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King of the Sea: Seafood Sovereignty and the Blue Revolution

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Abstract

The paper discusses nine of the ways in which food sovereignty issues affect both the production and consumption of food from marine and freshwater aquatic food systems. Seafood sovereignty is threatened and challenged by the introduction of exotic species, inshore aquaculture, inshore harvesting by non-traditional technologies, allocation of access to offshore fisheries to foreign interests with non-traditional technologies, the tendency for foreign interests to deplete and depart, the creation of marine protected areas, the introduction of frankenfish and supersalmon, habitat destruction, and exploitation for exportation. In the face of these threats and challenges to seafood sovereignty, rights based approaches and activism and advocacy offer some countervailing pressures. The paper concludes with a discussion of likely future directions.

Introduction

Despite the large amount of attention to food sovereignty, in general little attention is paid to the roles of fisheries in food sovereignty; of 8,000 citations to food sovereignty in Google Scholar, only about 15 percent make reference to seafood or fisheries. Yet for many people in the world, fish is the main source of protein; in general, across countries and regions, the lower the level of economic development, the higher the importance of fish protein in human diets.

Despite this relative neglect, a careful examination shows that all of the issues that comprise food sovereignty occur equally with regard to aquatic resources as with terrestrial foods. Much of the work on common property resources has concerned the democratic management of freshwater and marine fisheries. Much of the concern with foreign industrial harvesting and processing vessels relates to the right of peoples to determine the shape and substance of their food systems. For many peoples fish have tremendous cultural significance.

This paper will discuss nine ways in which food sovereignty issues affect both marine and freshwater aquatic food systems. The paper will focus on issues of access to, and production of, fish for food (both in terms of human nutrition and in terms of sociocultural meaning), although access to fish for employment and for income is also very important in many situations. Although the paper will consider most forms of marine and freshwater animals (fish, shellfish, echinoderms) and plants (seaweed, plankton), it will not include marine mammals (e.g., whales for Native Americans, dolphins for Japanese villagers) because the food sovereignty issues they raise are too complex to cover adequately in a paper such as this.

This paper uses the word "seafood" to denote all of the aquatic food resources described above (marine and freshwater animals and plants). The paper uses the word "fisheries" to denote all of the harvesting, production, marketing and consumption activities associated with those resources.

Food Sovereignty

Food sovereignty is an issue at multiple scales of social organization. At the individual level -- e.g., a person without access to transportation living in a so-called "food desert", a person without access to land or water to produce her/his own food -- is very constrained in the kinds of foods to which s/he has access. At the community level, again the questions of food deserts and access to productive resources are raised, along with concerns about the ability of a community to support small-scale local food retail shops and food service firms selling locally traditional foods in the face of competition from big box stores and transnational food service chains selling industrialized foods for mass consumption. For example some towns in Italy have attempted to block new restaurants from coming into the center of town in order to maintain the purveyors of traditionally local foods. At the national level, a variety of issues concern what kinds of foods can be produced and what kinds of foods can be imported and marketed. These issues range from how beef is produced (what hormones if any can be used) and how poultry is processed (air drying versus a continuous water bath) to fresh cheeses made with unpasteurized milk and genetically modified plants and animals. Both multinational (e.g., GATT) and multilateral (e.g., NAFTA) trade agreements have tended to limit food sovereignty, with allowances made for issues of food safety and plant, animal and environmental health in the importing country. Thus issues of food sovereignty are often contested as sanitary and phytosanitary standards.

With this review of the different meanings and aspects of food sovereignty, I turn now to an overview of some of the major food sovereignty issues pertaining to seafood and fisheries. The list of 12 issues I will discuss is certainly not exhaustive. But they do, I think, illustrate the variety of ways in which food sovereignty issues arise in fisheries in all of the post-industrial, highly industrialized, and developing societies around the world.

Introduction of Species

In many cases around the world, exotic seafood species have been introduced to a local environment both for wild harvest and/or for aquaculture, without the full and informed participation of the people who had a material and social interest in that aquatic system. I will focus not so much on unintentional introductions (e.g. the zebra mussel and the round goby to

the North American Great Lakes via ship ballast discharge, see Minchin et al. 2002), but more on deliberate introductions, even though the impacts on the food system may have been totally unintended (e.g., brown trout in North America, see Quist and Hubert 2004; grass carp in 121 countries, see Casal 2006). While introduced species have impacts on all aspects of ecosystem services, in this discussion I will focus just on the impacts on provisioning, livelihood, and sociocultural services (cf. Binimelis et al. 2007).

