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History of Regulation of Alaskan Groundfish Fisheries

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NOTICE

HISTORY OF REGULATION OF ALASKAN GROUNDFISH FISHERIES

By

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TABLE OF CONTENTS

Introduction

The Resource Ecology and Fisheries Management Division of the Northwest and Alaska Fisheries Center and the Highliners Association, a Seattle-based organization of commercial fishing vessel operators, have undertaken a cooperative study of the effects of fishing and fishery management measures on certain stocks of groundfish in the U.S. fishery conservation zone off Alaska (3 to 100 nautical miles offshore). These waters are under the fisheries jurisdiction of the North Pacific Fishery Management Council, one of eight such regional councils established by the Fishery Conservation and Management Act (FCMA)[1/] of 1976 (U.S. PL 94-265). Groundfish stocks selected for the cooperative study are yellowfin sole in the eastern Bering Sea, walleye pollock in the eastern Bering Sea and Gulf of Alaska, and Pacific cod, rockfish (the Pacific ocean perch complex), and sablefish throughout their ranges off Alaska. As part of the study, a history of regulations bearing on fisheries for the selected stocks has been brought together and is presented in this report.

The intention here is not merely to compile a list of fishery regulations but also to provide the reader with a chronicle of events and circumstances that surrounded the restrictions and which, in large measure, led to passage of the MFCMA.

1/ In 1981 the American Fisheries Promotion Act changed the title of the FCMA to the Magnuson Fishery Conservation and Management Act (MFCMA), in honor of Warren G. Magnuson, former U.S. senator, who was a driving force behind the passage of the 1976 Act. That Act is henceforth referred to in this report as the MFCMA.

Early Fisheries and Events

Governmental regulation of fisheries for the groundfish species included in this study lagged by ages, so to speak, their original utilization for subsistence purposes and intertribal trade by natives along the coast of Alaska and by more than a century the reportings in 1765 by a Russian navigator of "cod, perch, pilchards, and smelts" around the Fox Islands in the eastern Aleutians or in 1778 and 1786-87, respectively, by the explorers Cook and Portlock of cod as being "a very common fish along the Alaskan coast" (Cobb 1906). Such regulation also lagged by decades the year (1864) that the first American cod-fishing vessel, the schooner Alert, sailed from San Francisco to Alaska and caught nine tons of cod in Bristol Bay (Cobb 1927), or the year (1867) that the U.S. purchased Alaska from Russia, an acquisition which was hailed by the Washington Territorial legislature and Pacific coast fishing interests as a boon to American fishermen (Cobb 1906), or the year (1871) that the U.S. Commission of Fish and Fisheries was established under joint resolution of Congress.

U.S. Treasury Department and Fish Commission, 1868-1903

In 1868, the year following the purchase of Alaska and a few years before the Fish Commission came into being, the U.S. Treasury Department began dispatching special agents to the newly acquired territory and did so for 35 years. The agents' responsibilities at first were primarily concerned with the protection of fur seals and other fur-bearing animals, the administration of a lease to the Alaska Commercial Company of San Francisco for the right to take fur seals for their skins in the Pribilofs, and the enforcement of

revenue laws.[2/] Later, as Alaska's salmon industry developed, the agents also collected taxes on processed salmon products. As for the Fish Commission, the Congressional resolution establishing it defined its tasks thusly: "To prosecute investigations on the subject of the diminution of valuable fishes with the view of ascertaining whether and what diminution in the numbers of food-fishes of the coast and the lakes of the United States has taken place; and, if so, to what causes the same is due; and also whether any and what protection, prohibitory or precautionary measures should be adopted in the premises, and to report upon the same to Congress" (Goode 1886).

For many years the idea was widely entertained that the Fish Commission received from Congress authority for enforcing measures aimed towards the prevention of improper modes or times of catching fish in U.S. waters. However, as Spencer F. Baird, the first Commissioner, pointed out in the report of Commission operations and inquiries during 1884, the Commission considered that its functions were purely advisory and did not include the power of either making or enforcing regulations (Baird 1886). The Commission was aware of the fact that, in contrast with a number of European nations and in spite of evidence that some fish stocks along the New England and mid-Atlantic coasts had undergone substantial diminution during the 1800's, public opinion in the U.S. was generally antagonistic to fishery regulation. According to Goode, Baird, who had indicated his concern about the welfare of fishermen and the consumer of fish products in earlier annual reports of Commission activities, had not become satisfied after fourteen years of fisheries

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2/ As indicated by information given by Osgood, Preble, and Parker (1916), direct revenue to the U.S. Government from the sale of sealskins totaled nearly 7 million dollars by 1890, which was only slightly less than the sum paid by the U.S. to Russia for Alaska.

investigations that laws were necessary for the perpetuation of the sea fisheries. Goode also wrote: "The protection of fish by law is what legislators have been trying to effect for many centuries, and we are bound to admit that the success of their efforts has been very slight indeed", and, "The statutes of the various States contain numerous laws for the protection of fish and fishermen, generally worse than useless, though there are many definitions of close time [closed seasons and in-season closed periods] which appear to be beneficial."

Baird's philosophy, as stated by Goode, was that it was better to expend a small amount of public money in making fish so abundant that they could be caught without restriction, and serve as a cheap food for people at large, rather than to expend a much larger amount in preventing the people from catching the few that remained after generations of improvidence. Consequently, 75 to 85 percent of the Commission's appropriations during 1871-1883 were expended for artificial propagation, which Baird called "this wonderful art" and in connection with which he was awarded the grand prize of the International Fisheries Exhibition in Berlin in 1880 as "the first fish culturist in the world", a not altogether accurate accolade. In any event, as far as the Fish Commission was concerned, fishery regulation took a distant back seat to artificial propagation, the latter having quickly become and having remained the keynote of the Commission's efforts during its existence of more than 30 years as an independent establishment of the government, that is, from 1871 to 1903, when it became the Bureau of Fisheries in the newly established Department of Commerce and Labor, which was delegated the responsibility for enforcement of laws and regulations for Alaskan fisheries (previously assigned to the Treasury Department)[3/] and which was later (in

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3/ The Department of Commerce and Labor (DOCL) was established by act of Congress on February 14, 1903. Treasury's Special Agents Division was transferred to DOCL on July 1, 1903.

1913) divided into two departments, Commerce and Labor, with the Bureau of Fisheries being part of the former.

Decades of Little Attention to Groundfish, 1890-1930

Congress passed several acts bearing on the regulation of commercial fisheries in Alaska between 1889 and 1924, but they had to do almost exclusively with the salmon fisheries, not groundfish.[4/] Salmon constituted such a conspicuous feature of the Alaskan fishing industry that for decades the fisheries for other species received only infrequent, scant attention. Importance of the salmon fisheries aside, however, the regulation of fisheries for most other species was hardly a burning issue during the existence of either the Fish Commission or the Bureau of Fisheries,[5/] judging from reports issued by the two agencies. Some scattered excerpts illustrate:

> "The only commercial marine fisheries which have been developed in Alaskan waters are those for the cod, and for the seal and other aquatic mammals. Besides the cod, many other valuable food-fishes, including the halibut, are very abundant on the Alaskan coast, but owing to the distance from markets and the unsettled conditions in the region, these resources have not been utilized hitherto except by the natives. Even on the coasts of Washington, Oregon and California, where a great variety and abundance of marine fishes exist, the difficulty of disposing of a large catch has been the chief cause of the slow development of the fishing grounds." (Rathbun 1892.)

4/ Congress also passed an act in 1912 creating a legislative assembly in the Territory of Alaska, but it specifically provided that the legislature would not have the power to repeal or amend federal laws in respect to fisheries.

5/ In 1939 the Bureau of Fisheries was transferred from the Department of Commerce to the Department of Interior and in the following year was consolidated with the Bureau of Biological Survey to form the Fish and Wildlife Service.

"The fishing grounds [in Alaska] are believed capable of furnishing an unlimited amount of cod." Also, "According to Bean [Tarleton H. Bean, Fish Commission ichthyologist] the Alaska pollock is one of the best baits known for cod." (Collins 1892.)

"Nearly all species taken incidentally in the halibut fishery are thrown away." (Cobb 1906.)[6/]

"Salmon has always been and is yet the principal element in the yield, but more and more attention is being paid each year to the other resources. Many of these, however, are still totally neglected." (Cobb and Kutchin 1907.)

"Until an active market was developed for black cod [sablefish] 3 or 4 years ago, it was hardly thought worthwhile by the fishermen to pay much attention to them, and they were often thrown away to make room for the halibut." (Bower and Aller 1915.)

"Minor species of fish are taken in small quantities, chiefly in connection with the halibut fishery. In 1924, such products were as follows: Sablefish, 23,006 pounds fresh, valued at $831, and 204,344 pounds frozen, valued at $8,977; smelt, 1,233 pounds fresh, valued at $113, and 23,251 pounds frozen, valued at $2,235; flounders, 6,933 pounds frozen, valued at $349; red cod [Sebastodes melanops], 115 pounds fresh, valued at $3, and 1,060 pounds frozen, valued at $31." (Bower 1925.)

6/ The history of the North American fishery for Pacific halibut and regulation thereof is summarized by Bell (1981).

"Several species of fish of minor commercial importance are taken in small quantitites, chiefly in connection with the halibut fishery, and are landed at ports of Alaska and British Columbia, and at Seattle.....Most of the flounders were used in Alaska for mink feed." (Bower 1932.)

There were two provisions in an act approved by Congress in 1906[7/] that had a bearing on the utilization of groundfish species in Alaska. One of those provisions made it unlawful to wantonly waste or destroy any food fish taken in waters of the Territory, and the other required the filing of an annual report with the Department of Commerce and Labor by any person or company engaged in the catching of fish or processing of fish products. The first was a moralistic regulation, similar to one which appeared on the books in 1937: "The use of dynamite or any other explosive in the taking of any fish is prohibited" [Department of Commerce (DOC) Circular No. 251, 23rd Edition, February 1937]. The 1937 regulation was modified in 1949 to include the prohibition of the use of any poison in the taking or killing of fish (Fish and Wildlife Service Regulatory Announcement 25, March 1949). All Alaska commercial fishery regulations, of course, pertained only to fisheries inside the 3-mile territorial seas limit.

The first edition of DOC Circular 251 was issued August 19, 1913. It listed the laws and regulations for Alaskan fisheries that were in effect from that date until the second edition of the circular was issued on May 4, 1915. There were only three regulations in the first edition. One required that representatives of DOC be given free access to all processing facilities and privately operated hatcheries during their inspection of salmon fisheries; a second required all traps, pound nets and fish wheels

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7/ An act for the protection and regulation of the fisheries of Alaska, approved June 26, 1906.

used for taking salmon and other fishes to be conspicuously marked; and the third required salmon canners to provide the Bureau of Fisheries with copies of labels placed upon their canned products. The three regulations obviously had little to do with groundfish. However, numerous sections of the act of June 26, 1906 remained in force, including certain provisions that had a bearing on groundfish species and their fisheries, such as those that pertained to wanton waste and the filing of annual reports.

A fourth general regulation, one which included as wanton waste any edible portion of salmon not used in the curing or processing of bellies, appeared in the second through ninth editions of Circular 251, which altogether were in force from May 4, 1915 to June 21, 1924. The tenth edition of the circular,[8/] issued on the latter date, listed numerous regulations for Alaska's salmon fisheries and ten general regulations. Not surprisingly, most of the general regulations also pertained to salmon fisheries. Taking effect in 1925 was a new general regulation, one which apparently was written with the salmon fisheries foremost in mind but pertained to fishing for groundfish as well: "Any increase in the amount of fishing gear employed or any expansion of fishing operations in any district in any season shall in the discretion of the Secretary of Commerce result in the immediate imposition of such additional restrictions as may appear necessary" (11th Edition, DOC Circ. 251, December 2, 1924). That regulation can be considered as having set the stage for the promulgation of measures directed towards later developing fisheries, including trawl fisheries for groundfish.

8/ The 10th edition of Circ. 251 incorporated the provisions of a congressional act approved June 6, 1924 and entitled, "An act for the protection of the fisheries of Alaska, and for other purposes", which repealed or amended most parts of the act of June 26, 1906.

Some Pre-MFCMA Controls on Fishing for Alaskan Groundfish

First mention of trawling in the Alaska fisheries regulations was in the sixteenth edition of DOC Circular 251, applicable to fishing operations in 1930: "The use of any trawl in commercial fishing operations is prohibited: Provided that this prohibition shall not apply to fishing operations conducted solely for the purpose of taking shrimp." The regulation remained unchanged until 1935 when trawls were permitted to take flounders as well as shrimp when fishing for the former did not result in the capture, injury, or destruction of other food fish. Further changes occurred between 1935 and 1959, the last year that the Bureau of Commercial Fisheries administered the commercial fisheries of Alaska,[9/] as follows:

1939. Trawls were permitted in commercial fishing for king crabs west of 150° west longitude, exclusive of all waters in Cook Inlet (25th Edition, DOC Circular 251).

1942. Trawls were permitted in commercial fishing for all species except salmon, herring and Dungeness crabs (Fish and Wildlife Service [FWS] Regulatory Announcement 5).

1944. The International Fisheries Commission (later named the International Pacific Halibut Commission, which is referred to here as IPHC) prohibited the retention of halibut taken by bottom trawl gear.

1948. Minimum mesh sizes for trawls were set at 5 inches stretched measure between knots in the bag, 6 inches in the wings, with an exception for trawls then in use having smaller mesh size; chain "ticklers" or similar devices were prohibited; no otter trawling was permitted in any area populated by small halibut which had

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9/ The Bureau of Commercial Fisheries was created as one component of the U.S. Fish and Wildlife Service in 1956. Responsibility for administration and management of Alaska's commercial fish resources was transferred to the Alaska Department of Fish and Game as of January 1, 1960.

been closed to halibut fishing by the Halibut Commission; and running logs of fishing operations had to be maintained (FWS Regulatory Announcement 22).

1954. Minimum mesh sizes were established for trawls used in catching king and tanner crabs (FWS Regulatory Announcement 42).

In addition to the pre-1960 general regulations regarding the use of trawls in fishing for groundfish, there were some restrictions on fishing in southeastern Alaska specifically directed towards sablefish, most of which were taken by setline gear. In 1945 and 1946 commercial fishing for sablefish was prohibited prior to March 15 and after November 30. (There had been no seasonal closures in commercial fishing for sablefish prior to 1945.) According to Bracken (1983), evidence of a 55% decline in catch per unit effort between 1937 and 1944 and a decline in average weight from 8 pounds in 1934 to 6.5 pounds by 1944 led to the shortening of the season in 1945, with the view towards reducing fishing intensity, protecting spawning stocks, and reducing the inadvertent catch of halibut during early spring. Beginning with 1947 and continuing through 1959, southeastern Alaska waters were closed to commercial fishing for sablefish prior to May 1 and after November 30.[10/]

A summary of groundfish regulations issued annually by the Alaska Department of Fish and Game (ADFG) beginning in 1960 is given in Fishery Management Plans (FMP's) for groundfish in the Bering Sea/Aleutian Islands Area and in the Gulf of Alaska (North Pacific Fishery Management Council, 1979 and 1984). Like the earlier federal regulations, ADFG's regulations have been for fisheries inside the 3-mile territorial seas limit.

10/ Federal regulations for Alaska's commercial fisheries during 1945-1959 are given in FWS Regulatory Announcements 12, 15, 19, 22, 25, 28, 31, 35, 39, 42, 45, 48, 51, 56, and 60.

For many years prior to entry into force in 1977 of the MFCMA, domestic and foreign fisheries existed in extraterritorial waters off Alaska for the groundfish species included in this study. Not all of them went completely unregulated or unchecked in their impact on the resources. Around the turn of the century and continuing for several decades, for instance, catches and fishing operations by U.S. fisheries for Pacific cod and sablefish beyond the 3-mile limit were held in check by market conditions. In 1959, as its post-World War II groundfish fishery in the eastern Bering Sea expanded, Japan closed an area off the north side of the Alaska Peninsula to trawling by its groundfish fleets to avoid gear conflicts between those fleets and its king crab fishery (Figure 1).[11/] Because the number of fleets in its Bering Sea mothership fishery for groundfish had increased from 2 in 1954 to 33 in 1961, Japan established in the latter year a system of defining and limiting the operating areas for each fleet to avoid utter chaos in fishing activities (see Figure 1). When Japan began fishing for groundfish on a commercial scale in the Gulf of Alaska[12/] in 1963, it limited the number of licensed vessels and restricted their area of operation in an attempt to ease U.S. and Canadian concerns about the impact of Japanese trawl fisheries on the Pacific halibut resource in the gulf. In 1967 Japan designated the areas of operation and limited the numbers of licensed vessels for all components of its groundfish fisheries in the Bering Sea, around the Aleutians, and in the Gulf of Alaska.[13/]

11/ The closed area north of the Alaska Peninsula was somewhat larger in 1959 and 1963-1976 than that shown in Figure 1. An area off the Siberian coast between Cape Olyuotorski and Cape Navarin was also closed to trawling.

12/ As defined in the North Pacific Fishery Management Council's FMP for groundfish in the region, the Gulf of Alaska includes that portion of the North Pacific Ocean, exclusive of the Bering Sea, between 170°W longitude and Dixon Entrance.

13/ Further details of restrictions on Japan's groundfish fisheries in waters off Alaska are given by Forrester et al. 1978.

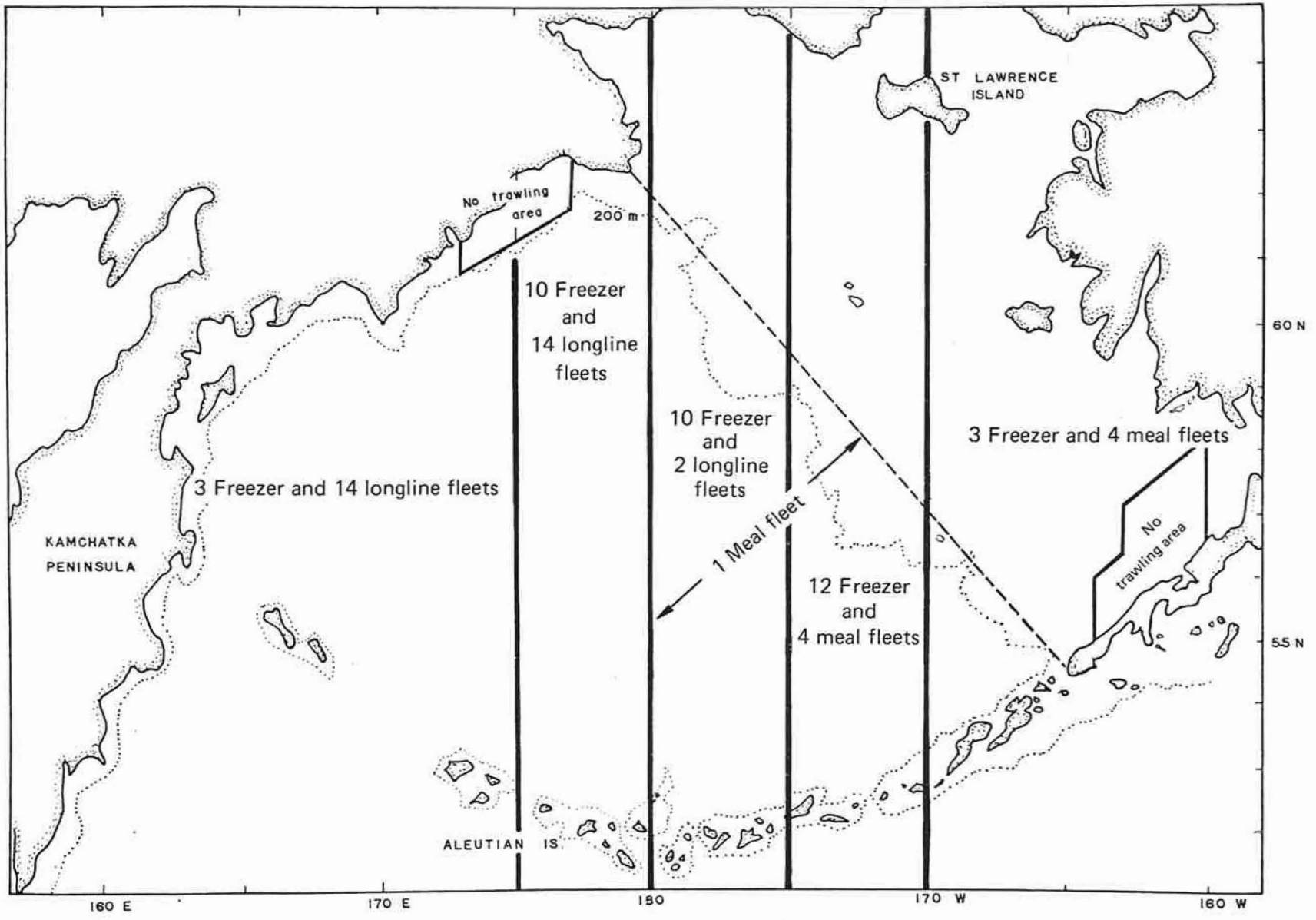

Figure 1. Japanese no-trawling zones and areas assigned to various mothership fleets in fishing for groundfish in the Bering Sea in 1961. (From Forrester et al. 1978, fig. 11, redrawn, and Table 7.)

