

# CIRCUMPOLAR MARINE WORKSHOP

NOVEMBER 28 / DECEMBER 2, 1999



## Report and Recommendations

(CAFF) Conservation of Arctic Flora and Fauna  
(WCPA) IUCN World Conservation Union  
(PAME) Protection of the Arctic Marine Environment



# CIRCUMPOLAR MARINE WORKSHOP

NOVEMBER 28 / DECEMBER 2, 1999

## Report and Recommendations





# FOREWORD

On behalf of the Planning Team, organisers of the workshop, we are pleased to present this *Report and Recommendations* from the Circumpolar Marine Workshop. This Workshop has been instrumental in beginning an important dialogue on the conservation and protection of the circumpolar marine environment and the sustainable use of its resources. It has generated many useful and highly practical recommendations for action. However, in the Planning Team's view, it is only a first step in a much-needed longer-term process.

This leads us to an important question: How should we move ahead with this initiative and what steps are needed? Early on, the Planning Team was asked to look into this question and on its behalf, we are pleased to provide the sponsoring organisations with the following suggestions.

- *The sponsoring organisations should consider holding a second Circumpolar Marine Workshop circa the year 2001 and identifying which subject areas could be accommodated by a series of supplementary theme workshops.*
- *The sponsoring organisations should consider putting in place some arrangement to monitor and report back on the results of the Workshop and implementation of Recommendations.*
- *The sponsoring organisations should seek opportunities to incorporate the Workshop recommendations into their respective long term plans for submission to the Arctic Council and World Conservation Congress as the case may be.*
- *The REPORT AND RECOMMENDATIONS should be widely disseminated and its results communicated to Arctic policy makers to alert them to the collaborative achievements and results of this initiative.*

*James Johnston, Parks Canada*  
Chair, Circumpolar Marine Workshop Planning Team

*Jeanne Pagnan, IUCN World Commission on Protected Areas*  
Project Manager, Circumpolar Marine Workshop

# TABLE OF CONTENTS

EXECUTIVE SUMMARY	III
ACKNOWLEDGEMENTS	V
LIST OF ACRONYMS	VI
<b>PART ONE – SUMMARY REPORT AND RECOMMENDATIONS</b>	
PREAMBLE	1
1. INTRODUCTION	2
2. WORKSHOP GOALS AND OBJECTIVES	5
3. WORKSHOP HIGHLIGHTS	6
4. WORKSHOP CONCLUSIONS AND RECOMMENDATIONS	9
<b>PART TWO - OVERVIEWS</b>	
<b>A. Background Papers</b>	15
1. Involving Local Authorities and Indigenous People in Marine Management - Facing the Challenges - <i>K. McCormick</i>	15
2. Building the Infrastructure for Circumpolar Marine Management Tools and Management Systems - <i>G. Legare and J. Pagnan</i>	16
3. Improving Marine Management - Regulatory and Voluntary Marine Protection Instruments and Methods - <i>A. Hillary and J. Pagnan</i>	17
4. Improving Marine Management - Sustainable Resource Use and Managing Threats - <i>D. Egilson</i>	19
<b>B. Keynote Presentations</b>	21
Welcome Address - <i>Mathew King</i>	21
Values and Uses of the Arctic Marine Environment - <i>Alfred Jakobsen</i>	21
Pressures on the Arctic Marine Environment - <i>Bruce Amos for Nancy Foster</i>	22
An Ecosystem Approach to Marine Management - <i>Kenneth Sherman</i>	22
The Importance of Co-operation in Marine Management - <i>Clifford Lincoln</i>	22

<b>C. Workshop Panels</b>	<b>23</b>
Panel on Indigenous Peoples and Marine Management	23
Inuit Circumpolar Conference (ICC) – <i>D. Smith and B. Day</i>	23
Russian Association of Indigenous Peoples of the North (RAIPON) – <i>A. Mikhailov</i>	24
Saami – <i>L. Halonen</i>	25
Panel on Regional Authorities and Marine Management	25
Alaska State Government – <i>G. Gray</i>	25
Northern Norway – <i>J. Angell</i>	26
Murmansk Oblast – <i>Y. Vishnyakov</i>	26
Arkangel'sk Oblast – <i>V. Stanislavets</i>	26
<b>D. Module Presentations</b>	<b>27</b>
<b>Module I</b>	
Integrating Indigenous Peoples and Local Authorities in Marine Management – <i>A. Amirkhanov</i>	27
<b>Module II</b>	28
Integrated Marine Management – <i>J. Mathias</i>	
Environmental Data – <i>C. Zockler</i>	
Global 200 – Ecoregion-based Conservation System – <i>S. Christiansen</i>	
Arctic Monitoring and Assessment (AMAP) – <i>J. Murray</i>	
Global International Waters Assessment (GIWA) – <i>D. Henry</i>	
<b>Module III A</b>	29
Marine Management – Regulatory and Voluntary Instruments and Methods – <i>J. Johnston</i>	
<b>Module III B</b>	30
Marine Management – Sustainable Resource Management – <i>T. Ibsen</i>	
<b>PART THREE – MODULE DISCUSSION RESULTS</b>	
<b>Module I</b> – Integrating Indigenous Peoples and Local Authorities in Marine Management	33
<b>Module II</b> – Tools and Management Systems for Marine Management	34
<b>Module III A</b> – Regulatory and Voluntary Instruments for Marine Protection	37
<b>Module III B</b> – Sustainable Resource Use and Managing Marine Threats	38
<b>Appendices</b>	
I Sponsoring Organisations	41
II Workshop Agenda	43
III List of Participants	45

## EXECUTIVE SUMMARY

The Arctic ecosystem is shared by the Arctic countries and by the international community. It is important to engage the key players and gain their co-operation if a unified approach to conservation, protection and sustainable use of the Arctic marine environment and its resources is to be achieved. To that end, representatives of the Arctic countries and international organisations met at a Circumpolar Marine Workshop (CMW) from Nov. 28 – Dec. 2, 1999 in Montreal, Canada to begin a dialogue on their shared marine environment.

The Arctic marine environment is attracting increasing attention due to the opening of Russia's borders, the heightened recognition of its role in the global climate and ocean regimes, the collapses of several northern fish stocks, the growth of Arctic tourism, the presence of huge oil, gas and mineral deposits and the concerns over radioactive waste.

The *goals* of the Circumpolar Marine Workshop were, in recognition of the need to integrate conservation and sustainable development, to develop practical measures to protect the Arctic marine environment and conserve its biodiversity and to facilitate collaboration among Arctic countries, indigenous peoples and other stakeholders. The *objectives* were to develop common tools and mechanisms for circumpolar marine management, to discuss barriers and opportunities for marine conservation and an integrated approach to marine management, to identify gaps in the knowledge base and determine ways to address these, to integrate traditional with western scientific knowledge and to develop mechanisms to engage local and indigenous peoples in marine management.

The Workshop was introduced by several key-note presentations on Arctic marine issues and was designed around three themes: Involving Local Authorities and Indigenous Peoples in Arctic Marine Management, Developing Circumpolar Tools and Systems for Arctic Marine Management, and Management of the Arctic Marine Environment and its Resources. Each of these was addressed in a Module. Supporting the Modules were a number of Background Papers and presentations. Two Panel groups on the role of Indigenous Peoples and the role of Local Authorities in marine management were also held. They described the dependence of local and indigenous peoples on the marine environment, promoted the application of community based resource management systems and stressed the need for better integration of local and indigenous peoples in marine management decision-making.

The Module on Integrating Local Authorities and Indigenous Peoples opened with a talk on the transition in Russia's approach to its northern communities since the shift from the Soviet system and highlighted efforts to decentralise authority and promote community resource management. Participants then addressed three related topics in discussion groups: 1. successful mechanisms for local and indigenous participation in marine management decision-making; 2. key challenges and obstacles and 3. ways to improve participation. Common findings of the groups were that there is a need to move decision-making closer to its level of impact, to improve involvement of local and indigenous peoples in marine management, to increase greater communication among the various stakeholder and to better integrate traditional knowledge with western science.

The Module on Building the Circumpolar Infrastructure – Tools and Management Systems heard talks on integrated marine management, ecoregional approaches to marine management, marine environmental data, monitoring, and on international water projects. Participant groups then discussed three related topics: 1. the most useful tools and management systems for the Arctic; 2. the barriers to successful use of existing tools for marine management, and 3. systems practitioners would like to have. Common findings of the groups were that effective marine management needs to consider and integrate both science and socio-economic factors, and that there is a need to increase funding and marine management capacity. There was widespread interest in improving data management and monitoring, in standardising marine management tools, in pursuing an ecosystem approach to marine management and in developing a circumpolar marine strategy for the Arctic.

The Module on Improving Marine Management dealt with A. Regulatory and Voluntary Protection Instruments and B. Sustainable Marine Resource Use and Managing Threats. The first part included a presentation describing the legal instruments available for marine management and various voluntary mechanisms such as guidelines and industry certification programs. Topics considered in discussion groups were: 1. the adequacy of existing instruments for marine protection, 2. effectiveness of implementation, and 3. additional instruments and methods which might be needed and ways to improve implementation. Discussants were of the general opinion that there are enough domestic legal instruments to protect the marine environment inside the 200 nautical mile EEZ but beyond those limits, the situation is problematic since there is insufficient data on that portion of the marine environment, its biodiversity and its sensitive sites. There was also broad interest in circumpolar collaboration to increase marine protection including establishing a network of marine protected areas. The second part of the Module was introduced by a talk on Iceland's sustainable fisheries management and its system of Total Allowable Catch and Individual Transferable Quotas. Groups then discussed 1. the extent to which marine resources are being used sustainably and whether threats are being managed adequately, 2. obstacles to sustainable resource use in the Arctic and 3. ways to improve the sustainability of resource use in the Arctic marine environment. Discussions revealed differing perceptions on sustainable use and sustainable development but general interest in pursuing an ecosystem approach to marine resource management and a recognition that more knowledge and data on the marine environment is needed. The Workshop developed a series of Recommendations for projects and further action. These were grouped under six broad themes:

- Communication and participation
- Funding and capacity building
- Tools and mechanisms for marine management
- Marine protection
- Integrated marine management
- Marine resource management

The individual Recommendations are contained in the Report itself.

The co-sponsors, CAFF, PAME and the IUCN affirmed that they would take the Recommendations forward to their respective organisations for further consideration and action as appropriate.

As follow-up to the Workshop, the workshop organisers recommended holding a second Circumpolar Marine Workshop circa 2001, identifying subject areas for supplementary theme workshops, putting in place some arrangement to monitor and report back on the results of the Workshop and implementation of Recommendations, that the sponsoring organisations incorporate the Recommendations into their respective workplans and that the Workshop findings be widely disseminated.

## ACKNOWLEDGEMENTS

The World Conservation Union (IUCN) and the Arctic Council Working Groups for the Conservation of Arctic Flora and Fauna (CAFF) and Protection of the Arctic Marine Environment (PAME) wish to thank the following members of the Circumpolar Marine Workshop Planning Team for their fine work.

**Snorri Baldursson** (CAFF)  
**Stanislav Belikov** (Russia)  
**David Egilson** (PAME)  
**Jan Ekebom** (Finland)  
**Nils Ole Gaup** (Indigenous Peoples Organisations)  
**Annie Hillary** (WCPA)  
**James Johnston** (Canada) - Chair  
**Tiina Kurvits** (Canada)  
**Peter Nielsen** (Greenland)  
**Olav Nord-Varhaug** (Norway)  
**Jeanne Pagnan** (IUCN/WCPA) - Project Manager  
**Kenton Wohl** (USA)

The sponsoring organisations also gratefully acknowledge the generous support of the following organisations:

**Canadian International Development Agency** (Canada)  
**Departments of Fisheries and Oceans, Indian Affairs and Northern Development and Environment** (Canada)  
**Directorate for Nature Management** (Norway)  
**IUCN** (World Conservation Union)  
**World Commission on Protected Areas** (WCPA)  
**National Oceanic and Atmospheric Administration** (NOAA - USA)  
**Nordic Council of Ministers** (Denmark/Greenland, Finland, Iceland, Norway, Sweden)  
**Norwegian Polar Institute** (Norway)  
**Parks Canada** (Canada)

# LIST OF ACRONYMS

<b>AC:</b> Arctic Council	<b>IUCN:</b> World Conservation Union
<b>AMAP:</b> Arctic Monitoring and Assessment Program	<b>LDC:</b> London Dumping Convention
<b>CAFF:</b> Conservation of Arctic Flora and Fauna	<b>LME:</b> Large Marine Ecosystem
<b>CBD:</b> Convention on Biological Diversity	<b>MARPOL:</b> Convention for the Prevention of Pollution from Ships
<b>CMW:</b> Circumpolar Marine Workshop	<b>MPA:</b> Marine Protected Area
<b>CPAN:</b> Circumpolar Protected Area Network	<b>MSC:</b> Marine Stewardship Council
<b>DFO:</b> Department of Fisheries and Oceans (Canada)	<b>NC:</b> Nordic Council of Ministers
<b>EEZ:</b> Exclusive Economic Zone (Law of the Sea)	<b>NMFS:</b> National Marine Fisheries Service (NOAA)
<b>EIA:</b> Environmental Impact Assessment	<b>NOAA:</b> US National Oceanic and Atmospheric Agency
<b>FAO:</b> United Nations Food and Agriculture Organisation	<b>OSPAR:</b> Convention for the Protection of the Marine Environment of the North-East Atlantic
<b>GEF:</b> Global Environment Facility (World Bank)	<b>PAME:</b> Protection of the Arctic Marine Environment
<b>GIS:</b> Geographic Information System	<b>POPs:</b> Persistent Organic Pollutants
<b>GIWA:</b> Global International Waters Assessment	<b>RAIPON:</b> Russian Association of Indigenous Peoples of the North
<b>GPA:</b> Global Program of Action for the Protection of the Marine Environment from Land Based Activities	<b>RPA:</b> Regional Program of Action for Protection of the Arctic Marine Environment from Land Based Activities
<b>GRID:</b> Global Resources Information Data Base	<b>SCEP:</b> State Committee for Environmental Protection (Russia)
<b>GRSMPA:</b> Global Representative System of Marine Protected Areas	<b>SCNA:</b> State Committee for Northern Affairs (Russia)
<b>HELCOM:</b> Helsinki Commission	<b>TAC:</b> Total Allowable Catch
<b>ICC:</b> Inuit Circumpolar Conference	<b>UNCLOS:</b> United Nations Convention on the Law of the Sea
<b>ICES:</b> International Council for Exploration of the Seas	<b>UNEP:</b> United Nations Environment Program
<b>ICM:</b> Integrated Coastal Management	<b>WCC:</b> World Conservation Congress
<b>ICZM:</b> Integrated Coastal Zone Management	<b>WCMC:</b> World Conservation Monitoring Centre
<b>IMM:</b> Integrated Marine Management	<b>WCPA:</b> IUCN World Commission on Protected Areas
<b>IMO:</b> International Maritime Organisation	<b>WWF:</b> World Wide Fund for Nature
<b>IOC:</b> International Oceanographic Commission	
<b>IPCC:</b> Intergovernmental Panel on Climate Change	
<b>ITQ:</b> Individual Transferable Quotas	



CIRCUMPOLAR MARINE WORKSHOP



SUMMARY REPORT  
AND RECOMMENDATIONS

## PREAMBLE

Marine interests in the Arctic are varied and complex. Thus, it is important to engage the key players and gain their co-operation if a unified approach to the conservation, protection and sustainable use of the circumpolar marine environment and its resources is to be achieved. To that end, on November 28, 1999, over 70 representatives of the Arctic countries, organisations, indigenous peoples and the international community met, by invitation, in Montréal, Canada to begin a five-day dialogue on the Arctic marine environment. The Workshop was co-sponsored by the World Commission on Protected Areas of the IUCN (World Conservation Union) and two Working Groups of the Arctic Council – the Conservation of Arctic Flora and Fauna (CAFF) and the Protection of the Arctic Marine Environment (PAME). The Workshop brought together a diverse group of managers, scientists, regional authorities and local residents with the aim of improving the protection and conservation of the shared Arctic marine environment and its resources. Dedicated funding was raised for the Workshop from an array of interested organisations, which clearly signals the broad appeal of the subject area.

The impetus for the Workshop stemmed from informal discussions held between representatives of the IUCN, CAFF and PAME in late 1997. This was followed by a formal proposal from the IUCN's World Commission on Protected Areas (WCPA) and the IUCN Director General, to the Chairs of CAFF and PAME in 1998. The proposal was accepted and a Planning Team and Steering Committee were put in place to guide the process.

