

FISHBYTES

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Tracking fish to market: field research on Fiji's coral reef fisheries

by Ben Starkhouse

Last winter I spent a month in Fiji collecting data and information for my master's thesis research, which includes an economic analysis of Fiji's coral reef based fisheries. The following anecdote provides a brief description of my research, an account of my recent visit to Fiji and some preliminary results from this study.

The coral reef ecosystems of Fiji provide a diverse assemblage of finfish, invertebrates and marine plants for commercial and subsistence fishers. With an annual contribution to Fiji's Gross Domestic Product of over US\$ 65 million¹, it is only fitting to ask: to what extent are different stakeholders

benefitting from the exploitation of these natural resources? Answering this question is important because it will help explain trends of resource use and can assist in the creation of management strategies that help ensure efficient, equitable and



Seafood vendors in the Fijian capital Suva display their wares in the market.

Photo by B. Starkhouse.

sustainable harvests.

Rashid Sumaila (UBC Fisheries Centre) and Yvonne Sadovy (University of Hong Kong) are currently leading a study that will attempt to answer this question by documenting costs and benefits throughout the chain of custody for both domestic and export uses of coral reef resources, while determining their total economic value. My thesis research is one component of this larger study, which is generously funded by the Kingfisher Foundation.

When I travel to another country I always make a point of spending time in public markets and the accompanying areas of commerce. One usually finds an astounding assortment of goods, services and activities, which give an abbreviated peek into the nation's culture. As a central meeting point, people don't just come to shop, they come to talk. With an inquisitive bearing and an untroubled demeanor, it usually doesn't take long to uncover the latest political scandal, rugby results or, in my case, the inner-workings of harvesting, buying and selling of reef fish and invertebrates.

With its assortment of fresh fish of all shapes and sizes, painted lobsters, baskets of urchins, piles of clams, bowls of edible seaweed with chili and lime, smoked mussels and octopus, the public fish market is a feast for the senses and this is where I conducted a portion of my Fiji-based research. With a series of both predetermined and impromptu questions, I

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started to uncover the details of the monetary transactions underpinning the harvest and sale of reef resources.

Preliminary findings indicate there are generally three 'owners' of an artisanally-caught fish prior to its final sale in domestic markets, with approximately a 20% markup in selling price between each owner. Taking into account a number of monetary and non-monetary arrangements and variables, I created an economic model that suggests an average "full-time" fisher's net profits are US\$ 2,600/year, while a middleman earns about US\$ 3,100/year and a vendor US\$ 2,200/year. I'm currently working on modelling different scenarios, such as changes

in fuel prices, harvest volumes or unit price, to see how reef fisheries' participants are impacted financially. The purpose of this model, and my continued research, is to provide the Fiji Fisheries Department and other relevant stakeholders a tool to explore the social and economic implications of different reef resource management strategies and harvest scenarios. I will undoubtedly reveal additional results that are both informative and useful as I work towards completing my research by this upcoming fall.



Some of the variety of reef fishes available in Fijian markets. Photo by B. Starkhouse.

Footnotes

1. Asian Development Bank 2005. Fisheries Sector Review: Republic of the Fiji Islands.



FishBase recognized by the International Game Fish Association

by M.L. Palomares

FishBase (www.fishbase.org) has achieved several successes in the last few years, the most important being that it reached well over 20 million 'hits' per month from over 2 million visitors (hence this is not mainly due to Fisheries Centre students availing themselves of its resources). Since September 2007, the new picture-uploading tool for FishBase users has resulted in the addition to FishBase of about a dozen pictures a day (a total of about 1,600 pictures in 4 months) - another sign of FishBase's online success. Another indicator is that FishBase now includes more than 30,000 species of fish - far more than the 25,000 species previously assumed to exist. Of these, about 1,200 are game fish species, of which half occur in the waters around Florida.

