine and diadromous species

This Theme session will provide a opportunity for scientists working on a range of different fish species in different areas to share knowledge on causes and variations in M, including practical methods for estimating M, modelling approaches, the factors driving changes in M, as well as the implications of changes in M for stock recovery.

Across marine, diadromous and freshwater fishes, papers are welcome on relevant topics, including:

- Experimental and modelling approaches for estimating natural morality at all life history stages;
- Estimates of natural mortality for different species, at different life stages and in different environments;

- Direct and indirect effects of anthropogenic factors and both long and short term changes in environmental factors on natural mortality;
- Changed views on ecosystem functioning arising from changed knowledge of natural mortality

Title: Fisheries Certification – is it any use?

Convener: Mark Tasker (UK)

[Some of the following could be approached as co-convenors Jake Rice, Canada; Paul Knapman (Moody Marine), Canada; Colin Bannister, UK; Marine Stewardship Council; Retailer? should this concept be liked]

Background – There has been recent rapid growth in fisheries certification, primarily under the aegis of the Marine Stewardship Council, but with other more local schemes also being developed. This growth has been driven mostly by retailer/consumer demand for sustainably harvested seafood products and a wish by some fleets to meet this demand. ICES provides advice on fisheries management for several stocks used by fisheries that have been certified, but rarely are certification issues considered in this advice. Papers will be sought on the following and other related topics:

- Description of the certification process;
- Outcomes from certification (is there objective evidence that a stock/fishery/ecological feature has improved?);
- Views of retailers/consumers;
- Frontiers of certification e.g. aquaculture, industrial fisheries;

Germany has one of the highest market penetrations of MSC certified products and so this symposium will be suitable for the 2009 ASC. [France has one of the lowest market penetrations, so might also be relevant in examining why not!]

Title: Upwelling events, coastal-offshore exchange and links to biogeochemical processes in various parts of the oceans

Conveners: Kai Myrberg, Finnish Institute of Marine Research; Andreas Lehmann, Leibniz Institute of Marine Sciences at Kiel University; Tom Anderson, Southampton Oceanographic Laboratory

In general, upwelling is the result of horizontal divergence in the surface layer of the ocean. It involves wind-driven motion of dense, cooler and usually nutrient-rich water towards the ocean surface, replacing the warmer, mostly nutrient-depleted surface water. There are at least five types of upwelling: coastal upwelling, large-scale wind-driven upwelling in the ocean interior, upwelling associated with eddies, topographically induced upwelling, and broad-diffusive upwelling in the ocean interior. Upwelling is an important hydrodynamic process in the World Ocean. It plays often a key role in phytoplankton dynamics by replenishing the euphotic zone with the nutritional components that are limiting biological production for most of the growth season.. Furthermore, it is still unknown how much of the coastal-offshore exchange is contributed by upwelling. Coastal jets, which are closely related to up and dowelling transport upwelled water along the coast extending the influence to larger areas.

Upwelling is a typical phenomenon in the Baltic Sea as well. Because the Baltic Sea is a semi-enclosed basin, winds of favourable directions blowing predominately parallel to the coast cause upwelling. During the thermal stratified period, upwelling can lead to a strong sea surface temperature drop of more than 10°C. The rapid temperature decrease during such events was early recognized and documented since temperature measurements became available. In some areas this mechanism is of special importance for meeting the nutritional requirements of the late-summer cyanobacterial blooms

The objective of this Theme Session is to invite scientist to present their work dealing with integrated analyses of coastal upwellings, and costal-offshore exchanges for different sea areas. The workshop covers all physical aspects of these processes as well as interactions with biochemical links. This includes observations, modelling studies as well as the utilisation of satellite remote sensing. Papers which integrate physics and biogeochemistry in relation to upwellings and coastal-offshore interactions are especially welcome.

Title: Elasmobranch Fisheries: Developments in stock assessment, technical mitigation and management measures

Conveners: Dominic Rihan (Ireland); Jim Ellis (UK); Henk Heessen (The Netherlands)

Description: Elasmobranchs (sharks, skates and rays) are taken in a range of targeted and mixed commercial fisheries, and are also of interest to recreational fisheries and wildlife conservation groups. The large size of elasmobranchs and their aggregating nature makes them susceptible to capture in many fisheries from an early age. They are also biologically vulnerable to fishing impacts, given that their life history strategy involves a late age at maturity, slow growth and low fecundity. Declines and regional extirpations have been documented for a range of elasmobranch populations and there has been an increased concern over the status of several species/stocks in recent years. In 1999, the FAO published its International Plan of Action for Sharks (IPOA–Sharks), giving guidelines for data collection and management measures, and it was recommended that shark action plans be implemented at a national level.

Although elasmobranchs are at a high risk of capture in fishing operations, they have to date received limited attention in terms of bycatch mitigation in comparison to other charismatic megafauna (e.g. cetaceans and sea turtles). Nevertheless, in the course of research into mitigation devices for release of marine mammals, options to reduce elasmobranch bycatch have been found (e.g. in Mauritanian pelagic fisheries). Other possible mitigation devices aimed specifically at reducing their bycatch have been suggested but not fully developed.

In order to address many of the current issues in elasmobranch fisheries management, it is proposed to hold a theme session at the ICES ASC 2010. This theme session aims to bring together recent studies on elasmobranch fisheries and talks on the following subjects are encouraged:

- Development of stock assessment methods.
- Utility of fishery-independent surveys for examining long-term trends in spatial extent and relative abundance.
- Reconciling fisheries stock assessment and conservation assessment methods.
- Development of Ecological Risk Assessments (ERA) and management plans for species-complexes (e.g. “deep-water sharks”, “demersal skates”, “pelagic sharks”).
- Studies on the efficacy of potential management measures.
- Research with technical mitigation measures used directly or indirectly to reduce elasmobranch bycatch.
- Discard survival of elasmobranchs taken by commercial fishing gears.
- Size restrictions for elasmobranch fisheries: should managers protect the young (e.g. with a minimum landing size, MLS) and/or mature females (e.g. with a maximum landing length, MLL).
- Spatial management for ecologically important elasmobranch habitats.
- Management of highly migratory shark stocks.
- The implementation of National Plans of Actions for Sharks and their outcomes.

