

# The Southeastern Alaska Herring Fishery

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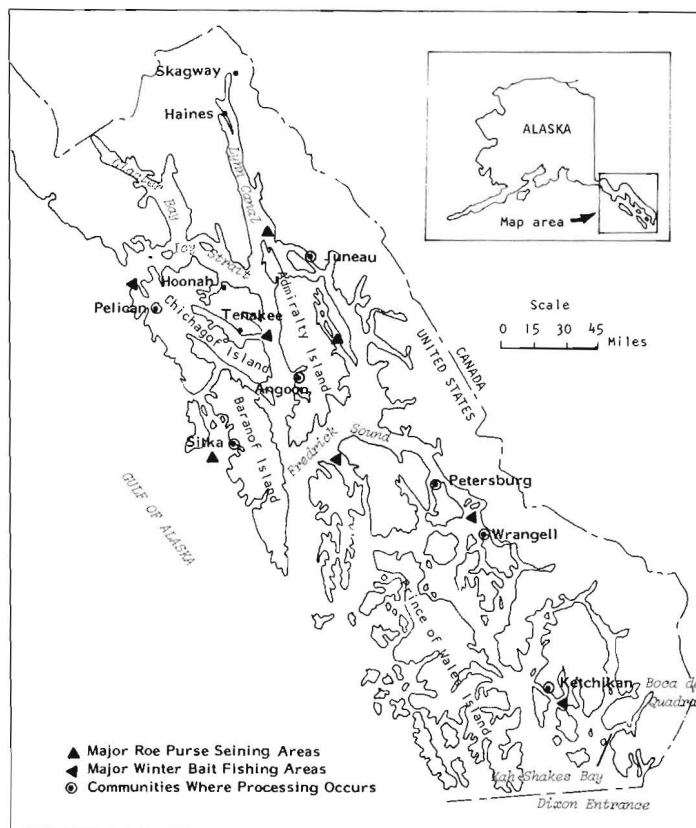


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Many southeastern Alaska salmon fishermen were in trouble in 1975. Because they were plagued with low salmon runs and increased operating costs, some fishermen actively sought participation in additional fisheries.

Diversification in a winter herring fishery for food and bait products and spring herring fishery for sac roe helped some southeastern Alaska salmon purse seiners out of a severe financial crunch. Today there is increasing evidence that the further development of a spring and winter herring fishery could provide an economic boost to this depressed industry.

Assuming a constant demand for herring products and a sustained availability of the resource, there is growth potential for the herring industry in southeast Alaska. Dependent upon the location of the processing plant, presently about 6-14 percent<sup>1</sup> of all southeast Alaska processing labor is devoted to herring production. The total employment during the peak of the herring roe fishery totals about 188 in processing

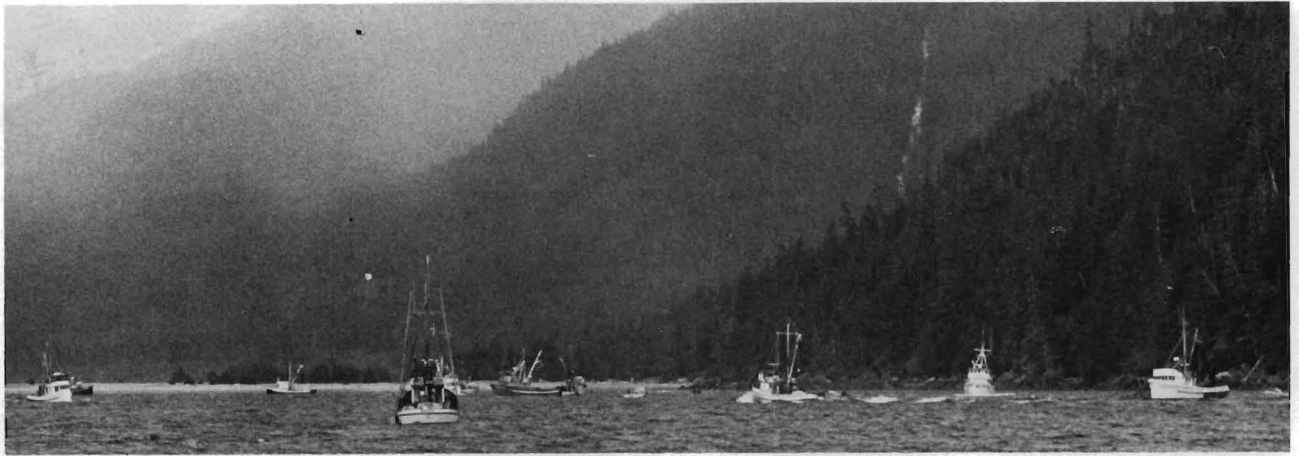


Major herring fishing areas in southeastern Alaska.

Purse seiners "setting" near Juneau, Alaska.



