One Hundred Years of the Geopolitics of Seafood

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Introduction

Seafood occupies a space in the geopolitics of food and agriculture that is both very diverse and very significant. Seafood includes the variety of animals (fish, shellfish, sharks, mammals) and plants (kelp, seaweed) that are harvested for human and animal feed from the fresh and marine surface waters of the earth. Seafood is harvested by individuals for household subsistence, by small scale low power outfits for barter and trade, and by large scale industrial operations for domestic commerce and international trade. Seafood is both harvested in wild nature, and farmed or ranched on land and in protected bays and in more open lake and ocean areas. The harvesting of seafood is governed variously by treaty rights, provinces and nation-states, and international agreements concerning the high seas.

In 2011 fish and seafood totaled 157 million metric tonnes (MMT), of which 130 MMT entered the human food chain and 23 MMT was destined for animal feed. The human portion constituted 19 kilograms per person for the year. Approximately 40 percent of that total production entered into international trade. China is both the largest exporter and the largest importer. Peru, Norway and Thailand are the other three largest exporters; the USA, Japan and Germany are the other three largest importers. In 2011, world trade in seafood was approximately 250 billion dollars (U.S.), or slightly less than one percent of total world trade.

The geopolitics of seafood are driven by several dialectical tensions. On the one hand, seafood is viewed as being increasingly important for human health and nutrition. Seafood is viewed as being healthier for humans than meat. Seen as the bounty of the lakes and seas of the world, the harvesting of seafood is viewed as being less harmful to the biophysical environment than the production of meat. On the other hand, as a result of efforts to harvest more seafood to supply upscaling tastes and a growing population, many fisheries around the world are depleted or endangered. This has stimulated national and international efforts to make the production of seafood more sustainable. Efforts to accomplish this goal have included both various forms of regulation, and various forms of aquaculture. But some of the forms of regulation have been challenged as being socially and economically inequitable, and some of the forms of aquaculture have been challenged as being environmentally and socioeconomically unsustainable.

At the same time, fisheries play an important role in national and international political economics. For labor, seafood is an important source of protein in lower class diets, a marker of socioeconomic status in middle class diets, and an item for conspicuous consumption in upper class diets, as well as a source of employment for two percent of the world's labor force. For capital, seafood is a vehicle for the accumulation of wealth, from the inputs to the harvesting, from the harvesting and the processing, from the national and international commerce, and from

retail and restaurant sales. For nation-states, seafood is a way to ensure the wellbeing and satisfaction of the domestic population, and a way to earn foreign exchange.

Looking back on the past 100 years, we can see the ways in which these dialectical tensions have played out in the seafood sector. The next section of the paper begins this examination with the age of empires when seafood was one of the motivating factors of the imperial project but the available technologies of harvesting, transportation, and preservation limited the imperial scope. The following section analyzes the ways in which the impact of the Thirty Years Crisis (TYC) on the geopolitics of seafood was conditioned by changes in harvesting and preservation technology. The fourth section of the paper examines the geopolitics of seafood in the bipolar world of the postwar period. A brief period called "The American Decades" at the end of the 20th century is characterized both by the dominance of neoliberalism and consistent efforts for sustainable management of fisheries. The sixth section of the paper analyzes the geopolitics of seafood in a multipolar world, and the final section of the paper speculates wildly on what the global seafood system will look like in the future.

Prelude – The Imperial Period

Although Joannès and Nevill note that empires were common forms of geopolitical organization over 3000 years ago, Aldrich locates the age of empires from the late 15th century to the late 20th century. The discussion in this paper will follow Aldrich. The concept of "empire" marks a distinction from an earlier (but still continuing) pattern of expansion. Bearing in mind that we are considering contexts where neither the sociopolitical formation (e.g., nation-state) nor the geographical boundaries (e.g., the Great Wall) of societies were very clearly defined, a society could increase its resources by conquering and annexing adjoining territory and people. If one can envision a continuum with simple expansion at one end and global empire at the other end, then one can see that over the past 5000 years, in all parts of the world, it became gradually more common to have "geographically extensive collectivities of polities and ethnies united and ruled by a central authority".

