

FISHBYTES

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MSY Reborn: The 2000 Larkin Lecture

By Dr Tony J. Pitcher

The first Larkin Lecturer who had studied under Peter Larkin presented her talk at UBC on February 17th 2000. Peter inherited Pamela Mace as a graduate student after she had cleverly eliminated her first two research supervisors,

sending the first one to Florida and the second to Vienna. But Peter had the stamina to see her through her Ph.D. After this Dr Mace worked on the Bay of Fundy herring fishery at the Bedford Institute in Halifax for a while, and then returned to her native New Zealand, where she concentrated on fisheries for long-lived deep sea fish like the orange roughy. She moved to the USA in the 1990s, working initially for the New England Management Council and, since 1993,

for the National Marine Fisheries Service (NMFS), where she has analysed a wide diversity of fisheries, including scallops, herring, groundfish, sharks, tuna, swordfish and billfish. Since 1998 she has been NMFS' national stock assessment coordinator.

Pamela Maces' recent work has focussed on harnessing the precautionary approach to control rules for sustainable fishing, and this was her topic for the fourth Larkin Lecture. Her thesis is that Maximum Sustainable Yield, (MSY), a former management target, lives on as a useful limit reference point which should not be exceeded. Peter Larkin himself was famous for a piece of poetry (1977 - *An epitaph for the concept of MSY*) that effectively helped to bury the MSY concept – Larkin likened MSY to a piece of stained glass in the cathedral of confident fisheries management of the 1960s.

Pamela's talk included an audiotape that neatly demonstrated the problems of managing a fishery, the North Atlantic bluefin tuna, by presenting statements from different perspectives: we were played statements from the fishing industry, the conservation movement, a stock assessment scientist and a fishery manager. Predictably, these "voices" sounded as though they were living on different planets. While the recordings were played, Dr Mace showed us an NMFS graph of estimated tuna biomass and catch as a dramatic reality check.

In her lecture, Pamela quoted Peter Larkin's poem and then presented her own version, which we reproduce here:

In this issue...

Poetry and the 2000 Larkin Lecture

Justice and Fisheries: launching a new book - and paradigm

The importance of proper posture

Saving the Patagonian Toothfish

The Fisheries Centre teaches the AAAS a thing or two

Beware of smiling dolphins

And, as always, lots of News and Notes!

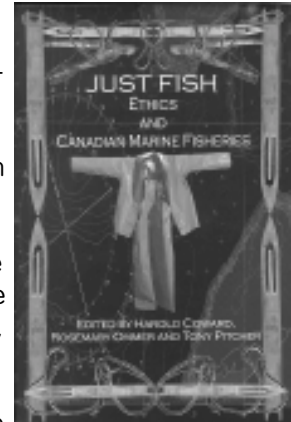
Continued on page 4 - MSY Reborn

Seeking Justice in Fisheries

By Melanie Power

After nearly three years of effort, three team meetings on three islands and two coasts, several editorial meetings, and much work by contributing authors, the 'fish ethics' project book has been published!

Just Fish: Ethics and Canadian Marine Fisheries, edited by Harold Coward, Rosemary Ommer, and Tony Pitcher, was published by ISER Books (Memorial University of Newfoundland) in March, 2000. A 31-page brochure of the same name and written by Rosemary Ommer was also published by ISER Books in conjunction with the 304-page book. Both the book and the brochure are highlighted with original artwork by Pam Hall, an artist from St. John's, Newfoundland.



