

Rediscovering *Ecopath* in the Kerguelen Islands

by Maria Lourdes D. Palomares

Unfortunately, this really isn't about an exploratory expedition to the Kerguelen Islands (though I would have loved for it to be!). Rather, Daniel Pauly and I went to Paris to attend the workshop on modeling the Kerguelen ecosystem (Figure 1), held at the Muséum National d'Histoire Naturelle (MNHN) in late September 2003. This was one of the rare occasions where Daniel delivered an *Ecopath* course in his native tongue. Incidentally, some of the participants were not aware that Daniel is French and they arrived armed with English up their sleeves, greeting Daniel in their best English. When Daniel responded in

French, they were all amazed to have discovered a compatriot. That immediately broke the ice, paving the way to a successful workshop and to Daniel's two-day lecture on *Ecopath with Ecosim* being received with keen interest. Participants included representatives from the Centre d'Etudes Biologiques de Chizé; l'Observatoire Océanologique de Villefranche sur Mer; L'Université du Littoral Côte d'Opale; the Centre de Geostatistique of the École Nationale Supérieure des Mines; the Université de Rennes 1; and of course, our partners from the MNHN Guy Duhamel and Patrice Pruvost.

We might ask why the MNHN is interested in keeping an eye on these islands, part of the French Antarctic territories. In the early 20th century, the large number of marine mammals around Kerguelen archipelago (notably sperm whales, elephant seals and fur seals) was the target of a fishery which continued until the late 1960s - when whaling as a whole was banned (IWC 1994). In the 1970s, the Soviet Union started bottom trawling,

targeting marbled rockcod, mackerel icefish and grey rockcod without any management or control (G. Duhamel, pers. com.). Then, in 1978, an EEZ was established, which led to the creation and implementation of a fishery management scheme (Duhamel 1995) which included a limit of seven trawlers. In 1984, a stock of Patagonian toothfish was discovered in the area, but it was not until 1996, when the Japanese discovered a liking for the white tasty flesh of the toothfish, that the industry switched from bottom trawling to longlining for toothfish (Duhamel 1993). This highly profitable fishery led to the emergence of an illegal longline fishery in 1997 which is now still operating. This longlining produces large bycatch of other fish species, e.g. macrourids and skates, and also seabirds (Capdeville and Duhamel 1996), as well as marine mammals (e.g. orcas).

Why 'rediscover' *Ecopath* in the title of this account? Well, because I did rediscover *Ecopath*. The last time I used this modeling approach extensively was for my Ph. D. *Continued on page 2 - Kerguelen*

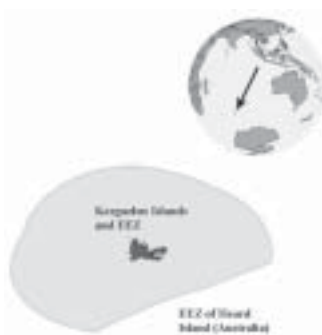


Figure 1. The Kerguelen Islands (and Exclusive Economic Zone), a component of the French Antarctic Territories.

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thesis in 1991. The objective of my latest visit to MNHN was to help Patrice Pruvost and Guy Duhamel improve the Kerguelen EEZ model that Patrice and I started during his February 2003 visit to Vancouver. This entailed re-examination of the preliminary model (presented at the workshop on Modelling Antarctic Ecosystems held at the Fisheries Centre in April 2003 and to be included as a contribution in the Fisheries Centre Research Report for that workshop). This proved to be a very successful 'bug hunting' process and we were able to fine-tune some of the parameter estimates of the Kerguelen ecosystem. Though *Ecopath's* 'look' has changed since 1991, its recognizable interface allowed me to navigate through the routines without having to shout 'HELP' to a far-away Villy Christensen.