The domestic measures taken by Japan in 1963 and 1967 undoubtedly stemmed from lengthy deliberations within the International North Pacific Fisheries Commission (INPFC), a body established under the 1952 International Convention for the High Seas Fisheries of the North Pacific Ocean, a Canadian-Japanese-U.S. treaty that entered into force in June 1953.[14/] As spelled out in Articles III-1-c-i and ii of the Convention, the Commission's functions with respect to groundfish resources, or any stock of fish that was not covered by an existing conservation agreement between two or more parties to the Convention at the time it was concluded, consisted of (1) studying any stock under substantial exploitation by two or more of the contracting parties to determine the need for joint conservation measures, and (2) deciding on such measures and recommending them to member governments.

INPFC and Groundfish Stocks off Alaska

The Commission held an organizational meeting February 1954 and its first annual meeting in the fall of the same year.[15/] During the first seven annual meetings of the Commission (1954-1960), hardly a word was spoken about non-halibut groundfish resources off Alaska other than occasional mention by Japanese members of the Commission of the need to utilize and develop fisheries for such resources. Discussions centered around the high seas areas of intermingling of salmon of North American and Asian origins and interceptions of Bristol Bay sockeye by Japan's mothership salmon fishery in waters west of 175°W longitude. King crab in the southeastern Bering Sea was the only resource with which the Commission was concerned in reference to Articles III-1-c-i and ii. It was not until the annual meeting in 1961

14/ The Convention was amended by Protocol in 1978. The amended Convention was modified in the early part of 1986.

15/ Proceedings of INPFC's annual meetings are prepared by the Commission, with the distribution limited to participants.

that any attention to speak of was focused on any groundfish species that are included in the present study. Stewart Udall, who was then U.S. Secretary of Interior, brought up the matter of Japan's large-scale bottomfish operations in the eastern Bering Sea and expressed concern about the impact on halibut resources in the Gulf of Alaska if those operations were to expand to the gulf.

Japanese vessels began commercial-scale fishing for groundfish in the Gulf of Alaska in 1963 with one stern trawler, two side trawlers (one of which was replaced by another stern trawler late in the fishing season), and a factory-ship accompanied by three bottom gillnetters. In contrast, there were 20-125 vessels involved in the Soviet fishery for groundfish in the Gulf of Alaska in 1963,[16/] the number varying during the year and the fleet concentrating on Pacific ocean perch in the vicinity of Kodiak Island. The Soviet vessels, of course, were not bound by any of the provisions of the tripartite North Pacific fisheries treaty or measures emanating from INPFC. Their fishing operations, it appears, were guided largely by production targets set by GOSPLAN, the State Planning Committee of the Council of Ministers of the U.S.S.R. (Sysoev 1970).

After discussing the matter over the course of four annual meetings, the INPFC in 1967 agreed to undertake a joint study of groundfish other than halibut in the northeast Pacific Ocean[17/] to determine the need for joint conservation measures. During the annual meeting of INPFC in 1968, Pacific ocean perch (POP) was chosen as the resource to receive initial attention.

16/ Soviet trawlers began commercial-scale fishing in the gulf in July 1962 (Forrester et al. 1978).

17/ The northeast Pacific Ocean, as considered by INPFC, includes all waters exclusive of the Bering Sea from 170°W eastward and southward to 132°30'N (latitude of the U.S.-Mexico border).

In 1971 sablefish (black cod) in the Gulf of Alaska and elsewhere in the northeast Pacific also came under joint study by INPFC scientists.

By the end of the 1972 annual meeting of INPFC, no recommendations for joint conservation measures for either Pacific ocean perch or sablefish in the northeast Pacific had been forthcoming from the Commission even though there was evidence that the POP stocks in some areas had been reduced to a low level of abundance due to very large catches in the mid-1960's (mainly by Soviet trawlers). There also was some indication of a decline in the abundance of sablefish after a few years of expanded fishing activity for that species in the northeast Pacific. Nor by the end of the 1972 meeting had the Commission been able to agree to undertake joint studies of non-halibut species of groundfish in the eastern Bering Sea/Aleutians region under Article III-1-c-i of the Convention. A joint INPFC-IPHC program for monitoring the incidental catch of halibut by Japanese groundfish trawlers in the eastern Bering Sea had only recently begun (summer of 1972), although the program had been first proposed at the 1968 annual meeting of INPFC. Meanwhile, the U.S.S.R. had provided no (or only very meager) data regarding groundfish catches and fishing effort by its vessels, which had been operating in waters off the North American coast for 15 years. Likewise the Republic of Korea (ROK) had provided practically no fishery statistics or other information pertaining to groundfish fishing operations by its vessels, which had been ongoing in the eastern Bering Sea and along the Aleutians for several years and had just begun in the Gulf of Alaska. All things considered, it was no small wonder that many fisheries leaders in the U.S. who had long been concerned about INPFC's inability to reach timely agreement on joint studies or effective conservation measures and also about the fishing activities of non-INPFC nations in waters off Alaska and as far south as California were

diligently seeking the development of a new management regime to better protect coastal fisheries and the fishery resources off the U.S. coast.

Bilateral Fisheries Agreements

In October 1966, the U.S. Congress had enacted PL 89-658 which established a 9-mile contiguous fishery zone (CFZ) adjacent to the 3-mile territorial sea. Enactment of the law led to a series of bilateral fisheries agreements between the U.S. and certain other nations regarding the operations of their fishing vessels with respect to the CFZ off Alaska, the first of which was a 1-year U.S.-U.S.S.R. agreement negotiated in February 1967.[18/] A little more than two years before that, in December 1964, the U.S. and U.S.S.R. had negotiated the Kodiak King Crab Gear Area Agreement, under which six areas off Kodiak Island were closed to Soviet trawlers from July through October when concentations of king crabs occurred (Figure 2). The purpose of that agreement was to reduce gear conflicts between the U.S. king crab fishery and Soviet trawlers in the Kodiak Island area. The original agreement was for 3 years and was extended without change in December 1967, to be effective until mid-February 1969.

The February 1967 CFZ agreement between the U.S. and U.S.S.R. prohibited Soviet trawlers from fishing in two large areas in international waters in the Gulf of Alaska during the first 15 days of the halibut fishing season as established by IPHC. The object was to reduce interference by Soviet trawlers with halibut setline fishing by U.S. fishermen. As a trade-off for that concession and certain arrangements for protecting U.S. fisheries off Washington and Oregon, Soviet vessels were permitted to fish within the 9-mile contiguous

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18/ There had been bilateral agreements between the U.S. and Japan in late 1964 and the U.S. and U.S.S.R. in early 1965 concerning the king crab fisheries of the two foreign nations in southeastern Bering Sea. Those agreements were expanded in late 1968-early 1969 to include tanner crabs. The specific provisions of the crab agreements are given by Naab (1968, 1969).

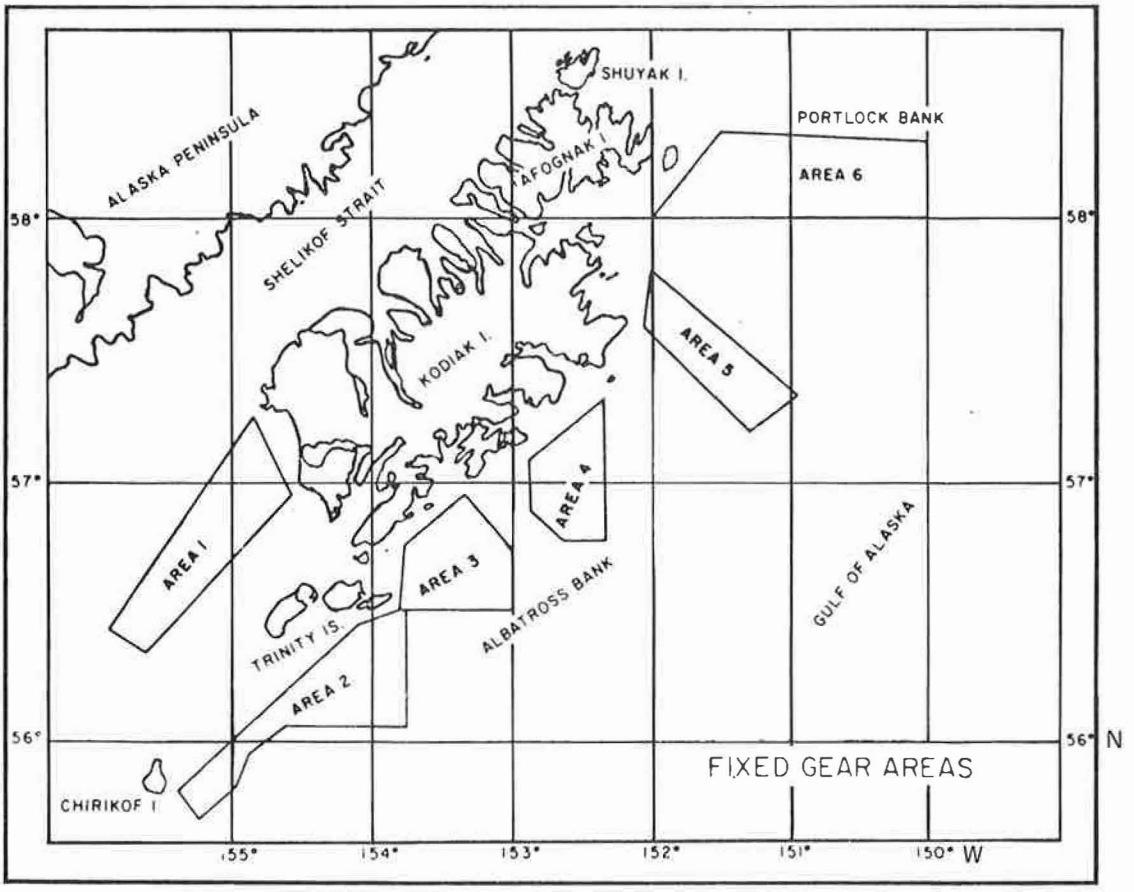

Figure 2. Fixed fishing gear areas established by the December 1964 U.S.-U.S.S.R. Kodiak king crab gear area agreement. (From Naab 1968, fig. 4.)

fishing zone in three areas little used by U.S. fishermen off the Alaskan coast and to conduct loading and fishing vessel support operations within the CFZ in three small areas in the gulf (Figure 3). The agreement was extended for a second year in December 1967. By that time, judging from the sparse and independently unverifiable fisheries data provided by the U.S.S.R., the abundance of Pacific ocean perch in the gulf (the target species of the Soviet fishery in that region) had been sharply reduced, and Soviet vessels had initiated large-scale fishing operations elsewhere in the northeast Pacific Ocean, particularly off Washington and Oregon. It was a classic example of pulse fishing, the three stages of which consist of, first, a massive fishing effort on local stocks with an early buildup in catches, then a decline in yield as abundance quickly falls off (i.e., the target rapidly shrinking), and, finally, a translocation to other species or fishing grounds.

In May 1967, the U.S. and Japan had negotiated a 2-year CFZ agreement which (1) prohibited Japanese vessels from fishing during the first 15 days of the IPHC halibut season in the two zones off Kodiak Island described in the February 1967 agreement between the U.S. and U.S.S.R.; (2) closed the six areas off Kodiak Island described in the December 1964 U.S.-U.S.S.R. agreement (see Figure 2) to Japanese trawlers and longliners from September of one year through February of the following year; and (3) closed an area beyond the CFZ south of Unimak Island to Japanese fishing vessels during September-February (Figure 4). The objective in negotiating the three restrictions was to avoid interference with U.S. halibut setliners in the first instance and with U.S. king crab pot fishermen in the other two instances. Trade-offs for the restrictions, which pertained to waters far beyond U.S. jurisdiction at the time, included authorization for Japanese vessels to conduct loading and support operations within the CFZ in two areas in the Gulf of Alaska and to

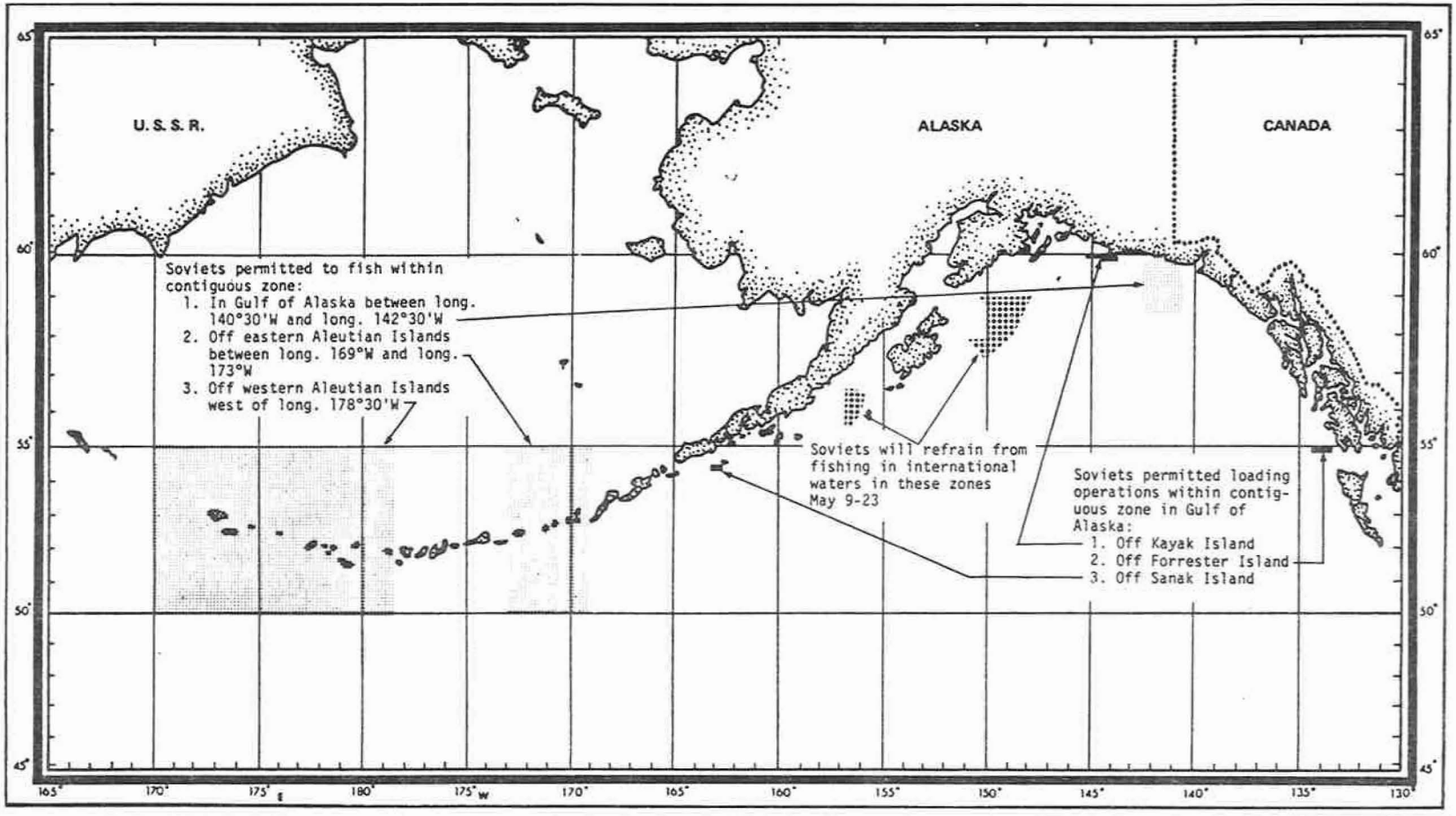

Figure 3. Fishing and loading areas established by the February 1967 U.S.-U.S.S.R. contiguous fishery zone agreement. (From Naab 1968, fig. 7.)

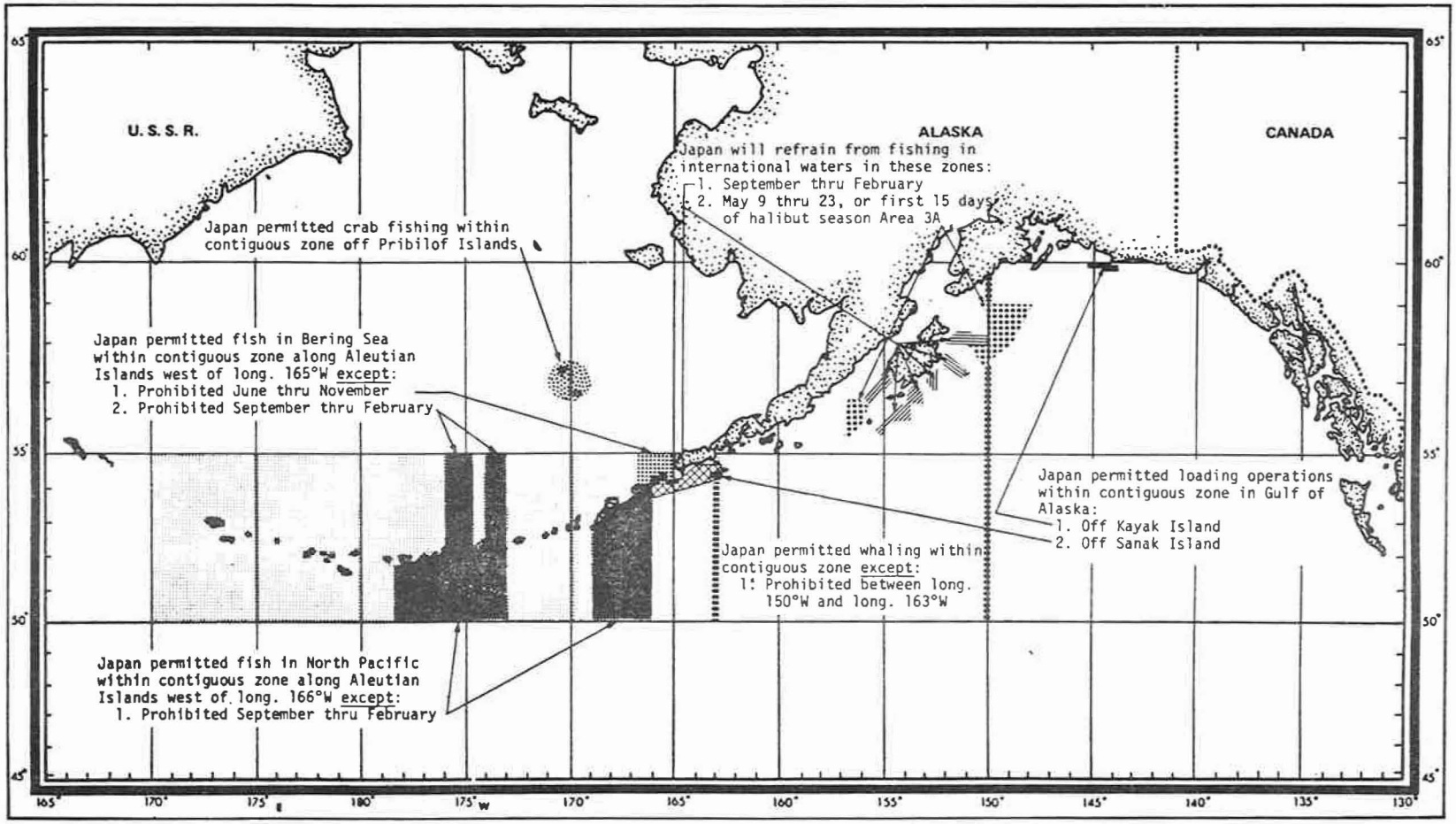

Figure 4. Fishing and loading areas established by the May 1967 U.S.-Japan contiguous fishery zone agreement. (From Naab 1968, fig. 8.)

carry out trawl fishing in the CFZ along the Aleutian Islands except during specified periods in certain areas off the eastern and central Aleutians.