The Fisheries Centre participated in the project along with the University of Victoria's Centre for Studies in Religion and Society and the Institute for Social and Economic Research at the Memorial University of Newfoundland. In addition to Tony's efforts as co-editor of the book, five chapters were contributed by Fisheries Centre members and alumni: "Not Just Fish: Value of Marine Ecosystems on the Atlantic and Pacific Coasts" (Daniel Pauly, Alasdair Beattie, Alida Bundy, Nathaniel Newlands, Melanie Power, and Scott Wallace), "Back to the Future' and Creative Justice: Recalling and Restoring Forgotten Abundance in Canada's Marine Ecosystems" (Nigel Haggan), "Ecosystem Justice and the Marketplace" (Ussif Rashid Sumaila, along with Mahamudu Bawumia), and "Fish Figures: Quantifying the Ethical Status of Canadian Fisheries, East and West" (Tony Pitcher and Melanie Power).

Workshops have been planned in Victoria and St. John's to present the team's findings and to discuss the issues with interested parties. The brochure is intended to summarise and present key findings, particularly to assist policy-makers in determining the role of ethics in fisheries management.

For more information, visit www.fisheries.com. Earlier progress reports may be found in *FishBytes* 3(5) and 4(6).



Sit up Straight!

As workaholic academics, faculty and students at the Fisheries Centre spend unending hours hunched over our computers. Although the benefits of such dedication are obvious, the possibility of aches, pains, and injury is very real.

Alarmed at the growing number of walking (typing?) wounded wandering our little huts, Val Pitcher recently spent an afternoon at the Fisheries Centre discussing ergonomics and health. A physiotherapist, Val began by discussing proper posture, work station arrangements, and exercises to reduce the likelihood of repetitive strain injury. Special gadgets (from pens to vegetable peelers) were passed around to demonstrate the wide variety of adaptive devices which are becoming more widely available. Val also reminded us of the need to have a life beyond the research, urging each of us to find an interest which will provide much-needed breaks from the desk.

Following the general discussion, Val visited various workstations to suggest proper set-up and positioning. Of special note: while the cubicles in the newly-renovated office space (selected by Tony Pitcher and Nigel Haggan) were praised by Val for their design, those in the existing grad student office were panned for their inflexibility and poor design – cubicles selected by the powers-that-be at UBC!

Many thanks to Val for taking time to speak with us and for reminding us that we really need to take care of ourselves if we are to be successful in our work. Who knows? Perhaps future issues of *FishBytes* will be produced using voice recognition software...



A Humble Note from the Editor...

Ah, dear readers of *FishBytes* and the *Sea Around Us Newsletter*... Yes, these really are the "March/April" issues of our newsletters. Do not adjust your calendar.

Just to assure you, as well, there will be a "May/June" issue following closely on the heels of this one... assuming technology helps rather than hinders!

Suffice to say that, despite the best planning and preparation, when technology doesn't feel like co-operating, everything grounds to a halt...

Sorry for the delay... And thanks for your patience and understanding!



BACK TO THE FUTURE at the AAAS:

'A step up in technology is a step down the food web'

By Nigel Haggan

BACK TO THE FUTURE (BTF) is a new resource management philosophy developed at UBC-FC. BTF presents an 'audit' by comparing present and past ecosystems in terms of diversity and abundance. Past ecosystem states are re-constructed using information from scientific studies, the traditional knowledge of Aboriginal peoples, the expertise of fishers, archives, faunal remains from archaeological sites and sediments. BTF has a strong 'participatory' element based on respect for different systems of knowledge and reciprocity in sharing knowledge and the benefits that might accrue from harnessing knowledge to resource rebuilding. Much to our delight, we were invited to present the approach at the February 2000 American Association for the Advancement of Science (AAAS) conference in Washington DC.

Tony Pitcher opened with a compelling argument for a rebuilding agenda to reverse the sequential depletion of marine systems by human technological advances. Three ratchet-like processes are involved. 'Odum's ratchet' is ecological, fishing pressure leads to the replacement of large 'tasty' species by small high-turnover pelagics. In 'Ludwig's ratchet,' depletion drives spiralling investment in vessels, technology and gear to fish lower down the food web. 'Pauly's Ratchet' is described below. This was followed by an account of how fishers' knowledge on presence, absence or relative abundance can be used as input to mass-balance models.