One of the best known fisheries introductions was the introduction of the Nile perch (*Lates nilolticus*) into Lake Victoria in the first part of the 20th century. While the exact events of the introduction are not well established, the introduction had been discussed for years by British colonial resource managers as a way to provide a top predator in the Lake for recreational and commercial purposes (Harris et al. 1995). Because the crocodiles in the Lake had been hunted close to extinction, no aquatic predator was present to check the growth of the Nile perch population. At the same time, the native inhabitants of the lakeside communities did not like the taste and texture of the introduced species, and their traditional fishing gear and methods were not suitable for catching the relatively large Nile perch. As a result, the Nile perch was able to deplete the forage base of endemic small fish on which the local fisheries had been relying, both for consumption and for regional commerce (Kasulo 2000; Kaufman). The explosion of the Nile perch population stimulated the development of industrial fish processing in the major cities around the Lake, but the cost of the industrially processed fish was too high for the local market, and the fish mostly were exported to Europe and North America (Binimelis et al. 2007).[1]

A second major fish introduction in the 20th century was the introduction of salmon from the North Atlantic to the South Pacific (especially Chile, but also Australia and New Zealand) and the North Pacific (especially the Canadian province of British Columbia, cf. Volpe). Whereas the introduction of the Nile perch was intended for wild harvest, the introduction of the Atlantic salmon to Chile and Western Canada were intended for cage aquaculture in inshore areas (Casal 2006). Atlantic salmon is an ideal species for cage aquaculture; it is easy to handle, it grows well in sea cages, it commands a high market value and it adapts well to being farmed away from its native habitats (Knapp et al. 2007). In this section I will focus on the fact that the Atlantic salmon is an introduced species; in the next section of the paper I will focus on the impacts of inshore cage aquaculture production. Obviously from the perspective of impacts on food sovereignty, the two aspects are completely interconnected.

[1] The icthyological, ecological and socioeconomic consequences of the introduction were so severe that they stimulated the production of a relatively successful film “Darwin’s Nightmare” (www.darwinsnightmare.com).

In the perspective of introduced species, the food sovereignty issue with Atlantic salmon arises when the salmon escape from their net pens. Although efforts are ongoing to construct stronger and more durable net pens (because a large escape is a significant loss of investment), accidents are normal (Perrow) and it would be very expensive to construct a net pen that could withstand a major storm. When the Atlantic salmon escape, they outcompete the native species for food and habitat, and they interbreed with any native salmonids thus reducing genetic diversity, disease resistance and adaptability (Gardner and Peterson 2003). In British Colombia the populations of native salmon species had been reduced below commercially viable levels, so the remnant populations were providing subsistence and some livelihood, especially to Native American groups along the spawning streams but also to some individual fishers. In Patagonia, Chile, it was the Mapuche whose subsistence and livelihood fishing was impacted by the introduced species. They are the groups that bear the impacts of the introduction of the Atlantic salmon, and they had no opportunities for effective participation in governmental decisions to allow the introduction of the exotic species.

Inshore Aquaculture

Although inshore (as opposed to land based or open ocean) aquaculture has been very controversial for the past two or three decades, it is in fact a technique that has been practiced for centuries. Nevertheless, as was suggested in the previous section, the introduction of industrial scale aquaculture into coastal locations where aquaculture was not previously practiced disrupts the fisheries that were being practiced in that area. To return to the example of salmon aquaculture in British Colombia, what makes industrial aquaculture so profitable is that fish are stocked in net pens at very high densities (e.g., nine fish per cubic meter) and supplied feed on several occasions during the day. The high densities allow both diseases (e.g., infectious salmon anemia -- ISA) and parasites (e.g., sea lice) to build up and then disperse into the surrounding waters where they can negatively affect wild salmon. The effect of ISA on wild stocks is still a matter of debate, but several studies have concluded that sea lice from salmon farms have negatively impacted wild salmon populations (Krkosek et al. 2007). Any negative effects on the wild stocks in turn negatively impact both Native and non-native groups that historically relied on the wild stocks for subsistence and livelihood.

Along with salmon, another very prominent species for aquaculture is shrimp (Skladany and Harris 1995). While in some cases shrimp aquaculture was based on introduced species, more frequently shrimp aquaculture was seen as a way to produce shrimp that both increased the accumulation of wealth from the shrimp production and shifted the accumulation of wealth from harvesters of wild shrimp to the owners of the coastal ponds and the suppliers of inputs to the aquacultural production (Stonich and Bailey 2000). In many cases, the establishment of the

industrialized shrimp aquaculture was based on the expropriation of coastal lands and the conversion of mangrove swamps into shrimp ponds (Stonich and Vandergeest 2001). However the mangrove swamps were providing the breeding and nursery areas for the seafood species that the local people were harvesting for subsistence and small-scale commerce. In most cases not only did the local people lose the access that they traditionally had had to seafood resources, with no participation in the decision about the change in land and water use, but in most cases they were not offered employment in the newly established industrial aquaculture facilities (Stonich et al. 1997; Stonich 1995). From a food justice perspective, the additional twist on food sovereignty was that the impetus for the greatly increased shrimp production was the desire on the part of food service corporations to supply relatively inexpensive shrimp to the middle classes and working classes in the post-industrial and industrialized societies (Skladany and Harris 1995).

