

Millennium Assessment update: Marine and Coastal Cross-Cutting workshop

by Jackie Alder

This April, the *Sea Around Us* project hosted the Millennium Assessment's (MA) Marine and Coastal Cross-Cutting Workshop. The workshop was the third in a series of five, designed to ensure that all facets of the MA include specific components such as marine systems throughout. Several coordinating and lead authors (LA) for the various chapters in the MA reports attended this meeting to provide a different perspective and to help clarify questions and issues related to areas outside of the expertise of the marine and coastal participants.

Daniel Pauly of the *Sea Around Us* project is coordinating lead author (CLA) for the Marine chapter and Tundi Agardy, a private consultant based in Washington D.C. is the CLA for the Coastal chapter. Several members of the *Sea Around Us* project are also involved in the MA: Villy Christensen, Deng Palomares, Reg Watson and



A raven dancer greets Richard Dugdale (left) and Andrew Bakun (right) to the workshop.
Photo by J. Alder

myself participated in the workshop and will continue to contribute to the writing of both chapters as well as furthering the scenarios work.

The previous two cross-cutting workshops were on human health issues and biodiversity. This workshop was the first to focus on specific ecosystems – the marine realm and coasts. Despite the earth surface being 70% marine, the world's oceans and coasts are often forgotten in global studies. The results of this workshop, however, will ensure that this does not happen in the MA.

While the group of over 20 dedicated researchers,

from a wide range of expertise (and not all of them of the 'wet' sort), was smaller than the previous two workshops, we made significant progress on the writing of the marine and coastal chapters of the planned conditions and trends report, strengthened and expanded the coverage of the other chapters, and tuned the work of the scenarios and responses working groups. The addition of experts from other fields provided a different perspective to marine and coastal issues, which will further strengthen the marine and coastal work. Many of the

Continued on page 2 - MA

The Sea Around Us Project Newsletter

Issue 16 – March/April 2003

MA - Continued from page 1

participants who did not have a marine background commented on how much they had learned and how they now have a better appreciation of marine and coastal issues.

The workshop was launched at the First Nations House of Learning with welcoming remarks from the University of British Columbia's Michael Goldberg, Director of International Affairs and Dick Carson, Pacific Regional Manager of Ocean Policy, Department of Fisheries and Oceans. The Longhouse venue, combined with BC's rich history of fishing and the spiritual values of BC's First Nations, provided an inspiring start to the workshop, especially since the MA has been working hard to ensure that aboriginal needs are recognized and included. The first day of the workshop was concluded

The evening's entertainment provided visitors with a glimpse of the importance of the coast and offshore resources to aboriginals in British Columbia



Participants at the MA Marine and Coastal Crosscutting Workshop with members of the Lax Kaien Tsimshian Dancers.

with a dinner of traditional aboriginal food and The Lax Kaien Tsimshian Dancers. The evening's entertainment provided visitors with a glimpse of the importance of the coast and offshore resources to aboriginals in British Columbia and set the scene for a productive week.

The workshop then moved to St John's College for the remainder of the week and much work was accomplished. The current drafts of the three major reports on 'Conditions and Trends,' 'Scenarios' and 'Responses' were reviewed in detail, including recommendations on incorporating important marine and coastal aspects. The group reviewing the Scenarios report found it quite a challenge to determine the likely events that would play out for the four scenarios that have been proposed by the MA's Scenarios Working Group. The scenarios have previously been described

(see *Sea Around Us* Issue 14: www.saup.fisheries.ubc.ca/Newsletters/newsletter.htm). Because of the limited knowledge of marine systems combined with even less knowledge of the impacts of some of the proposed initiatives for such systems, the scenarios breakout group came to a consensus that any of these scenarios will have considerable uncertainty about how marine systems will behave. But under all four scenarios, it was agreed, fish landings would not increase above what they currently are.