As Naab (1969) reported in the second of his three excellent summaries of international agreements affecting Alaskan fisheries,[19/] changes in the Alaskan and foreign fisheries required frequent revisions of the agreements to ensure that maximum possible benefits were being obtained for U.S. fishery interest. Accordingly, the U.S. had insisted that bilateral agreements be of short duration and reexamined frequently. In late 1968 and early 1969, respectively, U.S. negotiators and advisors met with their counterparts of Japan and the U.S.S.R. to reappraise prior agreements. The May 1967 U.S.-Japan agreement was modified in December 1968. The principal modification with respect to trawling by Japanese vessels in international waters was the prohibition of such trawling during darkness on important, traditional U.S. halibut fishing grounds in southeastern Bering Sea for the first 12 days of the halibut season. That measure was aimed towards reducing problems of gear interference and conflicts between Japanese fishing vessels and U.S. halibut vessels. In return, two new loading zones within the U.S. CFZ in the Gulf of Alaska were provided Japanese vessels. Other provisions of the 1967 agreement remained in force (Figure 5). All agreed upon regulatory measures were to be in effect through 1970.

It took 3 weeks to negotiate the foregoing bilateral fisheries agreement because agreements concerning the Japanese king and tanner crab fisheries in southeastern Bering Sea were being hammered out simultaneously. Those negotiations were followed by nearly 4 weeks of negotiations between the U.S. and U.S.S.R. in January 1969 on a package of agreements involving Soviet fishing within the contiguous fishery zone off the coasts of Alaska, Washington,

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19/ Naab's first summary of international agreements affecting Alaskan fisheries was published in 1968, the third in 1971. (See references.)

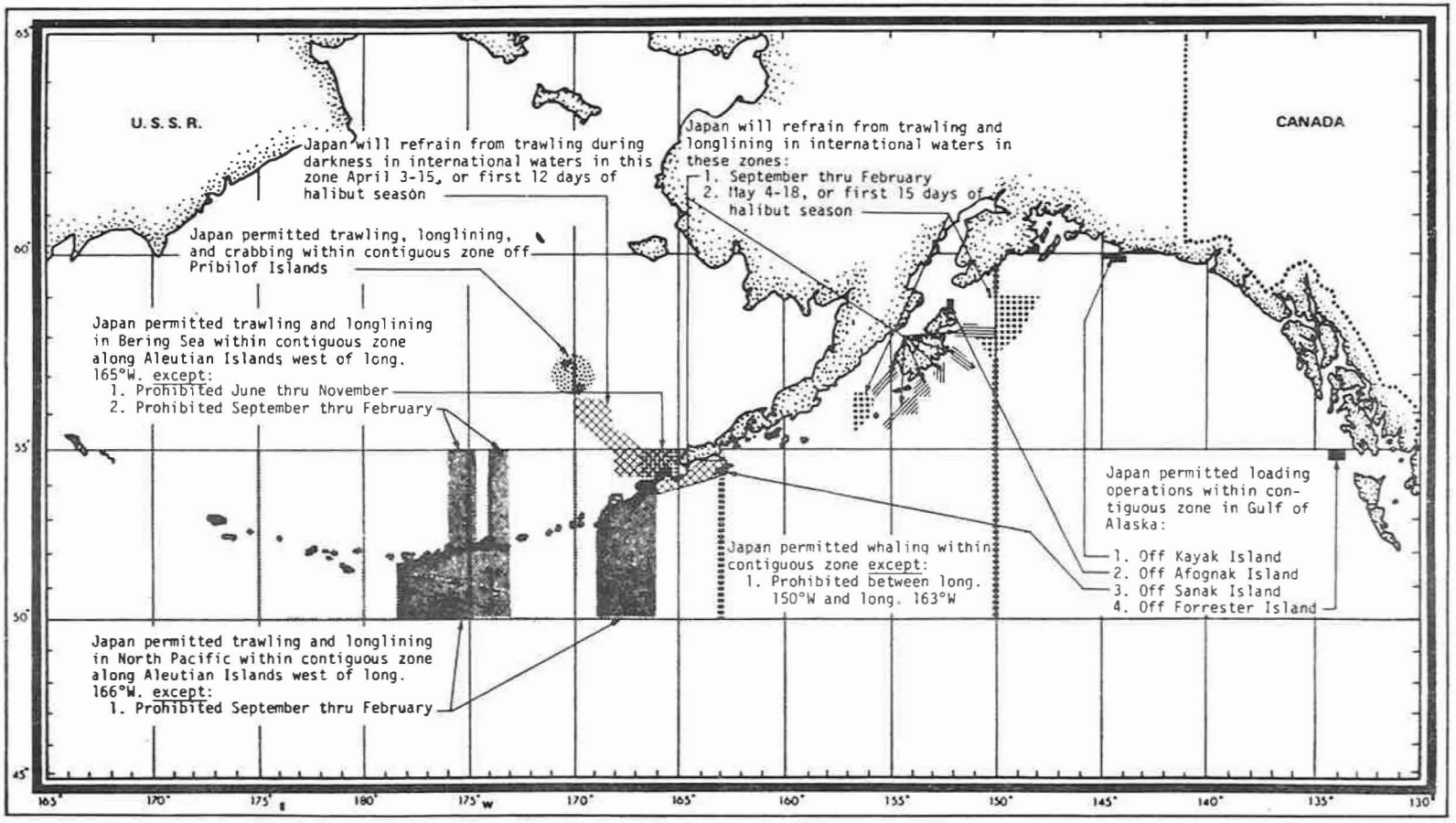

Figure 5. The U.S.-Japan contiguous fishery zone agreement of May 1967 as extended and modified December 1968. (From Naab 1969, fig. 2.)

Oregon, and California; in the vicinity of U.S. crab pot fisheries and the halibut setline fishery on the high seas off Alaska; and for king and tanner crabs in southeastern Bering Sea. Modifications of the December 1964 U.S.-U.S.S.R. King Crab Gear Area Agreement and the February 1967 U.S.-U.S.S.R. CFZ Agreement called for Soviet trawlers to refrain completely from fishing on two prime halibut grounds in southeastern Bering Sea during the first six days of the halibut season and in international waters south of Unimak Island from mid-August to mid-January, then the main period for the U.S. king crab fishery operating on Davidson Bank. As trade-offs for these concessions, Soviet vessels were permitted to conduct fishing and loading operations during the same periods and in the same areas within the CFZ along the Aleutians as Japanese vessels. Three new loading areas within the CFZ, one in the Gulf of Alaska and two in the Bering Sea, were also established for Soviet vessels. Other provisions of the 1964 and 1967 agreements with the U.S.S.R. were continued in force, except for certain changes in dates to coincide with the then current fishing seasons for crabs and halibut fished by U.S. fishermen. As was the case for the CFZ agreement that had been reached with Japan a month earlier, the U.S.-U.S.S.R. agreement of January 1969 (Figure 6) was to be in effect through 1970.

The December 1968 U.S.-Japan and January 1969 U.S.-U.S.S.R. CFZ agreements were modified in December 1970 (U.S.-Japan) and February 1971 (U.S.-U.S.S.R.). Provisions of the revised agreements as they pertained to the CFZ off Alaska are shown in Figures 7 and 8. The main objectives of the U.S. in negotiating the agreements were to further protect the interests of domestic fisheries for king and tanner crabs, halibut and shrimp; to enhance the development of a domestic fishery for scallops around Kodiak Island; and to reduce the threat of oil and refuse pollution and damage to fish and wildlife habitats in fur

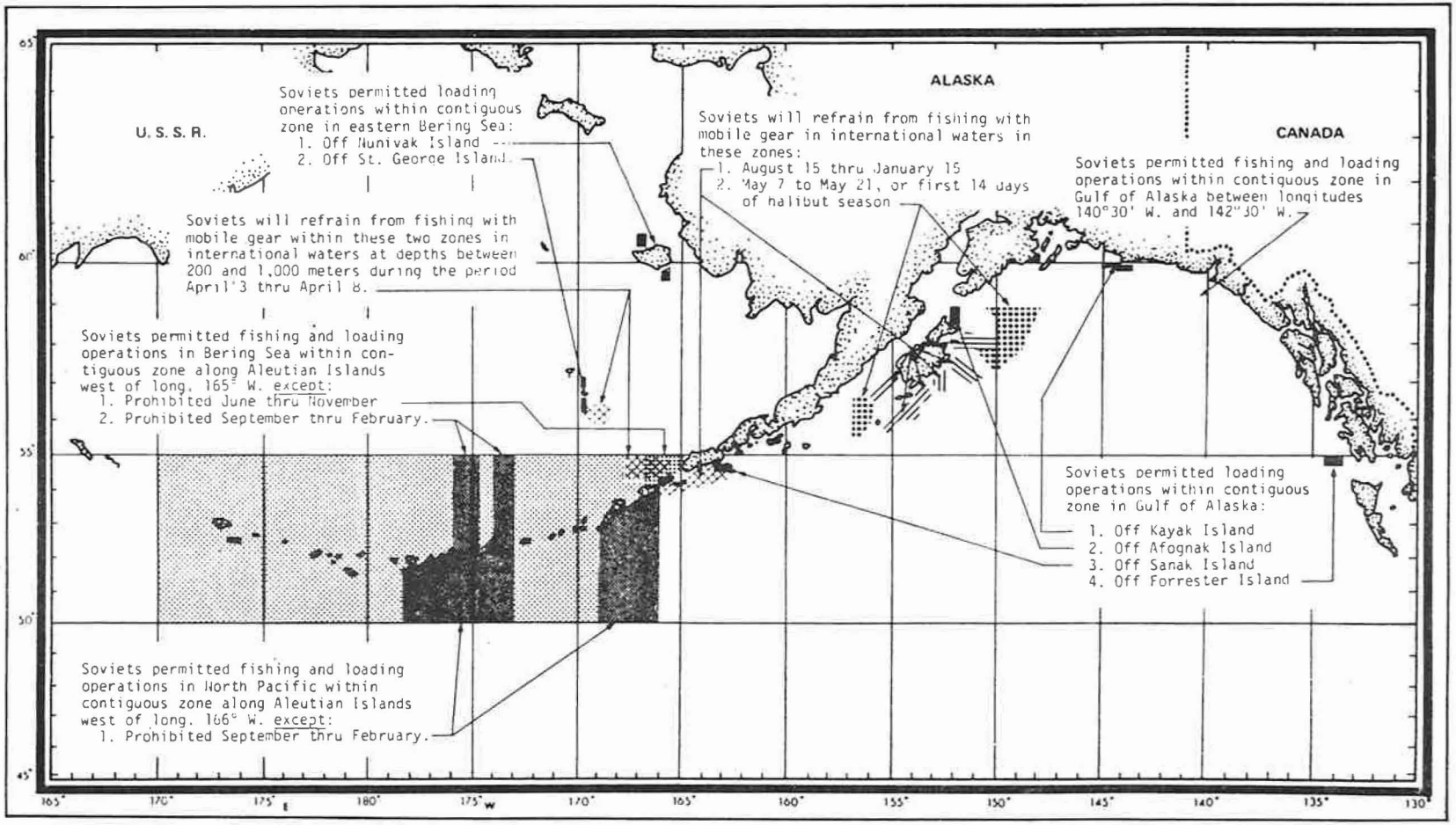

Figure 6. The U.S.-U.S.S.R. fisheries agreements of December 1964 and February 1967 as extended and modified January 1969. (From Naab 1969, fig. 3.)

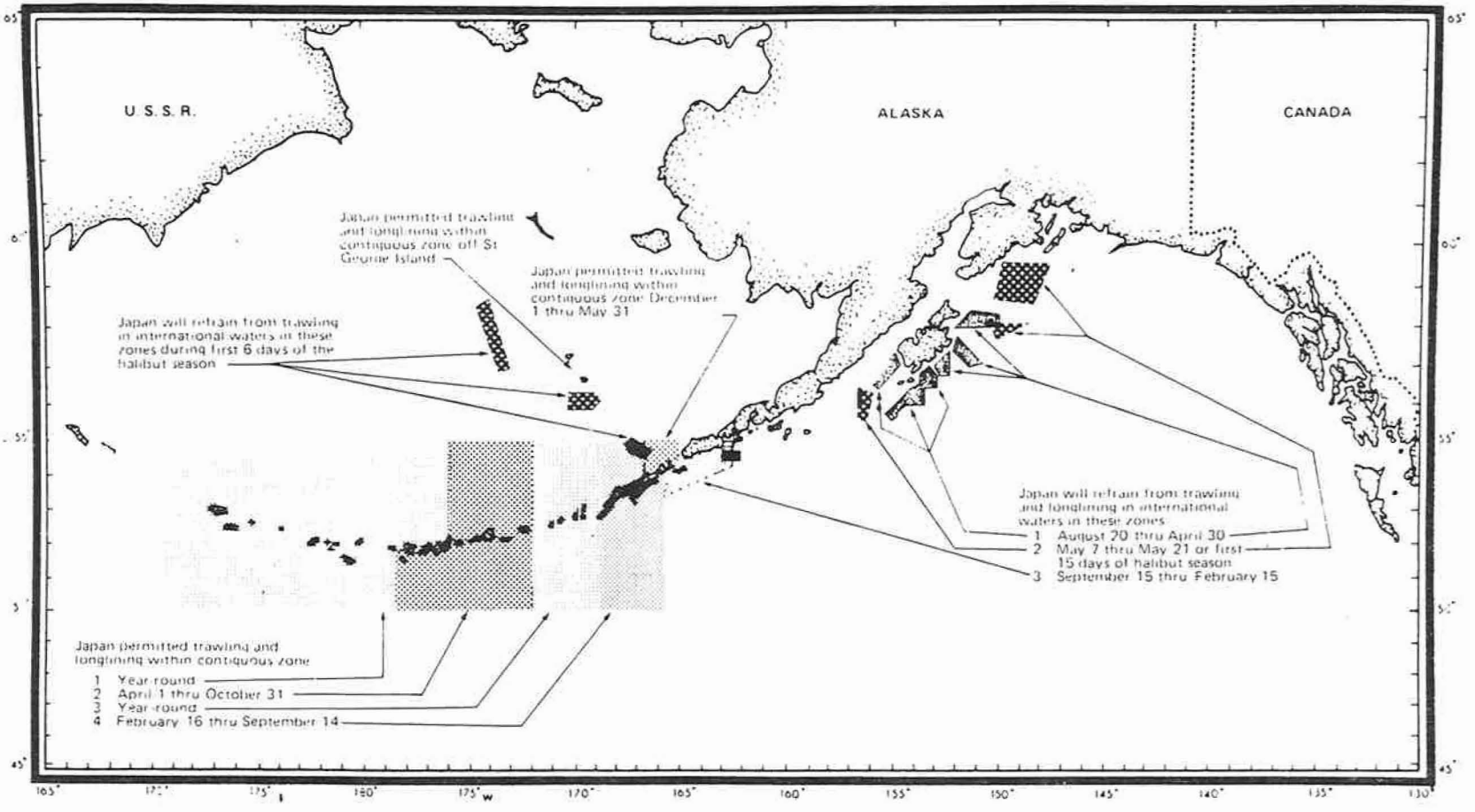

Figure 7. Restrictions placed on Japanese groundfish fisheries in 1971 and 1972 by the U.S.-Japan fisheries agreement of December 1970. (From Forrester et al. 1983, App. fig. A.)

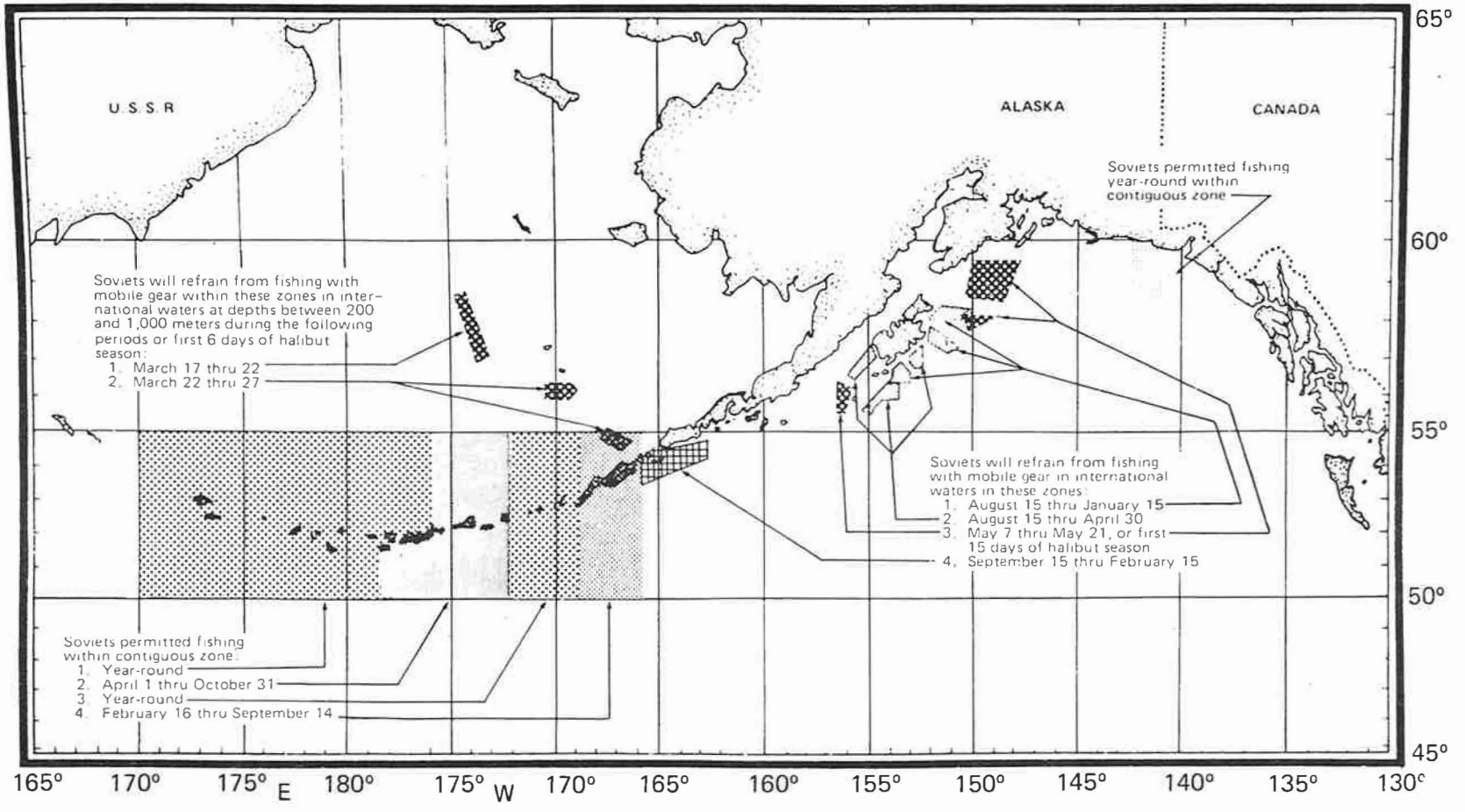

Figure 8. Restrictions placed on U.S.S.R. groundfish fisheries in 1971 and 1972 by the U.S.-U.S.S.R. fisheries agreement of February 1971. (From Forrester et al. 1983, App. fig. G.)

seal rookeries in the Pribilofs. As far as the U.S. was concerned, restrictions designed to control the impact of Japanese and Soviet fisheries on such Alaskan groundfish resources as pollock, yellowfin sole, Pacific cod, sablefish, and Pacific ocean perch were not an issue to be resolved at that time, and negotiators for Japan and the U.S.S.R. could hardly have been expected to voluntarily bring the matter to the forefront. It was a different story, however, during the next round of negotiations (with Japan in November 1972 and the U.S.S.R. in February 1973), when the U.S. insisted on taking up restrictions on the two nations' fishing activities directed towards certain species of groundfish[20/] in certain waters off the U.S. coast.

