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# DRIFTNET FISHING IN THE NORTH PACIFIC ENVIRONMENTAL AND FOREIGN POLICY DIMENSIONS

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*The development states of Japan, South Korea, and Taiwan have steadily pursued technological advancement to improve the material well-being of their people. Their hyper-efficient squid and tuna harvesting technology of driftnet fishing has, however, met an unforeseen obstacle in the form of environmental concern. Elaine Chang provides the context for the international community's confrontation of the oceanic threat of driftnet fishing.*

Far off the western shores of North America a relatively new fishing technique known as driftnetting is being used extensively to catch squid and albacore tuna.<sup>1</sup> This North Pacific fishery, involving huge fleets of Japanese, Taiwanese, and South Korean vessels, had a market value of between \$800 million and \$1.6 billion in 1988.<sup>2</sup> As the size and value of this fishery has grown over the past dozen years, so has the related controversy.

Increasingly, driftnetting issues are becoming foreign policy issues, raising questions of national sovereignty and trade relationships, and even drawing the attention of international organizations such as the United Nations General Assembly. As a resource management problem, North Pacific driftnetting concerns not only Japan, Taiwan, and South Korea, but also the United States, Canada, and the former Soviet Union. United States and Canadian governments, fishing interests, and environmentalists have united in their opposition to driftnetting, which is considered an unregulated, indiscriminate, and ecologically harmful industry.

Cited among the concerns related to driftnetting are the incidental catch of nontarget species such as marine mammals and birds, wasteful discarding of less valuable fish species, pollution and navigational hazards in the form of discarded nets, possible overfishing, and the deliberate and accidental interception of North American salmon by Asian driftnet fishermen. The policy stakes

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1. For the purposes of this paper, "driftnetting," when not otherwise noted, will refer to the large scale, high seas operation in the northeast Pacific Ocean.

2. Bruce Obee, "Strip Mining the Sea," *Canadian Geographic* (February/March 1990): 61.

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are higher than they may first appear because the issue goes beyond fisheries to touch upon bilateral trade relationships, claims of jurisdiction and enforcement authority on the high seas, and the conservation and responsible management of resources beyond any area of national jurisdiction.

### The Driftnet Industry

Of all modern industrial fishing techniques one of the most efficient is gillnetting, which uses a stationary net that snares the gill plates and other parts of fish that swim into it. Gillnetting is the oldest industrial method of catching salmon in the North Pacific, dating back to the mid-nineteenth century,<sup>3</sup> but is currently used to catch such fish as herring, mullet, perch, shad, sardine, anchovy, mackerel, tuna, and trout.

In the mid-1970s, the gillnet fishery expanded to the high seas areas of the North Pacific; this move necessitated the use of much larger gill nets that could either be anchored or left to float freely with the currents. Known as drift nets, these nets operate on the same principle as their small-scale inshore counterparts: a passive panel of monofilament or multifilament plastic mesh is suspended vertically in the water with floats at the top and weights at the bottom that can be adjusted to suspend the net at different depths. Lights and radio signals attached to buoys on the free-floating drift nets enable fishing boats to locate and retrieve their catch at a later time. The mesh size varies according to the target species and the nets are, in all cases, acoustically undetectable, invisible under water, non-biodegradable, and practically unbreakable. The modern driftnet industry uses free-floating nets up to thirty-five miles long, made of fifty-yard segments called *tans* that are stitched together in three-mile sections.

Economically, driftnetting is a very attractive technology. Pelagic drift nets can be operated from a variety of vessel types, and changing between gear systems or changing target species does not require major refitting. A fairly high proportion of driftnet vessels, particularly in the Taiwanese fleet, are old, converted vessels from other fisheries.<sup>4</sup> Another advantage is that by allowing fish to entangle themselves by their own movements, no power is required during actual fishing, unlike active techniques such as trolling, dragging, seining, sweeping, and trawling—a tremendous benefit in an age of rising fuel costs. Driftnetting technique involves teams of boats deploying their nets at dusk in an east-west direction in parallel lines about a mile and a half apart; they are then hauled in at dawn. Nets are set in the early evening to take advantage of the movement of fish and squid at nightfall, when they rise to the surface to feed on the plant plankton.<sup>5</sup>

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3. *Ibid.*

4. Food and Agriculture Organization (FAO) of the United Nations, "Report of the Expert Consultation on Large-Scale Pelagic Driftnet Fishing," *FAO Fisheries Report No. 434* (Rome: FAO, April 1990), 7.

5. Todd Campbell, "The Snag with Drift Netting," *Seattle Times*, 6 January 1991, 15.

There are two North Pacific high seas driftnet fisheries: the tuna fishery, which uses large-mesh nets, and the squid fishery, which uses small-mesh nets. Large-mesh driftnet fishing originated in 1905 with a bluefin tuna fishery in Japanese coastal waters. In 1973, the fishery expanded offshore and began targeting a new species, the striped marlin. During the late 1970s and early 1980s, the driftnet fleet continued to expand its operations eastward into the central and eastern North Pacific, with fishing efforts correspondingly shifting toward albacore tuna. Today, albacore is the major target of the large-mesh driftnet fishery, which concentrates its efforts in the North Pacific Transition Zone from the coastal waters of Japan to the waters northeast of Hawaii.<sup>6</sup> Taiwan has also developed a large-mesh driftnet albacore fishery.

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The small-mesh squid driftnet fishery is by far the largest fishery in the North Pacific. Beginning with only a handful of boats in the mid-1970s, it grew to about 700 vessels fishing nearly one million miles of net a year by 1983.<sup>7</sup> By 1988, this effort had doubled to roughly two million miles of net per year; presently, more than 1,000 driftnet vessels work in the North Pacific.<sup>8</sup> The annual catch of flying squid has reached 200,000 to 300,000 metric tons per year, valued at \$500-600 million.<sup>9</sup> This explosive growth was partially a response to a decline in the *Todarodes* squid stock in the coastal waters of northwest Pacific Rim countries, compounded by a high demand for squid in the Asian markets.<sup>10</sup> At approximately the same time, the United States established an *exclusive economic zone* extending 200 miles from its shores, displacing hundreds of Japanese salmon-fishing vessels from the directed salmon fishery in the North Pacific. These fishermen soon discovered that they could capture large numbers of flying squid using salmon mesh nets. Flying squid's large size and its predictable rise to surface waters at night made this new fishery lucrative.<sup>11</sup> Forced by falling

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6. *Ibid.*, 34.

7. David Benton, "Alaska and the Fisheries of the North Pacific & Bering Sea," *Alaska's Wildlife* (July/August 1990): 17.

8. *Ibid.*

9. Steven Pennoyer, "The High Seas Driftnet Fisheries of the North Pacific Ocean," *Alaska's Wildlife* (July/August 1990): 33.

10. FAO, 12.

11. Steve Ignell, "The North Pacific—Common Ground for Flying Squid, Salmonids, and Squid Driftnet Fishermen," *Alaska's Wildlife* (July/August 1990): 27.

prices to find other profitable opportunities, tuna longline vessels soon joined the former salmon-fishing vessels in the high seas.<sup>12</sup> Finally, fuel price increases made traditional energy-intensive fishing techniques less economical than driftnetting.

