ISSN 0162-0045

Food Monitor

Information, Analysis & Action on Food, Land & Hunger July/August 1980 No. 17 $2.00

FISHERIES, WASTE AND MALNUTRITION

WASTE AND MALNUTRITION AT SEA

By George Kent

Scientists often voice the hope that fisheries products may someday make an important contribution toward ending hunger. Agencies like the Food and Agriculture Organization of the UN and the United States National Academy of Sciences urge the development of new technologies and the opening of new and exotic fisheries. This will not solve the problem for solutions do not lie in creating new technologies to catch larger quantities. If we examine the fishing industry today we find that much of the fish caught is wasted, and that which is used often does not find its way into the mouths of the hungry.

Just as in every other sector of the food industry, there is enormous wastage in fish production, processing and consumption. Overfishing, discarded by-catches, indirect use, overcapitalization, excessive energy use and careless processing lead to an enormous sacrifice of protein which could be made available under different management arrangements.

Overfishing

Some fish stocks are exploited so extensively that the capacity of the stocks to maintain themselves over time diminishes or disappears. This has happened with the whales, the Peruvian anchoveta, the California sardine, the North Sea herring and many other species. As a result of overfishing, the catch per unit of effort steadily declines. Nevertheless, in many cases overfishing is deliberate. In pulse fishing, for example, the method is to fish very hard, depleting the local stock, and then to move on, to repeat the practice at different locations.

Worldwide total catches appear to be holding at around 65 million metric tons a year. It may be a mistake to view this as a stable, sustainable condition. In FAO fisheries expert Sidney Holt's analysis, "Stagnancy of total fish catches seems to result from the fact that the opening of new fisheries now does barely more than compensate for the decline of some older ones." Worldwide, the fishing industry seems to be functioning like a mining operation, systematically depleting the standing reserves.

Discarded By-Catches

Since hold space on fishing vessels is always limited, species of low market value are discarded to leave room for species of high market value. For example, great quantities of fish caught in shrimp nets are thrown back into the sea because the fishers will not devote hold space to them. According to Holt, the quantities are enormous: *It has been estimated that fish discards from shrimp fisheries alone now total about 4 million tonnes annually, and that total deliberate discards of fish might reach 6 million tonnes. That is more than 10 percent of the world retained catch.*

A variation of the by-catch problem occurs in the killing of porpoises incidental to the purse-seining of tuna.

Indirect Use

Fish which could be used directly for human consumption is used only indirectly, as feed for livestock, or even more indirectly, as fertilizer for agricultural production. About 30 percent of the total world catch of fish is used indirectly, and the share devoted to indirect use is increasing steadily.

Overcapitalization

Apart from the wastage of the fish product itself, there is enormous wastage of resources expended in the catching and using of fish. As one example: . . . *it has been estimated that in the cod and haddock fisheries of the North Atlantic substantially the same catch can be taken with about one half to two thirds of the present fishing effort. If this surplus of manpower and capital could be employed elsewhere, it would produce a total catch close to half a million tons* (Albert W. Koers in *International Regulation of Marine Fisheries: A Study in Regional Fisheries Organization,* Surrey, England, 1973).

This loss was estimated to amount to something between $50 and $100 million annually.

Table 1
LEADING COUNTRIES IN THE CONSUMPTION OF SELECTED FISH PRODUCTS, 1973.

	SPECIES	COUNTRY	CONSUMPTION AS % OF WORLD TOTAL
1.	Groundfish (i.e. cod, haddock, flounder, ocean perch)	U.S.S.R.	30
		Japan	27
		U.S.A.	8
		U.K.	6
2.	Tuna	U.S.A.	37
		Japan	22
		S. Korea	7
		France	3
3.	Salmon	Japan	36
		U.S.S.R.	17
		U.S.A.	17
		Canada	12
4.	Halibut	U.S.S.R.	31
		U.S.A.	15
		Japan	12
		Canada	10
5.	Sardines/ Herring	U.S.S.R.	16
		Denmark	10
		Japan	9
		S. Africa	8
6.	Shrimp	U.S.A.	29
		India	15
		Thailand	8
		Japan	8
7.	Lobster	U.S.A.	48
		Chile	13
		U.K.	8
		France	7
8.	Crabs	U.S.A.	30
		Japan	21
		France	5
		S. Korea	4
9.	Clams	U.S.A.	47
		Japan	33
		Malaysia	6
		S. Korea	6
10.	Scallops	U.S.A.	51
		Japan	27
		France	15
		U.K.	4
11.	Oysters	U.S.A.	53
		Japan	16
		France	13
		S. Korea	11
12.	Fish Meal	Japan	21
		U.S.S.R.	12
		U.S.A.	10
		U.K.	7

Source: Frederick W. Bell, *Food from the Sea: The Economics and Politics of Ocean Fisheries*, Boulder, Colorado: Westview Press, 1978, p. 24.

Energy

Vast quantities of energy are used in the catching, transporting and processing of fish. In the North Sea fisheries, for example, it has been estimated that 8,000 kilocalories are expended in harvesting each kilogram of fish. Thus, 20 calories of fossil energy are expended for each calorie of gutted fish. Some highly valued products such as bluefin tuna are regularly airfreighted around the world. And great quantities of fresh and frozen tuna are shipped out of the Pacific region, while at the same time great quantities of canned mackerel and other fish are imported into the region.

Processing

The protein yield for any given quantity of landed fish is generally lower the more extensive the processing. It is estimated that the average wastage figure for all shellfish is about 30 percent. About 65 percent of tuna is wasted in the canning process.