Also, the Chinese Academy of Fisheries Sciences is the latest institution to have joined the international consortium guiding FishBase, which, in addition to the Fisheries Centre, includes the

WorldFish Center (Los Baños, Philippines), the University of Kiel (Germany), Aristotle University (Thessaloniki, Greece), the FAO (Rome, Italy) and the natural history museums of Stockholm (Sweden), Paris (France) and Tervuren (Belgium). The enormous visibility of FishBase, and the scope and quality of its contents are now recognized world-wide. One particularly neat indication of this is the letter that the International Game Fish Association (IGFA) sent to Rainer Froese, the FishBase coordinator, informing him that FishBase has received the IGFA 2007 Conservation Award.

The award, consisting of a plaque and a framed certificate, was presented to Daniel Pauly, representing the FishBase Consortium, at the 24th Annual International



IGFA Board member Guy Harvey, IGFA President Rob Kremer and Daniel Pauly, accepting the IGFA Conservation Award on behalf of the FishBase Consortium (Palm Beach, Florida: 24th Annual International Auction & Banquet, January 25th, 2008). Photo by Adrian Gray, IGFA

Auction and Banquet of IGFA in Palm Beach Florida (see picture above).

All involved with the creation, maintenance and further development of FishBase are thrilled by this award from IGFA, as it recognizes its impact well outside of the group for which it was initially conceived (fisheries scientists in tropical developing countries).



Obituary: K. Radway Allen 1911-2008

by Tony J. Pitcher

A pioneer in fisheries science, whose work Fisheries Centre researchers use every day, has passed away aged 97 at his seaside home in Cronulla, New South Wales, a legend in his own lifetime. The last survivor of the generation that gave us greats like Ray Beverton, John Gulland and Bill Ricker, during an impressive career Kenneth Radway Allen worked on four continents, headed fisheries research laboratories in Wellington (New Zealand), Nanaimo (Canada) and Sydney (Australia), and performed the amazing feat of publishing two papers in the same journal 50 years apart. He has bequeathed an impressive legacy.

Radway Allen graduated from Cambridge in 1932, and began his career at the Freshwater Biological Association in Britain, working on links among mayflies, perch, trout and Atlantic salmon in Windermere. A 1938 move to Wellington, saw work on both trout and marine fish. In 1951 he published "The Horokiwi Stream" that popularized the then new concepts of biomass and production. A 1953 *Nature* paper on optimal sizes in a fishery foreshadowed the work of Beverton and Holt and presaged his appointment to head of the Wellington fisheries research laboratory.

In 1964 he moved to Canada, became an early adopter of computers (my own first computer programme implemented his method for fitting the von Bertalanffy growth curve), and, in 1967, was appointed as Director of the Fisheries Research Board of Canada based in Nanaimo (I echo the regrets of the late Ram Myers at the loss of the greatly respected FRBC). Radway Allen's neat proof that total mortality $Z = \text{Production/Biomass}$ was published in 1971. In 1972 he moved to Cronulla, Australia, as Chief of the federal fisheries lab (CSIRO), a position he held until retirement in 1977. A long-time member of the International Whaling Commission, in 1980 he wrote a book neatly summarizing the then state of the art in whale management. When CSIRO decamped to Hobart in 1985, "K" stayed at his seaside home in Cronulla, supported the laboratory taken over by New South Wales Fisheries, and maintained an active interest in international fisheries research, the IWC and FAO.

A fuller version of this obituary will be published in Fish and Fisheries Vol. 9 Issue 2 (June 2008).

Rashid Sumaila awarded Pew Fellowship

Please join us in congratulating the Fisheries Centre's Rashid Sumaila, who is one of five scientists to be awarded the 2008 Pew Fellowship in Marine Conservation.

This prestigious fellowship is awarded annually to five global leaders or teams who are working to preserve and protect the world's oceans and marine species and is worth \$150,000 over three years.

Dr Sumaila will use the fellowship to create comprehensive databases that document the financial factors contributing to unsustainable commercial fishing and depletion of ocean resources around the world, with particular focus on official national discount

rates, subsidies and the global cost of fishing.