By the time negotiations with Japan and the U.S.S.R. rolled around in late 1972 and early 1973, the scope and pace of their fishing operations off Alaska and farther south in the northeast Pacific had far outdistanced the advancement of scientific knowledge as to what had happened or was happening to a number of important fish stocks. There were some knowns, however. Catches of yellowfin sole in the eastern Bering Sea had fallen dramatically following the very large removals by Japanese and Soviet fisheries in the early 1960's. The abundance of Pacific ocean perch in some areas in the northeast Pacific declined markedly after a short period of massive fishing effort by Soviet vessels. The all-nation catch of pollock in eastern Bering Sea, practically all of which was taken by Japan and the U.S.S.R., had increased from 175,000 tons in 1964 to more than 1.7 million tons in 1971, a 9-fold increase. Annual fishing effort in the eastern Bering Sea-Aleutians region by Japanese pair and stern trawlers (vessels which are highly efficient in the catching of groundfish) increased by 180% and more than 65%, respectively, between 1968 and 1971 (S. Murai, pers. comm.).

20/ Restrictions on Japanese fisheries for herring in the eastern Bering Sea were also taken up during the U.S.-Japan negotiations on a revised agreement.

It was in light of this array of events and a concomitant concern over the welfare of assorted stocks of fish that restrictions on Japanese and Soviet fisheries in the form of catch quotas became noteworthy elements of the U.S. position in negotiations on revised CFZ agreements with Japan and the U.S.S.R. The new CFZ agreements regarding fishing operations off Alaska by the two nations in 1973 and 1974 included in addition to the seasonal/areal restrictions shown in Figures 9 (U.S.-Japan) and 10 (U.S.-U.S.S.R.) catch quotas for certain species of groundfish in the eastern Bering Sea and Gulf of Alaska, among which were:

Nation	Region*	Species	Fishery	Catch quota, t 21/ 1973	1974
Japan	EBS	Pollock	Trawl	1,500,000	1,300,000
	GOA	Pac. oc. perch	Trawl	60,000	60,000
	GOA	Sablefish	Longline	25,000	25,000
	GOA	Sablefish	Trawl	5,000	5,000
U.S.S.R.	EBS	Flatfish	Trawl	100,000	100,000

*EBS: Eastern Bering Sea; GOA: Gulf of Alaska

There are a few things to be mentioned here in regard to the catch quotas shown above. One is that they were nearly the same as the respective average annual catches during the preceding 3 or 4 years for which data were available, thereby representing an attempt to put the fisheries on hold while assessments of stock conditions were being brought up to date. Another is that the quotas reflected a recognition that there was a strong movement by many countries around the world for extended fisheries jurisdiction. Lastly, enforcement of a catch quota was the responsibility of the nation whose fishery was affected,

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21/ Catch quotas were also established for other species of fish in certain areas. See Forrester et al. 1983 for details.

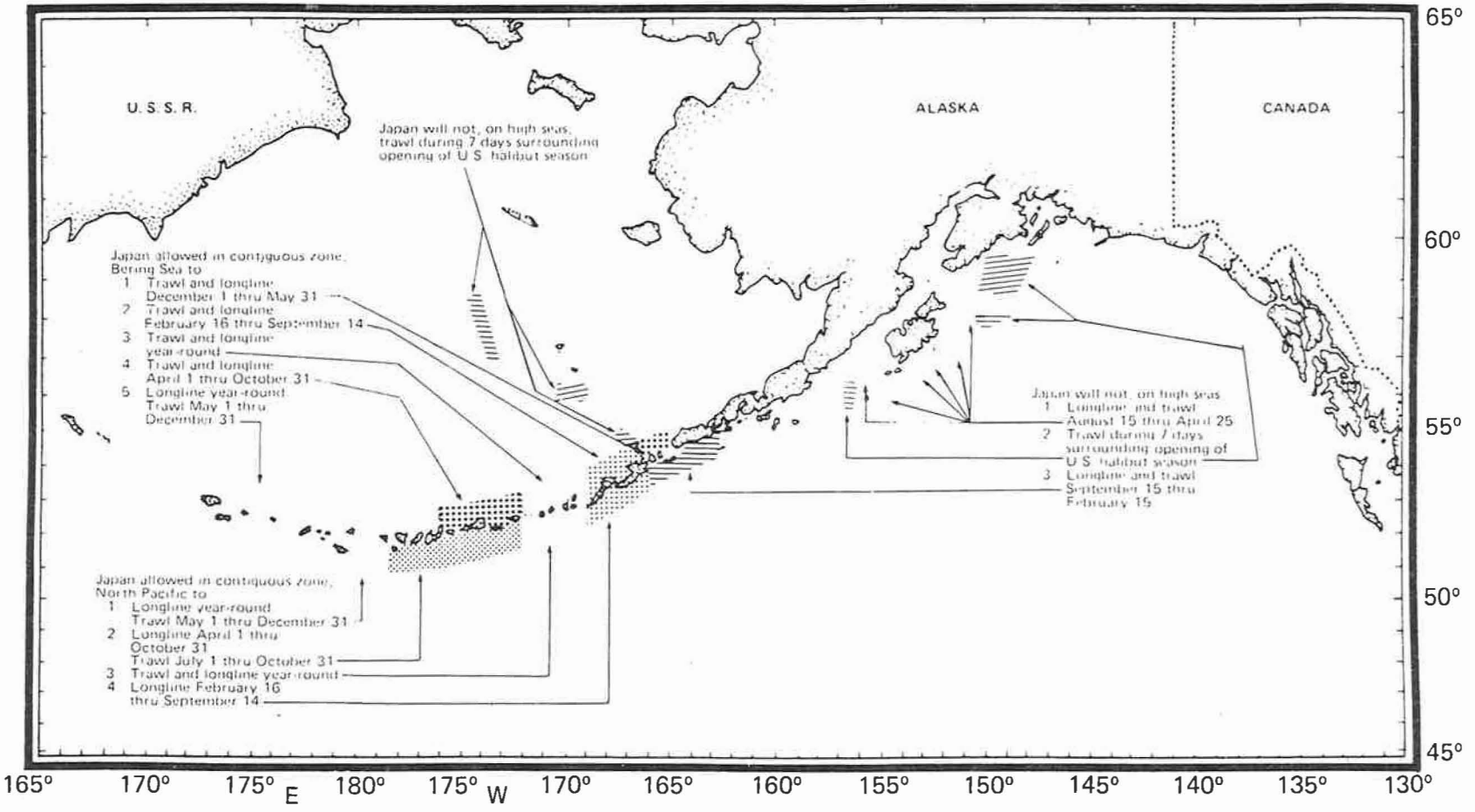

Figure 9. Restrictions placed on Japanese groundfish fisheries in 1973 and 1974 by the U.S.-Japan fisheries agreement of December 1972. (From Forrester et al. 1983, App. fig. B.)

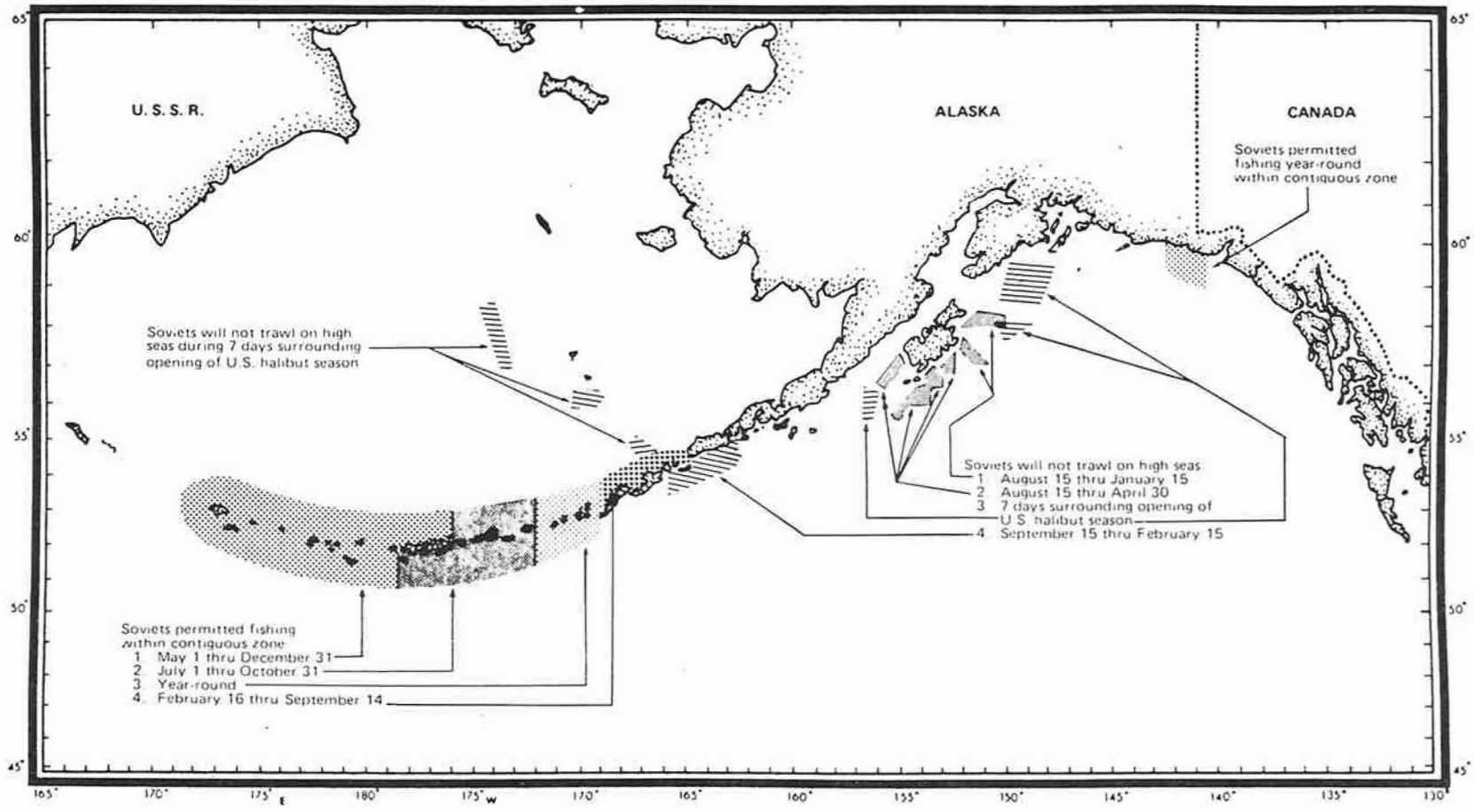

Figure 10. Restrictions placed on U.S.S.R. groundfish fisheries in 1973 and 1974 by the U.S.-U.S.S.R. fisheries agreement of February 1973. (From Forrester et al. 1983, App. fig. H.)

the only internationally acceptable arrangement at the time but one which mixed good faith with fox-guarding-the-henhouse doubts.

The final round of negotiations on bilateral fisheries agreements with Japan and the U.S.S.R. before the MFCMA entered into force took place in November-December 1974 (U.S.-Japan) and July 1975 (U.S.-U.S.S.R.). A year prior to the U.S.-Japan negotiations, i.e., during the 1973 annual meeting of INPFC, the three member nations of the Commission had agreed to carry out joint studies of all bottomfish resources of the Bering Sea, studies which U.S. members of the Commission had first proposed in 1967. In March of 1974, the Canadian and U.S. Sections of INPFC had concurred with measures taken or proposed by Japan to close certain areas in eastern Bering Sea to trawling by its vessels during certain periods of time beginning on December 1, 1973 (Figure 11). The purpose of the closures[22/] was to reduce the incidental catch of young halibut by Japanese trawl fisheries.

During the 1974 annual meeting of INPFC, which immediately preceded U.S.-Japan negotiations on a revised bilateral fisheries agreement, a number of technical reports by Japanese and U.S. scientists on the condition of various groundfish stocks off Alaska were reviewed and, in most instances, objects of considerable dispute. Arguments over the reports continued during the bilateral negotiations. Notwithstanding disparate views of scientists of the two countries as to the status of some of the groundfish stocks, agreement was reached in December 1974 on an extensive array of annual catch quotas applicable to Japanese fisheries for groundfish off Alaska during 1975-76.

22/ The closures were in addition to various other INPFC conservation measures for halibut of eastern Bering Sea in 1974. All of the measures are described in INPFC's 1973 Annual Meeting Proceedings.

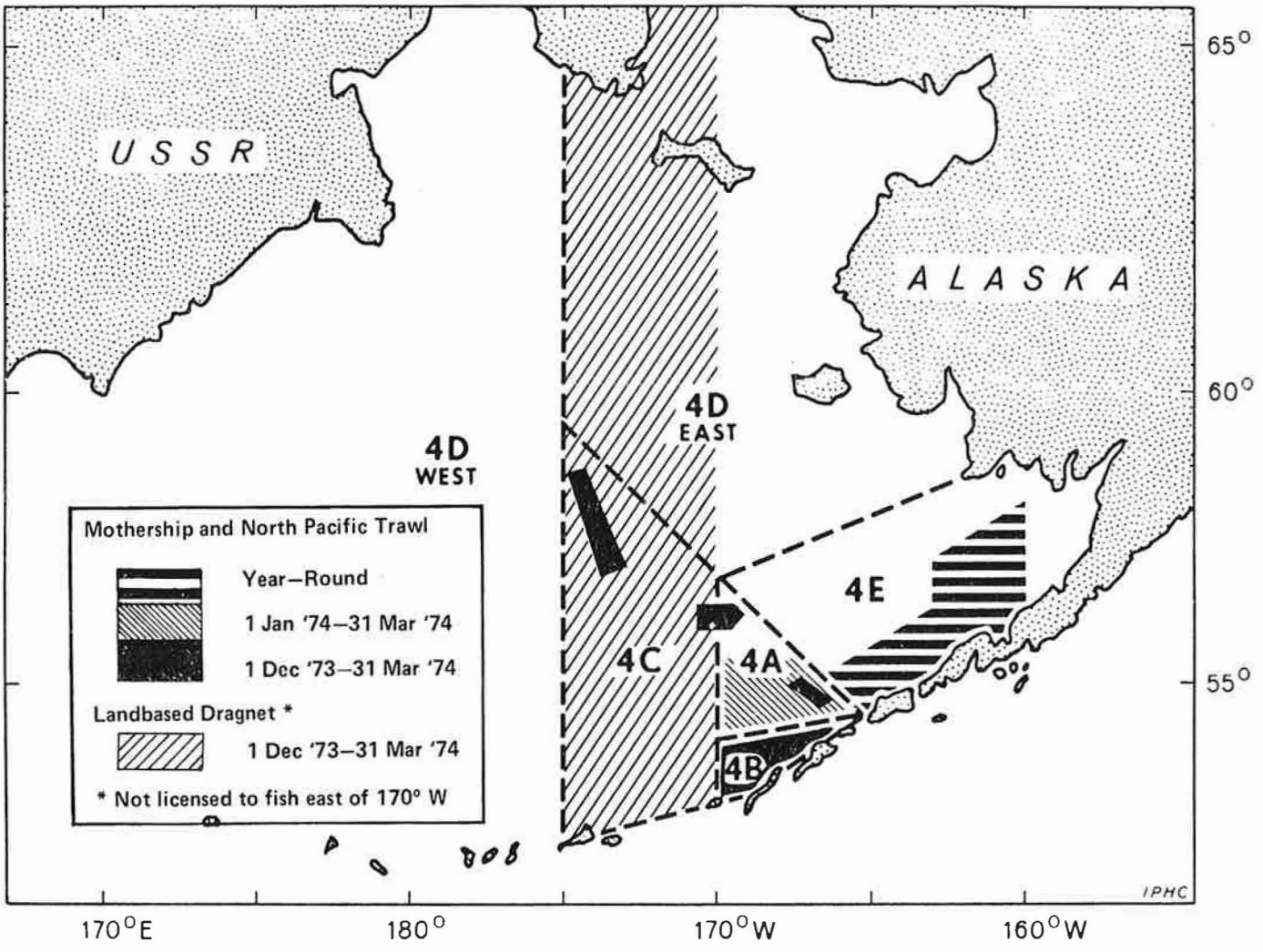

Figure 11. Areas closed to trawling by Japanese vessels in eastern Bering Sea during 1 December 1973 to 31 December 1974 under domestic regulations of Japan. (Redrawn from fig. 2, IPHC 1974, using information from INPFC 1975.)

Region	Fishery	Species	Annual catch quota, 1975-76, t	Change in quota from 1974
EBS	Mothership and No. Pac. trawl	Pollock	1,100,000	-200,000 t
	" "	Other groundfish	160,000	No quota in 1974
	Landbased dragnet	All groundfish	35,000	" "
Aleutians	M'ship-No. Pac. trawl and longline	Pac. oc. perch	9,600	No quota in 1974
	" "	Sablefish	1,200	" "
	Landbased dragnet	All groundfish	8,500	" "
GOA	Longline	Sablefish	25,000	No change
	Trawl	Sablefish	5,000	" "
	"	Rockfish	60,000	*
	Trawl and longline	Other groundfish	30,000	No quota in 1974

* The 1974 quota was 60,000 t for Pacific ocean perch only.

Agreement was also reached on measures pertaining to fishing and loading operations by Japanese vessels in the contiguous fishery zone off Alaska and certain restrictions on Japanese fisheries seaward of the CFZ in the eastern Bering Sea and Gulf of Alaska during 1975 and 1976 (Figure 12). The restrictions were in the form of area closures during certain periods of the year and were intended to make it easier for U.S. fishermen to carry on fisheries for halibut, crab, and shrimp, as well as to reduce incidental catches of halibut and crab by Japan's fisheries.

