

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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