

FISH HARVESTING AND FISH PROCESSING IN ALASKA, 1982

By Kathleen Thomas

The fishing industry is an integral part of Alaska's economy. Almost all coastal communities are affected by the fortunes of fishing. In 1982 annual average fish harvesting and fish processing employment comprised 7.2% of statewide annual average employment (nonagricultural wage and salary employment plus fish harvesting employment). During July, the peak month in 1982 for fish harvesting and processing employment, the industry comprised 16.4% of statewide employment. This percentage is exclusive of secondary and tertiary employment generated by the fishing industry such as boat repairs and the sale of gas and oil, food, equipment, and other supplies, or fishing income spent in local communities. Total 1982 ex-vessel fishery value (the value of the fish paid to the fish harvester) combined with total fish processing wages paid in 1982 was equal to \$686 billion, 11.1% of the statewide total yearly nonagricultural employment payroll plus fishing ex-vessel value.

Nonagricultural wage and salary employment does not include fish harvesting employment. For that reason fish harvesting employment and wages are added to nonagricultural wage and salary employment and wages when making comparisons between the fishing industry and statewide employment and income. Fish processing employment is considered to be nonagricultural employment; therefore, no adjustments need to be made for the purpose of making comparisons between fish processing employment and statewide nonagricultural wage and salary employment.

Because of the significance of the fishing industry to Alaska, a full body of knowledge must be available in order to make effective policy and management decisions for the fishing industry. Until recently a systematic estimation of fish harvesting employment had not been completed. Periodic estimations of fish harvesting employment have been performed previous to 1977 but estimates to provide a time series of employment had not been completed until the Department of Labor, Research and Analysis Section began to develop fish harvesting employment estimates in 1977. Estimates of fish processing employment are made monthly in *Alaska Economic Trends* and are included in the food and kindred products sector of manufacturing employment.

Many problems arise when trying to make an accurate count of fish harvesting employment. Throughout the season fishermen may fish for more than one species, use more than one gear type, and fish more than one area. These transitions make it difficult to establish an actual count of fish harvesting employment. To overcome these limitations a methodology was developed by Rogers and Listowski to estimate fish and seafood

A wide range of activities are included in fish and seafood harvesting and processing. Harvesting employment includes captains and crews, those people actually working on the fishing vessels. Fish processing employment employs a wider range of occupations. Fish processing employment includes everyone employed from tender crews to cannery workers to cold storage.

Fish and seafood harvesting and processing data are organized to correspond with four of Alaska's six labor market areas: Southeast, Gulf Coast, Southwest, and Northern. The statewide totals are the total of the four regions plus a miscellaneous category. Since the data are estimates, any further disaggregation would make the data less reliable. Fish processing data are organized to correspond to fish harvesting areas. Fish processing information is available at the census division level but is subject to limits imposed by confidentiality restrictions.

Several factors affect participation in fish harvesting employment but analysts are amazed at the tenacity of fish harvesters to remain fishing in the face of low stocks, low prices, and poor working conditions. Under economic theory one would expect fishermen to quit plying the waters once the value of the fish caught drops below the cost of catching the fish. One aspect of fishing that keeps harvesters in the water is a multitude of species and mobility of the vessels. (This also makes employment in fish harvesting difficult to count.) When the value or stock of one species of fish or seafood declines, vessels are able to physically move to more productive waters and, within certain limits, alter the gear type to target their effort on another species. Some of the limitations to convertibility are boat size, limited entry, cost of boat or gear conversion, and fishing regulations.

A second factor that discourages the exit of fishermen from the industry is the cost of leaving the industry. Fishermen continue to fish as long as the variable costs (fuel and oil, bait, and other supplies consumed in a season) can be paid in the hope of an improved season the following year. One reason is a salvage value of the fixed assets (such as boat, permit, and gear) that is lower than the acquisition cost of those assets. Given that the fisherman would lose money by selling boat and gear, the fisherman is reluctant to relinquish those assets in the hope that cyclical stocks will rebound and fishing will once again be profitable.