Supporting information

Priority:	High
Scientific justification:	Elasmobranchs are of an increased importance in fisheries management, given their commerical and conservation importance, and their low productivity rendering them suscpetible to over-exploitation. ICES is having to provide advice to the EC on an increasing number of these (data poor) stocks, and the EC and various Member States are further developing the recent Community Plan of Action for Sharks.
Participants:	It is expected that responses to a call for contributions will reflect the wide interest and recent progress in applied fisheries research in this subject area, and will provide a useful forum for both relevant ICES Expe Groups as well as the wider scientific community.
Linkages to advisory committees:	ACOM
Linkages to other committees or groups:	WGEF, WGFTFB, WGDEEP, WGFE, WGECO as well as regional assessment and advisory groups
Linkages to other organizations:	ICCAT

Title: Applications of optical and image based technologies in the ecosystem approach to fisheries management

Conveners: Eirik Tenningen (Norway) and Bill Michaels (USA).

Optical imaging and analysis technologies have evolved rapidly during the last decade. Applications of these technologies can be found in many areas of marine science and are particularly relevant to the ecosystem approach to fisheries management. In 2007, the Study Group on Fisheries Optical Technologies was established to:

- Review the state-of-the-art in optical imaging and analysis technologies for:
    - Target identification
    - Behavioural characterization
    - Measurement uncertainty; and
    - Automated data processing and visualization, and data management;
- Identify other optical methods (current and emerging technologies) for ecosystem-based fisheries management that can be investigated further

SGFOT will submit its final report in 2009. Findings and recommendations of the study group will be presented during the theme session, and we seek papers on optical technologies within the fields of:

Target identification

- Species recognition and size measurements
- Benthic and pelagic habitat classification

Behavioural characterization

- Orientation of individual targets; e.g. to support in situ acoustic target strength measurements
- Fish reaction to vessels and human induced noise
- Fishing gear interaction
- Small-scale dynamics

Measurement uncertainty

- Measurement uncertainty using optical technologies
- Observing fishing gear performance; e.g. trawl catchability, selectivity and bycatch

Automated data processing and visualization, and data management

- Automated image recognition and interpretation
- Data synthesis

Title: Quantifying all fishing mortality – putting the pieces together

*Convenors: Philip MacMullen, Ellen Kenchington**, Coby N/Nick D?*

Fishing kills target and non-target species. The extent of these impacts may or may not be significant but we can't manage resources confidently unless we can quantify mortality levels. Sometimes it would be useful just to know whether or not there's a risk of significant unaccounted mortality so that we can caveat management advice appropriately. This session explores what's known, what isn't and, in a time of structural change within ICES, how a better network of Expert Groups could lead to a better-informed approach to resource management.

Papers and posters are invited dealing with the following or related aspects:

- whether discard reduction strategies merely shift the problem elsewhere
- the influence of emerging knowledge – for example IUU fishing or escape mortality – on conventional assessments
- risk-assessing fisheries – how the combination of species, fishing methods, technical measures and ambient conditions may interact
- putting the pieces together – structural and networking implications

* following our discussions, 2010 seems more likely

** talked to Ellen – seems interested…

Title: Monitoring biological effects and contaminants in the marine environment: where do we go from here?

John Thain (CEFAS Weymouth Laboratory, Barrack Road, Weymouth, DT4 8UB, United Kingdom)
Catherine Couillard (Institut Maurice-Lamontagne, Fisheries and Oceans Canada, 850 route de la Mer, Mont-Joli, Qc, Canada G5H 3Z4)
Dick Vethaak Deltares (P.O. Box 177, 2600 MH Delft, The Netherlands).

Many countries within the ICES community have monitoring programmes to measure chemical contaminants and biological effects in coastal and offshore waters. The programmes are carried out to measure the "health status" of the marine environment and to meet national and international obligations e.g. OSPAR, HELCOM, EU WFD, LEM, U.S. Clean Water Act, Canadian Oil Pollution Act, etc. With the OSPAR QSR 2010 looming and the introduction of the EU Marine Strategy Directive (MSD) it is time to take stock and ask important questions.

- Do our measurements tell us anything useful?
- Are they fit for purpose and cost effective?
- Can the data be assessed in an integrated manner?
- Do we have good indicators of environmental "health"?
- Are the indicators being applied for management purposes?

- Are past and current measurements useful for the future and are they broadly applicable?

The emphasis of the theme session will be to address these issues and to this end contributions are invited on:

- Marine chemical contaminant data and their assessment
- Biological effect data and their assessment
- Development and implementation of chemical contaminant and biological effect indicators
- Chemical contaminant and biological effect integrated assessment
- Integrated assessment of chemical contaminant and other environmental stressors
- Use of chemical contaminant and biological effect data for risk assessment purposes
- Management applications.

Contributions as presentations / posters can include case studies, assessment of long-term data sets or just be scientifically stimulating, but must aim to address the issues stated above. In particular, presentations will be highly ranked if they provide good evidence and a strategy for monitoring chemical contaminants and their effects as part of ecosystem health assessment into the future.

Title: Evolution of Community Interactions: Answering the Call for Management and Advice

Conveners: Mike St. John, University of Hamburg, Germany, and Laurie Kell, CEFAS, England

Understanding the complex influences of changes in the environment and resource utilization has necessitated the development and funding of multinational multidisciplinary research teams focused on the development of management approaches. As a result, teams within the ICES community from physical oceanographers to social scientists have assembled, funded by National and Community sources to provide the management advice necessary to mitigate the effects of global change and resource utilization. With this as the background, the purpose of this session is two fold. First is to disseminate to the ICES community the management issues addressed and key findings of these multidisciplinary programs. Secondly, this session will address a critical issue for the advancement of ICES science, our scientific credibility and the development of new generations of ICES scientists that being the communication of results. In order to foster advances in this area the tactics taken by these multidisciplinary management programs in addressing the communication of results will be encouraged.