Daniel Pauly described how increasing world fish catch actually represented a stock by stock series of depletions and a shift to invertebrate landings. This is integral to the

'FDMFW' (Fishing Down Marine Food Webs) effect. 'Pauly's Ratchet' is cognitive. Fisheries scientists (and indeed fishers) tend to see the amount of fish that 'ought' to be in the system as the amount there was when they started their careers. The perception of productive potential thus 'ratchets down' over successive generations. BTF offsets this 'baseline shift' by re-constructing past abundance and diversity.

Andrew Trites presented a Bering Sea case study that addressed the question of whether whaling or commercial fisheries could account for the major shift from salmon and herring to pollock and large flatfish. Ecosystem modelling of whaling and fisheries alone could not account for the changes. This suggests that other factors such as climate or a regime shift were likely involved and demonstrates the need for BTF to consider 'forcing' variables as well as fishing pressure.

Russ Jones of the Haida Nation told how Aboriginal communities ascribe cultural and spiritual as well as economic value to marine ecosystems. Quotes from Haida elders described how the sheer volume and noise of herring, sea lions and other predators passing through Skidegate Narrows would keep them awake at night. This contrasts with present low levels. It also underscores Haida concerns about how treating herring stocks as aggregate can lead to the extirpation of local populations. This has implications for community stability and biodiversity. He also discussed the significance of language as a source of embedded ecological knowledge and the caveats needed in interpretation.

Rashid Sumaila presented a graph showing key species of the Strait of Georgia ecosystem 100 years ago

and today. Baleen whales, halibut, lingcod and many species of salmon have dwindled to vanishing point. Seals and hake are abundant. Three economic perspectives were presented, the first two using a discount rate of about 4%. A simple economic comparison showed that past resource levels were 160% more valuable than the present, an ecoeconomic valuation increased this to 170%. Lastly, arguing for a 0% discount rate on the basis of inter-generational equity, an ecological, economic, and social analysis valued the past resource at 220% higher than the present. Note that these values do not include allowance for community stability, reduced transfer payments or lifestyle values.

Cristofer Boggs presented an Ecosim 'hindcast' that showed an increased abundance of sharks marlins, broadbill swordfish, and large tuna as fishing effort declined to 1950 levels. In contrast, mahimahi and flying fish abundance declined. There was no increase in total ecosystem biomass, but biomass was redistributed towards the apex of the food web. These results suggest that the present day food web configuration is a product of both fisheries-induced mortality and the indirect effects of fisheries induced by species interactions.

The presentation was well received and got favourable comment in the context of other AAAS sessions. There was also quite a bit of media interest at a press conference, and Russ Jones was also interviewed by the BBC World News Service.

Please see (www.fisheries.com) for abstracts and slides from the presentation.

In addition to his role as a researcher, Nigel Haggan has recently been appointed Consultant Executive Director of the Fisheries Centre. Nigel chaired the session in which the BTF approach was presented.



In Praise of PA Larkin and MSY

MSY Reborn - Continued from page 1

Up springs MSY.
No, it didn't die.
It just metamorphosed
To be better for those
Who wrote of its woes.

Ahead of his time was Larkin,
To him we would always harken.
But MSY has a cause,
It's the focus of many laws.

It finally discovered the key:
Please, don't take all of me.
Just take a quarter,
Leave more in the water.
(You know that you ought'a)

Now MSY has found a new niche,
And all that's needed is to make
the pitch
That production from the oceans is
finite,
And civilized people should not
have a pie-fight.

The Larkin Lecture was followed by a delicious buffet and reception hosted by the First Nations House of Learning at which Director and Fisheries Centre Associate Dr Jo-Ann Archbald introduced us to the meanings of the carved longhouse totems: one of them especially suitable for Fisheries Centre chatterboxes – an admonition to listen twice as much as we speak.