The crosscutting workshop also made substantial progress in defining marine and coastal concepts and clarifying a number of terms that are used in the MA. The MA authors from outside of the marine and coastal chapters highlighted a number of concepts that they were not familiar with. Terms such as 'production' or 'harvest'

Continued on page 3 - MA

The *Sea Around Us* project newsletter is published at the Fisheries Centre, University of British Columbia. Six issues of this newsletter are published annually, included with the Fisheries Centre's newsletter *FishBytes*. Subscriptions are free of charge.



Our mailing address is: UBC Fisheries Centre, 2204 Main Mall, Vancouver, British Columbia, Canada, V6T 1Z4. Our fax number is (604) 822-8934, and our email address is SeaNotes@fisheries.ubc.ca. All queries (including reprint requests), subscription requests, and address changes should be addressed to Robyn Forrest, *Sea Around Us* Newsletter Editor.

The *Sea Around Us* website may be found at saup.fisheries.ubc.ca and contains up-to-date information on the project.

The *Sea Around Us* project is a Fisheries Centre partnership with the Pew Charitable Trusts of Philadelphia, USA. The Trusts support nonprofit activities in the areas of culture, education, the environment, health and human services, public policy and religion. Based in Philadelphia, the Trusts make strategic investments to help organisations and citizens develop practical solutions to difficult problems. In 2000, with approximately \$4.8 billion in assets, the Trusts committed over \$235 million to 302 nonprofit organisations.

MA - Continued from page 2

are used extensively in the terrestrial realm to define the output of cultivated systems. In the marine sector, they do not have the same meaning. Gathering marine and coastal experts from different areas allowed identification of a range of datasets that will be useful for other researchers participating in this MA as well as for providing baseline data for subsequent MAs.

The workshop also provided the CLAs with the opportunity to meet with colleagues who are contributing to the marine and coastal chapters and to highlight information gaps and approaches to fill those gaps as well as to reach a consensus on what are the major issues and

how they should be presented.

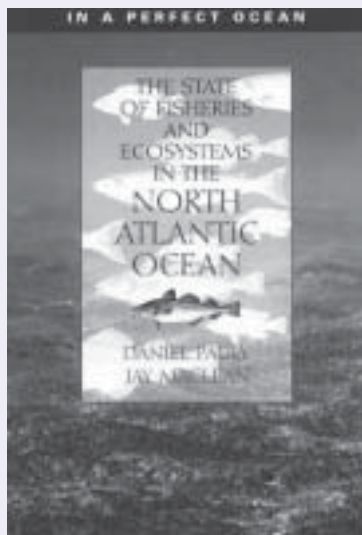
Some of the MA workshop participants took advantage of the weather and spent a few hours on Wednesday afternoon touring the Fraser Inlet and coast. It was a beautiful afternoon: the weather, sun and marine wildlife cooperated so that participants were given a glimpse of the coast of Vancouver - a mix of industry, recreation, urban and port development. Within this seascape they saw a real false killer whale, seals and a wide variety of sea birds and waders. Participants from the United States were thrilled to see bald eagles, their national bird, in such numbers while others were amazed that such wildlife could be seen so close to a city.

The *Sea Around Us* project is pleased that, through hosting the workshop, it could make a significant contribution to the progress of the Millennium Assessment. The workshop allowed us to make a major leap forward in making sure that marine and coastal systems are considered throughout the MA. It also highlighted the fact that there is considerably more work to be done to make sure that decision-makers in the public and private sectors, the major end-users of the MA, have the most up-to-date and best advice available to ensure the sustainability of oceans and coasts. No doubt the *Sea Around Us* through its participation in the MA has much to contribute to this end!



The Sea Around Us project is pleased that it could make a significant contribution to the progress of the Millennium Assessment

In a Perfect Ocean: The Sea Around Us now available in paperback



Long-term readers of this newsletter may remember a story published in May/June 2001 (*Sea Around Us*, Issue 9, p. 3), where scientific writer Jay Maclean is described as working feverishly through the night, during a *Sea Around Us* workshop in Nanaimo, to finish the first draft of *In a Perfect Ocean: The State of Fisheries and Ecosystems in the North Atlantic Ocean*. Those who have been waiting ever since for the book's publication will be glad to know that it has just been published by Island Press.