Title: Methods to describe changes, patterns and relationships in fisheries and environmental data

Conveners: Carmen Fernandes (Spain), C. Needle (UK), M.-J. Rochet (France)

For developing an ecosystem approach to fisheries, for monitoring, as well as for integrated coastal management there is a need for appropriate statistical methods in multi-dimensional, complex, non-linear systems. These methods should be more advanced than correlations and linear regression to detect and describe regime shifts, changes in time-series on various time-scales (inter- or intra-annual), spatial patterns beyond overlaying maps. These methods could be applied either to fisheries or environmental data or to the output of complex simulation models, e.g. individual-based models.

The questions to be addressed include:

- Characterizing spatial patterns and testing temporal changes in patterns, quantifying relationships in a spatial context, taking account of spatial auto-correlation, for bi- or multi-variate data;

- Identifying regime shifts, detecting or modelling trends and/or non-linear patterns in long- or shorter-term, regular or irregular time-series, using time-series or other methods.

- Describing or testing univariate and multivariate relationships within and between groups of variables, such as factors and responses.

Presentations should apply methods to real questions, that is, use and possibly compare methods. We will welcome presentations describing and using alternative, non-linear, multivariate tools to detect or describe:

- Temporal trends, regime shifts, changes;
- Spatial patterns, spatial correlations;
- Relationships between factors and responses, alternatives to correlation, such as quantile regressions, non-linear models, qualitative models;
- Identification of shortcomings of existing methods to investigate specified questions.

Title: Ichthyoplankton Surveys – value added beyond assessment

Conveners: Cindy van Damme (The Netherlands), Matthias Kloppmann (Germany), Steve Milligan (UK)

Within ICES co-ordinated work a number of ichthyoplankton surveys have been carried out for many years. Many of them already constitute a long time series that would allow for data analysis beyond estimates of annual indices of recruitment or annual egg production. Some of those surveys also may have undergone changes in methodology or have adopted new techniques. This session invites contributions that analysed ichthyoplankton survey data with respect to changes in distribution, size and stage composition of species in relation to the changing physical and biological environment. Descriptions and analysis of change of methodology and the adoption of new techniques, and how they impacted the survey results are also expected. Since most of those surveys are carried out under the supervision of different ICES working groups it is expected that this theme session will also promote positive influences between different ichthyoplankton groups.

Contributions addressing the following topics are encouraged:

- The impact of changes in methodology on survey results
- Adoption of new techniques and their benefits for improvement survey results
- Changes in abundance and distribution patterns in relation to changing ecosystem
- Changes in size and/or stage composition
- Species composition, parasitisation of eggs and other issues of interest.

Title: Benthic indicators: responding to different human pressures and assessing integrative quality status

Conveners: Ángel Borja (Spain), Daniel Dauer (USA) and Antoine Grémare (France)

Description: Increasingly on a worldwide scale, legislation has been adopted to determine the ecological status of estuarine and coastal waters. One of the biological elements more used in such assessment is benthic communities. In recent times a plethora of methodologies with hundreds of indices, metrics and evaluation tools have been developed. An ecologically parsimonious approach dictates that investigators should place greater emphasis on evaluating the suitability of indices that already exist prior to developing new ones. Hence, the objective of this session is to compare the methodologies existing in various countries, for different systems, trying to improve the knowledge of the suitability of such approaches when using benthic communities under different human pressures.

Contributions are welcome on the following topics:

- Benthic indices for hard- and soft-bottom substrata, both in coastal and estuarine systems
- Setting reference conditions for coastal and estuarine waters, in a changing ocean
- Response of indices to different human pressures

- Comparison of different indices across different geographies
- Managing invasive species in benthic quality assessment
- Response of benthic indices to aquatic restoration
- Uncertainty in assessing quality status, using benthic indices
- Integrating benthic indices with other biological elements, when assessing ecological integrity of marine waters.

Supporting information

Priority:	Given its focus on benthic indicators, the proposed Theme Session supports the topic "Biodiversity and the health of marine ecosystems", being one of the 16 focal topics of the ICES Science Plan 2009-2013.
Scientific justification:	This theme session will provide the SoA regarding benthic indicators and further aims at outlining the future challenges of and potential solutions to the use of benthic indicators, e.g. reference condition, metrical and biogeographical intercalibration, uncertainty and integration. This next step in benthic indicator development and elaboration will be supportive for an efficient application of benthic metrics within e.g. the Marine Strategy Framework Directive.
Participants:	It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area.
Linkages to advisory committees	It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area.
Linkages to other committees or groups:	SCICOM, ACOM, any quality assessment ICES EG
Linkages to other organizations:	–

Title: ICES and the Ocean Observing Community: Making Tools, Observations, and Products in Support of Marine Management

Conveners: to be determined

Description: The focus of the theme session will be the chain of science from ocean observing systems and operational models, to the development of products to advise management. This chain is already in use in the ICES community: for example fisheries-independent trawl surveys (ocean observing systems), are used to develop estimates of population characteristics (operational fisheries science), which in turn contribute to stock assessments (products to advise management). The theme session would examine and elucidate this chain, but from the perspective of new developments in ocean observing and the opportunities to create or improve scientific advice provided to managers. The session would be purposely cross-cutting. New developments and capabilities in ocean observing and operational oceanography would be presented in the context of improving scientific advice provided to managers. From the other end, presentations describing current and future needs of fisheries management, ecosystem-based of approaches to management, and forecasts of the effect of climate on marine ecosystems would be geared toward informing the ocean observing community. The session would encourage contributions in the following areas:

- Overview of Ocean Observing Systems and Capabilities in the North Atlantic and North Pacific
- Development of Operational Oceanography in the North Atlantic and North Pacific including development of new tools with direct relevance to management related products
- Development of Scientific Products from Managements (Stock Assessments, Ecosystem Status Reports, Integrated Ecosystem Assessments)
- Application to Ecological and Climate Forecasting

- Future – How can the function of observing systems-operational oceanography-product development be strengthened? How do institutions and organizations interact as both data providers and product users?