Inshore Harvesting

One of the ways in which seafood harvesting activities are classified is in terms of scale – small scale artisanal fisheries (Cordell 1990), intermediate scale mechanized fisheries (Freeman 1975), large scale industrialized fisheries (Fricke). Issues arise when access to different areas where seafood can be harvested is allocated, either explicitly or implicitly, to harvesting outfits of different scales. The issue arises in part because, in general, small scale outfits cannot practically and safety fish in offshore areas, whereas large scale outfits can fish in inshore areas. But if large scale outfits using industrial technologies fish in inshore areas, they may severely deplete the inshore fish stocks and disrupt the inshore physical environment to such an extent that the inshore areas can no longer supply the subsistence and petty commerce needs of the small scale fishers. The same problem exists if inshore and offshore fleets exploit the same fish stock that spends part of its time in inshore waters and part of its time in offshore waters (Charles and Reed 1985).

Access to seafood in inshore national waters is controlled both by informal and formal regimes that may or may not give priority to local small scale traditional fishers versus intermediate scale and large industrial harvesters. Informal regimes are one instance of common property resource management (Acheson and McCay), and may be established by the community of fishers at a particular beach or harbor to control the area they define as relevant for their operations. The classic example of an informal regime is the lobster turfs of Maine (Acheson) where the local lobster harvesters allocated the ocean spaces suitable for setting lobster pots among themselves, and acted cooperatively to exclude any non-local harvesters. Formal regimes may be established or reinforced by government regulation and management of a particular fishery. For example, the Newfoundland cod fleet historically based access to the

inshore cod fishery on having a dock and shed in a particular village (Faris 1970). When the Canadian government wanted to formalize the management of the inshore cod fishery, it finally adopted the traditional system of allocating access.

The food sovereignty issue arises when these traditional regimes are changed without the democratic participation of the affected fishers and consumers. In the period after World War II it was proposed to modernize all of the Japanese fisheries. The inshore fishers and fishing communities saw this as a major threat to their subsistence and livelihoods, and strongly opposed it. What resulted was a system of co-management, where the prefecture grants fishing rights to the local fishers' cooperative; the rights are exclusive but not transferable (Schmidt n.d.). In this way, the small scale fishers maintained their sovereignty over that part of their food system. Wilen (1998) discusses a similar situation in Alaska, and Taylor-Moore (1997) describes an analogous arrangement in Australia.

Off-shore Fisheries

Since the ratification of the United Nations Convention on the Law of the Sea, a nation-state has legal authority over access to aquatic resources out to 200 nautical miles from the country's shoreline (Vanderpool et al. 1988). As a result of that Convention, foreign harvesters now are obligated to negotiate terms and arrangements for access to seafood in the national aquatic territories of other countries; generally this negotiation is conducted between the national governments of the country with the resources and the country with the harvesting fleet. This creates several dilemmas for the countries with the aquatic resources. On the one hand, rents from access of foreign harvesters contribute to the national treasury, and can be used for a variety of purposes. But, it may be a challenge for a developing country to police and enforce the terms of whatever agreement has been reached (e.g., times, areas, gears, quantity). On the other hand, domestic fishers may be using intermediate technologies (e.g., motorized canoes) to harvest seafood in offshore areas, and landing the seafood in the country where it will be processed and consumed. Although this contributes to food security and livelihoods, it may not contribute to the national treasury. Further, in developing countries the technologies of the foreign harvesters will almost certainly be much more powerful than those of the domestic fishers, so they will be able to out-compete the domestic fishers for both domestic and foreign markets for the seafood. Even so, the foreign harvesters complain about not having access to the aquatic resources on the same terms and domestic fishers.

Fishing in the territorial waters of North African and West African countries is very important for the fleets of many European nations. One very notable recent example was the prolonged negotiations between the European Union and Morocco for access to that country's territorial

waters. In this case it was especially fishers from Spain who harvest seafood in the Moroccan waters. Those territorial waters had been closed to the Spanish fleet since the end of 2011 when the previous agreement expired. After nine months of intense negotiations, an agreement having "enormous economic, social and political importance" was reached that will make it possible for a hundred Spanish fishing vessels mainly from Andalusia and the Canary Islands to return to Moroccan waters (Murias 2013). The agreement will be in force for four years, during which the Moroccan government will receive 40 million euros per year. The agreement not only maintains but expands the access of the Spanish fleet to the seafood resources of the Moroccan waters, and thus restores some of the seafood sovereignty of the Spanish fishers. While the agreement reaffirms the seafood sovereignty of the Spanish nation-state, it is not clear what are its implications for Moroccan fishers, fish processors and fish dealers.

Deplete and Depart

Even when an access agreement has been properly negotiated, issues of food sovereignty concerning foreign harvesters may still rear their ugly fins. Again, this is most like when there is a great difference in harvesting power between the domestic fishery and the foreign harvesters, and when the targeted fish stock(s) straddle both the inshore and offshore zones in space and/or time. Under those conditions it is possible for foreign investors to instigate the exploitation of local fish stocks, with the aim of exporting the fish to more profitable foreign markets, at rates that cause the seafood populations (stocks) to crash. When that happens, the host country finds itself with a diminished supply of seafood; the domestic harvesters, processors and marketers find themselves with diminished resources for their livelihoods; and coastal people find themselves with less seafood for their diets.