### **Reasons cited by the co-sponsors in support of this joint effort:**

- **IUCN:** At its 1996 World Conservation Congress, the IUCN membership passed Resolutions calling for increased emphasis on the Arctic, the development of an Arctic Strategy and the implementation of a Global Representative System of Marine Protected Areas (GRSMPA) in the Arctic. All eight Arctic countries have State membership in IUCN.
- **CAFF:** In 1998, the Arctic Council Ministers directed CAFF to continue the implementation, development and assessment of the Circumpolar Protected Area Network (CPAN) through emphasis on habitats and ecosystems that are presently underrepresented, including marine ecosystems, and to continue the identification of options for enhancing the protection of marine habitats in collaboration with PAME.
- **PAME:** In 1998, the Arctic Council Ministers also welcomed the Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities (RPA) developed by PAME, and agreed to work vigorously for its early implementation and to develop additional actions to protect the marine environment.

This *Report and Recommendations* from the Circumpolar Marine Workshop is offered in response to these directions and to the global call to increase the protection of our marine environment and conserve its resources.

## INTRODUCTION

The Arctic marine environment covers an area of roughly 13 million km<sup>2</sup>. This vast region includes the Arctic Ocean and the neighbouring Bering, Chukchi, East Siberian, Laptev, Kara, White, Barents, Norwegian, Greenland, Labrador, Beaufort and northern Okhotsk Seas as well as the Hudson and James Bays and the Davis Strait. It is surrounded by the USA (Alaska), Canada, Greenland, Iceland, Scandinavia (Norway, Finland and Sweden) and Russia.

The Arctic marine system is influenced by the permanent 6 million km<sup>2</sup> ice cap that covers part of the Arctic ocean itself and by the formation of seasonal ice in wintertime that recedes during the short Arctic summer, thus exposing the open waters of the Arctic seas. A characteristic of the Arctic ice pattern is that its circular rim teems with algal growth in the spring and summer. This ring of primary productivity in turn supports the higher marine food chain and provides important habitat to much of the Arctic marine biodiversity. Another interesting feature of the Arctic marine environment are the “polynyas” which are permanent or semi-permanent open spaces of water that dot the icy surface and form vital open-water habitat for the Arctic’s marine creatures.

Marine species of the Arctic include a number of benthic species such as molluscs and sponges along with cold-water fish (e.g. cod, Arctic charr, salmon), northern cetaceans (e.g. beluga whale, narwhal), seals (e.g. ringed seal), seabirds (e.g. thick-billed murres or guillemots) and the marine-dependent polar bear, recognised world-wide as a flagship species of the Arctic. In summer, the Arctic’s open waters teem with plankton and play host to large numbers of migratory whales such as the Pacific Grey and Humpback. In the Arctic’s ocean depths and under the ice cap, the marine biomass is surprisingly high.

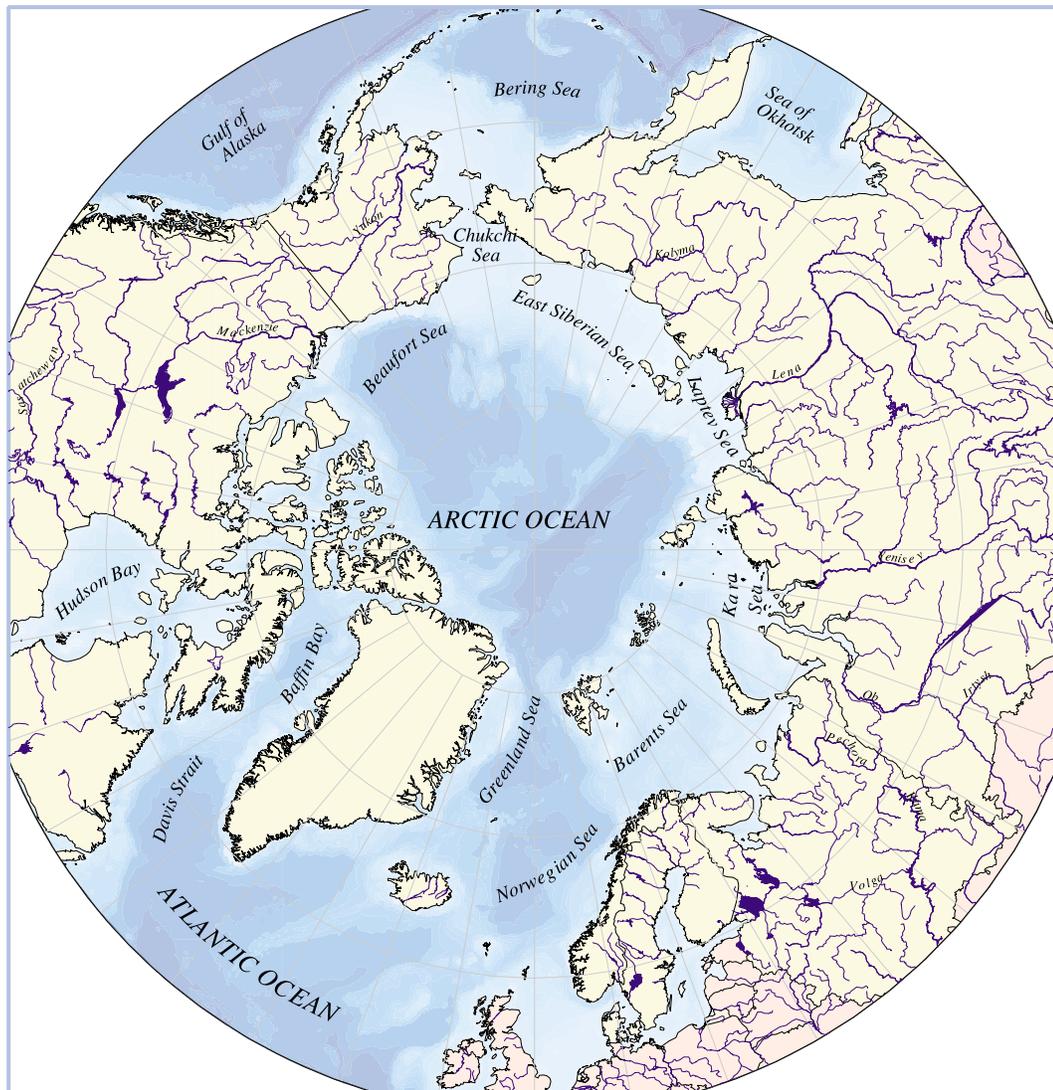
Traditionally, the Arctic marine environment has not attracted as much attention from the global community as have other marine systems. However, that is changing rapidly. Some of the reasons are:

- Russia, with almost 50% of the Arctic environment, has opened its borders to the world community and this has fostered increased collaboration and information exchange.
- Climate change and global warming have raised awareness of the importance of the Arctic marine environment as for example, a major CO<sup>2</sup> sink, as a major driver of the global ocean current regime and as having a pivotal role in regulating the world’s climate.
- Widely publicised collapses of some of the northern fish stocks and subsequent recovery efforts have focused more attention on the Arctic marine systems.
- The tourism industry is marketing the Arctic marine environment as a pristine and majestic cruise destination. Other shipping interests are investigating the Northern Sea Route along the coast of Russia as a potentially economical way to move goods and services between Asia and Europe.
- Huge deposits of oil, gas and minerals along the Arctic coastal shelves are attracting world wide attention and large capital investments.

- Reports of the use of Arctic waters as repositories of radioactive waste have raised concern globally.
- The Arctic countries have established the Arctic Council, preceded by the Arctic Environmental Strategy, which provides an infrastructure for circumpolar co-operation.

Although the Arctic countries have been co-operating on a variety of environmental and socio-economic issues since the early 1990s, most of their efforts have been directed at pollution and terrestrial biodiversity issues and in establishing mechanisms for co-operation. However, with interest in the Arctic marine system escalating and pressures on the system mounting, Arctic Ministers have deemed co-operation on the Arctic marine environment to be a priority.

## THE ARCTIC MARINE ENVIRONMENT



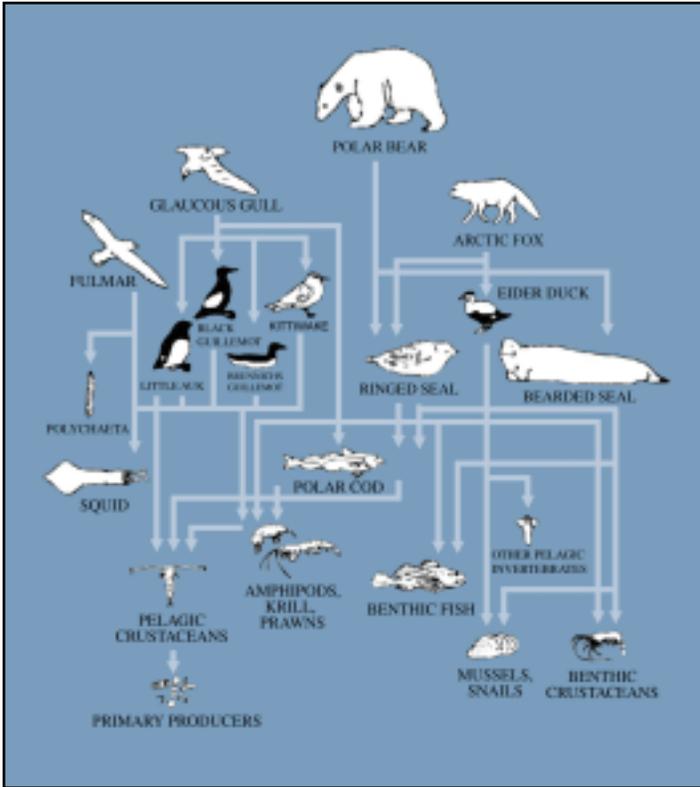
Scale is approximately 1:45 000 000 Projection : Lambert-Azimuthal Equal Area

Neither the delineation of boundaries nor the use of any name in the publication implies an expression of opinion on the part of UNEP concerning the legal status of any country or territory, or of its authorities, or concerning the delimitation of the frontiers of any country or territory.

Graphical production by : UNEP/GRID Arendal, March 1996

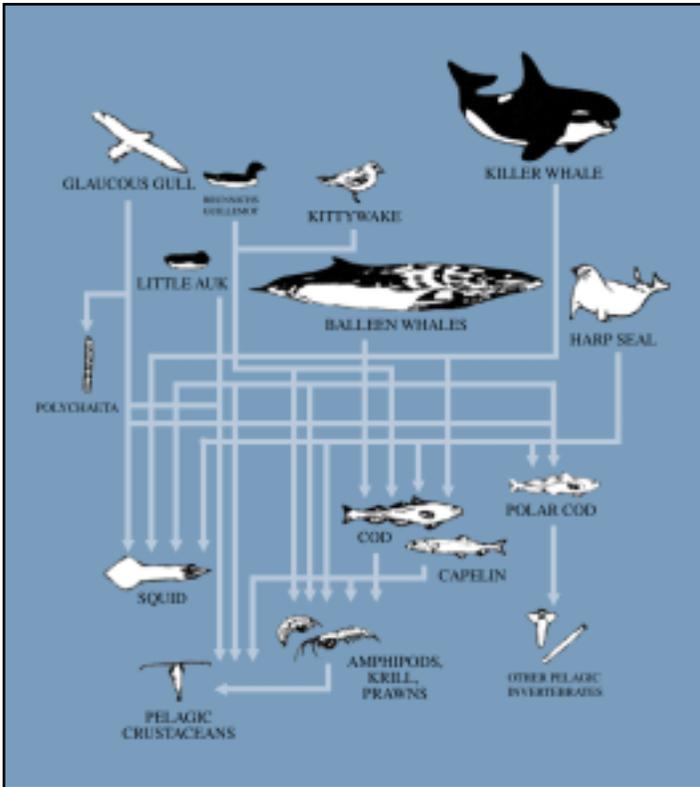


source: GRID - arendal



## ARCTIC DRIFT ICE FOOD WEB

source: GRID - arendal



## ARCTIC PELAGIC FOOD WEB

## WORKSHOP GOALS AND OBJECTIVES

The sponsoring organisations established the following goals and objectives for the workshop.

In recognition of the need to integrate conservation and sustainable development, the *goals* for the Circumpolar Marine Workshop were:

- to develop practical measures to protect the Arctic marine environment and conserve its biological diversity.
- to facilitate improved collaboration among Arctic countries, indigenous peoples and other stakeholders and organisations.

The *objectives* were:

- to develop common tools, mechanisms, processes and best management practices to enhance circumpolar conservation and protection of the marine environment within a sustainable development framework.
- to identify barriers to and opportunities for enhanced conservation and protection of the marine environment and help to design an integrated approach to marine management.
- to identify major gaps in the knowledge base on the marine environment and its resources and to determine ways to address those needs.
- to integrate traditional with western ecological knowledge and to develop mechanisms to engage local and indigenous peoples in marine conservation and management.
- to assist the Arctic Council and its governments, the IUCN, indigenous peoples and other organisations to further their marine conservation agendas.
- to prioritise pressures on the Arctic marine environment and recommend co-operative strategies to address them.
- to identify values and uses of the circumpolar marine environment.

## WORKSHOP HIGHLIGHTS

The Circumpolar Marine Workshop was designed around three themes of circumpolar interest.

- Involving Local Authorities and Indigenous Peoples in Arctic Marine Management
- Developing Circumpolar Tools and Systems for Arctic Marine Management
- Managing the Arctic Marine Environment and its Resources

Themes were addressed in Modules with the first supplemented by Panel presentations from representatives of three northern indigenous peoples organisations (Inuit Circumpolar Conference (ICC), the Saami Council and the Russian Association of Indigenous Peoples of the North (RAIPON)) and local authorities (State of Alaska, Norway, Murmansk and Arkhangel'sk Oblasts of Russia).

Supporting the Modules and Panels were several advance background papers and a number of keynote addresses by: Greenland's Minister of Environment (Alfred Jakobsen), the Vice-Chair, Marine of the IUCN/World Commission on Protected Areas (Bruce Amos for Nancy Foster) and the Director of the NOAA National Marine Fisheries Service's Office of Marine Ecosystem Studies, Kenneth Sherman. Clifford Lincoln, Member of Parliament for Canada and Member of the Arctic Parliamentarians also gave a special address.

Some of their messages were:

- The marine workshop should be seen as an important step in a longer term process to improve the conservation and protection of our shared Arctic marine environment.
- The Arctic marine ecosystem is under increasing stress but through collaboration there is an opportunity to meet the challenges and overcome some of the serious obstacles.
- Arctic peoples have traditionally depended on marine resources for their sustenance and need the help of the circumpolar and global communities to maintain the health and productivity of the Arctic marine ecosystem.
- A shift to an integrated ecosystem approach to marine management may be desirable since the traditional sectoral approach is considered by some to be a contributing factor in an overall depletion of marine resources and a decline in the health of the oceans.
- The Arctic countries and organisations should strive to develop and put in place common tools and systems to more effectively protect and conserve the Arctic marine environment.

The **Panel on Indigenous Peoples and Marine Management**, chaired by Peter Nielsen of the Greenland Home Rule Government, and the **Panel on Regional and Local Authorities and Marine Management**, chaired by Kent Wohl

of the US Fish and Wildlife Service, described the dependence of local and indigenous peoples on the marine environment and promoted the application of community based resource-management and fisheries systems. Representatives advocated the use of traditional fisheries methods and community-based regimes, which they consider less destructive than the capital intensive, commercialised systems currently in place. They expressed concerns for the use of the current fisheries quota systems, which give economic incentives to overfish, and for the impacts of pollution on the marine environment, its resources and on the health of people who depend on them. Representatives pointed to the need for better integration of local and indigenous peoples into the marine management decision-making process and explained that people at the local level often do not have the capacity or training to effectively participate in marine management and sought to have that remedied.

The first Module, **Integrating Indigenous Peoples and Local Authorities in Marine Management**, was chaired by Kevin McCormick of the Canadian Wildlife Service. Dr. A. Amirkhanov, Russian State Committee for Environmental Protection, opened with a talk on the transition in Russia's approach to its northern communities since the shift from the Soviet system and the efforts to decentralise authority and promote community marine resource management. Following his talk, participants were asked to address three topics in discussion groups:

- *successful mechanisms for participation in marine management decision-making by local authorities and indigenous peoples*
- *key challenges and obstacles to successful participation in marine management decision-making by local authorities and indigenous peoples*
- *ways to improve local and indigenous peoples' participation in marine management*

In conclusion, Mr. McCormick summarised some of the overarching themes that had emerged from the discussions. They were: the need to move decision-making closer to the level of impact, the need to improve the involvement of local and indigenous peoples in the decision-making processes, the need for greater communication among the various groups and the need for greater integration of traditional ecological knowledge with western science.