On the morning after the Larkin Lecture Dr Mace held an informal discussion session and lunch in the Fisheries Centre. She proved refreshingly candid about the advent of privatized fisheries research and ITQs in her native New Zealand, especially with regard to the failure to halt serial depletion of very long-lived deep sea fish like the orange roughy. A full report of Pamela Mace's discussion with Fisheries Centre members, by rapporteur Amy Poon, appears on our web site.

As in previous years, the whole

Larkin Lecture event was stimulating and thoroughly enjoyable, and we were all grateful to the Larkin family and friends for establishing the endowment fund that sponsors the event. It is hoped that Dr Mace's Larkin Lecture will be published, after peer review, in the new Blackwell's journal, *Fish and Fisheries*, in 2001.

See also: Larkin, P.A. (1977) An epitaph for the concept of MSY. Trans. Amer. Fish Soc. 106: 1-11.

Dr Tony J. Pitcher is Director of the Fisheries Centre



Danish Industrial Fisheries

Denmark's fishery is the largest in the European Union measured in terms of volumes caught. Total catches in 1998 were just over 1.5 million tonnes, of which approximately 1.1 million tonnes were fish for industrial purposes (i.e. reduction to fish meal and fish oil, rather than direct human consumption), and approximately 400 000 MT fish for consumption. The value of Danish fishermen's catches totalled about US\$ 0.48 billion.

(From Globefish - FAO April 2000)



Pirate Fish Catch Released

In mid-March, Greenpeace unhooked and released alive almost sixty Antarctic sea bass (Patagonian toothfish). The sea bass were hooked on five kilometres of abandoned pirate fishing gear that the crew of the MV Arctic Sunrise pulled from 1500m below the surface of the ocean around Antarctica. Illegal fishermen frequently abandon their valuable fishing gear to avoid arrest.

Greenpeace reports that pirate fishing is driving this species toward commercial extinction. Furthermore, it is estimated that the fishing gear used in this illegal fishery hooks and kills 60,000-100,000 seabirds each year.

For more information on the Antarctic sea bass and illegal catches, visit www.greenpeace.org/pressreleases/oceans/2000mar20.html



Food Webs and Economics

A new volume, the *ACP-EU Fisheries Research Initiative Report Number 5: Proceedings of the EXPO '98 Conference on Ocean Food Webs and Economic Productivity*, edited by Daniel Pauly, Villy Christensen, and Lucilia Choelho, has recently been published in English and in French. The report presents the proceedings of a three day scientific conference on "Ocean Food Webs and Economic Productivity", held July 1-3, 1998 at the Instituto de Investição das Pescas e do Mar (IPIMAR) in Lisbon, Portugal, under the auspices of the ACP-EU Fisheries Research Initiative and the European Commission (DG VIII). The report is based on a three-step structure, each corresponding to one conference day: 'General Diagnosis' documents the present crisis of fisheries and the magnitude of fisheries impact on ocean ecosystems and their productivity; 'Sectoral Responses' shows how the fisheries sector (including fisheries science) views the crisis, and illustrates approaches that might be used to mitigate fisheries impacts with emphasis on Marine Protected Areas; 'New Arrangements' deals with the new institutions and actors that may contribute to resolving the crisis of fisheries, and the ecological threats to ocean productivity that emanate from this crisis.

One possible conclusion: cautious optimism.



Marine Mammal Mercenaries

Remember Flipper, the charismatic, friendly, clever, television-star dolphin? Now imagine Flipper with an explosive charge, swimming off to take care of an enemy vessel.

Sounds pretty farfetched, but the March 10, 2000, edition of The Times of London (www.the-times.co.uk) reported that both the Soviet Union and the United States maintained programmes for training marine mammals for military purposes. The article, by Richard Beeston, indicates that the animals were used to detect mines, carry charges to destroy ships, find missing missiles and torpedos, and even harpoon divers.