<sup>1</sup>Estimated in man-days. Actually, during the months of May, October, and November, well over one-half of the processing labor force is involved in processing herring. Rogers, G. A Study of the Socio-Economic Impact of Changes in the Harvesting Labor Force in the Alaska Salmon Fishery. University of Alaska, NMFS Contract 1-360-079. 6 February 1973.



Some of the activities involved in a herring roe fishery about 25 miles north of Juneau in April 1975 are shown here.

In scouting for herring (top), sonar fish finding gear is being used to locate schools. Herring is caught (middle). Three boats have made their sets and are bringing part of their nets aboard in preparation for brailing.

A "Japanese brailer" is used (right) to load the catch into the tender. Single hauls of over 200 tons worth \$35,000 have been reported.



and 150 to 180 individuals in fishing and tendering. The winter herring fishery employs approximately 136 in processing and 56 in fishing and tendering. The present industry contributes an estimated monetary benefit of over \$2 million annually to the economy of southeast Alaska.

Herring fishing trip costs are not excessively high. Roe herring fishing expenses, excluding crew shares, average \$700-\$1,000 per boat. Over 90 percent of the spring roe herring purse seine fleet at least recovered their operating costs. The fixed cost of mortgage payment continues irre-

spective of the boat's fishing activity and spring herring fishing offers an opportunity to recover some of this fixed investment. The costs of investment in herring fishing gear may not be covered for any given season and the forfeited opportunity to work in other occupations (opportunity cost) should



Extracting herring roe.

Herring roe containers are topped off with salt before being sealed for export to Japan.

be considered. However, if the vessel's crew makes a successful set while fishing for roe herring there can be high net returns to the operator after operating and labor costs are subtracted.

The estimated average costs and returns of southeastern purse seiners in both salmon and winter herring fishing are illustrated in Table 1. A winter herring seine operator can more than cover his fixed and capital costs, estimated at \$12,000 to \$15,000. Earnings returned in the winter herring seine fishery averaged about \$24,000 per vessel in 1974-75.

Probably more than 50 percent of the 371 southeastern Alaska purse seine vessels are valued in excess of \$125,000 each. Some of the newer vessels in this fleet are valued at more than \$200,000. Several of the 30 purse seine operators that fish for herring own the newest and best equipped boats in the entire fleet. The Alaska Commercial Fisheries Entry Commission determined that approximately 46 percent of this fleet's gross earnings were made in fisheries other than salmon fisheries<sup>2</sup>.

<sup>2</sup>Alaska Commercial Fisheries Entry Commission. Costs and earnings of Alaskan fishing vessels—an economic survey. 10 September 1974.

The purse seiners' estimated average gross revenue in 1973 was \$80,000 for all fishing activity. Fifty-four percent of this can be attributed to salmon fishing. Receipts from herring fishing have accounted for the remainder of the annual gross receipts from fishing for at least 10 percent of the southeastern Alaska resident purse seiners, helping some southeastern seiners out of a severe financial crunch in years when fishing costs have greatly escalated. Also, southeastern pink, chum, and coho runs suffered record low returns in southeast Alaska in 1975.

To diversify into herring fishing, fishermen in southeast Alaska can outfit their salmon purse seine boats with a herring seine for approximately \$20,000-\$25,000 and electronic "fish finding" gear for \$7,500-\$15,000.

Processors favor an immediate expansion in the spring herring roe fishery because this fishery has proven to be highly profitable and expansion requires little increase in facilities and investments. Estimated in man-days, during the months of May, October, and November well over half of the processing labor force is involved in processing herring. It was apparent from inter-

views with processing plant managers that almost all of the plants in southeast Alaska have processing expansion capability for both spring sac roe and winter herring processing.

### HERRING ROE PROCESSING

Southeastern Alaska processors most certainly view the spring roe fishery as a necessary segment of their gross sales. In fact, this fishery was a needed "shot in the arm" for some southeast Alaska processors who, in 1974-75, were suffering from one of the most depressed worldwide seafood markets in years.

Since the final destination for the product is Japan, the processing activity begins on the grounds where Japanese technicians examine samples of herring to determine the stage of ripeness, a vital factor that determines both the processing efficiency and roe quality—the herring carcass must yield from 12 to 20 percent roe by weight. Roe yields are dependent upon the female-male sex ratio, age, race, and roe maturity. When the technicians find that the herring have reached the appropriate degree of roe maturity, which changes just prior to spawning, the season is opened.

