Potential Demand for Cold Storage Services Available to the Public in the Port of Newport

by Michael J. Shadbolt
Extension Marine Economist
Oregon State University

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SECTION 1.1

Methodology

The approach used to develop this information is constrained by the adoption of a format which is comparable with Exhibit XXVII (Martech, 1976). Exhibit XXVII used a point estimate of the amount of fish-related raw materials which would be available to a cold storage plant in the Port of Newport.

The agreement between Oregon State University and Northwest Natural Gas for this work specifies an approach which is comparable with the earlier Martech estimates. Therefore, a table which is similar in design is employed, using the same five groupings of fish, and arraying production figures by month of landings. Landings apply to port of off-loading. There is no assurance that port of landing and point of processing coincide.

Two main tables are provided. The volume of fish and shellfish are estimated in Table 1 which is comparable to Martech's Fish and Shellfish, In Pounds Round Weight, Available to Newport Facility in 1979 for Freezing and Cold Storage by Species, by Months. The new table is titled: Table 1. Projected Potential Demand for Newport Cold Storage Facility, Fish and Shellfish in Pounds Round Weight by Species, by Month for 1980 or 1981 or 1982.

Table 2., titled Estimated Yield in Edible Seafoods and Usable Waste at Newport Facility, is derived from data published in Table 1. The methodology and recovery factors used to develop Table 2 are taken and unchanged from Martech's earlier work.

A problem with Martech's Fish and Shellfish table is that a definition of the concept available is not specifically supplied. Readers are left to speculate whether the figures are meant to convey an upper-end estimate of the volume of seafood and usable waste which might flow to a plant in Newport. There are some indications that the word available as used by Martech recognized the existing price system and institutional framework which directs the movement of fish through processors and marketing channels. But just why percentages are set as high as they are is not fully explained in the report. Whether the estimates reflect current freezing strategies for different species, transportation routes, current marketing realities, or eventual market destination is not fully explained. Estimates of certain biological parameters known to vary with great regularity are often conveyed as more certain than perhaps they deserve to be.

In order to improve upon the earlier approach, an adaptation is made to the design of the table (in addition to a more fully detailed explanation of the underlying assumptions and limitations of the new approach). The adaptation includes a revised concept (and label) for the exhibit. The new table discards the word available and substitutes the concept potential demand. Reliable, quantifiable figures (which measure potential demand) are still difficult to come by, but the problem is rendered more explicit by this methodology. Risks can be understood when the limits of knowledge are displayed.

In this research method, measurement of potential cold storage demand is based upon cold storage price. Using multiple choice responses associated with cold storage price levels vis-á-vis the competition, the interest of a potential customer can be measured to detect actual intentions and degrees of commitment. However, the question concerning the amount of use is beyond the limits of a brief interview study, and quite possibly, regardless of the time constraint. Several seafood technologists and fisheries specialists believe that techniques for estimating demand which have proven reliable in agriculture and other industries may not be possible with a question as complex as the quantity of cold storage demanded by the seafood industry from what is sometimes called a public cold storage warehouse. (This project has consistently referred to the facility as cold storage available to the public rather than public cold storage to discourage inferences that the facility will necessarily be publicly owned.)

The interview process raised several questions in order to analyze consistency. Informants were asked whether they preferred a facility at Astoria, Newport or Coos Bay. They were then asked whether they would use a facility in Newport, both in the face of cold storage competition in the major ports, and without Oregon coastal competition. Informants were asked where they buy fish and whether they would build their own additional cold storage if facilities available to the public were not provided in Newport.

In some cases, informants provided answers to other questions which allow a rough indexing of the processor's buying position. Other information permitted inferences to be drawn as to whether a processor will freeze a particular product at a specific site. From this, deductive predictions were made as to whether processors would respond to future market conditions by transporting fish for freezing/cold storage to a facility in Newport at some point in the processing/marketing cycle.

Of course, forecasts of the future are fraught with difficulty. Predicting the continuation of current trends which encourage freezing and future changes whose net affect may be to increase or decrease the demand for fish freezing/cold storage services may be impossible without prodigious amounts of luck. Several variables which affect the decision to freeze and store a particular product at a specific site illustrate the complexity of the problem. Some of the more significant issues are:

1) The chemistry of the particular fish. Due to the presence of highly unsaturated oils, some fish don't hold when they are frozen and stored. Pink shrimp which are low in fat, freeze and hold very well while some species of rockfish fillets, for example, may not.

2) The abundance of the particular fishery with respect to the immediate fres market. The market for salmon is sometimes so brisk that all the fish can be sold fresh (or fresh frozen if distances are great). For many species, fresh fish sale are the preferred market strategy by most processors.

3) The public perception of the quality of frozen fish. An experiment expect to be undertaken by a Sea Grant food technologist seeks to show that frozen seafoo when it has been properly handled and frozen, is undetectable after it is thawed, from seafood which has never been frozen. The common perception that seafood quality is inevitably lost through freezing may be altered if the study fulfills the hypothesis.

4) The size of the export market is important. Long distances generate the need for freezing/cold storage. Cold storage may be only for a short period, whil "staging a shipment."

5) The cost of money (interest rate) is important. Seafood in storage is expensive, particularly when interest rates are high.

6) The tendancy of inelastic prices or the ease with which consumers accept seafood price increases without reducing consumption. A related tendancy is the sensitivity of price to reductions in supply. Product prices which increase durin the season reward the processor who waits with fish in cold storage until prices improve.

7) The innovativeness of the local fishing industry. Freezing/cold storage facilities that are available to the public are tools which can be used by innovative industry members. For example, portions and sticks can be remanufactured from blocks of bottomfish which have been held in cold storage.

8) The proximity of the particular port to the fishing grounds, to other ports, and to the transportation and market channels through which the fish are moved. Depending upon his proximity to these points in the production/marketing cycle, the processor may use the cold storage facility for one or more of the following reasons:

(a) load-leveling or buying some time when heavy production outstrips processing capability;

(b) staging a shipment or waiting until container, truck or van is full;

(c) speculating or waiting until prices improve;

(d) inventorying or waiting until sale can be completed.

9) The home base of the owner of the seafood at the point of freezing can be critical. If a broker or wholesaler who lives close to the market has taken title to the product, the broker may prefer to have the storage facility nearby so that periodic inspection is possible.

10) The tradition of the industry which tends to cement relationships and reinforce convenience is significant. Many processors utilize cold storage facilities well situated on transportation and trade routes where experienced workers provide custom services such as sliming, cleaning, grading, wrapping, boxing and delivering containers to transshipment facilities.

Finally, the information generated through the questionnaire was used to develop rough estimates of the amount of fish and shellfish which would be sent to a cold storage facility in a near future year. Estimates were based on two major assumptions and specification of them will serve to standardize projections. 1) It was assumed that the cold storage facility would select user charges which are comparable with the competition. 2) It was assumed that no new major cold storage available to the public would be established in the Oregon coastal ports in competition with the Newport facility.

Numerical factors for the North, Central and South Coast were applied to "Projected Landings" which were developed by Oregon Department of Fish and Wildlife. Based as they ("Projected Landings") are on historical patterns, the projections extended past trends and do not attempt to anticipate sharp departures in the future. As such, the projections are intended for any near future year such as 1980, 1981 or 1982. It is most likely that production will vary between these years, but there is no reliable way to forecast the variation. Even growth in fishery enhancement efforts cannot be counted on to produce increased landings in future years.