This paper will focus on the imperial activities of the European nations including Russia, and Japan, during the past 500 years. One of the aspects that is distinctive about this set of imperial activities is the emphasis on colonization, the establishment of a demographic, economic, and administrative presence throughout the territory of the empire. In this respect there was some difference among the imperial powers. The English, the Spanish and the Portuguese were more likely to establish colonies with settlers from the home country; other European imperial countries and Japan were more likely to establish trading centers (entrepôts) and rely on intermediaries.

The imperial project was motivated by an increasing imbalance between resources domestically available on the one hand, and population and consumption on the other, and seafood was an important component of the attempt to restore that balance. Indeed the imperial project was to some extent stimulated by fishing activities of the colonial powers even before the age of empires. Boats were coming from Scandinavia to the east coast of Canada in the 1200s and 1300s, and English boats were harvesting cod off the eastern coast of North America in the

1300s and 1400s. During the same period Russian fishing ships were operating off the western coast of North America. In time temporary short-term shelters became more permanent settlements.

It is easy to see how exploration and exploitation and empirialization were intertwined. As explorers like Columbus and da Gama and Bering and Magellan moved around the world during the Age of Discovery, they encountered what appeared to them and their chroniclers to be amazing amounts of resources like fish and furs and wood. The stories of these available resources that reached the home countries then instigated both financial investment and human engagement in colonization. This can be seen perhaps most paradigmatically with the Spanish and the Portuguese. Explorers and fishers from those societies moved gradually during the decades along the coast of northwest Africa and eventually to the rich fishing areas off southwest Africa. Encouraged by the explorations and discoveries, they gradually shifted their efforts across the Atlantic to southern North America, Central America, South America and the Caribbean. Seafood was only one of the resources that they tapped to send back to Europe, but it was a significant component of the flow.

At the same time, the significance of seafood in the overall imperial project was limited by the available technologies of preservation and transportation. In the 1600s and 1700s, the trip across the Atlantic Ocean took several weeks. The clipper ships could reduce that somewhat, but not enough to make it possible to move fresh fish from the fishing grounds (e.g., the Grand Banks) to the European ports. Fish preservation for a trip that long was some combination of salting and drying. For example, the cod species that were widely sought would be beheaded and gutted and packed in barrels with salt and water on board the fishing ship at sea, or beheaded and gutted and hung on racks to dry in the sun if the ship was fishing out of a port. Although steam driven propellers are available by the end of the 19th century, the journey from the most productive sites to European ports was still a matter of several days, the cost of the necessary amount of ice was high, and returning to port after only one or two days of fishing would make the seafood prohibitively expensive.

Act One – The Thirty Years Crisis (TYC)

The TYC caused some major changes in the geopolitics of seafood. Naval military activities in the Atlantic Ocean during World War I briefly interrupted the flow of seafood from North, Central and South America and the Caribbean and Africa to western Europe. Although military activities disrupted fishing and trade in the Baltic and North Seas, seafood harvesting and commerce continued relatively uninterrupted in the northern seas and the Arctic Ocean. At the same time, Russia and Japan continued to contest for hegemony over the fisheries of the western Pacific Ocean and southeast Asia, contributing to the political turmoil in China. Naval conflicts among the combatants in the Mediterranean certainly impacted seafood harvesting and trade, as well as the movement of seafood from south Asia via the Suez Canal. The U.S., Canada and Mexico remained secure with their domestic seafood supplies, as did the developing countries in South America.

The end of World War I made possible a series of major changes in the geopolitics of seafood. The cessation of hostilities meant that harvesting and trade in Baltic and North and Mediterranean Seas and the North Atlantic could resume, and that the Suez Canal could again connect the countries of western Europe with their colonies in Asia. As both Russia and Japan were part of the victorious alliance in World War I, they continued their contestation for hegemony in the North Pacific. The agreements concluding the end of the war normalized relationships between, on the one hand, the countries of western Europe and the U.S., and on the other hand their colonies in Central and South America and the Caribbean, Africa, and Asia. This meant that fisheries could be established and exploited along both the west and the east coasts of Africa, along the Arabian Peninsula and the coastal areas of the Arabian Sea and the Bay of Bengal, and in the colonies of southeast Asia.

