

Babette's feast in Lima

by Daniel Pauly

Through 2006, the members of *Sea Around Us* project were heavily involved in the 'Forage Fish Project', now completed (see Alder and Pauly 2006a). This was a global, multi-authored study of those small pelagic fishes which transfer primary and secondary production to the higher trophic levels (notably seabirds and marine mammals) of marine ecosystems. The project also emphasized that forage fishes provide humans with large, but not limitless quantities of valuable protein, which we, however, tend to waste by using it as raw material for fishmeal.

The report contained a paper (Alder and Pauly 2006b) which recalled that forage fish, a.k.a. small pelagic fish, have, since time immemorial, contributed directly to the human diet, and that the emergence of fish husbandry practices requiring fishmeal as input should not make us swallow the notion that these fish have suddenly become unpalatable to humans.

However, I recently had an

experience that would make me sharpen that paper, were I to write it now. This was a meal I recently had, with a number of Peruvian friends, in a Japanese restaurant in Lima, which consisted exclusively of Peruvian anchoveta (*Engraulis ringens*), and which was so delicious that, like the Danish villagers in the film 'Babette's Feast', we turned for, a while at least, into better people.

I had been invited to give the keynote address of the 'International Conference on the Humboldt Current System: Climate, Ocean Dynamics, Ecosystem Process and Fisheries' held from November 27 to December 1, 2006, organized by the *Instituto del Mar del Peru* (IMARPE) and the French *Institut de Recherche pour le Développement* (IRD). The invitation was due to my earlier work in Peru, the result of multiple visits through the 1980s, and which led to two edited books on the Humboldt Current Ecosystem, which included, notably, detailed analyses of 30 years' worth of (often monthly) time series on the Peruvian

anchoveta, its predators, and their abiotic environment (Pauly and Tsukayama 1987; Pauly *et al.* 1989).

Although well received at the time - Cushing (1980) spoke of a "formidable collection of papers" - I didn't follow up on this work, for a number of reasons, one of them being that the German-Peruvian project through which I had carried out this research ended in the early 1990s. But the event to which I was invited, more than 15 years later, made clear that the work was not forgotten. Indeed, much to my surprise, I discovered that it is alive and well, and that it provided the baseline for several of the studies conducted in the joint French-Peruvian project which organized the conference. Germans, French... *plus ça change, plus c'est la même chose.*

Thus it could be anticipated that my keynote, based on work with Sylvie Guénette and Villy Christensen, and which presented an ecosystemic synthesis, based on *Ecopath with*

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Ecosim, of the time-series data we gathered in the 1980s, would be of interest. Parallel to the conference, however, there was, in Lima, another series of unanticipated activities which have the potential to become a key to the future of Peruvian fisheries.

Dr Patricia Majluf, a Peruvian marine mammal expert and conservationist, and a team of students from her University, were starting a campaign to change the image of the anchoveta from something that only poor people eat, to a fish that could be turned into the tasty dishes consumed by well-heeled sophisticates. For this, she convinced the chefs in 30 leading restaurants in Lima to serve newly created anchoveta

dishes, which the President of the Republic would also eat, all under the glare of local media. But how could encouraging the consumption of anchoveta be a good thing?

Right now, because the Peruvian fishing fleet suffers from a tremendous overcapacity, the annual anchoveta quota suggested by IMARPE and set by the government is caught and processed into fishmeal in three or four months, under appalling conditions, leaving the vessels and their crew idle for rest of the year. Also, the ex-vessel price of the anchoveta caught is extremely low. While the government often claims it is interested in increasing human consumption of anchoveta (presently about 0.3% of the catch), its focus on anchoveta as subsidized food for the poor actually prevents the emergence of a market for fresh, good-quality anchoveta.

Patricia Majluf thinks that if the negative association of anchoveta with poverty (similar to that we have in North America of anchovies with pizza) could be broken, this would generate a demand for freshly caught anchoveta, whose price would then decline, as market competition increased. Anchoveta would then become available to the poor, but without subsidies, and without the negative image. She calculates that the Peruvian anchoveta catch of 2-6 million tonnes per year, if used for human consumption, would generate revenues an order of magnitude higher than presently gained from the export of fishmeal. Also, Peru could supply both its internal market and the international market, which now features small pelagic fishes from northern Europe, especially Norway, being exported to West

Africa, especially Nigeria.

Having had this wonderful meal, which included anchoveta tempura, marinated fillet of anchoveta, a "soup with no name", and other delights, I can attest that anchoveta are tasty (and they contain omega 3 fatty acids, too!). I realize now that we should not think of small pelagics as 'forage fish' in the first place, but as a way to resolve some of the fish supply issues we now have, especially because we waste such a large part of the world catch (30-40%) by turning it into fishmeal.

A massive increase of direct consumption of small pelagics would affect the fish farming industry. However, their representatives have been telling us for years that a replacement for fishmeal is around the corner, so that would not be a problem ...