Factors which estimate the percentage of an area's fish and shellfish which would be delivered to Newport cold storage are developed by month. Factors are based on information which was gathered by the author during interviews and libra research. The information was species-specific and was focused on the ten issues which were listed above. Other information gathered on the questionnaire provide profiles of Oregon seafood processors' recent cold storage practices and future intentions.

However, despite efforts to specify and standardize this methodology, it is unlikely that another individual would assign the same numerical factors (and replicate the estimates) after studying the information and integrating it with thei knowledge of the industry. On the other hand, the information does provide insight into industry practices which tend to be repeated by seafood processors and tend to bracket future possibilities.

SECTION 1.2

CONFIDENTIAL

(Company) _____ (Official) _____

(Port) _____ (Telephone No.) _____

1. If cold storage facilities available to the public are provided, where would you most prefer to see them located?

☐Astoria ☐Newport ☐Coos Bay ☐(Other)_____

2. If cold storage facilities available to the public are not built in Newport, would you construct your own cold storage facilities?

☐Yes ☐No

3. (A) If fish freezing/cold storage facilities available to the public are provided only in Newport, would you use the Newport facilities?

(B) If fish freezing/cold storage facilities available to the public are provided in Newport, Coos Bay and Astoria, would you use the Newport facilities?

A		B		
☐Yes	☐No	☐Yes	☐No	Only if user charges are significantly less than the competition and other policies are convenient and competitive.
☐Yes	☐No	☐Yes	☐No	Only if user charges are at least moderately less than the competition and other policies are convenient and competitive.
☐Yes	☐No	☐Yes	☐No	Only if user charges are at least comparable with the competition and other policies are convenient and competitive.
☐Yes	☐No	☐Yes	☐No	Even if user charges are moderately more expensive than the competition and other policies are convenient and competitive.
☐Yes	☐No	☐Yes	☐No	Even if user charges are significantly more expensive than the competition and other policies are convenient and competitive.

NOTE: Responses will be used to measure strength of interest.

4. If a Newport cold storage plant provided flake ice and/or block ice to the fishing industry, would your firm be in favor of this move?

☐Yes ☐No

5. In which ports does your firm operate buying stations?_____

	Principal Species					Lesser Species			
Historical practices	Salmon (DW)	Tuna (DW)	Groundfish (RW)	Shrimp (RW)	Crab (RW)	Shad	Smelt	Bait	Was
% of port's landings									
% of Landings frozen									
% of frozen product to cold stor.									
Average months held in cold storage									
Change in buying and/or freezing/cold storage utilization as a result of nearby cold storage (comments)									

	Groundfish						
Historical practices	Flatfish	P.O.P.	Other Rockfish	Black cod	Pacific hake	Jack Mackeral	Others
% of port's landings							
% of landings frozen							
% of frozen product to cold storage							
Average months held in cold storage							
Change in buying and/or freezing/cold storage utilization as a result of nearby cold storage (comments)							

	Salmon				
Historical practices	Coho	Chinook	Chum	Pinks	Sockeye
% of port's landings					
% of landings frozen					
% of frozen product to cold storage					
Average months held in cold storage					
Change in buying and/or freezing/cold storage utilization as a result of nearby cold storage (comments)					

CONFIDENTIAL

(Company) _____ (Official) _____

(Port) _____ (Telephone No.) _____

1. If cold storage facilities available to the public are provided, where would you most prefer to see them located?

☐ Astoria ☐ Newport ☐ Coos Bay ☐ (Other) _____

2. If cold storage facilities available to the public are not build in Newport, would you construct your own cold storage facilities?

☐ Yes ☐ No

3. (A) If fish freezing/cold storage facilities available to the public are provided only in Newport, would you use the Newport facilities?

(B) If fish freezing/cold storage facilities available to the public are provided in Newport, Coos Bay and Astoria, would you use the Newport facilities?

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☐ Yes ☐ No	☐ Yes ☐ No	Only if user charges are significantly less than the competition and other policies are convenient and competitive.
☐ Yes ☐ No	☐ Yes ☐ No	Only if user charges are at least moderately less than the competition and other policies are convenient and competitive.
☐ Yes ☐ No	☐ Yes ☐ No	Only if user charges are at least comparable with the competition and other policies are convenient and competitive.
☐ Yes ☐ No	☐ Yes ☐ No	Even if user charges are moderately more expensive than the competition and other policies are convenient and competitive.
☐ Yes ☐ No	☐ Yes ☐ No	Even if user charges are significantly more expensive than the competition and other policies are convenient and competitive.

NOTE: Responses will be used to measure strength of interest.

4. If a Newport cold storage plant provided flake ice and/or block ice to the fishing industry, would your firm be in favor of this move?

☐ Yes ☐ No

5. Please list current and planned release-recovery sites on the Oregon Coast for salmon ranch operations _____

_____.

# = Number of fish
lbs. = Pounds of fish (Round Weight)

Anticipated Returns	Coho	Chinook	Chum	Pink	Sockeye	Pan Size Salmon
1980	# / lbs.	# / lbs.	# / lbs.	# / lbs.	# / lbs.	# / lbs.
1981	# / lbs.	# / lbs.	# / lbs.	# / lbs.	# / lbs.	# / lbs.
1982	# / lbs.	# / lbs.	# / lbs.	# / lbs.	# / lbs.	# / lbs.

Historical Pattern--Fish Freezing/Cold Storage
(All Salmon Except Pan Size)

Year	Pounds Frozen D.W.	Pounds Fresh D.W.	Pounds in Cold Storage D.W.	Ave. # of Months in Cold Storage
1978				
1977				
1976				
3-yr. Ave.				

Historical Seasonal Patterns, Returns to Point of Recapture
(Per Cent of Total Returns)

Species	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Total
Coho								100%
Chinook								100%
Chum								100%

SECTION 1.3

Summary of Results
Questions #1 - #5

In summary, 36 interviews with private industry members were conducted. Most respondents were individuals representing themselves and business firms which have demonstrated a past association or future intent to process major amounts of seafood. They were contacted by telephone. A small number (three), but high percentage (100 percent) of the large salmon ranchers were interviewed by mail. Completed questionnaires were not the outcome of all contacts, but every contact generated useful information.

Question #1

Respondents strongly preferred a nearby location for a cold storage plant (available to the public) located on the Oregon coast. The trend was deviated from in the major ports (Astoria, Newport, Coos Bay) only when a processor had substantial operations in another major port. In a few instances, respondents stated a preference for a local, small port such as Florence for a cold storage facility.

Salmon ranchers tend to prefer cold storage in a location nearby to their point of release-recapture. Some salmon ranchers contract processing operations to a seafood processor and relegate decisions such as choice of cold storage to the processor. These operators do not display as strong an interest in the location of cold storage facilities available to the public.

Processors in Garibaldi, which is a significant minor port for seafood landings located closer to Astoria (55 miles) than to Newport (81 miles), tended to favor Astoria. The choice of Astoria by Garibaldi processors may be influenced as much by the opportunity to accomplish other business objectives while in town than by mere comparison of mileage differentials. Nonetheless, distance to facility remains a key consideration to seafood processors.

One of the most successful developers of U.S. involvement with Pacific hake preferred Coos Bay for a cold storage plant in the short run. In the long run, he wasn't prepared to state a preference, but he mentioned Astoria with its container cargo capability and the large number of ships passing by which might be induced to call on the port for ocean commerce.