Owing to the cross-cutting nature of the proposed theme session, IGSG will seek participation from WGOOFE and WGOH, and potentially other ICES WG. The idea is to have broad participation across the ICES and GOOS communities to strengthen the chain from observing to products. The overall goal is to increase communication between the ocean observing and fisheries and ecosystem assessment communities. Ultimately, the value of ocean observations will be measured, in part, by the contribution to improving management of marine resources. If the session involves a description of ocean observing systems and capabilities to the ocean observing community with little participation from scientists involved in developing products and from those developing ICES advice, then we will not have meet our objectives.

In addition to proposing a theme session, the IGSG will propose a plenary speaker. The speaker will present the importance of ocean observing and operational oceanography to developing products in support of marine management.

Title: The Arctic Ocean – North Atlantic connection – a vital and fatal link in the Atlantic meridional circulation

Title: The Arctic Ocean – North Atlantic connection – a vital, and fatal, link in the Atlantic meridional circulation

Conveners: Bert Rudels (Finland), Robert Pickart (USA), Hendrick van Aken (the Netherlands), Kjell-Arne Mork (Norway).

Description: The study of the of the Arctic Ocean has been intensified in recent years, culminating in the International Year IPY 2007-2009, 125 years after the first Polar Year was initialised. The urgency of understanding the polar processes and their dependence upon and influences on the world ocean and the global climate was dramatically brought out by the unprecedented decline in the minimum Arctic Ocean ice cover in 2007 with only a weak recovery in 2008. This decline was not foreseen and preceded the models projections by 40 years. Investigations of this event will undoubtedly reveal several causes for the 2007 decline, but will they be able to estimate the consequences of this unique event for future of the ice cover? Are all years unique and the state of the Arctic Ocean is ruled by chance or do sufficient constraints exist for reliable predictions of its future state? The last years have, in addition to the IPY, also seen several other large international projects e.g. DAMOCLES, and many national efforts devoted to understand the Arctic Ocean processes. The principal oceanic interactions of the Arctic Ocean is with the North Atlantic, the Atlantic bringing warmth to the Arctic Mediterranean and the Arctic Mediterranean contributing significantly to the thermohaline overturning of the Atlantic. The thermohaline circulation is presently receiving increased attention, and EU projects like THOR as well as several national efforts are devoted to understand and estimate its causes and constancy. The North Atlantic is the ICES area, and to understand processes and changes in the North Atlantic and their impact on the North Atlantic ecosystem is perhaps the key mandate of ICES. It is therefore appropriate that ICES devotes a theme session at the AC 2010 to the results from the IPY and their consequence for and their dependence of the conditions in the North Atlantic. This session will concentrate on physical processes but also be open to multidisciplinary studies. It is important to realise that the Arctic Mediterranean is an active part of the North Atlantic critically influencing the hydrography and the circulation of the North Atlantic.

Papers are welcome on the following topics:

- The circulation in the North Atlantic, the Nordic Seas and the Arctic Ocean
- Sea ice extent and sea ice processes
- Heat and freshwater balances and fluxes, including ice export

- The thermohaline overturning circulation and overflows
- Convection and deep water renewal
- Effects on high latitude ecosystems

Supporting information

Priority:	High – The public awareness of Global warming and its possible large impact on high latitudes is presently, after IPY, perhaps higher than ever before.
Scientific justification:	The intensity of the oeanographic research presently conducted at high latitudes more thar justify that ICES devotes a theme session to these topics.
Participants:	It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area.
Linkages to advisory committees:	It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area.
Linkages to other committees or groups:	
Linkages to other organizations:	–

Title: Physics and biology in modelling harmful algal blooms (HABs): validation and application for forecasting and climate change

Conveners: Donald M. Anderson (USA), Geneviève Lacroix (Belgium)

Description: Harmful Algal Blooms (HABs) are of great concern because of their toxicity and/or the damage they cause to ecosystems and coastal resources. Toxic HAB events in aquaculture can have adverse effects on economy (fish or shellfish mortality) and public health (human disease, mortality) and high-biomass, non-toxic blooms can affect water quality and tourism. Aquaculture and tourism are mainly located in coastal zones that can be affected by eutrophication, sometimes cited as a cause of HABs. Amongst the challenges related to HABs we can cite the need to: (i) understand the physiological/biological/environmental factors that regulate HABs and in particular the underlying physical/biological interactions that are the most important, (ii) forecast HAB events and (iii) assess the impact of climate change on HABs (occurrence/frequency/magnitude). Models, providing that they are carefully validated and adapted to the situation (region/species), are necessary tools for forecasting, assessing the impact of future scenarios and for process studies. The development of HAB models requires interdisciplinary (biological, chemical, and physical) research. Strong interaction between modellers and experimentalists is crucial and data availability essential. Recognizing the rapid progress in HAB modelling in recent years, we invite contributions of modelling studies, laboratory and experimental research, field studies and remote sensing investigations that advance our ability to understand underlying physical/biological interactions that control HABs, to improve HAB model validation, to forecast HAB events, or to assess effect of climate change.

Title: Fish behaviour and Low Impact Fuel Efficient (LIFE) fishing gears

Conveners: Bjarti Thomson, Faroe Islands, Svein Løkkeborg (Norway; not confirmed), and Michael Pol, US

Drawing on a model of attraction, capture and retention, this theme session has the objective to assist in the development of low energy, low impact fishing gears by gathering together new research on fish behaviour in relation to static gears.

Papers will be invited on farfield attraction (e.g. chemosensory reception), nearfield stimuli (e.g. vision and mechanosensory reception), and gear modifications that improve catch and retention of fish in static gears.

Justification:

Increases in energy costs and the greater awareness of environmental impacts have led to a greater interest in innovative, low energy, low impact fishing gears. Recent investigations of fish pots have highlighted the need

to increase the efficiency of these gears to become a viable alternative. It has been proposed that a behavioural model of fish attraction, capture, and retention can be used to help understand the static gear capture process.