These changes in territorial control were accompanied by some small beneficial developments in international relations. The optimism that accompanied the signing of the peace accords and the establishment of the League of Nations led to some expectations that territorial security would lead to economic security and accumulation of wealth. The League did facilitate the resolution of some maritime disputes (e.g., the Aland Islands). The establishment of the International Labor Organization began to provide some guarantees of humane treatment of sailors on fishing vessels. Ultimately the optimism faded as economic conflict between nations led to tariffs and quotas that decreased international trade, the burdens and reparations imposed on the countries on the losing side of World War I disrupted recovery and development in those countries, and the more developed countries of the world gradually descended into the Great Depression. With the gradual resumption of territorial aggression as the normal pattern of international relations, the TYC was heading for its climax.

But the period of the TYC was not a total loss from the perspective of the geopolitics of seafood. Although there were no enduring economic or international relations developments from the period, it was a time of significant technological change in preservation and transportation. Mechanical refrigeration technology was developed in the middle of the 19th century, and was initially used to produce ice from unpolluted water for breweries and food shippers. In time the technology was used to freeze meat, and in 1881 a sailing ship was outfited with a compression refrigeration unit to keep frozen meat cold for a voyage from New Zealand to Great Britain.

From the freezing and shipment of lamb literally half-way around the world, it was a fairly direct path to the freezing and shipment of fish. The higher moisture content and the differences in cell structure made it somewhat more difficult to accomplish high quality in frozen seafood, but these difficulties were solved by the development of quick freezing by Clarence Birdseye in the early 1920s. Both Birdseye and the technologies he developed were adopted by the General Foods Corporation in the northeastern U.S. Initially this increased the harvesting of redfish via trawling in the waters off New England; freezing made it possible to market the increased supply in the midwestern U.S. by renaming it “ocean perch”. Further development and implementation of the technology was slowed by the Depression and the Second World War, but by the early 1950s the freezers had been relocated to the trawlers and the factory ship had been created.

The period of the TYC is also a time of improvements in harvesting technology. In general, seafood is harvested commercially using either nets or traps or hooks. The traps may themselves

be made of netting or other materials. For commercial fishing, hooks are attached at intervals on long lines which are then put into the water. In general, nets may be stationary so that fish swim into them and get caught; or nets may be manipulated to enclose a large quantity of fish, either in the open water or on a beach; or a net may be shaped into a bag, called a trawl, and pulled through the water. Whereas in the 1700s and early 1800s, it was a ship's speed that enabled it to bring a harvest quickly to market, beginning in the late 1800s and continuing up to the present time, it has been the mechanical power of the ship that enables it to pull a large trawl in deep water or to pull a long line or gill net from deep water. The capabilities to produce both large ocean-going ships and powerful steam and diesel engines existed in only a few western European and North American ports.

Not only did ships become more powerful, but nets and ropes became stronger and more durable. During the period of the TYC, natural fibers (cotton, linen, sisal) were gradually replaced with synthetic fibers, especially nylon. Before the shift, ropes and nets could be produced from fibers from plants that the imperial project had distributed widely around the globe. After the shift, only countries with the chemical industries to convert petrochemicals into synthetic fibers.

While the Great Depression slowed the pace of economic and technological change, the military activities leading up to the Second World War and the War itself shifted the focus of national economies to armaments and military equipment. The fact that the War was fought in both the Atlantic and the Pacific greatly constrained fishery activities on the open ocean. Nevertheless seafood arose phoenixlike from the ashes of World War Two. Developments in naval technology made possible ships that were both faster and more powerful. Developments in aviation technology made possible air transport that was not exorbitantly costly. These developments created the conditions that made it possible for the fisheries to take off in Act Two.

Act Two – The Bipolar World

The 35 years of the Bipolar World was a period both of global unity and of separation between nations. Despite the structural dominance of the split into "East" and "West", international relations did not degenerate into the engulfing destruction of World War I. Despite the destruction in, and the burdens that were imposed upon, the nations that were defeated in World War II, national and international economies did not descend into an engulfing depression like the 1930s. Despite the diplomatic (and occasionally military) hostilities of the Cold War, both poles of the bipolar world cooperated and even collaborated at the United Nations and the other Bretton Woods organizations -- the World Bank, the International Monetary Fund.

The dualism of conflict and cooperation played out in the seafood sector in several ways. First, as noted above, part of the motivation for the imperial project was the recognition that the coastal seafood populations of western Europe and northern and eastern Russia had been severely overfished. The bipolar world provided an opportunity for scientists and managers in the Soviet Union, in western Europe, and in North America to collaborate on the development of models for the sustainable management of fisheries. This led to the development of the concepts of

maximum sustainable yield, and economically and socially optimum sustainable yield, which were implemented in the fisheries management of many nations.