The second Module chaired by John Karau from the Environmental Protection Service of Environment Canada, dealt with the far reaching topic of **Building the Circumpolar Infrastructure for Marine Management - Tools and Management Systems**. At the outset participants heard talks on several relevant subject-areas including integrated marine management (J. Mathias), the use of environmental data (C. Zockler), an ecoregion approach to marine conservation (S. Christiansen), Arctic monitoring and assessment (J. Murray) and the Global International Waters Assessment (D. Henry). Participants then broke into discussion groups to address the following issues:

- *tools and marine management systems most useful for Arctic marine management*
- *barriers to the successful use of existing tools*
- *marine management tools and management systems practitioners would like at their disposal*

In concluding this Module, Mr. Karau outlined common grounds that had emerged. One is the need to consider both the science and the socio-economic dimensions in effective marine management. Another was the widespread interest in improving Arctic marine data management, monitoring and information sharing and at standardising marine management tools. A third was the interest in pursuing an ecosystem approach to the management of the marine environment and in developing a marine strategy for the Arctic. A fourth was the need for increased financing. And lastly, there was an interest in looking further at what tools and systems are in place across the Arctic.

Module III addressed the topic of **Improving Marine Management** and was divided into two parts. Part A, **Regulatory and Voluntary Protection Instruments and Methods** was chaired by Douglas Yurick of the Canada Parks Agency and was opened with a talk by James Johnston, also from the Canada Parks Agency. Mr. Johnston described the legal instruments available for marine protection and explained that this approach which generally has political support, is popular with interest groups and has the force of law, although it can cause resentment

because of its coercive nature. He also described various voluntary mechanisms such as guidelines and certification programs that can be incentives for conservation. Participants then considered the following three issues in discussion groups:

- adequacy of existing regulatory and voluntary instruments for marine protection
- whether marine protection instruments and methods are being implemented effectively
- additional instruments and methods needed for marine protection and ways to improve implementation

Mr. Yurick closed this portion of the Module by pointing out that discussants were of the general opinion that there are enough domestic legal instruments to protect the marine environment within the 200 nautical mile Exclusive Economic Zones (EEZ) but that beyond the 200 mile limits the situation is much more problematic partly because there is insufficient data on that portion of the circumpolar marine environment, on its biodiversity and on its sensitive sites. He noted the broad interest in collaborating to increase marine protection including establishing a network of marine protected areas.

David Egilson of Iceland's Environment and Food Agency chaired Part B of Module III - **Improving Marine Management: Sustainable Resource Use and Managing Threats**. He pointed out the importance of having the whole marine system function effectively and the need to examine the impact of the various activities on it. Thorir Ibsen talked on sustainable fisheries management using Iceland's fisheries with its system of Total Allowable Catch (TAC) and Individual Transferable Quotas (ITQ) as an illustration. Some points were that the economic performance of the industry and that "sustainability" is a political concept the application of which means that social, economic and ecological choices have to be made, choices that are often controversial. Participants then addressed the following topics in discussion groups.

- *the extent to which marine resources are being used sustainably and threats managed*
- *obstacles to sustainable marine resource use in the Arctic*
- *improving the sustainability of marine resource use in the Arctic*

Mr. Egilson concluded the session by pointing to the very different perceptions of the definition of "sustainable use" and "sustainable development" that were evident in the discussions. He also noted the interest in pursuing an ecosystem approach to resource management and the recognition that we need more knowledge of the marine environment and more data in the form of maps and other management tools.

## WORKSHOP CONCLUSIONS AND RECOMMENDATIONS

Aided by presentations from the session Chairs, participants reviewed the results of the Workshop sessions in the concluding Plenary session chaired by Malcolm Mercer of IUCN Canada.

Participants concluded that even though all the ideas and suggestions from the Workshop had benefit, it would be useful to consolidate them under overarching themes, a task assigned to the Planning Team.

In summarising the general themes and drawing up consolidated Recommendations from the Workshop, the Planning Team was mindful of the need to ensure that the Recommendations were:

- Consistent with the original intent of the Workshop and its goals and objectives outlined earlier in this Report.
- Practical, realistic and achievable (assuming funds and resources are made available).
- Reflective of the major lines of thought from the workshop.
- Designed to enhance collaboration.
- Respectful of the policies and legislation of the individual Arctic countries and not in conflict with stated domestic law and policy.
- Consistent with the programs, priorities and policies of the Arctic Council and the IUCN.

The CAFF and PAME programs will review these recommendations with a view to bringing them forward to the Senior Arctic Officials of the Arctic Council and having them incorporated into future work as appropriate. The *Report and Recommendations* will be distributed widely within the IUCN and serve to inform IUCN priorities for the next triennium that will be established at the next World Conservation Congress. They will also be reflected in and underpin marine resolutions for the World Parks Congress in 2002.

### Recommendations

Recommendations from the Workshop have been grouped under six broad themes:

- a Communication and Participation
- b Funding and Capacity Building
- c Tools and Mechanisms for Marine Management
- d Marine Protection
- e Integrated Marine Management
- f Marine Resource Management

## A. COMMUNICATION AND PARTICIPATION

Participants felt that overall communication on Arctic marine issues could be improved. They also observed that the management goals and objectives for marine management should be clearly communicated in a way that is readily understandable to the recipients (i.e. communicated in culturally and regionally appropriate ways). Participants pointed out that information on the Arctic marine environment, on its importance, its values, its uses, its resources and its status should be more broadly communicated to the public, to decision-making politicians and stakeholders and to other regions. Participants saw a need to strengthen the involvement of local residents and indigenous peoples in marine management and decision-making and that without their co-operation, effective marine management and conservation is not possible. One way to strengthen participation could be by delegating decision-making to the local level and providing training in effective participatory practices.

### Recommendations:

- Review and analyse current communication methods and practices relating to marine management in the Arctic
- Develop collaborative ways to increase public understanding of the Arctic marine environment and disseminate information on the Arctic marine environment, its issues, uses and importance to a broad audience
- Prepare a circumpolar report and analysis of marine management decision-making practices and protocols within the Arctic countries and identify opportunities to delegate decision-making to the local level where feasible and appropriate
- Review and assess current participatory mechanisms and processes and propose improvements that are culturally and linguistically appropriate
- Establish environmental impact, monitoring and enforcement programs at the local level and incorporate local and indigenous knowledge in these programs
- Review multi-stakeholder marine management mechanisms that include local and indigenous peoples
- Provide skills training to indigenous peoples and local residents in participatory techniques and practices

## B. FUNDING AND CAPACITY BUILDING

The Workshop discussed the adequacy of funding for Arctic marine work, for participation of local and indigenous peoples in marine management and for consultation and communication and agreed that a sustained, increased level of funding was necessary to manage the marine environment and its resources properly and to ensure full and adequate participation of and communication with local and indigenous peoples. Participants also noted the need to build scientific and management capacity for marine work at the local level and among indigenous peoples. There are currently few specialists and their capacity to participate is stretched to the limit.

### Recommendations:

- Seek long-term, sustained financing for circumpolar marine conservation
- Share costs for marine project work and establish funding policies and incentives favouring collaboration and partnerships to access funding
- Review and report on the funding situation and potential funding sources for Arctic marine work, including the non-government community and industry

- Educate and provide skills training and hence jobs for local and indigenous peoples in marine sciences and management and examine current and potential local employment opportunities in these fields
- Study the current marine management capacity and capability within indigenous groups and local communities

### C. TOOLS AND MECHANISMS FOR MARINE MANAGEMENT

Participants observed that common tools and mechanisms would benefit marine research, conservation, protection and management and that compatible tools and mechanisms would enhance collaborative Arctic marine management and research and provide for more accurate and timely advice to decision-makers. Participants also acknowledged that they were uncertain on exactly what tools were in use across the Arctic and how effective they were. They identified several tools and mechanisms that would facilitate co-operation at the circumpolar level and pointed to an overall need for clear, shared objectives for marine research and management. Other needs identified were for:

- Circumpolar data/maps on indigenous sites, marine resources, biologically sensitive sites
- Catalogues of existing environmental information
- Common standards for data acquisition and management
- Common indicators of marine ecosystem health
- Additional information on marine species and habitats
- A common marine geo/biogeographical classification system and standardised marine terminology
- A circumpolar monitoring scheme, protocols, compatible monitoring systems and establishment of additional monitoring sites to improve baseline data
- Information on the circumpolar marine environment beyond the 200 mile Exclusive Economic Zones

#### Recommendations:

- Develop a list of existing Arctic marine databases and initiate a process to harmonise marine data collection, assessment and promulgation using modern technologies
- Produce circumpolar maps of marine resources, indigenous sites, ecologically sensitive sites and marine economic zones
- Review existing marine geo/biophysical classification systems and terminology in use across the Arctic and propose a common system
- Establish common marine monitoring and marine environmental quality assessment standards, methods and guidelines, including a system of marine ecosystem health indicators
- Encourage initiatives such as those in Russia, and of CAFF and AMAP for circumpolar marine monitoring

## D. MARINE PROTECTION

Participants reviewed the regulatory and voluntary instruments available for marine protection. They called for better protection of the circumpolar marine environment and noted, for example, that only approximately 2% of the circumpolar marine environment is under some type of formal protection. They acknowledged current circumpolar efforts such as those of CAFF, through the Circumpolar Protected Areas Network, PAME, through the Oil and Gas Guidelines, and the IUCN through the implementation of the Global Representative System of Marine Protected Areas in the Arctic. They pointed to the dilemma of affording migratory species protection throughout their migratory ranges and observed that on the high seas some species and sensitive sites were probably outside the scope of current legal protection regimes. Participants were not convinced that local authorities or indigenous peoples were cognisant of the instruments available to them or of their potential role in implementation and enforcement. They were also not convinced that there is sufficient political will to increase and enforce marine protection.

### Recommendations:

- Complete a compendium of and establish a circumpolar network of marine protected areas within CPAN and the IUCN's Global System that incorporates seasonal sites and migratory routes
- Establish circumpolar guidelines for sensitive and culturally important marine sites and for marine user groups such as extraction industries and ship tourism
- Review compliance with marine regulatory instruments and recommend further steps needed
- Review and assess incentives (financial and other) to encourage voluntary marine protection
- Assess the need for conservation and protection beyond the 200 nautical mile limit (EEZ) and for further international collaboration
- Review current protection afforded marine migratory species throughout their ranges and propose improvements

## E. INTEGRATED MARINE MANAGEMENT

Participants acknowledged that the Arctic marine environment should be managed on an integrated basis and that this could involve a paradigm shift to an ecosystem approach. They touched on various integrated management systems including the Regional Seas Programme of UNEP, the Baltic Sea arrangement under HELCOM, the Coastal Zone Management approach, and the Large Marine Ecosystem and ecoregion-based approach. Participants also suggested that institutional arrangements should be improved to facilitate inter-regional marine collaboration. Participants discussed the usefulness of developing a circumpolar marine strategy that would incorporate many of the concepts discussed during the Workshop and foster an integrated approach to circumpolar marine management. Such a Strategy could serve as a comprehensive, overarching framework for circumpolar marine activity and would be developed as a consultative product. Russia offered to lead on developing a circumpolar marine strategy beginning with a consultation process.

### Recommendations:

- Carry out a feasibility study on the applicability of regional marine management approaches such as the UNEP Regional Seas Programme, OSPAR, and HELCOM arrangements for applicability to the circumpolar region
- Investigate the establishment of additional Large Marine Ecosystems in the Arctic (i.e. as applied in the Barents Sea LME, the Baltic Sea LME and the Labrador Shelf LME) and assist Russia to access GEF funds for the purpose

- Develop a concept paper and proposal for a Circumpolar Marine Strategy beginning with a consultation process

## F. MARINE RESOURCE MANAGEMENT

The marine resources of the Arctic are abundant and include pristine seascapes, oil and gas deposits and fish and marine mammals. Participants identified several current and potential threats to the marine environment including increased shipping, pollution, overexploitation, dams, habitat degradation, introduction of alien or genetically modified species (i.e. salmon) and uncontrolled tourism. Although all these issues were considered important and require more in-depth treatment at a later date, most of the discussion centred on the use of living marine resources and the barriers and incentives to good management, including the use of subsidies. Several participants noted a lack of agreement among user groups and acknowledged that there are competing and conflicting interests that impede effective management of marine resources. They suggested that to achieve sustainable use, a multi-stakeholder approach needed to be applied that would include industrial interests, conservation interests and local and indigenous peoples' interests. Participants suggested that a vision statement be developed across the Arctic that would include the social, economic and environmental components associated with resource use.

### Recommendations

- Prepare circumpolar resource evaluations of certain key marine species and sites to include economic, social, cultural, traditional and ecological values
- Assess the impact of economic incentives and disincentives and of subsidies on marine resource use and protection
- Publicise examples and 'lessons learned' where communities have moved from consumptive to non-consumptive activities
- Encourage the use of a percentage of oil and gas lease sale income and other marine industrial use revenues for marine conservation, research, monitoring and impact assessment
- Examine the impact of modern harvest technologies and practices on inter alia, fish stocks and traditional resource use
- Prepare a circumpolar overview of fisheries and other marine resource systems
- Prepare a study and individual case studies on local and indigenous peoples fisheries practices and community-based fisheries management

# CIRCUMPOLAR MARINE WORKSHOP



## OVERVIEWS

## A. BACKGROUND PAPERS

### Paper I: “Involving Local Authorities and Indigenous Peoples in Marine Management” – *Kevin McCormick*

The marine environment has played a key role in the dispersion and sustenance of humans in the Arctic. The oceans were, and still are, a primary medium of transportation, which permits the movement of people and goods across large distances and areas. The oceans have also been a key source of natural resources for both personal consumption, subsistence and commercial exploitation. Indeed, the close association of Arctic people with the marine environment is apparent in their distribution throughout the Arctic. It is evident that in most countries, the majority of people are concentrated in coastal communities or in close association with the marine environment.

Marine ecosystems support many of the economic and socially important species for Arctic communities. They provide a significant component of many local subsistence and regional and national commercial economies. Many aboriginal people are closely linked to the marine environment, particularly due to their dependence on traditional foods, which form the basis of indigenous society, cultures and economies. There are large exports of fisheries products from the Arctic region to other parts of the world. For example, fish products amount to approximately 75% of Icelandic exports. The well being of many Arctic communities therefore depends on a clean and unpolluted environment.

Marine conservation concerns and challenges that face us today are pollution both from within the Arctic and from external sources, coastal ecosystem degradation and alteration caused by human settlements, infrastructure and mining activities, the large-scale exploitation of living resources beyond sustainable levels, and long-range transport.

Clearly the scale and complexity of these environmental concerns dictates that they must be addressed at various geographic scales including at the local level and in a manner which will induce necessary individual and collective behavioural changes. This entails an apparent need to improve socio-economic decision-making processes, to further develop shared or co-operative management systems, to further integrate management systems from the local and regional scale to the national and international one and to consider the views and values of local/regional users as well as national/international organisations.

There is an extensive array of international and domestic legal instruments pertaining to the conservation and protection of the Arctic marine environment. That said, the variety and extent of the current holding relating to the conservation and management of the marine environment suggests that there are adequate legal mechanisms to address many of the current environmental concerns. However, these conventions, agreements and domestic legislation depend upon the commitment of the signatories to address their international obligations within their respective jurisdictions and the co-operation of local authorities and people to implement them. Therefore, a key question is: *How do we engage local and indigenous peoples in the practical process of addressing national and international obligations at the local and regional level?* The concept of sustainable development offers some insights on this issue.

The generally accepted definition of sustainable development is the one provided by the Bruntland Commission. A recent conference on “Sustainable Development in the Arctic”, held in Whitehorse, Canada developed some key themes about the application and implementation of sustainable development in the Arctic region. Sustainable development is about human social, economic and cultural welfare. However, collective human welfare can be advanced only within the biological constraints or carrying capacity of the ecosystem in question. A key challenge when trying to implement sustainable development is the development of an agreed-upon vision for a particular ecosystem. Our vision is driven by our values. There are often significant differences between the views of aboriginal and non-aboriginal persons with respect to their relationship with the natural environment. Who gets to define the vision for a particular marine ecosystem - members of a central government who may be far removed from the area in question, public interest groups who may have a specific agenda, the local and regional residents and their organisations, or a combination of all three? The political dimension of this issue is obvious. Clearly a framework of structured process is needed for bringing together the disparate interests and reaching a common or shared view of the way forward. There must be ownership of the decision. There must be a willingness to accept the result and move forward. The potential for ownership is greatly enhanced if all parties have an opportunity to engage in the decision-making process, to debate the various options and to produce a result, which is beneficial to the greatest number of participants. This is especially so with respect to community or local involvement. If there is no obvious local benefit accruing from a particular decision, there is little possibility of local support.

Management of natural resources - at any scale - is essentially the management of people. Environmental concerns arise over the conflict between the desire for enhancing our social and economic well-being and the need to do so within the ecological constraints imposed by the marine ecosystems on which we depend. *Most persons and organisations will act in their long-term self interest based on the information available to them. Conversely, they will be reluctant to act in a desired manner if the benefits of doing so are not apparent to them.* Clearly, there is a need to actively engage local and indigenous organisations in resource management decisions. The mechanisms for doing so can and should vary with individual circumstances but the principle of local and regional engagement is fundamental to the full integration of environmental management actions from the local to international levels.