Several ICES and non-ICES nations have prioritized the investigation and improvement of static gears both for commercial and survey purposes.

Title: Data for the Masses: Recent advances in the application of Marine Data and Information Management

Conveners: Bernard Megrey (PICES TCODE, USA), Neil Holdsworth (ICES DC, Denmark), Edward Vanden Berghe (OBIS, USA)

Description:

Management of data and information within the marine science community has become a very important component in the quest to provide more comprehensive and time sensitive advice to ecosystem and fisheries managers. There are significant difficulties in integrating diverse fishery, oceanographic, and other marine environmental data. In addition, the tools to enable fishery and environmental assessments needed to respond to the requirements for ecosystem-based management initiatives are still in a remedial state of development. There are a growing number of databases and data sources requiring new approaches to enable efficient access to the data.

As these challenges are not unique to the ICES world, a co-sponsored theme session with PICES is proposed as a follow up to the data management session at the 2008 ICES ASC and the 2008 session at the PICES annual meeting. Both sessions attracted a large number of contributions.

This theme session will provide the opportunity to update the community on new approaches and endeavours by inviting database specialists, distributed data specialists, visualization specialists, end-users and others to present and/or demonstrate:

- tools for re-use of data (including a live demo session), and recycling of tools (specifically open source software)
- data publication – linking reports to data
- de facto standards and how to establish them as widely accepted standards
- data availability versus data visibility

Title: Marine biodiversity: have we halted its loss by 2010 and what do we need to do now?

Suggested conveners: Jake Rice and Heye Rumohr

Description: Building on the theme session entitled 'Marine biodiversity: a fish and fisheries perspective', convened at the 2007 ASC in Helsinki, SGBIODIV propose to convene this theme session to address wider issues of marine biodiversity at the 2010 ASC.

In April 2002, the Parties to the Convention on Biological Diversity (CBD) committed themselves to "*achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level…*". Within EC waters, the recent Marine Strategy Framework Directive (MSFD) aims to maintain biodiversity and provide diverse and dynamic oceans and seas which are clean, healthy and productive. Within the MSFD, one of the descriptors for 'good environmental status' is that "*Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions*". The MSFD is also viewed as an important vehicle for allowing the EC to meet obligations under the CBD.

The increased interest in maintaining and protecting biodiversity is mirrored in the current ICES Science Plan, which identifies 'Biodiversity and the health of marine ecosystems' as an important research topic within the thematic area *Understanding Ecosystem Functioning.* However, it could be argued that biological diversity in all its forms (genetic, species, and habitat) is much more fundamental and is actually an overarching theme to much of ICES' work. In order to address ICES' fundamental goals, it is vital that biodiversity science be addressed in a more coordinated and integrated way.

Given the 2010 timeline, this timely theme session aims to bring together presentations of various facets of marine biodiversity (including all marine taxa and habitats), with papers on the following topics particularly welcomed:

Biodiversity loss

- Estimating rates of loss in biodiversity, and has biodiversity loss been reduced?
- Have RFMOs been successful in preventing biodiversity loss in marine ecosystems?
- Declines of vulnerable taxa, top predators and habitats.

Baseline data

- Incorporating historical information to define natural baselines
- Data integrity and the role of taxonomy in applied biodiversity science
- Quality and precision of data for monitoring and assessing temporal changes in the diversity of marine communities and assemblages. Are multi-species distribution and abundance data fit for purpose?
- Modelling biodiversity and species distributions

Factors affecting biodiversity

- Importance of habitat diversity to the conservation of marine resources
- Ecological hotspots, their biodiversity value and how to manage them
- The role of structured habitats in the productivity and diversity of fish communities
- The role of alien species on native diversity. Are all non-native species bad?

Biodiversity: indicators and value

- Biodiversity indicators for examining the effects of anthropogenic activities, including fisheries
- Utility of biodiversity indicators: What do they tell us, and what do they miss?
- What is the socio-economic 'value' of species and functional diversity?
- How to incorporate biodiversity issues in fisheries management?
- Importance of genetic diversity to conservation of marine resources and how fisheries have induced adaptive change

Supporting information

Priority:	High
Scientific justification:	The new ICES Science Plan identifies 'Biodiversity and the health of marine ecosystems' as an important research topic within the thematic area *Understanding Ecosystem Functioning*. Given that the EC is a Contracting Party to the Convention on Biological Diversity, having a theme session in 2010 is timely.
Participants:	It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area, and will provide a central forum for much of the work undertaken in a wide range of ICES Expert Groups as well as the wider scientific community.
Linkages to advisory committees:	ACOM
Linkages to other committees or groups:	SCICOM and a wide range of Expert Groups, including ecology groups (WGPE, WGZE, WGFE, WGSE, BEWG etc.), as well as survey groups (e.g. IBTSWG)
Linkages to other organizations:	–

Theme Session Proposal for the 2010 Annual Science Conference

Title: Biodiversity Science for Ecosystem-Based Management and Policy

Conveners: Paul Snelgrove (Canada), Carlo Heip (Netherlands), Thomas Noji (USA)

Contacts: psnelgro@mun.ca, c.heip@nioo.knaw.nl, thomas.noji@noaa.gov

The widespread recognition of the importance of multiple species and processes in ocean health and the long-term sustainability of many fisheries has created a new focus on studies of biodiversity. These studies have been organized within major international such as the Census of Marine Life and MarBEF, within national initiatives such as the Canadian Healthy Oceans Network, as well as in smaller research projects around the world. Studies have focused on a wide range of issues, including linkages between biodiversity and key ecosystem processes such as primary and secondary productivity, reproductive output, trophic structure, and nutrient cycling, as well as patterns and hotspots of biodiversity and habitat in relation to selection of closed areas (e.g., fisheries access, marine protected areas). In addition to directed studies with specific hypotheses, some of the programs have emphasized the development of biodiversity databases that amalgamate data from a wide range of studies, and development of statistical tools that improve data intercomparison, thereby facilitating a wide range of ecological meta-analyses that build on individual field sampling programs.