Finally, even if the fishery declines for a series of seasons, fishermen are unwilling to change their way of life. Prices received for fish would have to drop to the point where the full vessel payments could not be met for a period of seasons before fish harvesters would be likely to sell out and move into other occupations. A cost is also associated with the transfer of occupations. Costs are incurred for retraining or even for moving to areas with better labor possibilities. The ones who could easily make the transition from fishing are those fish harvesters who are already engaged in another occupation between fishing seasons. However, this second occu-

pation also allows them to continue operating longer than they might otherwise.

As an example of the willingness of fish harvesters to remain fishing despite difficulties, shellfish volume from 1980 to 1982 decreased 61% while shellfish employment increased 11.4% during the same period. Most of the vessels engaged in crab harvesting are in the 50 to 150 foot range making them difficult to convert to another fishery and difficult to sell since the vessels are specialized for crabbing. Only if crab stocks remain low will the vessels be sold or converted.

Unlike fish harvesters, which are usually small operations of the owner operated vessel plus the crew, fish processors are large firms that hire employees on a seasonal basis. The employees of processors are less attached to the work force since they have less direct investment in the firm than a fish harvester would have in a fishing operation. This situation makes fish processing employment subject to immediate market conditions. From 1981 to 1982 annual average statewide fish processing employment decreased 15.7%. The reasons for the employment drop range from a change in species mix to a change in production factors.

One factor affecting fish processing employment is large volume drops in the shellfish catch. Effort to harvest shellfish remained high to cash in on high ex-vessel prices but the volume caught dropped 87,473,000 pounds or 37.8% from 1981 to 1982. By examining fish processing employment one sees the largest monthly differentials occur during October, November, and December between 1981 and 1982 when monthly employment decreased an average of 34.5%. These are the prime shellfish harvesting months. Meanwhile during July, August, and September (the prime salmon harvesting months) fish processing employment decreased an average of 1.7% from 1981 to 1982. Both 1981 and 1982 saw high levels of fish caught.

Another factor that contributed to declines in fish processing employment was the record breaking 1981 fishing season. A high 1981 canned salmon inventory was carried into 1982. The movement of these inventories was slowed by the botulism scare in the spring of 1982. These high inventories pushed the processors to switch production from canned salmon to fresh and frozen salmon. The 1982 canned salmon pack was 47% less than the 1981 pack. The percentage of the salmon catch that was canned dropped from 55% to 32%. The percentage of the pack that was frozen increased from 45% to 68%. From 1981 to 1982 the amount of fresh salmon processed increased 33.8%. The significance this has on fish processing employment is that frozen or fresh salmon requires fewer numbers of employees than canned salmon. With a switch to fresh and frozen salmon the number of people working in fish and seafood processing industry-wide declined.

Though bottomfish comprised only 7% of the total catch in 1982 it has the

potential for affecting fish processing employment in the future. Between 1981 and 1982 the bottomfish catch increased 66%, from 39,888,000 pounds to 66,323,000 pounds. Indications are that 1983 experienced similar increases. With the current demise in the crab fishery the larger crab boats are switching to bottomfish trawling thereby portending an increase in bottomfish volumes in the future. Unless more shore-based facilities are developed these fish will probably be processed by foreign joint ventures. Foreign joint ventures are counted for unemployment insurance purposes only if they perform their processing functions within the three mile limit of state jurisdiction. If the processing occurs outside of three miles the state does not require that the employment be reported. Due to this limitation an increase in bottomfish production may not increase Alaska's fish processing employment or at best increase fish processing employment at a slower rate than bottomfish production.

To refine fish harvesting employment estimates, efforts are being made to improve the current methodology. A survey of permit holders is being planned to improve the critical crew factor data and the Commercial Fishing Entry Commission is adjusting the computer programs to improve the landings data. More accurate data will make the fish harvesting employment estimates more reliable.

The data presented in this article are summarized. A more detailed presentation of data and discussion of results is presented in *Alaska Fish Harvesting and Processing Employment 1982* currently being published.

Fish and Seafood Processing Annual Average Employment			
	1981	1982	% Change from 1981 to 1982
Southeast	2068	1541	-25.5
Gulf Coast	3190	2905	-8.9
Southwest	2378	2057	-13.5
Northern	195	102	-47.7
Statewide ¹	7830	6604	-15.7

¹ May not sum due to rounding.