One of the clearest recent examples of this is the exploitation of Patagonian toothfish off Chile and Argentina. Patagonian toothfish became very popular in the U.S. in the last two decades of the 20th century when it was marketed as Chilean sea bass. The surging demand, both for restaurants and for home preparation, motivated a tremendous increase in the harvesting fleet. Although Chile and Argentina attempted to manage the fishery in accordance with their commitments to the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the burgeoning demand motivated illegal, unreported and unregulated fishing, and some stocks in the Southern Ocean region nearly collapsed, leaving the domestic fishers without a resource that could sustain any harvest. After 2005, as a result of government patrol vessels of CCAMLR Member nations, NGO activism, media exposure and a range of trade and port state measures, IUU fishing has been all but eliminated from within Southern Ocean countries' exclusive economic zones, although a relatively small amount of IUU fishing still

occurs in high seas areas (CCAMLR 2010). Redfish (red drum) in the Gulf of Mexico and the adjacent Atlantic Ocean waters experienced a similar series of events, which unfortunately for the commercial harvesters resulted in the prohibition of commercial harvesting in federal waters and most state waters (Executive Order 13449 2007). The story of orange roughy is also apposite (Clover 2004).

But not all such events result in a diminution of seafood sovereignty. During the past two years, Australia has been considering a request for a harvesting permit that was perceived by many to threaten the national supply of seafood and the security of livelihoods from the fisheries. The super trawler Margiris (renamed Abel Tasman) is 142 meters in length and tows a trawl net that is approximately 300 meters long with a mouth opening 80 meters wide and 35 meters high. Its owners, Seafish Tasmania, applied for a permit to harvest 18,000 tonnes of fish. The most prominent concern was that the pelagic trawling would cause localized depletion both of target species and bycatch, which would in turn impact domestic supplies and livelihoods. After considerable controversy and a complex decision making process, the permit was denied and the super trawler left Australia to seek a harvesting permit, apparently from Chile.

Marine Protected Areas

Another way in which local fishers find their subsistence and livelihoods disrupted is from the establishment of marine protected areas (MPAs). Several decades ago, significant discourse about the overexploitation and depletion of the world's stocks of seafood resources began to appear. For the past three or decades some of that discourse has focused on the creation of MPAs. Just as gazetted parks and reserves are believed to have helped to conserve threatened and endangered species of plants and animals on land, it has been suggested that protected areas in oceans, lakes and rivers could function to conserve and restore the aquatic species that have been depleted. Indeed, reviews of research on MPAs conclude that not only do the endangered species in general recover in the protected area, but as the populations recover they spill out of the protected areas into waters where harvesting is permited. So, there would appear to be reasons for people who are dependent on seafood resources to support MPAs.

However, the establishment of a marine protected area invokes three questions: (1) where, (2) how big, and (3) what activities will be permited or proscribed. It makes the most sense to establish the MPA where the aquatic habitat is most propitious for the endangered species; but that is of course exactly where the harvesters have been targeting their efforts and in proximity to which they have located their onshore facilities. The science of MPAs is very young and inexact, and there is a tendency to create large MPAs so as to increase the likelihood that they

will be successful. Some activities (e.g., snorkeling) have minimal impact on the endangered species and can be permited in the MPAs; other activities with more negative impact (e.g., set hooks, small traps) can be permited in small amounts. The decisions about location, size, and activities obviously require a delicate balance of science and politics. Not surprisingly, people who depend on seafood resources want to participate effectively in decisions about marine protected areas that will affect them, and they want to be convinced that the proposed protected area is necessary, will be effective, and will not unduly impair their subsistence and livelihood. So far, no marine protected area has been established without significant contestation and controversy, either before the fact and/or after the fact.

The seafood sovereignty issue, then, is that the establishment of marine protected areas may deprive local fishers and consumers of access to the seafood resources on which they depend without their democratic participation. A current example of this contestation concerns the fisheries of western Scotland. Near the end of 2012, the Scottish Government submitted proposals to the EU for Europe's largest marine area of nature conservation in five Special Areas of Conservation west of Scotland. One of the proposed Special Areas met with the support of the local fish harvesters. "Stanton Bank shows us that it is possible to negotiate an arrangement that delivers protection for habitat features whilst at the same time safeguarding the fishing industry's access to critically important fishing grounds" (NFFO 2013). However the chairman of the National Federation of Fishermen's Organizations said "We are determined that this will not be some kind of marine highland clearance, with fishermen callously evicted from their traditional fishing grounds" (NFFO 2013). A similar controversy is currently ongoing in Australia (Taylor 2013). Tony Abbott, a very popular politician, said ""We do not want to lock up our oceans . . . We won't make decisions that damage the lives and livelihoods of people without talking to people first".