There is an absence of a clear mechanism to incorporate biodiversity information in traditional ocean and fisheries management models and approaches. An additional challenge is that many fisheries agencies continue to conduct stock assessments but are also requested to address biodiversity questions with little in the way of new resources. New partnerships and data sharing offer one path forward and papers that address these new types of linkages are particularly welcome. The utility and benefits of data sharing data as a means of advancing understanding of ocean health issues is gaining momentum in the research community, however, there is still reluctance among some researchers to place their data in venues where others may use it. Nonetheless, the potential payoffs are significant.

This theme will highlight real and potential examples of how biodiversity science will support decision making and understanding for issues ranging from stock assessments to recruitment understanding to designation of marine protected areas. Contributors are encouraged to present data, theories, methodologies and ideas that can generate biodiversity products of interest to policy and management. Papers for consideration should focus on:

- Use of biodiversity data in understanding of ocean processes and ocean health;
- How biodiversity and ecosystem function studies can support ecosystem-based management;
- Biodiversity as a consideration in management and policy decisions.

The papers from this session should be of great interest to fisheries and ocean scientists as well as marine resource managers. The findings should promote (1) more holistic approaches that can move us towards ecosystem-based management (2) ecosystem models that incorporate linkages between biodiversity and ecosystem health and function; and (3) comprehensive and defensible advice for use in spatial and temporal management strategies.

Title: Environmental Sustainability of Aquaculture Activities in Coastal Zones

Conveners: Karin K. Boxaspen (Norway), Ingrid Burgetz (Canada), Einar Dahl (Norway).

Description: Aquaculture has become increasingly important for the production of marine food and feed stock, and at present and for the near future, most aquaculture production is likely to take place in coastal zones. This causes increased pressure on the coastal zone and space and resource competition among different uses or industries. In addition aquaculture activities may have various direct and indirect effects on the coastal zone ecosystem. Potential influences from aquaculture may include discharge of nutrients, sedimentation of organic material (i.e., pellets and faeces), dispersion of chemicals (i.e., therapeutants and impurities), spreading of "signal" substances or concentration of pathogens. This may lead to eutrophication – potentially resulting in

enhanced productivity or a shift in biodiversity. Wild species may be attracted to or displaced from aquaculture sites and may feed on pellets and/or faeces and potentially resulting in effects on wild species health status. Aquacultured species may also be a source for spreading of pathogens to wild organisms, as well as being susceptible to pathogens from wild species. Should all these potential effects be realized in a coastal ecosystem, there is a potential for the aquaculture activity to be unsustainable and result in coastal ecosystem degradation. However, with scientific research, technological advances and knowledge, the potential negative effects from aquaculture should be possible to avoid through good planning and management of aquaculture activities as well as the implementation of efforts to minimize or mitigate any potential negative effects.

With an ecosystem approach in mind, papers on the following topics are welcome:

(suggestions for possible points)

- Competition for space and areas in the coastal zone
- Carrying capacity for different types of aquaculture activities in different types of areas/ zones
- Effects of aquaculture on biological assets in the coastal zone (e.g., behaviour and migration of wild stocks).
- Effects of aquaculture on productivity in the coastal zone (e.g., primary production, benthos).
- Effects of aquaculture on biodiversity in the coastal zone.
- Disease transmission in coastal areas between wild and farmed stocks (e.g., carrier status in wild populations, interactions between wild and farmed stocks that affect disease transmission, etc.)
- Mitigation of detrimental effects of aquaculture (e.g., use of polyculture, etc.)
- Ecosystem effects associated with release of nutrients from different aquaculture activities (e.g., suspended, bottom culture, finfish, shellfish, algal production, etc.)
- Attracting or avoidance of wild fish around aquaculture activities
- Effects on essential habitats (e.g., spawning and feeding grounds)

Supporting information

Priority:	
Scientific justification:	
Participants:	It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area.
Linkages to advisory committees:	It is expected that responses to a call for contributions will reflect the wide interest and active research current in this subject area.
Linkages to other committees or groups:	SCICOM
Linkages to other organizations:	–

NOAA (USA) and IMR(Norway): propose a Theme Session for the 2010 Annual Science Conference:

Title: MPAs in heavily exploited cold water regions of the continental shelf

Conveners: Erik Olsen (Norway), Susanne McDermott (USA), Dvora Hart (USA).

Description: With the implementation of ecosystem-based approaches to fisheries management, tools are being developed for the goals of sustainable resource management. One of these tools is the implementation of time and area closures i.e. marine protected areas (MPAs). Even though MPAs have been widely used in the management of exploited fish stocks, the creation and implementation of MPAs in a scientifically sound manner is challenging. This theme session will focus on design, monitoring, and evaluation of MPAs in commercially exploited cold water regions of the continental shelf. We are soliciting contributions that address these specific topics:

1. Identify and provide examples of scientific information relevant to MPA design such as larval dispersal, habitat mapping, vulnerable life history stages, spatial fishery patterns, and socio-economic impact analysis.

2. Identify and provide examples of MPA monitoring case studies and tools.

3. Evaluate MPA performance and define success rates in relation to original objectives and design.

The theme session will contribute to the third thematic area entitled ***Development of options for sustainable use of ecosystems*** of the ICES Science Plan (2009-2013).

Theme session proposal for ICES ASC 2010 (by Henn Ojaveer and Stephan Gollasch)

Preliminary title: Global change and marine bioinvasions

Conveners: Henn Ojaveer (Estonia), Stephan Gollasch (Germany) and NN (preferably from the North America)

Linked to EG/Committee: WGITMO, WGBOSV (SSGEF, SSGHIE, ACOM)

Description: The invasion of alien species is considered, besides climate change, exploitation of marine living resources and habitat alteration, one of the most important factors influencing marine ecosystem structure and functions. Most likley, it is the interraction of the different ecosystem drivers that finally determine the population abundance and role of an alien species in a new environment. In marine ecosystems most of the ecological impact caused by alien species in until now confined to costal areas and/or shelf seas, it has been predicted that the 'invasion front' is moving towards the offshore areas. However, still relatively little is known on economic impact caused by bioinvasions. Although the 'International Convention for the Control and Management of Ships' Ballast Water and Sediments' was adopted at IMO already in 2004, only a few countries have signed the convention. Therefore, the risk for new ballast water mediated invasions is still high until the Convention standards become applicable.