Of the three driftnetting nations, Japan is by far the most prominent in several respects. It possesses the largest number of pelagic driftnet vessels (463 small-mesh squid driftnet vessels and 459 large-mesh tuna driftnet vessels in 1988<sup>13</sup>), harvests the largest quantity of North Pacific squid of any nation (157,772 metric tons in 1988<sup>14</sup>), and has been the most vocal in the defense of this technology. Japanese fishing interests are represented abroad by a powerful lobbying group—the Japan Fisheries Association. Domestically, there appears to be little, if any, opposition to the Japanese driftnet industry; Greenpeace, an international environmental organization that has worked to end pelagic driftnetting, concedes that a mere 300 of its two million members worldwide are Japanese.<sup>15</sup>

Taiwan, with 179 vessels in 1990<sup>16</sup>, and South Korea, with 154 vessels in 1988<sup>17</sup>, have followed Japan's lead in most aspects of the driftnet controversy. Many Taiwanese and Korean vessels are relatively old, converted Japanese tuna longliners.<sup>18</sup> According to the United Nations Food and Agriculture Organization, the South Korean fleet caught 101,000 metric tons of squid in 1988, nearly two-thirds the volume of the Japanese take that year. The reason the South Koreans are able to catch that amount with only one-third the number of boats is their extended fishing season. While the Japanese driftnet for squid from June through December, the South Koreans operate practically year-round.<sup>19</sup>

The most disparate collection of parties involved in the driftnet issue can be found in the United States. Normally antagonistic groups such as environmentalists, commercial fishermen, fish processors, Native Americans, and sport fishermen have managed to unite in an anti-driftnet coalition. As a result, the United States has taken the lead in campaigning against the Asian driftnet industry, with a growing number of elected officials embracing the driftnet issue as one of their primary concerns at the state (especially West Coast states) and federal levels. The United States is home to most of the environmental organizations that are actively opposing driftnetting in the North Pacific.

Within this coalition opposed to driftnetting, US commercial fishermen have the most at stake financially. Tuna fishermen, based in Hawaii and the West Coast states, operate a trolling fleet for albacore in the North Pacific. The Hawaii and West Coast-based trawling fleets compete with Japanese driftnet vessels for

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12. Pennoyer, 32.

13. FAO, Appendix H.

14. *Ibid.*

15. Campbell, 19.

16. Oregon Department of Fish and Wildlife, "A Summary of Oregon's Position and Recent Actions," (May 1990), 4.

17. FAO, Appendix J.

18. Report of the Secretary of Commerce to the Congress of the United States on the Nature, Extent, and Effects of Driftnet Fishing in Waters of the North Pacific Ocean Pursuant to Section 4005 of Public Law 100-220, *Driftnet Impact Monitoring, Assessment, and Control Act of 1987*, 18.

19. FAO, 7.

albacore migrating eastward in the North Pacific Transition Zone. During the 1970s about 2,000 US vessels fished for albacore; in recent years the number has dwindled to about 200 trollers.<sup>20</sup> Still, the landed value of the catch of North Pacific albacore by US vessels is estimated at about \$15-20 million annually.<sup>21</sup>

By far the most important fin fishery for the United States is the salmon industry. In the mid-1980s, salmon represented about 16 percent by landed value of the total US commercial catch delivered to US ports and more than half the \$1 billion earned annually by US fishery exports.<sup>22</sup> Salmon hold great historical, economic, and cultural significance for some Native American tribes in the United States. The economic benefit from salmon fishing is concentrated in Alaska and the Pacific Northwest, as is the greatest opposition to Asian driftnetting.

In Canada, the province most affected by North Pacific driftnetting is British Columbia. Although the provincial fishing industry employs only about 1.5 percent of the total labor force in British Columbia, its main focus is on a very valuable commercial species: salmon.<sup>23</sup> The province is troubled by driftnetting not only because of the direct impact on commercial and sports fishing; the province has also foregone economic development opportunities such as hydroelectric development and logging in order to maintain the integrity of its salmon stocks.<sup>24</sup> As in the United States, the other major interest groups in Canada concerned about the effect of pelagic driftnetting on salmon of Canadian origin are the recreational fishing industry, environmentalists, and the native peoples of British Columbia.<sup>25</sup>

The former Soviet Union, too, has shown increasing concern since Taiwan and South Korea began driftnetting. It now wants to join the other North Pacific salmon-producing nations in a protective organization. Japan has paid the Soviet Union an annual fee for fish caught by Japanese fishermen in Soviet waters; in 1989, that amounted to about \$27 million.

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20. *Ibid.*, 44.

21. *Ibid.*, 48.

22. Mark J. Navarre, "The Policy of the Pacific Salmon Resource: The United States and Canada," (Paper submitted to Professors William Burke and Edward Miles, Ocean Policy and Resources Seminar, University of Washington School of Law, June 1986), 14.

23. Navarre, 10.

24. British Columbia Ministry of Agriculture and Fisheries, "The British Columbia Position," (Presented at North Pacific Driftnet Conference, Vancouver, British Columbia, 17-19 July 1989), 58.

25. Canada did not oppose driftnetting at the outset. In the early 1980s, the government authorized an experimental squid driftnet fishery conducted jointly by a small number of Japanese and Canadian vessels, with the objective of determining squid fishery potential in the newly established Canadian Exclusive Economic Zone. In 49 days the Canadian experiment netted 639 salmonids, 44 marine mammals, and 42 seabirds. In November 1987 Canada closed down this fishery and announced a "moratorium on the use of high seas squid driftnets inside the Canadian 200-mile zone for the foreseeable future" due to the high catch of marine mammals. Douglas M. Johnston, "The Driftnetting Problem in the Pacific Ocean: Legal Considerations and Diplomatic Options," *Ocean Development and International Law*, Vol. 21 (1990): 32. Also R.J. Beamish et al., "A Preliminary Summary of the Impact of the Squid Driftnet Fishery on Salmon, Marine Mammals, and other Marine Animals," (Canada: Department of Fisheries and Oceans, August 1989), 81.

## Consequences of Driftnetting

### *Salmon*

There is direct and indirect evidence that salmon are incidentally harvested in the high seas driftnet fishery. Salmon in the North Pacific originate in either North America or Asia. Most Asian salmon are from Siberian rivers, although one species (*Oncorhynchus masu*) occurs only in Japan and along the nearby mainland of Asia.<sup>26</sup> The vast majority of salmon in waters east of 175° W longitude are believed to be of North American origin.<sup>27</sup> There are five species of Pacific salmon that originate in North America, and all are anadromous, meaning that they spawn in fresh water, migrate to the ocean for the better part of their life cycle, then return to the rivers and streams of their origin to renew the cycle.<sup>28</sup>

Pacific salmon generally prefer cooler waters (35°-53° F) than squid (59°-75° F); therefore it was widely believed that their habitats did not overlap. The northern boundary for Japanese and Taiwanese squid driftnetters moves northward by two degrees per month from June to October in order to follow the squid as they migrate northward with warm currents. (It retreats two degrees south from October to December).<sup>29</sup> By setting the northernmost boundary at 46° N latitude, it was hoped that the squid driftnetting operation would remain safely within the North Pacific Transition Zone, and the salmon would stay farther north in the area known as the Subarctic Domain. However, according to recent research, squid can be found in water as cool as 50° F in the fall. Moreover, since the mid-1970s, "anomalously cold surface water has persisted to a varying degree in the central North Pacific Ocean."<sup>30</sup> Taken together, these facts show that salmon and squid habitats may overlap.

