

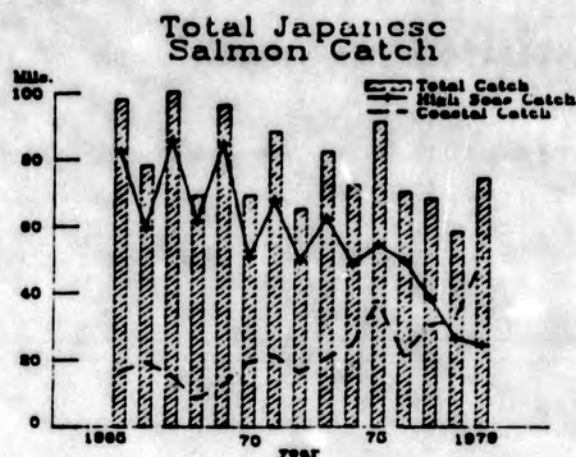
ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILE 8672

1246 SCOMM 48: HOUSE SPEC. COMMITTEE ON FISHERIES 1985-86

Implications of the Increasing Japanese Coastal Salmon Catch and Declining High Seas Salmon Catch for the U.S. Salmon Industry.

The effectiveness of the Japanese hatchery programs can be seen from the graph below.* The high seas salmon catch has decreased significantly since the early 1970's, due mainly to international agreements to restrict the high seas harvest. During the same period, the Japanese coastal catch (consisting mainly of hatchery raised adult chum salmon) has increased enough to equal the previous 15 year average.

The panelists were requested to review the factual information given below, then were asked to state the implications of the trend in the increasing Japanese coastal catch and declining high seas harvest for the U.S. salmon industry in the next 20 years. They were additionally instructed to identify species in their responses.



There was a high degree of consensus among the panelists' responses to this question. Japanese demand for reds is likely to continue to increase due to declining high seas catches (T3.4,#2,4,7,12). This could be moderated somewhat in the short term by the strength of the dollar (T3.4,#14). Hatchery produced pinks and chums are not close substitutes for reds in the Japanese market (T3.4,#5). Therefore, export sale of these species (pinks and chums) and sujiko (salmon roe) will probably weaken and prices will likely stay low (T3.4,#9,10,15,16). Most panelists stated that alternative domestic markets need to be aggressively developed for the price of pinks and chums to increase significantly (T3.4,#6).

*Alaska Fish Tales and Game Trails, Spring, 1982, p. 36.

TABLE 3.4

**Implications of the Increasing Japanese Coastal Salmon Catch
and Declining High Seas Salmon Catch for the U.S. Salmon Industry.**

**Percentage of Panelists Selecting Each
Assertion as Valid or Reliable***

PANEL ASSERTIONS

1. These trends suggest a continuing shake out of the U.S. industry with only those having a special market niche, financial strength, and sustained profits remaining.	91%
2. Japanese salmon imports are 70 - 75% reds. With a decreasing high seas catch, demand for reds will increase.	88%
3. This implies that we must solve institutional questions related to salmon ranching if the U.S. is to compete effectively with Japan.	84%
4. The more significant trend for U.S. exports to Japan is the decreasing Japanese distant water catch.	84%
5. Chums and reds aren't good substitutes for one another in the Japanese market.	84%
6. The number one implication is to develop the U.S. salmon market.	76%
7. The Japanese coastal catch consists mainly of chums and pinks while the high seas catch concentrates on reds. Therefore, there would be negative effects on U.S. export markets for the low value species while the higher valued species would only be marginally affected, if at all.	74%
8. These trends will force U.S. producers to market fish elsewhere. European demand will be met by Norway and the U.S.S.R. One alternative will be the Third World which cannot absorb much at today's prices. The king and coho market will continue to be strong in the U.S. at reduced prices. Sockeye looks good in the frozen domestic market. Also, there will be increased domestic consumption at lower prices for pinks and chums.	74%
9. There will be a decline in export markets for chums.	71%
10. Alternative markets for salmon roe must be found.	70%
11. The Japanese per capita demand for all fish products will decline in the next 20 years due to changes in tastes and preferences among the younger generation.	61%
12. The overall Japanese salmon market has increased over the last 20 years and will continue to do so.	58%
13. The Japanese success with hatchery production provides a model to predict economic success of domestic hatchery production.	52%

TABLE 3.4
(Continued)

Implications of the Increasing Japanese Coastal Salmon Catch
and Declining High Seas Salmon Catch for the U.S. Salmon Industry.

Percentage of Panelists Selecting Each
Assertion as Valid or Reliable*

PANEL ASSERTIONS

- | | |
|--|-----|
| 14. One implication is to develop the overseas market (especially for canned products) in anticipation of a declining U.S. dollar. | 50% |
| 15. There will be a decline in the export markets for pinks. | 46% |
| 16. The greatest detrimental effect will be on sujiko (salmon roe) exports and not on the export of fish. | 40% |
-

*The validity ratings of panelists indicating a low level of expertise for this question have been excluded from the table.

(R2-Q:1.1, average n = 51)

(R3-Q:1.1, average n = 40)

CHAPTER 4

ALASKA HATCHERY ISSUES

- o The Role of Pen-reared Salmon in Alaska's Future.
- o Political Implications of Farming Versus Hunting in Alaska Salmon Fisheries.
- o Geographical Dislocation of Traditional Fisheries Due to the Distribution of Hatchery Fish.
- o Future Changes Needed for Alaska Hatchery Programs to Maintain Competitiveness.
- o Types of Cost Recovery for Privately Held Hatcheries.
- o Expected Net Profits to Producers.

PRINCIPAL RESULTS

Alaska needs salmon farming to open up year-round markets for high quality fish, assuming that pen-rearing is technically and economically feasible.

Most panelists indicate that there is no reason why hunting and farming cannot be integrated into a single industry. Salmon farming will dominate the high priced fresh market in the off-season while hunting and ranching interests will hold the lower priced, high volume end of the market.

Salmon pen-rearing should be profit motivated to attract investors, but the fishing lobby who view pen-rearing as competition will exert political pressure on the Legislature to prevent private for profit pen-rearing.

The cost of hatchery programs should be carefully evaluated to insure they contribute more than they remove from the fishery economy. We should consider whether dollars spent on hatcheries might be better spent on research, stock assessment, and hatchery enhancement.

Pen culture should be encouraged. The State should allow a pen farming network of size, scope, and marketing operations similar to Norway.

"Private nonprofits" should concentrate on commercial fish production and enhancement of early and late stocks to extend seasons.

Since salmon are most often fished in mixed stock fisheries and predicting run strength is an art even for hatchery fish, great care should be exercised not to close down valuable mixed stock fisheries in order to generate more hatchery returns. In other words, the expected costs and benefits of alternative methods of managing fisheries which intercept hatchery fish should be weighed.

Two-thirds of the panel indicated that the preferred method used to finance nonprofit, private hatcheries would be a balance between an enhancement assessment and partial cost recovery.

About half of the panel forecast that net profits will increase for both fishers and processors if there is a long-term increase in the supply of salmon stocks. Although price will decrease, the overall increase in harvest volume will increase unit efficiency (CPUE) as long as limited entry is in place.

The Role of Pen-reared Salmon in Alaska's Future.

Norway has developed a successful salmon farming industry. Production of pen-reared salmon exceeded 40 million pounds in 1984 and is expected to at least double by 1986. Other European countries are also entering this industry. Alaska salmon could largely be displaced from European markets for fresh and fresh/frozen salmon by 1990, and competition for U.S. markets is likely to intensify. Given these developments, we requested the panelists to describe the role that they foresee for pen-reared salmon in Alaska's future. In Round 2, panelists responded to an open ended format. For Round 3, the panelists' responses were fed back as a set of assertions. They were requested to rate the validity of each assertion using the six point validity scale.

A majority of the panelists thought Alaska should try to develop some type of salmon pen culture program at least on an experimental basis (T4.1,#3,6,7). The species most commonly proposed for farming were Kings, cohos, Atlantic salmon, and steelhead (T4.1,#14,15). Most respondents stated that a year round supply of high quality fresh salmon would be a great help in developing high priced domestic specialty markets (T4.1,#1). New fisheries could also be developed to supply feed to farms. Fish byproducts from processing plants could be converted into feed to add value to existing production (T4.1,#11). Some panelists, with a long-term outlook, said that the era of the "fisherman farmer" is beginning, where fishermen harvest wild and hatchery stocks during the regular season and harvest farmed fish in the winter (T4.1,#1). For the near term, about a third of the panel thought salmon farming in Alaska will be of minor importance compared to traditional salmon fisheries (T4.1,#9,12).

Panelists taking the opposing view argue that pen rearing in Alaska is too costly and politically unacceptable to fishermen (T4.1,#13). Several noted that the Norwegian program took many years to develop and massive government subsidies. Other negative factors mentioned include labor and capital costs, distance from markets, and lack of local brood stocks (which mature in winter).

Panelists stated that economic impacts on fishermen need to be better understood (T4.1,#2). It should be decided whether to allow large companies to enter or a network of small individually owned farms as in Norway (T4.1,#10). Lease and site arrangements need to be settled (T4.1,#4). Brood stocks need to be located and further biological research undertaken. In addition, questions such as the following were posed. "What about using Atlantic salmon in Alaska? How about eyed eggs from the Southern hemisphere which would have an opposite growth cycle from our fish?" These issues and more need to be thought through according to the panel.

In summary, the panel felt that some type of pilot or experimental pen-rearing program should be attempted. Careful study is needed, however, and an institutional framework needs to be worked out before a more ambitious program is undertaken.

TABLE 4.1

Role of Pen-reared Salmon in Alaska's Future.

Percentage of Panelists Selecting Each Assertion as Valid or Reliable	
PANEL ASSERTIONS	
1. Alaska needs salmon farming to open up year-round markets for high quality fresh fish. Farmed fish may actually increase the demand for high quality fresh and fresh frozen kings and cohos by assuring a steady supply.	76%
2. Assuming that pen rearing in Alaska is technically and economically feasible, the market effect of competition between farmed and troll caught kings and cohos needs to be better understood.	75%
3. The State should offer experimental permits to fishermen to conduct a pilot program and develop a system of individually owned small farms such as Norway has.	73%

TABLE 4.1
(Continued)

Role of Pen-reared Salmon in Alaska's Future.

Percentage of Panelists Selecting Each Assertion as Valid or Reliable	
4. Depends on government stance concerning leases, culture of Atlantic salmon, and financing of support facilities (i.e., brood stock and disease control).	70%
5. Southeast Alaska enjoys a comparative advantage in shipping costs to the Lower 48 (\$.22/lb from Southeast vs. \$1.10/lb from Norway). Therefore, we should concentrate on pen rearing salmon for the domestic market.	66%
6. Alaska should get into pen-rearing. It has the great advantage of site availability at least in Southeast and Southcentral Alaska.	60%
7. The development of pen reared salmon farming in Alaska is biologically feasible, but its economic feasibility is doubtful. High production and transportation costs will limit potential.	54%
8. There is absolutely no comparative advantage in North American pen rearing for European markets.	41%
9. Pen rearing in Alaska will be of very little importance compared to natural and hatchery production.	40%
10. Pen rearing by cooperatives composed of small producers would be a viable adjunct to total market development. Pen rearing of Alaskan chinook could potentially exceed or replace troll production.	36%
11. Pen-rearing would open up markets for fish wastes and by-products.	36%
12. For the near future (10-20 years), Alaska should stick to what she does best: harvesting salmon in her waters, not pen raising them.	32%
13. Alaska should not divert public funds into pen-raising and private industry will not find it profitable either.	32%
14. Coho, chinook and steelhead are the only species which should be considered for pen rearing.	29%
15. There are very few places in Alaska where the temperature conditions would be warm enough year round to compete with the growing conditions in Norway.	27%
16. One problem is high production costs for desired species, i.e., chinook and coho. Seasonality of production plus brood stock problems also limit present potential. Atlantic salmon may be Alaska's best bet for pen rearing at present.	23%
17. Pen rearing should be developed along the lines of the "mom and pop" hatcheries in rural areas.	16%

(R3-Q:2.1, average n = 57)

Political Implications of Farming Versus Hunting in Alaska's Salmon Fisheries.

We proposed the following premise to the panel for their response. "Salmon aquaculture will create a new interest group in Alaska salmon fisheries. This new group will possess a farming philosophy which can contribute to conflict with a traditional industry which is based on hunting. Legal and institutional structures for farming and hunting economies are quite different."

In reference to these assumptions, we asked the panelists to tell us what would be the political implications of farming versus hunting to Alaska salmon fisheries. A corollary question also posed was, "Can a salmon industry based on hunting survive with one based on farming?"

Most panelists agree that there need not be any philosophical conflict between "hunters" (fishers), "ranchers" (hatchery owners and operators), and "farmers" (future pen-rearing operations) in the future of Alaska's salmon industry (T4.2,#2). One respondent pointed to the current system of public and privately owned hatcheries that supply salmon to the common property fishery as a successful integration of "hunting" and "ranching" which enjoys widespread political support.

Pen rearing looms as a separate issue however. Many panelists observed that pen reared salmon are generally marketed fresh in the winter and thus fill a different market niche than traditional fresh and frozen products (T4.2,#4). Most respondents felt that fishermen would perceive pen rearing as a threat to their livelihood regardless of the "separate season-separate markets" argument (T4.2,#1). Therefore, any State sponsored pen rearing program may have to be designed to provide direct economic benefits to fishermen to be politically acceptable (T4.2,#3,4,5,6). Several panelists stated that fishermen are the best organized and most politically powerful segment of the salmon industry. Fishermen also have a great amount of political support in rural areas where pen-rearing operations would most likely be located (i.e., Southeast and Southcentral Alaska).

Panelists described a wide range of models and options for a State supported pen rearing program. About half of the panel said ADF&G should at least supply smolts and monitor the program (T4.4,#7). The most commonly mentioned ideas were: a fishermen's cooperative approach (as in Japan), a State controlled system of small farms owned by individuals (the Norwegian model), or allowing the private nonprofit associations to begin pen rearing (T4.2,#5). A few respondents commented that since trollers are the gear type whose markets are most affected by pen-reared species, perhaps they should receive some type of compensation or entry preference for issuing permits, licenses, sites, etc., if a pen-rearing program is started.

In general, panelists agree that "hunting," "ranching," and "farming" can and must be successfully integrated if Alaska's salmon industry is to remain competitive in traditional and developing markets. Many in the panel forecast a future salmon industry structure where net fisheries that harvest natural and ranched fish would supply the "low value-high volume" end of the market during the regular season; and farmed fish would predominate in the "high value off season" markets (T4.2,#2).

TABLE 4.2

**Political Implications of Farming
Versus Hunting in Alaska Salmon Fisheries**

**Percentage of Panelists Selecting
Each Assertion as Valid or Reliable**

PANEL ASSERTIONS

- | | |
|--|-----|
| 1. Salmon pen rearing must be profit motivated to attract investors. Fishermen view pen-reared salmon as competition and resist aquaculture for profit. This strong fishing lobby will keep political pressure on the Legislature to prevent private for profit pen rearing. | 71% |
| 2. There is no reason why hunting and farming cannot be integrated into a single industry. Salmon farming will dominate the high priced fresh market particularly in the off season while hunting and ranching interests will hold the lower priced, high volume end of the market. | 70% |
| 3. An integration of the processing and farming sectors seems inevitable. Fishermen must be included to make this politically viable. | 68% |
| 4. You must be able to demonstrate some definite advantages to the "hunters" and to the State's economy as a whole. I think you can argue that the two products aren't all that competitive - they serve different market niches so far as pen reared versus wild/ranching fish are concerned. | 62% |
| 5. Only some type of fishermen's cooperative approach, where fishermen could fish during part of the year and farm during the remainder (as in Japan), would be politically acceptable. | 37% |
| 6. A salmon industry based on hunting can survive with one based on ocean ranching because the benefits of increased adult production are being realized by fishermen. Strict pen rearing will be incompatible unless it can somehow be integrated into the existing institutional structure possibly via fishermen's cooperatives or by allowing private nonprofit aquaculture associations to participate. | 36% |
| 7. The interests between hunting and farming may not necessarily be different. This has not been the case in Norway. Limit the farm size and limit farming to individuals by amending the limited entry permit to allow farming by a permit holder. | 34% |
| 8. We would not see any basic conflict for years, as Alaska's largest political group is made up of its fishermen. The big problem of DomSea in Puget Sound came from real estate, antipollution forces, and other directions - little opposition from fishermen. | 33% |
| 9. Only large corporations such as Weyerhaeuser or possibly Native corporations can afford the capital costs of pen rearing. | 24% |
-

(R3-Q:2.2, average n = 57)

Geographical Dislocation of Traditional Fisheries Due to the Distribution of Hatchery Fish.

Experience has shown that successful hatcheries can support major fisheries. We asked the panelists if they foresee changes in the geographical location of major fishing grounds in response to the distribution of hatchery fish.

In response, 38% of the panelists indicated 'Yes,' 33% indicated 'No,' and 29% indicated 'Don't Know' (n = 69). This question also included an open-ended comments section, and the summarized results of the group comments are given in Table 4.3. Few panelists responded to the open-ended portion of this question.

A general trend toward more terminal harvest fisheries is a theme that emerges from all of the salmon hatchery questions posed in this study. This coincides with the consensus reached early in the Delphi process by the panel that mixed stock fisheries should be managed to protect natural runs. Again, there is some skepticism about the relative importance of hatchery production compared to natural production. One panelist pointed out that some geographical movement has already occurred as special season openings are allowed to harvest surplus fish at certain hatchery sites, e.g. Hidden Falls hatchery in Southeast Alaska. This type of geographic dislocation is likely to continue as "new" fish become available through hatchery production. The major implication from this trend to terminal fisheries is more fish of lower quality (pinks and chums in particular). Most traditional fishing grounds will remain unaffected, with some minor changes in localized areas.