International concern for the sustainability of seafood was implemented in the establishment of the International Whaling Commission in 1946, and the International Union for the Conservation of Nature in 1948.[1] At least equally important, between 1956 and 1982, the United Nations convened three conferences on the Law of the Sea. The first of these recognized the importance of the continental shelf for coastal countries, and adopted a Convention on Fishing and Conservation of the Living Resources of the High Seas that imposed on all signatory nations, both coastal and noncoastal, the obligation to cooperate in the sustainability of fishing activities. The signatories were mostly nations aligned with the Western bloc. The second conference did not reach any agreements and was dominated by disagreements between the East and the West. The third conference changed the historical concept of territorial waters (three nautical miles or the distance of a cannon shot) to 12 miles, and added the concepts of exclusive economic zone (out to 200 miles) and continental shelf (potentially out to 350 miles). The Convention was ratified by countries in both the Eastern and Western blocs (although not the U.S.), and by many of the nonaligned developing countries because it gave them control over the resources in their exclusive economic zones.

The extensive agreement on cooperation and collaboration made it possible for the more developed countries in the Eastern and Western blocs to implement contemporary technologies more fully in their national fisheries and to foster the expansion of fishing fleets around the globe, both on the high seas and in the waters of the developing countries. The Soviet Union helped China develop its fishing fleet, and the U.S. helped Taiwan develop its fishing fleet. Then the three Asian countries and Japan harvested both their domestic fisheries and the fisheries of the developing countries of southeast Asia. The U.S. was more active in the fisheries of the south Pacific, along with Australia and New Zealand.

All the coastal nations of western Europe now had control over the fisheries in their exclusive economic zones. Some nations, especially Spain and Portugal and France, negotiated agreements with some of the coastal countries of North Africa and West Africa for access to the fisheries of their exclusive economic zones. The U.K. negotiates access to the extensive shrimp fisheries off southern India.

While the Soviet Union was engaged in the Cuban fisheries, Mexican and U.S. fishers compete for shrimp in the Gulf of Mexico, and for tuna in the western Atlantic and the eastern Pacific oceans. Although the U.S. negotiates access to the seafood resources of many Latin American countries, Peru autochthonously develops an extensive fishery for anchoveta. This paradigmatic example of export led development stimulated the growth of the economies of Peruvian coastal cities, and provided a massive supply of fish meal to the growing poultry industry of the U.S.

Although the Cold War drove much of the geopolitical dynamics of the seafood sector in the third quarter of the 20th century, the dynamics were also more complex than that. By 1980 Russia and China were more competitors than they are partners, and the same was true of the

[1] The International Maritime Organization was also established in 1948, providing certain protections to fishing vessels along with other vessels.

European Union and the U.S. The international consensus on sustainable fisheries led to the formation of many regional fisheries management organizations for specific species (e.g., tuna, salmon). At the same time, the lack of conservation by some nations led to the importance of international environmental organizations like Greenpeace and the World Wide Fund for Wildlife.

Entr'acte – "The American Decades"

By the early 1980s the Bipolar World was in the process of dissolution. China had become economically and diplomatically independent of the Soviet Union, which itself was about to dissolve into nation-states seeking their own interests. The long "Vietnam War" (1945-1972) was over, and Vietnam was developing globally competitive fisheries along a market model. Although the European Union attempted to develop a Common Fisheries Policy, this effort was hampered both by different seafood interests within the Union, and the fact that several of the major European seafood countries are not part of the Union. Several decades of development aid from both the West and the East resulted in increasingly competitive fisheries in many coastal (and some inland) developing countries.

In this situation, the most coherent and powerful actor was the U.S., and the roughly two decades between the mid 1970s and the mid 1990s constitute a period when the U.S. was arguably the dominant world power. Thus it is important to examine how that dominance affected the geopolitics of seafood.

As noted above, the geopolitics of seafood result from a combination of social, economic, and political forces, playing out in a biophysical environment that is itself in part produced by those forces. With respect to seafood, the interests of the nation-state may include subsistence and sustenance for some or all of the population, employment and livelihood for some of the population, the accumulation of wealth by state or private enterprises linked to the nation, the maintenance of balance of payments and the generation of foreign exchange, and the popular legitimacy that comes from ensuring those things.