US fishermen point to the declining numbers of spawning salmon to support their claim that Asian driftnetters are catching salmon of US origin. From 1987 to 1988, the estimated number of Alaskan salmon that returned to spawn dropped from 135 million to 90 million.<sup>31</sup> Concern over this trend led to the formation in September 1988 of an anti-driftnet fishermen's lobby in Alaska called the Southeast Alaska Coalition Opposed to Pirated Salmon (SEACOPS). SEACOPS claims that 30,000 metric tons or more of North American fish are intercepted annually by driftnetters.<sup>32</sup> In addition, the group cites widespread reports by both commercial and sports fishermen of fish they have caught showing bruises and lacerations caused by drift nets.<sup>33</sup>

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26. Report of the Secretary of Commerce, 81.

27. *Ibid.*, 90.

28. Navarre, 4.

29. Scott McCredie, "Controversy Travels with Asian Squid Driftnet Fleet," *National Fisherman* (November 1989): 17.

30. Report of the Secretary of Commerce, 89.

31. Obee, 63.

32. Mark Tennant, "SEACOPS transcript," (Presented at North Pacific Driftnets Conference, Vancouver, British Columbia, 17-19 July 1989), 53.

33. *Ibid.*, 54.

It is difficult to say what proportion of intercepted salmon is caught accidentally by driftnetters within the legal boundaries of the squid fishery. What complicates the picture is that there is also a growing body of direct evidence of deliberate salmon interception by driftnet vessels fishing north of the boundaries, resulting in sizable illegal harvests of Pacific salmon. Consequently, the controversy over salmon interception is no longer confined to the potential impact of squid driftnetters that adhere to current time and area restrictions.

The National Marine Fisheries Service (NMFS) and the US Coast Guard have primary responsibility for monitoring driftnetting and enforcing time and area regulations. In 1988, US enforcement vessels and planes counted ninety-three driftnet fishing boats operating outside their legal boundaries.<sup>34</sup> A series of undercover investigations by NMFS and Canadian fisheries officers resulted in the arrests of twenty-two individuals involved in illegal fish brokering and the confiscation of more than 52 million pounds of salmon.<sup>35</sup>

The most dramatic "sting" operation targeting Taiwanese salmon poachers was Operation Sure in 1989. With White House approval, NMFS enforcement officials used undercover agents, telephone bugs, a long-range submarine-tracking C-130 aircraft, a 112-meter Coast Guard cutter, and \$1.5 million in "bait" money to apprehend an illegal salmon driftnetting operation. Following a high-speed, 4,300-kilometer chase through international waters, four Taiwanese salmon dealers were arrested and 110 metric tons of salmon confiscated.<sup>36</sup>

Driftnet opponents agree that most of the blame for deliberate illegal salmon fishing should be directed against Taiwan. According to Clem Tillion, chairman of the INPFC, "Eighty percent of the North American [salmon] intercepts have been made by 114 Taiwanese boats licensed for squid out of Taipei that never catch squid, that have never even been seen on the squid grounds."<sup>37</sup> These Taiwanese vessels deliberately sail north of the squid fishing boundary to catch salmon of North American origin. The fish are then "laundered:" processed in Asian countries that do not produce their own fish, such as Thailand and Hong Kong, and sold through "neutral" Asian ports such as Singapore. The illicit salmon is sold at about 50 percent of the US export price for salmon.<sup>38</sup> An estimated 15 percent of the European salmon market and 20 percent of the Australian market now consists of laundered salmon caught by Asian squid driftnet vessels.<sup>39</sup> This takes place in spite of a ban on the export of salmon by the Taiwanese government.<sup>40</sup>

In spite of a Japanese government prohibition on the import of salmon from Taiwan, Japan remains a prime market for driftnetted salmon. Laundered fish arrive in boxes marked "Product of the U.S." or carry bogus certificates of origin from Chile, Holland, Canada, or France.<sup>41</sup> In August 1986, NMFS officials seized

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34. Obee, 65.

35. Tennant, 55.

36. Mark Hume, "Inside Operation Sure," *Vancouver Sun*, 7 April 1990.

37. McCredie, 17.

38. Miles, 67.

39. Obee, 63.

40. Miles, 67.

a shipment of 595,000 pounds of salmon bound from Taiwan to Japan via the United States. Since Japanese customs would have seized the shipment had it been accompanied by a Taiwanese bill of lading, the detour from Taiwan to the United States appeared to be part of a laundering scheme.<sup>42</sup>

Some Japanese companies have also actively brokered salmon caught illegally by the Taiwanese. In 1988, the Pacific Seafood Processors Association documented the involvement of one Japanese company, Igari and Company, Ltd., of Tokyo "as the seller of at least one parcel of 400 metric tons of coho, sockeye and chum salmon offered out of Singapore."<sup>43</sup> In January 1989, Canadian and US undercover agents carried out a sting operation in which a Tokyo-based company offered to sell them 24 million pounds of salmon that had been caught illegally by Taiwanese driftnetters. The deal was worth between \$36 million and \$48 million.<sup>44</sup>

Finally, a rather bizarre example of Japanese involvement in deliberate illegal salmon fishing was discovered in May 1990, following the seizure of a fleet of North Korean fishing boats by the Soviet Union in Soviet waters. The vessels, each bearing a North Korean flag, turned out to be Japanese, as were the fishermen on board. Evidently, the fishing fleets of Japan and North Korea—two countries that have no diplomatic relations—had entered into a secret agreement whereby Japanese vessels were painted with the flag of North Korea. Apparently, the catch was to be transferred at sea from the North Korean flagged boats to a Japanese vessel, with the Tokyo fish markets as its final destination. Profits estimated in the tens of millions of dollars would have been divided by the Japanese and North Koreans. The Soviet Union considered the Japanese to be guilty of "malicious poaching" of thousands of tons of salmon that originated in Soviet rivers.<sup>45</sup>

#### *Bycatch of Other Fish Species*

Although the interception of salmon is the issue of greatest importance to North American fishing interests, there is also concern that the high seas squid fleet may be depleting stocks of other species as well. Those which are usually retained are tuna, swordfish, blue marlin, striped marlin, dolphinfish (mahimahi), and yellowtail;<sup>46</sup> those which are not retained include a variety of birds, marine mammals, and turtles. In 1990 a team of seventy-four Canadian, Japanese, and US observers monitoring catches representing 10 percent of Japan's annual driftnet catch documented a catch of 7.9 million squid and a bycatch of 253,490 tuna and billfish, 9,747 salmon and steelhead, 89,568 sharks and rays, 3,634,628 pomfret and other fish, 30,464 seabirds, 2,323 marine mammals, and 35 sea turtles.<sup>47</sup>

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41. Hume, "Inside Operation Sure."

42. Miles, 68.

43. *Ibid.*

44. Campbell, 14.

45. David Sanger, "Tokyo is Squirming Over Soviet Arrests of Pacific Poachers," *The New York Times*, 30 May 1990, A3.

46. Report of the Secretary of Commerce, xiii.

The most common bycatch of driftnets is a food fish called pomfret, which has a market value substantially lower than squid. While data on the amount of pomfret caught is limited because it is usually thrown back into the ocean, the Canadian Department of Fisheries and Oceans estimates that pomfret are caught in about the same quantities as squid. If this is accurate, then about 150 million pomfret—about 300,000 tons—are caught and discarded each year.