Fish and Seafood Harvesting Average Annual Employment
1981

Species/Gear	Southeast	Gulf Coast	Southwest	Northern	Statewide
Salmon					
Purse Seine	339	624	269	—	1231
Drift Gillnet	224	397	919	803	2343
Beach Seine	—	23	—	—	23
Set Gillnet	98	320	384	—	801
Power Troll	482	—	—	—	482
Hand Troll	260	—	—	—	260
Traps	—	—	—	—	—
Fish Wheels	—	—	—	22	22
Shellfish					
King Crab-Pots	25	256	431	17	728
Dungeness-Pots	41	103	*	—	144
Tanner-Pots	34	166	304	—	504
Shrimp-Pots	18	39	1	—	57
-Beam Trawl	13	6	—	—	18
-Otter Trawl	1	34	4	—	40
-Double Otter Trawl	—	32	3	—	35
Scallops-Dredge	10	23	—	—	34
Otter Trawl	1	—	—	—	1
Clams-Dredge	—	—	—	—	—
Clams-Shovel	—	20	—	—	20
Halibut					
Licensed-Longline 1/	270	260	22	—	552
Unlicensed Longline	30	41	3	—	74
Power Troll/Jigs	3	2	3	—	9
Hand Troll	2	—	—	—	2
Bottomfish					
Longline 2/	29	4	1	—	34
Otter Trawl	3	10	27	—	39
Double Otter Trawl	—	2	—	—	2
Beam Trawl	—	—	*	—	*
Pots	—	—	—	—	—
Power Troll/Jigs	1	5	*	—	6
Hand Troll	1	—	—	—	1
Sablefish/ Black Cod					
Longline	56	—	—	—	56
Pots	1	—	—	—	1
Herring					
Purse Seine	42	66	63	—	171
Roe Kelp	—	22	—	*	22
Set/Drift Gillnet 3/	35	45	27	73	180
Pair Trawl	—	1	—	—	1
Miscellaneous 4					
	—	—	—	—	6
Total	2019	2500	2461	915	7898

See footnote, page 8.

Fish and Seafood Harvesting Average Annual Employment:
1982

Species/Gear	Southeast	Gulf Coast	Southwest	Northern	Statewide
Salmon					
Purse Seine	418	519	283	—	1221
Drift Gillnet	232	471	895	804	2402
Beach Seine	—	16	—	—	16
Set Gillnet	94	333	378	—	804
Power Troll	527	—	—	—	527
Hand Troll	248	—	—	—	248
Traps	—	—	—	—	—
Fish Wheels	—	—	—	17	17
Shellfish					
King Crab-Pots	33	299	307	44	683
Dungeness-Pots	70	147	8	—	226
Tanner-Pots	53	230	270	—	552
Shrimp-Pots	26	39	—	—	65
-Beam Trawl	11	3	—	—	14
-Otter Trawl	1	26	1	—	28
-Double Otter Trawl	—	27	•	—	27
Scallops-Dredge	8	20	—	—	28
Clams-Dredge	—	—	—	—	—
Clams-Shovel	—	25	—	—	25
Halibut					
Licensed Longline 1/	315	412	52	—	779
Unlicensed Longline	29	50	5	—	83
Power Troll/Jigs	5	4	—	—	9
Hand Troll	2	—	—	—	2
Bottomfish					
Longline 2/	23	3	1	—	27
Otter Trawl	3	22	49	—	73
Double Otter Trawl	—	•	—	—	•
Beam Trawl	—	—	•	—	•
Pots	—	—	—	—	—
Power Troll/Jigs	1	1	—	—	2
Hand Troll	•	—	—	—	•
Sablefish/Black Cod					
Longline	59	3	—	—	62
Pots	1	—	—	—	1
Herring					
Purse Seine	44	52	71	—	167
Roe Kelp	—	12	—	2	14
Set/Drift Gillnet 3/	19	30	64	64	177
Miscellaneous 4/					
	—	—	—	—	7
Total	2220	2744	2385	930	8285

See footnote, page 8.

- 1/ Licensed and unlicensed longline gear categorized by vessel weight: Licensed = 5 net tons or more; Unlicensed = less than 5 net tons.
- 2/ Longline gear net differentiated for bottomfish.
- 3/ Set and drift gillnet gear combined for herring.
- 4/ Contains gear and specie combinations not elsewhere classified. A value of 1 was assigned to each unduplicated landing.

- Average annual employment is less than .5.