TABLE 4.3

Geographic Dislocation of Traditional Fisheries due to the Distribution of Hatchery Fish

Summarized Panel Comments

- o Generally there will be a geographical trend toward more terminal fisheries in response to successful hatchery programs to avoid overfishing of natural runs in areas where natural and hatchery runs mix. Witness the Hidden Falls and Neets Bay terminal fishing areas.
 - o Except for isolated areas for pinks and chums, most traditional Alaskan fishing grounds are likely to remain unaffected.
 - o Harvest areas can be tailored by releasing smolts at selected times and sites. These do not have to be coincident with hatchery locations.
 - o No doubt that "new" fish will change some of the traditional fleet distribution/allocation patterns and already have. In some cases, we have seen relocation of gear within established fishing areas, in others, we will probably see regulatory bodies such as the Board of Fisheries respond to allocation problems by changing local fishing areas. Hatchery location, species, and timing of releases can be a powerful management tool, but in many cases logistical limitations (water sources, construction costs, etc.) will force us to adapt the fishing to the opportunity.
-

(R2-Q:1.6)

Future Changes Needed for Alaska Hatchery Programs to Maintain Competitiveness.

In 1982, approximately 50% of the salmon eggs taken in Alaska were handled by private, non-profit hatcheries. At the present time private-for-profit hatcheries, as such, are not allowed in Alaska. Currently three types of hatcheries exist in the State: public hatcheries (funded by tax dollars), private nonprofit hatcheries (PNP's, started by State loans and/or grants and funded by an aquaculture assessment on the ex-vessel value of the commercial catch landed in a particular region, e.g., 3% in Southeast, and the sale of surplus salmon), and so called "Mom and Pop" operations (started with State money and funded by the sale of surplus fish). Surplus fish are defined as fish which have passed through the common property fishery and returned to the terminal area over and above the numbers needed for cohort recruitment. Currently all of these programs are coordinated by the Alaska Department of Fish and Game.

Panelists were requested to give us their views on what type of institutional arrangement, different from that given above, will be necessary to maintain Alaska's competitiveness in future world salmon markets. In Round 1, the panelists responded in their own words. For Round 2, their responses were summarized and fed back as assertions. The panelists then rated the assertions using the six-point Validity Scale. In Round 3, assertions that revealed a lack of consensus of ratings in Round 2 were again fed back in order to possibly produce a greater consensus. Panelists' self-rated level of expertise for this question was 33% high expertise, 29% medium expertise and 38% low expertise (n = 84).

Panelists with high expertise in this area tended to have very strong ideological preferences on the public vs. private ownership issue. Many of the responses are lengthy and complex. As a result, in this section we will establish a general context based on the assertions given on Table 4.4. Other more specific questions about aquaculture programs grew out of panelists' responses to this question and are dealt with in detail later in this chapter.

One theme that recurs in panelists' responses is the realization that future development of the present institutional arrangement is constrained by a diminishing public funding source. Apparently the panel believes the present institutional arrangement will not be adequate for future development (T4.4,#8,14). Most panelists have no quarrel with the State providing funds through loans or grants to set up private for profit or private nonprofit hatcheries, but feel they should become self-sustaining fairly quickly. There is some concern that private sector hatcheries will require continual subsidies.

Panelists strongly agree that ADF&G should continue to manage hatchery runs and perform their regulatory role for the private sector hatcheries (T4.4,#4). Panelists also agree that the ADF&G, Fisheries Rehabilitation and Enhancement Division (FRED), should concentrate on research, distant upriver and sportfish hatcheries and not compete with the private sector for commercial production (T4.4,#12). A number of panelists said that ADF&G currently plays a dual role as regulator and competitor with private (PNP's and PFP's) hatcheries which can produce fish cheaper and more efficiently (T4.4,#10). Several respondents felt that current restrictions on the transfer of eggs by private hatcheries from one region to another are too restrictive (T4.4,#13). In their view, provided they are disease free, eggs should be more widely distributed so that the very earliest and latest runs can be enhanced to lengthen the harvest season (T4.4,#3).

Another concern of panelists, expressed repeatedly throughout the salmon hatchery series of questions, was whether State money spent to build and finance hatcheries might be better used for stock assessment, research, management, or enhancement (T4.4,#1). This question has at least been partially answered by empirical research conducted in tandem with this study by the Alaska Department of Commerce and Economic Development, Office of Enterprise, and ADF&G's FRED Division staff for the Governor's Fisheries Mini-Cabinet Task Force. These studies computed positive benefit/cost ratios for Alaska's private and public hatchery systems. While this research doesn't completely answer the question of where State dollars could be more wisely spent, it does indicate that the current hatchery systems produce more in economic benefits over time than they remove in costs.

In general, panelists' answers indicate they would like to see the State's hatchery systems run on a more businesslike basis (T4.4,#6,8). As one panelist put it, "The nonprofit concept was instituted to protect the salmon industry from the upheaval of too rapid change. It does not promote the best efficiency and innovativeness that a profit motive generates. Alaska should introduce the profit concept to private hatcheries at a deliberate pace or State interests will

fall behind more efficient foreign competition." Various ideas were proposed for consideration including affiliation of PFP's with fishermen's cooperatives, allowing PNP's to begin pen rearing, and giving property rights to private hatcheries for runs developed on barren systems that could be harvested with traps (T4.4,011). Several panelists urged the State to pursue policies aimed at enhancing both competitiveness and vertical integration in the private hatchery systems (T4.5,06).

TABLE 4.4

Future Changes Needed for Alaska
Hatchery Programs to Maintain Competitiveness

Percentage of Panelists Selecting Each Assertion as Valid or Reliable*	
PANEL ASSERTIONS	
1. Costs should be carefully evaluated to assure they contribute more than they remove from the fishery economy. We should consider whether dollars spent on hatcheries might be better spent on research, stock assessment, and enhancement.	88%
2. Salmon stocks should be managed to protect natural runs.	82%
3. "Private nonprofits" should concentrate on commercial fish production and enhancement of early and late stocks to extend seasons.	75%
4. ADF&G should continue to manage hatchery runs and perform their regulatory role.	72%
5. Pen culture which should be encouraged and can be controlled in its entirety.	70%
6. Private <u>For Profit</u> hatcheries that can make some level of profit and still contribute to the common property fishery should be encouraged.	70%
7. The State should allow a pen farming network of size, scope and marketing operations similar to Norway.	67%
8. The nonprofit concept doesn't promote efficiency and innovation that the profit motive generates. Alaska should introduce profit at a deliberate pace or State interests will fall behind more efficient foreign competition.	55%
9. The State should fund a smolt operation for the purpose of getting the farming network started and maintaining a genetically strong strain.	48%
10. Private Non Profit (PNP) hatchery corporations, both local and regional, are stifled by overregulation from the Alaska Department of Fish and Game (ADF&G). The primary cause is the Fisheries Research and Enhancement Division (F.R.E.D.) playing a dual role as competitor and regulator.	46%
11. Exclusive area rights with no restriction on how the catch is taken. Should be in the form of fishermen/processor cooperatives. Offshore interceptions should be kept at a minimum through individual quota licensing arrangements.	41%

TABLE 4.4
(Continued)

Future Changes Needed for Alaska
Hatchery Programs to Maintain Competitiveness

Percentage of Panelists Selecting Each Assertion as Valid or Reliable*	
12. The primary role of ADF&G should be research and development and disease control.	41%
13. Transfer of stocks, providing they are disease free, should be allowed between regions.	38%
14. The present institutional arrangement is practical in terms of political support and is functional.	19%

* The ratings of panelists that indicate a low level of expertise for this question have been excluded from the table.

(R2-Q:2.1, average n = 65)

(R3-Q:1.3, average n = 32)

Types of Cost Recovery for Privately Held Hatcheries.

The panelists were requested to give us their views on whether fishermen and processors should share in the costs and/or profits of privately held hatcheries. In response, the panel as a group was divided. That is, 48% of the panel responded with a "Yes," 38% with a "No" and 14% indicated "Don't Know" (n = 63).

The comments provided by the panel from this question were combined for analysis with the panel responses to the two additional questions below.

Private nonprofit hatcheries are allowed to sell surplus adults as a means to generate funds for operations and debt repayment. Should the State (ADF&G) manage common property fisheries to allow sufficient escapement for total cost recovery? Partial cost recovery? No cost recovery?

If there is partial or no cost recovery from returning adults, what means should be used to finance nonprofit, private, hatcheries?

Over 50% of the panelists indicated that they would like to see fishermen and processors share in the costs and/or benefits of privately held hatcheries above and beyond the current aquaculture assessment (T4.5,#6). A majority of the respondents stated that vertical integration between fishermen, processors, and hatchery owners and managers will become increasingly desirable to keep costs down and maintain competitiveness (T4.5,#6). One panelist suggested, "Provide 'buy-in' opportunities for fishermen and/or processors who wish to participate. Exclusive ownership by a single individual, partnership, or corporation should be discouraged."

Over half of the panel indicated that hatcheries, fishermen, and processors are separate entities and should remain so (T4.7,#3). They pointed out that fishermen already benefit by having more fish available in the common property fishery (T4.5,#4). Several stated that if a particular hatchery is sited so that its returns can be segregated from mixed stocks, then it may be possible to tax those who harvest them (T4.5,#3,5).

Panelists' responses were split on the issue of cost recovery for private nonprofit hatcheries. A majority felt that partial cost recovery was the most viable option (T4.5,#4; T4.6,#3; T4.7,#1,4). Those who objected to total cost recovery argued that terminally harvested fish are of poor quality and don't command the higher price of salmon caught in the open water fishery (T4.6,#2). Those who answered no cost recovery generally stated that only the number of fish necessary for brood stock should be allowed to return to the hatchery (T4.6,#7; T4.7,#5).

A number of respondents felt that trying to manage for a particular level of cost recovery for hatcheries was unrealistic given the historical accuracy of stock assessments and would add unneeded complication to an already complex job (T4.6,#1,4). In their view, this type of "fine tuning" is better left to the Alaska Board of Fisheries where local harvesting area boundaries and seasons can be set on an annual basis.

Most of the panel who stated that PNP's should be financed with partial or no cost recovery felt that the aquaculture assessment was the most equitable means of distributing costs on a "user pays" basis (T4.5,#4; T4.7,#2). Several stated that PNP's should learn to live within the funding limits of a combination of aquaculture assessments and partial cost recovery from the sale of surplus fish (T4.7,#1). It is also important to the private nonprofit concept that they are not put in a position of competing with fishers by having to depend on total cost recovery at the hatchery.

TABLE 4.5

**Whether Fishers and Processors Should Share
in the Costs and/or Profits of Privately Held Hatcheries**

**Percentage of Panelists Selecting Each
Assertion as Valid or Reliable**

PANEL ASSERTIONS

1. Private for profit hatcheries should carry their own costs and/or profits.	79%
2. The public is precluded from commercial fishing by the limited entry system. Therefore, all of the costs and benefits of private hatcheries should be borne by those who are directly involved - fishermen, processors, and hatchery owners.	73%
3. In localized areas where fishermen can derive determinable benefits in increased catch, and where the major return is to hatcheries, fishermen should be assessed to fish.	71%
4. The current assessment is a good means for providing capital and operating costs on a "user pays" basis. The profit side should be covered by the availability of more fish to benefit the greatest number of people.	64%
5. The answer depends on identification of increases in production due to such hatcheries. The simplest mechanism is to allow an adequate escapement to hatcheries and assess no costs. If catch (interception) rates are set high, a cost-sharing arrangement may be in order.	58%
6. Yes, they should share costs and profits. Vertical integration and a better definition of property rights are necessary for Alaska to maintain its competitiveness.	56%
7. The ideal arrangement would be a joint stock company or limited partnership arrangement with fishermen as stockholders. The hatcheries should be private for profit complete with a manager and a board of directors.	35%
8. There should be no private for profit hatcheries. The only private for profit operations that should be allowed are pen rearing salmon farms. These should buy their smolts from ADF&G controlled hatcheries.	12%

(R3-Q:2.3, average n = 54)

TABLE 4.6

**Whether Alaska State Should Allow Sufficient
Escapement for Total, Partial, or No Cost Recovery**

Percentage of Panelists Selecting Each Assertion as Valid or Reliable	
PANEL ASSERTIONS	
1. Since salmon are most often fished in mixed stock fisheries and predicting run strength is an art even for hatchery fish, great care should be exercised not to close down valuable mixed stock fisheries in order to generate more hatchery returns. In other words, the expected costs and benefits of alternative methods of managing fisheries which intercept hatchery fish should be weighed.	86%
2. Partial recovery should be allowed. Terminal fisheries necessary for total recovery equal poor quality and are therefore economically inefficient.	64%
3. Partial cost recovery should be used to cover development costs. Assistance should be phased out eventually to convert nonprofits to profit status.	54%
4. Management costs should not be tied or limited to the actual year-by-year production of a fishery that is periodically depressed.	48%
5. Total cost recovery should be required of all hatcheries including State operated hatcheries.	28%
6. The present system for private nonprofit partial cost recovery is working well.	26%
7. No cost recovery. Surplus fish at the hatchery are of poor quality and should be used only for breeding stock.	11%

(R3-Q:2.4, average n = 53)

TABLE 4.7

What Means Should be Used to Finance
Nonprofit, Private Hatcheries

Percentage of Panelists Selecting Each
Assertion as Valid or Reliable

PANEL ASSERTIONS

1. A balance between an enhancement assessment and partial cost recovery from fish sales is a good financial arrangement.	67%
2. Tax those who benefit, fishermen or processors. In any case, the cost will be passed on to the final consumer, tacked onto the price paid for the fish.	66%
3. Private for profit hatcheries should probably remain independent - to make their own profit or suffer loss, and they have to be assured of sufficient profit to encourage investment.	57%
4. PNP's must learn to live within what is provided by assessments.	51%
5. The simplest mechanism is to allow an adequate escapement to hatcheries and assess no costs.	15%

(R3-Q:2.5, average n = 53)

Expected Net Profits to Producers

Panelists were asked to assume that the planned fivefold increase in Alaskan hatchery releases of salmon fry (by 1990) would materialize into a long-term increase in salmon stocks. Given this, the panel was requested to indicate whether U.S. salmon fishers' and processors' net profits would increase, decrease, or stay about the same. The panel's response is presented on Table 4.8 below.

TABLE 4.8

Effect on Net Profits to Producers

	DECREASE	STAY ABOUT SAME	INCREASE
U.S. Salmon Fishers	15%	28%	57%
U.S. Processors	19%	32%	49%

(R1-Q:B15b, p. 11, n = 81)

(R2-Q:4.1, n = 67)

Panelists' opinions were evenly split on the two parts of this question, with about half thinking that fishers' and processors' net profits would increase and about the same number saying they would decrease or remain the same. Many respondents commented that the question was phrased too vaguely and didn't provide sufficient reference to current hatchery production (and species) as well as other important variables. A majority of panelists framed their answers in conventional economic terms of supply and demand, price elasticity of demand for salmon, etc. (T4.9, #5, 11)

The rationale cited by those who felt fishers' net profits would increase was that returns from the increased catch volume would more than compensate for a drop in the ex-vessel price caused by a larger supply of fish on the market (T4.9, #1, 2, 4). The main concerns were that if too much of the total catch were composed of low valued species and low quality fish, it could further depress prices and cause gross revenues, thus, profits to decline (T4.9, #9). Another concern was that short-term profits tend to be dissipated in capital improvements which adversely affect long-term profitability when prices decline in the future (T4.9, #3, 10).

TABLE 4.9

Expected Net Profits to Fishers and Processors

Percentage of Panelists Selecting Each Assertion as Valid or Reliable	
PANEL ASSERTIONS	
1. More fish will increase unit efficiency (CPUE) so long as limited entry is in place.	76%
2. The same level of effort with larger stocks will increase profits if we assume there is profit at current levels.	69%
3. Common property tends to erode average profitability.	63%
4. Price will decrease, but the overall increase in harvest volume will increase fishermen's net return.	59%
5. Net profit will increase initially since demand is price elastic.	59%
6. If properly managed, releases can stabilize the annual harvest, bringing stable prices and enhanced marketability.	54%
7. Profitability will vary widely from fishery to fishery, but will increase for those that catch predominately sockeye (i.e., Bristol Bay).	41%
8. An increase in the catch volume will lead to greater profits for only 5 - 10% of the fleet.	39%
9. Profitability will decline in areas where pinks and chums are the dominant species due to foreign competition.	39%
10. Profits will decline in the long run because short-term profits will be dissipated by reinvestment in the fleet and prices will decline.	35%
11. Net profit will decrease later as demand becomes more price inelastic.	34%

TABLE 4.9
(Continued)

Expected Net Profits to Fishers and Processors

Percentage of Panelists Selecting Each Assertion as Valid or Reliable	
12. Current profitability is recession oriented and will strengthen.	31%
13. Without corresponding increases in demand, current demand will be met by more efficient foreign operations including structured/fabricated products.	29%

(R2-Q:4.1, average n = 64)

Those panelists who felt processors' net profits would increase with larger catch volumes reasoned that production costs could be spread over larger product volumes. One concern was that hatchery production should ideally lengthen the processing season (through enhancement of early and late runs) to derive the greatest economic benefit. Intensifying production during the peak of the season when processors are already operating at capacity is not a desirable consequence and would only result in lower quality products.