Frankenfish and SuperSalmon

Seafood sovereignty concerns also pertain to an issue that has been prominent with respect to terrestrial plants and animals – genetically modified organisms. While more than 35 species of genetically modified fish have been produced in the laboratory, none has been approved by any national government for release into the wild and for human consumption. From the perspective of seafood sovereignty, the issue is very similar to the issue with introduced species: despite the precautions and best intentions, the introduced species will escape its containment and breed with the native species, and the transgenes it carries with then introgress into the genome of the local fish stock. When this happens the local fish stock would then have the characteristics controlled by the transgene (taste, texture, nutrition), which might not be to the liking of the local people. In addition, people who eat local fish by necessity

or choice and who do not want to eat genetically modified fish would no longer have that option. The concern for genetic diffusion is linked to the concern that fish with the modified genome would out-compete the native species either sexually and/or physiologically, and that individuals without the transgene would become a small remnant in the total population.

Currently the U.S. Food and Drug Administration is considering a petition to permit the release into the wild, and the human consumption, of AquAdvantage, a variant of the Atlantic salmon that has been genetically modified both to grow faster and to grow to a larger size. The current petition by the firm AquaBounty proposes only to release individuals that are not capable of reproducing and to release them only to producers who will raise them in enclosed inland tanks (Dimond 2013). The environmental assessment of the proposed salmon concluded that "the salmon is safe to eat and poses no serious environmental hazard" (Dennis 2012), but the FDA has not yet made a decision. Although the commitments of AquaBounty would seem to deal with some of the seafood sovereignty issues, and some retailers have said that they will not carry the transgenic fish, the concern is that the quicker growing modified variety would be less expensive than the non-modified varieties and would out-compete the non-modified varieties in food service and retail distribution. If that happened, the final consumers would have their seafood sovereignty diminished.

Habitat Destruction

A global issue for seafood sovereignty is habitat destruction – the intentional or unintentional alteration of the habitat on which seafood species depend, in ways that diminish or eliminate its suitability for seafood production. This may happen from events at local scales, or from decisions at regional scales, or from global scale processes of environmental change. But in all cases the negative impacts of the habitat changes are borne by local people who were relying on the seafood for subsistence and livelihood.

One set of examples that have occurred at many locations around the world concerns the conversion of coastal swamps and estuaries to tourist and recreational and residential uses. Above it was noted that in areas of Asia and Latin America it was common to convert mangrove swamps to aquaculture ponds. Mangrove swamps are perhaps paradigmatic of the ecosystem services provided by coastal biomes. Not only do they provide protection against storm waves and tsunamis, and a high level of carbon sequestration, they also provide breeding and nursery habitat for fish and shellfish. Fishers in the towns and villages near or adjoining the mangrove swamps are able to harvest the adults that were nurtured in the swamps. Unfortunately mangrove swamps are generally located on sites that have very high potential value for coastal residences and coastal tourism facilities. Because coastal swamps and estuaries are often

either public property or common property, it is relatively easy for investors to gain control of the property and convert it to uses that do not benefit seafood production. (Developers argue that the residents and clients in the developed facilities will purchase fish and thus increase the livelihoods of the local fishers; but if there is no fish production, there are no fish for the local fishers to harvest.) In Mexico this type of reallocation has happened especially on both sides of the Gulf of California/Mar de Cortés (Aburto-Oropeza et al. 2008), and on the Caribbean coast (UNEP 2007), most notably Xel-Ha and Xcaret.

The reallocation of a resource away from the support of the fisheries to the benefit of other interests also happens at the regional level. One set of examples that are currently occuring in various locations around the world concerns the allocation of river water among different uses – hydropower, agricultural irrigation, and fisheries production. This threat to seafood sovereignty arises when a dam is constructed on a river where fish populations depend on flowing freshwater for part or all of their lives; the construction of the dam stops the flow in the impoundment area behind the dam, and limits the flow below the dam to only the amount that is released. One species that is especially affected by the damming of rivers is the salmon; because they are anadromous, they need to swim upstream to breed, and the young fish need to come back downstream to the ocean for the bulk of their adult lives. Because the need of the salmon to migrate has been well recognized, dams have been built with fish ladders to allow the salmon to migrate upstream, and diversion screens to keep the young fish out of the hydropower turbines as they move downstream. In recent years the seafood sovereignty issue that has arisen concerns the allocation of the water that the dam has impounded. Particularly in the rivers of the west coast of North America, the hydropower operators have made commitments to supply a certain amount of electricity to the regional electric companies, farmers have come to depend on a certain amount of water for irrigation of their crops, and Native American groups depend on the flow of the river to support the migration of the salmon on which they rely for subsistence and livelihood. When there is plenty of precipitation in all four seasons of the year, there is enough water for all these uses; but when there is diminished rainfall and snowfall, as there has been for the past several years, there is not enough water to meet all these demands, and difficult allocation decisions have to be made. To date most of the decisions have maintained the seafood sovereignty of the Native American groups, partly because their rights of access to the fisheries are embedded in treaty agreements with the U.S. government, but politics is always an emergent process. Similar concerns for seafood sovereignty apply to groups in China and South Asia and Africa and Latin America where large dams are currently being developed.