The U.S.-U.S.S.R. agreement of July 1975 contained a number of provisions bearing on 1975-76 fishing operations by Soviet vessels both within and beyond the CFZ off Alaska (Figure 13), plus a new set of annual catch quotas for several species of groundfish taken by Soviet trawlers:

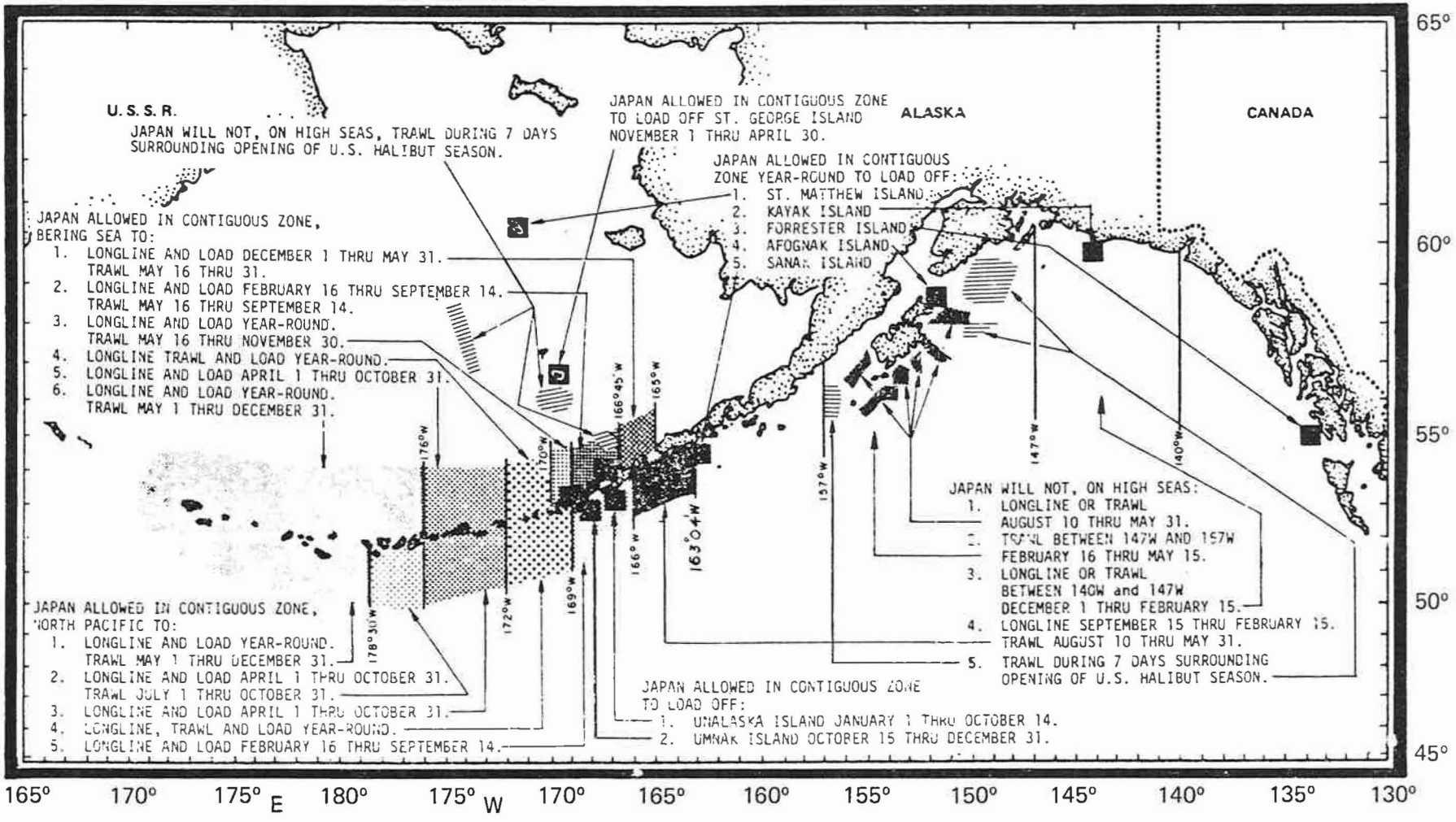

Figure 12. Restrictions and privileges applicable to Japanese groundfish fisheries off Alaska in 1975 and 1976 under the U.S.-Japan fisheries agreement of December 1974. (From U.S. Dept. Comm. 1977b, fig. 3.)

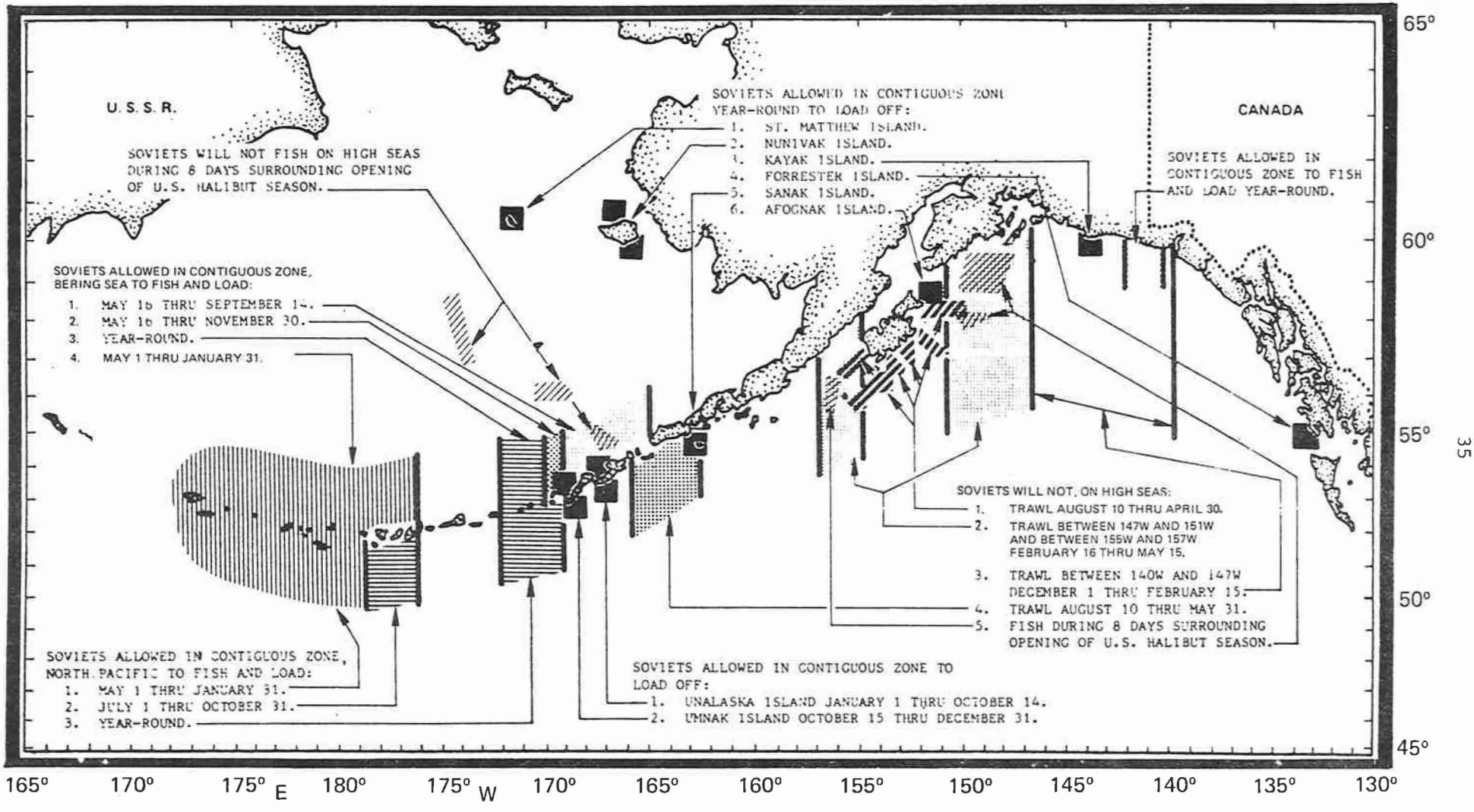

Figure 13. Restrictions and privileges applicable to Soviet groundfish fisheries off Alaska in 1975 and 1976 under the U.S.-U.S.S.R. fisheries agreement of July 1975. (From U.S. Dept. Comm. 1977b, fig. 4.)

Region	Species	Annual catch quota, 1975-76, t	Change in quota from 1974
EBS	Flatfish	Included in "other groundfish" category	*
	Pollock	210,000	No quota in 1974
	Other groundfish	120,000	**
Aleutians	Rockfish	12,000	No quota in 1974
	Other groundfish	16,000	" "
GOA	Pollock	40,000	" "
	Rockfish	10,000	" "
	Other groundfish	30,000	" "

* Quota in 1974 was 100,000 t.
** Not a separate species category in 1974.

The Japanese and Soviet catch quotas for 1975 and 1976 stemmed almost entirely from analyses of fisheries and biological data that Japan had provided over a period of many years. (The scanty information that the U.S.S.R. had furnished for its groundfish fisheries was of very little use for assessments of stock conditions.) There was much that was not known about the stocks--their discreteness as biological or management units, vital statistics, interrelationships, responses to environmental variables beyond man's control, and so forth. Further, there were questions about the credibility of some of the reported fisheries statistics. In spite of such shortcomings, however, there existed a substantial body of evidence that was useful for gaining some understanding of the condition of groundfish populations considered in this study.[23/] In the case of pollock in eastern Bering Sea, the evidence indicated that there had been nearly a fourfold increase in all-nation fishing effort between 1968 and 1973, a decrease of at least 50% in annual CPUE during the same period,

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23/ Summaries of the evidence on stock conditions and a listing of source documents are given in the INPFC 1974 Annual Proceedings.

and an increasing dependence of the fishery on small, young fish. The yellowfin sole resource in eastern Bering Sea, which had been much reduced by intensive fishing in the early 1960's, remained in a depressed condition. Pacific ocean perch stocks throughout the Gulf of Alaska were in such poor condition that catch reductions were called for. In the Aleutians, the POP stocks could not be considered to be in good condition, and the most optimistic appraisal that could be made in regard to the resource along the continental slope in eastern Bering Sea was that it needed to be watched very carefully after the large catches of earlier years. In the case of sablefish in the eastern Bering Sea, U.S. scientists interpreted recently reduced catches and downward trends in CPUE's for Japanese stern trawlers (of the landbased dragnet fishery) and longliners as being indicative of a sizeable reduction in abundance. Longline CPUE's indicated that the sablefish stock in the Aleutians had been in a reasonably stable condition for a number of years. As for sablefish in the Gulf of Alaska and Pacific cod in the eastern Bering Sea, data available during the 1974 annual meeting of INPFC and the bilateral negotiations that followed were judged to be insufficient for detailed analysis of stock conditions.[24/]

24/ During the 1975 annual meeting of INPFC Canadian, Japanese, and U.S. scientists considered signs of declining abundance of sablefish in the Gulf of Alaska during 1970-74 to be reason for concern, particularly since Japanese longline fishing effort in 1974 was the second highest on record and no limits had been placed on sablefish catches by Republic of Korea vessels. The scientists also expressed concern over the condition of the Pacific cod stock in the eastern Bering Sea (EBS), as well as stocks of rock sole, flathead sole, and turbot there, while noting that information was not available for adequate assessment of the condition of these stocks. Additionally, the INPFC scientists agreed in 1975 that the abundance of sablefish in EBS had been declining, by as much as 80% in some areas since 1966, and they concurred in the opinion that the sablefish population in the Aleutians was small in comparison with the population in EBS or northeastern Pacific Ocean (1975 INPFC Annual Proceedings).

Protection of Halibut from Trawling

In addition to the revised catch quotas for various species of groundfish in 1975 and 1976, another significant new feature of both the December 1974 U.S-Japan and the July 1975 U.S.-U.S.S.R. agreements was the closure of large parts of the Gulf of Alaska to longliners (Japan) and trawlers (Japan and U.S.S.R.) during the winter or early spring (Figures 12 and 13). The closures were among an array of area-time restrictions that were proposed by the U.S. during the 1974 annual meeting of INPFC and were the focal point of discussions during U.S.-Canada-U.S.S.R. consultations in February and July 1975. They were developed primarily with the view toward gaining as much protection as possible for halibut from Japanese and Soviet fishing activities in the gulf, but it was also believed that they would provide some protection for other groundfish stocks as well as crab resources in the gulf.

Turning from the Gulf of Alaska to eastern Bering Sea, negotiations involving the three member nations of INPFC in late 1974 and early 1975 led to Japan's agreeing to take further steps to protect halibut from trawling in the latter region beginning December 1, 1974 (Figure 14).[25/] After more discussion in INPFC a year later, Japan imposed additional restrictions on its trawl fisheries in eastern Bering Sea beginning December 1, 1975. These restrictions, together with certain restrictions placed on Soviet trawling activities in the region under terms of the U.S.-U.S.S.R. agreement of July 1975 and effective also on December 1, 1975 are shown in Figure 15. As that figure and several preceding figures give an inkling of--not to mention other, longstanding indicators of the fact--the Pacific halibut resource off the North American coast represented

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25/ Although the negotiations extended well beyond December 1, 1974, Japan had voluntarily closed certain sectors of EBS to fishing by its trawl vessels as of that date.

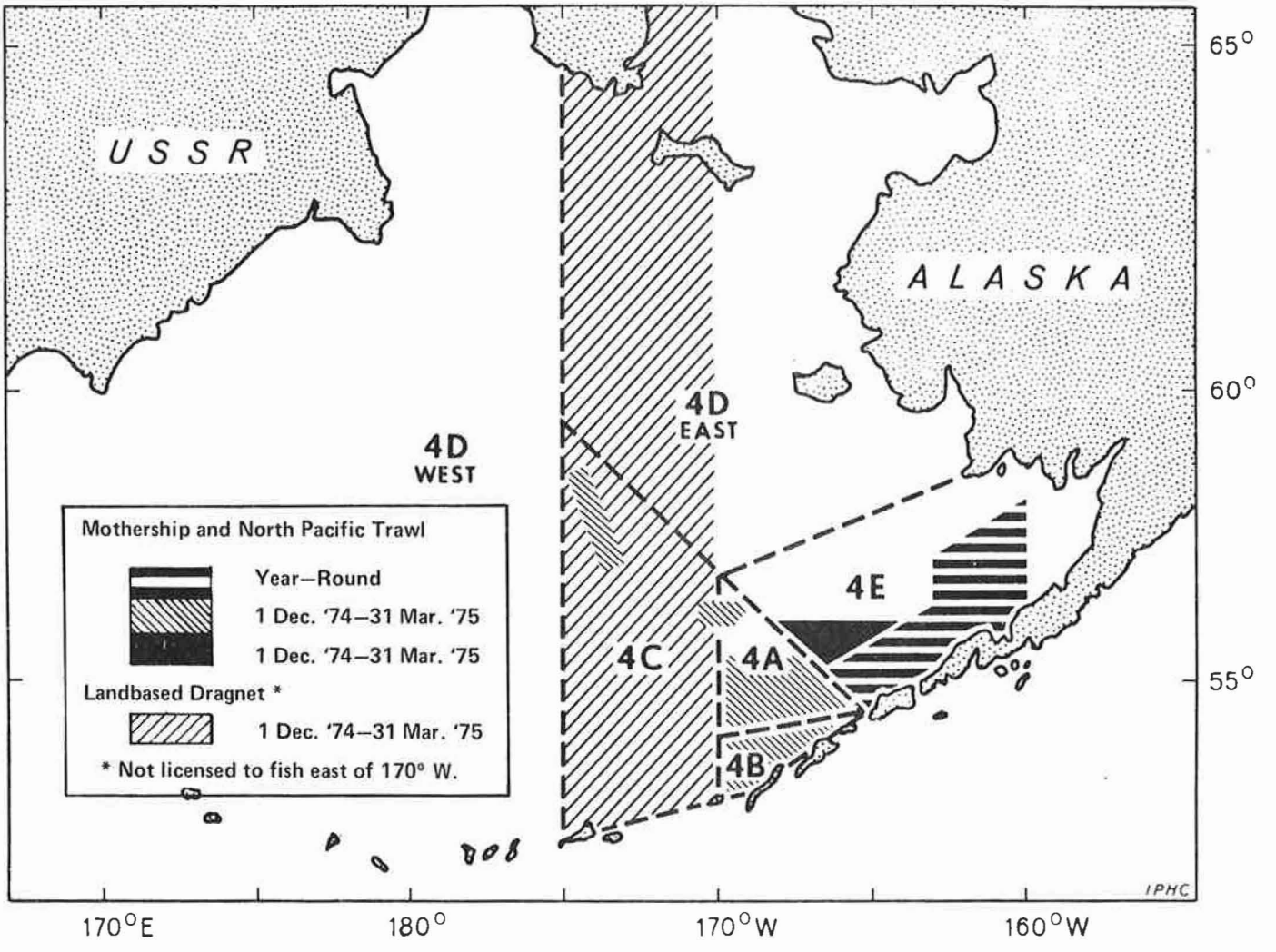

Figure 14. Areas closed to trawling by Japanese vessels in eastern Bering Sea during 1 December 1974 to 31 December 1975 under domestic regulations of Japan. (Redrawn from fig. 2, IPHC 1974, using information from INPFC 1977a.)

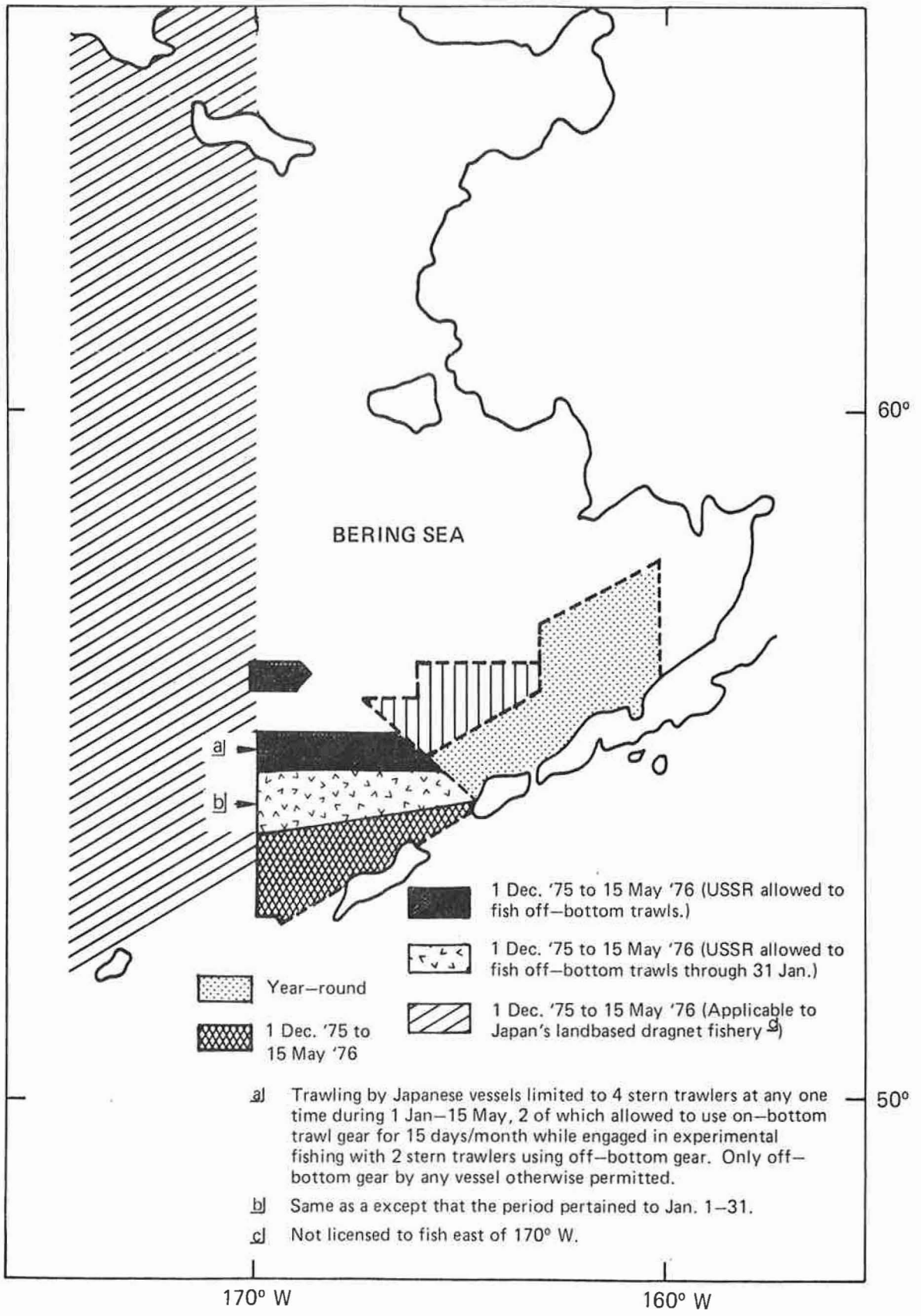

Figure 15. Areas closed to trawling by Japanese and Soviet vessels in eastern Bering Sea during 1 December 1975 to 31 December 1976 under domestic regulations of Japan and the U.S.-U.S.S.R. bilateral agreement of July 1975. (Information from INPFC 1977b and Forrester et al. 1983, App. fig. J.)

a sort of national treasure and its conservation a matter of national resolve for both the U.S. and Canada.