In a Perfect Ocean, by Daniel Pauly and Jay Maclean, presents the first comprehensive empirical assessment of the status of ecosystems in the North Atlantic ocean. Drawing on the results of the work of the *Sea Around Us* project, the book provides a picture of an ocean whose ecology has been dramatically altered by fishing. In addition to presenting some of the many maps and graphs produced by members of the *Sea Around Us*, including Reg Watson, Villy Christensen, Rashid Sumaila, Kristin Kaschner and Dirk

Zeller, the book provides a snapshot of the past health of the North Atlantic and compares it to its present status; presents scientific assessments based on the key criteria of fisheries catches, biomass and trophic level; discusses the factors that have led to the current situation; and discusses the policy options available for halting the decline. The book is intended to be the first in a series of assessments by the world's leading marine scientists.

And Kenneth Arrow was in the audience!

by *Ussif Rashid Sumaila*

I think I succeeded in convincing the audience that it is both ineffective fisheries management and the way we discount flows of net benefits that contribute to over-fishing

In the past year or so I've given talks in various parts of the world on how discounting may affect our ability to manage marine resources sustainably, for the benefit of both current and future generations. In January 2003, I gave one such talk at Stanford University on the invitation of the Institute for International Studies. Given that the lecture was very early in the semester, my host, Dr Rosamond Naylor, informed me not many people were likely to attend. To our pleasant surprise we ended up with a full house, with several Stanford economists, including Nobel Laureate Kenneth Arrow, in attendance.

I began my talk by asking the question: do economic models of marine resource use adequately capture the interests of future generations? In other words, are economic models altruistic? I discussed what the literature says, and presented fisheries data to examine the empirical evidence regarding this question. I then proceeded to introduce the concept of intergenerational discounting, which has the potential to solve the vexing problem of discounting of flows of net benefits from natural and environmental resources. Finally, I used results from a model of the Icelandic ecosystem to illustrate the benefits from restoration programs for the ecosystem, compared to those from maintaining the status quo fishing strategy (Sumaila, 2001).

A key message of my

presentation is that conventional discounting results in the 'front loading' of benefits and the 'back loading' of costs. This in turn leads to a situation where the interest of future generations is compromised. It should be noted that I am not the first to make this point; many others have been concerned about the effect of discounting on benefits to be received from natural systems in the distant future (e.g. Clark, 1973; Weitzman, 2002). To deal with this problem, I presented the newly developed intergenerational discounting approach of Sumaila (2001) and Sumaila and Walters (2002), and results from an analysis of the Icelandic model mentioned earlier, using the conventional and intergenerational discounting approaches.

In the discussion that followed, first, a point was made that discounting as conventionally practiced is meant to demonstrate the economic efficiency of environmental projects and policies, and nothing more. Concerns such as inter- and intra-generational equity and ecosystem sustainability should be dealt with outside the economic valuation framework. My response to this is that, while there is a need for policy makers to know the state of environmental projects with regards to economic efficiency, there is also a need for evaluation approaches that explicitly include legitimate policy questions as part of the framework of economics. By

incorporating the concerns for future generations within the economic framework, policy makers can determine what they have to give up in terms of economic efficiency in order to meet crucial societal objectives such as intergenerational equity.

Another interesting point, made by Kenneth Arrow and others, was that most of the overfishing observed in various parts of the world is due to the open access nature of fisheries and not the way we value the flow of benefits. I think I succeeded in convincing the audience that it is both ineffective fisheries management and the way we discount flows of net benefits that contribute to over-fishing. Another comment worth mentioning is that a member of the audience encouraged me to try to link the idea of discounting clocks to Daniel Pauly's "shifting baseline syndrome." Rather coincidentally, Daniel and I had already discussed a joint contribution to do just that.