The second most common form of bycatch is the blue shark. Together with the salmon shark, blue shark become trapped while feeding on ensnared squid and tuna. Like pomfret, shark carcasses are also thrown overboard, albeit minus their tail and dorsal fins, which are retained for the high price they command in the Asian sharkfin soup market. Data from commercial vessel observers and research vessel surveys indicate that the annual bycatch of blue shark is between 20,000 and 200,000 metric tons.<sup>48</sup> During a 1990 voyage in the North Pacific, observers aboard the Greenpeace ship *Rainbow Warrior* counted one juvenile blue shark for every six skipjack tuna hauled in by a Taiwanese tuna driftnet boat.<sup>49</sup>

#### *Entanglement of Birds, Marine Mammals, and Turtles*

Birds attempting to feed on entangled fish and squid become ensnarled in the nets themselves and usually drown. At least forty species of seabirds inhabit the waters of the North Pacific in the area of the squid driftnet fishery (including two endangered species, the short-tailed albatross and dark-rumped petrel) of which eight species of birds are known to be captured in driftnets: the black-footed albatross, Laysan albatross, flesh-footed shearwater, Buller's shearwater, sooty shearwater, short-tailed shearwater, tufted puffin, and horned puffin.<sup>50</sup> Estimates of the number of birds caught annually range from 400,000 to 750,000, with shearwaters comprising fifty percent to seventy-five percent of that catch.<sup>51</sup> Of those, the sooty shearwater appears to face the greatest danger: the total annual mortality of sooty shearwaters in the squid fishery may comprise up to 4.8 percent of the world population.<sup>52</sup>

Marine mammals are also intercepted by drift nets. These include Dall's porpoises, northern right whale dolphins, Pacific white-sided dolphins, striped dolphins, and common dolphins. The figure of 914 entangled dolphins noted by on-board observers in 1989 appears to be consistent with previous records of marine mammal incidental take by squid driftnetters. During cruises of three squid driftnetters in 1982, 1986, and 1988, sixty-three driftnet sets were observed in which 111 marine mammals were caught. Ninety-three of these were dolphins and the rest were northern fur seals.<sup>53</sup>

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47. Scott Sunde, "Report Details Slaughter From Japan Driftnetters," *Seattle Post Intelligencer*, 22 May 1991, A1.

48. Report of the Secretary of Commerce, 124.

49. Campbell, 20.

50. Report of the Secretary of Commerce, xi.

51. Beamish et al., 20.

52. Report of the Secretary of Commerce, 111.

53. *Ibid.*, 64.

The impact of drift nets on the mortality rates of northern fur seals is a less known but important issue for the United States, as their population was already declining prior to the start of the squid fishery. Since little is known about the distribution and abundance of fur seals in the squid fishing area, and the rate of incidental fur seal catch by driftnets has been higher than expected, the United States is particularly concerned about the impact on the recovery of this species.<sup>54</sup>

At least three species of sea turtles may become entangled in squid drift nets: the green turtle, the loggerhead, and the leatherback. The green and loggerhead turtles are listed as threatened and the leatherback as endangered under the US Endangered Species Act. Albacore trollers have reported seeing dead leatherbacks floating in the ocean wrapped in driftnet, and juvenile loggerheads have also been found entangled in ghost nets. There have been no known cases of green turtle entanglement, although the proximity of their nesting sites to squid fishing grounds makes such a consequence possible in the future.<sup>55</sup>

### *Overfishing*

Another danger posed by driftnet fishing is the prospect of catching more than is optimal. There are indications that both the squid and tuna driftnet fisheries may be depleting their target species. Statistics from Japanese sources indicate that the squid catch per unit effort (kilograms of squid caught per tan of net) fell from 8.5 in 1983 to 4.4 in 1988.<sup>56</sup> This figure is even more alarming when one considers that the catch of squid is almost entirely female.<sup>57</sup> According to the Western Fishboat Owners' Association, the harvest of albacore tuna has also declined steadily since the introduction of the driftnet fleet. From an average annual catch by US vessels of about 30,000 metric tons during the 1970s, it dropped to 4,000 metric tons in 1988<sup>58</sup> and 1,800 metric tons in 1989.<sup>59</sup>

### *Ghost Nets*

Another major concern is the large quantity of lost and discarded drift nets, known as "ghost nets," that end up in the marine environment. Nets become marine debris in two ways: they become lost, often torn loose by storms, or are purposely discarded when they become too damaged to repair. Driftnets in the North Pacific account for about fifty-three percent of the observed marine debris from ships at sea.<sup>60</sup> According to one estimate, the North Pacific driftnet fisheries introduce approximately 500 to 600 (1000 kilometers) of derelict netting into the marine environment each year.<sup>61</sup>

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54. *Ibid.*, ix.

55. *Ibid.*, 117-118.

56. Todd Campbell, "The Driftnet Threat," *Sierra* (March/April 1990): 12.

57. Beamish et al., 21.

58. Tennant, 56.

59. Campbell, 12.

60. Lee Alverson, "Ghost Netting and Plastic Debris," (Presented at North Pacific Driftnet Conference, Vancouver, British Columbia, 17-19 July 1990), 102.

61. Greenpeace, "High Seas Driftnets Fact Sheet" (Fall 1989).

Various organizations have conflicting opinions as to the extent of the potential for damage by ghost nets. Environmental groups claim that lost and discarded nets continue to catch fish forever.<sup>62</sup> Lee Alverson, a natural resources consultant and observer at the North Pacific Driftnet Conference, says that sunken gill nets have been found to fish for three to four years.<sup>63</sup>

Ghost nets may also pose dangers to safe navigation by fouling vessel gear. US albacore trollers frequently complain that their propeller shafts have become entangled in the nets and some have been disabled. Loss of steerage can be deadly in rough seas, and fishermen face grave dangers when forced to dive under their boats to cut the nets free.

### Addressing the Driftnet Issue

The driftnet issue is particularly difficult to resolve because it involves so many uncertainties. There is a dearth of data on the effects of driftnetting on various marine resources of the high seas and a lack of clear-cut international mechanisms to address those effects. What began as a resource management question has given rise to questions about national sovereignty, diplomatic recognition, and international trade.

The lack of data has led one side to argue that driftnetting should continue subject to better scientific data, and the other side to argue that the burden of proof should be on the driftnetters to show they do not damage the marine ecosystem. The UN Food and Agriculture Organization concluded in its 1990 Report of the Expert Consultation on Large Scale Pelagic Driftnet Fishing:

The data available are generally inadequate to make management decisions with confidence...The Consultation believed that it would be unwise to wait for definitive data to become available and that action should be taken on the best available information.

Proponents of driftnetting point out that there is no concrete evidence to support a causal relationship between driftnetting and damage to any stock of marine species. Conservationists, on the other hand, cite this lack of evidence as reason to adopt a precautionary approach to developing fisheries policies for the North Pacific.

The United States, the former Soviet Union, Canada, and Japan are among the countries most involved in fishery research and are thus influential in the formulation of international fishery conservation policy.<sup>64</sup> However, even the combined resources of these nations have not overcome the difficulties of conducting effective ocean research and monitoring. According to Virgil Moore, Fisheries Research Manager for the State of Idaho, 5 percent of the total

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62. McCredie, 19.