Several panelists with a marketing orientation pointed out that several countries are increasing hatchery releases at once, particularly pinks and chums, which could lead to worldwide oversupply of these species (T4.10). Compounding this trend, at least in the short term, is the strength of the dollar (especially against the pound) which has depressed canned sales for the past few years (T7.6). Most of the marketing-oriented panelists view hatchery production positively. They feel that a larger and more stable supply of lower priced fish will lead to new products (e.g., salmon loaf, sausage, or skinless and boneless canned salmon) and increased markets (T4.10). The main problem with this viewpoint expressed by other panelists with a financial perspective is that the very companies who are best suited to handling large volumes (i.e., major salmon canning companies) have been hurt badly by depressed canned sales overseas. Major salmon canning companies should be in the forefront of the development of new salmon products for the domestic market, but don't have the financial ability to undertake major investments (T5.2, #8).

Empirical research has tentatively shown that the price inelastic (ex-vessel) portions of the demand curve for Alaska pink and chum salmon occur when the harvest levels near 120-150 thousand mt. for pinks and 30-40 thousand mt. for chums. The panel was requested to assume these numbers are correct and that total gross revenues for fishers began to decline when these harvest levels are reached. They were then asked the following questions.

Given the current levels of Alaskan fishing effort in those fisheries where pinks and chums are the predominate species harvested, do you believe that world salmon markets can absorb these supply levels at prices which will provide an adequate return on investment for fishermen?

Fifty percent of the panel indicated a "Yes" response, 16% indicated a "No" responses, and 34% indicated "Don't know" (n = 62). A summary of the panel's comments is given in Table 4.10.

The Alaska Board of Fisheries convenes annually in each region of the State to set commercial salmon seasons and area allocations between gear types. In public testimony at meetings for Southcentral and Southeast Alaska during the past few years, salmon fishers have often complained of falling gross revenues while catching larger volumes than ever before. This is especially true for gear types which harvest mainly pinks and chums. The Commercial Fisheries Entry Commission

keeps track of returns on investments for limited entry permit holders by gear type. These data show that in some pink and chum dominated fisheries, real permit prices and returns on investments have declined as catch volumes have increased.

Most panelists stated in their explanation that a greatly expanded marketing and promotion effort by the State for pink and chum salmon products is the most important thing that could be done to insure future profitability for fishers and returns on hatchery investments. As one panelist put it, "Demand doesn't happen by itself, it is created by sustained promotional efforts." Another panelist pointed out that one Norwegian salmon company spent more on advertising and marketing in 1983 than the Alaska Seafood Marketing Institute (ASMI).

Other respondents pointed out that market prices of pinks and chums have become competitive with other forms of protein, thus opening a broader domestic market. Several stated that broader foreign market development is unlikely to occur until the dollar weakens.

TABLE 4.10

Will Fishers Get an Adequate Return on Their Investment?

Summarized Panel Comments

- o We cannot assume static markets but the pink and chum products appear to be mostly traditional and not easily moved to the frozen market.
 - o Yes, if foreign owned processing companies are not allowed to dictate price and if product innovation is promoted and fostered in the industry.
 - o Not in the short-term anyway. New markets with U.S. dollars for foreign exchange will have to be created. The domestic markets tend toward the higher value species and imports of Atlantic salmon continue to foster the use of these higher value species.
 - o A recent study relating Bristol Bay ex-vessel price to Tokyo wholesale market price for red salmon at current conditions of inflation, consumption, etc., shows that a 14 to 23 percent increase in supply (as inventory) would still mean a 10 to 12 percent increase in market price and translates directly down to ex-vessel price. Red salmon, of course, are much different than pinks or chums but this does give you some idea of what we are looking at here.
 - o Better, more stable supply should allow a better market development effort.
 - o Adequate returns is the key word. I believe that increased pinks and chums can and will find markets and that return on present investments will be increased.
 - o Major marketing efforts, both domestic and foreign are the key here. The State of Alaska should make a major commitment in this area if it is going to get an adequate return on its hatchery investment and insure an adequate return for fishermen and processors.
 - o World wide increase in production of pink and chum will decrease price, but this will be overcome by new markets; and value added products - such as skinless, boneless fillets using fresh caught fish.
-

(R2-Q:4.5)

CHAPTER 5

INTERNATIONAL GROUNDFISH ISSUES

- o Displacement of Imports by Domestic Groundfish Production
- o Some Reasons why the U.S. Seafood Industry is Not in the Forefront of the Development of the Domestic Surimi Market
- o Factors Affecting the Competitiveness of the Domestic Processing Industry
- o Effects on the U.S. Industry Resulting from a 50% Cut in the TALFF
- o Expected Retaliation by Other Nations Should a Large Cut in the TALFF Occur

PRINCIPAL RESULTS

More than half of the panel expects that domestic groundfish production will generally displace imports in the next 20 years, but it will occur slowly. However, about one-third of the panel expects that the domestic industry will not completely displace imports because domestic producers will not be able to supply the total domestic demand, especially at a competitive price with foreign imports.

According to the panel, the primary reasons why the U.S. seafood industry is not in the forefront of the development of the domestic surimi market are: that the Japanese have much historical experience in the processing of pollock and the technology of surimi product development due to their traditional markets in Japan and Korea.

A majority of the panel indicated that domestic producers were surprised at the U.S. market's acceptance of analog products. In order to successfully compete with imports, either joint ventures will be necessary or a major domestic company which is capable of financing a fully integrated operation will be necessary.

The major factors that affect the competitiveness of the domestic processing industry are: foreign labor costs, exchange rates, trade barriers and foreign government subsidies.

Displacement of Imports by Domestic Groundfish Production

In Round 1, we asked the panel whether they believed that domestic groundfish production would generally displace imports in the next 20 years. We also requested their comments which were subsequently turned into assertions and given in Round 2 for the panelists to evaluate using the six-point validity scale. After the panel evaluated the comments in Round 2, they were again requested to indicate whether domestic groundfish production would displace imports.

Responses to Round 2 indicate that 57% of the panel believe that domestic production will generally displace imports in the next 20 years. Thirty-four percent (34%) indicated that domestic production will not displace imports (9% indicated "Don't Know," n = 78). An analysis of the evaluated assertions given on Table 5.1, reveals substantial agreement among panelists that domestic groundfish production will greatly increase during the next 20 years. Many panelists remain doubtful that imports of groundfish products will be completely displaced however (T5.1, #1, 7). The U.S. white fish market has been carefully developed by foreign fishing interests which will not be easily dislodged. Fishery exports to the U.S. are an excellent means to gain hard currency and thus are promoted and subsidized by foreign governments. So, although the overall domestic market for groundfish products has considerable scope for growth and is forecasted to continue growing at a rapid rate by the panel, American producers will still face stiff competition from foreign products.

Regulating foreign fleets out of the U.S. Fisheries Conservation Zone (FCZ) is only the first step in domestic market development. Several panelists pointed out that the comparative advantage of exclusive access to a major supply of raw product must be followed closely by technological and quality control improvements in order to produce high quality, moderately priced, consumer products (T5.1, #3). Ultimately, price and quality are the two most important variables in domestic consumer preference (T7.3). Respondents pointed out that some nationalistic prejudice does exist in consumer choices and U.S. groundfish products still suffer from a reputation of poor quality compared to foreign products (T7.3, T7.5). If the "made in U.S.A." or "fresh frozen from the pristine waters of Alaska" image is going to be promoted successfully, consumers must have an objective standard for product differentiation. A large majority of panelists feel that product standards are the most important factor influencing the consumer's quality perception (see Chapter 7, Table 7.4). Foreign production of higher valued groundfish species such as Pacific cod and black cod could be substantially replaced by domestic production fairly soon but the higher volume/lower priced species such as pollock and yellowfin sole are likely to remain dominated by foreign and joint venture production for the intermediate future (10 years).

A few panelists raised concerns about the long-term (10-20 years) outlook for domestic fishermen and processors. They pointed out that in every developing Alaskan fishery, open access has eventually led to overcapitalization, overharvesting, and financial hardship for all concerned. Several respondents thought that some type of restrictive licensing scheme, limited entry, share quota system, or property rights, need to be established before this resource is subjected to the same apparently inevitable boom and bust cycle of exploitation.

Other panelists pointed out that fisheries trade issues are perceived by the U.S. State Department as being of minor importance in the broader overall context of foreign trade. Thus, the amount of diplomatic pressure the U.S. Government is likely to exert on behalf of domestic fishers and processors is limited. The "fish and chips" trade policy of recent years (where foreign groundfish allocations are parcelled out in exchange for the technological, economic, or scientific contributions that a particular foreign country makes to the development of the U.S. fishery) will probably remain in effect for some time yet. Several panelists stated that even with complete Americanization of the Total Allowable Level of Foreign Fishing (TALFF), groundfish imports will still occupy certain niches in the U.S. market.

TABLE 5.1

Expected Displacement of Imports by
Domestic Groundfish Production

Percentage of Panelists Selecting Each
Assertion as Valid or Reliable

PANEL ASSERTIONS

1. Our groundfish consumption will require imports. We can find some foreign markets, but price will be the main problem for U.S. producers.	84%
2. Displacement will occur very slowly. Development would be assisted by the development of table ready or easy to prepare items.	81%
3. Once we achieve domestic utilization of the TALFF, the U.S. market will increase if the price and quality are good.	68%
4. This question is too difficult to answer without an analysis of the direction of change in the key variables affecting domestic and foreign demand: exchange ratios, relative prices, import trade barriers, subsidies, etc.	68%
5. Yes, displacement will occur, but there will be more losers than winners in groundfish production due to low margins.	67%
6. New marketing companies are entering the business to take advantage of new supplies of raw product.	66%
7. Displacement will not occur completely unless tariffs or subsidies are employed.	58%
8. Complete displacement will not occur unless there is more of a movement toward development of a fleet of factory trawlers.	47%
9. Displacement will not occur unless cheap foreign processing hulls can be bought outright rather than borrowed through joint ventures.	32%
10. Yes we can displace imports, if identity standards are enforced which would keep foreign sources from using nonfish additives.	30%
11. The U.S. Government will not make the cuts in foreign catch to allow domestic production to displace imports.	20%

(R2-Q:3.1, average n = 66)

Some Reasons Why the U.S. Industry is Not in the Forefront of the Development of the Domestic Surimi Market

Surimi and remanufactured analog products (particularly imitation crab legs made from minced pollock flavored with King crab) are the fastest growing U.S. seafood import - 30 million pounds in 1983 vs 16 million pounds in 1982. Since much of the pollock used to make these products is caught in Alaskan waters, we asked why the domestic processing industry is not in the forefront of the development of the U.S. market. The self-rated level of expertise of the panel for this question was 41% high; 42% medium; and 17% low.

Most panelists feel that the main reason why the domestic processing industry hasn't shared in the U.S. surimi/analog products bonanza is simply that it's not a traditional U.S. product. Several pointed out that the products, markets, and technology used in producing surimi and remanufactured/analog items were developed over many years in Japan and Korea (T5.2,#1). Since entry costs are very high in this capital intensive industry and official and unofficial trade barriers have made it virtually impossible to penetrate the Far Eastern markets, U.S. processors have traditionally focused on the high value end of groundfish markets and products (T5.2,#5,13). Because of this, in the view of many in the panel, domestic processors were caught off guard by the success of the aggressive U.S. marketing campaign mounted by their Oriental competitors in recent years (T5.2,#3,6).

There is some skepticism among panelists about the eventual size of the domestic market for surimi and analog products although none doubt that at least some of these items will win long-term consumer acceptance. A "wait and see" attitude pervades. Several felt that once the novelty wore off, U.S. consumption would level out and domestic producers could establish their own market niches. Other panelists feel that it is precisely this kind of complacent attitude which has largely kept domestic processors from sharing in the U.S. market.

One of the greatest difficulties facing U.S. processors is to raise enough capital to enter the industry (T5.2,#18). Domestic harvesters have unlimited access to the resource while foreign competition is being regulated out of the FCZ. There is a growing domestic market and trade barriers are beginning to come down in the Far East. Foreign technology can be purchased (T5.2,#2). The availability of capital was the key for many on the panel. One processor panelist said, "Banks are unwilling to loan money for as yet unproven products in the domestic market, while the Japanese and Koreans refuse (in one way or another) us entry into their market" (T5.2,#14). In addition, many of the processors who should be investing heavily into expanding groundfish production have been financially strapped by the strength of the dollar and its effect on their traditional export sales of other seafood products. Another complication mentioned by a few panelists is that several West Coast processors are controlled by foreign capital (particularly Japanese holding companies) which also is heavily invested in distant water fisheries and overseas processing. Although these foreign controlled processors are in business to make a profit wherever they can, it may not be in the interest of the parent firm to provide them with capital to enter the surimi/analog business (T5.2,#10). This would be true if a holding company controlled distant water fleet was not fully depreciated, production capacity under-utilized, or capital commitments to overseas production not completely amortized.

Since the surimi/analog production process is very capital intensive, labor costs don't seem to be as important an obstacle to competitiveness as it would be for the domestic seafood products (T5.3). It is apparent from panelists comments that most feel the best way to economically produce surimi is to process at sea (T6.2). It is also apparent that many panelists think that with the advent of U.S. factory trawlers, the old perception of being unable to compete with foreign factory fleets due to the limitations of the Jones Act, high domestic shipbuilding costs, etc., may be changing (T5.3). Most of the financial problems listed previously apply to domestic shore-side processors (T5.2,#12). As one panelist put it, "New companies or cash rich food companies may find this a very attractive investment."

TABLE 5.2

Some Reasons Why the U.S. Seafood Industry is Not in the
Forefront of the Development of the Domestic Surimi Market

Percentage of Panelists Selecting Each
Assertion as Valid or Reliable

PANEL ASSERTIONS

1. The Japanese have had many years of catching and processing pollock behind them; surimi products and the technology to produce them were all developed in Japan, and the markets are traditionally Japanese and Korean.	96%
2. The job will have to be done by joint ventures or by a U.S. major capable of financing a fully integrated operation. Technical expertise can be purchased. One domestic company turning a profit would do wonders for the industry.	91%
3. Domestic producers were surprised at the U.S. market's acceptance of analog products.	86%
4. It takes more than a spirit of challenge. It takes time and a skilled and dedicated labor force. It takes a dedicated interest rather than a venture capital interest. It takes painstaking hard work.	81%
5. Domestic processors find it extremely difficult to raise enough capital (in an extremely capital intensive business) to produce surimi for an as yet unproven U.S. market.	80%
6. Domestic processors are tradition bound by existing products and markets. They don't show the imagination and aggressive marketing abilities of their foreign competitors.	74%
7. Now that foreign fishing efforts are being phased out of the U.S. FCZ, there is great reluctance to allow U.S. penetration of these traditional Japanese and Korean markets.	69%
8. The large domestic processing firm's parent companies are getting out of Alaska seafoods (e.g. Castle and Cook, Amfac, R.J. Reynolds, Con Agra). The remainder are small and underfinanced for the long-term investment needed to produce Kamoboko-type (fish cake) products.	69%
9. Surimi production is relatively high tech compared to traditional processing methods of canning, freezing, etc. It requires an entrepreneur rather than an operator to push into a new production area.	63%
10. Many companies have a high degree of foreign ownership as a means of securing a supply of raw product. A foreign company is unlikely to encourage the development of surimi production that could hurt it in other areas.	62%
11. Domestic processors lack technical competence and quality control. These products are particularly susceptible to poor quality. Any rush of U.S. firms into the business could damage market potential.	58%
12. Shore-side processed surimi sells for half the price (in Japan) as processed at sea products. The substandard shore-side products could be manufactured into ham, salami, etc., all good products, but very low priced and difficult to make pay.	55%

TABLE 5.2
(Continued)

Some Reasons Why the U.S. Seafood Industry is Not in the
Forefront of the Development of the Domestic Surimi Market

Percentage of Panelists Selecting Each Assertion as Valid or Reliable	
13. It is virtually economically impossible for the U.S. industry to invest the necessary capital to acquire surimi processing equipment, process pollock into surimi either on land or at sea, and acquire analog equipment to manufacture products to sell in competition with foreign products at today's interest rates. Domestic entry into the market requires all new equipment to compete with largely amortized and often subsidized foreign competition.	52%
14. There is distrust among investors about returns on "imitation" products.	52%
15. Labor costs demand floating processors. Americans are not interested in spending six months at sea at a time in a factory ship.	49%
16. One problem with surimi products is that people tire of them quickly.	10%

(R2-Q:3.3, average n = 65)

Factors Affecting the Competitiveness of the Domestic Processing Industry

Domestic processors have generally found it difficult to compete with Joint Ventures and foreign factory ships in world groundfish markets. The panel was asked to review the factors given on Table 5.3 and rank the factors according to which had the greatest impact. Several panelists suggested additional factors. Chief among these was a lack of adequate infrastructure which is dealt with in greater detail in Chapter 6.