Question #2

Many respondents replied that they have recently constructed or plan to increase their own freezing/cold storage capabilities. It is less clear that current plans hinge on whether or not a facility available to the public is built in Newport. In Newport, the response was divided about equally between those who would build additional capacity of their own and those who would not.

Question #3

Respondents indicated their strength of interest in a Newport freezing/cold storage facility (available to the public) when they answered this question. Generally, answers indicated that a user charge rate schedule which was under the competition would be necessary to attract product from processors located in or closer to other major ports. However, processors in both Coos Bay and Astoria, mostly responded that even user charges "significantly less than the competition" would not be enough to pull product away from a local cold storage facility (available to the public) or current practices. Current practices often include use of their own freezing/cold storage capability in adjacent or distant parent facilities. Other alternatives are use of excess space at a nearby processor, or shipment to public cold storage in these locations, among others: Bellingham, Everett, Seattle, Portland, Salem, Forest Grove, Eugene, Medford, Crescent City and San Francisco. Responses were more positive in the absence of a local competing facility, but responses continued to emphasize the importance of price.

In major ports of Coos Bay and Astoria, a limited number of processors indicated preferred sites in another major port, usually Coos Bay or Newport. These responses came from the larger processors with important branch operations in other ports.

Many processors located elsewhere on the Oregon Coast perceive that for some storage objectives, Newport is disadvantageously located to their own operations. A location for storage of final product, for example, is usually sought nearby transshipment points so that double freight charges are avoided.

Newport processors are probably less sensitive to this consideration when storing product for shipment to market. In combination with other uses for nearby storage such as load-leveling, reprocessing and staging a shipment, Newport processors said they would use it, but a strong majority indicated that competitive prices would be essential to attract some unspecified percentage of their freezing/

cold storage. However, since most processors already have private facilities of their own, use of facilities available to the public would be secondary unless rates charged by the Newport facility were perceived as being very low by the clients.

One Newport processor asked to separate his strong interest in cold storage available to the public from his feelings about the energy source (LNG) which would be used to fuel a proposed Newport cold storage facility. He questions the safety of the LNG facility and the LNG tanker delivery system.

Question #4

Respondents generally indicated approval of a Newport freezer plant offering flake ice and/or block ice to the fishing industry. Processors who don't operate in Newport tended to be indifferent but many were aware of ice shortages in Newport and they agreed that greater supply was the solution. Newport processors voiced agreement with the concept, but several indicated that the ice shortage may not be as great as it was a year or two ago. A major processor stated that only one of the top four Newport processors had not added ice-making capacity. Several processors indicated a preference for additional flake ice capacity.

Question #5

Almost all processors who were interviewed indicated they have arrangements which enable them to buy product which is landed in ports other than the home port. Sometimes dock and plant space is owned or leased at neighboring ports. Often product is obtained from other processors who are designated as "commission receivers." The "commission receiver" is paid to unload the boats, buy the fish, and reship to the firm which will process the product. This is quite common in the tuna industry.

Another arrangement which permits processors to receive product landed in another port are reciprocal buying agreements. Vessels which are fishing for a processor, but on grounds distant from the port, will unload at a nearby port with a processor who has signed a reciprocal agreement with his processor. The agreement extends the same privileges to all processors who participate and allow the fishing vessels to maximize their effort on the fishing grounds.

The significance of this multi-port buying activity for freezing/cold storage is that it suggests an operational pattern which tends to unify interests between

ports and break down parochial loyalty to a nearby port. Because product moves up and down the coast, it increases the likelihood of non-local processors using a cold storage available to the public in another port. Moreover, there was evidence of this in the survey when results of Question numbers 3 and 5 are cross-correlated.

Table 1. Projected Potential Demand for Newport Cold Storage Facility, Fish and Shellfish in Pounds Round Weight, by Species, by Month, for 1980 or 1981 or 1982.

	Albacore Tuna	Groundfish	Pink Shrimp	Dungeness Crab	Troll-Caught Salmon	Total Pounds to Newport Cold Storage
January				137,300		137,300
February				103,740		103,740
March				90,990		90,990
April		21,000	196,000	5,820		222,820
May		33,600	392,000	45,925	5,418	476,943
June		288,400	352,800	2,910	199,191	843,301
July	41,100	313,600	333,200	13,330	398,237	1,099,467
August	672,100	340,550	294,000	15,900	338,312	1,660,862
September	177,850	103,400	294,000	10,735	47,364	633,349
October	23,000	102,900			8,246	134,146
November						
December				530,195		530,195
TOTAL	914,050	1,203,450	1,862,000	956,845	996,768	5,933,113

Source: This table is a compilation of Column J from Tables 3, 4, 5, 6 and 7.

NOTE: Data refers to initial month of delivery and does not estimate length of holding in cold storage.

Table 2. Estimated Yield in Edible Seafood and Usable Waste at Newport Facility, 1980 or 1981 or 1982.

	Whole Fish	Fish Fillets	IQF Shrimp	Whole Crab	Usable Waste	Unusable Waste
Albacore Tuna	914,050					
Groundfish		392,446			811,004	
Pink Shrimp			418,950		372,400	1,070,650
Dungeness Crab				956,845		
Salmon	747,576				249,192	
TOTAL	2,054,072		418,950	956,845	1,432,596	1,070,650

Source: Total weights for each species are derived from Table 1.

NOTE: Methodology for allocating fish between usable and unusable categories is taken from Martech (1976). Data refers to initial month of delivery and does not estimate length of holding in cold storage.

Table 3. Projected Potential Demand for Newport Cold Storage Facility--Albacore Tuna.

Projected Av. lbs./year Oregon: 14,380 [1]	A. N. Coast Landings [2] (64%)	B. % to Newport C.S.* [3]	C. Lbs. to Newport C.S.*	D. Central Coast Landings [2] (14%)	E. % to Newport C.S.* [3]	F. Lbs. to Newport C.S.*	G. S. Coast Landings [2] (22%)	H. % to Newport C.S.* [3]	I. Lbs. to Newport C.S.*	J. Total Pounds to Newport Cold Storage [4] (C + F + I)
January										
February										
March										
April										
May										
June										
July	736,000			121,000			411,000	10	41,100	41,100
August	6,258,000	5	312,900	1,409,000	10	140,900	2,183,000	10	218,300	672,100
September	1,657,000	5	82,850	443,000	10	44,300	507,000	10	50,700	177,850
October	460,000	5	23,000	40,000			63,000			23,000
November	92,000									
December										
TOTAL	9,203,000			2,013,000			3,164,000			914,050

*C.S. = Cold Storage

1/ Source: Oregon Department of Fish and Wildlife, "Landings Projections," 5/21/79.

2/ Area landing estimates are based on average production figures (percent of state total and seasonal landing pattern) developed in Tables 8 through 22.

3/ Factors in this column are estimated independently from survey data to determine percentage of area landings delivered to Newport cold storage.

4/ Column J is a compilation of figures from Columns C, F and I.

NOTE: Data refers to initial month of delivery and does not estimate length of holding in cold storage.

Table 4. Projected Potential Demand for Newport Cold Storage Facility--Groundfish.