63. Alverson, 102.

64. Noted in Johnston, 28.

area occupied by a species must be surveyed to obtain statistically reliable estimates about that species.<sup>65</sup> A computation extrapolating observed bycatch rates to the entire North Pacific fishing area assumes uniform distribution of both fishing effort and non-target species over the entire area of the fishery, when in reality there are large variations in fishing effort and animal abundance.<sup>66</sup>

Thus there are sizeable research gaps when it comes to understanding much of the North Pacific ecosystem. Lack of scientific information gives rise to claims such as that of Alan Macnow, lobbyist for the Japan Fisheries Association. In a letter to Senator Ernest Hollings, chairman of the US Senate Commerce Committee, Macnow wrote:

There is no evidence that driftnet fishing is any more environmentally destructive than any other method of commercial fishing.... Many fishery scientists believe that fishing that removes a full cross-section of marine life in a fishing area is ecologically better than a method that removes only a few selected species.<sup>67</sup>

The United States has made a legislative response to fishery, whaling, and wildlife issues.<sup>68</sup> The three acts most pertinent to high-seas driftnetting are the Magnuson Fisheries Conservation and Management Act, the Fishermen's Protective Act, and the Driftnet Monitoring, Assessment and Control Act. The Magnuson Act established a 197-mile-wide exclusive Fishery Conservation Zone (FCZ) beyond the United States three-mile territorial sea. Within this region, the United States exercises exclusive management authority over most forms of marine and plant life, and foreign governments may only fish within the region if granted a share of the "optimum yield" of any species by the United States. Allocations for foreign fishing fleets are determined on an annual basis, and have included Japan, Taiwan, and South Korea. When determining allocations, the secretaries of commerce and state are required to consider whether such nations have cooperated with the United States in fishery research and other matters the secretaries deem appropriate.

Of the three, only the Driftnet Impact Monitoring, Assessment, and Control Act of 1987 specifically addresses pelagic driftnetting. This Act, sponsored by Alaska Senator Ted Stevens, requires that the Secretary of Commerce, through the Secretary of State and in consultation with the Secretary of the Interior, initiate negotiations with nations operating driftnet fisheries in the North Pacific outside the *exclusive economic zone* and territorial sea of any nation. The Act requires the collection of statistically reliable information on the numbers of US marine resources that have been killed, retrieved, discarded, or lost in

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65. Virgil Moore, "Statement on behalf of State of Idaho," (Presented at North Pacific Driftnets Conference, Vancouver, British Columbia, 17-19 July 1989), 63.

66. Report of Secretary of Commerce, viii.

67. McCredie, 19.

68. Johnston, 33.

these operations. The Act requires that the Secretary of Commerce provide a report to Congress identifying "the nature, extent, and effects of driftnet fishing in waters of the North Pacific Ocean on marine resources of the United States." The Act also requires that the Secretary of Commerce, again through the Secretary of State, request that the governments of driftnetting nations with vessels in the North Pacific provide information including statistics on the number and flag of vessels involved, areas fished, mesh sizes used, number of resources of US origin killed, and seabird mortality.

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Negotiations with the governments of driftnetting nations must also concern entering into agreements on the effective enforcement of laws and regulations applicable to driftnetting. These agreements should include measures for equal cost-sharing, detection of violations, collection and presentation of evidence, and reporting of penalties. If the secretaries of Commerce and State determine that a foreign government failed to enter into and implement such an agreement within eighteen months after enactment of the Act, they may recommend the certification of that nation for conducting fishing operations in a manner that diminishes the effectiveness of an international fishery conservation program. The US president may then prohibit the importation into the United States of the offending nation's fishery products for as long as he deems appropriate, so long as it is consistent with the General Agreements on Tariffs and Trade.<sup>69</sup> Within sixty days following a certification, the president is required to notify Congress of any sanctions to be imposed or the reasons for his actions if he fails to prohibit the importation of fish or if the prohibition does not cover all the fish products of the offending nation.<sup>70</sup>

Under the terms of the Act, bilateral negotiations began in 1988 between the United States and each of the three North Pacific driftnetting nations.<sup>71</sup> By 1990, bilateral driftnet monitoring and enforcement agreements had been reached

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69. Robert Eisenbud, "Problems and Prospects for the Pelagic Drift Net," *Environmental Affairs* Vol. 12, No. 473 (1985): 482-483.

70. *Ibid.*

71. Benton, 18.

with all three. These included restrictions on time, area, and number of vessels, and represented a major step toward international regulation of the driftnet fisheries in several respects:

- it was the first time South Korea had agreed to any time and area restrictions or a limit on the number of vessels in its driftnet fleet;
- vessels from all three countries were required to report their monthly catch and effort;
- the number of observers on board driftnet vessels was increased significantly;
- location-fixing satellite transmitters were required on all vessels by 1990; and
- retention of salmon was expressly prohibited.

Although these agreements were recognized as a major effort to resolve some of the outstanding issues in the driftnet controversy, they were unsatisfying to advocates of a complete ban on all driftnetting.

Any acquiescence by the driftnetting nations to US requests for driftnet monitoring and enforcement programs (including at-sea boarding) raises a host of sensitive questions about national sovereignty, freedom of the high seas, and the right of United States to jurisdiction over marine resources on the high seas. These concerns have been expressed at the highest diplomatic levels and in some cases have impeded efforts to collect data on the North Pacific driftnet fishery.

### *Japan*

There is a growing perception among Japanese that North American frustration over Japanese economic success in other areas has taken the form of "Japan-bashing," with the driftnet industry being an easy target. A Japanese-American environmentalist working on the Greenpeace antidriftnet campaign in Tokyo summed it up this way: "For a long time, the Japanese have seen environmentalists as hysterical Japan-bashers funded by US car companies and the CIA."<sup>72</sup>

There are parallels between the divergence of Japanese and Western attitudes on driftnetting and whaling. In 1971, the United States began calling for a total ban on commercial whaling in response to public concern for endangered whale species. This was achieved in 1982 in the form of a worldwide five-year moratorium on all commercial whaling to take effect by 1988, imposed by the International Whaling Commission. The Japanese, who claim that whaling is a deeply rooted cultural tradition and that whale meat is important to the Japanese diet, saw this as an imposition of the values of the nonwhaling nations. In fact, Ed Miles argues that the US position on whaling has been a major cause of turmoil in the entire United States-Japan fisheries relationship.<sup>73</sup>

Driftnet opponents claim that the United States does not take a tough enough

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72. Michi Mathias (Greenpeace Japan), interview with author, 15 July 1990.

73. Miles, 117.

negotiating stance with Japan due to powerful Japanese economic interests in the United States and US concerns about balance of trade. "The US government is more interested in opening up the cellular telephone market in Tokyo for Motorola than in dealing with environmental issues with these kinds of tragic consequences," complains Sam LaBudde, a biologist with the environmental group Earthtrust.<sup>74</sup> As one example of US weakness, driftnet opponents point to the northern extension of the July and August squid boundaries in the 1989 driftnet agreement reached with Japan pursuant to the Driftnet Monitoring and Control Act. Taiwan, on the other hand, agreed to a stricter set of measures under the threat of trade retaliation by the United States.

Conflict between the United States and Japan over other fisheries has hurt US efforts to set up observer programs aboard squid driftnet vessels. A pilot observer program slated for 1988, for example, was cancelled by the Japanese after the United States refused to grant permits to Japan's salmon fleet for the incidental catch of marine mammals (as required by the Marine Mammal Protection Act).<sup>75</sup>

Another complicating factor is that the penalties imposed by driftnetting countries for violations of driftnet regulations have been lax. For example, in the sting operation described earlier in which a Japanese company tried to sell undercover agents between \$36 million and \$48 million worth of illegally caught salmon, only two arrests were made. One defendant served six months in jail, and the second fled to Japan after posting \$150,000 bail.<sup>76</sup>

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The Japanese fishery management system is embodied in its Fisheries Law, which is based on Japan's traditional system of managing fisheries as well as the needs of motorized trawl fleets introduced after World War II.<sup>77</sup> Fishing activities are controlled primarily through the awarding of fishing rights and fishing licenses. The former applies only to coastal fisheries, but the latter controls access to the fisheries anywhere in the world. Through the licensing system, the Japanese government can theoretically control the entire fishing effort by setting limits on the aggregate gross tonnage of fishing vessels involved in any designated fishery. Gross tonnage is the basis upon which the

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74. McCredie, 19.

