

FISHBYTES

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International travel and collaboration: an important component of learning

by Brett van Poorten

Many students at the Fisheries Centre have gained international experience either as international students or through research programs in other countries. This experience can form an important part of the learning process needed while entering a world of fisheries research. As a Canadian student whose work is centred in British Columbia, it was a rare treat to be invited to briefly work at the Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB) in Berlin, Germany.

My host at IGB was Dr Robert Arlinghaus, who works on understanding recreational fisheries and the ecosystems they impact from both a biological and social scientific perspective. My own interests and experience

are in recreational fisheries and inland fish ecology. Having worked in this area for a number of years, it was easy for me to believe that I had a pretty good handle on how fisheries management works to conserve fish stocks. I was wrong.

Dr Arlinghaus often finds that researchers in North America assume that recreational management models are similar between North America and

Europe. This narrow viewpoint can cause policy makers to be limited in the management options they use to conserve fish stocks. In most North American lakes, fishing rights are referred to as open-access: anyone can fish a water body because they are publicly owned and managed. Government departments look after setting limits on the number and size of fish you can harvest and decide whether to stock lakes and with how many fish. In Germany, as in much of Europe, many water bodies are privately governed, where the right to use and manage fish populations falls to the private fishing rights holders (e.g., angling clubs), who are owners or leaseholders of the fishery (Arlinghaus 2006). Angling clubs often allow only their members to fish a site and are solely responsible for habitat alterations, fishery enhancement (stocking) and regulations about harvest limits. It is common for North Americans (like myself) to forget that the open access model is not universally used. I was soon to get a solid lesson on how this management model works.

My work in Berlin included modelling the long-term conservation issues surrounding angling clubs having direct control over stocking rates. If catch rates are related to angler satisfaction by club members, then there can be a situation where stocking continues to increase in order to satisfy anglers who either fish longer if fishing is better (harvesting more and lowering catch rates, thereby bringing the satisfaction down to normal or sub-satisfactory) or having a short memory and thinking that angling was always better in the past. Our preliminary work showed that this can cause a total loss of natural populations when stocked and natural populations compete for food and spawning sites.

No management system is perfect. While the European model can sometimes be over-responsive to angling satisfaction, our centralized system is often under-responsive: we often do not take satisfaction into account in short-term decisions about management actions.

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A note on salmon farming in Chile

by Liesbeth van der Meer¹

Trained and educated as a veterinarian in Chile, and taking my first job as a vet working on fish farms, I feel as if my education will be tied to salmon diseases and massive farmed salmon production forever. The initial phase of the salmon farming industry was prosperous for Chile as it created local jobs for both men and women in remote areas of the country. However, what began as an industry with much hope and optimism evolved into a decade of uncontrolled expansion into water bodies around the southern part of the country, depletion of native fauna, and the illegal use of chemicals in a bid to maintain positive economic returns.

Glancing at the green-stained boards flanking the salmon cages where I worked was a daily reminder of the excessive use of Malaquite Green, a cheap carcinogenic substance used illegally to combat the fungus that inflicts stressed salmonids. At that time (2004), the controversy focused on the use of unauthorized chemical substances. Today, the controversy is more on the use of antibiotics. Looking out over the tranquil lake holding the salmon cages, I had begun to question the damage this type of industry was doing to the ecosystem.

It was therefore no surprise to me when on March 27, 2008, *The New York Times* reported the spread of a new virus responsible for the deaths of thousands of farmed fish in Southern Chile (Barrionuevo 2008). The article signalled the beginning of a long chain of events, which raised the concerns of American consumers and ended with the restriction of Chilean salmon imports by Safeway, a large North American food retailer.

Salmon farming in Chile is mostly run by European firms and has long been under scrutiny for poor operations, the discontent of the labour force and the abuse of



Salmon pens in Chiloe, Chile.
Photo by Liesbeth van der Meer

antibiotics and other chemicals to treat diseases mostly caused by stress in salmon (Fulton 2003). It is amazing that, five years after the publication of Fulton's article in the *Sea Around Us* project newsletter, nothing seem to have changed for the better.