TABLE 5.3

Factors Affecting the Competitiveness of
the Domestic Processing Industry

Percentage of Panel Indicating the Factor is One of the Five most Important	
<u>FACTORS</u>	<u>PERCENT</u>
Foreign labor costs.	47%
Exchange rates	47%
Trade barriers - including tariffs and quality controls.	45%

TABLE 5.3
(Continued)

Factors Affecting the Competitiveness of
the Domestic Processing Industry

Percentage of Panel Indicating the Factor is One of the Five most Important	
FACTORS	PERCENT
Foreign government subsidies.	41%
Jones Act - Requires U.S. crews on U.S. built ships operating in U.S. waters.	35%
Complacent attitude - traditionally production oriented industry.	32%
Low quality of products.	28%
Total Allowable Level of Foreign Fishing (TALFF) too high.	23%
Foreign capital (particularly Japanese holding companies) having a major financial stake in the domestic processing industry.	23%
Lack of knowledge about foreign markets.	21%
Foreign technology.	19%
Government regulations.	18%
Taxes.	3%

(R1-Q:D7, maximum n = 47)

Effects on the U.S. Industry Resulting from a 50% Cut in the TALFF

The question posed to the panel in Round 1 was: If a large cut in the Total Allowable Level of Foreign Fishing (TALFF), say 50%, were to occur, what would be the resulting positive and negative effects on U.S. fishing, processing, and marketing forms?

Approximately 20% of the panelists did not respond to this question, and several others only partially responded vis-a-vis their position within the industry. Because of this partial response and the relatively low level of self-rated expertise for this question, we decided not to reiterate this question in subsequent questionnaire rounds. However, some valuable ideas were given by the panel, and thus they are presented in Table 5.4. The panelists' responses give a fair sampling of the range of opinion on this issue.

TABLE 5.4

Effect on the U.S. Industry Resulting from a 50% Cut in the TALFF

SUMMARIZED PANEL COMMENTS

FISHING FIRMS

POSITIVE EFFECT:

- o Decreased gear and grounds conflicts.
- o Increase in joint ventures.
- o Increase in the catch per unit of effort (CPUE).
- o Very little positive effect, U.S. fishermen have priority for all they can catch.
- o Would force the industry to look at domestic shore-side deliveries and/or build at sea processing vessels.
- o Would help provide year-round usage of vessels.

NEGATIVE EFFECT:

- o The resulting decrease in supply would have a negative effect on established markets.
- o Profits would be recapitalized without fleet control.
- o Would decrease foreign nations willingness to participate in joint ventures.
- o Would force industry into smaller, more efficient vessels for shore-side delivery.
- o Would decrease the competitive incentive.
- o Domestic processing would not be able to handle the increase in supply, at least in the short run.
- o Japanese threat of retaliation.

PROCESSING FIRMS

POSITIVE EFFECT:

- o May encourage further shore-based processing capacity.
- o Open foreign markets for groundfish and surimi.
- o Perhaps allow for more rapid growth in the groundfish area by an infusion of foreign dollars into domestic fish plants.
- o Allow more control over domestic market penetration by foreigners.
- o Would increase the available fish supply for a few years until overcapitalization forced season reductions.

NEGATIVE EFFECT:

- o I assume by joint ventures, you mean over-the-side purchases by foreign processing vessels. Also, that the pattern will follow a gradual shift from TALFF, to joint operations, to U.S. complete processing and marketing and the next shift that we are looking at here is from TALFF to joint operations - we are not ready to go all the way. There has also been the suggestion to close out the TALFF completely, thus forcing the price up. Don't depend on it - there are other products for surimi and there is a lot of pollock off Japan, Korea and the U.S.S.R.
- o Very little negative effect.

Table 5.4
(Continued)

Effect on the U.S. Industry Resulting from a 50% Cut in the TALFF

PROCESSING FIRMS
(Continued)

- | | |
|---|---|
| <ul style="list-style-type: none"> o Would increase the interest of U.S. investors. o With increased raw material availability and increased export demand, production could expand to maximize the use of domestic processing facilities and profits would increase. | <ul style="list-style-type: none"> o There is a serious domestic lack of know how. o Would increase foreign equity ownership in the U.S. industry. o Inability to expand to match market growth with a potential loss to foreign firms with access to other supplies. o We would need a radical change in processing capability as our processors are used to speculative marketing in low capital intensity, low volume, high unit priced fisheries. o Joint ventures could become so strong that we would never get rid of them. |
|---|---|

MARKETING FIRMS

POSITIVE EFFECT

- o An increase in fish through traditional channels. However, the rise of multinational marketing firms through joint ventures appears imminent.
- o Would increase the variety and volume of products available.
- o Get our foot in the door of foreign markets and thus develop a broader foundation.
- o Not necessarily any effect if joint venture caught.
- o Markets would firm for Alaskan whitefish products and margins would increase.
- o Could help U.S. firms to fully exploit the domestic market.

NEGATIVE EFFECT

- o Possible quality control problems.
- o Inability to adequately respond to market growth.
- o Would increase resistance and decrease cooperation by displaced nationals.
- o We might lose the urgency for domestic resource development.
- o Instability of supply would increase prices.

(R1-Q:D1)

Expected Retaliation by Other Nations Should a Large Cut in the TALFF Occur

The panel was requested to indicate whether or not a large cut in the TALFF would result in retaliation in other seafood markets, e.g., salmon, and to briefly explain their answer. Panel comments are summarized in Table 5.5.

Thirty-seven percent (37%) of the panel indicated that retaliation would occur and 43% indicated retaliation would not occur (20% indicated "Don't know," n = 89). Clearly the panel was split on this issue. Several panelists suggested that a retaliatory response to a cut in the TALFF would depend on how it was perceived by foreign participants in the U.S. Fisheries Conservation Zone (FCZ). If U.S. harvesters were able to step right in and take over production, retaliation would seem unlikely. If they weren't and a cut was seen as a political gesture, then retaliation would be likely to occur. Any retaliation would probably consist of a decrease in over-the-side sale type in joint ventures rather than any direct market response. A number of respondents pointed out that foreign fishing is being phased out of the U.S. FCZ anyway so that in the long-term an accelerated TALFF cut would not have much effect. There seems to be general distrust among most panelists of the U.S. Government interference in seafood markets through national interest policies. As was noted previously, in the overall context of foreign trade, foreign fishing and domestic seafood exports are not viewed as vitally important by the U.S. State Department.

TABLE 5.5

Expected Retaliation By Other Nations
Should a Large Cut in the TALFF Occur

Summarized Panel Comments

- o The cut would mostly affect foreign fishing companies which are usually different from the Export Trading Companies that market their products. Export markets are more often with trading companies which would just discontinue marketing some of their seafood lines of products.
 - o They didn't retaliate when we cut off King and Tanner crab.
 - o North America has 20% of all continental shelf species. We can overcome any situation in the long-term.
 - o There is probably too much competition between trading companies for significant organized resistance.
 - o Yes, they would retaliate, they have nothing to lose.
 - o Japan will not like U.S. joint venture catches, but, the cost of the product from the U.S. fishermen will be less than from their own fishermen.
 - o The consumer will still demand the product and competition will cure any attempt at retaliation.
 - o Certainly the Japanese would look hard for alternative supplies and/or substitutes and might increase informal trade barriers.
 - o The main reaction would likely be from Japan. If the result was a diversion of large quantities of cheap salmon to European markets (through refusal to purchase U.S. salmon), the EEC would probably implement their reference price arrangement approved in principal, but currently suspended.
 - o We have been told by the Japanese that we could lose markets if we get too tough. Filling in foreign groundfish production in the FCZ with domestic fishing and processing, in an orderly phase-out, is a plan we can both live with.
-

(R1-Q:D2)

CHAPTER 6

ALASKA GROUNDFISH ISSUES

- o What Alaska Can do to Encourage the Development of a "Value-added" Groundfish Industry
- o How to Overcome Limitations to the Development of Shore-based Processing of Pollock and Yellowfin Sole
- o Medium Sized Factory Vessels as an Option for Increasing Alaska's Share of the "Value-added" Industry
- o Domestic Groundfish Processing: Floaters vs. Shore-side
- o Alaskan Groundfish Production: Joint Ventures vs. Domestic Processors vs. Foreign Catch

PRINCIPAL RESULTS

According to the panel, strategies for encouraging the development of a "value-added" industry around Alaska's abundant groundfish resources are: to encourage steady improvement in infrastructure, to encourage development around factory trawlers (Alaska can benefit by providing support facilities and support services), and to pursue no development policy other than providing a stable regulatory environment.

Over half of the panel indicated that a viable option for capturing some of the "value-added" from groundfish production would be a fleet of locally-based vessels, of smaller size than factory trawlers, which could harvest and process their catch at sea and ship their frozen finished product from Alaskan ports in freezer containers.

The current relative share of production by domestic groundfish processors (floaters, 65%, shore-based, 35%) is forecasted to remain about the same for the next 20 years.

Domestic processors are forecasted to increase by 20% their relative share in Alaska's groundfish harvest compared to joint ventures and foreign catch levels by the year 2000.

What Alaska Can do to Encourage the Development of a "Value-added" Groundfish Industry

The twelve Seattle-based American flag factory trawlers currently operating within the Alaskan FCZ add little to Alaska's economy. Over-the-side sale type joint ventures provide income for some local fishermen, but all of the "value added" from processing the harvested fish into its final product form escapes overseas. Processed-at-sea surimi sells for twice as much as the shore processed product in export markets. Given these facts, the panel was asked to tell us what Alaska can do to encourage the development of a "value-added" industry around its abundant groundfish resources.

Infrastructure development in the Aleutian Chain and a steady regulatory environment would be the most encouraging things the State could do to promote Alaskan groundfish development according to the panel (T6.1,#1,4,5). "Value added" will enter the State economy first through support services (i.e., cold storages, trans-shipment facilities, brokers, and suppliers) for domestic factory trawlers and J.V. catcher vessels, and later as facilities expand, through secondary manufacturing and distribution (T6.1,#3; T6.5). Several panelists likened Alaska to a developing country, in that Seattle and other West Coast ports have historically provided the base for extracting Alaska's resources in the raw. The fishing industry has grown around this status quo and is unlikely to change its structure very rapidly. Market connections to the "Lower 48" and foreign countries are steadily improving via improved air freight service. One panelist pointed out that there is no major brokerage sector in Alaska, it is based in Seattle which has the advantages of being a major port with regular transport links to foreign and domestic markets.

Several themes emerge in analyzing panelists' responses to this question. Aside from strong support for further Americanization of the Alaska FCZ, which is virtually unanimous among the panel, the panel indicated that the State should encourage U.S. factory trawlers and provide services to them (T6.1,#3). Local harvesters should concentrate on the high valued species, e.g. (T6.1,#9), blackcod, rockfish, Pacific Ocean perch, etc. Shore-side processing facilities should only be encouraged for ports which are very close to the fishing grounds such as Akutan, Kodiak, Sand Point, and Dutch Harbor (T6.2). Products must be targeted at the domestic market with an integrated effort promoting both shore based products and those which are cheaper to process on factory ships at sea. The Alaska Fisheries Development Foundation and Alaska Seafood Marketing Institute were singled out as vehicles for development and promotion. As one panelist put it, "We must create a market development program that stimulates demand - not just for added value retail/food service, but to increase industrial consumer demand. There are functional advantages for the protein quality of salmon, roe, pollock, etc., as components or ingredients in other products. We should not promote the 'image' of fish alone. A constant question asked should be 'where else can we use the properties of this resource.' There is a great future volume potential for added value products in competition with meat and poultry if fish products are modified for the remanufacture market." Other respondents noted that the domestic market doesn't have any basis for discriminating between "at sea" and "shore-side" processed surimi, so no price differential exists as it appears to, in the Japanese marketplace (T6.1,#7).

A general sense of the panelists' responses is that as Americanization of Alaska's FCZ increases, so should the domestic groundfish industry. It is important to establish a broad domestic market for groundfish. The State can help with support services, product development, tax incentives, financial support, and marketing (T6.1,#2).

TABLE 6.1

**What Alaska Can do to Encourage the
Development of a "Value-added" Groundfish Industry**

Percent of Panel that Selected Each Assertion as Valid or Reliable	
PANEL ASSERTIONS	
1. Encourage steady improvement in infrastructure. Stay away from subsidies.	81%
2. Employ tax incentive schemes to generate modernization of plants and vessels.	66%
3. To be competitive, the U.S. industry must develop around factory trawlers. Alaska can benefit by providing support facilities and support services.	60%
4. Provide long-term, low interest loans for infrastructure development in Alaskan coastal communities and most important, low cost electrical energy and tax incentives.	57%
5. I'm not sure it would be wise to pursue any development policy other than providing a stable regulatory environment - using State funds to develop a fishery merely transfers wealth from the State as a whole to the relatively few individuals who would benefit.	56%
6. Surimi is the bottleneck at the present time. Under current restrictions, surimi processing is hard to put together economically. I would suggest that we forget surimi processing and turn to production of surimi products to take advantage of the growing U.S. market now.	52%
7. Shore-based processors have to process pollock into surimi for the domestic market. The domestic market doesn't recognize the quality difference between at sea or shore-based processing. Subsidies and/or proof of profitability will stimulate processors into the bottomfish industry.	41%
8. Alaska should take a hard look at "in State waters" joint ventures and take advantage of them for a while.	39%
9. Concentrate efforts on higher value species, i.e., rock fish, flounder, cod. Pollock can follow at a much later date. Provide information on direct marketing of higher value species.	37%
10. Allow the landing of Japanese produced product, restricted to U.S.-Japan joint operation produced product if necessary, directly into Alaska ports.	36%
11. Restructure the raw fish tax; graduate it from tax credit to actual tax determined on the extent to which a product is locally processed.	33%

(R3-Q:2.6, average n = 56)

How to Overcome Limitations to the Development of Shore-based Processing of Pollock and Yellowfin Sole

Several factors inhibit the development of shore-based processing of pollock and yellowfin sole, the most abundant commercial groundfish resources in Alaska's FCZ. Chief among these are the rapid deterioration of pollock after it is caught and the relatively small average size of yellowfin sole which makes fillets unattractive to the domestic consumer. Panelists were requested to tell us how these limitations can be overcome. The responses given on Table 6.2 represent what we considered to be a representative sampling of the responses.

Panelists treated these limitations as technological and marketing problems. Their assertions fall into two categories: those who believe these limitations can be easily overcome by the application of appropriate technology or marketing strategy; and those who believe shore-side processing of these species will never be viable.

TABLE 6.2

How to Overcome Limitations to the Development of Shore-based Processing of Pollock and Yellowfin Sole

Summarized Panel Comments

- o First, explore the technology available. The U.S. is always far behind in most fisheries research; we always end by adopting someone else's methods. Use an organization that has a history of successful application of appropriate technology to overcome the apparent technological obstacles. This takes time and money.
- o A selective, long-line fishery for sole should eliminate the problems of small fillets, unwanted incidental catches and trawl damage to fishing grounds.
- o There are many markets for small sole fillets. Other fish also deteriorate rapidly, but this is overcome by handling methods at sea. TV dinners require small chickens to fit into the package. The market can accept the small fillets - it is a matter of market research. (In 1966, Howard Johnson's was trying to buy millions of pounds of sole fillets from 1 to 2 ounces, without success.)
- o Why should these limitations be overcome? Presently the accepted technology worldwide is floating processors. They make sense. Shore-based processing facilities will probably never make it with pollock or yellowfin sole nor should they. This is not their comparative strength.
- o Shore-side facilities should concentrate on processing and shipping species which can be delivered in fair to excellent condition.
- o I seriously doubt there will ever be substantial (relative to the actual harvest) shore-side processing of either specie. Instead, Alaska should set the Aleutians up as a series of service stations where floaters can offload the product for trans-shipment, brokering, secondary processing, and to take on supplies. Tax incentives to make this attractive also need to be incorporated.
- o NEFCO tried to overcome these problems at their Kodiak Plant and lost millions. Provide at sea processing, this is the only way the U.S. industry can compete given the present level of technology.

TABLE 6.2
(Continued)

How to Overcome Limitations to the Development
of Shore-based Processing of Pollock and Yellowfin Sole

Summarized Panel Comments

- o There is no simple answer. However, for pollock, turn to other surimi products that can be manufactured from the lower quality shore-side processed surimi - they do it in Japan, why not here?
 - o For yellowfin sole, it is too small for U.S. and Japan markets (pricewise). Two suggestions: (1) use the surimi extractors to extract the flesh from the yellowfin and reconstitute the product into fish product of some kind, or into Fish Protein Concentrate, etc., or (2) dry and sell to third world poor countries that generally like dried fish (Africa, etc.).
-

(R2-Q:3.5)

Medium Sized Factory Vessels as an Option for Increasing Alaska's Share in the "Value-added" Industry

One option that would help capture some "value added" from groundfish production is a fleet of locally based vessels, of smaller size than the factory trawlers, which could harvest and process their catch at sea and ship their frozen finished product from Alaskan ports in freezer containers.

Panelists were asked if this was a viable option and to further comment. Fifty-two percent (52%) indicated it was a viable option and 19% indicated it was not a viable option (28% indicated "Don't Know," n = 68)

A majority of panelists felt the idea of a fleet of medium sized locally based vessels (as compared to the current generation of American factory trawlers) was a viable option at least for some groundfish species and products. Several panelists stated this idea wouldn't be practical for large scale surimi production which requires the economies of scale found with factory trawlers or speedy delivery to a shore-side plant (T6.3,#8,10). Smaller vessels equipped with automated whitefish filleting lines which are adaptable to several species could pay off however (T6.3,#6). In any case, panelists thought development of more trans-shipment facilities to take advantage of Alaska's proximity to the Orient should proceed as quickly as possible (T6.3,#5).

It is clear from panelists responses that the economics of various sized catcher/processors, their products, and market niches are not well known. It is also apparent that with the Americanization of the FCZ, serious study needs to be done in this area if domestic vessels are going to replace foreign factory ships and joint ventures in a timely manner. The general sense of the panelists' responses is that the future composition of the domestic fleet in Alaska's FCZ will be different than it is today, and it will also be much different than the distant water foreign fleets it will be replacing.