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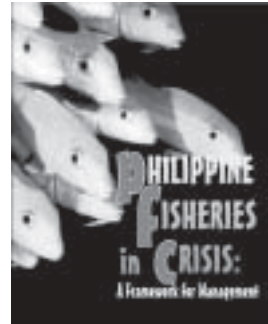
Thus in the end, Patrice was able to present a well balanced model to the workshop participants. This elicited constructive comments and suggestions and, aside from some minor adjustments to the parameter estimates of a few major groups, the participants all agreed that this model represented the Kerguelen ecosystem well. They also agreed that a follow-up workshop focusing on testing different fishing scenarios and simulations using *Ecosim and Ecospace* is a logical progression to this effort.

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Book Review: Philippine Fisheries in Crisis

This book, by Stuart J. Green and colleagues, highlights the current crisis facing Philippine fisheries today. In its own words, its objectives are to highlight the role of fisheries in food security in the Philippines; measure the large economic role played by



fisheries and other coastal resources; illustrate what is lost from the destruction of fisheries and habitats; and thus provide advice and support to decision-makers. It does this clearly and concisely, making good use of graphics. With a foreword by Edgardo Gomez, Pew Fellow in Marine Conservation and Professor at the Marine Science Institute, University of the Philippines, this book will be a valuable source of information for anyone concerned about sustaining the fisheries of the Philippines.

Reference

Green, S.J., A.T. White, J.O. Flores, M.F. Carreon III and A.E. Sia. 2003. Philippine Fisheries in Crisis: A framework for management. Coastal Resource Management Project of the Department of Environment and Natural Resources, Cebu City, Philippines, 77pp.

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

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ICES 2003 Annual Science Conference

The Sea Around Us expands its European links

by Dirk Zeller

This year's ICES Annual Science conference was held in Tallinn, Estonia, one of the three small Baltic States sandwiched between Russia and Poland. The prime purpose for this trip was to present to the European fisheries science and advisory community a paper of the key findings and recommendations of our project to date. Additionally, I arranged to meet with local scientists in order to establish cooperative working relationships for our fisheries data-recovery efforts. Estonia and the other Baltic states (Latvia and Lithuania) represent a special challenge for improving global fisheries time series, given that they became independent countries only with the dissolution of the former USSR. Thus, prior to the early 1990 catches taken by Estonian, Latvian and Lithuanian vessels were reported as part of USSR catches within the FAO statistics.

The conference was well attended, with 200 papers and 41 posters presented in 15 theme sessions over four days. While major emphasis was placed (for geographically obvious reasons) on the Baltic Sea, topics ranged from the traditional (fisheries technology and stock assessment) to more progressive and holistic

themes such as stock recovery and reference points. One interesting point was the fact that the president of ICES (Pentti Mälikki) in his opening remarks, as well as all three keynote addresses, by Fredrik Wulff (University of Stockholm, Sweden), Randall Peterman (Simon Fraser University, Canada) and John Caddy (Mexico), while covering diverging topics, all made a plea for the urgent need for scientists to improve communication outside of the direct science forum, especially with decision makers and the public. Judging by the amount of media and high-level briefing exposure our project has achieved so far (see publication and media records listed on our web page: www.saup.fisheries.ubc.ca), it seems we are on the right track and ahead of the curve in this area.

Other highlights of the conference were the theme sessions on long-term changes in spatial distribution and abundance, recovery planning, and reference points. The paper I presented was titled "Towards sustainable fisheries: mapping regional and global trends in abundance and catches", and summarized the major project findings to date. I also outlined some of the solutions we propose for the global fisheries crisis, with major emphasis on reduction of overcapacity, and on the need for ecosystem recovery through the establishment of no-take zones

of substantial size (Pauly *et al.* 2002; Russ and Zeller 2003).

An additional outcome of this European visit was the establishment of co-operation with local scientists in our data recovery efforts. Thus, I met with Dr. Henn Ojaveer (Estonian Marine Institute), the author of a paper on Estonian fisheries catches in Baltic waters from 1928 to 1995 (Ojaveer 1999), and with Dr. Maris Plikshts (Latvian Fisheries Research Institute), who deals with Latvian fisheries catches. Attempts continue to try to extend this collaboration to Lithuania.