Projected Av. lbs./year Oregon: 35,000,000[1]	A. N. Coast Landings[2]	B. % to Newport C.S.*[3]	C. Lbs. to Newport C.S.*	D. Central Coast Landings[2]	E. % to Newport C.S.*[3]	F. Lbs. to Newport C.S.*	G. S. Coast Landings[2]	H. % to Newport C.S.*[3]	I. Lbs. to Newport C.S.*	J. Total Pounds to Newport Cold Storage[4]
	(49%)			(24%)			(27%)			(C + F + I)
January	343,000			588,000			662,000			
February	343,000			252,000			284,000			
March	858,000			336,000			567,000			
April	1,715,000			420,000	5	21,000	567,000			21,000
May	1,886,000			672,000	5	33,600	756,000			33,600
June	2,744,000	5	137,200	1,008,000	15	151,200	850,000			288,400
July	2,744,000	5	137,200	1,176,000	15	176,400	850,000			313,600
August	2,401,000	5	120,050	1,092,000	15	163,800	1,134,000	5	56,700	340,550
September	1,372,000			840,000	5	42,000	1,228,000	5	61,400	103,400
October	1,886,000			924,000	5	46,200	1,134,000	5	56,700	102,900
November	514,000			504,000			756,000			
December	343,000			588,000			662,000			
TOTAL	17,150,000		394,450	8,400,000		634,200	9,450,000		174,800	1,203,450

* C.S. = Cold Storage

1/ Source: Oregon Department of Fish and Wildlife, "Landings Projections," 5/21/79.

2/ Area landing estimates are based on average production figures (percent of state total and seasonal landing pattern) developed in Tables 8 through 22.

3/ Factors in this column are estimated independently from survey data to determine percentage of area landings delivered to Newport cold storage.

4/ Column J is a compilation of figures from Columns C, F and I.

NOTE: Data refers to initial month of delivery and does not estimate length of holding in cold storage.

Table 5. Projected Potential Demand for Newport Cold Storage Facility--Pink Shrimp.

Projected Av. lbs./year Oregon: 35,000,000[1]	A. N. Coast Landings[2]	B. % to Newport C.S.*[3]	C. Lbs. to Newport C.S.*	D. Central Coast Landings[2]	E. % to Newport C.S.*[3]	F. Lbs. to Newport C.S.*	G. S. Coast Landings[2]	H. % to Newport C.S.*[3]	I. Lbs. to Newport C.S.*	J. Total Pounds to Newport Cold Storage[4]
	(34%)			(28%)			(38%)			(C + F + I)
January										
February										
March										
April	1,190,000			980,000	20	196.0	1,330,000			1,960,000
May	2,142,000			1,960,000	20	392.0	2,527,000			3,920,000
June	2,618,000			1,764,000	20	352.8	2,527,000			3,520,800
July	2,618,000			1,666,000	20	333.2	2,261,000			3,332,000
August	1,666,000			1,470,000	20	294.0	2,128,000			2,940,000
September	1,309,000			1,470,000	20	294.0	1,862,000			2,940,000
October	357,000			490,000			665,000			
November										
December										
TOTAL	11,900,000			9,800,000		1,862,000	13,300,000			18,620,000

*C.S. = Cold Storage

1/ Source: Oregon Department of Fish and Wildlife, "Landings Projections," 5/21/79.

2/ Area landing estimates are based on average production figures (percent of state total and seasonal landing pattern) developed in Tables 8 through 22.

3/ Factors in this column are estimated independently from survey data to determine percentage of area landings delivered to Newport cold storage.

4/ Column J is a compilation of figures from Columns C, F and I.

NOTE: Data refers to initial month of delivery and does not estimate length of holding in cold storage.

Table 6. Projected Potential Demand for Newport Cold Storage Facility--Dungeness Crab.

Projected Av. lbs./year Oregon: 8,560,000[1]	A. N. Coast Landings[2]	B. % to Newport C.S.*[3]	C. Lbs. to Newport C.S.*	D. Central Coast Landings[2]	E. % to Newport C.S.*[3]	F. Lbs. to Newport C.S.*	G. S. Coast Landings[2]	H. % to Newport C.S.*[3]	I. Lbs. to Newport C.S.*	J. Total Pounds to Newport Cold Storage[4]
	(30%)			(17%)			(53%)			(C + F + I)
January	385,200	10	38,520	261,900	10	26,190	72,900	10	72,590	137,300
February	231,100	10	23,110	261,900	10	26,190	544,400	10	54,440	103,740
March	205,400	10	20,540	160,100	10	16,010	544,400	10	54,440	90,990
April	205,400			116,400	5	5,820	362,900			5,820
May	179,800			101,900	5	5,095	408,300	10	40,830	45,925
June	102,700			58,200	5	2,910	136,100			2,910
July	51,400	10	5,140	14,600	25	3,650	45,400	10	4,540	13,330
August	77,100	10	7,710	14,600	25	3,650	45,400	10	4,540	15,900
September	25,700	10	2,570	14,500	25	3,625	45,400	10	4,540	10,735
October										
November										
December	1,104,200	15	165,630	451,100	25	112,775	1,678,600	15	251,790	530,195
TOTAL	2,568,000		263,220	1,455,200		205,915	4,536,800		487,710	956,845

* C.S. = Cold Storage

1/ Source: Oregon Department of Fish and Wildlife, "Landings Projections," 5/21/79.

2/ Area landing estimates are based on average production figures (percent of state total and seasonal landing pattern) developed in Tables 8 through 22.

3/ Factors in this column are estimated independently from survey data to determine percentage of area landings delivered to Newport cold storage.

4/ Column J is a compilation of figures from Columns C, F and I.

NOTE: Data refers to initial month of delivery and does not estimate length of holding in cold storage.

Table 7. Projected Potential Demand for Newport Cold Storage Facility--Troll-Caught Salmon.

Projected Av. lbs./year Oregon: 14,293,000[1] Troll only 9,588,000	A. N. Coast Landings[2]	B. % to Newport C.S.*[3]	C. Lbs. to Newport C.S.*	D. Central Coast Landings[2]	E. % to Newport C.S.*[3]	F. Lbs. to Newport C.S.*	G. S. Coast Landings[2]	H. % to Newport C.S.*[3]	I. Lbs. to Newport C.S.*	J. Total Pounds to Newport Cold Storage[4]
	(14%)			(27%)			(59%)			(C + F + I)
January										
February										
March										
April										
May	80,539			25,888	10	2,589	56,570	5	2,829	5,418
June	429,542	5	21,477	543,640	15	81,546	961,676	10	96,168	199,191
July	523,505	5	26,175	1,009,616	15	151,442	2,206,199	10	220,620	398,237
August	201,348	5	10,067	906,066	15	135,910	1,923,353	10	192,335	338,312
September	80,539			77,662	10	7,766	395,984	10	39,598	47,364
October	26,847			25,888	10	2,589	113,138	5	5,657	8,246
November										
December										
TOTAL	1,342,320		57,719	2,588,760		379,253	5,656,920		557,207	996,768

*C.S. = Cold Storage

1/ Source: Oregon Department of Fish and Wildlife, "Landings Projections," 5/21/79.

2/ Area landing estimates are based on average production figures (percent of state total and seasonal landing pattern) developed in Tables 8 through 22.

3/ Factors in this column are estimated independently from survey data to determine percentage of area landings delivered to Newport cold storage.

4/ Column J is a compilation of figures from Columns C, F and I.

NOTE: Data refers to initial month of delivery and does not estimate length of holding in cold storage.

SECTION 1.5

Table 8. North Oregon Coast Groundfish Landings[1/] (1000s of lbs.).