The environmental threats to the ecological resources that support a local fishery may also come from long distances away and be dispersed on a global scale. Aquatic pollution caused by

these distant sources may negatively impact the reproduction and growth of the seafood species directly, or it may negatively affect the health of the humans who consume the fish. Although an environmental threat that impacts the physiological health of the seafood species would appear to be a definite possibility, I have not been able to identify any examples where microbial or toxicant contamination significantly negatively impacted the fish/shellfish population before it significantly impacted the health of the people who were eating the fish. This may be because of the tendency to blame declines in seafood populations on overfishing rather than on pollution. Certainly there are many instances (e.g., Atlantic bay scallops) where the environmental hazard (in this case, nutrient runoff causing eutrophication) made the historic habitat unsuitable for the seafood species.

One region where an environmental threat to seafood sovereignty involves human health and is currently occuring is the Great Lakes of North America. To highlight just two aspects of the problem, first, in the 1960s and 1970s polychlorinated biphenyls (PCBs) were discharged into the Lakes by factories located on the shores. The PCBs were fat soluble and bioaccumulated in the fatty tissues of the fish species in the Lakes. PCBs are a probable human carcinogen; they also cause developmental and reproductive problems, disruption of hormonal regulation, and immume and thyroid problems. When it was realized that the PCBs were bioaccumulating in the fish and were a significant human health hazard, their disposal into the Lakes was stopped; but PCBs are a highly persistent chemical, so the residues in the Lakes are still significant. At the same time, the combustion of hydrocarbons and other manufacturing processes were releasing mercury into the atmosphere, whence it was being deposited in the Lakes, where aquatic biota would methylate the elemental mercury. The methylmercury was then ingested by fish and deposited in muscle tissue where it continued to accumulate during the lifetime of the fish; humans then ingested the mercury when they ate the fish. Whereas most residents of the Great Lakes region consume only small amounts of fish from the Great Lakes, some groups in the region rely heavily on fish in their diets; these include low income households in urban and rural areas, and perhaps especially Native American groups in the region who, like the Native Americans in the Northwest, have treaty rights to the fisheries. Thus the safety of the food of the Native Americans and the other high consumption groups in the region was being jeopardized by pollution from distant sources of which they were totally unaware and over which they had no control.

A similar risk to seafood sovereignty occurs on an even larger scale with respect to mercury in tuna in the South Pacific. For the past two decades there has been an ongoing controversy over whether the consumption is a benefit or a hazard to human health, especially the health of fetuses and young children. In this paper I will not try either to summarize, or to suggest a conclusion for, that controversy. Here I merely wish to highlight that while that controversy has

raged in the global North, the substance of the controversy is perhaps even more pertinent to the native peoples of the South Pacific who regularly both harvest and consume tuna. The issue here is analogous to the issue for the Native Americans around the Great Lakes. The mercury is being transported from the industrial cities of Asia, deposited in the South Pacific, methylated by the aquatic biota, and bioaccumulated in the tuna that is traditionally one of the major foods of the peoples of the South Pacific (Blum et al. 2013; Greenberg 2010).

In the preceding discussion I have emphasized the long distance and global aspects of the environmental threats to seafood sovereignty. But I would want to make clear that in many cases the hazard is a very local one that nevertheless raises the sovereignty and justice issues of an uninformed and unconsented harm. Certainly the classic case of this type was the ingestion of mercury in the 1950s by the people living around Minamata Bay in Japan; the mercury was deposited in the Bay in effluent from a factory on the shore, methylated by the aquatic biota, ingested and bioaccumulated by the fish in the Bay, and consumed by the local people as they had for centuries, but now with severe and widespread teratogenic impacts. Similar situations currently affect Native American groups in Northern Canada, Australia, Russia and China; generally the sources are mining, industrial and agricultural activities.

Exploitation for Exportation

Another type of threat to food sovereignty comes from the ability of a fully globalized fishery system to identify opportunities to harvest aquatic resources in one part of the world and sell those resources in another part of the world for a significant profit. In some cases, as with the Patagonian toothfish, the resource is being harvested by local fishers for subsistence and livelihood, and the resource is simply appropriated by the foreign harvesters and dealers. In other cases, the aquatic resources that is targeted for exploitation for export is part of the forage base on which the seafood consumed by the local people depends. In either case, the local people find themselves without access to the seafood that they had been eating, as a result of decisions in which they had no part.

A classic example of such an appropriation concerned the anchoveta off the coast of Peru. Because upwelling and currents along the west coast of South America in normal climatic conditions bring a large amount of nutrient to the waters off Peru, the area has historically supported a large anchovy population. Historically the anchovy were seen as a forage base for seabirds that nested along the Peruvian coast, depositing large amounts of guano that was collected and sold very profitably for fertilizer for Peruvian agriculture. In the years around 1950, the Peruvian government adopted a policy of export led development, the sardine fishery off California collapsed, and the demand in the U.S. for pork and poultry greatly increased. The

combination of those three factors led to the establishment and rapid growth of anchovy harvesting and processing for fish meal. While the tremendous growth of anchovy exportation had a severe impact on the guano industry, it also impacted the availability of other piscivorous fish and shellfish that had been relying on the anchoveta as a forage fish.