## Paper 2: “Tools and Management Systems for Circumpolar Marine Management” – Gregg Legare and Jeanne Pagnan

The paper provides background information on selected ecosystem science and management tools and systems available for Arctic marine work and provides an overview of classifications, integration efforts for coastal and marine management and oceans data and monitoring.

Ocean space is classified, studied and managed based on a variety of very large classification units depending on the purpose. Overall, there are basic legal, scientific and management oriented classifications. The United Nations Convention on the Law of the Sea (UNCLOS) is the main system used to legally partition ocean space. It provides the basic framework within which ocean management operates. Within this international legal regime are “nested” the various convention-based Regional Seas Programs of the United Nations Environment Program (UNEP) and a number of other regional Conventions (e.g. Helsinki, OSPAR). UNCLOS also forms the “operational framework” for a number of international marine agencies (e.g. International Maritime Organisation (IMO)). There are a large number of science-based classification systems for ocean space, usually based on oceanographic and/or biogeographic criteria. According to IUCN, the reason there are several is that “the marine environment has been much more difficult to categorise according to biogeographic regions and there is no general consensus on any one system including for the Arctic”. At the management level, all Arctic countries classify their marine environment and, increasingly, all are moving to an ecological-legal based system of coastal zones as management units, which may or may not incorporate elements of adjoining land and river systems.

A number of international agreements and initiatives employ an ecosystem framework to define their management units. There are no standardised criteria used to delineate regions. Some are based on biogeo-

graphic criteria, some on geopolitical criteria and some on conventional cartographic criteria. For the purpose of implementing its Global Representative System of Marine Protected Areas (GRSMPA), IUCN has divided the world's oceans into 20 regions (realms). The Intergovernmental Oceanographic Commission (IOC) and the US National Oceanic and Atmospheric Administration (NOAA) sponsor the Large Marine Ecosystem (LME) classification which divides the world's productive coastal zone into 50 LMEs based on bathymetry, hydrography, biological productivity and trophically dependent populations.

In ocean affairs, the Regional Seas Program is UNEP's «flagship program» and there are now 12 Regional Seas programs based on intergovernmentally approved work plans. Through Regional Seas UNEP is now vigorously pursuing integrated coastal management (ICM). It proposes to strengthen the program by making its overarching principle the integrated management and sustainable development of coastal areas and associated river basins. Drainage basins will then become the management units. There is currently no Arctic Regional Seas program.

World Wide Fund for Nature (WWF) has adopted an ecoregion approach in its Global 200 program, which focuses on 237 global ecoregions chosen for their role in representing all the world's ecosystems. Selection of ecoregions is based on species richness, endemism, uniqueness, unusual ecological or evolutionary phenomena, and global rarity of major habitat types.

Over the past decade or so, both scientific and management approaches to ocean affairs have increasingly reoriented themselves toward an integrated ecosystem approach with ecosystem, according to the Convention on Biodiversity, meaning a «complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit». While this integrated approach goes under various names such as ecosystem management, integrated coastal management or the WWF and IUCN bioregional approaches, all are characterised by using ecosystems as the fundamental scientific and/or management unit. Some claim that nature itself has forced this reorientation.

The advent of computerised and electronic data analysis in the past 30 years and the more recent development of computer and remote-sensing means of acquiring basic information itself has meant a virtual explosion of the amount of data available on all measure of scientific and environmental management problems. In a way there is an embarrassment of riches here. A major activity in international and national scientific projects has become the management of data itself. Nevertheless, several gaps in marine science data have been identified. One is the lack of time-series data to detect trends in natural variability. There is also a lack of data on the full complement of biologically rich and sensitive sites, on particular species and their ecological interactions and the separation of natural effects from anthropogenic ones. Data tends to be richest for commercially harvested species but this is insufficient to an ecosystem approach. A more comprehensive ecological knowledge of the marine environment is needed.

Governments have identified several management data needs as well. Central management questions posed by all Arctic governments are: what should the focus of marine conservation efforts be? And, what should the main tools be? Marine protected areas, harvesting regulations or others? Until this is answered, there is great uncertainty as to how to proceed. Better, more comprehensive environmental impact assessments are needed. There is also wide agreement on the need to better integrate local and indigenous participation.

A specific type of data collection integral to scientific research and management is environmental monitoring which is “the long-term, continuous and periodic assessment of biological and other environmental variables, using a particular methodology...it is essential to establish a baseline or standard against which changes can be measured. Monitoring is a long-term activity”. All Arctic countries have national monitoring programs with a greater or lesser marine component. Overall though, while there may be substantial agreement on various monitoring needs and their importance, there is no commonly agreed or comprehensive set of criteria to govern Arctic marine monitoring.

### Paper 3: “Regulatory and Voluntary Marine Protection Instruments and Methods” – *Annie Hillary and Jeanne Pagnan*

Current sectoral approaches to management of Arctic marine and coastal resources have generally not proven capable of conserving marine resources effectively. New models are needed that move toward multiple-use,

systems-oriented modes of management, based on precautionary approaches and ecosystem management principles. Understanding the various protection interests in the Arctic Region can assist in determining effective conservation measures. A number of initiatives are contributing to increased protection of Arctic marine resources. They have resulted from catastrophic events that now require more stringent conservation and protection measures. Crashes of important commercial fish species have led to major social and economic upheavals in many established fisheries (e.g. Greenland and Canada). This has resulted in additional conservation initiatives (e.g. the Canada Coastal Fisheries Protection Act). Additionally, marine catastrophes, such as the Exxon Valdez oil spill in Alaska sparked both public outcry and governmental responses with the United States enacting new protection legislation (e.g. the Oil Pollution Act). These are only a few examples that point to the need to provide increased protection to the Arctic marine environment.

Protection of the Arctic marine environment is being accomplished through a number of legal instruments that protect and conserve resources through regulation of human activity, as well as through establishing special areas that prohibit or restrict human activities in highly sensitive areas. These command and control approaches have intensified over the past 25 years and there is now an array of legal and regulatory instruments available at both the international and national levels. There are also a number of conservation instruments to set aside marine areas for conservation purposes that are being applied in the Arctic region. Significant instruments are the 1982 United Nations Convention on the Law of the Sea, the Conventions on Biological Diversity (CBD), Trade in Endangered Species (CITES), Whaling, Wetlands of International Importance (Ramsar), World Heritage, Migratory Species and the UN Agreement on Straddling Fish Stocks. Two anti-pollution Conventions also contain important marine conservation provisions, the Convention for the Prevention of Pollution from Ships (MARPOL) which restricts vessel discharges and can be used to identify Special Areas to be Avoided and Particularly Sensitive Sea Areas as well as the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) which contains marine habitat and species conservation provisions.

In addition to the international regime, each Arctic coastal country has its own legislation and all use or plan to use protected areas as a mechanism for marine conservation. Their rationales for setting aside areas - habitat, species and ecosystem conservation - have been similar. However, there has been steady shift in the application of this mechanism and countries are increasingly using recreation and cultural heritage values as equally important criteria to designate protected areas. This is consistent with the global trend which the IUCN's World Commission on Protected Areas terms 'mainstreaming' protected areas meaning the gradual shift from treating them as conservation islands or preserves to treating them as integral parts of a broader land/marine sustainable development and use strategy.

There are several voluntary approaches to marine protection that can have application for the circumpolar Arctic region. One example is the Marine Stewardship Council (MSC), a recently established volunteer effort known as the "Sustainable Fisheries Certification Program and Labelling". Another is guidelines such as the "Arctic Offshore Oil and Gas Guidelines" adopted by Ministers of the eight Arctic states in 1997. While guidelines are non-binding they are intended to encourage the highest standards currently available.

Marine conservation will require diverse strategies for management purposes: a "one size fits all" approach will not work. As well, collaboration among the various interests is necessary to achieve a unified direction in marine conservation in the circumpolar Arctic. Among these interests are:

- Tourism and Marine Expedition Operators
- Shipping Operators
- Coastal Development Interests
- Northern Cultures and Traditions

Any approach applied to marine conservation efforts in the Arctic needs to recognise that multiple and sometime conflicting uses of marine resources may occur and that specific resources are components of larger ecological systems that may contain many resources of economic and social value. Ideally, protection using a multiple use approach should be implemented for marine conservation.

Marine species protection focuses on conservation of marine species stocks. Often the habitats of rare or endangered species are protected by restricting activities in sensitive sites. However, protection of critical sites is often done because of commercial and recreationally important species or for the protection of particularly good examples of habitat types and their associated genetic diversity.

Networks and systems approaches to marine conservation have many benefits and can facilitate collaboration. An important circumpolar initiative exemplifying this is the Circumpolar Protected Area Network (CPAN) of terrestrial and marine sites. To date most efforts have been directed at terrestrial sites. However, Arctic Ministers have now called for an increased effort on the marine component. Finally, the IUCN's marine program aims "to provide for the protection, restoration, wise use, understanding and enjoyment of the marine heritage of the world in perpetuity through the creation of a global, representative system of marine protected areas (GRSMPA) and through the management in accordance with the principles of the World Conservation Strategy of human activities that use or affect the marine environment".

An integrated, multi-sector involvement approach needs to be designed to co-ordinate and guide decisions affecting marine conservation. Integration requires co-ordination among economic sectors, national agencies, including their private sector, public interest and other clientele. Integration on an Arctic regional basis requires collaboration with fisheries, tourism, oil and gas, transportation and traditional cultural interests. Each sector will have specific interests and influence on determining issues and solutions to Arctic marine conservation.

#### Paper 4: "Sustainable Resource Use and Managing Threats" – *David Egilson*

The oceans of the Arctic region are of essential importance to adjacent communities and nations. Historically, the use of Arctic marine resources has been limited to fishing, whaling, hunting and mining. More recently, oil and gas, hydroelectricity and infrastructure such as roads, harbours, oil rigs, pipeline and electric transmission lines have become important. The effects of these activities on the Arctic marine environment can be profound, particularly in marine areas and the coastal zone. Furthermore, marine tourism has become a booming industry along with other Arctic shipping operations. These new activities pose new risks for the living marine resources of the region.

Humans have utilised Arctic marine resources for centuries and have adapted to their dynamic changes but since the beginning of the 20th century, improvement in fishing vessels and fishing gear (including navigational and sensor systems) has revolutionised utilisation capacity. Fishing technology has now reached a state where, if uncontrolled, fishing capacity may exceed the production capacity of the sea. Fortunately, in recent years, there has been a growing awareness among governments, scientists, stakeholders and the public regarding the need to conserve living marine resources and harvest sustainably. In a number of areas of the Arctic, governments and local communities have initiated and implemented sustainable management systems to ensure that use is in line with carrying capacity of the stocks.

While the Arctic is generally considered among the cleanest areas in the world, there are several specific areas of concern within it such as Svalbard and several river estuaries in Russia. Apart from the consequences for human health, marine pollution can seriously affect the state and reproduction of marine species. It can damage habitats and have serious commercial consequences for many communities and even nations both as a result of diminishing supply of species and lower commercial value of harvested fish surviving in contaminated waters.

While few effects are yet evident in the Arctic, the introduction of foreign and exotic marine species may alter the composition of many biological communities in the Arctic although environmental conditions may be too harsh for most foreign species to establish themselves there. However, concerns have been raised about the spread of the Kamchatka crab, namely its impact on local biodiversity in the Barents Sea.

Habitats may be damaged through other actions such as dredging and filling, trawling, anchoring, trampling and unauthorised visitation, noise pollution, oil spills and siltation from land-based activities etc. As yet there are few records of physical impacts in the Arctic, but based on experience elsewhere, it is most likely that habitat alteration and loss in the Arctic will occur in estuaries and near-shore areas, often close to human settlements. Deeper areas can also be affected by trawling.

Incidental take or by-catch of marine fauna, especially seabirds caught in fishing gear, has caused great concern. The UN Food and Agriculture Organisation has developed a global action plan to reduce by-catch in long-line fisheries. In the Arctic, the by-catch of seabirds in gill-nets is considered a serious conservation problem in many countries. Bottom set fixed nets appear to offer the greatest potential to deal with by-catch in the Arctic. By-catches of marine mammals in pelagic and deep-water trawls are also known, but information on this has not been systematically synthesised for the Arctic region.

Global market conditions also have substantial implications for marine conservation and sustainable use of resources. For instance, most fishery subsidies encourage overfishing by generating fishing overcapacity. High tariffs encourage resource users to counter by attempting to increase supply.

Some ecological effects are reversible and the ecosystem can recover close to its original state when pressure is released, whereas other effects are irreversible. The global community is not lacking in principles, rules or guidelines intended to ensure protection of the marine environment or conservation and sustainable use of its living resources. If these were fully implemented, marine pollution, depletion of fish stocks and degradation of marine habitat and biodiversity would not be occurring.

Implementation of effective sustainable fisheries management systems is the key to ensuring conservation and sustainable use of living resources. A number of different fisheries management schemes have been developed and implemented. Most of these measures can be grouped in two broad classes; biological fisheries management measures; and economic fisheries management measures. Biological fisheries measures include mesh size regulation, total allowable catch rules, area closures and protection of nursery and juvenile grounds. This management is based on scientific criteria, assessment and monitoring. Approaches to biological management can be based on one or a combination of precautionary and ecosystem approaches. Economic fisheries management measures are of two kinds. Direct restrictions such as limitation on days at sea, fishing time, engine size and holding capacity of vessels are the first kind. The second kind involves indirect economic management including territorial use rights, access licenses, community quotas and individual transferable quotas (ITQs).

Recently, the Marine Protected Area (MPA) concept has been gaining ground as a tool for biodiversity conservation and also to maintain and restore marine ecosystems. MPAs are based on concepts such as Integrated Coastal Zone Management (ICZM) but are not confined to coastal zones. However, some would argue that the protection elements are stronger in an MPA approach than in the ICZM one.

Environmental Impact Assessment can be useful for diminishing the environmental impact of infrastructure development in marine waters and coastal areas, particularly regarding harbours, marine transport and hydrocarbon exploitation.

There are lessons to be learnt from various systems in place. The first is that to attain sustainable resource management, long-term objectives must be set on the basis of a precautionary approach. Legislation must also provide authority for adequate regulations to control, manage and if necessary prohibit activities. Effective management also calls for thorough scientific knowledge and understanding of the resource base. It is important to have one coherent policy but complementarities and conflicts must be resolved through trade-offs or other means. Involvement of stakeholders and local and indigenous peoples is essential. It must begin at the initial stage and continue throughout the process. There has to be a mechanism that indicates whether set criteria are met and measures are having the desired effects (i.e. monitoring). The most important of all control measures is to tie a realistic and enforceable economic incentive into the scheme.

## B. KEYNOTE PRESENTATIONS

**MATHEW KING, ASSISTANT DEPUTY MINISTER OF CANADA'S DEPARTMENT OF FISHERIES AND OCEANS,** welcomed participants to the Workshop and to Canada. He reminded participants that the Arctic countries share a globally important water body that requires concerted, concrete and immediate action to protect it and prevent serious damage. He spoke of Canada's evolving approach to ocean issues that relies on the three principles of integrated management, sustainable development and the application of the precautionary approach. He further stressed that domestic actions alone are not enough, but that we must co-operate to ensure the long-term health of our circumpolar marine environment. Mr. King concluded by emphasising that the Workshop is an important first step in a longer term process to address common concerns and that the government of Canada is committed to improving collaboration among the circumpolar nations, indigenous peoples and other stakeholder organisations for our shared marine environment.

**ALFRED JAKOBSEN, MINISTER OF HEALTH, ENVIRONMENT AND THE CHURCH, GREENLAND,** spoke of the values and uses of the marine environment and used the Inuit people of Greenland to illustrate his messages. He explained that in the past, his people were a hunting society that depended on marine life for their sustenance, and that the very existence of the Inuit was dependent on an adequate supply of marine creatures for their food, clothing, heating and cooking oil. This dependence also had a spiritual dimension reflected in the pre-Christian Greenland myth of the Mother of the Sea, which Minister Jakobsen shared with the participants. In the myth, which is still an important part of Greenland culture today, the Mother of the Sea was the protector of sea life. She lived on the seabed and kept a watchful eye on humans. When they did not comply with the rules of nature and human society, she kept the sea animals away from the hunters and the people would go hungry. The Arctic shaman - called the Angakok - would then have to try to intercede on behalf of humans. To do this, he entered a trance and visited the Mother. If he was successful, the animals would be returned and once again provide the Inuit with a food supply. Mr. Jakobsen explained that this ancient Greenland myth holds important lessons for us today. First, there are limits to what humans can do to the natural world and second, we have to tackle problems quickly and before they become serious. He went on to explain that today, people of the Arctic can no longer turn to their mythology to resolve many of today's problems but must turn to the outside world where many of them originate. He signalled out three difficult issues that have a negative influence on the Inuit: contaminants, trade barriers and climate change. Contaminants (i.e. POPs) accumulate in the marine food chain and subsequently in the humans who consume marine foodstuffs. Trade barriers such as the Marine Mammal Act of the USA prohibit trade in products from marine species such as the harp seal, which are plentiful. Climate change is already causing serious changes in the Arctic and the Arctic nations are encouraged to work together in global negotiations with the aim of protecting Arctic peoples. Minister Jakobsen concluded his remarks by wishing the participants well in their deliberations and stating that he looked forward to the recommendations.

