

FISHBYTES

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Modelling apex predators in the Central North Pacific

by Bob Lessard

For several years, as part of a long-term research initiative, Jim Kitchell, director of the Center for Limnology (CFL), University of Wisconsin, has gathered fisheries scientists at the Honolulu National Marine Fisheries Service lab in Hawaii. The workshops are cleverly timed and located to entice fisheries modellers living in Canada and northern USA to escape the winter and spend some time in the sun.



Left to right, workshop participants Isaac Kaplan, Steve Martell, Tim Essington and Bob Lessard enjoy a beer in Honolulu.

Science), Tim Essington (University of Washington), Villy Christensen (Fisheries Centre), Isaac Kaplan (Kitchell lab PhD student) and myself (Walters lab PhD student). Carl Walters, who joined the group four years ago, works with Kitchell's Wisconsin group each summer, generating ideas and questions to be addressed during the Honolulu workshops.

The first few years of the

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CITES meeting in Mexico

And, as always, lots of News and Notes!

Kitchell formed the APEX predator group to study the fisheries of the Central North Pacific (CNP), particularly the highly-valued tuna fisheries. The 2004 group consisted of Kitchell, the Fisheries Centre's Carl Walters, Steve Martell (a Fisheries Centre graduate, now faculty at the University of Maryland Center for Environmental

project focused on issues pertaining to marine protected areas (MPAs) and the management of fisheries based on single-species vs ecosystem perspectives. This involved doing stock assessments using catch data and comparing results to *Ecosim* predictions of ecosystem dynamics (Cox *et al.* 2002a; Cox *et al.* 2002b). Fisheries Centre graduate Sean Cox led that effort as a post-doc in Kitchell's lab, before moving to a faculty position at Simon Fraser University.

Efforts at the 2003 Honolulu workshop were directed toward examining the effects of environmental forcing (El Niño, La Niña). Spatial ecosystem models were developed to examine behavioural responses of fish to primary productivity and predation risks (Martell *et al.*: *CJFAS* in review). New spatial models of physical forcing (surface currents) characterized the response of fishes, their prey and fisheries to large-scale oceanic variability and simulated the influence of these interacting factors on the design of MPAs for highly-migratory pelagic species. These models and their applications now find their way into the policy arena for agencies such as the National Marine Fisheries Service, its regional

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Hawaii - Continued from page 1

Fishery Councils and the Inter-American Tropical Tuna Commission.

As a result of the scoping session at a CFL retreat in the summer of 2003, the group drafted the core ideas for the papers to come out of the 2004 workshop. The focus for 2004 is on issues of managing ecosystems where numerical responses in competitors and predators cause declines in abundances of target

species. An ecosystem model of the southern Benguela system was fit to available time series data for the period 1978–2002 to explore how changes in target fish populations in this ecosystem can be attributed to feeding interaction terms, population control patterns, the impact of fishing and environmental forcing. Another paper examines the dynamics of the “fishing-down” of food webs (*sensu* Pauly *et al.* 1998), providing additional

perspectives on this apparent effect. The third paper looks at the erosion of ecosystem structure under single-species management regimes. A fourth presents case studies of ecosystems that have shown unexpected trophic dynamics through exploitation of a key species, the introduction of a species, or the alteration of an environmental factor. The paper argues for actively controlling species abundances in cases where ecosystems have been severely altered and simple protection policies will likely fail. Another paper examines alternative longline gear (circle hooks) and fishing practices to reduce by-catch of apex predator species.

The APEX predator group will continue to meet yearly in Honolulu until 2007.

References

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Letter to the editor

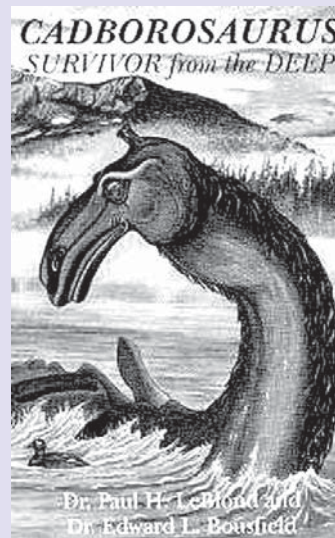
Dear Sirs:

Our west coast “CaddyScan” research group, including retired UBC Professor of Oceanography Dr Paul H. LeBlond, is delighted to note your recent publication of my letter, and reply by Ms Karpouzi [*FishBytes* 9–6], that touches on the rarely encountered deepwater megaserpent *Cadborosaurus* in coastal waters of British Columbia. For those readers who may wish further information on this extremely difficult aquatic vertebrate research topic, publication of *Cadborosaurus willsi* Bousfield and LeBlond, 1995 meets official ICZN criteria of a recognized new zoological species. The description, in a refereed scientific journal (*Amphipacifica* I, Suppl. 1: 1–25, 1995), depends mainly on three specimen-based “type” photographs of a 3.5 metre carcass taken from the forestomach of a sperm whale flensed at Naden Harbour, Queen Charlotte Islands, in July, 1937, good copies of which are available from the B. C. Provincial Archives, Victoria. Although the description treats only superficial character states of three life stages, these are sufficiently detailed and accurate to obviate confusion with any other known zoological species, living or fossil. During the past 35 years, three “baby” specimens, less than a metre in length, have been captured and released in waters of SE Vancouver Island. One was initially described and sketched by Capt. W. A. Hagelund in his book “Whalers No More” (1987). The most recent specimen was captured by fisherman Sam Bowes and his assistant (Sidney, B. C.) in a crab pot hauled up from 140 ft. depth at Ganges Harbour, in November, 1999, but soon released.

We would welcome the assistance of the *FishBytes* readership in capturing further study specimen(s), without which the internal anatomy, skeletal structure, and DNA composition remain undescribed, and correct subclassification within the Reptilia undetermined.

Ed Bousfield

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LeBlond, P.H. and E.L. Bousfield. 1995. *Cadborosaurus, Survivor from the Deep*. Horsdal and Schubart, Victoria, 144pp.

Italian spam?

In Rome, FAO is in a very big building, so people tend to email to join each other for lunch. The other day, my email lunch invitation from Kevern Cochrane was deleted as ‘spam’. I guess prosciutto would have been OK.

Tony Pitcher

Timely debate about farmed salmon

by James Hrynyshyn

Dr Amanda Vincent and her teaching assistant, Sarah Foster, got lucky with their term-opening panel discussion for the Science and Politics of Aquatic Management graduate seminar course. Indeed, they could not have chosen a more timely topic.

Three days before the Jan. 12 class, a long-awaited paper that found high toxin loads in farmed salmon hit the news (Hites *et al.* 2004. Global Assessment of Organic Contaminants in Farmed Salmon. *Science* 303: 226-

229). When it comes to the intersection of science and politics, there is no more contentious an issue in B.C. than salmon aquaculture.

The four invited panelists covered the spectrum: Bud Graham, assistant deputy minister at the provincial Ministry of Agriculture, Food and Fisheries; Laurie Jensen, president of the grassroots industry-support group Society for the Positive Awareness of Aquaculture; Otto Langer, director of marine conservation for the

David Suzuki Foundation; and UBC professor Scott McKinley, director of the Centre for Aquaculture and the Environment.

The debate was mostly civil but, not too surprisingly, no consensus could be reached on the wisdom of the 2002 decision to lift the provincial moratorium on expansion of the open-net salmon cage industry. On one point, however, all parties were in agreement: more resources should be devoted to university research on the subject.

Fourth World Fisheries Congress workshops

by Ratana Chuenpagdee, AQUALINK

'Innovation and Outlook in Fisheries'

AQUALINK, a network of graduate students and early- to mid-career interdisciplinary, international researchers interested in the health of aquatic resources and the sustainability of fisheries livelihoods, would like to invite you to participate in the Workshop 'Innovation and Outlook in Fisheries', to be held in Vancouver, Friday May 7, 2004. The workshop is co-sponsored by the Fisheries Centre and will critically assess the extent to which existing tools, approaches, methods and concepts used in fisheries science and management address the current and emerging challenges of understanding and managing aquatic ecosystems. A well-designed template will be used to systematically evaluate all papers presented orally at the World Fisheries Congress. The results of this evaluation will be presented at the workshop on May 7, and will be followed by responses from a group of distinguished fisheries scientists, including Jackie Alder, Tony Charles, Patrick Christie, Kevern Cochrane, Patricia Gallagher, Patrick McConney, Lance Morgan, Gordon Munro, Daniel Pauly, Rashid Sumaila and, hopefully, Charles Menzies and Tony Pitcher. The workshop participants will then be invited to comment on the results and on the responses, and through an interactive discussion session, will develop a list of principles, concepts, approaches, and tools that should be promoted in research and education in fisheries management and conservation for the next decades. The workshop output will be published as a report in the *Fisheries Centre Research Report* series, with contributions from all participants. **If you are interested in evaluating the papers and/or in participating at the discussion on May 7, please contact Dr Ratana Chuenpagdee (rchuenpa@sfx.ca).** Note that the workshop is free, but registration is required by April 15th and is limited to 50 people. For additional information, please visit www.fisheries.ubc.ca/aqualink/index.htm.