One panelist summed up the marketing situation well, "I don't know whether economics make it worthwhile. I remember the nonsuccess of the ALEUTIAN MISTRESS which was in that (midsized) category. We may need factory trawler production volume to be able to compete pricewise. The real question in my mind as an economist and marketing person is whether the primary processed food service layered puck fillet (the one factory trawlers make, 15 lb. block, 3/15 per case) can compete with the imports. Without question, a more targeted marketing effort involving much person-to-person contact will be needed to develop a segmented market for an Alaskan product which is equivalent to the Icelandic marketing strategy. Did you know Icelandics get from 50-65¢ more per pound because of their market niche?"

TABLE 6.3

Medium Sized Factory Vessels as an Option for
Increasing Alaska's Share in the "Value-added" Industry

Percentage of Panelists that Rated the Assertions as Valid or Reliable	
PANEL ASSERTIONS	
1. The focus of smaller sized vessels must be on higher valued species and high quality markets.	89%
2. We see some of it already, especially in higher value fish, sablefish, cod, turbot, but must have storage and shipping facilities greatly improved.	86%
3. Locally based vessels would tend to contribute more to the local economies. However, if high wages are required for Alaskan crews and smaller boats are inherently less efficient, such boats may be marginal operations at best.	84%
4. Lower priced imports from Korea, Canada and other countries seeking hard currencies will probably make it difficult. Specialized market niches, especially with high quality/value products are a viable option, however.	84%
5. Because of Alaska's transportation cost advantage to the Orient, offloading in Alaskan ports for trans-shipment should be encouraged.	75%
6. Some studies I have seen indicate that the most efficient processors are of medium size and the size of boat has to be carefully matched with efficiency of production. I don't know at the moment what the optimum size is. Otherwise, a viable option I think.	72%
7. Shore based processing companies simply must get out of the mind-set that they are adversaries to floating processors or else they will die on the vine. I dare say that had there been some innovative thinkers among the shore based processors or the new larger class of factory trawlers would never have been built in the U.S. Someone still has to do the groundwork for vessels once they land their catch. Why not break into this?	65%
8. Pollock and yellowfin sole are caught in such tremendous quantities and are of such low value that it dictates a large boat, large volume fishery.	46%
9. If government leadership is provided for R & D, grants for production equipment and extension and marketing help, this could be accomplished.	45%
10. The fact that there is little movement in this direction indicates that it is probably not "viable," i.e., profitable.	44%
11. Shipping costs are too great and the dollars going into Alaska's economy would be negligible.	20%

(R3-Q:2.7, average n = 54)

Domestic Groundfish Processing: Floaters vs. Shore-side

Domestic groundfish processors can be classified as floaters (consisting mainly of U.S. factory trawlers - twelve in operation currently, mostly producing frozen-at-sea cod fillets) and shore based processors. Panelists were asked to forecast their relative share of production for the years 1990 and 2000. As a group, the panel forecast very little change from the current status quo.

TABLE 6.4
Relative Share in Production

Panel Group Means			
	1983 (Prelim.)	1990	2000
Floaters	65%	67%	63%
Shore-based	35%	33%	37%
	100%	100%	100%

(R1-Q:D5, n = 73)

Alaskan Groundfish Production: Joint Ventures vs. Domestic Processors vs. Foreign Catch

Ninety-eight percent (98%) of the Pacific Coast groundfish catch is taken in Alaska's waters. As shown in the table below, the 1983 production is divided into the three categories of joint ventures, domestic processors, and foreign catch. The panel was requested to forecast the relative percentage shares of the total Alaskan harvest in the three categories for the years 1990 and 2000.

The data show a continual decline in foreign catch and a steady increase in domestic processing. Joint ventures will increase into the intermediate future and a decline in the long-term future.

TABLE 6.5

Relative Shares in Alaska's Groundfish Harvest

Panel Group Means			
	1983	1990	2000
Joint Ventures	23%	42%	38%
Domestic Processors	3%	19%	43%
Foreign Catch	74%	39%	19%
	100%	100%	100%

(R1-Q:D4, average n = 70)

CHAPTER 7

MARKET ECONOMICS

- o Growth Potential of Six U.S. Seafood Market Segments
- o Future U.S. Demand for Selected Product Forms
- o Factors Affecting Domestic and Foreign Demand
- o Most Important Factors Necessary to Insure Consistent Quality of Domestic Seafood Products
- o Consumer Product Differentiation Between "Wild" and "Farmed" Salmon
- o Role of Exchange Rates in the Development of the Domestic Groundfish Industry
- o Strategies to Insulate U.S. Fishery Exports from Exchange Rate Fluctuations
- o Effect of U.S. Export Trading Companies Upon Price Fluctuations

PRINCIPAL RESULTS

The greatest growth in seafood markets will occur in fast food restaurants and in convenience type foods (e.g., frozen fillets, fish sticks) in the next 20 years.

U.S. demand for seafood products will increase for fresh and frozen salmon and for groundfish products. Per capita demand for regular canned salmon will decrease or remain about the same, while demand for skinless and boneless canned salmon is expected to increase. Demand for canned crab and shrimp is projected to decrease.

According to the panel's ranking of factors that affect foreign and domestic demand, product price, consistency of supply, and perceived quality appear to be more important in foreign demand for seafood products, while change in dietary habits, price of substitutes, and ease of preparation appear to be relatively more important factors for domestic consumer demand.

The most important factors necessary to insure consistent quality of seafood products are: product standards, education, product inspection, bonus payments to fishers for quality, and product grading.

Ninety-two percent of the panel indicated that the role of exchange rates was a critical factor in the development of the domestic groundfish industry.

Growth Potential of Six U.S. Seafood Market Segments

The panel was requested to rank the six seafood market segments shown in the left column on Table 7.1. They were instructed to rank the segments according to their growth potential in the next 20 years. The panel felt that demand for seafood products would continue to increase in all market segments with fast food restaurants and convenience type products showing the greatest growth.

TABLE 7.1

Growth Potential of Six U.S. Seafood Market Segments

Percentage of panel selecting a sector as having the greatest growth potential. Also, percentage of panel selecting the sector as among the top three sectors.		
<u>Seafood Sectors</u>	<u>Sector With Greatest Growth Potential</u>	<u>Sector Selected Among Top Three</u>
Fast food restaurants	34%	76%
Convenience type foods (e.g., frozen fillets or fish sticks)	30%	62%
Home prepared entrees (e.g., fresh whole, eviscerated, or filleted fish)	16%	49%
Family restaurants	14%	54%
White tablecloth restaurants	11%	25%
Institutional (e.g., large volume canned products or frozen blocks)	8%	40%

(R1-Q:D9, n = 87)

Future U.S. Demand for Selected Product Forms

The U.S. market for fishery products is widely regarded as the largest underdeveloped market in the world. The American per capita annual consumption of edible commercial fish and shellfish products at 12.9 lbs. is less than half the world average of 27.1 lbs. The panel was asked to project whether per capita U.S. demand will increase or decrease from the current level for the product forms and species given in Table 7.2. Panelists were to consider a 20 year time frame in making their responses.

The panel forecast that demand would increase for fresh and frozen salmon with groundfish products increasing the most. Per capita demand for regular canned salmon is forecasted to decrease or remain about the same, while demand for skinless and boneless canned salmon is expected to increase. Demand for canned crab and shrimp is projected to decrease. Of the smoked and cured products listed, salmon appears to be the most likely to increase in demand.

TABLE 7.2

Future U.S. Demand for Selected Product Forms

Percentage of Panel Indicating Demand will Decrease, Stay about the Same or Increase *				
U.S. Per Capita Demand Will:	Decrease	Stay About the Same	Increase	No. of Panelists
Product Forms				
Fresh whole, eviscerated or filleted:				
- salmon	4	14	82	71
- groundfish	4	4	92	70
- crab	20	54	28	66
- shrimp	6	52	43	68
Frozen natural fillets:				
- salmon	1	17	82	71
- groundfish	1	10	87	70
Frozen:				
- crab	23	44	33	66
- shrimp	6	48	32	67
Frozen processed:				
- breaded fillets	10	28	62	68
- breaded fish sticks	24	25	51	69
- breaded shrimp	9	41	50	66
- salmon	0	33	67	67
- seafood analogs				
a. minced products	1	12	86	67

TABLE 7.2
(Continued)

U.S. Per Capita Demand Will:	Decrease	Stay About the Same	Increase	No. of Panelists
Product Forms				
- seafood analogs				
b. restructured seafood based meat products (i.e., sausages, ham, etc.)	0	8	92	63
Canned:				
- skinless and boneless salmon	16	40	44	67
- canned salmon	34	37	29	68
- crab	48	36	16	67
- shrimp	45	39	16	67
Cured:				
- salmon	9	46	45	68
- salmon roe	9	62	28	64
- herring roe	8	73	19	64
- groundfish	9	52	39	65
- groundfish roe	5	71	24	62

* Group expertise for this question is high 17%, medium 54%, and low 26%.
The ratings of panelists who indicated a low level of expertise for this question have been excluded from the table.

(R1-Q:C2, average n = 71)

Factors Affecting Domestic and Foreign Demand

Seven factors that affect consumer demand for seafood products were submitted to the panel to rank. The panel was requested to review the list and rank the top five factors according to their impact on domestic and foreign demand. The panel was also instructed to add other factors not included in the list we provided.

As presented in Table 7.3, product price, consistency of supply, and perceived quality appear to affect foreign demand for seafood products more than domestic consumer demand, while change in dietary habits, price of substitutes, and ease of preparation appear to be relatively more important to American consumers. Exchange rate (which could be subsumed under product price) was the most often suggested additional factor affecting foreign demand while advertising and promotion were the most frequently suggested additional factors that affect domestic demand. Per capita income exerts about the same amount of influence in foreign and domestic seafood demand.

TABLE 7.3

Factors Affecting Domestic and Foreign Demand

Percentage of Panel that Ranked the Factor Among the Top Three Factors Having the Greatest Impact Upon Demand		
Factors affecting demand	RANK	
	DOMESTIC	FOREIGN
1. Product price	87%	96%
2. Per capita income	54	57
3. Consistency of supply	40	48
4. Perceived quality	62	74
5. Change in dietary habits	61	35
6. Price of substitute products (beef, pork, chicken)	64	42
7. Ease of preparation	39	29

(R1-Q:C3, maximum n = 91)

Most Important Factors Necessary to Insure Consistent Quality of Domestic Seafood Products

U.S. seafood products are widely perceived as being of inferior quality when compared to the same products produced by foreign competitors. Given this, the panel was requested to rank the list of factors, given in the left column of Table 7.4, according to their importance for insuring consistent quality within the domestic seafood industry. The panelists were also requested to add important factors that were not included on the list we provided.

Product standards, education, product inspection, financial incentives for quality, and grading were the most important factors indicated by the panel. These confirm, at least partially, the group consensus reached in Chapter 5 (Displacement of Imports by Domestic Groundfish Production), that objective criteria are very important factors in the consumer's perception of quality. Additional factors that were most frequently suggested by the panelists were: advertising, loans and/or subsidies, and promotion of at-sea processing.

The main obstacles to improving domestic seafood quality may be the structure of the industry itself and the American consumer's relative lack of sophistication about seafood products. Even if producers can provide a prime quality product, distributors and brokers may be unwilling to pay a premium price if they think their customers aren't able to differentiate between a prime quality product and one of lesser quality. The ultimate solution to this problem is to educate the American consumer. A major promotional effort of seafood product standards should come from within the industry and would go a long way toward developing the domestic market according to panelist's comments.

TABLE 7.4

**Most Important Factors Necessary to
Insure Consistent Quality of Seafood Products**

Percentage of Panel Indicating the Factor as One of the Five Most Important	
<u>FACTORS</u>	
Product Standards	70%
Education	61%
Product Inspection	57%
Bonus payments to fishermen for quality	57%
Product grading	52%
Plant verification of quality control	38%
Quality seal	32%
Research	27%
Regulations - e.g., trip limits	10%
Operations plan	10%
Vessel/hold inspection	8%
Delivery schedules for fishermen	8%

(R1-Q:C7, maximum n = 70)

Consumer Product Differentiation Between "Wild" and "Farmed" Salmon

In the European white tablecloth restaurant market, particularly the British portion, wild Atlantic salmon (as opposed to pen-reared) has enjoyed a premium position. Customers apparently have some basis for this product differentiation. The panel was instructed to provide what they believe is the basis for this consumer preference. Most panelists gave a similar response. That is, that the premium price and prestige accorded to "wild" Atlantic salmon is primarily based upon snob appeal, image, or national chauvanism rather than objective criteria.

In addition, the panel was asked the following corollary question. "Over time, would 'wild Pacific salmon' maintain a preferred U.S. market position over pen-reared Atlantic salmon without special advertising?" In response, 28% of the panel answered "Yes," 51% answered "No," (21% indicated that they did not know, n = 64). Comments were solicited for both of these questions and selected comments are reported on Table 7.5. The comments were selected on the basis of the frequency of a single or similar concept or issue being stated by the panel members.

TABLE 7.5

Basis for Product Differentiation Between
Wild and Farmed Salmon

Summarized Panel Comments

- o Most Europeans are convinced that "salmon salar" is superior to any Pacific salmon. I think the most important factor in the European market is that Atlantic salmon is almost always marketed fresh, while Pacific salmon have been frozen and shipped by boat. Some of the preference may be a "snob" effect, i.e., wild Atlantic salmon is more expensive, so supposedly it is better.
- o Before we get into advertising, lets do more about quality. U.S. Pacific salmon's reputation has improved over the past few years, but we can do more. Advertising is very expensive and complex (we may end up increasing the consumption of Norwegian salmon).
- o This is an example of prejudice based on a cherished belief rather than verifiable experience. It is possible that a slight flavor or texture distinction can be made. Perhaps the "wild" fish has firmer flesh due to better muscle tone, or that the feed of "wild" fish imparts a different flavor detectable by gourmets.
- o Premium quality product at a premium price. Only Pacific Coast steelhead probably could command same price with a little promotion.
- o Snob appeal, i.e., at the gourmet restaurant level. The thought that someone has risked life and limb to "hunt" to provide the meal carries great prestige. Could also be due to the appeal of being "natural."
- o Only blindfold tests to compare organoleptic perceptions by expert taste panelists would be a valid way to affirm or disspell any real differences. A good marketer would know exactly how to "glamorize" the pink or chum salmon through other means (e.g., diet entrees for weight watchers) rather than exact competition with the solidly established red and Kings. For three decades the South African lobster tail has brought a premium price over warm water species, but even the experts cannot detect a difference.
- o Any industry should have its "high end, or superior product," and the leaping, wild salmon is a natural. However, special advertising would still be needed to guide public attitudes.
- o Competition with "wild Atlantic salmon" could be extremely difficult. It is a different fish and tradition. Product substitution becomes more difficult at a narrow margin of sophistication in buyer's discrimination. We are talking about a very small segment of the consumers in any case.
- o Relative scarcity, larger size and prestige of a "wild" fish.
- o A natural consumer preference for domestic product over imports, assuming that quality is as good or better, frequently occurs the marketing of fish. You will find the same thing on the U.S. East Coast where Atlantic salmon (pen-reared) will have a strong appeal to the consumer because of the magic historical link to the once native Atlantic salmon in New England. It is also observed in the Japanese consumer preference for domestic produced salmon products over imports. Even the very carefully prepared chum salmon from Kotzebue or the Yukon, of excellent quality, still does not quite get the price of domestically produced chum salmon in Japan. I simply call this consumer preference based almost upon tradition alone.

TABLE 7.5
(Continued)

Basis for Product Differentiation Between
Wild and Farmed Salmon

Summarized Panel Comments

- o "Image!" Perceived quality of wild fish is higher, perhaps customers feel wild diet is "more natural."
 - o I doubt that a promotional campaign could produce positive net benefits. Also, I doubt that the market size for this premium fish is large enough to warrant advertising.
 - o You must be prepared to market the "wild salmon" of equal quality and at a competitive price. Incidentally, the advertising campaign put on by Alaska two or three years ago was excellent and I don't want to discourage this kind of effort. Quality and price, however, are more important than special advertising in maintaining a premium position in the market.
-

(R2-Q:4.6 & 4.7, n = 64)

Role of Exchange Rates in the Development of the Domestic Groundfish Industry

The panel was requested to indicate on a four-point importance scale the relative importance of the role of exchange rates in the development of the U.S. groundfish industry. Ninety-two percent (92%) of the panel indicated that the role of exchange rates was either "Very Important" or "Important," 8% indicated exchange rates were of little importance, and 2% indicated exchange rates were unimportant. Panelists that indicated a low level of expertise for this question are not included in the above percentages. Seventy-two panel members responded to this question, of which 20% or 16 persons indicated a low level of expertise for this question. The panel was also requested to briefly explain their response and their summarized explanations are given on Table 7.6.

A large proportion of the panel believe exchange rates will play an important role in future groundfish development. In their comments, panelists noted that even if domestic groundfish markets are aggressively promoted, a strong dollar only encourages imports and of course, the price of domestic products will be directly affected in export markets. There are a great many substitute species for groundfish products so Americanization of the FCZ is not the only answer, since alternative sources of supply are available in other parts of the world.