But nation-states are not the only powerful actors influencing the geopolitics of seafood. Generally speaking, currently the other structures and organizations that are nationally and globally powerful are either economic or civil society.[2] In the structuralist perspective, the economic system (e.g., capitalism, socialism) seeks the implementation of public policies that benefit the interests of the system, especially the accumulation of wealth. For example, because capitalism benefits from quiescent labor, capitalist societies are likely to enact policies that provide inexpensive seafood for the working class and affordable seafood for the middle class. On the other hand, the individual capitalist actor (firm, corporation) will likely seek policies that benefit that specificaccumulaitonist interest. For example, restaurants and food distributors favor unrestricted access to supplies of low cost seafood from around the globe, whereas seafood harvesters and producers favor policies that constrain the importation of low cost seafood.

[2] In some societies and in some locales, faith-based and military structures and organizations are very powerful.

The other group of powerful actors influencing the geopolitics of seafood is civil society. With the increase of environmentalism during the 1950s and 1960s, especially in the West, non-government organizations became powerful actors in national and international arenas. Organizations that focused specifically on environmentally sustainable fisheries included the World Wide Fund for Wildlife, Oceana, Greenpeace, and Sea Shepherd. In addition, organizations such as Fairtrade International focused on equity in commercial transactions, and other organizations focused on equity in labor relations.

This period was marked by the dominance of neoliberal policies in the U.S. and western Europe and in international agencies (e.g., the World Bank, the International Monetary Fund). These policies implied the loss of power on the part of labor, and the shift of power away from the state and to markets. But the period was also marked by the negotiation of the major international agreement on access to fisheries noted above (UNCLOS -- the United Nations Convention On the Law of the Sea), and the beginnings of international agreements on fishing technologies on the high seas (e.g., drift nets) and on the regulation of fishing (illegal/unregistered/unlicensed boats).

The combination of these two tendencies (neoliberalism and internationalism) produced several interesting developments. Perhaps the most notable was the formation of the Marine Stewardship Council. As noted above, the Grand Banks off eastern North America had been supplying cod to European and North American societies since the 1600s, but by the 1980s and 1990s, that fishery too had collapsed. The fact that such a collapse could happen despite the available scientific knowledge and the existing national and international governance stimulated WWF and Unilever (one of the largest processors and marketers of seafood internationally) to establish an organization that could communicate to processors and marketers and consumers whether or not a seafood came from a fishery that was being managed sustainably. MSC established standards for sustainability, and mechanisms for certifying that a fishery was sustainably managed. When so certified, the seafood could be sold with the MSC logo. In the spirit of neoliberalism, the organization sought to solve the problem of overfishing with a solution that was market based. At the same time, it was a solution that was very much based in the global North, and was criticized for the lack of participation and inclusion of Southern perspectives and interests.

It is also possible to see how the dynamics of legitimation, accumulation, conservation, neoliberalism and internationalism play out as the geopolitics of particular species. In addition to cod that has already been mentioned, another good example is tuna. Tunas are found in the tropical areas of the Atlantic and the Pacific, and in the Mediterranean. Initially the production of tuna utilized the canning technology that had existed since the late 1800s. Processing was centered both on Fiji and on American Samoa. Both the harvesting fleet and the processing facilities were owned by U.S. corporations. The canned tuna was marketed to lower income consumers in North America and Oceana.

In some area of the Pacific, harvesters look for dolphins because they tend to swim above schools of tuna. When a purse seine is closed around the tuna, it can entrap the dolphins also. In 1972 the U.S. passed the Marine Mammal Protection Act, which directed the Department of Commerce to ensure that marine mammals were conserved during the production of goods sold

in the U.S. Although the regulations were gradually implemented in the U.S. domestic fishery, the fleets of other countries were slower to comply. The U.S. regulations have been challenged before the World Trade Organization, and a case brought by Mexico is still in process.

While most tuna consumed in the U.S. was canned, fresh tuna was always highly desired in Japan. As sushi and tuna loins became more popular in the U.S., pressure on the tuna stocks rapidly increased. Especially as the stocks of bluefin tuna declined, it became a luxury item in Japan.