75. *Ibid.*, 14.

76. Campbell, 14.

77. Miles, 109.

number of vessels is licensed for particular fisheries.<sup>78</sup>

The Japanese government can also control the pace of fleet reduction when a fishery declines in profitability. However, this is done with the cooperation of the fishermen, some of whom require subsidized, low-interest loans to bear the burden. Japanese fishermen are highly organized and have their own links to the Diet and Ministry of Agriculture, Forestry, and Fisheries.<sup>79</sup>

Japanese fisheries regulations that apply to the high seas driftnet fleet consist primarily of restrictions on the time and location of fishing operations, which are set out in the terms and conditions of the license.<sup>80</sup> In 1981 Japan began limiting the area and season of the squid fishery because of the high catch rates by the growing driftnet fleet, and also to minimize the interception of salmon. These domestic regulations were designed to restrict the fishing to warmer waters where salmon are theoretically not found. Japan's large-mesh tuna driftnet fishery has the same time and area restrictions as its squid fishery.<sup>81</sup>

Although Japanese patrol vessels are capable of operating in mid-ocean regions, they are designed like fishing vessels and consequently cannot conduct boarding operations at sea. Moreover, the Japanese government does not think boarding at sea is either safe or efficient, preferring instead to board, inspect, and seize vessels once they have returned to port. So while the United States continues to pressure the Japanese to implement and enforce a comprehensive set of regulations for the driftnet fishery, including clear penalties for noncompliance, effective surveillance and inspection programs (including at-sea boarding) by Japanese patrol vessels, an adequate observer program, and spot checking of logbooks, the Japanese view enforcement in an entirely different way.<sup>82</sup>

### *Taiwan*

There is a lack of understanding in Taiwan of the concept of state-of-origin rights over anadromous species. The result has been an emotional response to the 1989 United States-Taiwan driftnet agreement in which the United States appears to have taken advantage of its size and power to deprive Taiwan of its rightful catch of high seas fish. Clearly, the United States could do more to explain to the Taiwanese its reasons for US opposition to driftnetting, and this in turn could lead to greater acceptance of regulatory measures.<sup>83</sup>

In 1985, bowing to pressure from the United States over the incidental harvest of salmon, Taiwan adopted domestic regulations for squid driftnetters similar to those of Japan east of 170° E. In waters west of 170° E, fishing was prohibited north of 39° N latitude.<sup>84</sup> Then, under an agreement with the United States

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78. *Ibid.*, 110.

79. *Ibid.*, 112.

80. *Ibid.*

81. Report of the Secretary of Commerce, v.

82. Miles, 113.

83. Wen-ju Gloria Wu, "United States-Republic of China Driftnet Agreement" (Paper submitted to Professor William Burke, Ocean Policy and Research, University of Washington School of Law, 16 March 1990), 36.

84. Report of the Secretary of Commerce, 19.

reached in June 1989, Taiwan was able to extend their squid driftnet time and area restrictions to equal those of the Japanese fleet—as far north as 46° N in September. At the same time, the government established the Taiwan-United States Fishery Cooperation Team, composed of five vice-ministerial officials from the government departments concerned with fisheries. This body passed a resolution calling for:

- a research program on marine resources of the North Pacific and educational efforts on conservation of the marine environment;
- the creation of a Taiwanese Coast Guard to patrol the North Pacific;
- amendments to domestic fishery regulations to increase penalties for violations; and
- a reexamination of Taiwan's driftnet fishery management policy.<sup>85</sup>

In January, 1990, the Taiwanese Coast Guard was formally established. The following month, the government acknowledged that the eventual prohibition of driftnet fishing was inevitable, and that Taiwan would set up a timeline for phasing out the use of this technique.<sup>86</sup>

In Taiwan's 1989 regulatory statutes governing its squid driftnet fleet, the punishment for fishing outside the legal boundaries is a maximum two-year suspension of the boat's fishing permit and the captain's license. For catching and possessing salmon, the punishment is revocation of the boat's fishing permit and the captain's license, plus a 1,000 *yuan* fine (about \$38 US dollars).<sup>87</sup> These penalties are minor compared to the five- to ten-year prison sentences and substantial fines offenders would receive in the United States.<sup>88</sup>

In the August 1989 bilateral driftnet agreement between Taiwan and the United States, Taiwan granted the US Coast Guard the right to board Taiwanese fishing vessels in high seas areas of the North Pacific upon prior notification to the Taiwan government. The agreement also required that Taiwanese driftnetting vessels be outfitted by 1990 with location-fixing devices that enable satellites to monitor their location and identity.

Taiwanese fishermen denounced this agreement as a "disgrace to national sovereignty."<sup>89</sup> They cite the 1958 Convention on the High Seas, which holds that ships are subject to the exclusive jurisdiction of their flag state on the high seas, with limited exceptions. However, under either the 1958 Convention on the High Seas or the 1982 Convention on the Law of the Sea, the right of boarding on the high seas may be derived from powers conferred by treaty.<sup>90</sup> The United States points to high seas boarding provisions in the International Convention for the High Seas Fisheries of the North Pacific Ocean between the United States, Japan, and Canada as an example of this kind of arrangement.<sup>91</sup>

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85. Wu, 34.

86. *Ibid.*, 35.

87. *Ibid.*, 12.

88. Wayne Lewis (Special agent in charge of Pacific operations, National Marine Fisheries Service), interview with Todd Campbell, 13 September 1990.

89. "Briefing," *Far East Economic Review*, 7 September 1989, 111.

90. Wu, 31.

The United States also points to Taiwan's inability to satisfactorily enforce its own regulations prohibiting salmon fishing as a factor leading to the request for boarding authority on the high seas.<sup>92</sup>

Taiwanese legal experts point to Article 2 of the Convention on the High Seas and Article 1 of the Convention on Fishing and Conservation of the Living Resources of the High Seas as affirmation that fishing is one of the basic freedoms of the high seas. They further note that neither Convention specifically restricts catching anadromous species on the high seas. The United States is party to, and bound by, both conventions.<sup>93</sup> The Taiwanese are justified in pointing out that since the United States has not acceded to the Convention on the Law of the Sea, its claim to "primary interest in and responsibility for" anadromous species as set forth in Article 66 of the convention is weak.

