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Blue revolution

The promise of fish farming

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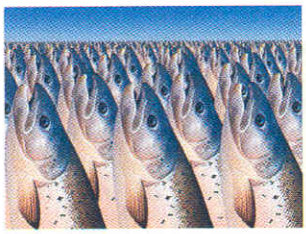
A new way to feed the world

Fish farming is a good and promising thing, despite the environmental worries



IF MODERN agriculture were invented today, it probably wouldn't be allowed. It pollutes the environment with pesticides, fertilisers and nutrients from feed and animal waste. Farming damages wild habitats and wildlife. And domesticated animals are stocked at high densities and pumped full of growth hormones and antibiotics, with the result that they are often unhealthily fatty compared with their wild relatives. Now, people say the same sort of things about aquaculture. But it would be a calamity if rows about the environmental effects of fish farming prevented the development of a new industry, with the potential to supply most of the world's fish.

All farming alters, and sometimes damages, the environment. Modern aquaculture has arrived at a time when environmental knowledge and concern has rarely been higher, and when it must compete with tourism and home-owners as well as environmentalists for access to the coast. Agriculture had the luxury of being able to pollute and alter the landscape first and worry about the consequences later. Not so aquaculture. Nevertheless, there is no sense in expecting modern aquaculture to emerge immediately as a perfect food supply that pleases everyone from animal lovers and greens to economists and industrialists. The challenge will be to regulate it prudently and efficiently, not just in the rich world but in poor countries and eventually farther out to sea, too.

The devil and the deep blue sea

Certainly, plenty of fish farming makes a nasty mess. Shrimp and salmon aquaculture, which have shown astounding double-digit growth in the past decade, present particularly worrying environmental challenges. But the salmon was first domesticated in the 1970s. Early industrialists made a nasty mess too. However, whereas it took a century to begin to clean up the filth of the Industrial Revolution, improvements in technology are already cleaning up fish farming, at least where the industry is well regulated (see pages 19-21). For example, the release of waste nitrogen from farming salmon in Norway is now one-sixth of its level 30 years ago; and the amount of feed required is less than half. Indeed, organic farmed salmon is now available to consumers who are worried about marine pollution and antibiotics. Such progress is all the more remarkable given how quickly it has been achieved.

In less developed countries, it is true that much of the industry is poorly regulated. But even here, environmental concerns about fish farming need to be put in context. For example, in less developed countries, such as Thailand and Vietnam, it is well known that shrimp aquaculture is exceptionally destructive to mangrove forests, which are essential for healthy populations of many wild fish. What is less well advertised is that, whereas 55-60% of mangroves have been lost globally, conversions to shrimp farms probably account for less than 10% of this loss. The rest is down to factors such as rice production, grazing, urban development, fuel, construction materials and tourism—all of which inspire less outrage. And shrimp aquaculture, if undertaken responsibly, is arguably a better use of the land than these other options. It is a compact and efficient way of producing a highly nutritious form of food, and an important way to alleviate poverty.

There are, though, some serious questions to be asked about certain sectors of fish farming. One of the world's most respected fisheries biologists, Daniel Pauly at the University of British Columbia, argues, naturally enough, that there are good and bad forms of aquaculture. The good forms include plant-eating fish such as tilapia—popular in America—and filter-feeding creatures such as scallops, mussels and oysters. Tilapia, he argues, could become the chicken of the sea and produce a net increase in the world's supply of fish. Salmon and sea bass, he argues, are the bad guys, fed on wild fish caught in the ocean. If this kind of farming, widespread in the developed world, becomes popular elsewhere, it may aggravate, not diminish, pressure on the marine environment and on the world's supply of fish. For the moment, however, farming of the good guys represents 80% of global aquaculture.

In cod we trust

In the rich world, the industry urgently needs a certification scheme for farmed fish. Even carnivorous fish can be fed sustainably, by feeding them on fish that has been caught from a renewable (and not a plundered) fishery. Such a certification scheme is already being developed for wild fisheries.

International regulation may also be necessary to address a problem that technology is likely to throw up in the next decade. It will become increasingly possible to farm fish on the high seas, something known as mariculture. At the moment, one of the benefits of aquaculture over oceanic fisheries is that it occurs within the boundaries, and regulation, of governments. If fish farming starts to become a big business in international waters, it could become a big, hard-to-regulate and polluting industry: in other words, a tragedy of the commons. Before that happens, and before large investments are made and governments feel obliged to start defending national interests, mariculture needs common international standards.

Up to now, the world has been dreadful at regulating fishing. The catching of wild fish has long since passed the point at which most fish stocks are sustainable. Catches are declining, and that decline may gather speed. If governments are willing to end the subsidies that keep ocean fisheries afloat, then unsubsidised fish farming could replace at least part of the lost catch. Besides, if governments do not stop subsidising sea fisheries, then the lower costs and greater scope for technological advance in fish farming will make sea fishing less and less competitive, and relentlessly drive up the cost to the public purse of supporting an uneconomic business.

Aquaculture's promise is that, within the next three decades, it could produce most of the world's marine produce. At the same time it could help to alleviate poverty and food shortages in some of the world's poorest countries. And if it is done well, it could help to safeguard marine resources for future generations. That, surely, is something to nurture. ■