During these decades U.S. firms led in the development of seafood technologies; capture methods like purse seines and trawling become more powerful, and onboard processing becomes more effective. Perhaps most distinctive is the development and expansion of aquaculture. Aquaculture can be done in inland ponds, in areas of both marine and freshwater coasts, and in the open waters of sheltered bays and islands. As part of its aid to less developed countries, the U.S. supported the development of aquaculture, especially in Central America and Southeast Asia. Generally this was for shrimp or fish like tilapia that could be marketed to middle class consumers at affordable prices. Although aquaculture production increased rapidly, it often displaced traditional coastal residents and diminished the ecosystem services that had been provided by the coastal ecosystems.

Act Three – The Multipolar World

By the mid-1990s had become highly globalized – large quantities of Nile perch were exported from East Africa to Europe and North America; farmed salmon were exported from northern and western Europe and South America to the U.S. and China; tuna was exported from southern Europe and the Mediterranean to China and North America; and various shellfish were exported from Australia to northern Asia and the U.S. Both the exporting nations and the importing nations included a mixture of both more developed countries and less developed countries.

But within the globalization some geopolitical interests continued and some new geopolitical interests developed. The past two decades have seen increasing confrontation over fisheries between China and Japan in the North Pacific, between Russia and other countries in the Black Sea, and between Russia and Canada and the U.S. in the Arctic. Russia is seeking to expand its North Pacific fisheries beyond sustainable limits. The African coastal states are insisting on renegotiating terms of access for European and Chinese fishing fleets.

In this global context, some nations do develop certain specializations. Most large powerful harvesting and factory vessels come from western Europe. The strongest and most durable fishing gear comes from countries with major chemical industries – Germany, the U.S., China. Crab is largely produced by the U.S., Russia and Norway. Some nations (e.g., Panama, Liberia) specialize in the registration of fishing vessels. Some nations (e.g., Senegal) specialize in giving harvesting concessions to other countries. A figure that visualized the trading and harvesting relationships would indeed be very complex.

In addition to the competition and the specialization, these developments and confrontations take place in a strongly internationalist context structured by the World Trade Organization, UNCLOS, and other fisheries agreements. In addition to the agreements on the Highly Migratory Species and the Use of Driftnets on the High Seas already noted), recently attention has been directed toward illegal, unregistered and unreported harvesting – harvesting conducted in violation of national or international regulations, by unregistered vessels, outside the purview of national or international record-keeping systems. Because these harvesting activities are seen as inimical to the interests of the dominant seafood powers – the U.S., the E.U., Russia, Norway, Japan, Australia and New Zealand – recently an agreement was reached that signatory nations would deny access to any IUU seafood.

An important aspect of the increasing globalization and complexity of seafood is aquaculture. Since the 1950s, fish farming has been seen as an important component of the blue revolution that would increase the supply of protein for human consumption. As noted above, aquaculture varies in its spatial intensity from fish ranching on the high seas to net pens covering less than 500 square meters holding roughly 10,000 fish. While countries like Norway and Scotland viewed aquaculture as a way of responding to the decline of wild caught salmon, China viewed aquaculture as a way of increasing the supply of fresh seafood to the domestic market, and countries like Chile viewed aquaculture as a way to develop a seafood export sector. Currently the amount of seafood produced by wild harvest and the amount produced by aquaculture are roughly equal.

The past two decades have also seen the financing of seafood become more global and more external. Much of the investment in salmon fish farming in Chile was Norwegian money. For example, the fisheries holding company China Fishery Group has large investments in the fisheries of Namibia, Russia, and Peru. In 1912, IntraFish published a directory of 50 banks, private equity firms, and mergers/acquisitions firms that specialize in seafood investments. As noted, the financing is coming both from the more developed countries and from economic elites in the less developed countries, and it is going to seafood sectors in both more developed and less developed countries. The financing is being used to purchase major interests in all stages of the seafood sector, from inputs to harvesting and aquaculture, to processing, to seafood restaurants.

Focusing on salmon enables one to see in more detail the geopolitics of seafood in the multipolar world. As recently as 150 years ago, salmon was only found in the North Atlantic and the North Pacific. Russian boats harvested salmon in Alaska, and salmon was a local mainstay in western and eastern Canada and Norway. The abundance of salmon was the basis for the development of canneries in Alaska and British Columbia, whence the canned salmon was exported to Europe. Currently the wild harvest of salmon is roughly one-third of its historical maximum in the mid 1970s; Finland and Ireland are the two countries with the largest catches, accounting for about one-third of the global total.