'Small is Beautiful' - Roles of small-scale fisheries in conservation of aquatic ecosystems

This roundtable (May 3, 7.30-8.30 pm) will facilitate discussion on the roles and contributions of small-scale fisheries in conservation of aquatic ecosystems, with an aim to develop strategies and mechanisms to promote sustainable management of small-scale fisheries. The results of the roundtable discussion will be presented as part of the WFC Small-scale Fisheries Session (Q2-3) on Tuesday afternoon (May 4, 3.15-5.15 pm).

Topics of discussion will include: 1. Understanding the ecological impacts of small-scale fisheries in relation to conservation of marine resources; 2. Understanding the social and economic roles of small-scale fisheries in relation to conservation of marine resources; 3. Identifying opportunities for reconciling small-scale fishers with other sectors; 4. Success and constraints in small-scale fisheries management; and 5. Setting goals and new vision for small-scale fisheries. The roundtable is open to everyone who is interested in small-scale fisheries issues. Interested persons are invited to submit 3-5 bullet points addressing the topics listed above, or on alternative relevant topics. Points should be concise and should offer innovative ideas for strategies to promote sustainable small-scale fisheries and conservation. Bullet points will be compiled and distributed to all round table participants. To stimulate discussion, a small number of 5-minute presentations will also be made by participants who submit the points. **If you would like to submit points for discussion, please contact Dr Ratana Chuenpagdee (rchuenpa@sfx.ca), no later than April 15, 2004.**

International seahorse workshop

by Sarah Foster

On February 3-5, 2004, Amanda Vincent and I participated in an international workshop in Mazatlán, Mexico, devoted to implementing the recent listing of seahorses on Appendix II of the Convention on International Trade in Endangered Species (CITES). The workshop was hosted by the United States of America and Mexico, with co-ordination by the International Fund for Animal Welfare. Its goal was to ensure sustainable trade in seahorses under the CITES Appendix II listing. Participants included representatives from the CITES secretariat, parties to CITES, non-governmental organizations, industry, academia, and a public aquarium.

The CITES listing takes effect this May, and the discussion focused on the requirement of CITES signatories to ensure all seahorse exports are non-detrimental to the survival of wild populations. Consultation with stakeholders revealed that most favoured setting a minimum size limit – one that would restrict the number of immature seahorses taken from the wild – as an interim measure while more specific management strategies are developed. The idea, proposed by Project Seahorse, was generally accepted by workshop participants. As seahorses are the first fully marine fish of commercial importance to be listed by CITES, the progress made at the workshop bodes well for future marine conservation efforts. Please contact me (s.foster@fisheries.ubc.ca) for more information, including a copy of the workshop's final recommendations.



Sarah Foster speaks in Mazatlán.
Photo by Keith Martin-Smith

News and Notes

Congratulations



Congratulations to **Dr Rik Buckworth** who successfully defended his PhD thesis "Effects of spatial stock structure and effort dynamics on the performance of alternative assessment procedures for the fisheries of northern Australia" on January 23, 2004. This project explored the performance of monitoring/management combinations for fisheries which are spatially

complex, and for which the spatial complexity was at finer scales than management was implemented. Rik assessed Australia's Northern Territory Spanish mackerel fishery, an example of such a fishery. Tagging approaches that measure fishing mortality rates and track catchability performed very well in the general simulations, suggesting that genetic tagging would be a good basis for monitoring the Spanish mackerel fishery. Rik, who works as a research scientist for the state fisheries department of the Northern Territory in Darwin plans to continue his research into effective monitoring in a pilot genetic tagging project for the Spanish mackerel fishery, which has been funded by the (Australian) Fisheries Research and Development Corporation.

Welcome

Welcome to **Gakushi Ishimura**, a new PhD student at the Fisheries Centre. Gaku began studying marine science at Hokkaido University, Japan, in 1995, where he researched nutrients dynamics and primary production in seaweed aquaculture in Southern Hokkaido. He did his MSc: "A Bioeconomic Model Approach for a Fluctuating Fish Stock: Bioeconomic Assessment of Pacific Whiting" at the University of Washington's School of Marine Affairs. His research at UBC, supervised by Rashid Sumaila, will focus on: 1) development of a bioeconomic model incorporating uncertainties and 2) economic evaluation of marine ecosystems. See also www.fisheries.ubc.ca/students/gishimura/.

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