Beeston's article details what he describes as "...one of the most bizarre sell-offs of the post-Cold War Soviet arsenal...", a sale of 27 animals, including not only dolphins but also beluga whales, walruses, and sea lions, to Iran. Beeston further writes that "Boris Zhurid, a former submariner in charge of training the dolphins, said that he was forced to sell his animals after he ran out of cash to feed and maintain them." The development is thought to involve the world's first animal mercenaries.

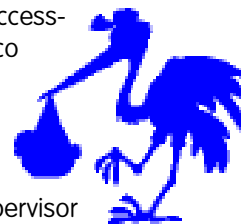
Something to think about the next time a frolicking smiles at you from the water...



Congratulations to **Mary Gregory**, who successfully defended her PhD thesis in late January. Mary's thesis reviewed the application of auction theory to the 1996 Pacific salmon licence retirement program and assessed the data to determine what factors influenced bid values. She has now returned to work at Fisheries and Oceans in Ottawa, working temporarily as Acting Director of Restructuring and Adjustment. Mary's PhD was supervised by Gordon Munro.

Congratulations to **Marcelo Vasconcellos**, who successfully defended his PhD dissertation, "Ecosystem impacts of fishing forage fishes: an analysis of harvest strategies for the Brazilian sardine", on February 24th. Marcelo was a student of Tony Pitcher, supported by the Conselho Nacional de Ciencia e Tecnologia, CNPq/Brazil. Marcelo will be working as a postdoctoral researcher at the Fisheries Centre for one year, and after that he and his wife Daniela (also a PhD candidate in Resource Management and Environmental Studies) plan to return to Brazil.

Congratulations also to **Laura Vidal-Hérendez**, who successfully defended her MSc thesis, "Exploring the Gulf of Mexico as a large marine ecosystem through a stratified spatial model" on the afternoon of March 1, 2000. In another stunning success, at 2:30pm, March 15, Aurora Gómez-Vidal came into the world, at 3.3 kg. Congratulations to proud parents Laura and Gerardo Gómez, and proud supervisor Daniel Pauly.



Congratulations also to **Stephen Watkinson**, who has been awarded the Dofasco Inc. First Nations Fellowship through the 2000/2001 UBC University Graduate Fellowships competition.

Congratulations to **Jo-Ann Archibald**, director of the First Nations House of Learning and adjunct professor to the Fisheries Centre, on being selected as a recipient of the 2000 National Aboriginal Achievement Awards. A member of the Stó:lo First Nation with a specialty in First Nations curriculum development, Jo-Ann received the award for Education. The National Aboriginal Achievement Awards are the highest award granted by Canada's Aboriginal community, and recognise commitment to ideals and levels of achievement.

Anyone who has the opportunity to visit the Fisheries Centre will be greeted by a friendly new face. **Jessica Chen** has joined the Centre as receptionist and assistant administrative clerk.

Student Funding Opportunity

AFS Travel Award: Call for John E. Skinner Memorial Fund Applications John E. Skinner Memorial Fund Award – Established in memory of John Skinner, former Chapter and Western Division American Fisheries Society president, the fund provides monetary travel awards (up to \$500) for deserving graduate students or exceptional undergraduate students to attend the AFS Annual Meeting. Contact the Committee Chair, Christopher Guy for an application or download the form from www.fisheries.org/2000SkinnerApplicationForm.PDF or www.fisheries.org/2000SkinnerApplicationForm.doc or www.fisheries.org/2000SkinnerAwardApplication.wpd The deadline to apply for this funding is 15 May. Contact: Christopher Guy, Chair, Skinner Award Committee, KS Coop Fish & Wldf Res Unit, Kansas State University, 205 Leasure Hall, Manhattan, KS 66506, (785) 532-6635, fax (785) 532-7159, chrisgy@ksu.edu

News and Notes

Conference Calls

Economics of Marine Protected Areas – to be hosted by the Fisheries Centre, Vancouver, July 6-7, 2000. Expressions of interest should be directed to Gunna Weingartner, UBC Fisheries Centre, 2204 Main Mall, Vancouver, British Columbia, V6T 1Z4, events@fisheries.com, fax (604) 822-8934. Contact Dr Ussif Rashid Sumaila at the above address, or visit www.fisheries.com.