Like tuna, salmon has been a fish consumed by lower income groups in canned form, and by middle and upper income groups in fresh form. In recent years, salmon has been viewed as a healthy source of fish oil. The increasing size of middle income groups and the changing tastes of upper income groups created a large potential market for salmon, at the same time that the

wild harvest was declining by about two percent per year on average. The opportunities for wealth accumulation offered by this potential market were the basis for the rapid development of aquaculture, which is now roughly equal to the wild catch. The top six producers are Norway, Chile, the U.K., Canada, the Faroe Islands, and Australia. Russia, Brasil, the U.S., France, Germany and Japan are the top importing countries.

Salmon especially implicates the multipolar geopolitics of indigenous groups. In Canada, the U.S., Siberia and Mongolia, salmon traditionally were an important food of the indigenous people; although salmon were introduced to New Zealand they became an important food of the Maori people. As treaties have been negotiated with those indigenous groups, in many cases provision is made for continued access to the salmon. The co-existence of wild and farmed salmon implicates geopolitics in another way. In western Canada, the farmed salmon are Atlantic salmon, but the wild salmon are Pacific Salmon. The U.S. does not allow salmon farming in Alaska or the West Coast. Because major escapes from fish farms are common, local salmon fishers are very concerned that the escapees will interbreed with the native stock, and that the escapees will transmit diseases to the native stock.

Finale – The Future

Given the various dynamics influencing the geopolitics of seafood described above, one could reasonably expect that the future of fishing geopolitics is far from certain but will certainly be interesting. One might start with the expectation that the future will probably not repeat the TYC. The various international agreements described above will probably avert a return to national policies that exploit the seafood resources of other countries in order to benefit one's own country. As noted, although IUU fishing benefits many of the economic interests of the nations where the seafood is consumed (generally more developed countries) and harms the interests of the nations where the seafood is harvested (generally less developed countries that do not have the resources to police their territorial waters), the more developed countries have taken the lead on developing programs to enforce bans on IUU vessels and seafood. Similarly, although piracy of harvested seafood is becoming more common in the waters of less developed countries, efforts are being developed to counter those activities, especially by targeting nations that are viewed as providing havens for the pirates.

International conflicts will more likely concern individual outfits fishing in the waters of neighboring countries, or the environmental impacts of one country's aquaculture on the fisheries of neighboring countries. International conflicts do come into play when a country importing seafood refuses entry to products that have allegedly been produced using employment practices that violate labor human rights (e.g., slavery in Thailand) or using substances in aquaculture that endanger the health of consumers (e.g., antibiotics in shrimp aquaculture in India) or harvesting techniques that cause negative environmental impacts (e.g., the failure of Mexican shrimp trawls to protect turtles).

Geopolitical conflicts concerning seafood in future years will more likely be within countries than between countries. As countries grant concessions to other countries to harvest seafood in offshore waters, those activities diminish the inshore fisheries that are exploited by the domestic

harvesters. Because fisheries like salmon rely on regular supplies of temperate non-polluted waters, the fisheries come into conflict with alternative interests like farming that want to use the water for irrigation, and mining that want to use the water for waste disposal. And the conflicts already noted between aquaculture and wild caught fisheries play out within nations as well as between them.

The geopolitics of seafood will continue to be driven in part by (1) the political economies of nation states at different levels of development, and by (2) the accumulationist imperatives of large transnational producing, processing, marketing and financing corporations. But these dynamics are now joined by (3) a global movement for sustainable production and consumption, and (4) local movements for seafood sovereignty. Fisheries are mostly associated with food, either directly (for human consumption) or indirectly (e.g., for poultry and aquaculture feed). Despite its luxury manifestations (caviar, bluefin tuna), the function of fish and seafood is largely (5) to provide upscale diets for the emerging and expanding middle class in the BRICS and other developing countries, and healthier diets for consumers in Europe and North America. The interaction of these five dynamics will determine the geopolitics of seafood in the decades ahead.