BRUCE AMOS, DIRECTOR-GENERAL OF NATIONAL PARKS AT PARKS CANADA AND NORTH AMERICAN VICE-CHAIR OF THE IUCN'S WORLD COMMISSION ON PROTECTED AREAS, delivered the paper by Nancy Foster (NOAA), WCPA's Marine Vice-Chair. He spoke of the pressures on the Arctic marine environment and the need to work together to combat them. He pointed out that the marine environment has not received high political profile in the past but that is now changing as the Arctic's strategic and environmental importance has become more broadly known. He noted that there was an overall lack of appreciation of the impacts of human activity on the marine ecosystem and he cited the historically unsustainable practices such as the plunder of its marine wildlife. He pointed to mounting pressures from improved technologies, transportation and increased access to the Arctic, which have resulted in a growth of ecosystem stresses, such as oil and gas development, shipping, pollution, tourism and overfishing. Other serious pressures are human population growth and the increasingly ominous climate change. The results of these stresses are now in evidence - the collapse of several fish stocks and the consequent starvation of marine mammals, seabirds and other species in the food chain; geophysical changes such as shifts in the Arctic ocean currents and circulation patterns, in addition to a host of other danger signals. Mr. Amos called on participants to strive to collectively reach consensus on ways to conserve the marine environment and combat the growing pressures. He concluded by challenging the group to delineate a plan of action for Arctic marine conservation while allowing for the sustainable use of its resources.

DR. KENNETH SHERMAN, DIRECTOR OF THE OFFICE OF MARINE ECOSYSTEM STUDIES OF THE US NATIONAL MARINE FISHERIES SERVICE (NOAA), spoke on the need to shift our way of managing the marine environment by adopting an ecosystem approach. Dr. Sherman stressed that the goal of ecosystem management is to maintain the capacity of an ecosystem to provide goods and services without degrading adjacent systems. He argued that when dealing with the marine environment there was a need to deal with a geographic construct that is a spatially explicit area encompassing the estuary and drainage basin out to the edge of the continental shelf (i.e. a Large Marine Ecosystem (LME)). To date 50 of these large marine systems have been identified and combined they account for 95% of the world's living marine resource productivity. However, research on LMEs has largely ignored much of the Arctic region, which he hoped could now be remedied. Dr. Sherman pointed out that because of their size, LMEs cross international boundaries and that their management must be co-operative. He urged participants to move away from a single species or resource approach to marine management because in the long run, such an approach is not sustainable. We need to move from single species to whole ecosystems, from small scale to multiple scale, and short term to long term management. Dr. Sherman also pointed to the need to make a transition from the traditional sectorisation approach which the educational system fosters to a multi-sector, integrated scientific assessment and management approach. He further argued that there is a serious undervaluation of marine ecosystems in terms of economic benefits and goods and services they provide and that this has led to abuse of these systems and their resources. He concluded by inviting the circumpolar countries to identify further LMEs in the Arctic region and suggested that the Global Environmental Facility (GEF) of the World Bank may be able to provide funding to assist.

CLIFFORD LINCOLN, MEMBER OF PARLIAMENT OF CANADA, MEMBER OF THE STANDING COMMITTEE ON THE ENVIRONMENT AND MEMBER OF THE CIRCUMPOLAR ORGANISATION OF ARCTIC PARLIAMENTARIANS, gave an inspiring talk to participants at their dinner held on the evening of December 1, 1999. He lauded their initiative to come together to begin work on the difficult and often highly controversial topic of managing the Arctic marine environment and its resources. He acknowledged the sensitivities inherent in the subject area and between the many countries and organisations represented at this gathering, but was encouraged that they had come together. He spoke of Canada's long and impressive relationship with all things marine and reminded participants that Canada is a seafaring nation along three coasts and has some of the richest marine areas in the world. He called their attention to the close relationship of Canada's northern peoples to the marine environment and their traditional dependence on its resources. He mourned the damage done to the seas by humankind and the depletion of its marine life but was bolstered by the growing sense of purpose and desire to co-operate shown by groups such as those gathered here for the first circumpolar marine workshop. He noted the broadening interest in environmental co-operation displayed at the political level by the Arctic Council and by Arctic Parliamentarians. He thanked the participants for their courage and enthusiasm and stressed that they had a rare and very real opportunity to contribute and make a real difference to the future and betterment of the Arctic marine environment and to influence politicians towards sound decisions in its favour. He ended his talk with a quote from Sylvia Earle and words of encouragement to the participants.

## C. WORKSHOP PANELS

There were two thematic Panel sessions, one for indigenous peoples organisations and one for local authorities, that provided each group with the opportunity to explain its involvement and interests in marine management.

### Panel I: Indigenous Peoples and Organisations

This Panel was chaired by Peter Nielsen, the Head of the Nature Conservation Department in the Ministry of the Environment, Greenland Home Rule Government. He began by describing three approaches to protection of the Arctic marine environment: 1. the use of legislation and special conservation measures (i.e. establishing protected areas); 2. the use of marine resources sustainably and employing ecologically friendly technologies and, 3. by, for example, convincing the external world not to abuse the marine environment of the Arctic by polluting it or overexploiting its resources. Mr. Nielsen affirmed that it is important for Arctic indigenous peoples to be integrated into all three of these processes. He then turned the floor over to the three organisations represented: the Inuit Circumpolar Conference, the Russian Association of Indigenous Peoples of the North and the Saami Council.

#### *The Inuit Circumpolar Conference*

The Inuit Circumpolar Conference (ICC) represents the Inuit of Canada, the USA (Alaska), Russia and Greenland. Each country has two representatives who together comprise the ICC Executive Council. ICC is a young organisation whose role is to promote the well being of the indigenous peoples it represents. The ICC is a permanent participant of the Arctic Council. It intends to be actively involved in all Arctic issues.

The ICC was represented by Duane Smith and Billy Day of the Inuvialuit of Canada. Duane Smith stated that Canada's land claims agreements have now turned vast tracts of the Arctic over to the indigenous peoples in a co-management framework and that these agreements require that local people participate in all aspects of Arctic resource management. Billy Day spoke of the changes that are occurring among the indigenous peoples of the North, many of them brought about by the land claim settlements. Previously, indigenous peoples were often ignored by outside developers, especially the oil and gas and transportation industry. Today they are consulted and are part of the decision-making process. Another change is the attitude toward traditional ecological knowledge. In the past, scientists viewed traditional knowledge as having little value because it was not in written form, relied on an oral tradition and was considered anecdotal. Today, scientists are discovering that by talking with local people on the land they are gaining useful information and saving a lot of time in the problem identification and evaluation process. Mr. Day echoed Minister Jakobsen's earlier point that in the past, the Inuit's survival depended on the use of marine resources. In Canada, Inuit practised sustainable resource use by hunting only where prey was abundant. Today things have changed and to maintain, for instance, sustainable fishery yields, management plans have been set up with seasonal harvest quotas. These are not always well received by local hunters or in some communities. Another change has been in the method used to assess

total population on which to base total allowable catch quotas. These have been adjusted to better simulate the Inuit traditional assessment methods as opposed to those designed by western scientists.

### *The Russian Association of Indigenous Peoples of the North (RAIPON)*

RAIPON, represented by Anatoly Mikhailov, is an umbrella organisation representing approximately 190,000 individuals organised into 29 Association chapters. RAIPON was founded in 1990 at the First Congress of Indigenous Peoples of Russia's North. Its purpose is to protect the human rights and legal interests of the indigenous peoples of the North, Siberia and the Russian Far East, to solve the social and economic problems of its membership and to promote their cultural development and education. It also works to ensure their land-use and resource rights and to achieve self-government. RAIPON is a permanent participant of the Arctic Council and participates in the United Nations Working Group on Indigenous Peoples. It is currently working with the ICC in Canada and a Danish NGO to assist Russia's indigenous peoples in the environmental, economic and educational fields. The RAIPON Secretariat is in Moscow.

Mr. Mikhailov based his presentation on four general themes. The first was the involvement of indigenous peoples in marine management decision-making. RAIPON takes part in drawing up the Russian National Program of Action for Protection of the Arctic Marine Environment from Land-Based Activities. It also contributes to international measures to develop recommendations for improved marine protection. His second theme was the indigenous contribution to more effective marine management. RAIPON has just begun to take part in the establishment of Russian legislation on ecological issues at the planning, drafting and review stages. His third theme was special concerns of indigenous peoples which outside assistance can help in resolving. He identified five areas of concern and suggested various courses of action.

- 1 Weak implementation and enforcement of Russian legislation on Arctic environmental protection: He suggested tighter control and the establishment of an ongoing national monitoring and verification system for projects along the length of Russia's coastline and that indigenous peoples would participate in the monitoring.
- 2 The shortage of indigenous people qualified in marine environmental protection and management: He suggested drawing up and implementing a training program for northern indigenous peoples in environmental monitoring and assessment.
- 3 The contamination of traditional food products: He proposed there should be assistance to conduct research on the impacts of this contamination on the health of indigenous peoples.
- 4 Plans to open the Northern Sea Route and develop oil and gas production on the coastal shelf: He recommended in-depth studies and seminars on environmental and health impacts of these proposed activities on indigenous peoples and marine resources and to improve monitoring of increased use of the Northern Sea Route and its environmental impact.
- 5 Insufficient consultation of indigenous peoples by federal state and local authorities when making marine management decisions that affect them: Here he suggested compiling and exchanging information on how other indigenous peoples are involved in nature conservation decision-making and emulating the cases that work.

Mr. Mikhailov's final theme was the problem of acquiring Russian traditional ecological knowledge. He argued that the best way to gather this information was for teams of specialists to make on-site visits to Arctic communities, to process this information and to draw up recommendations on how to use it in legislation and in practice.

## Saami Council

The Saami, which span the north of Norway, Sweden, Finland and northwest Russia, were represented by Leif Halonen of the Saami Council. The Saami Council was formed in 1956 and is comprised of elected representatives from each country except for Russia whose representatives are not popularly elected. The Council functions to promote the interests of the Saami as a nation, to promote affinity among all Saami, and to maintain the economic, social and cultural rights of the Saami in the legislation of the four countries. The Saami also have their own parliaments in the Scandinavian countries and are involved in issues of the Saami language, reindeer herding and the environment. The Saami Council is active internationally, is a permanent participant of the Arctic Council, has contributed to the United Nations and is active in the UN Working Group on Indigenous Peoples and the revision of the International Labour Organisation Convention. It also participates in the World Council of Indigenous Peoples and seeks to be more active in representing Saami interests in the European Union and the Barents Council initiatives. The Saami Council has its Secretariat in Finland.

Mr. Halonen made an impassioned plea for recognition of the threats to the Saami way of life from the current management of the non-indigenous fishing industry. He noted that small scale coastal and fjord fishing and hunting on a sustainable basis is the foundation on which to maintain the Saami in northern Scandinavia. He explained that Saami coastal and fjord fishing is sustainable because it is done on a small scale and uses selective fishing gear, sparing young and immature fish. He contrasted this with the heavy non-selective open-sea fishing in the coastal waters of northern Norway and the Barents Sea using large trawlers, purse-seiners, automated long-liners and other ecologically destructive fisheries practices. The result is that the local spawning stocks of cod and halibut have been destroyed and he pointed to the recent recommendation of Norwegian scientists for a drastic reduction in the cod quota due to a collapse of the stock from overfishing and illegal fish dumping. Mr. Halonen stated that in Norway there is a highly centralist approach to fisheries management where the local population has no influence in marine management and there is almost no co-management in the Norwegian fishery. He argued that this must change and that local management will produce a more sustainable fishery and also serve to maintain the Saami culture. He suggested that three Saami local fjords be selected for test areas for sustainable marine management and be regulated in line with traditional Saami fishing practices.

## Panel 2: Local and Regional Authorities

Kent Wohl of the US Fish and Wildlife Service chaired this Panel and introduced the Panel members from Alaska, Norway and the Russian Oblasts of Murmansk and Arkangel'sk

### Alaska

Glenn Gray spoke on behalf of the Governor of Alaska's office and from the perspective of Alaskan local communities. The four main issues are: a) maintenance of the subsistence lifestyle, b) ecosystems and climate change, c) the balance between development and resource protection, and d) co-operation and communications. Co-operation has three components - science, management and local knowledge. Science and management are slowly becoming better linked but it is a slow process. The use of local knowledge in Alaska has increased dramatically to the point where it is being fully integrated into mandated environmental impact statements such as the one done for the Northstar pipeline planned for the Arctic Ocean. Alaska has systems in place to facilitate local participation and consultation but a problem Mr. Gray pointed out is that some people do not know how to participate effectively and that there is a need for training in that area. He then described the Alaska coastal management program, which is a federal, state and local partnership involving resource assessment, establishing protection for sensitive resources and sites and developing enforceable environmental policies. He suggested that there needs to be better research co-ordination, which will be aided by the establishment of the North Pacific Research Board. He ended with a quotation from Sylvia Earle:

*"There is a window in time and that time is now, where we could forever lose a priceless ocean heritage, or we could develop the foundation for an enduring legacy, an ocean ethic, an inspired gift from the 20th century to all who follow us."*

### *Northern Norway*

Josten Angell spoke on behalf of local authorities in northern Norway and focused his talk on the fishery. The marine environment has long been the basis for Norwegian society. However, the Norwegian decision-process in the fisheries sector and in environmental management is mainly a top-down process supported by several legal instruments including the Nature Conservation Act, the Svalbard Act, the Saltwater Fisheries Act, the Building and Planning Act and the Fish Licensing Act. Authority for transboundary issues is national and in fisheries management the community level is almost ignored. There is little in the way of community-based fisheries management. Although there is a Regulation Council, local communities are not represented on it and for years, local and regional politicians have advocated recognition of the local level as a legitimate partner in the fisheries management process. A challenge is to ensure that decisions made by individual fishermen are in the collective interest of communities. At the moment fishing rights and licenses are given to individuals but should be allocated at the regional or local community level. This would result in increased local responsibility and would ensure that the right to fish continues to exist in communities. Where management schemes are directed at individual vessels and licenses are transferable, this is in doubt. Mr. Angell concluded that fisheries overcapacity is the most severe threat to marine conservation and control measures to reduce fishing overcapacity have been unsuccessful. He advocated new models for national quota allocation and suggested that there should be a circumpolar effort to describe best practices, which could help develop national fisheries management schemes.

### *Murmansk Oblast*

Yvan Vishnyakov spoke for the federal authorities in the Murmansk Oblast. He explained that anthropogenic activity and overfishing has resulted in depletion of the herring, capelin and other fish stocks which has, in turn, decreased the number of birds and mammals in the region. Oil and gas production, planned ocean pipelines and increased shipping are a threat to the marine ecosystem and the most productive fishing grounds. Unfortunately, these developments are going ahead at top speed without adequate environmental or mitigative measures being put in place. Mr. Vishnyakov described the excellent bilateral co-operation with Norway to combat these problems through their mixed Commission but emphasised that there is an international responsibility as well. He concluded by observing that help was needed from local residents to preserve the marine environment and the federal authorities are now giving more attention to indigenous participation and that local residents are now involved in environmental assessments required by law.

### *Arkangel'sk Oblast*

Valery Stanislavets spoke for the federal authorities in Arkhangel'sk Oblast which covers several "royons" or counties including the maritime Primorsky royon. A target of interest is the White Sea, which has an overall shoreline of 1325 kms. The region has 11 collective fisheries, 27 coastal villages and 5,344 inhabitants engaged in fishing, seaweed harvest and marine mammal hunting. The region is jointly administered by the Russian Federation and the Arkhangel'sk Oblast. In Russia, land and natural resources are treated as necessary and fundamental to the livelihoods of local inhabitants and are to be used and protected as such. At present the federal authorities are preoccupied with the development of hydrocarbon and mineral deposits on the continental shelf and in the 200 mile economic zone. On the one hand these provide economic and employment opportunities for the local population but on the other hand they create problems for the protection and conservation of biological resources. However, a major challenge facing the region is to develop the White Sea area in a way that allows for intensive natural resource exploitation and to skilfully manage it for the benefit of the local people. On local participation, Russia does not have a strong cultural and social tradition of operating in a democratic society, so it is carefully monitoring the self-government arrangements that have been reached in the region. The Primorsky county has established a local management system with a Hunting Monitoring Council set up under the local administration. It co-ordinates the fisheries and exploitation of biological resources. Licenses are based on a quota system and contracts are negotiated for the commercial use of specific water areas. There are special recreational fishing areas set aside and licenses are sold for net fishing. Local residents are given some tax relief and some increased quotas.