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The *Sea Around Us* website may be found at www.seaaroundus.org and contains up-to-date information on the project.



Announcing a new global fisheries subsidies database

by Ahmed Khan

Fishery subsidies are financial payments from public entities to the fishing sector, which help the sector make more profit than it would otherwise. Subsidies are currently topical because of the concern that they contribute directly or indirectly to overcapacity and overfishing, thereby undermining the sustainability of marine living

resources and the livelihoods that depend on them. These issues were reiterated at the World Summit on Sustainable Development in Johannesburg (WSSD 2002), the Doha Ministerial Conference (Doha Conference 2001), by the FAO Code of Conduct for Responsible Fisheries (FAO 1995), and in the Millennium Ecosystem Assessment (2005),

and have thus prompted significant research interests. Until the work that produced the database being described here (Khan *et al.* 2006; Sumaila *et al.* 2006), there was no comprehensive estimate of global fisheries subsidies that covered all maritime countries, particularly subsidies provided by governments of rich

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Fisheries subsidies in Argentina

Subsidies categories and types	Amount US\$ '000 (Y 2000)	% of landed value	Source
Good			
• Fisheries management and services	15,000		<u>UNEP, 2003</u>
• Fishery research and development	(37,203)		<u>UNEP, 2003</u>
Sub total	52,203	2.00	
Bad			
• Boat construction, renewal and modernization	(73,351)		<u>FAO profile</u>
• Fishery development and support services	(24,163)		<u>UNEP, 2003</u>
• Fishing port construction and renovation	-		-
• Marketing support and storage infrastructure	(90,220)		<u>UNEP, 2003</u>
• Tax exemption	(18,545)		<u>UNEP, 2003</u>
• Foreign access agreements	-		-
• Fuel subsidies	(115,000)		<u>Onestini and Gutman, 2001</u>
Sub total	321,279	14.78	
Ugly			
• Fisher assistance	(73,189)		<u>UNEP, 2003</u>
• Vessel buyback	(72,273)		<u>FAO info</u>
• Rural fisheries community development	-		-
Sub total	145,462	6.69	
Grand total:	518,945	23.47	

Figure 1. A sample fishery subsidies web page (Argentina). These data are taken from Khan *et al.* (2006) and Sumaila *et al.* (2006), who identified for each maritime country three categories and twelve fishery subsidy types, with subsidy amounts provided for 2000 in real (inflation adjusted) US\$. References for both the reported subsidy amounts and the estimates (in brackets) are provided. The subsidy intensity in the form of total subsidy as a percentage of landed value is also given. Source: www.seaaroundus.org/eez/eez.aspx

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countries to both the small-scale and commercial fisheries sectors in developing countries.

To create the database, information was gathered and recorded for twelve fisheries subsidy-types, for 144 coastal countries, for the period spanning 1995 to 2005 (Khan *et al.* 2006; Sumaila *et al.* 2006). Subsidy amounts were estimated for the year 2000 in inflation-adjusted US dollars. Each of the twelve subsidy types were further categorized into 'good', 'bad' and 'ugly' subsidies, depending on whether they improve, weaken or are indeterminate with regards to their impact on the sustainability of the resource.

Data on fisheries subsidies were obtained from the following major sources: (a) Organization for Economic Cooperation and Development; (b) Asian Pacific Economic Cooperation; (c) European Commission; (d) Food and Agricultural Organization (FAO) of the United Nations; (e) national fisheries department web sites and publications; (f) the 'onefish' community directory program; (g) United Nations Environment Program; (h) regional financial institution portfolios such as the African Development Bank; (i) overseas development project reports on fishery issues, such as the UK's Department for International

Development (DFID); (j) World Trade Organization (WTO) trade notifications; and (k) environmental NGO reports on marine issues.

Quantitative data were collected and recorded in each cell for each country and for each subsidy type, and summed to provide subsidy category totals. Where quantitative data were lacking, we used a statistical approach to fill in the gaps. The complete methodology and detailed database is reported in Sumaila and Pauly (2006). Also, the full datasets of the subsidy estimates are provided under the Governance tab in the Countries' EEZ section of the *Sea Around Us* project website (www.seaaroundus.org). Subsidy information for each maritime country is presented by category and type (e.g., Figure 1).

Using the database, Sumaila and Pauly (2006) report that global annual fisheries subsidies are estimated to be US\$30-34 billion, and that fuel subsidies make up about 20-25% of total global fisheries subsidies. Further, the proportion of subsidies contributing to excess fishing capacity ('bad' subsidies) globally amounts to US\$21 billion or about 65% of the total. It is worth noting that we see this database as a living web product, which will be improved through time, with the availability of better information.

We therefore encourage colleagues to contact Rashid Sumaila by email (r.sumaila@fisheries.ubc.ca) if they have comments and/or better information and data.

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