Many similar examples exist with respect to harvesting forage fish like sardines to manufacture fish meal for aquacultural production of large fish. Most of the adult life of a salmon is spent cruising the oceans looking for small fish to eat and avoiding sharks. Even though small fish have some tendency to school, it still requires time and energy to find them. Aquaculture industrializes the production process by keeping the salmon in one location and bringing the forage fish to the salmon in the form of fish meal (Greenberg 2010). On a dry weight basis, in aquaculture it takes between two and four kilograms of fish meal to produce on pound of harvested salmon. Other than Peru, fishmeal comes mostly from fisheries in the U.S., Japan, northern Europe and Japan (Pauly and Watson 2009). It is not clear in what ways and to what extent, if any, the harvesting of forage fish for fishmeal is creating issues of seafood sovereignty for local people in those countries.

Along with fishmeal, another prominent example of the appropriation of local stocks of forage fish and shellfish for non-local purposes is the harvesting of forage species for the production of fish oil which is high in omega-3 fatty acids. The fish oil is used both in aquaculture feed and in nutritional supplements for human consumption. Fish such as menhaden and shellfish such as krill ingest smaller phytoplankton and zooplankton that naturally produce oils that have high levels of compounds like omega-3 fatty acids. Although the interpretation of the situation is contested, there is some evidence that the harvesting of menhaden in the Chesapeake Bay has led to reduced populations of striped bass, bluefish, blue crabs and summer flounder, which historically were consumed and marketed by watermen living on the Bay (Warner 1977). An area of special concern in this regard is the harvest of krill in the waters surrounding Antarctica; both the Russian and the Norwegian fleets have processing operations there, and the South Korean, Japanese and Polish fleets are active there. Although there are suggestions that the high level of krill harvest is negatively impacting the local populations of whales, seals and penguins, there is no discussion of potential impacts on the seafood species in the Southern Ocean.

Supporting Seafood Sovereignty

In much of our study of food sovereignty, we assume a state of sovereignty to be the norm, both descriptively and normatively. Perhaps harking back to some golden age, we assume that up until some not too distant point in time (1) people had access to a sufficient supply of the

foods that were customary for them, and (2) people were able to exercise control over that supply. Particularly with respect to seafood sovereignty, at least some of the people living in coastal areas could expect to harvest the seafood that historically had been the practice for their location, and all of the people living in that location and its adjacent hinterland could expect to consume that seafood, and at least some of the people (both harvesters and others) could expect to process and market that seafood in various ways. In some places, to some extent and in some ways, that situation still obtains.

But even where the prevalence of seafood sovereignty is challenged, there are efforts to institutionalize some aspects of that sovereignty. The International Covenant on Economic, Social and Cultural Rights, which mandates the realization of the right to adequate food, has 160 signatory nations, and in 106 countries the right to food is embodied in constitutional or other legally binding commitments (Knuth 2011). For people whose historical and traditional diet includes seafood, the right to food would seem to imply the right to seafood.

The counterpart of the right to food is the right to produce food. As noted above, most fisheries have been regarded either as common property or as public (state) property. While there has been a tendency for common property regimes to decline (Acheson and McCay), in many cases they have transitioned, more or less smoothly, into co-management regimes. At the same time, state (public) fisheries regimes have come to be seen as too much open to influence by a variety of political-economic interests. In this situation, there has been a tendency to move toward rights-based systems, often within state ownership. Such a situation was described above for Japan, and exists *inter alia* in New Zealand, the U.S., Denmark, and the Netherlands (FAO 2000). These rights based systems may or may not involve species, location, gear, season, quota, transferability, and heritability, among other things. Although these arrangements are highly contested, both for populist-democratic and oligopsonistic reasons, they seem in general to be working fairly well.

Seafood Sovereignty Activism

It is clear from all of the material above that in recent decades there have been many challenges to and violations of seafood sovereignty. These challenges and violations have not stimulated the volume of response that has been generated by issues of food sovereignty in general. Google reports 720,000 items for “food sovereignty” (there are 74 for “seafood sovereignty”), Google Scholar reports 516 articles with the term in the title, and the New York Times mentioned the term in 35 articles during the past decade.

But some organizations do exist that either explicitly or implicitly address seafood sovereignty. One is the International Collective in Support of Fishworkers (ICSF), "an international non-governmental organization that works towards the establishment of equitable, gender-just, self-reliant and sustainable fisheries, particularly in the small-scale, artisanal sector" (ICSF 2013). As their name implies, their mission is to advocate for the interests of all fishworkers (including processors and marketers) with special attention to the small-scale artisanal sectors. Based in India and Belgium, they publish a daily general newsletter and a monthly newsletter on gender and fisheries, and they represent the interests of fishworkers in various international meetings and fora.

An organization that supports seafood sovereignty implicitly in its work is the Mangrove Action Project. Their "main goal is to promote the rights of traditional and indigenous coastal peoples, including fishers and farmers, to sustainably manage their coastal environs" (MAP n.d.). Because of the intimate connections between mangrove swamps and fisheries described above, all of the Project's work to benefit mangroves is also a benefit to the fisheries.