On a lighter note, it was pleasing to see that an established organization like ICES has not lost its sense of humour, as evidenced by a poster contribution entitled "Staying in tune with our ecosystem"; authored by none other than "J. Bach, G. Mahler, F. Schubert and Co-author Charlie"; and submitted for the imaginary theme session, Σ , on "Ecosystem Tuning Management". The authors allege that "an exciting new scientific area has emerged in hydroacoustics: the tuning of various fish species. Tuning has been performed for many years with data, but now a small group of scientists has started tuning the fish themselves." The authors further present a simple mathematical formula designed to assist in individual scale-tuning of fish. The equation, replicated below (without permission) has been passed on to the Fisheries

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Centre's own Prof Carl Walters for further modelling exploration and incorporation into Ecopath!

Note that ψ is a scale-density parameter for summer-spawning herring west of 62° N, S_{mean} is the mean scale

$$\ln \psi_{1.90903} = \int S_{mean} (F_{pa} - \partial SG / \partial HA)^2 \leq ((7.957114 \xi e^{\lim A^7} \neq \sqrt{cdefgab}) \pm \Pi^{3.14159}) - 67(\text{only odd years})^{0.73Hz}$$

equilibrium coefficient at 47.341° K (Pasteur Institute), ξ is the average off-key level, and Π is there for mathematical effect." Happy fish tuning!

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Letter to the editor: Aquaculture in the Philippines

by Josh E. Moncrieff

Philippines' coastal communities share many of the same worries as their Chilean counterparts

Your recent article, 'Salmon Farming in Chile' (*Sea Around Us*, Issue 18), depicts a state of affairs that is in many ways very similar to what I observed on a recent six-month stint in the Philippines. I spent this time as a research intern with the Tambuyog Development Center – a leading Philippine Non-Governmental Organisation (NGO) in coastal community development - studying the effects of the nation's aquaculture industry upon its artisanal fishers. My work revealed a widespread ignorance towards the rights of artisanal fishers and towards environmental protection as a whole, and indicated that the Philippines' coastal communities share many of the same worries as their Chilean counterparts.

The Philippines – a nation extremely dependent upon its coastal resources - has recently seen a dramatic increase in marine aquaculture production. While this growth has generally been cast in a positive light, centred on the belief that aquaculture will lead to food security and economic growth, the nation's artisanal fishers are highly susceptible to its less desirable results, and thus have recently seen their livelihood come under significant pressure.

As things stand, the threat presented by aquaculture development comes in a variety of forms. Many of the potential downsides of intensive and semi-intensive fish farming – including physical, chemical, and biological pollution – are widely acknowledged, and well represented in your article on Chile. Additionally, development of the Philippines' coast has resulted in widespread destruction of mangroves in the rush to develop fish-ponds. Another concern commonly expressed by artisanal fishers is that as large, high-value, farmed fish become increasingly prevalent, the demand for smaller fish – those that can still be caught in significant quantities in the wild - will sharply decrease. This would inevitably lead to lower prices for their wild catch, and a corresponding decrease in their income.

While many artisanal fishers in the Philippines would like to see a decrease in aquaculture activity, it seems unlikely that the industry's growth will be slowed or stopped by government intervention. It is more realistic to hope that industry, NGOs, and community-based organizations of fishers will take

a more active role in managing this development to ensure that artisanal fishers are not driven away from their traditional livelihoods. In addition to ensuring that sound environmental practices are adhered to, a variety of approaches should be considered. These would include granting coastal property rights to artisanal fishers and their communities, improving access to sources of credit in coastal communities, expanding fishers' access to education and training, and developing alternative livelihoods to ease the transition from fisheries for those that desire to follow such a path. While such efforts would not single-handedly bring socio-economic parity to the Philippines' marginalized artisanal fishers, they could play an essential role in the process of beginning to recognize the needs and rights of this portion of the Philippines' population.

Josh Moncrieff is a UBC graduate, with a degree in oceanography. In 2002, he began a CIDA-funded internship in the Philippines coordinated by the International Marine Institute of Memorial University, Newfoundland. He is now a Masters student at the University of Calgary.