The manifold restrictions on Japanese and Soviet fisheries for groundfish off Alaska in 1975-76 did not come about without strenuous debate in one forum or another--INPFC, bilateral negotiations, or trilateral discussions outside the scope of INPFC. In some instances the scientific data underlying the restrictions were highly equivocal. But what was crystal clear was the great change rapidly taking place in the fisheries world, i.e., the movement towards extended jurisdiction by coastal states. The days when distant-water fishing fleets of one nation could operate with impunity just beyond the territorial waters or contiguous fishery zone of another nation were coming to an end. That certainly was the case with the foreign fisheries for groundfish off Alaska. In March 1976 the U.S. Congress enacted P.L. 94-265, the Fishery Conservation and Management Act of 1976. The Act, which was proclaimed by President Ford on April 13, 1976, took effect on March 1, 1977.

Before the history of Alaska groundfish fishery regulations under the MFCMA is taken up, mention should be made of restrictions embodied in bilateral agreements between the U.S. and ROK, and the U.S. and Poland, other forerunners to MFCMA. The U.S.-ROK agreement, negotiated in November 1972 and in effect through mid-December 1977, permitted Korean vessels to carry out loading operations at certain locations in the U.S. CFZ but prohibited them from fishing for salmon or halibut east of 175°W in either the Bering Sea or northeast Pacific Ocean. The agreement also called for U.S.-ROK consultations in the event Korean trawling operations expanded to the vicinity of a defined "sanctuary area" in southeastern Bering Sea (Figure 16) but otherwise placed no restrictions on ROK fishing in waters beyond the CFZ off Alaska for the species of groundfish included in this study. Much more restrictive of foreign fishing were the

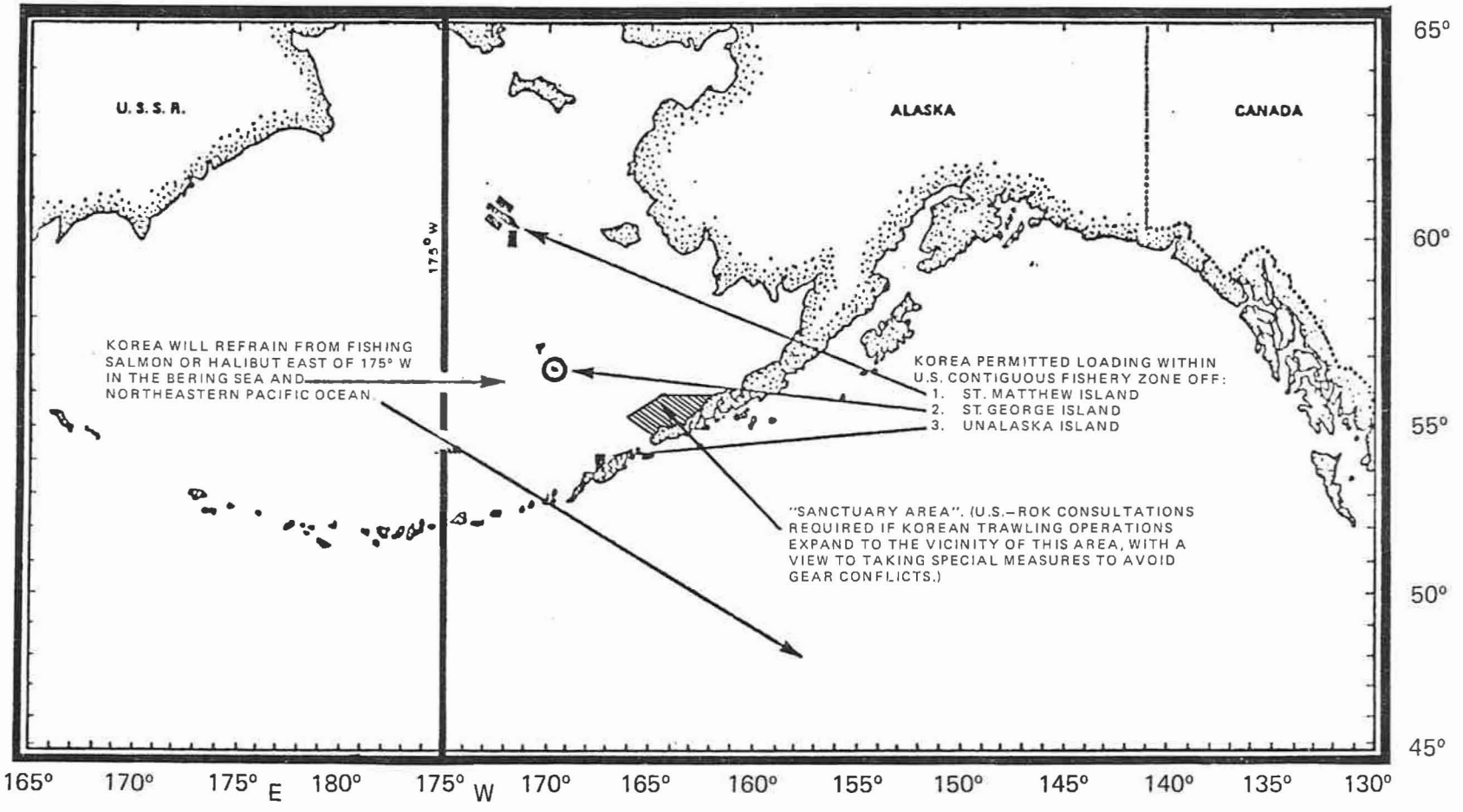

Figure 16. Provisions of the United States-Republic of Korea fisheries agreement of November 1972, effective through December 12, 1977. (From No. Pac. Fish. Mgt. Coun. 1979, fig. 20, revised.)

U.S.-Poland agreements of May 1975 and December 1975, particularly the latter (Figures 17 and 18). The restrictions on Polish fishing activities, however, did not lead to anything even faintly approaching a major reduction in foreign catches or fishing effort, but they nipped in the bud, so to speak, any plans that Poland might have had for a flourishing fishery for groundfish off Alaska.

Management under MFCMA

Passage of the MFCMA culminated several years of congressional study and deliberation and forcefully reflected a recognition of the fact that many of the international fishery agreements to which the U.S. had been a party left much to be desired by way of effectively controlling foreign fishing activities on fishery resources off the U.S. coast, including groundfish off Alaska. Many coastal fishermen around the U.S. had long and avidly lobbied for extended fisheries jurisdiction; the United Nations Law of the Sea Conference in Caracas, Venezuela, in 1973 had basically accepted coastal state management of fishery resources to 200 miles offshore; and many coastal nations had already declared 200-mile zones or were intending to do so at an early date.

Under the MFCMA the U.S. declared exclusive management authority over all fishery resources except tunas in a fishery conservation zone (FCZ) between 3 and 200 nautical miles offshore from the baseline from which its territorial waters are measured. The U.S. also prohibited fishing by any foreign vessel in the FCZ except as authorized under certain conditions and conducted under and in accordance with a permit issued by the Secretary of Commerce pursuant to what the Act refers to as a governing international fisheries agreement (GIFA) or by the Secretary of State in the case of an existing international fishery agreement. Total allowable level of foreign fishing (TALFF) under the GIFA's is limited to that portion of the optimum yield (OY) not harvested by U.S.

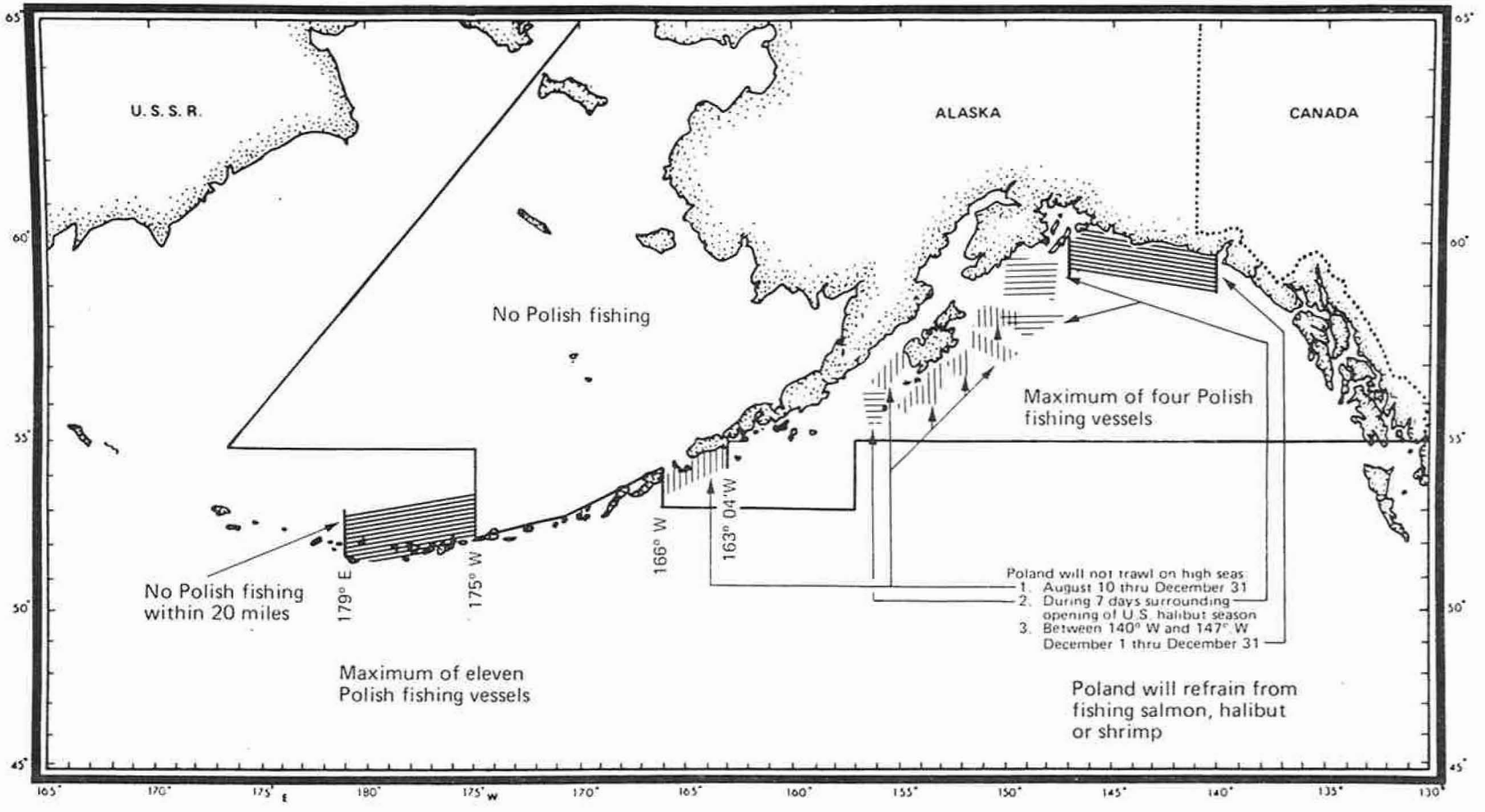

Figure 17. Restrictions placed on Polish groundfish fisheries off Alaska in 1975 by the U.S.-Poland agreement of May 1975. (From Forrester et al. 1983, App. fig. K.)

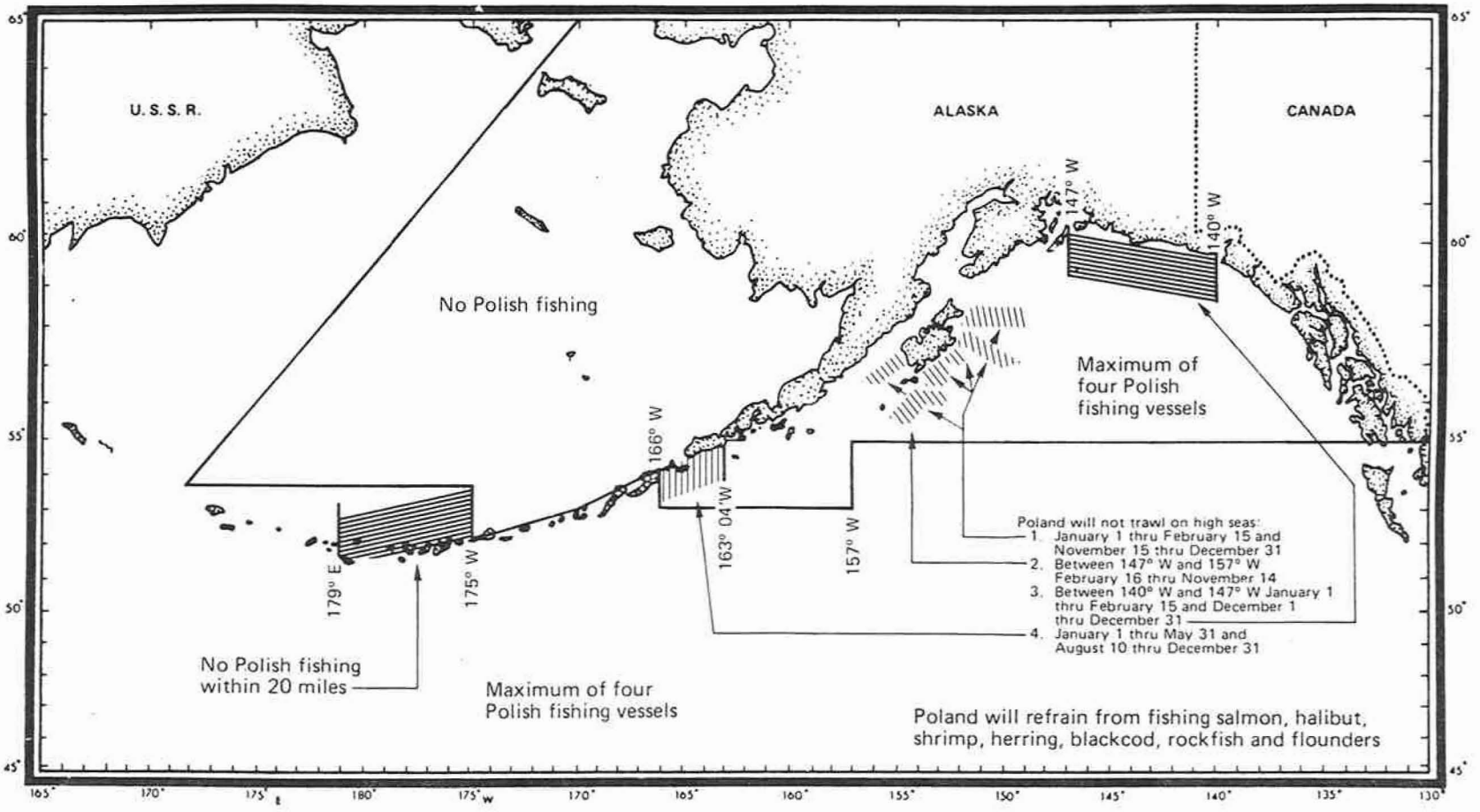

Figure 18. Restrictions placed on Polish groundfish fisheries off Alaska in 1976 by the U.S.-Poland bilateral agreement of December 1975. (From Forrester et al. 1983, App. fig. L.)

fishermen in any fishery in the FCZ, with OY being defined as the quantity of fish prescribed on the basis of maximum sustainable yield as modified by any relevant economic, social, or ecological factor.

Among its provisions and proclamations, the MFCMA called for the preparation and implementation of fishery management plans to achieve and maintain the optimum yield from each fishery on a continuing basis, with the plans being in accordance with seven national standards for fishery conservation and management, given in the Act as follows:

1. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery.
2. Conservation and management measures shall be based on the best scientific information available.
3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit.
4. Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be (a) fair and equitable to all such fishermen, (b) reasonably calculated to promote conservation, and (c) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
5. Conservation and management measures shall, where practicable, promote efficiency in the utilization of fishery resources, except that no such measure shall have economic allocation as its sole purpose.

6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
7. Conservation and management measures shall, where practicable, minimize costs and avoid unnessary duplication.

Pragmatism characterizes the national standards, as illustrated not only by frequent use of the term "practicable" but also, for example, by the provision (second standard) that conservation and management measures are to be based on the best scientific information available, meaning that regulatory measures should not be held in abeyance solely because knowledge of the host of factors affecting the status and productivity of fish stocks is incomplete. It is a statement to the effect that fisheries regulation is a trial-and-error process, that decision making involves risk taking. An element of pragmatism is also evident in the sixth national standard, which recognizes that fish populations are dynamic, that fisheries and fishing technologies change over time, and that the demand for fishery products is inconstant.

As pointed out by Larkins (1980), the MFCMA called for the preparation of two forms of fishery management plans. First were the preliminary fishery management plans (PFMP's). These covered only foreign fisheries and were prepared and implemented by the Department of Commerce. They were applicable from March 1, 1977 to the time that the regional fishery management councils developed the second plan forms, the fishery management plans (FMP's), which cover domestic as well as foreign fisheries. Three different PFMP's, all published in the Federal Register in February 1977, dealt with fisheries for the various species of Alaskan groundfish included in this study: One was for the sablefish fishery off Alaska and Washington-Oregon-California (U.S. Dept. of Commerce, NOAA, 1977a); another was for trawl fisheries for groundfish in

the Gulf of Alaska (U.S. Dept. of Commerce, NOAA, 1977b); and the third was for the trawl fisheries for groundfish in the eastern Bering Sea and Aleutians region (U.S. Dept. of Commerce, NOAA, 1977c). Portions of the sablefish PFMP pertaining to Alaskan waters were later incorporated in the Gulf of Alaska Groundfish FMP, which was implemented on December 1, 1978; the PFMP for groundfish fisheries in the Bering Sea-Aleutians area; and then the Bering Sea-Aleutian Islands Groundfish FMP, which was implemented on January 1, 1982.[26/]

U.S. management policy for groundfish resources of the Gulf of Alaska and Bering Sea was stated as follows in the PFMP's for fisheries in the two regions:

> Gulf of Alaska: First to assure an adequate potential for the development of new U.S. fisheries; second to protect the halibut resource so that it may rebuild to the level that will provide maximum sustainable yield (MSY); and third to allow foreign fishing consistent with the above and in a manner that will allow rebuilding of overexploited stocks and prevent overfishing of currently healthy stocks.
>
> Bering Sea: To arrest the decline in abundance of overfished stocks and allow them to begin rebuilding to levels that will produce MSY; to rebuild the halibut resource of the region to a level that will allow a viable U.S. setline fishery; and to prevent stocks that are currently healthy from being overfished.