## D. MODULE PRESENTATIONS

### Module I: Integrating Indigenous Peoples and Local Authorities in Marine Management – *Dr. Amirkhan Amirkhanov, Russia*

Dr. Amirkhanov of the Russian State Committee for Environmental Protection and IUCN Regional Councillor for Eastern Europe, reiterated the message that with the transition from the Soviet Union, Russia is at a starting point, particularly in regard to its relations with its indigenous peoples who make up 4.3% of the Russian Arctic population. In Russia, the federal authorities determine the strategy and procedures for natural resource use along the Arctic coast, on the continental shelf and within the Exclusive Economic Zone. This is done in consultation with municipalities, regional authorities and the indigenous peoples of the North. These authorities are responsible for ensuring the rational use of natural resources, including by indigenous peoples who have now been granted special rights in law. These rights, achieved through negotiations include priority rights to harvest grounds, special quotas and access; exclusive rights to harvest certain species and rights to use certain parts of protected areas to carry out traditional economic activities.

He pointed out that in Canada's north, in Alaska and in Russia, indigenous peoples have become economically dependent on government and countries need to ensure the full integration of their indigenous peoples into the contemporary world. He also acknowledged that indigenous peoples' right to exploit species must be tempered with species conservation measures such as temporary bans to preserve fish stocks and that harvest methods should be modern and humane. The indigenous peoples organisations have an important role to play in this. He further noted that the voice and messages of indigenous peoples need to be heard not only by the authorities engaged in environmental protection but also other authorities including Ministries that develop financial and economic policy.

Dr. Amirkhanov observed that local people and indigenous populations need more environmental education and that environmental impact assessments are needed for impacts of industrial development on northerners. Special marine zones should be set aside to maintain indigenous culture. Governments at all levels must adapt and make decisions that respect the rights of indigenous peoples. There also needs to be an assessment of the impacts of bioaccumulated contaminants in harvested sea animals on the health of northern residents. He closed by explaining that there are marine areas in Russia where industrial development interests run contrary to the interests of indigenous peoples such as the continental shelf where oil and gas development is planned in fishing grounds. These need to be fully examined.

Dr. Genady Matishev, Director of the Murmansk Marine Biological Institute, supplemented Dr. Amirkhanov's address by noting that there has been an overall negative trend in the marine mammal population in the Barents Sea and that overfishing is a problem. The fisheries deplete first one economically valuable species then move on to another all the way down the line. He confirmed that as the fish disappear, so do the seabirds and stressed the need for fisheries policies that protect the full range of marine biodiversity and fish stocks. Otherwise, if we continue with current policies, we may have no fish left. Dr. Matishev concluded by noting

that his institute carries out regular marine monitoring along the length of the Russian Arctic coastline and this data needs to be preserved.

## Module II: Building the Circumpolar Infrastructure for Marine Management - Tools and Management Systems - *Various Presenters*

**Jack Mathias**, of Canada's Department of Fisheries and Oceans, spoke on **integrated marine management** as practised in Canada. He described integrated management as a tool to balance sustainable development and conservation by combining environmental, social and economic values. The term "environmental" corresponds to the marine ecosystem; the terms "social" and "economic" correspond to human uses of that system and its resources. On the ecosystem side there is a need to know the important ecological processes, critical habitat, key species and how they interact in the food chain. To get this information, it is necessary to draw on both scientific research and traditional knowledge. On the human use side, there is a need for inventories of current and planned uses and stakeholders' interests along with an assessment of the environmental impact of those uses and human use conflicts that are likely to occur. In integrated management, human use and impacts are managed via a system of ocean governance designed to maintain ecosystem integrity. This governance is intended to influence legislation and to develop policy and recommendations. Institutions are an important area of ocean governance including new institutions such as Steering Committees that combine social, cultural and economic interests.

**Christoph Zockler** of the World Conservation Monitoring Centre described the use of **environmental data** as an effective tool for marine management and demonstrated this using species distribution maps of migratory birds. On these species distribution maps, there are up to 15 different parameters such as breeding distribution, core areas and population sizes. This meta-database system also provides hyper-links to databases around the world. These systems are extremely valuable in tracking the impact of global warming and climate change on habitats through a technique of discrete map overlays.

**Sarah Christiansen** of the WWF (Worldwide Fund for Nature) described an **ecoregion-based conservation system**, *Global 200*, in which WWF has divided the world into 237 terrestrial, marine and freshwater biomes or ecoregions. These are large pieces of land or water sharing the same characteristics and elements of biodiversity that define the area as an interactive unit. Within each ecoregion, the biological characteristics are assessed along with species, habitat and any rare ecological phenomena. From this combination of layerings, candidate priority areas are then selected and ranked according to high, medium or low importance. Candidate areas are then analysed for habitat underrepresentation, protected area coverage, threats and socio-economic factors. The purpose of the whole process is to develop a biodiversity vision and it is this focus on biodiversity that is one of the key strengths of the ecoregion based conservation approach.

**Janine Murray** described the contribution of the **Arctic Monitoring and Assessment Program (AMAP)** of the Arctic Council to Arctic marine management. AMAP provides information on the status and threats to the Arctic marine environment from contaminants and climate change and provides scientific advice on actions to be taken. Priority contaminants are persistent organic pollutants (POPs), industrial chemicals such as PCBs, heavy metals and radioactivity. Sources of these contaminants are from north-flowing rivers, ocean currents and atmospheric inputs coming from much further south. Of particular concern is that POPs and heavy metals accumulate in the food chain and concentrate at its higher levels. For example, animals that consume prey at the higher trophic levels in the food chain such as harbour porpoise have far higher concentrations of contaminants in their tissue than those consuming prey at the lower levels of the food chain. AMAP has accumulated pollution data from across the Arctic and this is stored in thematic data centres, the marine data being stored at ICES.

**David Henry** from UNEP's Global Resources Information Database centre in Arendal, Norway spoke to the meeting on the **Global International Waters Assessment (GIWA)** and its potential for Arctic marine management. GIWA is a UNEP led initiative linked to the Global Environmental Facility (GEF) of the World Bank and co-managed with the University of Kalmar, Sweden. This project aims to provide a global assessment of the ecological status of international waters, including identifying ecological priorities. It will provide the framework with which to decide future GEF projects, identify more sustainable uses of scarce water supplies and establish

protocols for transboundary analysis. The objective is to develop a comprehensive strategic assessment that can be used to identify priorities for remedial and mitigative actions in international waters that will also achieve significant environmental benefits at national, regional and global levels. GIWA has defined several mega-regions including the Arctic and 66 subregions that include the 50 Large Marine Ecosystems. The GIWA project will run for four years with a completion date of 2003.

## Module III - Marine Management

This thematic Module was broken into two components, III-A: Regulatory and Voluntary Protection Instruments and Methods and III-B: Sustainable Resource Use and Managing Threats

### *III-A: Regulatory and Voluntary Instruments and Methods - James Johnston, Canada*

Mr. Johnston explained that the background paper for this session made a case for increased marine protection and suggested models based on multiple-use, system-oriented modes of management, application of the precautionary principle and an ecosystem approach. He argued that working at a circumpolar level would be most appropriate because Arctic marine species include several highly migratory ones and their main feeding and nursery grounds crossed national boundaries. For reasons of efficiency and economy of effort a joint, co-operative approach would be preferable to eight unilateral approaches. He then described the two main ways to protect the marine environment - the Regulatory and the Voluntary approaches.

The Regulatory approach includes legislation and accompanying regulations as well as international conventions and treaties with their attendant obligations. This approach has many benefits. Domestically, it uses the force of law, carries a high level of political support and policy commitment and often has popular support among interest groups. Internationally, regulatory instruments facilitate concerted action on mutual problems that cannot be resolved by one country alone. On the negative side, the regulatory approach can cause resentment domestically because its underlying nature is coercive. The approach is often seen by northerners as favouring southern interests and curtailing traditional values and practices. Internationally, regulatory agreements are long and difficult to negotiate and can sometimes only achieve an unpalatable "lowest common denominator" solution.

Domestically, regulatory instruments include: protecting discrete areas (e.g. marine protected areas); regulating species exploitation through, for example, quotas and no-take zones; protecting the functions of an ecosystem and, regulating against threats such as contaminants. The regulatory approach to marine protection is framed internationally in environmental conventions such as the London Dumping Convention or the Convention on Biological Diversity.

Turning to the Voluntary approach, Mr. Johnston cited market incentives and disincentives that encourage ecologically acceptable behaviour; sectoral and industry guidelines intended to encourage the highest standards currently available (e.g. the Arctic Council Oil and Gas Guidelines of 1997); "green certification programs," and "green awards" which target consumers to purchase environmentally sound services (e.g. an Arctic cruise etc.) and, the increasingly popular multi-stakeholder Stewardship Councils. For the latter, Mr. Johnston pointed to the Marine Stewardship Council, which is attempting to reorganise the world's fisheries on a sustainable, best practices basis through a voluntary certification system.

Mr. Johnston concluded by noting that there are a great variety of instruments and approaches to marine protection and that a challenge to the circumpolar community is to select the ones that will work well.

Reinforcing several of Mr. Johnson's points, Mr. Yurick gave a presentation on the bioregional approach to marine protected areas that is evolving globally and in North America. Examples of this are the IUCN's Global Representative System of Marine Protected Areas and the WWF's Global 200 program. In North America, there is an initiative to develop a network of marine protected areas, not unlike the Circumpolar Protected Area Network (CPAN) of the Arctic countries that would link the marine environments of Mexico, the USA and Canada. The North American initiative is still embryonic but certain themes are being embraced. Among these are the need to look at the economic benefits of marine protected areas, the need to enlist local stakeholder support, the search for a common biogeographic marine classification system and the need for a way to measure and evaluate the effectiveness of the system.

### *III-B: Sustainable Resource Management – Thorir Ibsen, Iceland*

Mr. Ibsen of Iceland's Foreign Affairs Ministry used Iceland's fisheries management as an illustration of sustainable resource management. He began by clarifying the premises of his approach. They are:

- the objective of an Arctic marine environmental strategy is not protection *per se* but to ensure that people of the region can continue to prosper by using the living marine resources without compromising future use
- sustainability is an approach that must be continually developed and adjusted to different subjects and situations
- sustainability is a political concept and its application means that social, economic and ecological choices have to be made, choices that are often controversial

Mr. Ibsen described Iceland's fisheries management regime as advanced, innovative and successful by international standards. It was developed in three steps; first, gaining control over the resource which was accomplished in 1975 by the extension of the EEZ to 200 nautical miles; second, a period of trial and error from 1973-1990 involving first attempts at systematic fisheries management and thirdly, consolidation of the system under the Fisheries Management Act in 1990 which introduced individual transferable quotas.

The goals of fisheries management in Iceland are to maximise sustainable utilisation of all commercial fishstocks and to improve the economic performance of the industry. The approach is based on establishing a yearly total allowable catch (TAC) allocated on the basis of a system of individual transferable quotas (ITQ). Three pillars support the system - scientific, economic and social.

The scientific pillar consists of rigid scientific assessment and prognosis based on a strong and sophisticated scientific foundation, ecological support measures (e.g. closures and equipment specifications) and the TAC recommendations of the Marine Research Institute. The economic pillar is based on transferable quotas, which are tradable in the public market and where price is determined by supply and demand. This system has reduced fishing effort and fishing capacity and it is enforceable. The social pillar is based on gaining acceptance and legitimacy from the fisheries stakeholders through consultations, transparent processes and consensus building.

Mr. Ibsen pointed out that individual countries cannot secure sustainable management of their fisheries alone. There are international circumstances which can undermine domestic efforts. These include pollution which contaminates waters and devalues seafood. Other issues are tariffs, government subsidies and unilateral, arbitrary measures touted as environmental protection. Tariffs, for instance, reduce revenues to fishing operations which compensate by increasing their fishing effort to recoup revenues. Subsidies lead to overfishing, over-capacity and supply distortions. Unilateral and arbitrary measures include boycotts and threats of boycotts by non-government organisations, corporations and governments in the name of environmental protection.

He concluded by observing that (a) sustainable fisheries are possible, (b) that the domestic requirements include control of the resource and effective management that is at once economically and ecologically efficient, (c) that international conditions must be present including protection from pollution and a global market conducive to sustainable fisheries and environmental protection.



CIRCUMPOLAR MARINE WORKSHOP



MODULE DISCUSSION RESULTS

For each Module, three professionally facilitated discussion groups were formed to address specific issues relevant to the Module subject area. They were posed as questions. The results of the discussions were then reported back to Plenary by rapporteurs chosen from among the participants. This material formed the foundation for the Recommendations drawn up for the Workshop. This Part of the *Report and Recommendations* summarises the results of the discussions and participant input for each Module, by question.

## Module I: Involving Indigenous Peoples and Local Authorities in Marine Management

Chair: Kevin McCormick

Rapporteurs: Snorri Baldursson, Soffia Gudmundsdottir/Doug Yurick, Tom Laughlin

*Question One: What are some of the successful mechanisms for participation in marine management decision-making by local authorities and indigenous peoples?*

### **Participants identified, *inter alia*:**

- certain co-management and co-operative management practices such as those that have resulted from the Canadian land-claims agreements (i.e. Nunavut, Inuvialuit).
- the Arctic Council model which accords indigenous peoples organisations Permanent Participant status.
- “transparent” planning processes where all participants are fully informed of the issues.
- hiring local experts and establishing local advisory committees.
- involving local and indigenous peoples organisations in the law-making and regulation setting processes and in evaluating the impacts of proposed marine activities.
- using traditional and local ecological knowledge in scientific, management and policy assessments.
- establishing clear criteria for environmental reporting, evaluation and auditing.

*Question Two: What are the key challenges and obstacles to successful participation in marine management decision-making by local authorities and indigenous peoples?*

### **Challenges and obstacles to effective participation identified by participants were, *inter alia*:**

- mistaking public information campaigns for consultation and local participation.
- inadequate consultations.
- poorly informed public opinion.
- inadequate communications technology.
- lack of resources and capacity for effective local participation.
- differences in attitude and perceptions between ‘western’ and indigenous cultures and between central governments and local people.
- physical distances between the centres of decision-making and the affected people.
- frequent turnover of government staff and loss of continuity.

- top-down management.
- lack of decision-making authority and control over resources at the local level.
- too few people and too heavy a workload to properly represent local interests.
- disrespect for/ignorance of traditional ecological knowledge and methods in ‘western scientific thinking’.
- disrespect for ‘western’ science and methods in indigenous peoples’ thinking.
- management decisions made with inadequate assessments of long-term impacts on those affected.
- insufficient valuation of the real economic, social, cultural and ecological costs of marine resources, marine activities and exploitation.
- narrow interpretation of “ecosystem” that leaves out people.

*Question Three: How can local and indigenous peoples’ participation in marine management be improved?*

**Participants identified the following actions:**

- sensitise government officials to cultural differences.
- include traditional ecological knowledge in environmental and cultural impact assessments.
- establish legal rights to participation at the local level, if they are absent.
- build and increase local and indigenous peoples capacity to participate.
- improve communications technology and methods at a local level.
- improve the exchange of viewpoints on marine management issues.
- increase the hiring and education of local and indigenous people in fields of marine science and management.
- provide social, cultural, economic and ecological valuations of marine resources and practices.
- delegate management decision-making to the local or most appropriate level.

## Module II: Tools and Management Systems for Marine Management

Chair: John Karau

Rapporteurs: David Henry, Leslie Kerr, Janine Murray

*Question One: What tools and marine management systems are most useful for Arctic marine management?*

**Under tools that work, participants identified, *inter alia*:**

- databases such as the web-based digitised data in the Arctic Data Directory.
- digital maps of environmental, physical and cultural features (e.g. species distribution, sensitive sites).

- international networks of specialists and contact persons.
- the Internet and World Wide Web.
- bilateral arrangements that can be expanded.
- regional ocean strategies.
- diagnostic and gap analysis.
- geographic information systems (GIS) and remote sensing.
- monitoring systems that cover at a minimum, physical, biological, oceanographic, anthropogenic, socio-economic parameters.
- traditional ecological knowledge.
- standardised marine classification systems and marine terminology.
- clear objectives and standard reporting guidelines.
- environmental impact assessments.
- incentive programs to encourage conservation.
- quotas on resource exploitation.