Coastal Zone Canada 2000 – Saint John, New Brunswick, September 17-22, 2000. Paper and poster abstracts are due April 30, 2000. Contact James A. Smith, Chair of the Program Committee, james@coastalsmith.com. Abstracts should be sent to Coastal Zone Canada 2000 Secretariat, c/o NB Department of Fisheries and Aquaculture, P.O. Box 6000, Fredericton, New Brunswick, E3B 5H1, (506) 462-5961, fax (506) 453-5210, email cacacc2000@gov.nb.ca, visit www.gov.nb.ca/dfa/czc-zcc2000.htm.

The **Third William R. and Lenore Mote International Symposium** – Sarasota, Florida, USA, October 31-November 2, 2000. Topic: Targets, Thresholds, and the Burden of Proof in Fisheries Management. Contact Felicia Coleman, Institute for Fishery Resource Ecology, Department of Biological Science, Florida State University, Tallahassee, Florida 32306-1100, (850) 644-2019, email coleman@bio.fsu.edu, visit <http://www.fsu.edu/~biology/mote.html#international>.

The **19th Lowell Wakefield Symposium: Crab 2001 – Crabs in Cold Water Regions: Biology, Management, and Economics** – Anchorage, Alaska, January 17-20, 2001. Abstracts are due May 15, 2000. Contact Brenda Baxter, Coordinator, Alaska Sea Grant College Program, University of Alaska Fairbanks, PO Box 755040, Fairbanks,

Alaska, USA, 99775-5040, phone (907) 474-6701, fax (907) 474-6285. Visit www.uaf.edu/seagrant/Conferences/symposia.html for more information.

Publications

ACP-EU Fisheries Research Initiative Report Number 5: Proceedings of the EXPO '98 Conference on Ocean Food Webs and Economic Productivity, edited by Daniel Pauly, Villy Christensen, and Lucilia Choelho. Contact the Information Desks of the Directorate General for Development, 200 rue de la Loi, B-1049 Brussels, Belgium, or the INCO-Programme of the Directorate General for Research, 8 Square de Meeûs, B-1049 Brussels, Belgium.

Canadian Marine Fisheries in a Changing and Uncertain World: Canadian Special Publication of Fisheries and Aquatic Sciences 129, authored by members of the panel of the Canadian Global Change Program of the Royal Society of Canada. Contact Monograph Orders, NRC Research Press, M-55, National Research Council Canada, Ottawa, Ontario, K1A 0R6, (613) 990-2254, fax (613) 952-7656, email research.journals@nrc.ca. Visit www.nrc.ca/cisti/journals/42732/tc42732.html.

Publications from the Alaska Sea Grant College Programme, University of Alaska Fairbanks, P.O. Box 755040, Fairbanks, Alaska, USA, 99775-5040, (907) 474-6707 or (888) 789-0090, fax (907) 474-6285, email FYPUBS@uaf.edu, visit www.uaf.edu/seagrant. **Dynamics of the Bering Sea**, edited by T.R. Loughlin and K. Ohtani, is a valuable resource for scientists, students, and managers working in the Bering Sea and similar ecosystems worldwide. Publication number AK-SG-99-03. **Ecosystem Approaches for Fisheries Management** contains fifty papers presented at the 1998 Wakefield Fisheries Symposium. Publication number AK-SG-99-01.

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Opinions expressed in this newsletter do not necessarily reflect those of the Fisheries Centre or its members.

Be sure to visit the Fisheries Centre's website, www.fisheries.com, and follow the links to *FishBytes*. There, you'll also find details on Fisheries Centre projects, publications, faculty and students, as well as information on upcoming Fisheries Centre events.