These five dynamics can be expected to play out in at least a couple ways. First, although small-scale and intermediate scale harvesting will continue to be important, especially in inshore areas and less developed countries, the accumulationist imperatives of transnational corporations will push the development of more powerful technology. Already there are trawlers that are so powerful that a single vessel can harvest the entire total allowable catch of a particular species in a short period of time. In 2010 Australia refused to allow one of these supertrawlers to have access to its territorial waters. But nothing could keep the vessel from harvesting in areas beyond national jurisdiction. With respect to aquaculture, a variety of salmon has been genetically engineered that will reach harvest weight in 1.5 years; this is twice as fast as the selectively bred salmon that are currently used in aquaculture, and four times as fast as wild salmon. It is proposed to raise these salmon in large net pens in the open ocean, to avoid issues concerning environmental impacts. But the genetic issues from escapes would still exist. As another example concerning aquaculture, the restaurant chain Red Lobster planned to farm lobsters in coastal Indonesia for sale in Europe and North America. And as a further illustration of the globalization of the geopolitics of seafood, the North American Grains Council is currently developing a project to ship distillers' dried grains from ethanol production to Vietnam for aquaculture feed, replacing anchoveta from Peru.

Second, assuming that the next Great Depression is still some decades away, accumulationist imperatives will continue to drive consolidation and financialization. Most of the major brands of canned tuna are being brought together within one company based in Thailand. A large part of salmon farming in Chile is owned by the company that owns a large part of the salmon farming in Norway and Canada. Seafood restaurant chains like Red Lobster and Long John Silver are owned by diversified financial firms.

The sixth dynamic that may somewhat alter how the other five dynamics play out is anthropogenic global climate change (AGCC). Both in itself and through its impact on the El Nino Southern Oscillation, AGCC will push subtropical and low temperate species farther toward the high temperate latitude waters. In many cases, this will shift a fish stock from the

territorial waters of one nation to those of another nation. AGCC is also making the seafood of the Arctic Ocean more accessible, leading to competition among the riparian countries. Although marine species of seafood can move poleward in response to AGCC, many freshwater species do not have that possibility. The climate will probably change more rapidly than freshwater species can adapt in situ, so either the local populations will die out or efforts at relocation will be necessary. It has been suggested that even a continuation of the current drought could eliminate the populations of salmon on the west coast of the U.S.

Two hundred years ago commentators focused on the geopolitics of cod. One hundred years ago the international fish was tuna, and 50 years ago it was salmon. Today and in the years to come, the international seafood will be the shrimp. As noted , shrimp have been both the motor of economic development for less developed countries like India and Honduras and Vietnam, and at the same time the engine of destruction of coastal mangrove swamps and the ecosystem services they were providing. The consumption of shrimp provides a marker of socioeconomic status for the middle classes in more developed and less developed countries, and variants like giant prawns provide status markers for upper class consumers.

But, as noted above, shrimp entails a number of geopolitical conflicts. These entail environmental issues, as when the U.S. attempts to force Mexico to require Mexican trawlers to have turtle excluder devices that meet U.S. standards. The conflicts entail human health, as when the U.K. bans shrimp from India because it has residues of disallowed antibiotics. The conflicts entail human rights, as when the E.U. bans shrimp from Thailand because the Thai government does not crack down on Thai firms bringing slaves from Kampuchea. The international organization, the Marine Stewardship Council, that provides certification of sustainability for specific seafood products, was forced to withdraw certification from Thai shrimp.

Like tuna and salmon, the production of shrimp in many countries is dominated by one transnational corporation that was originally based in Thailand, and the marketing of shrimp is dominated by the Red Lobster restaurant chain that was originally based in the U.S. but is now worldwide. The supply of feed for shrimp farms is coming to be dominated by transnational firms like Cargill.

But, shrimp production is fragile. Shrimp are susceptible to several viruses that spread rapidly in the high densities of shrimp ponds. Once present, the virus becomes endemic in the substrate of the pond, so it is difficult to use the pond again, at least for several years. For various reasons, the viruses move readily among adjacent ponds. During the latter part of the 20th century, it was possible to see the viral diseases sequentially devastate shrimp aquaculture in Japan, Taiwan, and the Philippines. And, shrimp are very sensitive to temperature; the optimal temperature for shrimp growth is 28 degrees Celsius. AGCC will make it very difficult for a shrimp farm to maintain that temperature in the tropical areas where most are currently located without a large input of energy. At the same time, AGCC will make it possible for shrimp aquaculture to move up the coasts of East Asia and western North America.

Thus shrimp provide a more detailed illustration of the geopolitics of seafood in the years ahead. Both in coastal areas and in continental interiors, political, economic and social issues concerning fisheries will be salient matters for local people.

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