In the 1989 US agreement with South Korea, the high seas boarding provision is worded more delicately. Whereas US officials may board a Taiwanese vessel merely upon transmission of prior notification, they must transmit to the South Korean government a request to conduct a cooperative visit. The wording suggests that the South Koreans have some degree of choice in the matter, while the Taiwanese do not. There is some evidence that the Taiwanese feel discriminated against because of this.<sup>94</sup>

The United States is critical of Taiwan's enforcement effort. Taiwan has a North Pacific "enforcement fleet" of two or three ships. In 1989 these vessels failed to catch or even report a single Taiwanese vessel fishing for salmon or fishing outside the squid zone boundaries.<sup>95</sup> Taiwan's use of location-fixing transmitters has not inspired confidence either. In September 1990, US fisheries officials notified Taiwanese officials that forty of their driftnet vessels had ceased transmitting their position coordinates, and that the United States suspected that the transmitters had been turned off. Taiwanese officials in Seattle claimed that the transmitters had mechanical problems, but assured the United States that any ship captains who shut off the transmitters would face prosecution.<sup>96</sup>

In the summer of 1990, Taiwanese driftnetters were spotted for the first time operating in the Atlantic Ocean near the Caribbean, and have been reported using driftnets in waters off some African nations.<sup>97</sup>

### *South Korea*

The South Korean driftnet fleet is at best loosely regulated by the South

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91. *Ibid.*

92. *Ibid.*, 34.

93. *Ibid.*, 13.

94. *Ibid.*, 32.

95. Oregon Department of Fish and Wildlife, "The High Seas Driftnet Issue: A Summary of Oregon's Position and Recent Actions," (May 1990), 5.

96. Associated Press, "US fisheries officials, unable to detect Taiwanese fishing vessels in the North Pacific, suspect that transmitters have been deliberately turned off" (in Chinese), 14 September 1990.

97. William K. Stevens, "Huge Drift Nets Move to Atlantic," *The New York Times*, 14 August 1990, A1.

Korean government. Driftnet boats are prohibited from retaining salmon and marine mammals, but the government does not patrol for violators. Under a 1989 agreement with the United States, South Korea agreed to limit the size of its squid driftnet fleet to 160 vessels. For the first time, it also agreed to time and area restrictions. These are similar to, but slightly more restrictive than, those of the Taiwanese fleet.<sup>98</sup>

*The United Nations Convention on the Law of the Sea (UNCLOS)*

Without general ratification and implementation, the value of the UNCLOS as a regulatory instrument for resolving the debate over high-seas driftnetting has been limited. However, the provisions concerning the living resources of the high seas do provide a framework for future cooperation among states for dealing with the conservation and management of fisheries beyond national jurisdiction.

The United States played a key role in the UNCLOS talks. However, after the conclusion of the convention, President Ronald Reagan declared it unacceptable to the United States because of the system it established for regulating deep seabed mining. Apart from deep seabed mining, however, he proclaimed that the United States would act in accordance with the convention and would expect other states to do so as well. The United States did not ratify the convention, and as of May 1990, only forty-two of the sixty ratifications required to bring it into force had been deposited.<sup>99</sup>

In terms of strict treaty law, there are no internationally binding obligations under the convention. However, whether or not it ever comes into force, its provisions do have status under customary international law (i.e., established state practice). Therefore, it can be argued that international legal norms do exist now with respect to a law of the sea and control over international fisheries. This is the case with *exclusive economic zones* which can be unilaterally implemented by coastal states; however, it does not hold true for jurisdiction over the deep seabed. The applicability to high seas driftnet fishing, which falls somewhere between these two cases, is unclear.<sup>100</sup>

If ratified, several provisions of the convention would be applicable to the driftnet dispute with respect to salmon. In Article 66, paragraph 1 asserts the exclusive management authority of the "State of origin for anadromous stocks." Paragraph 3(a) leaves open the possibility of negotiations with Japan, Taiwan, and South Korea "in cases where this provision would result in economic dislocation for a State other than the State of origin." Paragraph 3(d) requires the consent of the flag state for enforcement authority by the state of origin.<sup>101</sup>

The provisions of the convention concerning high seas fisheries can be found

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98. Benton, 21.

99. Panel on the Law of Ocean Uses, "U.S. Interests and the United Nations Convention on the Law of the Sea," (Council on Ocean Law, June 1990), 2.

100. Barbara Johnson, "Treaties and Legislation: Notes on Legal Agreements," (Presented at North Pacific Driftnet Conference, Vancouver, British Columbia, 17-19 July 1989), 132.

101. Edward Miles, "The U.S./Japan Fisheries Relationship in the Northeast Pacific: From Conflict to Cooperation?" (University of Washington School of Fisheries, July 1989), 47.

in Articles 116, 117, and 118. Article 116 provides a general right of high-seas fishing, subject to treaty obligations and as qualified by economic zone provisions. Article 117 imposes on all states the duty to cooperate in conserving the living resources of the high seas by controlling fishing by their nationals. Article 118 requires states to cooperate with each other in ensuring conservation of high seas resources, including the establishment of subregional or regional fisheries organizations.<sup>102</sup>

The United States recognizes that the use of high seas driftnets has implications far beyond the immediate fisheries interests that surround them. Domestic opposition to the 1982 Convention must be weighed against the need to enhance respect for environmental standards in the high seas as well as in the 30 percent of the world's oceans that are now within the national jurisdiction of other countries.<sup>103</sup> Failure to bring the Convention into force could also jeopardize the rights of nations with *exclusive economic zones* and may encourage other states to engage in questionable practices on the high seas.<sup>104</sup>

#### *International North Pacific Fisheries Convention*

Outside of the United Nations system, the other primary international arena in which driftnetting has been debated is the International North Pacific Fisheries Convention (INPFC). After World War II, Japanese fisheries targeting salmon expanded dramatically into the North Pacific. This led to the negotiation of the International Convention for the High Seas Fisheries of the North Pacific in 1952 by the United States, Japan, and Canada. The purpose of this agreement was to regulate Japanese catches of fish stocks native to North America, particularly salmon, and to promote and coordinate scientific research relating to the fishery resources of the North Pacific. The INPFC created a demarcation line in the North Pacific to distinguish between North American and Asian-origin salmon migration patterns. The convention was amended in 1976 to reflect the establishment of 200-mile fishery conservation zones along the coasts of each of the parties and to minimize the interception by Japanese fleets of salmon originating in Canada and the United States. In 1978, the Japanese fleet moved 500 miles farther west.<sup>105</sup>

The INPFC meets annually to promote, coordinate, and review the results of scientific research on fishery resources of the North Pacific. It recommends, when it deems necessary, changes in the conservation measures set forth in the convention. Decisions of the commission require the unanimous vote of the three member nations.

The INPFC does not regulate driftnetting. However, in 1986, Canada succeeded in having the driftnet issue placed on the regular agenda of the INPFC Standing Committee on Biology and Research out of concern over the intercep-

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102. Johnson, 134.

103. Panel on the Law of Ocean Uses, 1.

104. *Ibid.*, 3.

105. British Columbia Ministry of Agriculture and Fisheries, "The British Columbia Position," (Presented at North Pacific Driftnet Conference, Vancouver, British Columbia, 17-19 July 1989), 3.

tion of North American-origin salmon by the Japanese squid driftnet fleets. The allegations about the impact of this driftnet fishery have given rise to perhaps the most bitter disputes in the INPFC between Japan and the two North American nations. The Japanese have maintained that there is no evidence that driftnetting has an adverse impact on salmon of North American origin,<sup>106</sup> and they argue that the Taiwanese are the "bandits" responsible for pelagic fishing of protected stocks.<sup>107</sup> The INPFC would be an appropriate international forum for addressing the problems associated with driftnetting, except that Taiwan and South Korea are not parties to the convention, and the requirement that any decision by the commission be unanimous makes resolution difficult to achieve. To date, the three parties (Japan in particular) have resisted expanding INPFC membership to include other countries.<sup>108</sup>

### Conclusion and Recommendations

The consequences of driftnetting include salmon interception, unacceptably high waste of bycatch, marine mammal and seabird entanglement, and marine pollution due to ghost nets. In the absence of any proven way to prevent these effects, it is in the best economic and environmental interests of the United States to continue to work toward a complete ban on driftnetting. While the United States supports the United Nations sponsored driftnet ban, other steps can also be taken. For instance, the United States should continue diplomatic negotiations on the subject.