Infectious salmon anaemia is a disease that can spread very rapidly when pens are placed too close to each other to save costs (Glover *et al.* 2006; Barrionuevo 2008). It is also related to fish stress and has caused high mortalities in Canada, Norway and Scotland (USDA 2002). The industry has already lost about US\$23 million due to salmon mortality and the elimination of salmon from farms since the recent disease outbreak, which started in June 2007 (Sernapesca 2007).

Since the publication of the article in *The New York Times*, Marine Harvest, a leading salmon farming company, announced the closure of one of their three processing plants in Puerto Montt and laid off 600 employees. They later accelerated the closure of a farm site in Chinquihue to cut off a quarter of their working force, representing 1,200 workers in a region that economically relies almost entirely on fish farming. The discontent expressed by the farm's labour force in

response to the layoffs has led to an attempt to form labour unions by the workers. Strikes have caused the temporary shutdown of some farm sites and the industry is now blaming the Government for their losses. One of the firms, Aguas Claras (the second largest national producer), is already threatening to shut down its operations completely if the current efforts by worker to organize continues.

The industry admits that current production levels have gotten out of hand and that the only way to ensure that salmon farming remains a viable sector of the Chilean economy is to re-evaluate production strategies - with the number of farms reduced and proximity of farm sites redistributed and spaced out. Nevertheless, it is also clear to the industry that nobody is willing to give up their water concessions and that it will take a lot of hard work to re-orient the industry and solve the problem.

I thank Rashid Sumaila for encouraging me to write this story.

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¹ Liesbeth van der Meer is currently a volunteer at the Fisheries Economics Research Unit at the UBC Fisheries Centre.

Fifth Fisheries and Marine Ecosystems (FAME) Graduate Student Conference

by Meaghan Darcy and Chad Wilkinson

The 5th annual Fisheries and Marine Ecosystems (FAME) conference was held from April 11 - 13, 2008, at the Olympic Park Institute, a beautiful lakeside venue situated in Olympic National Park's temperate old-growth rainforest in the US state of Washington. The 2008 conference was organized by graduate students from University of Washington's School of Marine Affairs and School of Aquatic and Fisheries Sciences.

The FAME conference was initiated in 2004 to facilitate communication among graduate students studying the various aspects of the science and management of freshwater and marine fisheries and ecosystems. It was also intended to provide a relaxed venue for graduate students to present and discuss research plans and results, and network with peers. While FAME has always attracted students from all over Canada and the United States, this year saw students from more universities than ever before. Dalhousie University, Evergreen State College, Memorial University, Moss Landing Marine Laboratory, Occidental College, Oregon State University, Simon Fraser University, the University of Alaska Fairbanks, University of Arizona, University of British Columbia, University of California Santa Barbara, University of Connecticut, University of Maryland, University of Minnesota, University of Rhode Island, University of Southern California, University of Washington, University of Victoria and Western Washington University were all represented.

During the two-day meeting, students gave oral and poster presentations that fell within four broad conference themes: integrated approaches to coastal management;

socio-cultural issues and fisheries management; quantitative fisheries analysis and management; and fish ecology and marine science (see <http://depts.washington.edu/fame2008/Home.shtml> for full list of abstracts).

We represented the UBC Fisheries Centre by speaking on a common theme: fishing behaviour in the context of predator-prey theory. Our presentations examined two very different fisheries from a common approach that draws on the theoretical basis of natural predator-prey systems. Meaghan presented the results from simulation-estimation experiments, where an effort-dynamics model was developed to partition total fishing effort into components of search and handling times according to Holling's disc equation (Holling 1959). This model was developed to account for species-composition effects in a multispecies fishery, and explicitly allows for handling time to influence the catchabilities of target and non-target species. Results demonstrate that increased handling time leads to a hyperstable index of abundance (i.e., catchability declines less rapidly than biomass) which leads to overestimates of abundance in classic single-species assessments.