Contributions are essenatially welcomed on the following topics:

- Ecosystem drivers and processes responsible for alien species introductions/outbreaks
- Assessment of ecological and economic impacts caused by alien species
- Prediction of future, both primary and secondary, invasions
- Ecosystem effects of the use of alien species, e.g. in aquaculture

Title: Marine Spatial Planning for Multiple Uses of Marine Wind Farms

Conveners: Barry Costa-Pierce (USA), Bela H. Buck (Germany), Gesche Krause (Germany), Flemming Möhlenberg (Denmark), Edward Black (Canada)

Description: In an historic perspective, the principle of the freedom of the Seas (*mare liberum*) can be traced back to Hugo Grotius, who in 1608 claimed the Seas as *res commis* (Grotius 1916). He asserted that things that cannot be seized or enclosed cannot become property. Nowadays the Sea is still generally regarded as commons. However, due to the growing awareness of resource depletion and limitation, the stage of a "tragedy of the commons" (Hardin, 1968) has been reached in many ocean regions in the world such as the North Sea and the Atlantic coast. The current use of their coastal seas is extremely multi-faceted and highly competitive and a source of potential conflict for space allocation. This situation has highlighted

the need for sufficient regulations to optimize the management of the resources within a multi-use context and has further triggered the movement to offshore areas, where little spatial regulations have been established so far and seemingly less stakeholder conflicts exist.

Within this session two new stakeholders in offshore areas are in the central focus. Since the year 2000 a new industry enters the offshore scene: the offshore wind farm operators (1) in the North Sea. These new stakeholders are seen as a chance to combine renewable energy production with another new stakeholder group in offshore waters, the cultivators of marine organisms – aquaculture (2).

(1) High and reasonably steady wind speeds occur regularly in offshore areas, making such areas prime candidates for renewable energy production by wind energy farms. In the EU, a major political incentive exists currently to install large offshore wind farms. The promotion of wind power is mainly driven by the policy to reduce the dependence on conventional fossil energy resources as well as the need to reduce the environmentally harmful CO_2 loads. Thus, the emerging branch of offshore wind farms appears as a new stakeholder on the list of users. Currently, several wind farms are in operation, under construction, consented or planned along the Atlantic coast, especially in the North Sea.

(2) Since the 1970s, aquaculture production has grown quite rapidly and is by now one of the fastest growing aquatic food production sectors in the world (FAO 2004). Besides the rapid development of this sector, the wide-ranging decline in fisheries yields has been enhanced by an increase in public demand for aquatic products. With an annual share of more than 15% of total animal protein supplies, the production of capture fisheries and aquaculture plays a significant role in global food security. In 2004, approximately 160 million tonnes of aquatic organisms were produced worldwide. From that amount, global aquaculture accounts for almost 37.7% of total edible production, totalling about 60 million tonnes of aquatic organisms. Today, a wide range of aquatic species is raised in various aquaculture systems, onshore as well as in the ocean. According to the FAO, approximately 300 different species, ranging from fish to shellfish, crustaceans and algae are produced in aquaculture systems. Most of these traditionally founded aquaculture enterprises are concentrated in well protected and therefore favourable inshore water areas. The inevitable expansion of aquaculture activity from protected coastal waters to the open sea commenced about a decade ago in countries such as the USA and Europe with restricted access to coastal embayments but extensive coastlines. Offshore or open ocean aquaculture (OOA) are the terms coined for this new type of activity. For historical reasons some countries have lagged behind other countries with regard to this development. Thus, a pioneering effort to explore the potential of offshore aquaculture in the Economic Zone (EEZ) is timely.

Due to the massive expansion of wind farms in offshore areas that require a strong spatial consumption, the idea emerged to combine these with the installation of extensive mariculture for bivalves and macroalgae. Since offshore wind farms provide safety from shipping traffic and infrastructure for attachment and service support, the opportunity for a multiple-use concept presented itself. Thus, there is an enormous economic potential for *extensive marine aquaculture* in offshore areas.

Since human activity will increase in offshore regions in the near future in type and intensity, larger portions of the sea will and are already sectioned off, dedicated for specific, often exclusive uses that causes rising conflicts between interests groups. One solution calls for stakeholder integration and the multifunctional use of space.

However, within the vast variety of regulations inside the EU, the EU Member States as well as in North America, the regulative framework relevant to multiple use of ocean space is not yet complete. In the EU, current efforts by putting forward a Blue book on an integrated maritime policy that includes the main governance framework and appropriate tools for integrated policy-making has opened a window-of-opportunity to develop integrated multiple use management schemes for ocean space.

However, an integrated co-management strategy for offshore regions requires very different sets of rights and duties, as well as holding different types of conflicts, constrains and alliances, some of which are

illustrated in this session. A transdisciplinary and problem-focused approach that combines different knowledge systems to generate novel insights into the management of multiple use of ocean space is needed. This session focuses on two examples, offshore wind farms and open ocean aquaculture. It analyses their potential synergies within a co-management approach.

Title: Strengthening the links between marine fisheries science and fisheries management

Conveners: John Lock (UK), Maurice Heral (France)

Across Europe, ministries and research councils allocate substantial budgets to fisheries science. For example the 18 funders of research in the MariFish* partnership commit approximately 190m euros annually to science, including for research and stock assessment. As 'customers' for science the MariFish partners require robust 'evidence' on which to develop their strategies and plans for sustainable fisheries. The relationship between 'customers' for research and the science providers, or 'contractors', is complex – science is not a straight forward commodity to purchase. The MariFish partnership has made 'Strengthening the links between marine fisheries science and fisheries management' its central theme and has identified a number of areas where the link between the science provider and science customer needs to be improved including:

- Communication. Customers of science need to express clearly what the management questions are and what evidence is needed. Likewise the scientists need to provide answers in a language that is understandable to the non-specialist. Without an effective two-way communication process in place there is a risk that the substantial investment in fisheries science may not be used as effectively as it could be in helping to deliver answers.

