

# Sea Around Us

## What we did: A very preliminary report of the first two years of the Sea Around Us Project

*By Daniel Pauly*

The existence of the *Sea Around Us* project, as for other large projects of this kind, is the results of a gamble by two groups of players: (1) the members of the project, betting that they *can* do what they said they will, and (2) the decision makers of the funding agency, betting that the project members *will* do what they said they can.

The *Sea Around Us* project held its second major workshop from April 22-27 2001 in Nanaimo, Vancouver Island, to evaluate how our part of our gamble worked out. The Pew Charitable Trusts, which funds our project, had nominated several participants to also assess how their part of the gamble worked out.

This is to report that everybody's gamble worked out: the Project did achieve its goal of quantifying the large-scale impacts of fisheries on

North Atlantic ecosystems, and the only job still at hand now is to complete the documentation of these impacts through various outlets that the workshop helped to identify.

As argued in the proposal that led to the implementation of the *Sea Around Us* project, evaluating fisheries impacts on the North Atlantic as a whole, i.e., at basin-wide scale, is not matter of assembling a number of illustrative case studies from sites deemed representative of the entire basin. (Many such compilations already exist, and they tend to be dismissed, as one can always argue that the examples are not representative.) Rather, the job is to identify key data sets capable of being 'mapped' at large scales, similar to the data-rich weather maps which, while covering entire continents, still allow direct prediction

of the likelihood of sun or rain at any specific locality.

One year ago, the *Sea Around Us* project held a workshop to review, with the help of our partners at FAO and in other institutions, the conceptual toolkit that we thought would help us generate the required maps. (The contributions included in this report are available online at [www.fisheries.ubc.ca](http://www.fisheries.ubc.ca))

During this year's workshop, we got to look at our first set of freshly produced maps (all with a resolution of ½ degree latitude and longitude). These were:

- 1) Maps of fisheries catches, for the world as a whole, and the North Atlantic in particular;
- 2) Maps of North Atlantic catch values;

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- 3) Maps of fish biomass in the North Atlantic
- 4) Maps of dietary overlap between North Atlantic marine mammals and the fisheries.

*...everybody's gamble worked out: the Project did achieve its goal...*

The catch maps were generated using a rule-based algorithm developed by Reg Watson, running on FAO statistics and other data assembled by Ahmed Gelchu and other members of the *Sea Around Us* team. They allow immediate identification of complex patterns, be they due to problems in the underlying database of catch series, or due to forcing by biological, physical or other natural processes. Though they were very well received, we are still a bit coy at showing these maps (and hence this article will not

present any), as they still need some improvements before they are submitted to peer-reviewed journals.

Multiplying catches by their price allows the values of fisheries to be estimated, and these can also be mapped. However, the work required to produce such maps can be daunting. Still such maps did emerge for presentation at our workshop, based on price information assembled by project economist Rashid Sumaila. We expect these maps, once published, to provide a richly patterned, visual complement to the time series commonly used to assess the economic state of fisheries.

Maps of fish biomass are not frequently used to evaluate the status of fish populations, though acoustic, bottom trawl and plankton surveys methods exist which generate spatially structured biomass data. Villy Christensen, assisted by Carl Walters, thus undertook to 'spatialize' the 18 Ecopath models of North Atlantic ecosystems so far available, either produced by earlier projects, or by international teams of project collaborators led by *Sea Around Us* postdocs Sylvie Guénette and Dirk Zeller. (While covering only about ¼ of the North Atlantic, these models cover over ¾ of the shelf areas in the North Atlantic,

and hence the bulk of the fishable biomass).

An elaborate regression model was produced which predicted biomass by trophic level for any ½ degree square in the North Atlantic (since 1950) based on a relationship between established Ecopath models, mapped catch data and other factors such as distance from the coast, depth, year, water temperature, presence of ice, etc. The resulting, rather spectacular maps, document a decline of fish biomass in the North Atlantic, for the period from 1950 to the late 1990s, notably at high trophic levels, and thus provide an illustration, in space, of the 'fishing down marine food webs' phenomenon.

The fourth set of maps we discussed were developed by Kristin Kaschner with assistance from R. Watson, V. Christensen and others; they identify the areas where the food (type, quantity) taken by marine mammals (cetaceans or pinnipeds, or subgroups thereof) overlaps with fisheries catches, and thus leads to competition. (The reason for the increasingly frequent sightings of emaciated marine mammals.)

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The *Sea Around Us* website may be found at [www.fisheries.ubc.ca/projects/saup](http://www.fisheries.ubc.ca/projects/saup), and contains up-to-date information on the

**T**he *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.

## **Putting Faces to the Names: Some of the Sea Around Us team**



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