**Under management systems that work, participants identified, *inter alia*:**

- integrated ocean planning processes and management (e.g. Large Marine Ecosystems, coastal zone management, and the Regional Seas program).
- standardised marine classification systems.
- collaborative management under its various guises.
- species management plans and seasonal habitat protection.
- ecosystem approaches to marine management.
- harvest and use management plans.

**Participants also identified factors that contribute to successful marine management and identified, *inter alia*:**

- political will.
- transparent, understandable and consistent decision making processes.
- clear objectives and evaluation criteria.
- local community acceptance of the approaches used.
- use practices that are sustainable.
- good science and traditional ecological knowledge.
- measures which facilitate domestic processes and that are transferable to other programs.

*Question Two: What are the barriers to the successful use of existing tools.*

**Participants identified, *inter alia*:**

- lack of adequate infrastructure.
- lack of political will.
- overlapping jurisdictions and incompatible mandates of agencies.
- interagency competition for available expertise and funding.
- differing views and philosophies among stakeholders.
- lack of shared objectives, vision and/or targets.
- lack of funding and short budgetary cycles which are not conducive to sustained research.
- insufficient baseline and time series data and data which is not catalogued or widely available.
- inconsistent standards for collecting and managing data.
- lack of or poor incentive systems for marine protection.
- focus on single-sector approaches or single-species management that does not adequately consider interrelationships.
- lack of an integrated approach among stakeholders.
- inadequate dissemination of information to the public or dissemination in ways that are culturally inappropriate.
- multiple classification schemes and no common system of indicators for monitoring the Arctic marine system.
- lack of training to use modern technologies.

*Question Three: What marine management tools would practitioners and marine managers like to have at their disposal and what management systems would they would like to see in place?*

**Participants identified, *inter alia*:**

- harmonised data and common standards to improve access, storage and usability.
- a study of which marine management tools are in place across the Arctic.
- a circumpolar system of indicators for marine health.
- a circumpolar monitoring system with standardised methods and criteria and incorporating traditional ecological knowledge.
- information on the carrying capacity of various habitats and marine sites.
- a common marine classification system.
- creation of financial and other incentives to encourage collaboration among various groups.
- a regional strategy and co-ordinated partnerships to seek funding.
- a compilation of marine projects eligible for GEF funding.
- a sustainable development marine strategy for the Arctic that defines common goals, targets and interests.

- application of an ecosystem approach to marine management.
- improved institutional arrangements to facilitate marine collaboration such as the UNEP Regional Seas model.
- an assessment of the applicability of the Large Marine Ecosystem approach in the Arctic.
- expanded budgets with appropriate time-frames for research, monitoring and capacity-building.
- collaboration to increase public understanding of the Arctic marine environment.
- better engagement of the public in marine conservation and management.

## Module III A: Regulatory and Voluntary Instruments for Marine Protection

Chair: Douglas Yurick

Rapporteurs: Martin Bergmann, Glen Gray, Kent Wohl

### *Question One: Are existing regulatory and voluntary instruments for marine protection sufficient?*

**Participants responded that, *inter alia*:**

- on the whole, there are sufficient instruments to provide adequate protection within the 200 mile Exclusive Economic Zone of each country.
- there is uncertainty and mixed opinion about the situation beyond the 200 mile limit (i.e. in international waters).
- there is a lack of data on whether there are gaps in protection outside the 200 mile limit, on what the resources are that may require special conservation measures and on where the sensitive sites are.
- certain countries do not subscribe to some of the important marine instruments such as the Law of the Sea and the Biodiversity Convention and this makes the utility of those protection measures at the circumpolar level problematic.

### *Question Two: Are marine protection instruments and methods being implemented effectively?*

**Participants responded that, *inter alia*:**

- national implementation of international agreements was sometimes inhibited by a lack of capacity or funding.
- there is sometimes inconsistent application of domestic laws, for example, by economies in transition.
- overlapping jurisdiction and conflicting stakeholders interests can hamper effective implementation because there is confusion about roles in the whole issue of marine management.
- some fiscal and tax incentives are counterproductive to environmental protection.
- there are differing views on whether increased habitat protection is necessary.
- existing measures do not always consider indigenous peoples' interests.
- there is a need for better enforcement.
- there is a debate on what methods are most effective in protecting, for example, fish stocks.

*Question Three: What additional instruments and methods are needed for marine protection and how can implementation be improved?*

**Participants identified, *inter alia*:**

- applying peer pressure to facilitate compliance.
- improving delivery of current instruments and compliance.
- co-operating to achieve better implementation and committing to plans of action.
- increasing awareness of the instruments among local and indigenous peoples and engaging them in implementing protection measures.
- examining ways to co-ordinate activities outside the 200 mile national EEZs.
- developing a circumpolar bioregional network of marine protected areas
- inventorying and assessing current instruments and methods.
- drafting international agreements where specific marine species and stocks are not covered.
- identifying successful voluntary and co-operative management practices.
- inventorying and assessing instruments that are and those that are not effective.
- evaluating current protection standards and regulations in the Arctic and harmonising these where appropriate.
- establishing fiscal incentives consistent with the long-term sustainability of marine ecosystems.
- evaluating the structure of regulatory and planning agencies to determine how well they address the interests of indigenous peoples.

## Module III B: Sustainable Resource Use and Managing Marine Threats

Chair: David Egilson

Rapporteurs: Jan Ekeboom, Annie Hillary, Mark Nuttall

*Question One: To what extent are we using marine resources sustainably and managing the threats to the marine environment?*

**Participant comments included, *inter alia*:**

- models of sustainable resource use need to be economically viable and ecologically sustainable.
- in the long run, a single-species group approach may not be sustainable as compared to an ecosystem or a multi-species approach.
- threats to the marine environment go beyond pollution of fishing waters: they include shipping, ecotourism, warming of the Arctic and development of oil and gas operations on the continental shelves all of which need to be addressed by the circumpolar community.
- participants agreed that there are three pillars of sustainability – economic, social and ecological.
- examples of sustainable resource management put forward were the management of the Polar bear, Atlantic-Scandic herring, and Minke whale; the Saami coastal fishery and the Icelandic cod fishery.

*Question Two: What are the obstacles to sustainable marine resource use in the Arctic?*

**Participant responses included, *inter alia*:**

- lack of consensus over what «sustainable» means.
- difficulty of distinguishing natural from anthropogenic impacts on the marine environment and the need to understand the complexity of ecosystems and component interactions.
- need for better integration of biological, economic, social and technological sectors.
- difficulty of setting common circumpolar priorities because of strong domestic interests.
- tensions between local and global interests.
- need to better understand the social and economic complexity of communities that are dependent on marine resources.
- growth of destructive fisheries technologies and practices (i.e. large trawler fleets).
- fisheries overcapacity and economic subsidies.
- need for better monitoring and a good system of indicators.
- need for a circumpolar map of marine resources.
- lack of data and need for full resource evaluation.
- need for environmental impact assessments throughout the Arctic.
- uncertainty over the impacts of dams, habitat degradation, overfishing, climate change and pollution on marine resources.

*Question Three: How can sustainability of marine resource use in the Arctic be improved?*

**Participants responded, *inter alia*:**

- draft a sustainable development marine strategy that considers all components of the ecosystem, ecosystem use and social factors.
- adopt an integrated and sustainable management approach to address linkages between pollution prevention, habitat and species protection, and resource utilisation.
- review the relevance of an integrated ecosystem management approach to the Arctic marine environment, in particular, the Large Marine Ecosystem process, where sites could be chosen on the basis of their intrinsic values and similarity of sustainability issues.
- create an ecosystem approach based on collecting the needed scientific data, problem identification and analysis and resource management using a cross-boundary and basin-wide approach.
- develop a regional doctrine on sustainable use.
- encourage transparency in resource exploitation.
- produce a circumpolar map and databases of Arctic biological resources and their use.
- carry out full social, economic and ecological resource evaluations of certain key species.

- design a range of case studies on sustainability which could make comparisons across countries.
  - assist countries to make their legal instruments conducive to sustainability.
  - look to industry for assistance with research, funding and clean-up.
  - use a percentage of oil and gas (and shipping?) revenues to support ecosystem research and conservation.
  - establish a network of marine protected areas.
-

# APPENDIX 1

## SPONSORING ORGANISATIONS

### IUCN - World Conservation Union and the World Commission on Protected Areas (WCPA)

The IUCN - World Conservation Union was created in 1948. It is the world's largest conservation-related organisation bringing together 76 states including all eight Arctic countries, 111 government agencies, 732 NGOs and some 10,000 scientists and experts from 181 countries in a unique world partnership. In addition to a world-wide secretariat with 42 offices, the IUCN has six specialist Commissions including the **World Commission on Protected Areas (WCPA)** which has established an Arctic component. WCPA is currently implementing a Global Representative System of Marine Protected Areas in several regions globally and will do so in the Arctic in collaboration with CAFF (see below). In 1993, the IUCN membership framed a policy on marine protection and in 1996 passed two relevant Resolutions: *Resolution 1.7: An IUCN Strategy for the Arctic* which calls for increased IUCN effort in the Arctic and co-operation with the Arctic Council, in particular its CAFF and PAME programs (see below) and *Resolution 1.106: Protection of the Arctic Ocean*. In 1999 IUCN applied for Accredited Observer Status with the Arctic Council and in 2000, began work on the **IUCN Arctic Strategy and Action Plan**.

### Arctic Council

The Arctic Council, preceded by the 1991 Arctic Environmental Protection Strategy, was established in 1996 by the eight Arctic countries as a voluntary Ministerial forum to “provide a means for promoting co-operation, co-ordination and interaction among the Arctic States, with the involvement of the Arctic indigenous communities and other Arctic inhabitants on common Arctic issues, in particular issues of sustainable development and environmental protection in the Arctic”. The Arctic Council has five programs including the Program for the Conservation of Arctic Flora and Fauna (CAFF) and the Program for the Protection of the Arctic Marine Environment (PAME).

The Arctic Council's **Working Group on the Conservation of Arctic Flora and Fauna (CAFF)** was established in 1991. It is the biodiversity arm of the Arctic Council and focuses on the conservation of Arctic flora and fauna, its diversity and its habitats. CAFF's mandate is to provide a forum for scientists, managers and indigenous peoples to co-operate for the conservation and sustainable use of the Arctic biological resources. One of CAFF's main tasks is to develop a Circumpolar Protected Area Network (CPAN) and it is currently in the process of implementing the *CPAN Strategy and Action Plan* which calls on CAFF to assist the IUCN in implementing the Global Representative System of Marine Protected Areas in the Arctic. In addition to its initiative on CPAN,

some of CAFF's achievements include a *Biodiversity Strategy and Action Plan* for the Arctic, Conservation Strategies for two Arctic seabird species, a Biodiversity Overview Report for the Arctic (in preparation) and work on a Circumpolar Biodiversity Monitoring Network and a Climate Change Impact Study. CAFF has also begun to focus more on the marine environment and has prepared a report on legal instruments to protect the Arctic marine environment. It has also been requested by Ministers to focus additional effort on developing the marine element of CPAN.

The Arctic Council's **Working Group for the Protection of the Arctic Marine Environment (PAME)** was established in 1993 to address marine pollution issues in the Arctic. It has since published the *Arctic Offshore Oil and Gas Guidelines* to be evaluated in 2000, and has prepared the Arctic Council *Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities* (RPA) based on the UNEP/Agenda 21 *Global Programme of Action*. Two relevant goals of the RPA are to: “prevent and reduce degradation of the marine environment and coastal areas” and “support conservation and sustainable use of marine resources”.

## APPENDIX 2

### CIRCUMPOLAR MARINE WORKSHOP

Co-sponsored by IUCN, CAFF and PAME / November 28 – December 2, 1999 Montréal, Canada

#### AGENDA

##### SUNDAY, NOVEMBER 28

*Registration: at Hotel;  
(Le Tour Centre-Ville, 400 Boulevard  
René Lévesque) and Opening  
Session, at Holiday Inn Select.*

**5:45 p.m. Opening Session and Reception**

Holiday Inn Select; 99 Rue Viger

**5:45 - 6:15: Welcoming Remarks**

M. King, Department of Fisheries and Oceans, Canada; Berit Lein, Chair, CAFF; John Karau, Chair, PAME; Annie Hillary for Nancy Foster, Vice-Chair - Marine, IUCN/WCPA

**6:30 - 7:15: Key Note Addresses:**

Values and Uses of the Arctic Marine Environment  
*Alfred Jakobsen, Minister of Environment, Greenland* Prioritising Pressures on the Arctic Marine Environment  
*Bruce Amos for Nancy Foster, Assistant Administrator, Oceans, NOAA*

**7:15 - 8:30: Reception**

##### MONDAY, NOVEMBER 29

Guy Favreau Centre 400 Boulevard René Lévesque

**8:30 - 9:00: Opening Presentation:**

Marine Overview  
– Kenneth Sherman, NOAA

**9:15 - 10:30: Panel 1: Indigenous People and the Marine Environment**

- ICC (D. Smith, B. Day); Saami (L. Halonen); RAIPON (A. Mikhailov). *Chair: Peter Nielsen*

**10:30 - 11:00: Coffee**

**11:00-12:15: Panel 2: Regional and Local Authorities and the Marine Environment**

- Alaska State Government (G. Gray); Nordic Regional Authorities (J. Angell); SCEPT Murmansk (I. Vishnyakov); SCNA Arkhangel'sk (V. Stanislavets). *Chair: Kent Wohl*

**12:15 - 1:30: Catered Lunch**

**Module I: Involving Local Authorities and Indigenous People in Marine Management - Facing the Challenges**  
(Chair: Kevin McCormick)

- 1:30 - 2:00: Opening Presentation**  
- Amirkhan Amirkhanov, Deputy Chair, Russian State Committee for the Environment
- 2:00 - 4:30: Guided Group Discussions**
- 4:30 - 5:30: Module I Plenary Session:**  
Reports from Discussions Groups;  
Draft Recommendations

**THURSDAY, NOVEMBER 30**

**Module II: Building the Circumpolar Infrastructure for Marine Management - Tools and Management Systems**  
(Chair: John Karau)

- 8:30 - 9:30: Opening Presentations**  
- J. Murray (AMAP - Monitoring);  
C. Zockler (WCMC - Data Mapping and Display); J. Mathias (DFO - Integrated Management Approach);  
S. Christiansen (WWF - Ecosystem Approach); D. Henry (GRID- Global International Waters Assessment)
- 9:30 - 11:45: Guided Group Discussions**
- 11:45 - 12:30: Module II Plenary Session:**  
Reports from Discussion Groups;  
Draft Recommendations
- 12:30 - 1:30: Catered Lunch**

**Module III A: Improving Marine Management - Regulatory and Voluntary Protection Instruments and Methods** (Chair: Doug Yurick)

- 1:30 - 2:00: Opening Presentation**  
– James Johnston, Canada
- 2:00 - 4:30: Guided Group Discussions**
- 4:30 - 5:00: Module III A Plenary Session:**  
Reports from Discussion Groups;  
Draft Recommendations

**WEDNESDAY, DECEMBER 1**

**Module III B - Improving Marine Management - Sustainable Resource Use and Managing Threats**  
(Chair: David Egilson)

- 8:30 - 9:00: Opening Presentation**  
– Thorir Ibsen, Iceland
- 9:00 - 11:30: Guided Group Discussions**
- 11:30 - 12:30: Module III B Plenary Session:**  
Reports from Discussion Groups;  
Draft Recommendations
- 12:30 - 1:30: Catered Lunch**
- 2:15 - 4:00: Excursion to Montréal Biodome**  
(Bus at 1:45)
- 6:30 p.m: CMW Dinner**  
- Chez Queux,  
158 Rue Saint-Paul Est  
  
Guest Speaker:  
The Honourable Clifford Lincoln

**THURSDAY, DECEMBER 2**

**Plenary Session: Chair:**  
Malcolm Mercer, IUCN Canada

- 9:30 - 12:30: Review of Module Conclusions/Draft Recommendations**
- 12:30 - 1:30: Catered Lunch**

**CLOSE OF WORKSHOP**

## APPENDIX 3

### List of Participants

**Amirkhan Amirkhanov**

State Committee for Environmental Protection  
of the Russian Federation  
4/6 B. Gruzinskaia Str., GSP  
Moscow, 123812, Russia

Tel: 7 095 124 0471

Fax: 7 095 254 8283

**Bruce Amos**

World Commission on Protected Areas  
Parks Canada – Heritage Canada  
4th Floor - 25 Eddy St.  
Hull, Quebec, K1A 0M5, Canada

Tel: 1 819 994 2657

Fax: 1 819 994 5140

E-mail: bruce\_amos@pch.gc.ca

**Josten Angell**

National Strategy for Sustainable Development  
in the Arctic  
c/o Landsdelsutvalget  
Bodo, N-8013, Norway

Tel: 47 7550 3420

Fax: 47 7552 6725

E-mail: angell@landsdelsutvalget.no

**Snorri Baldursson**

Conservation of Arctic Flora and Fauna (CAFF)  
Hafnarstraeti 97, 600  
Akureyri, Iceland

2 3350

Fax: 354 462 3390

E-mail: snorri@ni.is

**Stanislas Belikov**

Russian Institute for Nature Protection  
Znamenskoe-Sadki,  
Moscow, 113628, Russia

Tel: 7 095 423 8444

Fax: 7 095 423 2322

E-mail: arctos@glasnet.ru

**Martin Bergmann**

Fisheries and Oceans Canada  
501 University Crescent  
Winnipeg, Manitoba, R3T 2N6, Canada

Tel: 1 204 983 3776

Fax: 1 204 984 2401

E-mail: bergmann@dfo-mpo.gc.ca

**Vladimir Bocharnikov**

Russian Academy of Sciences  
7 Radio St., App. #512  
Vladivostok, 690041, Russia

Tel: 7 4232 312 857

Fax: 7 4232 312 159

E-mail: sergeikr@online.vladivostok.ru

**Sarah Christiansen**

World Wildlife Fund – USA  
1250 Twenty-Fourth Street, N.W.  
P.O. Box 97180  
Washington, DC 20077-7180, U.S.A.