In line with management policy, numerous restrictions were imposed on foreign fishing activities in the Gulf of Alaska and Bering Sea/Aleutians regions in 1977. Many of them were time-area closures carried over from agreements reached through INPFC or from bilateral fisheries agreements that the U.S. had negotiated

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26/ The FMP's for Gulf of Alaska and Bering Sea/Aleutian Islands groundfish were developed by the North Pacific Fishery Management Council (NPFMC). Sectors of the FCZ to which these plans apply are shown in Figure 19.

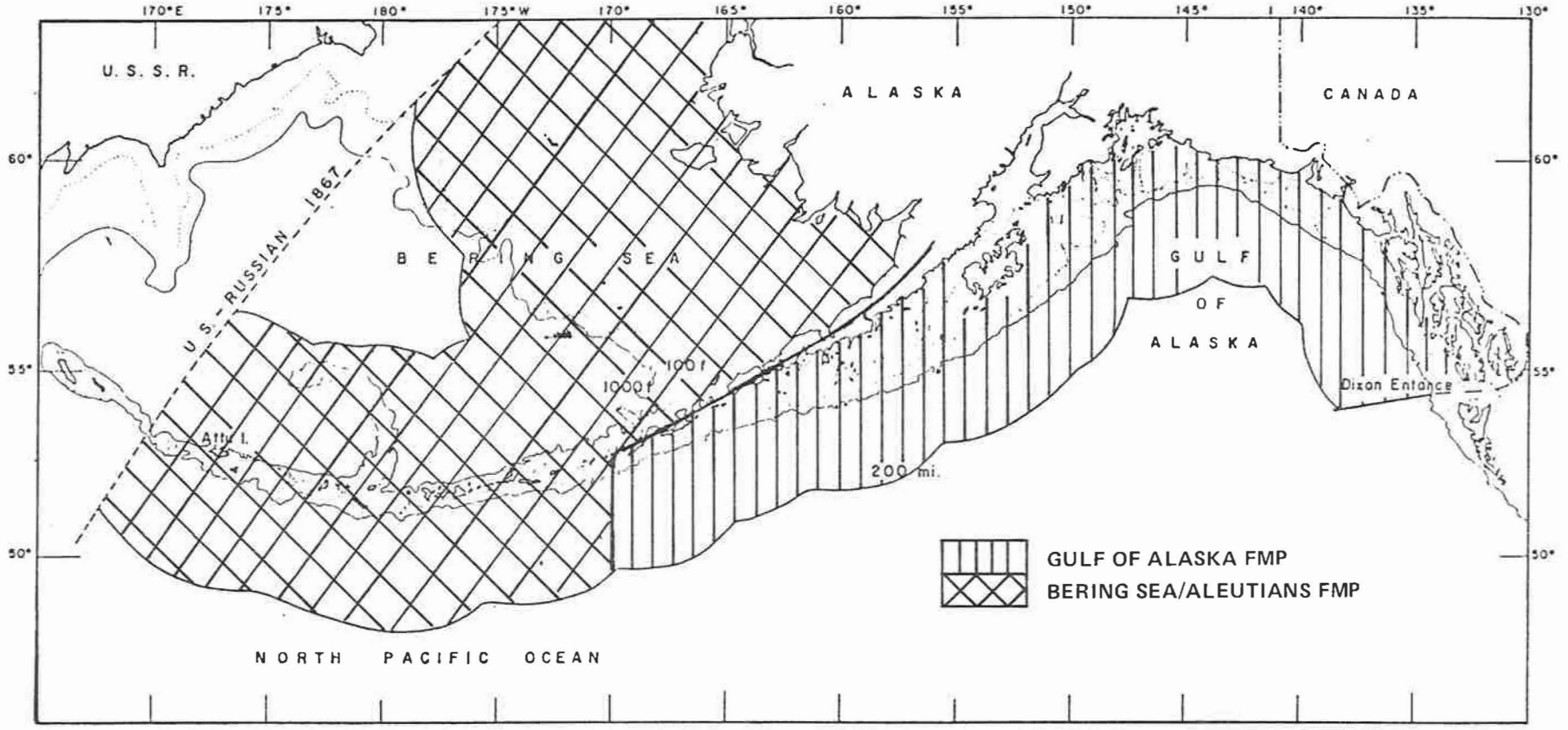

Figure 19. Sectors of the U.S. fishery conservation zone to which the Fishery Management Plans for groundfish in the Gulf of Alaska and Bering Sea/Aleutian Islands regions apply. (From No. Pac. Fish. Mgt. Council 1979, fig. 26, revised.)

with various foreign nations in earlier years (Figures 20 and 21). Other key provisions of the PFMP's applicable to the groundfish stocks that this study is focused on included (1) the establishment of total allowable catches by foreign fishermen in a given region or subarea thereof according to species and, in some instances, by type of fishery; (2) the closure of a region or subarea for the remainder of the calendar year to a nation's trawl or longline fishery when its allocated catch of any species of species complex was taken; (3) the requirement that all vessels of each foreign nation operating in the FCZ off Alaska have available at no cost to the U.S. accommodation for a U.S. observer; and (4) the reporting by each nation whose fishermen operate in the FCZ of monthly and annual catch and effort statistics to the Regional Director of the National Marine Fisheries Service in Juneau, and also the reporting by each foreign fleet commander or individual vessel master of information as to the disposition of each fishing and processing vessel operating in the FCZ off Alaska.

TALFF's in 1977 represented major reductions in permissible catches (quotas) for some species of groundfish off Alaska. For example, the TALFF for pollock in eastern Bering Sea in 1977 was 950,000 tons, nearly 30% less than the combined Japanese-Soviet catch quota of 1,310,000 tons in 1976. The TALFF for rockfish in the Gulf of Alaska in 1977 was 33,000 tons, which was less than one-half the combined Japanese-Soviet catch quota of 70,000 tons in 1976. The TALFF for sablefish in the gulf in 1977 was 19,500 tons, approximately one-third less than the 1976 Japanese quota of 30,000 tons alone.

The TALFF's have been a major feature of the regulatory regime under the MFCMA and are derived from annual estimates of OY's or total allowable catches (TAC's) adjusted for expected domestic annual harvests (DAH's) and a quantity of fish held in reserve for subsequent allocation to domestic or foreign

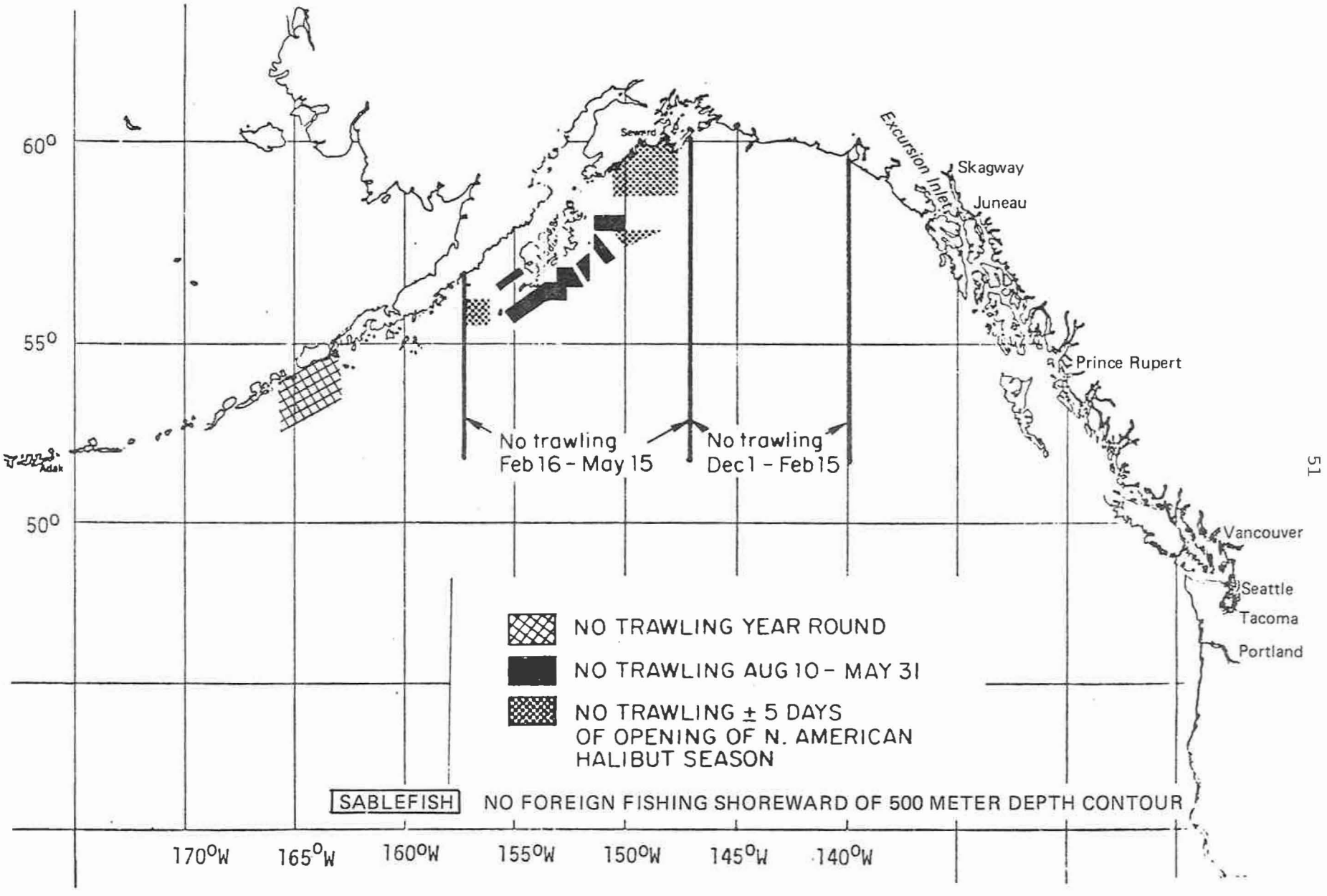

Figure 20. Time-area closures pertaining to foreign trawling for groundfish and an areal restriction on foreign fishing for sablefish in the Gulf of Alaska under the U.S. Preliminary Fishery Management Plans for trawl and sablefish fisheries in the gulf. (From U.S. Dept. Comm. 1977a and 1977b. Fig. 7 of latter document revised.)

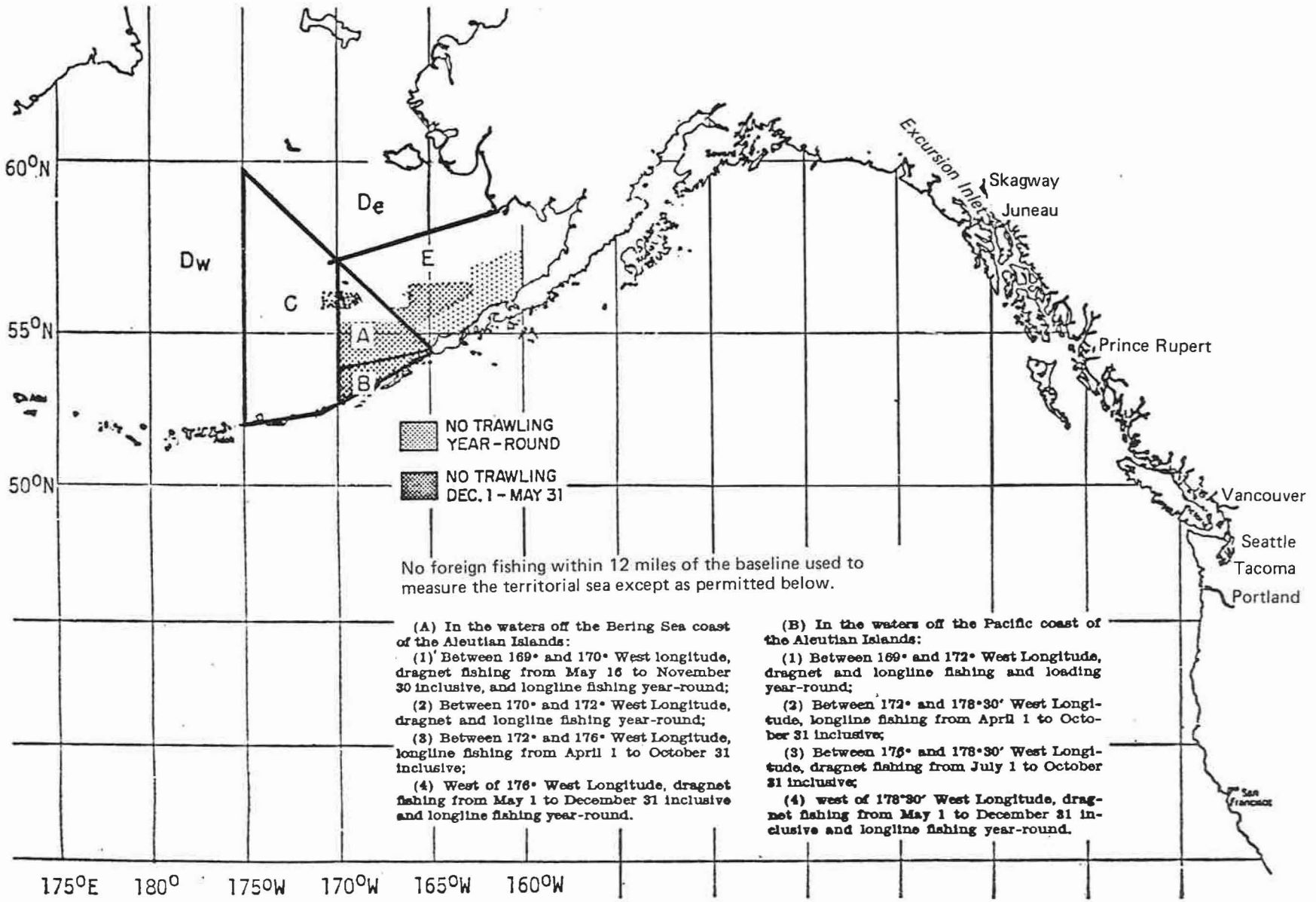

Figure 21. Time-area closures pertaining to foreign fishing for groundfish in the Bering Sea/Aleutian Islands region under the U.S. Preliminary Fishery Management Plans for trawl and sablefish fisheries in the region. (From U.S. Dept. Comm. 1977a and 1977c. Fig. 15 of latter document revised.)

fishermen.[27] Because of changes in the capability of domestic fishermen to harvest groundfish in the FCZ off Alaska over the past decade, it is the OY (or TAC)[28] for each species rather than the TALFF that directly reflects the restraints imposed on overall catches under MFCMA. Annual OY's during 1977-1985 for the species included in this study are given by region and management area (Figures 22-24) in Table 1.

In addition to catch limits, there have been numerous other kinds of restrictions on foreign and domestic fishing for groundfish in the FCZ off Alaska. These are described in detail in the groundfish FMP's for the Gulf of Alaska and Bering Sea-Aleutians (as updated in March 1984 and January 1986, respectively, to incorporate all amendments since the plans were first implemented); they include several measures aimed primarily toward preventing or minimizing incidental catches of juvenile halibut (Figures 25 and 26).

As the FMP's and the history of regulations prior to the MFCMA reveal, fisheries for Pacific cod, sablefish, yellowfin sole, rockfish, and pollock off Alaska have run the gamut from being entirely or largely unrestricted to being closely regulated. The consequences of many years of unregulated fishing and the effects on stock conditions of regulatory measures imposed over the past decade or two, particularly since the MFCMA entered into force, will be examined in a later report.

27/ The FMP for groundfish in the Gulf of Alaska equates TALFF to [OY - (DAH + Reserve)] while the FMP for groundfish in the Bering Sea/Aleutian region equates it to [TAC - (DAH + Reserve)].

28/ The total annual catch permitted to be taken in a region (or a sector thereof) has been variously referred to in INPFC and NPFMC documents as "optimum yield", "total allowable catch", "catch limit", "catch limitation", and "acceptable biological catch", all implying, in effect, a catch quota.

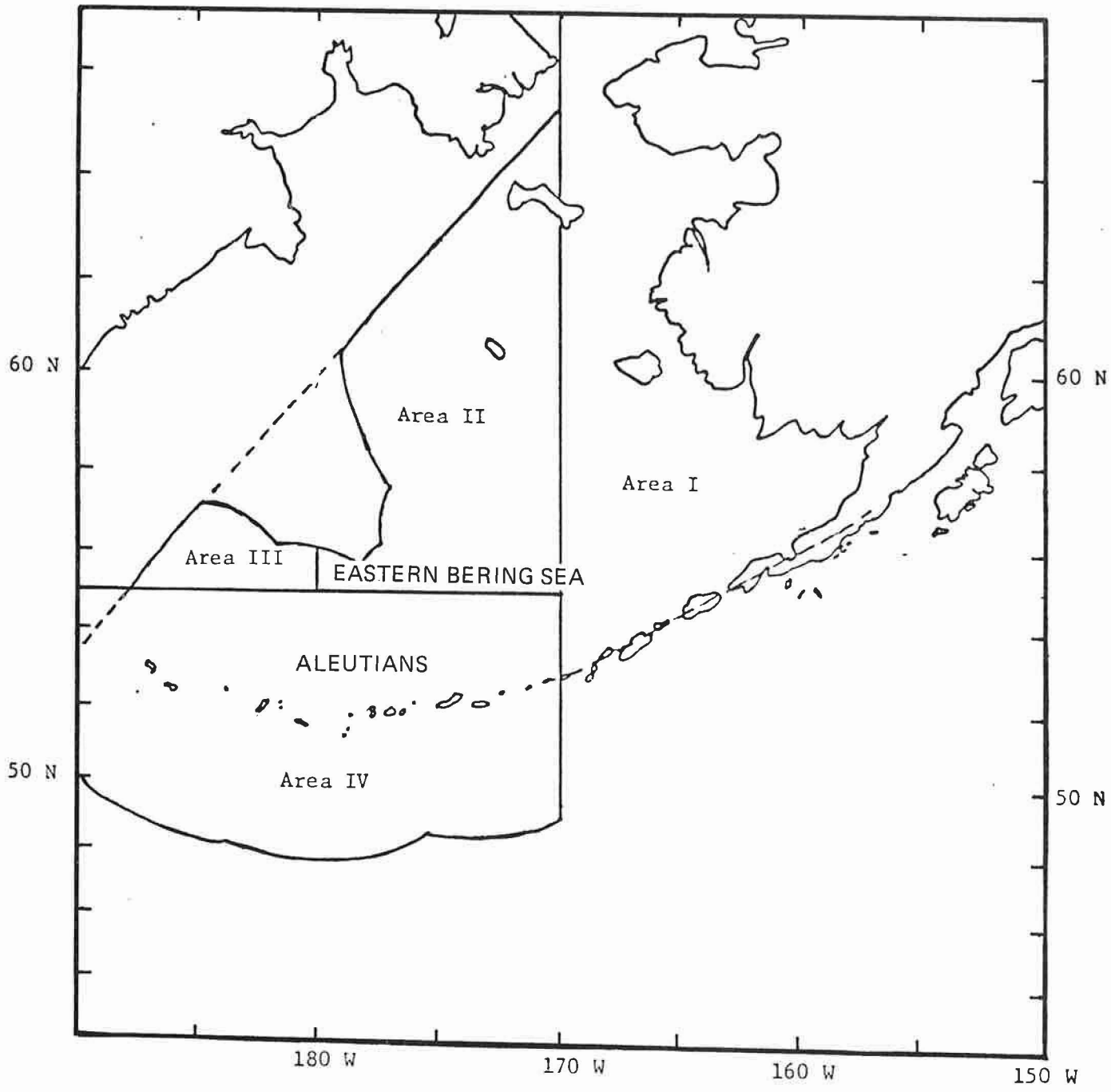

Figure 22. Fishing areas in the eastern Bering Sea and Aleutian Islands as designated in the FMP for groundfish in the region. (From No. Pac. Fish. Mgt. Council 1979, fig. 26a.)