- Collaboration between funders and between scientists. Across Europe there are big science questions related to fisheries that need answering including: what is the impact of fishing on the marine environment and how can we adopt an ecosystem-based approach; how do external factors such as temperature and oceanographic processes affect recruitment; and what will be the impact of climate change on fish stocks? No single funder can answer these important questions and we need greater collaboration between funders and scientists if we are to make progress. But to achieve this requires us to work outside our silos, and presents many challenges such as reaching agreement on research priorities, funding sources, reaching compromises etc.

- Knowledge management. Knowledge or 'evidence' is fundamental to fisheries management. Fisheries science is not a new topic – several research institutes have celebrated their centenaries, and there is an exponential increase in knowledge available. Managers, science advisers and scientists are finding it increasingly difficult to keep abreast of the available knowledge. Important questions include do we use existing knowledge to best effect, have we invested sufficient time and resources in science audits and reviews, and do we rely too heavily on 'codifiable' knowledge and not enough on 'tacit' knowledge – knowledge inside people's heads?

Improving the links between fisheries science and management presents us with these and other 'science management' challenges and the overall aim of this session is to explore ways of meeting these challenges, and improving the effectiveness of our investment in marine science. This session provides an opportunity to open up the debate between managers and users of science and the science community, to highlight good practice that undoubtedly exists, and enable the MariFish partnership and others to make more effective use of fisheries science in the future. The session will help us identify problems and explore potential solutions, for both customers and contractors of science. Broadly papers relevant to this session will examine how to improve the links between fisheries science and management and will include a wide range of topics such as: examples of

where collaboration is working well and why; how to improve the two-way communication between managers and scientists, and with other stakeholders including the fishing industry; studies in to knowledge management and examples of good practice. examples of where knowledge managementare invited that help sare invited on the following broad areas of 'science management'

*MariFish is an ERA-NET project supported by the European Commission.

Title: Habitat Mapping for better assessment and monitoring of our seas

Conveners: Proposed by Jacques Populus (France) and Roger Coggan (UK)

The Marine Strategy Framework Directive (MSFD) raises some key issues in the field of Habitat Mapping, particularly in the application of the eleven descriptors when assessing good environmental status (GES). The quality and occurrence of habitats and the distribution and abundance of species will be linked not only to climate change but also to seabed integrity (MSFD descriptor No 6). It is intuitive that habitats status and seabed integrity are sensitive to physical disturbance through agents such as demersal fishing and mineral dredging, but are all habitats equally sensitive and how accurately can we map such pressures?

The habitat mapping process encapsulates in maps a complex seabed reality using source data that are best acquired from targeted surveys of bottom topography, substratum and living communities but may also be available from historic data sets. Collating such data sets over extensive spatial areas is time consuming, but can benefit multiple end users. For example, sediment grain size data can be used in mapping and in statistical assessments of essential fish habitats or habitat suitability modelling. Likewise, evidence of seabed disturbance is commonly seen on sonar mosaics collected for seabed mapping, but is rarely exploited by other disciplines. These various collateral needs could have a bearing on how we collect and interpret seabed data in the future, and seabed mapping practitioners are keen to adapt their practices to accommodate such common cross-discipline needs.

Our assessment and monitoring of the marine seabed environment is intrinsically linked to the desire for effective Marine Spatial Planning (MSP), which increasingly calls for us to adapt our knowledge of habitats beyond mere documentation and description, so we can better understand their function and relative importance within the ecosystem as a whole. Such understanding will help to inform the Programme of Measures that management will implement in order to achieve or maintain GES.

These topics can be shared by several working groups, namely WGMHM, WGDEC, WGECO and WGICZM and a session at ASC2010 would be the best way to operate liaison between them.

Papers are welcome on:

- using and improving modelled maps to quantify spatial coverage of Annex I habitats at national and international scales
- monitoring change in habitat coverage and condition over time.
- best practice for using historical & legacy data in the context of seabed habitat mapping
- assessing and mapping habitat sensitivity (spatial & temporal)
- assessing and mapping seabed integrity (physical, biological, biogeochemical).
- survey strategies for remote sensing and ground-truth surveys, and how these influence mapping confidence.
- integrated interpretation of remote sensing & ground truth data (especially automated techniques such as segmentation)
- new biotopes for inclusion in the Marine Habitats section of the EUNIS classification system.

Suggestion by SGCC (now SICC) for two

Joint ICES/PICES Theme Session on "Responses to climate variability: comparison of northern hemisphere marine ecosystems"

Chairs: Jürgen Alheit (Germany), Harald Loeng (Norway), NN (PICES), NN (PICES)

Rationale

Marine ecosystems are heavily impacted by climate variability. Relevant questions related to external forcing functions that link global and regional climate processes to the physical oceanography are *inter alia*:

- how does variability in the physical aspects of the marine systems affect ecosystem structure and processes?
- how can we integrate across spatial and temporal scales to permit forecasting how changes in climate may affect the productivity and sustainability of the marine ecosystems?.

Climate impact studies have been made within single ecosystems or between different systems of the same region. However, comparisons between ecosystems of different regions or even of different ocean basins are rare. Such comparisons are vital in order to better understand responses of ecosystems to climate forcing, particularly with a view to large-scale climate forcing and teleconnection patterns.

The Theme Sessions invite contributions which compare ecosystems of different regions. Comparisons of climate variability impact between Atlantic and Pacific ecosystems are particularly welcomed.

It is intended to have two consecutive theme sessions on this subject, the first one at the ICES ASC 2010 and the second one at the Annual PICES Meeting 2010, where climate issues will be in focus. The aim is to exchange information between PICES and ICES scientists and to strengthen hemispheric collaboration.