TABLE 7.6

Role of Exchange Rates in Groundfish Development

Summarized Panel Comments

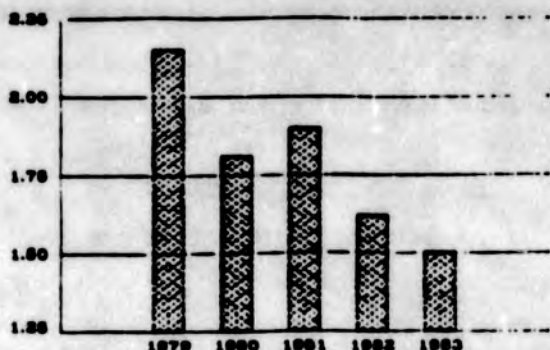
- o A strong dollar retards sales in a high volume, capital intensive, low unit value fishery. Differences of \$5 - \$20/mt. of finished product can be crucial.
 - o In my recent discussions with Japanese and European traders, exchange rates have outstripped quality as a major impediment to sales of Alaskan products.
 - o This problem makes it much harder for U.S. producers to keep their share of the U.S. market e.g., Arctic Trawler cod in the U.S. food service sector must compete with Icelandic imports which get steadily cheaper as the dollar increases in value.
 - o Exchange rates probably impact prices for all fish species more than any other factor in the long run.
 - o To the extent that we export groundfish products, a strong dollar will discourage sales.
 - o Current world markets are in other countries, U.S. acceptance of pollock and hake will be slow so exchange rates are very important.
 - o All EEC currencies at present make it nearly economically impossible to export salt cod even though there are currently good markets. Once trade barriers are lifted, the same will hold true for surimi and pollock blocks to Japan.
 - o There is not much elasticity in fish prices and absolutely no place to cut costs in U.S. groundfish production. Cheap imports will kill the U.S. effort.
 - o The world groundfish market is fiercely price competitive and largely determined by production outside the U.S.
-

(R1-Q:C6)

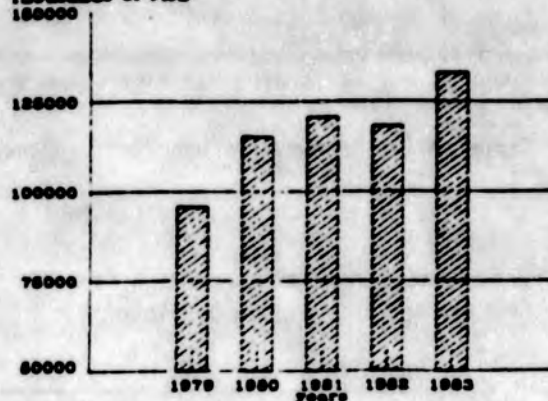
Strategies to Insulate U.S. Fishery Exports from Exchange Rate Fluctuations

Since 1979, the value per pound of canned and frozen salmon exported from the U.S. has fallen 25% (see graph at left). This drop has almost exactly paralleled the fall of the British pound (-25%), the French franc (-36%), to a lesser extent the Japanese yen (-9%) and the Canadian dollar (-5%). At the same time the supply of U.S. salmon was steadily increasing (see graph at right).*

**Average \$/lb. of Exported
Canned & Frozen Salmon**



U.S. Pacific Salmon Landings
Thousands of Fish



Panelists were asked what could be done, aside from reducing the federal deficit, to insulate U.S. fishery exports from exchange rate fluctuations. They were instructed to briefly answer in terms of hedging strategies, futures markets, etc., that they were aware of in other countries or commodities.

As we expected, the overall level of panel expertise for this question was quite low. Forty-eight percent (48%) of the panel indicated a low level of expertise, 33% indicated a medium level of expertise, and 18% indicated a high level of expertise (n = 73).

There was considerable agreement among the panelists that little can be done to avoid long-term currency rate fluctuations. For the long-term, the most frequently mentioned strategies (Table 7.7) were: to develop the U.S. market, improve overall domestic seafood quality to stabilize the price, diversify product lines, and work to decrease tariffs, import quotas, and barriers to trade. Several panelists thought that a futures market, similar to agricultural futures, might work for frozen and canned products but was somewhat impractical for more perishable products and products with major supply fluctuations.

*The source for the graphs is: At right, Alaska 1984 Catch and Production, Commercial Fisheries Statistics, Alaska Department of Fish and Game, 1984. At left, Fisheries of the United States, 1983, Current Fisheries Statistics No. 8320, National Marine Fisheries Services, April, 1984, p. 58.

TABLE 7.7

Strategies to Insulate U.S. Fishery Exports
from Exchange Rate Fluctuations

Summarized Panel Comments

- o Options trading market.
 - o Forward funding foreign exchange contracts.
 - o Hedge by buying foreign currency - speculate.
 - o Compensation schemes for exporters - draw backs, tax deductions, custom duty deductions.
 - o Subsidize freight charges similar to the Norwegians.
 - o Enter into long-term supply agreements specified in commodities. With the Export Trading Company Act this is now possible.
-

(R1-Q:C4)

Effect of U.S. Export Trading Companies Upon Price Fluctuations

The panel was requested to reveal what they believed would be the effect of the recent advent of U.S. export trading companies upon future price fluctuations in exported seafood products.

As presented in Table 7.8, most panelists indicated that U.S. export trading companies will have little or no effect on price fluctuations for exported seafood products. Those panelists who view these companies as important factors in future international trade predict only moderate influence on prices. Several panelists pointed out that these companies are unlikely to become as powerful within the U.S. legal system as they are in Japan with its system of legalized cartels.

TABLE 7.8

**Effect of U.S. Export Trading
Companies Upon Price Fluctuations**

Summarized Panel Comments

- o Probably very little as it is unlikely that long-term contracts would be specified in dollars.
 - o If U.S. companies were structured similar to Japanese zaibatsu (conglomerates unrestricted by anti-trust laws), then diversified export activity could stabilize prices since fish exports would be part of a larger portfolio.
 - o Very little, export trading companies don't seem to like perishables.
 - o Export trading companies are absolutely critical to get market power and deal with foreign exchange fluctuations.
 - o They may moderate fluctuations if trading companies are in a position to take advantage of hedging strategies.
 - o Very little effect unless U.S. exporters can learn to be cooperative instead of engaging in the fierce competition that now characterizes the export business.
 - o They will have a moderate impact. They won't be as effective as similar organizations in other countries due to anti-trust legislation.
 - o Price fluctuations should stabilize since trading companies could collude to establish price floors.
 - o Export trading companies will follow market demand and not lead it, thus, they will not exert price control.
-

(R1-Q:C5)

CHAPTER 8

METHODOLOGY

- o The Delphi Method
- o Study Design
- o The Delphi Panel
- o The Delphi Questionnaires
- o Procedure
- o Analysis and Interpretation of the Results

The Delphi Method

The basic Delphi process involves a small research team that designs a questionnaire which is sent to a larger respondent group. After the questionnaire is returned the research team summarizes the results and, based upon the results, develops a new questionnaire for the respondent group. The respondent group is given an opportunity to re-evaluate its original answers based on an examination of the group response. This form of Delphi represents a combination of a polling procedure and a conference procedure that attempts to shift a significant portion of the effort needed for individuals to communicate from the larger respondent group to the smaller research team.

Usually the Delphi process undergoes three phases. The first is characterized by exploration of the subject under discussion, where each respondent contributes information (s)he feels is germane to the issue. The second phase involves reaching an understanding of how the group views the issue (where the members agree or disagree). Typically, new areas of inquiry are added as a consequence. If there is significant disagreement, then it is explored in the third phase.

Study Design

The study's focus was defined by the Director of the Office of Commercial Fisheries Development at the direction of the Governor's Mini-Cabinet on Fisheries. The study focus was refined in consultation with an advisory consulting work group, which was composed of eight persons who have in-depth knowledge of different aspects of the North Pacific seafood industry. This group met for a total of three days with the research team in order to identify critical issues and events facing the industry in the next 20 years and to identify issue areas that could be usefully analyzed using the Delphi method.

Once identified, the issue areas were translated into questionnaire items for the first questionnaire. A total of three questionnaires were constructed by the research group and disseminated to the respondent panel. The panel was composed of industry representatives who were judged to have expert knowledge by the eight member consulting work group. After the return of the first and second questionnaires, the research team analyzed the panel responses, then constructed the next questionnaire based on the responses to the previous one. In the case of the first questionnaire, most respondent data was in the form of written narrative responses. These data were analyzed, summarized, and turned into a set of panel assertions. The assertions represent the panel's narrative responses and were presented to the panel to evaluate in the second questionnaire.

The analysis of the results of the second questionnaire was primarily based on the tabulated frequency distributions for each rated assertion in the previous questionnaire. The panel used a six-point validity scale or a four-point importance scale to rate the assertions (Tables 8.10 and 8.11). Construction of the third and last questionnaire involved selecting assertions for re-evaluation by the panel, and reporting assertions that revealed a high amount of consensus by the panel. Also, new questions that were introduced in the second questionnaire was evaluated by the panel in the third questionnaire.

The Delphi Panel

The panel members were selected on the basis of expertise, the sector of the industry they represent, and on maintaining a regional balance. The eight member consulting work group was responsible for nominating most of the prospective panel members. This advisory group provided a list of 249 names and rated each nominee according to two criteria. The criteria were: level of expertise in the six seafood issue categories of supply, demand, trade, marketing, price, and policy. The second criteria was the sector of the seafood industry that the nominee represents, i.e., government, university, industry-harvester, industry-processor, and industry-distributor. The final determination of the membership of the panel of respondents was the responsibility of the research group based upon these criteria and on producing a regional balance of representation. The advisory group also provided narrative descriptions of the panel nominee's expertise.

From an initial list of 249 potential panelists, 183 were invited to participate in the study with the expectation that about 50 percent would accept. Of the 183 potential panelists, 101 (55%) returned a completed questionnaire. For Round 2, 101 questionnaires were sent to the Round 1 panelists and 78 (77% response rate) panelists completed and returned the questionnaire. For Round 3, 78 questionnaires were sent to the Round 2 panelists and 70 were completed and returned. This represents a 90% response rate for the third questionnaire. Eight questionnaires were returned too late to include in the Round 3 analysis. Based on the initial panel size of 101, the response rate at the Round 3 stage was 69%.

The relatively high response rate is an indication of the dedication and patience of the panel. They persevered through 140 pages of instructions and questionnaires which contained over 500 variables.

In the Round 1 questionnaire, the panel members were requested to rate their level of expertise in six seafood categories and the sector of the industry that they represent. The panelists used the same scales as those used by the advisory group who nominated them. Table 8.1 displays the panel composition categorized by the six seafood issue categories. Panelists self-rated their expertise level according to the criteria given in the expertise scale (Table 8.2). The panel composition for Rounds 2 and 3 are also given on Table 8.1. The proportions among the six seafood issue categories remained relatively constant across the three rounds of questionnaires.

Table 8.1

Panel Expertise for Three Questionnaire Rounds

		Seafood Issue Categories					
		Supply	Demand	Trade	Market- ing	Price	Policy
Round 1 N = 101	Expertise Level						
	High	57%	33%	27%	27%	31%	49%
	Medium	32	52	45	53	46	40
	Low	11	15	28	20	23	11
Round 2 N = 78	High	55%	33%	24%	25%	28%	48%
	Medium	37	53	54	55	47	43
	Low	8	14	22	20	25	9
Round 3 N = 62	High	61%	33%	27%	23%	28%	49%
	Medium	34	54	50	55	43	44
	Low	5	13	23	22	29	7

(R1-p.3, maximum missing = 7 in Round 1)

Table 8.2

Expertise Rating Scale

High	Actively involved in decisions, research or analysis in this area.
Medium	Informed in this area through reading reports, listening to expert testimony, or conversation with experts.
Low	Knowledge or expertise about the same as a well informed citizen.
No Response	If you feel you have insufficient expertise for a particular question or topic, you may leave the expertise scale and the question blank.

Table 8.3 displays the relative expertise of the Round 1 panel according to the number of high ratings the panelists self-designated in the six seafood issue categories. A maximum of six high designations, one for each of the six categories, was allowed. About 7% of the panel self-rated their expertise as high in all six seafood issue categories. About 38% of the panel self-rated their expertise as high in three or more of the six categories. Approximately 20% of the panel rated their expertise in the seafood issue categories as medium or low.

Table 8.3

Number of High Ratings Each Panelist
Self-assigned in the Six Seafood Issue Areas *

Number of High Ratings	Frequency	
	Percent	No. of Panelists
6	7.4%	7
5	7.4	7
4	5.3	5
3	18.1	17
2	25.6	24
1	14.9	14
0	<u>21.3</u>	<u>20</u>
Total	100.0	94

* A maximum number of six ratings per panelist was allowed.

(R1-p.3)

In the Round 1 questionnaire, the panelists indicated which sectors of the seafood industry that best described their knowledge area. The panelists could indicate up to five seafood industry sectors. Table 8.4 illustrates the percent of panelists that indicated each of the five sectors as the area(s) that best described the industry sector they represent. Panelists were allowed to designate more than one sector. The relative proportion of representation in the industry sectors was maintained throughout the three rounds, with only the Industry-Distributor sector as an exception. This sector changed from 21% to 13% from Round 1 to Round 3. This reduction indicates that the greatest attrition rate was in the Industry-Distributor sector. Of the 48% of the panel (in Round 1) that indicated the Government category, 53% (n = 25) also indicated the Industry-Harvester category, 36% (n = 17) of the panel that indicated the Government category also indicated the University category, and 30% (n = 14) of those who indicated the Government category also indicated the Industry-Processor category.

Table 8.5 displays the percentage of panelists that indicated five (the maximum allowed) or less seafood industry sections. About 50 percent of the panel indicated one sector, 21% indicated two sectors, and 22% of the panel indicated three sectors. The geographic representation of the panel is given on Table 8.6. About one-third of the panel had mailing addresses in Alaska, about one-third in Washington, and about 13% of the panel had addresses outside the U.S.

Table 8.4

Panel Representation In Five Industry Sectors
for Three Questionnaire Rounds *

Round	Sectors				
	Government	University	Industry		
			Harvester	Processor	Distributor
1	48%	30%	38%	44%	21%
N = 101					
2	51%	35%	35%	41%	18%
N = 78					
3	51%	36%	30%	43%	13%
N = 61					

* Panelists checked more than one category, therefore the rows will not sum to 100 percent.

(R1-p.3, maximum missing = 3 in Round 1)

Table 8.5

Percent of Panelists Indicating Five
or Less Seafood Industry Sectors*

<u>No. of Categories Indicated</u>	<u>Frequency</u>	
	<u>No. of Panelists</u>	<u>Percent</u>
5	2	2.0
4	3	3.1
3	22	22.5
2	21	21.4
1	<u>50</u>	<u>51.0</u>
Total	98	14

* A maximum number of five categories per panelist was allowed.

(R1-p.3, missing = 3)

Table 8.6

Geographic Representation of the Panel
at the Round 1 Stage

<u>Geographic Location</u>	<u>Percent</u>	<u>Number</u>
United States		
Alabama	1	1
Alaska	36	37
California	5	5
District of Columbia	2	2
Illinois	2	2
Kansas	2	1
Kentucky	1	1
New York	2	2
North Carolina	1	1
Oregon	4	4
Rhode Island	1	1
Washington	30	31
Canada		
British Columbia	5	5
Nova Scotia	1	1
Quebec	1	1
United Kingdom		
England	1	1
Ireland	1	1
Scotland	1	1
Japan	2	2
Chile	<u>1</u>	<u>1</u>
Total	100	101

The Delphi Questionnaires

The questions that were posed to the panel covered a wide range of topics and issues and generally were technical in nature. The questionnaire items were constructed by the research team after consultation with the advisory consulting group. The questionnaires were pretested by having the advisory group of experts complete and comment on each of the three questionnaires. The selection of subject areas of inquiry were directed by the project objectives and the advisory group. The basic format used for the questions was to provide a factual/historical context of information about the subject area, then the specific question followed. Tables 8.7, 8.8, and 8.9 list the contents of the three questionnaires. The three questionnaires are shown in Appendix B.

Table 8.7
Contents of the First Round Questionnaire

Panelists were requested to:

- o Identify the three most important issues or questions facing the North Pacific seafood industry in the next 20 years.
- o Predict global and national developments that may affect the North Pacific seafood industry.
- o Predict the effects of the potential release of 11 billion salmon fry into the North Pacific by the year 2000.
- o Project whether net profits to fishers and processors will increase as a consequence of a five-fold increase in the Alaska hatchery release of salmon fry.
- o Describe the implications of the trend in the increasing Japanese coastal salmon catch and declining high seas harvest for the U.S. salmon industry.
- o Predict U.S. demand for selected product forms.
- o Rank the relative importance of factors that affect consumer demand for seafood products.
- o Identify strategies to insulate U.S. fishery exports from exchange rate fluctuations.
- o Evaluate the role of exchange rates in the development of the domestic groundfish industry.
- o Rank the most important factors necessary to insure consistent quality of seafood products.
- o Describe the effects on the U.S. industry resulting from a 50% cut in the TALFF.
- o Identify areas of comparative advantage for U.S. producers in international markets.
- o Predict the relative share of groundfish production for joint ventures vs. domestic processors vs. foreign catch.
- o Predict the future share of domestic groundfish processing: floaters vs. shore-side.
- o Predict whether domestic groundfish production will displace imports in the next 20 years.
- o Rank the factors that affect the competitiveness of the domestic processing industry.