"Dr Sumaila's Pew Fellowship project will provide concrete arguments for smarter policy-making concerning fisheries management worldwide," said Pew Institute for Ocean Science Executive Director Dr Ellen Pikitch. "Valuable marine ecosystems are being plundered because of overfishing, ineffective management, and fisheries subsidies, and Dr Sumaila will provide the evidence necessary to effect change."

For more on the project, "Global data on the economics of fishing", see www.pewoceanscience.org/fellows/USumaila/fellows-dir-project.php?pfID=10560



Amanda Vincent recognized by SEEDS program

The Sustainability Office of UBC has recognized the contributions of Dr Amanda Vincent to its Social, Ecological, Economic Developmental Studies (SEEDS) program in the 2006-7 academic year. During this time, Dr Vincent and her team worked with UBC Food Services on five separate projects related to moving towards sustainable seafood at UBC.

SEEDS projects strengthen on-campus relationships between faculty, staff and students, while completed projects provide benefit to the campus and guide future decision-making. For more on SEEDS and this particular project, see www.sustain.ubc.ca/seeds.html and www.sustain.ubc.ca/seedslibrary/



News and Notes

Congratulations

Daniel Pauly awarded honorary doctorate

Please join us in congratulating **Dr Daniel Pauly**, who has been awarded an honorary doctorate from the Katholieke Universiteit Leuven, Netherlands. Dr Pauly was presented the award at the symposium 'A future for fisheries? Towards effective strategies for sustainability' on 5 February 2008 in Leuven. The symposium was convened for the occasion of Dr Pauly's award. For more information, see www.vliz.be/EN/INTRO&id=274.

Belated congratulations to **Dr Lyne Morissette**, who defended her PhD thesis, "Complexity, cost and quality of ecosystem models and their impact on resilience: a comparative analysis with emphasis on marine mammals and the Gulf of St Lawrence", on September 17, 2007. Lyne is now working as a post-doctoral fellow with Arizona State University, focusing on potential competition between whales and fisheries.

Lydia Teh has been awarded the annual Cosmos International Travel Award for the 2007/8 academic year. Endowed by 2005 Cosmos Prize winner Daniel Pauly and UBC, this award is intended for a deserving international UBC graduate student who needs support for research and/or field work in the student's region or country of origin. Lydia's field work will be done in the Semporna Islands Group in south-eastern Sabah, Malaysia.

Jennifer Jacquet was awarded best student presentation for her talk "What counts when counting fish?" at the Annual Conference of the American Fisheries Society's North Pacific International Chapter. For more information, see www.npic-afs.org/

Welcome

Project Seahorse welcomes **Dr Les Kaufman**, Professor of Biology at Boston University, who is visiting on sabbatical. Dr Kaufman was one of the first Pew Fellows in 1990 and is currently P.I. for the Marine Management Area Science Program with Conservation International. This program has about 40 sub-projects, most aimed at improving diagnostics for marine ecosystem and societal health. Dr Kaufman is accompanied by his wife **Dr Jackie Liederman**, Professor of the Brain, Behavior and Cognition Program at Boston University.

Dr Antoine Leduc has arrived at the Fisheries Centre to begin a post-doctoral fellowship under the supervision of Dr Jordan Rosenfeld, Fisheries Centre Adjunct Professor with Aquatic Ecosystem Science of the Province of British Columbia. Antoine completed his PhD at Concordia University in Montréal, where he studied behavioural responses of juvenile salmon to chemical "predator alarm" cues. He will be working here on aspects of fish ecology and community structure in streams and rivers.

Belated welcome to **Laura Tremblay Boyer**, who started her MSc with Daniel Pauly in September, 2007, after completing a BSc in Biology at McGill University, Montréal. Her main interests lie in marine ecology and conservation and the use of quantitative methods in conservation research. Her thesis will look at the spatial distribution and magnitude of global fisheries bycatch as well as trends in the use of bycatch based on both locally-available data and ecological modelling.

Project Seahorse welcomes back **Lana Gunnlaugson**, who returns to assist the team on a part-time basis. Lana also holds a full time position with the David Suzuki Foundation in the Marine and Freshwater Conservation program, where her work focuses on marine use planning and sustainable fisheries.

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