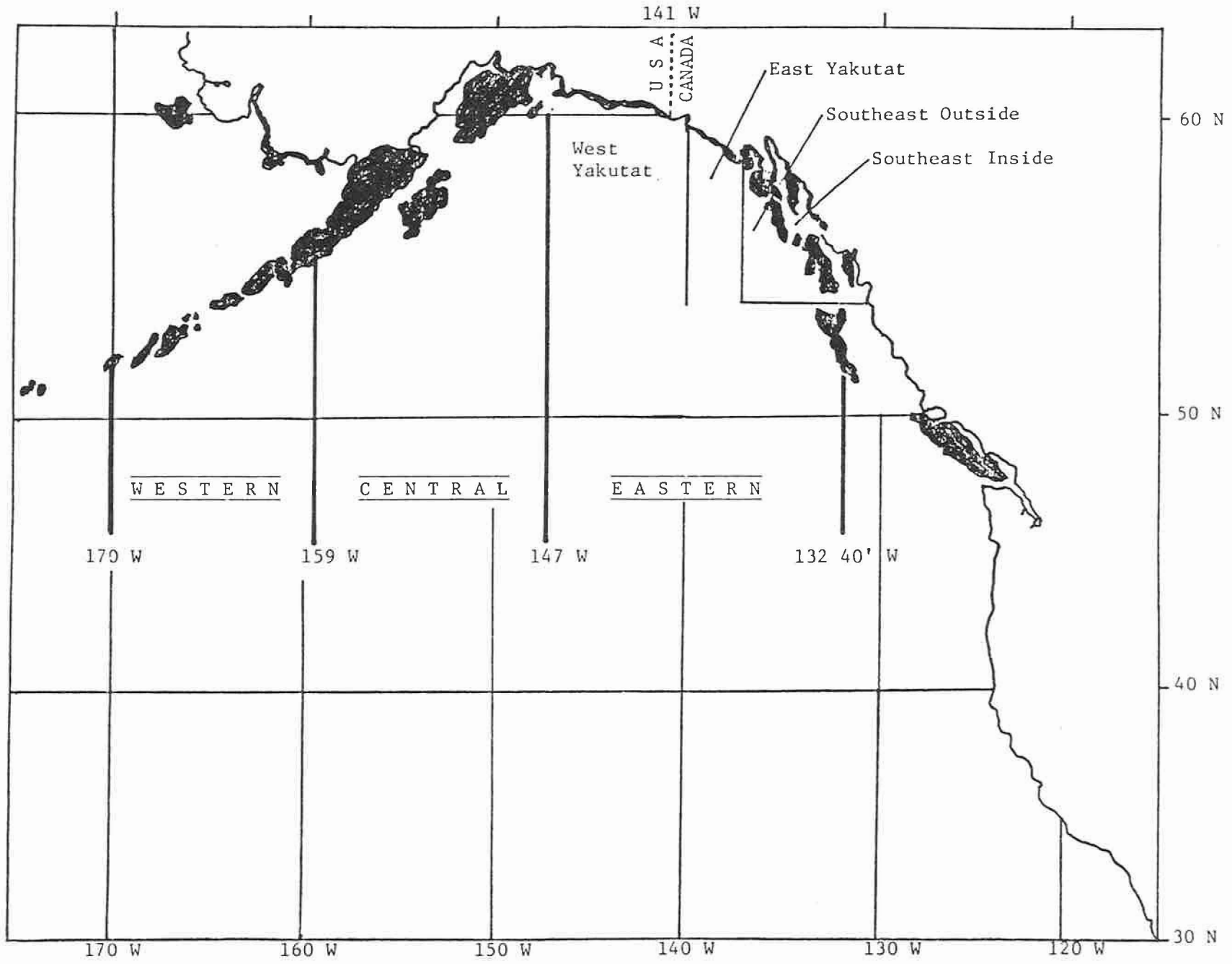

Figure 23. Regulatory areas in the Gulf of Alaska as designated in the FMP for groundfish in the region. (From No. Pac. Fish. Mgt. Council 1984, fig. 3.1.)

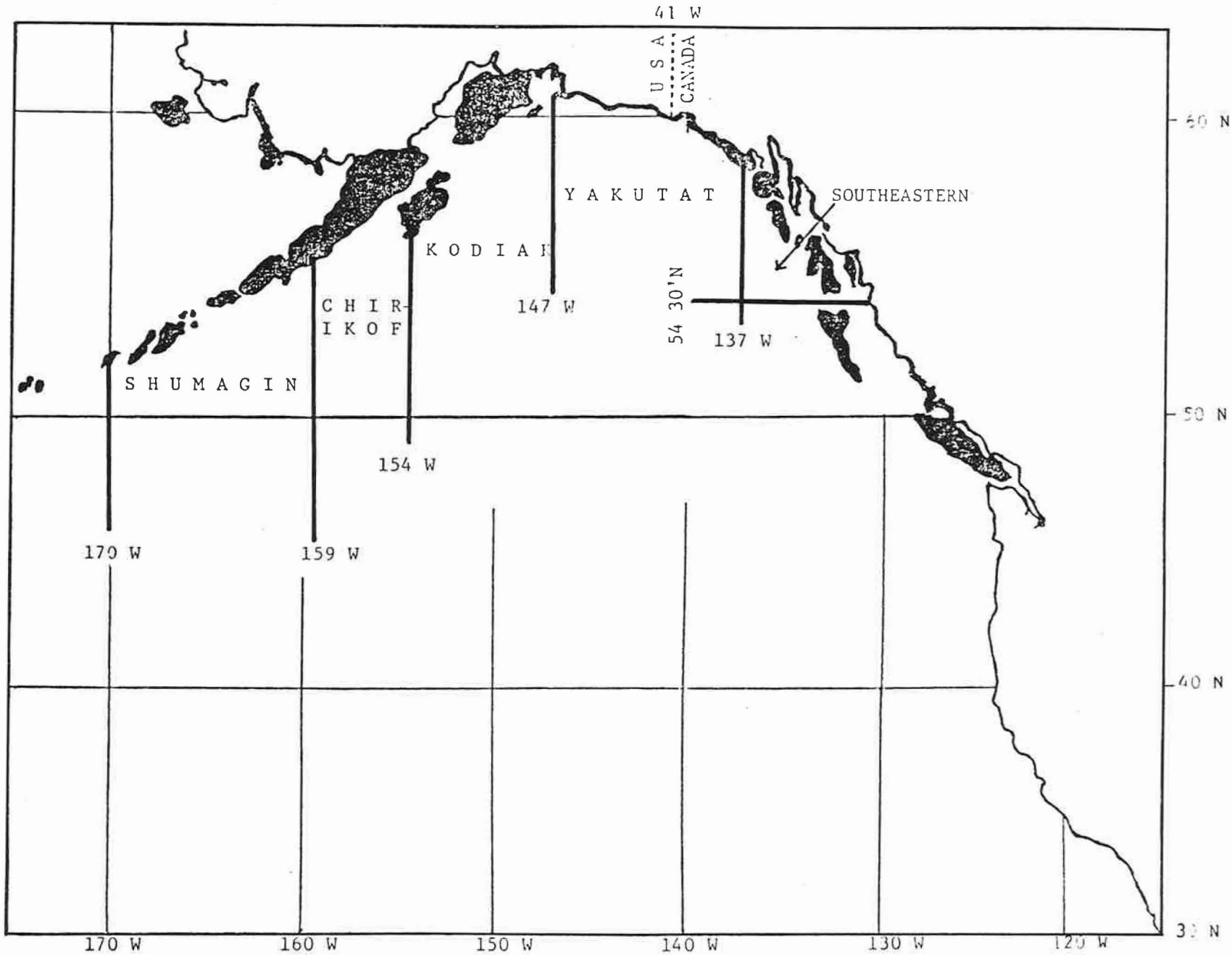

Figure 24. Fishing areas off Alaska in the Gulf of Alaska as designated by INPFC. (From No. Pac. Fish. Mgt. Council 1984, fig. 3.1a.)

Table 1.--Optimum yields for certain species of groundfish in the Eastern Bering Sea/Aleutians and Gulf of Alaska regions, by management areas, during 1977-1985, in metric tons. (Data for 1977-1984 are from Berger et al 1986, and data for 1985 are from Berger, personal communication.)

Species	Region/ Area [1]	1977	1978	1979	1980	1981	1982	1983	1984	1985
Pollock	EBS/AL									
	EBS	{950,000}	{950,000}	{950,000}	1,000,000	1,000,000	1,000,000	1,000,000	1,200,000	1,200,000
	AL				100,000	100,000	100,000	100,000	110,000	100,000
	GOA									
	W			57,000	57,000	57,000	57,000	57,000	{400,000}	{305,000}
	C			95,200	95,200	95,200	95,200	183,000		
	E			16,600	16,600	16,600	16,600	16,600	16,600	16,600
	Total	150,000	168,800	168,800	168,800	168,800	168,800	256,600	416,600	321,600
Yellowfin sole	EBS	106,000	126,000	106,000	117,000	117,000	117,000	117,000	230,000	241,635
Pacific cod	EBS/AL	58,000	70,500	58,000	70,700	78,700	78,700	120,000	210,000	217,310
	GOA									
	W			9,600	16,560	16,560	16,560	16,560	16,560	16,650
	C			19,400	33,540	33,540	33,540	33,540	33,540	33,540
	E			5,800	9,900	9,900	9,900	9,900	9,900	9,900
	Total	6,300	40,600	34,800	60,000	60,000	60,000	60,000	60,000	60,000
POP complex	EBS/AL									
	EBS	6,500	6,500	6,500	3,250	3,250	3,250	3,250	1,780	1,300
	AL	15,000	15,000	15,000	7,500	7,500	7,500	7,500	4,580	3,800
	GOA									
	W			2,700	2,700	2,700	2,700	2,700	2,700	1,302
	C			7,900	7,900	7,900	7,900	7,900	7,900	3,906
	E			14,400	14,400	14,400	875	875	875	875
	Total	30,000	25,000	25,000	25,000	25,000	11,475	11,475	11,475	6,083
Sablefish	EBS/AL									
	EBS	5,000	3,000	3,000	3,500	3,500	3,500	3,500	3,740	2,825
	AL	2,400	1,500	1,500	1,500	1,500	1,500	1,500	1,600	1,875
	GOA									
	W			2,100	2,100	2,100	2,100	1,670	1,670	1,670
	C			3,800	3,800	3,800	3,800[2]	3,060[3]	3,060[3]	3,060
	E			7,100	7,100	6,400	6,400[2]	4,750[3]	4,750[3]	4,250
	Total	22,000	15,000	13,000	13,000	12,300	12,300	9,480	9,480	9,480

[1] EBS - Eastern Bering Sea; AL - Aleutian Islands; GOA - Gulf of Alaska; W, C, and E - Western, Central and Eastern Management Areas of the Gulf. (See Figures 22 and 23.)

[2] 3,400 t in the Yakutat District and 3,000 t in the Southeastern District. (See Figure 24.)

[3] Foreign fishing was allowed only in the West Yakutat sector of the Yakutat District (Figure 23). OY in that sector was 1,680 t.

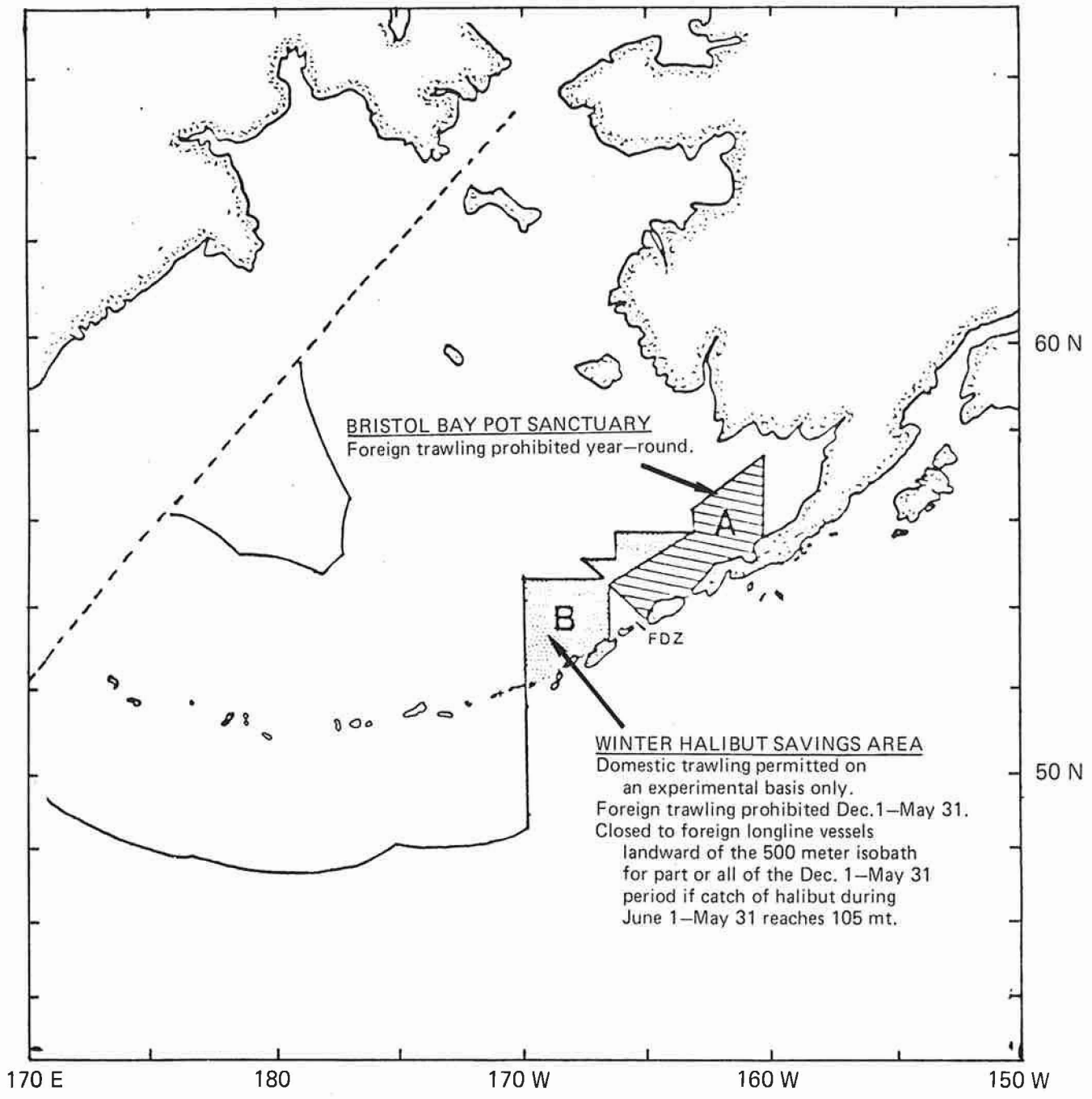

Figure 25. Restrictions on domestic and foreign fishing for groundfish in two areas in the eastern Bering Sea. (From No. Pac. Fish. Mgt. Council 1986, fig. 27 revised.)

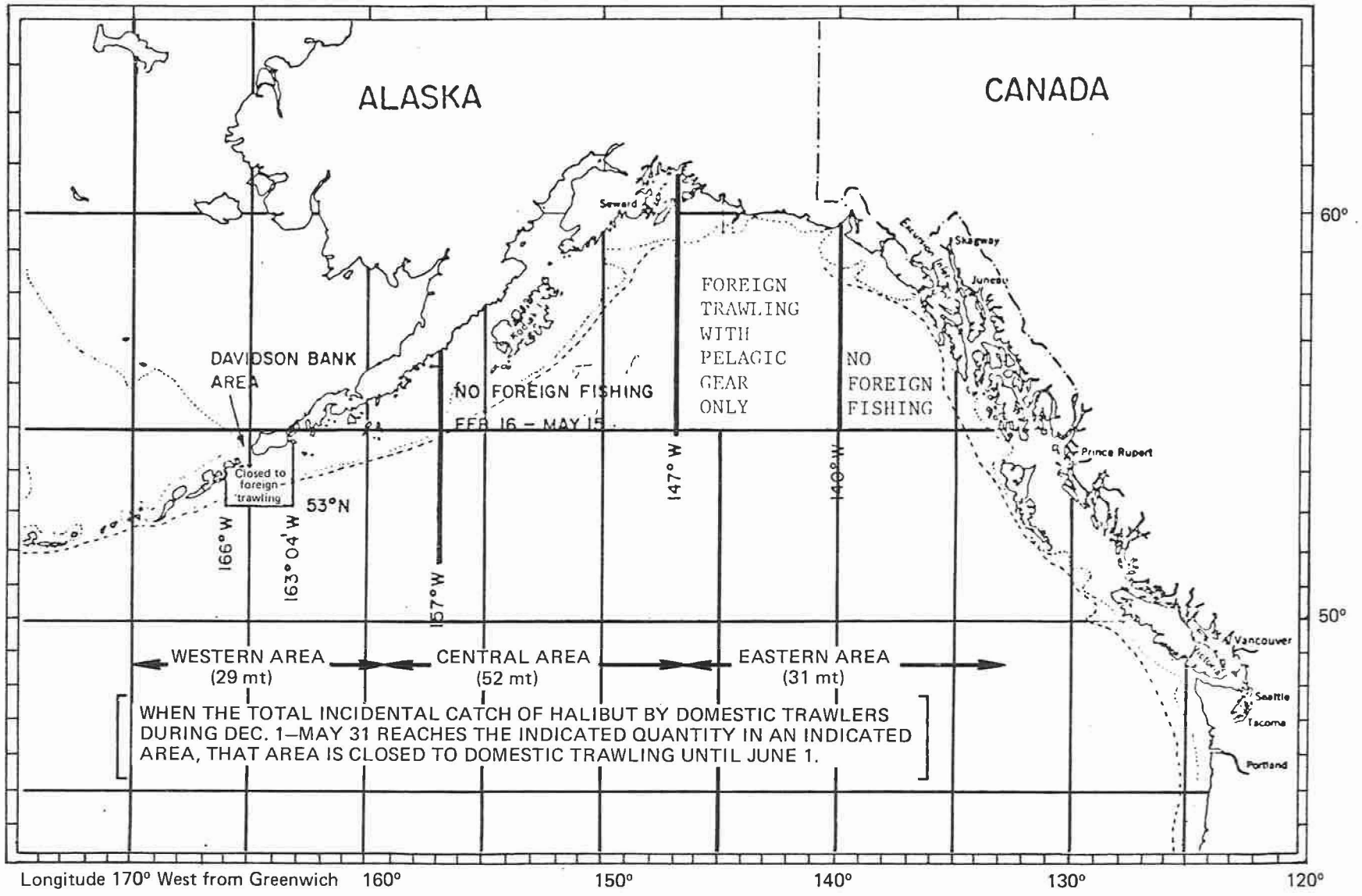

Figure 26. Some restrictions on domestic and foreign fisheries for groundfish in the Gulf of Alaska. (From No. Pac. Fish. Mgt. Council 1984, fig. 8.1 revised.)

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