Human Needs

Most fish goes to those who can afford it, not those who need it. Table 1 shows the major categories of fisheries resources, the four major consuming nations for each and the percentage of the world total weight consumed by each of these nations. It is evident that the major consumers are affluent, not poor countries.

The pattern is shown in another way in Table 2. Supplies for any given country are comprised of its production, plus its imports, minus its exports, including fish for both direct and indirect use. Consumption refers to direct use alone, and thus excludes fish used to feed livestock or for fertilizer. As the table shows, the developed market economies together use about two and a half times as much fish as the less developed market economies – 56 percent versus 22 percent of the world total.

The skew is especially clear when per capita measures are used. As Table 2 shows, people in developed market economies use five and a half times as

Fish, like other food products entering the market system, tends to flow toward the rich simply because the rich can outbid the poor.

much fish as people in less developed market economies – 43 kilograms versus 6 kilograms. Unfortunately these country-by-country data cannot show the further skew which results from the maldistribution of resources within countries.

Table 3 shows that people in less developed market economies obtain considerably smaller daily rations of protein, especially animal protein, than do people in developed market economies. Comparing this with Table 2 shows very clearly that the fish is not being consumed where it is needed most.

TABLE 2
DISTRIBUTION OF FOOD FROM MARINE RESOURCES, 1970

	COUNTRY SHARES		PER CAPITA SHARES	
	Consumption (% of total)	Supply	Consumption (kilograms/capita)	Supply
Developed market economies	49	56	25	33
Less developed market economies	26	22	6	6

Source: S.J. Holt, *Marine Fisheries*, p. 75.

This maldistribution arises largely from what I call the wastage of *upstream trade*, the net flow of fisheries resources from where it is needed most to where it is needed least. Fish, like other food products entering the market system, tends to flow toward the rich simply because the rich can outbid the poor. It is this trade which accounts for the fact that developed countries consume more than they produce.

Responsibility

The enormous wastage in fisheries is not accidental and it is not somehow forced on the industry by the limits of technology. It is the result of deliberate choices, and through deliberate choices much of it could be avoided. Since it is within human capacity to sharply reduce this waste, we must acknowledge human responsibility for it.

Once we give up the position that these patterns are the results of forces over which we have no control, we are confronted with the argument that creating any change in the prevailing patterns would be just too costly. A more careful analysis tells us that the real difficulty is that the benefits and the costs fall differently on different people. It is the

TABLE 3
DAILY PROTEIN SUPPLIES, PER CAPITA

	TOTAL PROTEIN				ANIMAL PROTEIN			
	1961-63	1964-66	1969-71	1972-74	1961-63	1964-66	1969-71	1972-74
	(grams)				(grams)			
Developed market economies	90	91	94	95	48	50	55	56
Less developed market economies	53	53	55	53	11	11	12	11

Source: *Fourth World Food Survey*, Rome: Food and Agriculture Organization of the United Nations, 1977, p. 18.

Unloading and stacking fishmeal in Peru. *World Bank photo by Ray Witlin*

producers who make the decisions, not the consumers, so the practices are adjusted to the producers' cost/benefit calculus, not the consumers'. Government agencies generally act in the producers' interests much more than in the consumers' interests. Thus, it cannot be surprising that the major benefits of the fishing industry go to the producers, in the form of profits, rather than to the consumers, in the form of nutrition. Control is in the hands of producers, so we cannot expect anything except the maximization of values from the producers' point of view.

Assessed in terms of the production of profits, the fishing industry is reasonably efficient. The systems are not always precisely tuned to fully maximize profits, but there is a persistent drive by management toward that objective.

While some attention is given to other values, it is clear that the prevailing purpose of management is to maximize the production of profit. Maximizing some other value such as, say, employment opportunities, or the total quantity of fish landed, or the total nutritive value of the final product, is not the major objective.

The industry is not designed or managed for the primary purpose of meeting basic nutritional needs, so some might argue that it is unfair to assess the industry on the basis of that standard. But such an assessment can show us the potential which might be achieved under different management objectives.

The industry should be modified, possibly through government intervention, so that values other than profit may be given fuller consideration. To suggest an end to profit maximization is not the same thing as advocating inefficiency. Certainly, any sort of enterprise must be profitable in the sense that there must be some net value gained. The point is that management needs to be directed toward serving a variety of human values, including meeting basic nutritional needs. The maximization of profits at the expense of other human values is simply unacceptable in its social costs.

Those who press for the opening of new stocks or for research and development leading to new technological breakthroughs have missed the message already very clearly established in the history of agriculture. It is in the nature of prevailing modes of management that any newly developed resources or new breakthroughs are likely to be used to the advantage of the already advantaged. The promise held out for meeting basic human needs will remain unfulfilled so long as there is no radical transformation in the way these resources are managed.

We must understand that the waste in the world food system is not incidental, something that can be remedied with some new technological device. The worldwide system of resource management fails to respond to basic needs because it is designed for other purposes. Given the sufficiency of the earth's resources, it is fair to say that it is the present management system which causes deprivation. It must be redesigned. It is this fundamental insight which has been the basis for the Third World's call for a New International Economic Order. □

George Kent is a professor of political science and of urban and regional planning at the University of Hawaii at Manoa. He is the author of The Politics of Pacific Island Fisheries, **available for $22 from Westview Press, 5500 Central Avenue, Boulder, Colorado 80301.**