	1976	1977	1978	Average Seasonal Landings Pattern (1976-78)
January	26	373	311.5	2%
February	217	140	346.1	2%
March	575	43	1,323.2	5%
April	1,291	1,361	1,136.1	10%
May	1,576	1,325	1,362.7	11%
June	1,762	2,333	2,410.7	16%
July	1,093	2,143	3,131.1	16%
August	1,685	1,522	2,317.4	14%
September	978	881	1,522.0	8%
October	1,543	600	2,250.0	11%
November	848	137	308.2	3%
December	551	20	221.0	2%
TOTAL	12,145	10,878	16,640.0	100%

[1/] Source: Oregon Department of Fish and Wildlife.
North Coast includes ports from Garibaldi to Astoria.

Table 9. North Oregon Coast Tuna Landings[1/]
(1000s of lbs.)

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February		6.6			
March					
April				1.9	
May					
June		10.0			
July	760.0	897.7	126.7	238.9	8%
August	7,116.6	3,003.3	2,689.1	3,948.8	68%
September	1,600.3	484.3	462.8	1,844.4	18%
October	707.2	220.8	102.5	264.2	5%
November	75.2	135.3	33.3		1%
December					
TOTAL	10,259.7	4,758.0	3,414.4	6,298.2	100%

[1/] Source: Oregon Department of Fish and Wildlife.
North Coast includes ports from Garibaldi to Astoria.

Table 10. Central Oregon Coast Groundfish Landings[1/] (1000s of lbs.).

	1976	1977	1978	Average Seasonal Landings Pattern (1976-78)
January	325	504	418.8	7%
February	125	161	321.8	3%
March	102	87	618.2	4%
April	210	288	425.1	5%
May	385	570	497.5	8%
June	578	681	1,145.7	12%
July	632	878	1,224.6	14%
August	575	634	1,278.6	13%
September	405	680	921.2	10%
October	508	245	1,442,4	11%
November	323	362	462.4	6%
December	289	487	628.8	7%
TOTAL	4,457	5,577	9,385.1	100%

1/ Source: Oregon Department of Fish and Wildlife. Central Coast includes ports from Pacific City to Florence.

Table 11. Central Oregon Coast Tuna Landings[1/] (1000s of lbs.).

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April					
May					
June					
July	127.7	123.2	13.0	70.5	6%
August	2,286.3	182.1	209.0	1,093.8	70%
September	376.0	49.4	23.4	759.2	22%
October	20.1	28.4	1.1	31.9	2%
November	.7				
December					
TOTAL	2,810.8	383.1	246.5	1,955.4	100%

1/ Source: Oregon Department of Fish and Wildlife. Central Coast includes ports from Pacific City to Florence.

Table 12. South Oregon Coast Groundfish Landings[1/] (1000s of lbs.).

	1976	1977	1978	Average Seasonal Landings Pattern (1976-78)
January	621	504	364.1	7%
February	261	142	303.3	3%
March	352	166	733.8	6%
April	678	286	416.4	6%
May	953	370	368.9	8%
June	624	304	1,051.0	9%
July	756	508	851.3	9%
August	1,080	664	1,049.3	12%
September	977	676	1,307.1	13%
October	1,041	461	1,319.5	12%
November	433	214	1,157.6	8%
December	642	191	822.2	7%
TOTAL	8,418	4,486	9,744.5	100%

[1/] Source: Oregon Department of Fish and Wildlife. South coast includes ports from Winchester Bay to Brookings.

Table 13. South Oregon Coast Tuna Landings[1/] (1000s of lbs.).

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April					
May					
June					
July	433	123	41	549	13%
August	2,794	455	732	2,013	69%
September	823	98	44	428	16%
October	44	72	27	4	2%
November			22		
December		12			
TOTAL	4,094.0	760.0	866.0	2,994.0	100%

1/ Source: Oregon Department of Fish and Wildlife. South Coast includes ports from Winchester Bay to Brookings.

Table 14. North Oregon Coast Shrimp Landings[1/].

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April	67,289	568,758	851,227	3,528,000	10%
May	1,622,276	992,442	3,556,206	3,310,000	18%
June	1,384,926	2,100,117	4,023,655	3,818,000	22%
July	2,620,099	1,723,264	3,608,882	3,560,000	22%
August	1,026,341	2,200,759	2,857,561	1,387,000	14%
September	1,698,566	1,641,015	1,805,062	803,000	11%
October	472,640	222,906	733,407	175,000	3%
November					
December					
TOTAL	8,892,137	9,449,261	17,436,000	16,581,000	100%

1/ Source: Oregon Department of Fish and Wildlife.
North Coast includes ports from Garibaldi to Astoria.

Table 15. North Oregon Coast Crab Landings[1/] (1000s of lbs.).

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January	185.6	638.0	455.1	961.5	15%
February	126.2	272.6	401.7	557.7	9%
March	81.6	188.5	541.9	440.7	8%
April	66.7	112.2	712.1	327.6	8%
May	80.0	92.0	616.4	178.7	7%
June	74.8	86.5	302.4	84.8	4%
July	31.6	36.0	171.1	69.5	2%
August	30.4	48.5	205.6	85.0	3%
September	22.1	3.4	114.0	28.3	1%
October				6.3	
November				11.1	
December	763.8	317.1	4,079.9	1,093.2	43%
TOTAL	1,462.8	1,794.2	7,600.4	3,844.4	100%

[1/] Source: Oregon Department of Fish and Wildlife.
North coast includes ports from Garibaldi to Astoria.

Table 16. Central Oregon Coast Shrimp Landings[1/].

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April		533,847	875,955	2,708,000	10%
May	816,477	1,639,741	3,074,073	3,137,000	20%
June	927,540	1,382,460	2,300,229	3,095,000	18%
July	954,102	940,632	2,493,965	2,744,000	17%
August	501,361	1,770,594	2,439,089	1,624,000	15%
September	1,320,534	1,149,309	2,842,907	1,142,000	15%
October	604,090	285,038	1,334,854	155,000	5%
November					
December					
TOTAL	5,124,101	7,701,621	15,361,072	14,605,000	100%

1/ Source: Oregon Department of Fish and Wildlife.
Central Coast includes ports from Pacific City to Florence.

Table 17. Central Oregon Coast Crab Landings[1/] (1000s of lbs.).

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January	91.4	365.8	707.3	390.5	18%
February	34.4	179.0	1,071.2	265.6	18%
March	32.6	165.9	576.3	159.0	11%
April	18.2	91.8	366.3	188.7	8%
May	43.5	98.5	415.7	68.4	7%
June	22.8	52.7	218.9	65.1	4%
July	17.0	7.0	50.1	16.9	1%
August	4.8	1.2	34.3	24.9	1%
September	--	--	37.5	12.0	1%
October				.7	
November					
December	99.0	8.5	1,654.3	893.7	31%
TOTAL	363.7	970.4	5,131.9	2,085.5	100%

1/ Source: Oregon Department of Fish and Wildlife.
Central Coast includes ports from Pacific City to Florence.

Table 18. South Oregon Coast Shrimp Landings[1/].