A third type of seafood sovereignty activism is the proliferation of organizations that recommend or warrant specific types or brands of seafood as "sustainably produced". While these organizations generally focus solely on environmental sustainability, to the extent that their claims are accurate, they do provide food service managers and final consumers with a partial food sovereignty that comes from the ability to make more informed choices about seafood. At the same time, as Constance and Bonanno have argued, they often operate in ways that diminish the sovereignty of the harvesters and aquaculturists. The most prominent example of a fisheries standards organization is the Marine Stewardship Council. Although its internal operations are only marginally open and participatory, its standards for certification require that a fishery be managed by "a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge" and that the management system "be appropriate to the cultural context, scale and intensity of the fishery" and "observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood" (MSC 2010). As always, one needs to investigate the extent to which and the ways in which these standards are implemented in the certification process.

Conclusion

As I noted at the beginning of the paper, seafood sovereignty can encompass many diverse topics; in this paper I attempted to outline those topics that seemed to me to provide an overview of the core of the issue. I did not include the harvesting of whales and other

cetaceans and mammals in the paper, because it is too complex and fraught a topic to cover effectively in the space of a page; in my view a good place to start on the topic is Blok (2007). I also did not include the issue of abusive labor practices, such as taking people from one country to work on fish farms or fishing boats in another country. In many cases these are young fishers or younger members of fishing households, so in a sense their right to fish with their own family in their own community has been abridged by their enslavement in another country.

I would have liked to have been able to push the concepts of appropriation and substitution (Goodman and Redclift 1997) a little bit farther. I did mention in the section on offshore fisheries that the European fishing fleet was harvesting the fish from the West African and North African waters for marketing and consumption in Europe. I did not mention above that the reason the supertrawler Tasman Abel applied to fish in the Australian national waters was to harvest fish to be sold in West Africa. One wonders who would then try to identify a species to harvest and import to Australia.

Finally, I have not mentioned anthropogenic global climate change; in the contest for seafood sovereignty, climate change is likely to be a game changer. Within a relatively few years several South Pacific nation-states will be totally submerged; what then becomes of the seafood sovereignty of the nations, and of their peoples? Already climate change has shifted some of the eastern Atlantic fish stocks northward, and there is political conflict between the European Union, versus Iceland and the Faroe Islands, over the right to harvest the fish stocks that have shifted across national territorial boundaries.

Despite these omissions, the paper does illustrate the ways in which issues of seafood sovereignty, both with respect to production and marketing and with respect to consumption, play out at individual, community, regional and national scales. The tendency of the globalized seafood system will certainly be to continue to challenge and constrain seafood sovereignty in the interest of the greater accumulation of wealth that comes from the ability to move money, labor and resources around the world. Nevertheless the efforts to institutionalize the right to food and the right to fish, and to foster activism and advocacy for seafood sovereignty, offer some hope that a better world is possible. At the moment there is a significant amount of conflict among the certifying organizations, as different sectors of the fishery see their interests benefited or harmed by different approaches to certification. And there is little collaboration between the certifying organizations and the other seafood sovereignty advocacy organizations. So the story of seafood sovereignty is still very much is process with many chapters remaining to be written.

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Food Sovereignty: A Critical Dialogue

INTERNATIONAL CONFERENCE
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http://www.yale.edu/agrarianstudies/foodsovereignty/index.html

FOOD SOVEREIGNTY: A CRITICAL DIALOGUE INTERNATIONAL CONFERENCE PAPER SERIES

A fundamentally contested concept, food sovereignty has — as a political project and campaign, an alternative, a social movement, and an analytical framework — barged into global agrarian discourse over the last two decades. Since then, it has inspired and mobilized diverse publics: workers, scholars and public intellectuals, farmers and peasant movements, NGOs and human rights activists in the North and global South. The term has become a challenging subject for social science research, and has been interpreted and reinterpreted in a variety of ways by various groups and individuals. Indeed, it is a concept that is broadly defined as the right of peoples to democratically control or determine the shape of their food system, and to produce sufficient and healthy food in culturally appropriate and ecologically sustainable ways in and near their territory. As such it spans issues such as food politics, agroecology, land reform, biofuels, genetically modified organisms (GMOs), urban gardening, the patenting of life forms, labor migration, the feeding of volatile cities, ecological sustainability, and subsistence rights.

Sponsored by the Program in Agrarian Studies at Yale University and the Journal of Peasant Studies, and co-organized by Food First, Initiatives in Critical Agrarian Studies (ICAS) and the International Institute of Social Studies (ISS) in The Hague, as well as the Amsterdam-based Transnational Institute (TNI), the conference "Food Sovereignty: A Critical Dialogue" will be held at Yale University on September 14–15, 2013. The event will bring together leading scholars and political activists who are advocates of and sympathetic to the idea of food sovereignty, as well as those who are skeptical to the concept of food sovereignty to foster a critical and productive dialogue on the issue. The purpose of the meeting is to examine what food sovereignty might mean, how it might be variously construed, and what policies (e.g. of land use, commodity policy, and food subsidies) it implies. Moreover, such a dialogue aims at exploring whether the subject of food sovereignty has an "intellectual future" in critical agrarian studies and, if so, on what terms.

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