Table 8.7
Contents of the First Round Questionnaire
(Continued)

-
- o Identify the reasons why the U.S. seafood industry is not in the forefront of the development of the domestic surimi market.
 - o Rank the growth potential of six U.S. seafood market segments.
 - o Describe future changes needed for Alaska hatchery programs to maintain competitiveness.
 - o Rate the relative importance of 15 seafood areas where further research is needed.
-

Table 8.8
Contents of the Second Round Questionnaire

-
- o General feedback from Round 1

Panelists were requested to:

- o Rate the relative validity of the panelists' predictions about the effect of the potential release of 11 billion salmon fry into the North Pacific by the year 2000.
- o Rate the relative validity of the panelists' answers describing the implications of the trend in the increasing Japanese coastal catch and declining high seas harvest for the U.S. salmon industry.
- o Describe the role they foresee for pen-reared salmon in Alaska's future.
- o Identify the political implications of farming versus hunting in Alaska salmon fisheries.
- o Describe the geographic dislocation of traditional fisheries due to the distribution of hatchery fish.
- o Rate the relative validity of the panelists' responses to the question on future changes needed for Alaska hatchery programs to maintain competitiveness.
- o Evaluate and explain the preferred types of cost recovery for privately-held hatcheries.
- o Rate the relative validity of the panelists' responses to whether domestic groundfish production will displace imports in the next 20 years.
- o Rate the relative validity of the panelists' responses to why the U.S. seafood industry is not in the forefront of the development of the domestic surimi market.
- o Describe what Alaska can do to encourage the development of a "value-added" industry.
- o Explain how to overcome limitations to the development of shore-based processing of pollock and yellowfin sole.
- o Indicate whether medium sized factory vessels are a viable option for increasing Alaska's share of the "value-added" industry.

Table 8.8
Contents of the Second Round Questionnaire
(Continued)

-
- o Rate the relative validity of the panelists' responses to whether net profits to fishers and processors will increase as a consequence of a five-fold increase in the Alaska hatchery release of salmon fry.
 - o Re-evaluate whether U.S. salmon fishers' net profits will increase or not.
 - o Predict whether U.S. salmon fishers' net profits will increase at a 21 to 28 million salmon catch level.
 - o Predict the average total Alaska commercial salmon harvest for the next 20 years and the range around the average they would use for a confidence interval.
 - o Indicate whether world salmon markets can absorb projected pink and chum supply levels at prices which will provide an adequate return on investment for fishers.
 - o Explain the basis for consumer product differentiation between wild and pen-reared salmon.
 - o Rate the relative importance of the panelists' responses describing the major impediments to the development of Alaska's fishing potential.
 - o Rate the relative importance of the panelists' responses describing the most important question or issues relevant to the development of the North Pacific seafood industry in the next 20 years.
-

Table 8.9
Contents of the Third Round Questionnaire

-
- o A "Feedback Document" accompanied this questionnaire which was a report of a preliminary analysis of Round 1 and 2 data.

Panelists were requested to:

- o Re-evaluate panel assertions concerning the implications of the potential release of 11 billion salmon fry into the North Pacific by the year 2000.
- o Re-evaluate panel assertions concerning the implications of the trend in the increasing Japanese coastal salmon catch and declining high seas harvest for the U.S. salmon industry.
- o Re-evaluate panel assertions related to future changes needed for Alaska hatchery programs to maintain competitiveness.
- o Evaluate panel answers describing the role of pen-reared salmon in Alaska's future.
- o Evaluate panel responses concerning the political implications of farming versus hunting in Alaska salmon fisheries.
- o Evaluate panel responses to whether fishers and processors should share in the costs and/or profits of privately held hatcheries.

Table 8.9
Contents of the Third Round Questionnaire
(Continued)

-
- o Evaluate panel responses concerning whether the State (ADF&G) should manage common property fisheries to allow sufficient escapement for total, partial, or no cost recovery.
 - o Evaluate panel answers describing the means that should be used to finance nonprofit, private hatcheries if there is partial or no cost recovery from returning adults.
 - o Evaluate panel responses about what Alaska can do to encourage the development of a "value-added" industry.
 - o Evaluate panel responses concerning how to overcome limitations to the development of shore-based processing of pollock and yellowfin sole.
-

A number of different response formats were used in the questionnaires. The primary format used during the first and second questionnaire was open-ended and required panelists to write in their own unique response. Another primary format used in the second and third questionnaires was close-ended and required the panel to rate the questionnaire items by using a six-point validity scale or a four-point importance scale (Tables 8.10 and 8.11). These scales have been frequently used in Delphi studies to define validity and importance. Panelists also responded to a three-point expertise scale for a number of questions in Round 1 (Table 8.2). The group's relative expertise for a question is reported with the analysis. A General Comments section was provided at the end of each questionnaire for the panel to comment on specific items and the Delphi process in general.

The time horizon used in this study about future developments in the seafood industry was the year 2000 and/or 20 years into the future.

A key feature of the Delphi is the process where the panel reviews and evaluates the contributions of the other panel members. In Rounds 2 and 3, panel responses were summarized and transformed into conceptual "assertions." These assertions represent the conceptual answer originally offered by the panelist to the question. The wording of the responses frequently had to be modified or shortened. However, whenever possible, the exact wording of a panelist's comment was retained. The assertions, the summarized panel responses, were fed back to the panel along with the original question. The panel was instructed to review the original question and evaluate the list of assertions according to how valid or reliable each assertion was as a contribution to an answer to the original question. The bulk of Rounds 2 and 3 questionnaires was largely due to the panel assertions (i.e., responses/ variables) that were presented to the panel to evaluate.

In Rounds 2 and 3, the panel evaluated approximately 500 assertions and reevaluated 40 assertions that revealed no clear panel position. Specifically, items for re-evaluation in Round 3 were selected from Round 2 assertions which displayed a frequency distribution where less than 66% of the panel, but more than 40% of the panel, indicated the assertion was valid or reliable. Panel assertions that were judged valid and/or reliable by 66% or more of the panel were defined as having a high amount of consensus. As a result, these assertions were given as feedback information only in Round 3.

Table 8.10

Validity Rating Scale

Numeric Scale

1	VALID	- low risk of being wrong - decision based upon this will not be wrong because of this "fact" - most inferences drawn from this will be true
2	RELIABLE	- some risk of being wrong - willingness to make a decision based upon this - assuming this to be true but recognizing some chance of error - some incorrect inferences can be drawn
3	NOT DETERMINABLE	- the information or knowledge to evaluate the validity of this assertion is not available to anyone - expert or decisionmaker
4	RISKY	- substantial risk of being wrong - not willing to make a decision based upon this - many incorrect inferences can be drawn
5	UNRELIABLE	- great risk of being wrong - worthless as a decision basis
6	NOT PERTINENT	- even if the assertion is VALID or UNRELIABLE it has no significance for the basic issue - it cannot affect the variable under question or observable amount
Blank	No Judgment	- no knowledge to judge this item

Table 8.11

Importance Rating Scale

<u>Score Value</u>	<u>Importance (Priority or Relevance)</u>
1 Very Important	- a most relevant point - first-order priority - has direct bearing on major issues - must be resolved, dealt with, or treated
2 Important	- is relevant to the issue - second-order priority - significant impact but not until other items are treated - does not have to be fully resolved
3 Of Minor Importance	- insignificantly relevant - third-order priority - has little importance - not a determining factor to major issue
4 Unimportant	- no priority - no relevance - no measurable effect - should be dropped as an item to consider

Procedure

The first Delphi questionnaire was mailed in June 1984, the second in November, and the third was mailed in March, 1985. The Round 1 questionnaire was accompanied by a letter from the Governor of Alaska that invited the prospective panelist to participate. Panelists were given six weeks to complete and return their questionnaire. The questionnaire was 27 pages long and requested many open-ended narrative responses. Many panelists commented that it took them about three hours to complete.

The content of the open-ended narrative data was analyzed using a rigorously applied method to control for subjective bias. Responses to a question were compiled and reviewed. Content areas which were unique conceptually and represented the position of a significant portion of the panel were listed. This preliminary list of summarized panel responses was then re-applied to the body of panel responses in order to validate their importance and to refine the preliminary list. This process was applied to all open-ended questions.

Inevitably, some ambiguity about the meaning of a panelist's response occurred during the summarization of the narrative data. By requiring the panel to evaluate the validity of each summarized panel assertion, the potential bias of the research group is mitigated. In other words, the panel as a group essentially selected which assertions were valid and which were not by rating the assertions.

Analysis of the content of the panel's response to the open-ended questions was an exceedingly time-consuming process. Those panelists with strongly held views on a particular issue tended to express themselves in detail and at great length. The panel was encouraged to make comments at any point in the questionnaire, and many did.

The second questionnaire, sent in November 1984, was 76 pages long and contained over 200 panel assertions to be rated. It also contained 14 new "probe" questions that were generated from analysis of the Round 1 results. The panel was allowed two months to complete and return the

questionnaire. The evaluated and rated data were coded and submitted for computer analysis using SAS Software in the State's IBM Mainframe computer. The open-ended data was analyzed using the same procedure described in the analysis of Round 1 narrative data.

In Round 3 analysis, some assertions that received less than 40% support at this evaluation phase were retained for analysis. The frequency distribution of the panel responses from Round 2 were reported along with the assertions presented in the Round 3 questionnaire. No new questions were included in the last questionnaire. The third questionnaire was mailed to 87 panelists in March 1985, and 62 were returned within six weeks. Since this questionnaire contained only fixed response data, analysis was performed on the computer.

Analysis and Interpretation of the Data

In this final report, the data gathered in all three rounds of the questionnaires were brought together. Each question (or group of questions where they have been combined) is accompanied by a "summary statement" that gives a general sense of the group response and a set of assertions which are representative or provocative. In other cases, particularly where there were many lengthy or complicated answers, a fairly long summary was necessary to provide a context for the panelists' responses. Occasionally statements from the general comments section are brought in to clarify a point. In all cases, the analysis and interpretation have remained minimal and secondary to the panel's responses. In some cases the assertions themselves tell the story and need little summarization.

The reader should read through the questions, tables, and summary statements for a general overview and then explore the assertions and their ratings for a more complete range of views on a particular issue. The principle form of the data reported in the foregoing chapters are tables of panel responses that have been validated by the panel using either the validity or importance scales. The panel responses or assertions that were judged as valid or reliable (2 of the 6 points on the validity scale) by at least 40% of the panel were considered sufficiently valid for inclusion in the final analysis. Although this proportion represents a minority, we nonetheless consider it a significant minority.

The assertions represent what the panelists believe to be valid or reliable statements. These statements (assertions) were interpreted as reliable indicators relevant to producing an answer to the original question. The assertions represent relevant concepts that should be considered in a search for a complete answer to the questions. The assertions may also be defined as a set of statements that are important to consider in an analysis of future trends in the industry. At the same time, the assertions do not represent a total answer to a question. Generally, the questions were complex, broad, and far-reaching. Each could require years of basic research to fully address. What the assertions do reveal is what a group of industry representatives think about the future outcome of some of the critical issues facing the North Pacific seafood industry in the next 20 years.

APPENDIX A

THE DELPHI PANEL

Brian Allee
Prince William Sound
Aquaculture Corporation
Cordova, Alaska

Andrew Alley
Ministry of Industry &
Small Business Dev.
Victoria, B.C. Canada

Lee Alverson
Natural Resource Consultants
Seattle, Washington

Don Amend
Southern Southeastern Alaska
Regional Aquaculture Assoc.
Ketchikan, Alaska

Nels Anderson
Dillingham, Alaska

Phillip Appleyard
International Fisheries Counselor
Surrey, England

Clinton E. Atkinson
Alaska Sea Grant
Seattle, Washington

Jerry Babbitt
Kodiak Investigations-Utilization
National Marine Fisheries Service
Kodiak, Alaska

R. C. Baker
Dept. Poultry & Avian Science
Cornell University
Ithaca, New York

Don Bevan
College of Fisheries
University of Washington
Seattle, Washington

Martha Blaxall
BBH Corp.
Washington D.C.

Jim Branson
North Pacific Fishery
Management Council
Anchorage, Alaska

Alec Brindle
Columbia-Ward Fisheries
Seattle, Washington

Alvin Burch
Alaska Druggers Association
Kodiak, Alaska

Bud Burgner
Fisheries Research Institute
University of Washington
Seattle, Washington

Chris Carter
Oregon Department of Fish & Wildlife
Portland, Oregon

Larry Cotter
International Longshoremen's and
Warehousemen's Union
Juneau, Alaska

James A. Crutchfield
Institute of Marine Studies
University of Washington
Seattle, Washington

Don DeVoretz
Economics Department
Simon Fraser University
Burnaby, B.C. Canada

Bill Dietrich
Van De Kamp
Long Beach, California

Lauren Donaldson
College of Fisheries
University of Washington
Seattle, Washington

John Doyle
Marine Advisory Program
University of Alaska
Anchorage, Alaska

Oscar Dyson
Alaska Seafoods
Kodiak, Alaska

Ralph Eluska
Koniag, Inc.
Anchorage, Alaska

Thomas R. Eyestone
DPRA, Inc.
Manhattan, Kansas

Captain Barry Fisher
South Beach, Oregon

Jay Gage
Trustee of the St. Paul
Island Trust
Seattle, Washington

Doug Gordon
National Food Processors
Washington, D.C.

Abby Gorham
University of Alaska
Alaska Sea Grant College Program
Fairbanks, Alaska

Murry Hayes
National Marine Fisheries Service
Seattle, Washington

Jeff Hendricks
Hendricks & Associates
Anacortes, Washington

Jack Hice
Research Associates
Charlotte, North Carolina

Roy Jackson
Natural Resources Consultants
Seattle, Washington

Keith B. Jefferts
N.W. Marine Technology, Inc.
Shaw Island, Washington

Tim Joyner
Sheldon Jackson College
Sitka, Alaska

Jon Karpoff
Department of Fin., Bus., Econ.
and Quantitative Methods
University of Washington
Seattle, Washington

Albert S. Kawabe
Kawabe Trading Co.
Anchorage, Alaska

Frank Kawana
JAC Creative Foods, Inc.
Los Angeles, California

Curt Kerns
University of Alaska
Juneau, Alaska

Ernie Kolhase
Douglas, Alaska

Tsune Kusakawa
Faculty of Marine Science
& Technology
Tokai University
Shimizu, Shizuoka Japan

Bert Larkins
Marine Resources Co., Inc.
Seattle, Washington

Doug Larson
North Pacific Fishery
Management Council
Anchorage, Alaska

Rick Lauber
Pac. Seafood Processors Assoc.
Juneau, Alaska

Patricia A. Lavin
Department of Resource Economics
University of Rhode Island
Kingston, Rhode Island

John Lecture
Seafood Producers Cooperative
Bellingham, Washington

Peter Leitz
Economics & Statistical Services Unit
Fisheries-Pacific Region
Vancouver, B.C. Canada

Rebecca J. Lent
Univesity of Quebec at Rimouski
Rimouski, Quebec Canada

Bling-Hwan Lin
Department of Economics
University of Alaska
Fairbanks, Alaska

Jon Lindbergh
North Bend, Washington

Rae MacFarland
Beehive Machinery, Inc.
Sandy, Utah

Byron Mallott
Sealaska Corporation
Juneau, Alaska

John Martin
Ursin Seafoods
Seattle, Washington

Ole Mathisen
University of Alaska
Juneau, Alaska

Jay Matsen
Peterson, Sullivan & Co.
Seattle, Washington

Richard McCormick
Prepared Foods
Chicago, Illinois

Bob Morgan
Pacific - Seafood Processors Assn.
Seattle, Washington

Eric Norgaard
Norgaard Consultants
San Fransisco, California

Dick Pace
Universal Seafoods
Redmond, Washington

Steven Pennoyer
Department of Fish & Game
Juneau, Alaska

Walter Pereyra
Prefish International
Seattle, Washington

John Peterson
Ocean Beauty Seafoods
Seattle, Washington

Rick Ranta
National Marine Fisheries Service
Seattle, Washington

Bruce Rattig
Department of Agricultural
& Resource Economics
Oregon State University
Corvallis, Oregon

James A. Richardson
Resource Econ
Anchorage, Alaska

Arnold Roseman
Jerrico
Lexington, Kentucky

Don Rosenberg
Alaska Sea Grant Program
Fairbanks, Alaska

Carl Rosier
Fisheries Development
National Marine Fisheries Service
Juneau, Alaska

William F. Royce
Seattle, Washington

Edward A. Ryan
Star-Kist Foods, Inc.
Terminal Island, California

Robert Ryan
Ryan Engineering, Inc.
Seattle, Washington

Teruji Sakiyama
International University of Japan
Niigata, Japan

Keith Sandercock
Fisheries & Oceans Canada
Vancouver, B.C. Canada

Susan Shaw
Department of Business Studies
University of Stirling
Stirling, Scotland United Kingdom

David A. Stanchfield
M/V MORNING STAR
Unalaska, Alaska

Hans Stuercken
Seaex Products, Limited
Vancouver, B.C. Canada

Ed Suska
Formax, Inc.
Mokena, Illinois

Tom C. Swafford
ALFA-LAVAL, Inc.
Novato, California

Joe Terry
National Marine Fisheries Service
Seattle, Washington

Clem Tillion
Homer, Alaska

John Wedin
Pacific N.W. Region
National Marine Fisheries Service
Seattle, Washington

Jim Wilson
National Marine Fisheries Service
Juneau, Alaska

Carlos F. Wurmann
Santiago, Chile

APPENDIX B

THE DELPHI QUESTIONNAIRES

DELPHI QUESTIONNAIRE #1

Department of Commerce and Economic Development
Office of Commercial Fisheries Development

Please return completed
questionnaire to:

Department of Commerce and
Economic Development
Pouch D
Juneau, Alaska 99811

Lynn Hutton, Project Director
(907) 465-2079 ext. 43

Jeannette Mitchell
Research Assistant
(907) 465-2079 ext. 20

GENERAL INSTRUCTIONS

This is the first of the three Delphi questionnaires you will receive on future developments in the North Pacific seafood industry. We are interested in knowing what you think will happen, and why it will happen. Thus, we are asking you to provide both projections of future events or trends, and comments explaining your reasoning.