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April	69,471	492,242	1,543,643	4,012,000	10%
May	1,445,916	1,050,619	3,579,610	5,064,000	19%
June	1,397,976	1,693,946	2,132,950	5,840,000	19%
July	2,263,604	1,170,934	2,184,775	4,558,000	17%
August	1,491,369	2,015,991	2,851,559	3,295,000	16%
September	2,453,991	1,359,421	2,285,574	2,389,000	14%
October	753,772	457,872	1,204,839	431,000	5%
November					
December					
TOTAL	9,876,355	8,241,025	15,782,950	25,589,000	100%

1/ Source: Oregon Department of Fish and Wildlife. South Coast includes ports from Winchester Bay to Brookings.

Table 19. South Oregon Coast Crab Landings[1/] (1000s of lbs.).

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January	462.2	1,675.8	1,150.8	1,027.0	16%
February	292.6	996.1	1,319.2	471.7	12%
March	151.2	1,093.3	1,614.3	318.0	12%
April	130.2	678.8	1,191.4	234.0	8%
May	193.4	412.8	1,837.2	42.0	9%
June	74.0	134.6	674.1	18.1	3%
July	66.4	24.7	227.6	8.0	1%
August	13.6	4.7	137.6	30.1	1%
September	5.4	.7	46.6	33.7	1%
October				2.7	
November				.8	
December	749.6	300.4	4,607.1	4,020.6	37%
TOTAL	2,138.6	5,321.9	12,805.9	6,206.7	100%

[1/] Source: Oregon Department of Fish and Wildlife. South Coast includes ports from Winchester Bay to Brookings.

Table 20. North Oregon Coast--Troll-Caught Salmon Landings[1/].

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April	838				
May	44,086	166,000	55,754	14,137	6%
June	236,922	642,000	430,483	291,766	32%
July	290,159	673,000	567,201	396,284	39%
August	151,273	350,000	137,407	133,397	15%
September	59,833	156,000	53,944	43,807	6%
October	2,171	18,000	16,768	44,811	2%
November					
December					
TOTAL	785,282	2,005,000	1,261,557	924,202	100%

1/ Source: Oregon Department of Fish and Wildlife. North Coast includes ports from Garibaldi to Astoria.
NOTE: An average of 4,705,000 pounds harvested annually in the gillnet fishery on the Columbia River. This poundage is not included in this table.

Table 21. Central Oregon Coast--Troll-Caught Salmon Landings[1/].

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April	154				
May	6,795	21,200	43,060	2,410	1%
June	606,898	762,000	243,424	508,095	21%
July	755,115	1,656,000	873,274	649,279	39%
August	718,985	1,528,000	850,097	412,762	35%
September	58,026	161,100	61,748	63,306	3%
October	6,527	45,100	8,990	15,123	1%
November					
December					
TOTAL	2,152,500	4,173,400	2,080,593	1,651,028	100%

1/ Source: Oregon Department of Fish and Wildlife. Central Coast includes ports from Pacific City to Florence.

Table 22. South Oregon Coast--Troll-Caught Salmon Landings[1/].

	1975	1976	1977	1978	Average Seasonal Landings Pattern (1975-78)
January					
February					
March					
April	710			2,890	
May	6,637	18,200	85,958	18,606	1%
June	934,387	1,257,000	445,381	1,050,807	17%
July	2,204,458	3,283,000	1,960,399	881,285	39%
August	771,766	4,801,000	1,146,630	477,129	34%
September	699,364	281,000	313,629	193,016	7%
October	95,181	85,700	115,461	71,877	2%
November	17,501	25,000	67,064	69,233	
December	1,353			200	
TOTAL	4,731,357	9,750,900	4,134,522	2,765,043	100%

1/ Source: Oregon Department of Fish and Wildlife. South Coast includes ports from Winchester Bay to Brookings.

Table 23. Pacific Coast Albacore Tuna Landings, By Region (1000s of lbs.).

Region	1974[1/]	1975[2/]	1976[2/]	1977[2/]	1978[2/]	10-Year Average[1/] (1966-75)	25-Year Average[2/] (1953-77)
Washington	17,983	16,297	7,202	4,948	4,150*	6,931	4,278
Oregon	25,225	17,149	5,934	4,425	11,250*	22,232	12,435
California	11,806	15,413	27,754	15,000*	22,100*	19,624	27,058
TOTAL	55,014	48,859	40,890	24,373*	37,500*	48,787	43,771

[1/] Published by Martech (1976).

[2/] Published by Pacific Marine Fisheries Commission, 31st Annual Report.

* Preliminary.

Table 24. Pacific Coast Groundfish Landings, by Region (1000s of lbs.).

Region	1974[1/]	1975[1/]	10-Year Average[1/]	1976[2/]	1977[3/]	1978[3/]	10-Year Mean 1968-1977[3/]
Alaska	692	143	N/A	978	2,529	5,791	N/A
British Columbia	38,561	45,630	39,486	53,006	54,608	56,861	41,530
Washington	43,595	37,491	53,296	47,754	50,934	51,444	47,058
Oregon	19,660	19,301	22,209	25,022	20,941	32,121	20,759
California	54,864	57,927	42,193	64,068	62,500	63,250	50,652
TOTAL	157,372	160,492	157,184	190,828	191,511	209,467	159,999

1/ Figures published by Martech (1976).

2/ Source: Pacific Marine Fisheries Commission, "Review of 1977 Pacific Coast Fisheries for Groundfish."

3/ Source: Pacific Marine Fisheries Commission, 31st Annual Report.

Table 25. Pacific Coast Pink Shrimp Landings, by Region (1000s of lbs.).

Region	1974[1/]	1974[2/]	1975[1/]	1975[2/]	10-Year Average[1/] (1966-75)	1976[2/]	1977[2/]	10-Year Average[2/] (1968-77)	1978[2/]
Alaska	108,748	108,741	90,000	98,535	65,546	129,011	116,872	91,597	73,293
British Columbia	2,644	2,644	500	1,729	1,623	8,470	6,200	2,753	3,100
Washington	9,300	9,300	9,700	10,200	2,171	9,225	11,400	5,117	12,200
Oregon	20,300	19,968	20,000	23,700	12,975	25,300	48,580	20,743	56,997
California	2,360	2,360	4,800	4,997	2,240	3,470	15,663	4,252	13,100
TOTAL	143,352	143,013	125,000	139,161	84,555	175,476	198,715	124,462	158,690

1/ Figures published by Martech (1976).

2/ Published by Pacific Marine Fisheries Commission in 31st Annual Report.

Table 26. Pacific Coast Dungeness Crab Landings, by Region (1000s of lbs.).

Region	1973/74[1]	1974/75[1]	10-yr. Ave.[1]	1973/74[3]	1974/75[3]	1975/76[3]	1976/77[3]	1977/78[3,2]
Alaska	3,791	2,400	7,248	N/A	N/A	N/A		7,200
							5,729*	
British Columbia	2,500	2,000	3,147	N/A	N/A	N/A		2,400
Washington	4,490	5,000	10,898	3,664	5,199	8,516	11,127	7,200
Oregon	3,462	4,150	8,791	3,417	3,353	9,081	16,144	10,400
California	880	1,800	6,908	756	1,690	17,397	26,200	13,800
SUBTOTAL: Washington-Oregon-California	8,832	10,950	26,597	7,837	10,242	34,994	53,471	31,400
TOTAL	15,123	15,350	36,992	N/A	N/A	N/A	59,200	42,900

[1] Figures published by Martech (1976).

[2] Preliminary figures for 1978.

[3] Source: Pacific Marine Fisheries Commission data published in PFMC's Fishery Management Plan, 2/79; and PMFC's 31st Annual Report.