I had a wonderful time at Stanford and I believe that my visit has created the potential for future collaboration between the Fisheries Centre and the Institute for International Studies at Stanford.

References

- Clark, C.W. (1973) The economics of overexploitation. *Science* 181, 630-634.
- Sumaila, U.R., (2001) Generational Cost Benefit Analysis for Evaluating Marine Ecosystem Restoration *In: T.J. Pitcher, U. Sumaila, and D.*

Continued on page 5- Stanford

The FishBase Consortium was in Malta?

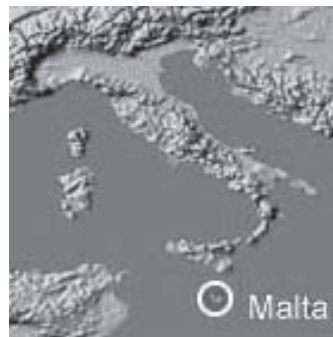
by Maria Lourdes (Deng) Palomares

Yes, it was! I went to sunny and beautiful Malta. Don't get me wrong, I went there to work! The invitation to give a FishBase overview to the Fauna Europaea Third End-users Forum Meeting, 7-10 March 2003, was welcomed and accepted with much enthusiasm (especially since I had never been to that part of the world). Organizers were Dr Patrick J. Schembri and Marika J. Gauci from the University of Malta.

The purpose of this meeting was to obtain an insight into what users of biodiversity databases in Europe want, and how they would like the access of information provided. The meeting was attended by: a) a 9-member Maltese end-user panel, consisting of representatives from the Ministry of Agriculture and Fisheries, the Natural History Museum of Malta, the University of Malta, and two national NGOs; b) a panel of 3 invited speakers from the FishBase Consortium (I represented the Fisheries Centre, and there were also representatives from the University of Agricultural Sciences, Vienna, and from the European Topic Centre on Nature Protection & Biodiversity (European Environment Agency, Paris); c) the 5-member *Fauna*

Europaea Bureau; and d) the 5-member *Fauna Europaea* Newly Accessing States (to the European Union) panel.

The *Fauna Europaea* Bureau presented the prototype of the online interface which will provide access to their database



containing scientific names as well as information on the distribution of all European fauna. This primarily taxonomic database will link to similar databases (e.g. Species 2000, and others like FishBase) providing more in-depth biological and geographical information for each species. One of the many important questions addressed and resolved in this meeting was the inclusion of common names in the different languages of the region.

All of the invited speakers were asked to present their

experiences in the building and maintenance of their databases. Special attention was given to future plans of collaborations and synergies between these various databases. I presented FishBase, using Maltese examples, notably the many Maltese common names supplied by Fisheries Centre graduate student, Yvette Rizzo, who is from Malta. I also outlined some of the reasons for the success of FishBase as an information and biodiversity database. I emphasized the lessons we learned through the 12 years of working with a complex, 'data hungry' database - notably that quality is not compromised by the quantity of data encoded and that all collaborators, data providers and authors of the various publications used in FishBase are given explicit credit. I also stressed the importance of vernacular names: the primary reason for the more than 6 million FishBase hits in February 2003. FishBase was well received as a 'model' database and my presentation generated a number of queries and offers of collaboration from the Maltese colleagues, notably, Mr. Darrin Stevens, from the Convention on Biological Diversity for Malta.

In addition to the opportunity of presenting FishBase to a receptive audience, who could not have resisted enjoying the sun, the clear blue skies contrasting with the limestone buildings of the old city of the Knights of St. John, the fantastic blue waters of the Mediterranean Sea and the friendly smiles of the Maltese people? I am happy I went ...

... an insight into what users of biodiversity databases want and how they would like the access of information provided ...

Stanford - Continued from page 4

Pauly (eds) *Fisheries Centre Research Reports* 9(5), 3-9. (www.saup.fisheries.ubc.ca/report/impactpolicy/sumaila1.pdf).