Chad presented results from his investigation into sportfish population dynamics in a closed river system with a growing recreational fishery. Snorkel survey data revealed a

relationship between densities of drift boat anglers (the predator) and sportfish species (the prey) across a series of river sections that are subject to varying degrees of effort, thereby demonstrating a functional response of boat density to sportfish abundance. Results showed that anglers adjust effort by spatially distributing themselves due to both interference competition and prey availability, corroborating previous investigations in larger marine fisheries (see Gillis *et al.* 1993; Gillis and Peterman 1998). Both of these theoretical approaches demonstrate that catch and effort data are not necessarily good indicators of true abundance.

FAME 2009 will be organized by graduate students from the UBC Fisheries Centre. A formal announcement with information about conference details will appear early in 2009. The broad representation by schools across North America in 2008 reveals a promising future for FAME, one that may very well extend far beyond the Pacific Northwest.

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Congratulations

To Fisheries Centre Faculty member **Steve Martell** and his wife **Liz** on the birth of their daughter **Lucie Martell**. Lucie arrived on March 20, 2008, at 4.58 am, weighing 8lb 7 oz (3.8 kg).



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Perhaps the best method might be an intermediate system where anglers can report on their satisfaction with the fishery, which would allow our centralized-management system to be more responsive to changes in fish abundance in lakes that otherwise are rarely, if ever, assessed.

It is being recognized that recreational fisheries are collapsing around us without our seeing it (Post *et al.* 2002). The key to future management is flexibility and innovation. As a student and researcher in fisheries management, I feel it is necessary to think more broadly about options for management. Having opportunities to see beyond the North American context through international experience has been a great first step.

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2nd Annual fishprinting workshop: register now

With the success of last year's workshop (*FishBytes* Vol. 13 Issue 5), the second annual fishprinting or "gyotaku" workshop will be given by Mr Mineo Yamamoto, master fishprinter from Japan (www.gyotaku.ca), on Thursday, 18 September 2008, 10 am – 5 pm, at the Fisheries Centre. Mr Yamamoto will give a presentation on the history of gyotaku, then environmentalist Dr David Suzuki and Mr Hidekazu Tojo, owner of Tojo's Restaurant, will give their impressions of gyotaku. This will be followed by a three-hour, hands-on fishprinting workshop, with fish and printing supplies included.

Advance registration, with fee, is required and space is limited to 30 participants. Please contact Dr Mimi E. Lam at m.lam@fisheries.ubc.ca or 604-822-3843.

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News and Notes

Congratulations

PhD students **Megan Bailey** and **Divya Varkey** have been awarded University Graduate Fellowships (UGF) for the academic year 2008-2009. Megan has also been awarded the **Pacific Century Award**. She will use the funds to continue her study of the economics of tuna fisheries in the Coral Triangle, under the supervision of Dr Rashid Sumaila. Divya has also been awarded a **John Grace Fellowship**. She will use the funds to continue her study of ecosystem modelling of coral reefs, under the supervision of Dr Tony Pitcher.

Carie Hoover is the recipient of the **Cecil and Kathleen Morrow Scholarship** for 2008. She will use the award to gather information on Hudson Bay ecosystems through meetings with field researchers and DFO experts, which will be used to build an ecosystem model. This scholarship, endowed by Cecil B. Morrow in honour of his parents Cecil and Kathleen, has been offered annually since 2001 as a travel award in support of a Fisheries Centre student's research (see www.fisheries.ubc.ca/grad/morrow.php for more information).

Welcome

Andres Miguel Cisneros Montemayor is a new Master's student under the supervision of Dr Rashid Sumaila. Andres is from Mexico and plans to study the economic value of recreational and tourist activities in the Gulf of Mexico and other parts of the world.

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