* Alaska and British Columbia figures combined--separate totals not available.

Table 27. Pacific Coast (Troll-Caught Chinook and Coho) Salmon Landings, by Region (1000s of lbs.).

Region	Chinook					Coho					Total	
	1974[1]	1975[1]	10-yr. Ave.[1]	1978[2]	10-yr.[2] Average 1968-77	1974[1]	1975[1]	10-yr. Ave.[1]	1978[2]	10-yr.[2] Average 1968-77	10-yr.[1] Average 1966-75	10-yr.[2] Average 1968-77
Alaska	4,500	3,800	4,500	8,500	4,300	4,200	900	4,100	9,200	4,300	8,600	8,600
British Columbia	13,500	12,700	11,800	13,200	12,500	15,600	9,400	18,400	14,800	16,100	30,200	28,600
Washington	3,700	2,800	2,500	2,200	3,100	5,600	5,100	5,600	3,600	5,300	8,100	8,400
Oregon	2,600	2,700	1,700	2,200	2,300	8,300	4,700	6,700	3,200	6,500	8,400	8,800
California	4,500	6,400	6,400	6,200	6,100	4,400	1,400	2,700	1,500	2,200	9,100	8,300
TOTAL	28,800	28,400	26,900	32,300	28,300	38,100	21,500	37,500	32,300	34,400	64,400	62,700

[1] Published by Martech (1976).

[2] Source: Published by Pacific Marine Fisheries Commission in 31st Annual Report.

SECTION 2.1

Projected Ice Needs
Port of Newport
Commercial Fishing/Fish Processing

Current Statistics--1978

Number of fish buying/processing plants		9
with ice making facilities	5	
without ice making facilities	4	
Total ice making capacity		158 tons/day
5 fish plants	124 t/d	
Ice plant (Ore-Aqua)	34 t/d	

1978 Ice-Use		25,000 - 30,000 tons
produced locally	22,000 - 25,000 tons	
imported	3,000 - 5,000 tons	
Boat-use	17,000 - 20,000 tons	
In-plant use	8,000 - 10,000 tons	
1978 Ice shortage		2,000 - 4,000 tons
TOTAL 1978 Ice NEEDS		27,000 - 34,000 tons

Number of Ice-boats by fishery (1978)

shrimp	30±	
dragfish	15±	(summer time)
salmon	100	local boats plus another 300 transient boats that may buy ice in Newport.
tuna	50	local boats plus another 200 transient boats that may buy ice in Newport.

Factors/variables to consider in projecting ice-use needs:

1) combined drag/shrimp fleet will probably double in next 10 years.
2) combined salmon/tuna fleet will probably increase only slightly in next 10 years.
3) vessels in all four of these fisheries are leaning more and more towards mechanical refrigeration systems in lieu of ice.
4) Automatic salt-water ice makers will become more commonplace aboard vessels using ice for holding the product. This will be particularly true in the shrimp and bottomfish fisheries.
5) Ice needs of private aquaculture will probably increase dramatically if returns of salmon to hatchery reach predicted magnitudes.

1988 Ice Needs (Projected)	
Boat-use	30,000 - 35,000 tons
In-plant use	15,000 - 20,000 tons
private aquaculture	3,000 - 6,000 tons
TOTAL 1988 Ice Needs	48,000 - 61,000 tons

No estimate available on 1988 ice-making capacity of Newport fish buying/processing plants, although plants will probably attempt to expand their ice-making facilities to meet the needs of the vessels fishing for them, unless another source of ice is readily available to their boats.

prepared by: Port of Newport Moorage Advisory Committee

SECTION 3.1

International and National Demand for Seafood Products

NOTE: Much of the following material has been taken from a study by Arthur D. Little, Inc.: The Development of a Bottomfish Industry: Strategies for the State of Alaska, November 1978. Allowing for some adaptations, it is believed that the material is relevant to individuals who contemplate fishery development on the West Coast of the United States. Customary credit is given to Arthur D. Little, Inc. for use of the material.

Several recent studies of the world fish market have been conducted. Most of the effort has been directed at determining the marketability of species under-utilized by U.S. fishermen. Principally, these species are bottomfish but the studies are useful for seafood marketing in general. Analysts conclude that the market is attractive for several reasons:

1) Demand for edible fish is increasing faster than the supply of fish. The world catch has been growing at about two percent annually while the usage of fish for human consumption has been growing at about three percent annually.
2) Prices are increasing faster than inflation. Deflated Japanese fish prices show a real increase, with a large rise in 1977 reflecting the 200-mile limit.
3) Imposition of the 200-Mile Fishery Conservation Zone has made some countries more dependent on imports.

Three markets which account for more than one-third of the total world fish consumption are commonly identified for U.S. development: 1) the United States; 2) Japan; and 3) Western Europe.

Each market is unique, and analysts have reported characteristics which are useful to persons contemplating fishery development.

United States

1) The domestic market represents about seven percent of the world edible fish market and the U.S. is the largest individual net importer of edible fish.

2) Bottomfish consumption in the domestic market has been growing even faster than total fish consumption, representing about 30 percent of domestic consumption in 1976.

3) The domestic market has become increasingly reliant upon bottomfish imports, which now account for almost 90 percent of the U.S. bottomfish supply.

4) Five countries supplied more than 75 percent of total U.S. bottomfish imports in 1976.

5) With the 200-Mile Limit, there is expected to be a reduction in U.S. imports from four of the five major supplying nations (Iceland, Denmark, Japan, Norway).

6) Despite expanding domestic marketing opportunities for the U.S. fishing industry, it is estimated that the domestic market will take a minor percentage of a fully developed U.S. bottomfish industry. In Alaska, analysts have argued that a maximum of 20 percent of the bottomfish MSY could be utilized in the current U.S. market through import substitution. Estimates of U.S. utilization range from 100 percent of the MSY for all cod species to eight percent of the pollock MSY.

7) Seafood products consumed in the domestic market are reported to be more highly processed than in other markets. This provides opportunities to add more value to domestic products than to fish consumed in other countries. More specifically:

A) There is less fresh fish consumed as a percentage of total;

B) Much of the fish consumed is sold as frozen portions--fillets, steaks and fishsticks;

C) There is also more consumption of canned fish.

8) Analysts conclude that it is possible for a non-integrated operator to serve the U.S. market since the channels of distribution are composed of independent entities.

9) According to analysts, the domestic market provides "the most attractive near-term" opportunity to expand sales of Alaskan bottomfish. Considering the reasons (which follow), the conclusion would likely hold for West Coast bottomfish.

A) Proximity to market;

B) Knowledge of market and established distribution channels;

C) Opportunity to supply markets formerly supplied by foreign fishing operations;

D) Higher degree of processing than in other markets;

E) Opportunity to enter distribution channels without being an integrated operator.

Japan

1) Japan represents 15 percent of the world edible fish market, making it the largest market in the world.

2) Japan has the highest per capita consumption of fish in the world--more than four times the per capita consumption of the United States.

3) Ninety percent of the edible fish which Japan catches or imports is used for domestic consumption.

4) Japan's domestic production of edible fish has been relatively static since 1970, whereas imports of edible fish have been growing at nearly 20 percent each year between 1970 and 1976.

5) Japan exported about the same percentage (10 percent) of its edible fish supply in 1970 as it did in 1976.

6) Products which move through the Japanese seafood market are less processed than products in the U.S. market.