Sumaila, U.R., C. Walters (2002) *Intergenerational Discounting*. Presentation at American Association for the

Advancement of Science, Boston. February, 2002 (www.aaas.org/meetings/2002/MPE_01_PRINT.html).

Weitzman, M.L. (2001) Gamma Discounting. *The American Economic Review*. 91(1): pp 260-272.



Sea Around Us posters

Sea Around Us members presented several posters at the Fisheries Centre Open House in February this year. Here we present a selection of these, representing some of the diversity of research interests in the Sea Around Us team.

GEO-REFERENCING FISH SPECIMENS FROM EARLY OCEANOGRAPHIC EXPEDITIONS AND SURVEYS

Walt Lovell, D. Palomares and Daniel Pauly



WHAT ARE THE OBJECTIVES?

- The collection of fish specimens is essential to understand the historical patterns of the present-day species and to identify the species that were present in the past.
- The geographic location of fish specimens is essential to understand the historical patterns of the present-day species and to identify the species that were present in the past.

WHAT ARE THE DATA SOURCES?

- The U.S. Fish Commission's early collection of fish specimens in the Pacific Ocean, 1840-1850.
- The U.S. Fish Commission's early collection of fish specimens in the Pacific Ocean, 1840-1850.

WHAT ARE THE DATA SOURCES?


- The U.S. Fish Commission's early collection of fish specimens in the Pacific Ocean, 1840-1850.
- The U.S. Fish Commission's early collection of fish specimens in the Pacific Ocean, 1840-1850.



"This poster introduces an initiative to establish a catalogue of late 18th to early 19th century oceanographic expeditions and early 20th century scientific surveys and also the detailed work of recovering baseline fish occurrence data from these expeditions and surveys. It can be downloaded at www.saup.fisheries.ubc.ca/ExpeditionsPoster.pdf. A website on this work is currently under construction - watch this space!" Deng Palomares.

Modeling and mapping of trophic overlap between marine mammals and fisheries in the North Atlantic: implications for fisheries management

K. Kaschner, R. Watson, A.W. Trites, V. Ginzburg & D. Pauly



I. Introduction

- To date, food web modeling approaches integrating trophic interactions between marine mammals and fisheries have received limited consideration.
- Explicitly explicit modeling of trophic overlap may help to assess the impact of fisheries on marine mammal populations.

II. Methods & Model Input Parameters

- Complete species-specific information for 40 North Atlantic marine mammal species abundance (1980s).
- Complete species-specific information for 40 North Atlantic marine mammal species abundance (1980s).

III. Conclusions


- Overlap between marine mammal food webs and fisheries in the North Atlantic appears to be quite low. A geographical and trophic mismatch may be an efficient strategy of marine resource management.

Global fisheries: spatial and temporal trends

Adrian Kitchingman, Reg Watson and Daniel Pauly
Sea Around Us Project, Fisheries Centre
University of British Columbia
Vancouver, B.C., Canada
www.saup.fisheries.ubc.ca




Change in the mean trophic level of fish and invertebrate landings from 1950 - 2000



Change in the mean body length of fish and invertebrate landings from 1950 - 2000



Decade with maximum fish and invertebrate landings



"My research uses GIS tools to investigate the degree of trophic overlap between marine mammals and fisheries on a global scale. This poster shows some preliminary results for the North Atlantic in the 1990s and demonstrates how spatially explicit modeling of trophic overlap may improve the assessment of potential impacts of fisheries on marine mammal populations. The poster can be downloaded at www.saup.fisheries.ubc.ca/FisheriesMammalOverlap.pdf." Kristin Kaschner.



"We designed this poster to give a geographical depiction and comments on the spatial and temporal trends in global fisheries that have been revealed through our research with Daniel Pauly and other Sea Around Us members. Interactive maps of this work can be viewed under 'Web Products' at www.saup.fisheries.ubc.ca. You can also download the poster at www.saup.fisheries.ubc.ca/GlobalTrendsPoster.pdf". Reg Watson (left) and Adrian Kitchingman.