Because this study is being undertaken on behalf of the Office of Commercial Fisheries Development, of the Alaska Department of Commerce and Economic Development, our questions focus heavily upon the North Pacific seafood industry and the U.S. seafood market. Unfortunately, other aspects of the U.S. seafood industry, such as East and Gulf coast markets are beyond the scope of this particular study. The inclusion of a project, trend, or policy in this questionnaire should not be interpreted to imply a bias, for or against, rather they are included due to their potential impact.

This first questionnaire focuses on an overview of events and trends that may impact the future of the North Pacific seafood industry, while the two subsequent questionnaires will provide feedback from previous round results and examine disagreement in greater depth. This first questionnaire consists of the following sections:

o FUNDAMENTAL ISSUES

In this section, you are requested to identify the three most significant questions or issues facing the North Pacific fisheries.

o GLOBAL AND NATIONAL FORECASTS

In this section, you are asked to identify international developments of importance to U.S. and Alaskan fisheries.

o MARKET PLACE

In this section, the U.S. seafood industry's position in national and international markets is explored.

o FUTURE ALTERNATIVES

In this section, long-term issues affecting the future competitiveness of the U.S. and Alaskan fishing industries are raised.

Included with a number of the questions which follow is an expertise scale. Please rate your self-assessed level of expertise in reference to the specific question to which it refers. Use the following guideline as a basis for your self rating.

Knowledge or expertise rating scale

High	Actively involved in decisions, research or analysis in this area.
Medium	Informed in this area through reading reports, listening to expert testimony, or conversation with experts.
Low	Knowledge or expertise about the same as a well informed citizen.
No Response	If you feel you have insufficient expertise for a particular question or topic, you may leave the expertise scale and the question blank.

A GLOSSARY of terms is included on page four of the questionnaire for reference.

In order to classify the type of fisheries expertise of the panel members, we request that you self-rate your level of expertise in the six seafood issue categories given below. Put "H" for high, "M" for medium or "L" for low in each box.

Supply	Demand	Trade	Marketing	Price	Policy

Put a check in the appropriate box(s) to indicate which sector of the seafood industry you believe best describes your knowledge area.

Industry				
Government	University	Harvester	Processor	Distribution

Glossary of terms

Jones Act - Requires U.S. crews on U.S. built boats conducting commerce between U.S. ports.

Cohort recruitment - A cohort is a given year class of salmon. Stocks of salmon are managed to insure enough escapement of spawners to provide for continuation of supply.

TALFF - Total Allowable Level of Foreign Fishing quota system for foreign vessels operating within the U.S. Fisheries Conservation Zone (200 mile limit) established by the Magnuson Act in 1977.

Surimi - A high protein fish paste used heavily by the Japanese usually made from minced pollock. Surimi products include imitation crab legs, shrimp "perfects," fish portions, sausages and hams.

Joint Ventures - A co-operative harvesting/processing agreement between domestic fishermen and foreign processor within the U.S. Fisheries Conservation Zone. Joint ventures can be classified as "over the side" operations, where U.S. fishermen just sell their catch to a foreign processing vessel; or a true joint venture, where equity and profits for the whole operation are shared by both parties. At present, of the 21 so called joint ventures, only one Marine Resources (U.S. and U.S.S.R.) qualifies as something of a true joint venture. The others are all "over the side" operations.

Common Property Salmon Fishery - Salmon returning to their rearing streams and lakes are intercepted by U.S. fishing fleets in what is known as the common property fishery. Salmon stocks from hatcheries (public and private) as well as native stocks mingle together until they reach their terminal areas. The common property fishery is controlled by limited entry permits, vessel size, area, and gear limitations. Escapement for each area is managed through season openings and closures with the primary purpose of maintaining wild stocks.

A. FUNDAMENTAL ISSUES

On the following pages, we will ask you to respond to specific questions regarding the future of the world and national seafood industries. However, the mere statement of a particular question focuses thinking in a particular direction, and thus introduces a form of bias. We believe that it is necessary to obtain some insights from you before your thinking may be influenced by the questionnaire. IN YOUR OPINION...

What are the three most important questions or issues relevant to the development of the North Pacific seafood industry in the next 20 years?

(After responding, please rank your list in terms of their priorities; first, second, and third.)

_____	Priority:

_____	Priority:

_____	Priority:

B. FORECASTING GLOBAL AND NATIONAL DEVELOPMENTS

The future of the U.S. seafood industry is affected by developments outside its borders, and thus, outside its direct control. In order to fully understand your views of the U.S. seafood industry's future, we need to have some idea of how you see the global and national context in which the U.S. industry will exist from now until the year 2000. Some possible key developments are listed on the next page.

Please indicate with a checkmark for each development:

1. the likelihood or probability of the event occurring.
2. the impact on the U.S. seafood industry should the event occur.
3. your level of expertise for each.

If important developments have been omitted, please enter them in the spaces provided at the end of the list.

POTENTIAL DEVELOPMENTS

	LIKELIHOOD OF OCCURRENCE BY 2000						IMPACT ON U.S. SEAFOOD INDUSTRY IF DEVELOPMENT WERE TO OCCUR				MY EXPERTISE LEVEL FOR THIS QUESTION		
	Very Probable (80-100%)	Probable (60-80%)	Either Way (40-60%)	Improbable (20-40%)	Very Improbable (0-20%)	No Judgement	Strong	Moderate	Slight or None	No Judgement	High	Medium	Low
1. Pacific Rim Common market established.													
2. Dramatic increase in "protectionism" in world trade.													
3. Pen reared (farmed) salmon will largely displace "caught at sea" salmon in the white tablecloth restaurant and European smoker markets.													
4. The maximum sustainable production and yield of ocean reared (wild stocks and hatchery releases) salmon is reached in the North Pacific.													
5. Japan will dramatically reduce imports of U.S. salmon by meeting demand through domestic production.													
6. Europe will dramatically reduce imports of U.S. salmon by meeting demand through domestic production.													

-7-

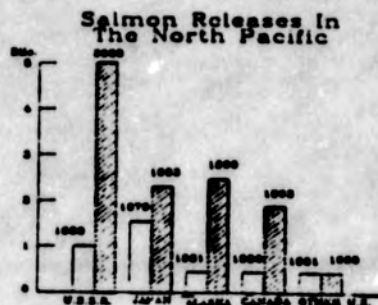
POTENTIAL DEVELOPMENTS (Continued)

	LIKELIHOOD OF OCCURRENCE BY 2000						IMPACT ON U.S. SEAFOOD INDUSTRY IF DEVELOPMENT WERE TO OCCUR				MY EXPERTISE LEVEL FOR THIS QUESTION		
	Very Probable (80-100%)	Probable (60-80%)	Either Way (40-60%)	Improbable (20-40%)	Very Improbable (0-20%)	No Judgement	Strong	Moderate	Slight or None	No Judgement	High	Medium	Low
7. Third world countries will become major markets for U.S. salmon.													
8. Third world countries will become major markets for U.S. groundfish.													
9. Alaska becomes the principal supplier of U.S. groundfish.													
10. Jones Act is repealed or modified to allow purchase of foreign vessels and/or use of foreign labor for fishing and processing in the U.S. Fisheries Conservation Zone.													
11. U.S. fishermen and processors completely displace foreign fishing effort in the U.S. FCZ.													
12. A futures market for U.S. seafoods is developed.													

POTENTIAL DEVELOPMENTS (Continued)

	LIKELIHOOD OF OCCURRENCE BY 2000						IMPACT ON U.S. SEAFOOD INDUSTRY IF DEVELOPMENT WERE TO OCCUR				MY EXPERTISE LEVEL FOR THIS QUESTION		
	Very Probable (80-100%)	Probable (60-80%)	Either Way (40-60%)	Improbable (20-40%)	Very Improbable (0-20%)	No Judgement	Strong	Moderate	Slight or None	No Judgement	High	Medium	Low
13. U.S. export trading companies begin trading substantial quantities of seafood on world markets.													
14. The world fisheries harvest, exclusive of aquaculture, reaches its maximum sustainable level.													
15. Privately-owned salmon ranching operations largely displace publicly financed hatcheries in the U.S.													
16. The domestic common property salmon fishery is largely replaced by privately-owned ranching operations and automated harvesting facilities.													

14. Japan is the world's largest producer of hatchery salmon. It is estimated that between 70% and 80% of the salmon fry descending Japanese rivers are hatchery raised. The U.S., U.S.S.R. and Canada have also embarked on ambitious hatchery programs as shown in the accompanying graph. If all of the planned releases materialized (which is unlikely), there could potentially be 11 billion salmon fry released throughout the North Pacific by the year 2000.



- a. What are the biological implications of these projected releases?

- b. What are the political implications of these hatchery plans in terms of future shares of ocean rearing grounds?

- c. What are the economic implications of these projected releases?

My expertise level for this
question is: (Circle One)

HIGH

MEDIUM

LOW

15. Assuming that the planned five-fold increase in Alaskan hatchery releases of salmon fry (by 1990) will result in a long-term increase in the supply of salmon stocks; how will net profits be affected? (Assume a constant level of effort and constant dollars.) Check one of the three options.

- a. Will U.S. salmon fishermen's net profit (check one):

☐ - Increase
☐ - Decrease
☐ - Stay the same?

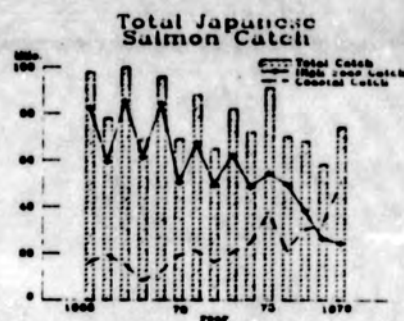
Briefly explain: _____

- b. Will domestic processor's net profit (check one):

☐ - Increase
☐ - Decrease
☐ - Stay the same?

Briefly explain: _____

16. The effectiveness of the Japanese hatchery programs can be seen from the graph below. The high seas salmon catch has decreased significantly since the early 1970's, due mainly to international agreements to restrict the high seas harvest (Japan accounted for 61% of all U.S. fishery exports in 1983). During the same period, the Japanese coastal catch (consisting mainly of hatchery raised adult chum salmon) has increased enough to equal the previous 15 year average.



- a. What are the implications of this trend (i.e., increasing Japanese coastal catch) for the U.S. salmon industry in the next 20 years? Please identify species in your answer.

My expertise level for this question is: (Circle One)

HIGH MEDIUM LOW

C. MARKET PLACE

1. Canada (8.0%), the U.S. (7.4%), and Norway (6.5%) are the three leading exporters of fishery products (seven major fishery commodity groups compiled by FAO 1978-81) in order of market share. These respective market shares have remained relatively stable over the period for which data is available, while the total worldwide export market grew 32.8% to \$5.3 billion in 1981.

What other exporters (nations) especially emerging players will become important in the next 20 years and in which species?

Nation	Species
a.	
b.	
c.	

My expertise level for this question is: (Circle One)

HIGH MEDIUM LOW

2. The U.S. market for fishery products is widely regarded as the largest underdeveloped market in the world. The American per capita annual consumption of edible commercial fish and shellfish products at 12.9 lbs. is less than half the world average of 27.1 lbs. Project whether per capita U.S. demand will increase or decrease from the current level for the product forms and species given below. Consider a 20 year future time frame in making your responses. Add product forms you believe will become important. Put one check mark for each product form (i.e., per row).

U.S. per capita demand will:

Product Forms and species	Decrease Sharply	Decrease Moderately	Stay about the same	Increase Moderately	Increase Sharply
Fresh whole, eviscerated or filleted:					
- salmon					
- groundfish					
- crab					
- shrimp					
- other shellfish (specify)					
Frozen natural fillets:					
- salmon					
- groundfish					
- other (specify)					
Frozen:					
- crab					
- shrimp					
- other shellfish (specify)					

U.S. per capita demand will:

Product Forms and species	Decrease Sharply	Decrease Moderately	Stay about the same	Increase Moderately	Increase Sharply
Frozen processed:					
- breaded fillets					
- breaded fish sticks					
- breaded shrimp					
- salmon					
- seafood analogs					
a.. minced products					
b. restructured seafood based meat products (i.e., sausages, ham, etc.)					
- other (specify)					
Canned					
- skinless and boneless salmon					
- canned salmon					
- crab					
- shrimp					
- other (specify)					
Cured:					
- salmon					
- salmon roe					
- herring roe					
- groundfish					
- groundfish roe					
- other roe (specify)					

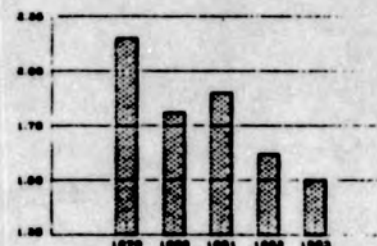
My expertise level for this question is: (Circle One)

HIGH MEDIUM LOW

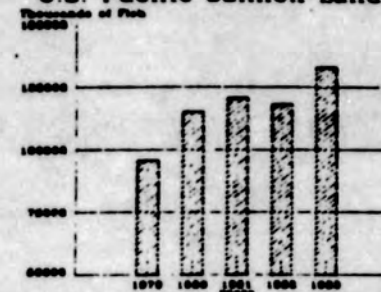
3. Given below are some factors that affect consumer demand for seafood products. Please review the list and add factors you think should be included. Then rank the top five factors (1 = greatest impact) according to their impact on foreign and domestic demand.

RANK ORDER FOREIGN	Factors affecting demand	RANK ORDER DOMESTIC
_____	Product price	_____
_____	Per capita income	_____
_____	Consistency of supply	_____
_____	Perceived quality	_____
_____	Change in dietary habits	_____
_____	Price of substitute products (beef, pork, chicken)	_____
_____	Ease of preparation	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Average \$/lb. of Exported
Canned & Frozen Salmon



U.S. Pacific Salmon Landings



4. Since 1979, the value per pound of salmon exported from the U.S. has fallen 25% (see graph). This drop has almost exactly paralleled the fall of the British pound (-25%), the French franc (-36%), and to a lesser extent the Japanese yen (-9%) and the Canadian dollar (-5%). At the same time the supply of U.S. salmon was steadily increasing (see graph). What if anything (aside from reducing the federal deficit) can be done to insulate U.S. fishery exports from exchange rate fluctuations? Briefly answer in terms of hedging strategies, futures markets, etc., you are aware of in other countries or commodities.

- a. _____
- _____
- _____
- b. _____
- _____
- _____
- c. _____
- _____
- _____

My expertise level for this
question is: (Circle One)

HIGH

MEDIUM

LOW

5. What effect do you think the recent advent of U.S. export trading companies will have in the future on price fluctuations for exported seafood products?

My expertise level for this question is: (Circle One) HIGH MEDIUM LOW

6. How important will the role of exchange rates be in the development of the U.S. groundfish industry?

Very Important	Important	Little or Effect	Unimportant

Briefly explain.

My expertise level for this question is: (Circle One) HIGH MEDIUM LOW

7. U.S. seafood products are widely perceived as being of inferior quality when compared to the same products produced by foreign competitors. From your perspective (as related by your position in the industry checked on page 3), what are the most important factors government and/or industry can do to insure consistent quality within the domestic seafood industry? Listed below are several factors. First, add any additional items you feel may be important; then, rank the top five in order of importance.

RANK

- _____ Research
- _____ Education
- _____ Product Standards
- _____ Product Inspection
- _____ Vessel/hold inspection
- _____ Regulations - e.g., trip limits
- _____ Plant verification of quality control
- _____ Operations plan
- _____ Product grading
- _____ Quality seal
- _____ Delivery schedules for fishermen
- _____ Bonus payments to fishermen for quality

D. FUTURE ALTERNATIVES

1. The 1983 Total Allowable Level of Foreign Fishing (TALFF) under the Magnuson Act for the U.S. Pacific Coast was 1,767,792 mt. of which 98% of the harvest occurred in Alaskan waters. The relative shares of the total Alaska groundfish harvest can be partitioned as follows:

Joint Ventures	352,874.6 mt	+93% from '82 level
Domestic Processors	46,651.1	+46%
Foreign Catch	1,124,836.2	-16%
TOTAL	1,524,361.9 mt	- 2%

If a large cut in the TALFF, say 50%, were to occur, what would be the resulting positive and negative effects on U.S. fishing, processing, and marketing firms?

- a. Fishing firms - positive effect _____
- _____
- b. Fishing firms - negative effect _____
- _____
- c. Processing firms - positive effect _____
- _____
- d. Processing firms - negative effect _____
- _____
- e. Marketing firms - positive effect _____
- _____
- f. Marketing firms - negative effect _____
- _____

My expertise level for this question is: (Circle One)

HIGH MEDIUM LOW

2. Do you believe a large cut in the TALFF would result in retaliation in other seafood markets, e.g., salmon? YES NO DON'T KNOW

Briefly explain _____

3. Given your knowledge of the species and products involved: what areas of comparative advantage do you think U.S. producers can exploit in the competitive world seafood markets of the future? Consider for examples the recent introduction of pen raised salmon into international markets and the planned North Pacific hatchery releases previously mentioned. Be specific in terms of species and/or product forms, and market segments.

- a. _____
- _____
- _____
- b. _____
- _____
- _____
- c. _____
- _____
- _____

My expertise level for this question is: (Circle One)

HIGH MEDIUM LOW