Tel: 1 202 861 8303

Fax: 1 202 861 8324

E-mail: sarah.christiansen@wwfus.org

**Billy Day**

Inuvialuit Game Council  
Box 2120  
Inuvik, NWT, X0E 0T0, Canada

Tel: 1 867 777 2828

Fax: 1 867 777 2610

E-mail: igc-c@jointsec.no.ca

**David Egilson**

Environment and Food Agency of Iceland  
Ármúla 1a, IS-108, Reykjavík, Iceland

Tel: 354 585 1007, 585 1000 or 894 5669  
Fax: 354 585 1020 or 558 8841  
E-mail: [davide@hollver.is](mailto:davide@hollver.is)

**Jan Ekebon**

Finnish Environment Institute  
P.O. Box 140  
FIN-00251 Helsinki  
Finland

Tel: 358 9 40300 733  
Fax: 358 9 40300 791  
E-mail: [jan.ekebon@vyh.fi](mailto:jan.ekebon@vyh.fi)

**Gudrun Eyjolfssdottir**

Ministry of Fisheries  
Skulagata 4, 150  
Reykjavik, Iceland

Tel: 354 560 9670  
Fax: 354 562 1853  
E-mail: [gudrone@hafro.is](mailto:gudrone@hafro.is)

**Terry Fenge**

Inuit Circumpolar Conference  
Suite 504, 170 Laurier Ave. W.  
Ottawa, Ontario, K1P 5V5, Canada

Tel: 1 613 563 2642  
Fax: 1 613 565 3089  
E-mail: [tuktu@magi.com](mailto:tuktu@magi.com)

**Petter Fossum**

Institute of Marine Research  
Nordnesgaten 50, PO Box 1870,  
Nordnes, Norway

Tel: 47 552 38633  
Fax: 47 552 38584  
E-mail: [petter.fossum@imr.no](mailto:petter.fossum@imr.no)

**Ellen Fritts**

Habitat and Restoration Division  
Alaska Department of Fish and Game  
PO Box 25526,  
Juneau, Alaska 99801, U.S.A.

Tel: 1 907 465 4105  
Fax: 1 907 465 4759  
E-mail: [ellen\\_fritts@fishgame.state.ak.us](mailto:ellen_fritts@fishgame.state.ak.us)

**Alexander Golovkin**

Russia Institute for Nature Protection  
Znamenskoe-Sadki  
Moscow, 113628, Russia

Tel: 7 095 423 8444  
Fax: 7 095 423 2322  
E-mail: [golovkin@golovkin.msk.ru](mailto:golovkin@golovkin.msk.ru)

**Glenn Gray**

Office of the Governor  
PO Box 110030,  
Juneau, Alaska, 99811-0030, U.S.A.

Tel: 1 907 465 8792  
Fax: 1 907 465 3075  
E-mail: [glenn\\_gray@gov.state.ak.us](mailto:glenn_gray@gov.state.ak.us)

**Soffia Gudmundsdottir**

Protection of the Arctic Marine Environment (PAME)  
Hafnarstaeti, 97,600, Akureyri, Iceland

Tel: 354 461 1355  
Fax: 354 462 3390  
E-mail: [pame@ni.is](mailto:pame@ni.is)

**Leif Halonen**

Nordic Saami Council  
Box 183, Kautokeino, N -9521, Norway

Tel: 47 7848 7160  
Fax: 47 7848 7199  
E-mail: [leif.halonen@kautokeino.commune.no](mailto:leif.halonen@kautokeino.commune.no)

**David Henry**

UNEP/GRID-Arendal  
c/o Canada Centre for Remote Sensing  
588 Booth St.  
Ottawa, Ontario, K1A 0Y7, Canada

Tel: 1 613 995 2042  
Fax: 1 613 947 1383  
E-mail: [dhenry@nrcan.gc.ca](mailto:dhenry@nrcan.gc.ca)

**Annie Hillary**

National Oceanic and Atmospheric Administration  
1305 East - West Highway, N/IPO  
Silver Spring, Maryland 20910, U.S.A.

Tel: 1 301 713 3078 Ext. 188  
Fax: 1 301 713 4263  
E-mail: [annie.hillary@noaa.gov](mailto:annie.hillary@noaa.gov)

**Janet Hohn**

United States Fish and Wildlife Service  
1011 E. Tudor Road  
Anchorage, Alaska 99503, U.S.A.

Tel: 1 907 786 3544  
Fax: 1 907 786 3640  
E-mail: [janet\\_hohn@fws.gov](mailto:janet_hohn@fws.gov)

**Thorir Ibsen**

Ministry for Foreign Affairs  
150 Reykjavik, Iceland

Tel: 354 560 9929  
Fax: 354 560 9979  
E-mail: [thorir.ibsen@utn.stjr.is](mailto:thorir.ibsen@utn.stjr.is)

**Alfred Jakobsen**

Minister of the Health, Environment and the Church  
Greenland Homerule Government  
P.O. Box 1160,  
Nuuk, Greenland  
Tel: 299 346 606  
Fax: 299 325 505  
E-mail: alj@gh.gl

**James Johnston**

Canada Parks Agency  
4th Floor - 25 Eddy St.  
Hull, Quebec, K1A 0M5, Canada  
Tel: 1 819 994 3013  
Fax: 1 819 997 5883  
E-mail: jim.johnston@pch.gc.ca

**John Karau**

Environment Canada  
12th Floor, 351 St. Joseph Blvd.  
Hull, Quebec K1A 0H3, Canada  
Tel: 1 819 953 1699  
Fax: 1 819 953 0913  
E-mail: john.karau@ec.gc.ca

**Mikhail Kashintsev**

State Committee of Fisheries of the Russian Federation  
V. Kzasnoselskaya, 17  
Moscow, 107140, Russia  
Tel: 7 095 264 9310  
Fax: 7 095 264 1277

**Leslie Kerr**

Selawik National Wildlife Refuge  
United States Fish and Wildlife Service  
PO Box 270,  
Kotzebue, Alaska, 99752-0270, U.S.A.  
Tel: 1 907 442 3799  
Fax: 1 907 442 3124  
E-mail: leslie\_kerr@fws.gov

**Luidmila Khorosheva**

State Committee for Environmental Protection  
of the Russian Federation  
4/6 B. Gruzinskaia Str., GSP,  
Moscow, 123812, Russia  
Tel: 7 095 254 6710  
Fax: 7 095 254 8283

**Mathew King**

Assistant Deputy Minister, Oceans  
Fisheries and Oceans Canada  
200 Kent Street  
Ottawa, Ontario, K1A 0E6, Canada  
Tel: 1 613 993 0850  
Fax: 1 613 990 2768  
E-mail: kingm@dfo-mpo.gc.ca

**Grigory Kovalev**

State Committee for Environmental Protection of the  
Russian Federation  
8-1 Kedrova Str., Moscow, 117874, Russia  
Tel: 7 095 124 3958  
Fax: 7 095 254 8283  
E-mail: zapchin@glas.arc.org

**Tiina Kurvits**

Fisheries and Oceans Canada  
12th Floor, 200 Kent St.  
Ottawa, Ontario, K1A 0E6, Canada  
Tel: 1 613 990 1575  
Fax: 1 613 990 8249  
E-mail: kurvitst@dfo-mpo.gc.ca

**Thomas Laughlin**

NOAA  
Room 5230, Department of Commerce,  
14th & Constitution Ave.  
Washington, DC, 20230, U.S.A.  
Tel: 1 202 482 6196  
Fax: 1 202 482 4307  
E-mail: tom.laughlin@hdq.noaa.gov

**Josh Laughren**

World Wildlife Fund – Canada  
Suite 410 - 254 Eglinton Ave. E.  
Toronto, Ontario, M4P 3J1, Canada  
Tel: 1 416 489 4567 Ext. 263  
Fax: 1 416 489 3611  
E-mail: jlaughren@wwfcanada.org

**Berit Lein**

Directorate for Nature Management  
Tungasletta 2  
Trondheim, N-7005, Norway  
Tel: 47 7358 0500  
Fax: 47 7358 0501  
E-mail: berit.lein@dnpost.md.dep.telemax.no

**Tanis Lugsdin**

Environment Canada  
351 St. Joseph Blvd.  
Hull, Quebec, K1A 0H3, Canada  
Tel: 1 819 994 4950  
Fax: 1 819 953 5371  
E-mail: tanis.lugsdin@ec.gc.ca

**Yury G. Lyashko**

State Committee for Northern Affairs of  
the Russian Federation  
Build. 2, 37 Vernadskogo Prospekt Str.  
Moscow, 117415, Russia  
Tel: 7 095 930 7983  
Fax: 7 095 930 7155

**Camille Mageau**

Fisheries and Oceans Canada  
12th Floor, 200 Kent St.  
Ottawa, Ontario, K1A 0E6, Canada

Tel: 1 613 991 1285  
Fax: 1 613 990 8249  
E-mail: mageauc@dfo-mpo.gc.ca

**Jack Mathias**

Fisheries and Oceans Canada  
501 University Crescent,  
Winnipeg, Manitoba, R3T 2N6, Canada

Tel: 1 204 983 5155  
Fax: 1 204984 2403  
E-mail: mathiasj@dfo-mpo.gc.ca

**Gennady Matishov**

Murmansk Marine Biological Institute  
17, Vladimirskaia St.,  
Murmansk, 183010 Russia

Tel: 7 81525 52 32  
Fax: (Norway) 47 789 10288  
E-mail: mmbi@mun.rospac.ru

**Kevin McCormick**

Canadian Wildlife Service  
Environment Canada  
5204 – 50th Ave.  
Yellowknife, North-West Territories, X1A 1E2, Canada

Tel: 1 867 669 4760  
Fax: 1 867 873 6776  
E-mail: kevin.mccormick@ec.gc.ca

**Malcolm Mercer**

World Conservation Union – IUCN  
380, St. Antoine Street West, Suite 3200  
Montreal, Quebec, H2Y 3X7, Canada

Tel: 1 514 287 9704  
Fax: 1 514 287 9057  
E-mail: mercer@iucn.ca

**Anatoly Mikhaylov**

Russian Association of Indigenous Peoples of the North  
Korp 2, Office 527  
Prospekt Vernadskogo 37  
Moscow, 117415, Russia

Tel: 7 095 938 9527  
Fax: 7 095 930 4468  
E-mail: udege@glasnet.ru

**Anatoli Miniaev**

State Committee on Environmental Protection –  
Arkhangelsk Region  
94 Troitsky Ave.  
Arkhangelsk, 163061, Russia

Tel: 7 8182 65 62 79  
Fax: 7 8182 65 41 20  
E-mail: ecolog@dvinland.ru

**Janine Murray**

Arctic Monitoring and Assessment Program  
Indian and Northern Affairs  
Room: 659, 10 Wellington St.  
Hull, Quebec, K1A 0H4, Canada

Tel: 1 819 997 9448  
Fax: 1 819 953 9066  
E-mail: murray@inac.gc.ca

**Peter Nielsen**

Department of the Environment and Nature  
Greenland Home Rule Government  
P.O. box 1614  
Nuuk, DK 3900, Greenland

Tel: 299 346 715  
Fax: 299 325 286  
E-mail: pen@gh.gl

**Ragnar Nilsen**

University of Tromsø / Nordic Saami Council  
SVF, Universitetet 9037,  
Tromsø, Norway

Tel: 47 776 45258 or 776 55799  
Fax: 47 776 46470  
E-mail: ragnarn@sv.uit.no

**Olav Nord-Varhaug**

Directorate for Nature Management  
Trondheim, N-7485, Norway

Tel: 47 735 80841  
Fax: 47 735 80501  
E-mail: olav.nord-varhaug@dirnat.no

**Mark Nuttall**

Department of Sociology  
University of Aberdeen  
Aberdeen, AB24 3QY, Scotland

Tel: 44 1224 272771  
Fax: 44 1224 273 442  
E-mail: m.nuttall@abdn.ac.uk

**Jeanne Pagnan**

IUCN World Commission on Protected Areas  
c/o 53 Brouage  
Aylmer, Quebec, J9J 1J5, Canada

Tel: 1 819 777 1767 (alt: 1 819 953 5277)  
Fax: 1 819 777 1767 (alt: 1 819 997 5883)  
E-mail: jpagnan@compuserve.com

**Aevar Petersen**

Icelandic Institute of Natural History  
Hlemmur 3  
P.O. Box 5320,  
Reykjavík, IS-125, Iceland

Tel: 354 562 9822  
Fax: 354 562 0815  
E-mail: aevar@ni.is

**Ina Pranoto**

Secretariat of the Convention on Biological Diversity  
393 St. Jacques St. W.  
Montréal, Quebec, H2Y 1N9, Canada

Tel: 1 514 288 2220  
Fax: 1 514 288 6588  
E-mail: ina.pranoto@biodiv.org

**Kenneth Sherman**

National Marine Fisheries Service - NOAA  
28 Tarzwell Drive  
Narragansett, Rhode Island, 02882, U.S.A.

Tel: 1 401 782 3210  
Fax: 1 401 782 3201  
E-mail: kenneth.sherman@noaa.gov

**Duane Smith**

Inuit Circumpolar Conference  
P.O. Box 2120  
Inuvik North-West Territories, X0E 0T0, Canada

Tel: 1 867 777 2828  
Tel: 1 867 777 2610  
E-mail: igc-c@jointsec.nt.ca

**Valeri Stanislavets**

State Committee on Environmental Protection –  
Arkhangelsk Region  
53 Suvoeova St.  
Arkhangelsk, Russia

Tel: 7 8182 64 09 90  
Fax: 7 8182 65 41 20

**Marianne Lykee Thomsen**

Greenland Representation  
Embassy of Denmark  
Suite 450 - 47 Clarence St.  
Ottawa, Ontario, K1N 9K1, Canada

Tel: 1 613 244 2094  
Fax: 1 613 244 2095  
E-mail: mlt@gh.gl

**Dag Vongraven**

Norwegian Polar Institute  
Polar Environmental Centre  
Tromsø, N9296, Norway

Tel: 47 777 50638  
Fax: 47 777 50501  
E-mail: dag.vongraven@polar.no

**David Witherell**

North Pacific Fishery Management Council  
Suite 306 – 605 W. 4th Ave.  
Anchorage, Alaska 99501-2252, U.S.A.

Tel: 1 907 271 2809  
Fax: 1 907 271 2817  
E-mail: david.witherell@noaa.gov

**Kent Wohl**

United States Fish and Wildlife Service  
1011 E. Tutor Road  
Anchorage, Alaska 99503, U.S.A.

Tel: 1 907 786 3503  
Fax: 1 907 786 3641  
E-mail: kent\_wohl@mail.fws.gov

**Robert L. Wolfe**

Transport Canada, Place de Ville , Tower C  
14th Floor, 330 Sparks St.  
Ottawa, Ontario, K1A 0N5

**Robert Wolfe (cont.)**

Tel: 1 613 991 4818  
Tel: 1 613 991 4818  
E-mail: wolfer@tc.gc.ca

**Doug Yurick**

Canada Parks Agency  
4th Floor - 25 Eddy St.  
Hull, Quebec, K1A 0M5, Canada

Tel: 1 819 997 4910  
Fax: 1 819 997 5883  
E-mail: doug\_yurick@pch.gc.ca

**Christoph Zockler**

World Conservation Monitoring Center  
219 Huntingdon Road  
Cambridge, UK

Tel: 44 1223 277 314  
Fax: 44 1223 277 136  
E-mail: christoph.zockler@wcmc.org.uk