A 1989 United Nations resolution calls for a "Moratoria on all large-scale pelagic driftnet fishing on the high seas by 30 June 1992."<sup>109</sup> However, the moratorium is imposed "with the understanding that such a measure will not be imposed in a region, or if implemented, can be lifted, should effective conservation and management measures be taken...to prevent unacceptable impacts of such fishing...."<sup>110</sup> Japan's approach had been to conduct experiments to improve and modify its driftnet fishing gear to find a way to continue driftnetting. One method has been to hang the nets so that the top is at a depth of one to three meters below the surface of the water. According to an official of the Japanese Ministry of Agriculture, Forestry, and Fisheries, this enables dolphins to swim over the nets.<sup>111</sup> Japanese and Taiwanese researchers have

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106. Proceedings of the 32nd Annual Meeting (International North Pacific Fisheries Convention, Vancouver, British Columbia, 1985), 20.

107. Johnston, 12.

108. Johnson, 134.

109. United Nations, "Resolution on large-scale driftnet fishing and its impacts on the living marine resources of the world's oceans and seas," UN Document A/RES/44/225, 1989.

110. In the preamble, the General Assembly limited the resolution to the question of "large-scale pelagic driftnet fishing," and not "small-scale driftnet fishing traditionally conducted in coastal waters."

111. In Japanese trials in the South Pacific, an average of 0.14 dolphins were caught per haul, as compared to 2.11 dolphins per haul in regular driftnets. In a North Pacific test, the rate of dolphin kill was reduced 25 percent through the use of the lower suspended nets. Reuters, "Japan develops method of driftnet fishing it says reduces the number of dolphins killed," 15 August

tested a sonar device attached to driftnets which emits sound waves to repel dolphins without deterring fish.<sup>112</sup> These techniques, which reduce but do not eliminate the problem of marine mammal bycatch, are unlikely to be accepted by driftnet opponents. They fail to address the other issues surrounding this technology, such as the bycatch of nontarget fish species, ghost nets, and overfishing.

On November 25, 1991, Japan's cabinet signed off on a compromise United Nations resolution that will result in a 50 percent reduction of large scale driftnets by June 1992 and a total moratorium by December 31, 1992. The General Assembly approved this resolution on December 20, 1991.<sup>113</sup> Taiwan has agreed to comply with the ban, and South Korea indicated that it will not block the ban.

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Diplomatic efforts directed at Japan must take into account the fundamental differences between the Japanese and American systems of fisheries management so as not to generate further misunderstandings that will aggravate this relationship.

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The UN resolution does not resolve all the issues surrounding driftnetting, however. The "honor system" of compliance with United Nations resolutions is difficult to enforce and is complicated by the fact that Taiwan is not a UN member. Without adequate surveillance and enforcement efforts, pirate vessels may circumvent the resolution by continuing to driftnet and/or deliberately intercept North American salmon. Other problems may arise over the interpretation of the resolution. For example, the definition of "50 percent reduction in fishing effort" to be achieved by June 30, 1992 is unclear; it could mean using the original number of boats but reducing the amount of netting by half, reducing the actual number of boats by half, or cutting the number of days of fishing effort in half. Supporters of the ban are concerned that driftnetting nations may use 1992 as their last big fishing season and ignore the idea of cutting their fishing effort in half.<sup>114</sup>

Officials in Canada and the United States credited threats of economic sanctions, continued diplomatic pressure, and international outrage over the

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112. Laurie Underwood, "Taiwan Talks Back: The ROC Speaks Out on Salmon Interception and the Driftnet Fishing Ban," *Alaska Fisherman's Journal* (January 1990): 64.

113. UN General Assembly, *Large-scale Pelagic Driftnet Fishing and its Impact on the Living Marine Resources of the World's Oceans and Seas*, 46/215, (New York: United Nations, February 10, 1992).

114. Congresswoman Jolene Unsoeld's Statement on UN Committee Approval of a Resolution to Ban Driftnetting by December 31, 1992, United States House of Representatives, 6 December 1991.

so-called "curtains of death" for the ban on this sector of the fishing industry. Bills in Congress had proposed penalties on the exports of all three driftnetting nations—including seafood products, sport fishing equipment, electronics, and automobiles—and recommended that the US Navy and Air Force patrol the high seas for violators.<sup>115</sup> To address gaps in the UN resolution, the US Congress is considering a bill that would broaden trade sanctions against any nation that continues to driftnet beyond 1992. The bill also calls for increased surveillance and monitoring assistance from the Department of Defense, Coast Guard, and Commerce Department.<sup>116</sup>

The United States has confronted the unwillingness of foreign nations to accept US observers on board their commercial vessels on the high seas. An agreed protocol for collecting and reporting data is also needed.<sup>117</sup> Increased knowledge of the complex biology and ecology of the North Pacific must form the basis for US input into conservation and management efforts. To understand the nature, extent, and effects of driftnetting on the North Pacific ecosystem, there is no substitute for reliable on-board observer programs as a means of obtaining credible data on bycatch rates.

The fisheries of the North Pacific need to be brought under a comprehensive regional authority. An organizational framework is needed within which a solution to this kind of high seas fishery management problem can be pursued. One viable solution would be to expand the INPFC to regulate all high seas driftnet fisheries by including more Pacific Rim countries. If the INPFC is reluctant to extend membership to other Pacific Rim nations, the United States should support the establishment of a new international scientific organization for the North Pacific which involves the successor(s) to the Soviet Union. In 1987 and 1988 Canada hosted representatives from China, Japan, the Soviet Union, the United States, and Canada to discuss the formation of a multilateral body to promote the cooperative investigation of marine biology, oceanography, and pollution in the North Pacific and Bering Sea. Nicknamed PICES (Pacific International Council for the Exploration of the Sea), this concept was given preliminary endorsement by the United States and Canada at the 1989 North Pacific Driftnet Conference.

It is clear that an international high-seas controversy such as the driftnet problem cannot be resolved through unilateral adoption and enforcement of national measures. The United States should surmount domestic obstacles and pursue the general ratification of the UN Convention on the Law of the Sea. A stable law of the sea is essential to US interests. Further, the United States must realize that bilateral negotiations represent a great diplomatic challenge and should undertake them carefully. Diplomatic efforts directed at Japan must take into account the fundamental differences between the Japanese and American systems of fisheries management so as not to generate further misunderstand-

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115. Scott Sunde, "Reeling in the Driftnets Permanently," *Seattle Post-Intelligencer*, 7 December 1991, A6.

116. House Bill No. 2152, 102nd Congress, 1992.

117. Report of the Secretary of Commerce, 135.

ings that will aggravate this relationship.

The political problem faced by the United States and Canada is how to satisfy the demands of domestic anti-driftnet groups through actions at the international level. Dealing effectively with the driftnetting nations within the limits of political, diplomatic, and ethical acceptability is difficult. Any single course of action seems unlikely to solve the problem without the risk of creating serious problems in other areas.<sup>118</sup> If the United States is genuinely committed to effective conservation and management of marine resources of the North Pacific, assertive action must continue.

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118. Johnston, 14.

