



## [Save Our Oceans, Eat Like a Pig](#)

Let's stop wasting tasty fish on animal feed.

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Thirty-six per cent of all marine fish caught are used to feed animals, according to a new study on forage fish from the Sea Around Us project at the UBC Fisheries Centre. "Forage fish" were so named because they often wind up as meals for other fish, marine mammals, or birds. Today we catch 30 million tonnes of these small, wild fish and grind them up into fish meal and oil to feed chicken, fish, and pigs.

Dr. Daniel Pauly, co-author of the report with Drs. Jackie Alder and Reg Watson, has come to disagree with the label "forage fish," which he views as synonymous with waste. "We should never have followed the fish meal industry on the slippery slope of naming edible fish 'forage fish' in the first place," says Pauly. "These fish could provide humans with large quantities of protein but we waste them by using them as raw material for fish meal."

A half-century ago, less than ten per cent of fish caught were used to make into fish meal. Pigs and chickens were fed mostly grains and fish farming was a cottage industry. Today, with fisheries in much dire straits and a heightened awareness about global malnutrition, why are we turning more than one-third of our marine fish into powdered pig feed? One part of the answer is that fish meal is price competitive with soymeal and other grain feeds because the fish are caught in developing countries willing to take low prices for the fish.

The other part of the answer is that, particularly in the Americas, many of the "forage fish" species, such as blue whiting, herring, sardines and anchovies have simply gotten a bad rap. These little fish are perfectly tasty but need a facelift in the marketplace. Consumers and governments must be convinced that it is more efficient, lucrative, and ecological to instead feed pigs, chickens, and fish a plant-based diet -- and for people to forage on forage fish instead. The price for such fish will rise as they are used for table fish rather than fish meal, and the result might well be fewer fish scoured from oceans, more people better fed, and more income for developing nations.

Enter Dr. Patricia Majluf from Lima, Peru.

### **Extreme fish makeover**

Majluf works with fur seals and penguins off the Peruvian coast, where she "saw an ever reducing resilience to El Nino events in these populations, largely due to availability of Peruvian anchovy."

The Peruvian anchovy fishery began around 1950 and since then has contributed, at times, up to half of the world's fish meal. Much of this fish meal is used to feed farmed fish farms in China as well as livestock and farmed salmon ("floating pig farms" says Pauly).

Yet, as Peru exports roughly 8 to 10 million tonnes of anchovy each year, half of its population, 15 million people, lives under conditions of critical poverty.

Majluf found it illogical that Peru has 25% infantile malnourishment and yet "millions of tons of fish is taken from the ocean and fed to pigs and fish."

"But Peruvians are finicky eaters," explained Majluf. "The government had been trying to get them to eat anchovies for years and they made some pretty nasty products that didn't taste good."

Majluf then found a way to generate more money for the Peruvian economy, feed more people, and leave more anchovies for marine life. She got herself introduced to the top chef in Lima, Gaston Acurio, who is pushing Peruvian cuisine to gain global status. Majluf, Chef Acurio, and a team of others inspired a media frenzy with the launch of their "Discover the Anchovy" campaign last December -- a week of anchovy cuisine inspired by a fusion of "biodiversity and gastronomy."

### **Fish meal into a meal of fish**

During Discover the Anchovy week, 18,000 people tasted anchovies at more than 30 restaurants in Lima, the nation's capital. Majluf then sealed the meal when, late last year, Peruvian President Alan Garcia broadcast his meal of anchovies on television. The president had single-handedly inspired Peruvians to eat chicken in the early 1980s, so too, he got his nation salivating for a new fish.

Since his television appearance, the president has hosted several more anchovy dinners at his palace. "The government has fully embraced using anchovies for food," explains Majluf. "Now 30 per cent of their budget, or about US\$80 million, for food security programs will go to supplying anchovies."

Anchovies are also making more money for the Peruvian economy as canned fillets rather than as fish meal. One tonne of fillets is sold for five times the price of one tonne of meal and requires half the fish (three tonnes for one tonne of fillets versus six tonnes for one tonne of meal).

### **'Morally repugnant'**

Peru faces many challenges in turning fish meal to a meal of fish, including how to address their excess capacity in fish meal processing plants, how to politically strategize for the long-term, and how to move toward ecosystem-based rather than single-species management. But Majluf is optimistic.

"The majority of people didn't know [anchovies] or that there was a different wonderful way to look at them," says Majluf. And many countries "now want [Peruvian] fish rather than turn it into meal." She believes Peruvian anchovies have potential in Spanish, African, and Chinese markets, though she has less hope for her neighbors. "Chile needs all the fish meal they can get to feed their farmed salmon," which Majluf believes is the top priority of the Chilean government.

The fishers in Peru will not see many immediate economic gains of the fish makeover since they are "price-takers." But, according to Pauly, "[fishers] will regain some dignity because wasting fish is morally repugnant." And they might get to eat anchovies rather than only catch them.

"Anchovies are really nutritious," says Majluf. "Now there are fresh anchovies in every market in Lima and they're cheap." Majluf now eats a plate of anchovies for lunch or dinner almost daily. The Peruvian example serves as an inspiration to make a real meal of our fish and thus literally eat like a pig.

## Baked Fillets of Mackerel with Lemon and Spices

Baked Fillets of Mackerel with Lemon and Spices **Ingredients** 4 small mackerel, filleted Pinch of salt and freshly ground black pepper Juice of 1 lemon 1 chili pepper 1/2 teaspoon coriander seeds, crushed Sunflower oil **Method**

- Pre-heat the oven to gas mark 5, 375°F (190°C).
- Wash the mackerel fillets and pat dry with kitchen paper. Place them on a board, skin side down, and season with salt, pepper and half the lemon juice.
- Cut the chili pepper in half lengthways, de-seed (wash your hands after this, and do not touch your eyes), then finely chop the flesh.
- Scatter the chili and coriander over the mackerel and lightly rub into the flesh of the fish. Leave for 30 minutes.
- Lightly oil a baking dish. Close the fillets, as you would an open book, place in the baking dish, sprinkle with the remaining lemon juice and a little oil and dust with pepper.
- Bake uncovered for 20 to 30 minutes until the fillets are cooked.

Serve immediately.

Jennifer Jacquet, an environmental economist, is with the Sea Around Us Project (SAUP) and the UBC Fisheries Centre.

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