A) More fresh and raw fish is consumed in Japan;

B) Consumption of fillets or fillet blocks is rare. Analysts explain that is due to the relative absence of fast-food restaurants which serve fish;

C) Fewer breaded products such as fishsticks are consumed;

D) Some forms of consumption are highly processed but different than in the United States--e.g., kneaded products and surimi.

7) Analysts conclude that Japan is an attractive market for Alaskan fish. This conclusion would probably hold for West Coast seafood although perhaps not as strongly. The reasons given for Alaskan fish:

A) Japan is the largest market in the world;

*B) Japan has traditionally been the largest consumer of Alaskan fish;

C) Japan's fish supplies are threatened by the 200-Mile Limit.

*D) Alaska's fish species are highly acceptable in Japan.

E) The U.S. dollar decline will make Alaskan-produced fish products attractive to Japanese customers.

8) Analysts have identified the following challenges which must be overcome to operate successfully in the Japanese market:

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*B and D require further analysis to determine applicability to West Coast.

A) It is necessary to understand complicated channels of distribution.* There may be a need to affiliate with Japanese trading companies

B) There is a need to establish a quality image for U.S. products in the Japanese market where high quality is critical.

C) There is a need to find ways to add value to fish products while meeting the Japanese demands for forms of fish.

D) There is a need to understand Japan's import restrictions which are extremely complex and which reduce importation of some species and product forms. It may be desirable to reduce restrictions such as import duties on many species.

E) There is a need to meet the Japanese demand for forms of fish not customarily processed in the U.S.

Western Europe

1) The major Western European countries represent 14 percent of the world fish market.

2) The market is fragmented, with more than 15 nations represented.

3) Among the world's top ten fish importers, seven are Western European countries with total imports over two million metric tons in 1976.

4) Two of the key suppliers to the rest of Western Europe are Norway and Denmark. Among the world's largest exporting (net) countries they ranked first and fourth, respectively, in 1976.

5) The supplies of fish in the North Atlantic for most Western European countries are being threatened by the establishment of 200-mile fishing zones. Some countries are decreasing the size of their off-shore fishing fleets. Analysts conclude this will create an opportunity for other countries to supply the Western European market.

6) Final product forms in the European market display some differences compared to the U.S. market. Analysts explain:

A) More fresh fish is consumed;

B) Less breaded fish is consumed;

C) Main process forms are salted, smoked and canned;

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* Components of the distribution channels include 37 major landing ports; 48 central wholesale markets in the local areas; 607 markets in the local areas; and 1,500 unauthorized markets throughout the country.

D) Buyers are highly sensitive to quality;

7) Analysts conclude that the Western European market is likely to be harder for Alaskan bottomfish to penetrate than the U.S. or Europe. The following reasons are given:

A) Market fragmentation;

B) Established fishing industries within individual countries;

C) Protectionism of European Economic Community;

*D) Europeans' lack familiarity with Alaska bottomfish;

*E) Freight disadvantage for Alaskan product.

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* D and E require further analysis to determine applicability to West Coast.

Table 28.

TOP 10 NET EXPORTING COUNTRIES – 1976
(in thousands of metric tons, round weight)

Country		Net Exports of Edible Fish
1.	Norway	826
2.	Peru	649
3.	USSR	496
4.	Denmark	495
5.	Korea	375
6.	Iceland	321
7.	Canada	276
8.	Chile	122
9.	Spain	95
10.	Thailand	77*
	Total	3,732

*1975 data.

Source: United Nations, Food and Agriculture Organization, *Yearbook of Fishery Statistics,* 1976.

Table 29.

TOP 10 NET IMPORTING COUNTRIES – 1976
(in thousands of metric tons, round weight)

Country		Net Imports of Edible Fish
1.	United States	887
→ 2.	West Germany	626
→ 3.	United Kingdom	503
→ 4.	Italy	276
→ 5.	France	271
→ 6.	Belgium	136
7.	Czechoslovakia	131
→ 8.	Switzerland	118
→ 9.	Netherlands	82
10.	Singapore	82

→ Designates Western European country; total imports 2,012,000 metric tons.

Source: United Nations, Food and Agriculture Organization, *Yearbook of Fishing Statistics,* 1976.

Table 30.

EDIBLE FISH CONSUMPTION IN
MAJOR WESTERN EUROPEAN COUNTRIES
(in thousands of metric tons, round weight)

Country	1976 Consumption
Austria	57
Belgium and Luxembourg*	186
Denmark*	176
Finland	104
France* 3	1,135
Ireland*	35
Italy* 5	703
Netherlands*	180
Norway	190
Portugal	513
Spain 1	1,366
Sweden	254
Switzerland	69
United Kingdom* 4	1,058
West Germany* 2	1,200
Total	7,226

*EEC countries.

Sources: U.S. Department of Commerce, *Fisheries of the United States,* 1977, and *Statistical Abstract of the United States,* 1977.

Table 31.

SOURCE AND DISPOSITION OF JAPANESE EDIBLE FISH SUPPLY – 1970 AND 1976*
(in thousands of metric tons, round weight)

	1970		1976		Annual Compound Growth Rate
	Amount	Percent	Amount	Percent	
Domestic Consumption					
Domestic Production**	6,853	86%	7,538	82%	1.6%
Imports	294	4	866	9	19.7
Total	7,147	90%	8,404	91%	2.7
Exports	791	10	796	9	0.1
Total Supply	7,938	100%	9,200	100%	2.5

*Human consumption only.
**Includes fish caught by Japanese ships in Alaskan and other foreign waters.

Source: Government of Japan, Ministry of Agriculture, Forestry, and Fisheries.

Table 32.

TOP FIVE COUNTRIES IN PER CAPITA EDIBLE FISH CONSUMPTION – 1972-74 AVERAGE
(pounds, round weight)

Japan	151.7
Iceland	145.5
Portugal	129.0
Hong Kong	111.6
Singapore	106.0
United States	34.6

Source: U.S. Department of Commerce, *Fisheries of the United States,* 1977.

Table 33.

U.S. BOTTOMFISH SUPPLY – 1968 AND 1976
(in thousands of metric tons, product weight)

	1968		1976	
	Amount	Percent	Amount	Percent
Imports	195	79%	322	88%
Domestic Production	51	21	43	12
Total	246	100%	365	100%

Sources: U.S. Department of Commerce, *Food Fish Market Review and Outlook,* December 1977, and *Fisheries of the United States,* 1977.

Table 34.

GROWTH IN U.S. BOTTOMFISH AND TOTAL EDIBLE FISH CONSUMPTION
(in thousands of metric tons, product weight)

	1968	1976	Annual Compound Growth Rate
U.S. Total Edible Fish Consumption	984	1,256	3%
U.S. Total Bottomfish Consumption	243	365	5
Bottomfish Consumption as a Percent of Total Edible Fish Consumption	25%	29%	

Source: U.S. Department of Commerce, *Fisheries of the United States,* 1977.

Table 35.

WORLD CATCH AND HUMAN CONSUMPTION
(in millions of metric tons, round weight)

	1968	1976	Annual Compound Growth 1968-76
Total World Catch	64.0	73.5	1.8%
World Catch for Human Consumption	39.9	50.9	3.1
World Catch for Human Consumption as a Percent of Total World Catch	62%	70%	

Source: United Nations, Food and Agriculture Organization, *Yearbook of Fishery Statistics,* 1973 and 1976.

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