**Table 1.—Estimated costs and earnings of south-east Alaska salmon purse seining and winter herring fishing<sup>1</sup>.**

	Salmon	Herring
<b>Vessel Characteristics</b>		
Age	35	35
Keel Length	47	47
Engine horse power	202	202
Diesel (%)	96	96
Outboard (%)	0	0
G. inboard (%)	4	4
<b>Electronics</b>		
Radar (%)	76	76
Loran (%)	20	20
Auto pilot (%)	36	36
Est. mkt. value of vessel	75,780	75,780
Est. mkt. value of gear	15,432	23,000
Vessels insured (%)	96	96
Number of crew (incl. skipper)	6	6
<b>Operating costs</b>		
Fuel	1,147	1,381
Food, clothes	1,002	1,206
Bait	0	0
Ice	0	0
Total	2,149	2,587
<b>Fixed costs</b>		
Vessel repairs	2,408	2,051
Gear repairs, losses	2,313	1,970
Insurance	1,041	887
Moorage	74	63
Utilities	14	12
Administrative	208	177
Freight-transp.	402	342
Other	412	359
Total	6,872	5,861
<b>Capital Costs</b>		
Depreciation	1,258	1,072
10% interest charge on all investments	4,955	4,221
Total	6,213	5,293
<b>Labor costs</b>		
Crew labor cost	18,966	15,886
<b>1973 average earnings</b>		
Plus: bonus payments at 19.6%	7,445	
Total earnings	45,504	32,421
<b>Less: operating costs</b>		
fixed costs	2,149	2,587
depreciation	6,872	5,861
depreciation	1,258	1,072
labor costs	18,966	15,886
Total costs	29,245	25,406
<b>Net return</b>		
Less interest charge on investment	16,259	7,015
Total	4,955	4,221
Return to operator	11,304	2,794

Source: Alaska Commercial Fisheries Entry Commission and the National Marine Fisheries Service.

During the fishing period, tender boats trail and load the herring from the seines. The herring are transported to the processor where they are loaded and cured for 3-4 days in bins containing a 10 percent brine solution. Some are frozen for future processing. Both the brining and freezing allow easier roe extraction after the product has been stored.

After curing, the roe is extracted from the carcass by hand squeezing. The roe is then placed in a 100 percent brine solution, drained, inspected, graded, and packed into cartons destined for the Japanese market. The carcasses are reduced into meal and oil<sup>3</sup>—herring meal is currently used as an animal feed additive and packaged into 100-pound bags. Spring herring yield about 20 percent meal by weight and 60+ percent protein.

Herring roe processing production is often dependent upon fishing skill and luck because there are instances of boats fishing for processing firms that unfortunately do not make successful sets. The herring roe processing activity in 1975 was clearly limited to fishing success and harvest levels, and not market demand for the products.

### SPRING SAC ROE FISHERY

Today, in terms of gross returns per season duration, the herring roe fishery is one of the most valuable in the world. In April 1975, during a one day opening in the Sitka district lasting a total of 1½ hours, over 1,500 tons of herring were landed, valued at over \$270,000 ex-vessel<sup>1</sup> and approximately \$675,000 after the roe was extracted.

The same fleet, comprised of 26 purse seine vessels valued at over \$3 million, were attracted to the Juneau area opening off Eagle Beach. This concentration of fishing effort focused on an allowable harvest of 550 tons of herring valued at \$99,000 in the net. The 2½-hour fishery also attracted 9 tender boats, valued at an additional \$1 million-plus, that would land and transport the herring to the processing plant where the revenue from the finished product would be in excess of \$275,000. The 1975 southeast Alaska roe fishery lasted 4 hours and grossed over \$365,000 for 26 vessel operators.

Most of the vessels that participated in the 1975 roe fishery landed herring. The seiners in the Sitka opening were, in varying degrees, successful while in Juneau, about half of the 26 vessels made successful sets.

<sup>3</sup>The reduction process only occurs at the Petersburg Fisheries Plant, Petersburg, and at the Seward Fisheries Plant, Seward, Alaska.

<sup>4</sup>After price adjustments are made by some processors, this value will increase.

The catch per boat in both openings ranged from less than 1 ton to over 200 tons. The average catch per boat for the season was just under 81 tons.

The herring roe fishery is extremely intensive. At times the fishing effort has been concentrated in an area no larger than 300 surface acres. In the 1975 season most fishermen did not have time to make more than two sets during any given opening. Alaska Department of Fish and Game personnel must work fast to monitor the fishing until the estimated allowable quota is reached, sometimes in less than 90 minutes.

The economic aspects of the spring roe herring fishery at first appear questionable, particularly inasmuch that this fishery is undergoing severe public criticism. Gear operators who participate in this fishery represent 8 percent of the 371 vessels in the southeastern Alaska salmon purse seine fleet. They will offer varied opinions about the roe fishery, opinions probably influenced greatly by their past successful participation.

Individual fisherman's returns in this fishery can be very high. During the 1975 opening in Sitka, a boat landed 200 tons of herring valued at approximately \$36,000 in a single haul. There were some boats that fished the Juneau opening that did not land any herring. This boom or bust characteristic of the herring roe fishery has led to many proposals designed to limit participation in the spring herring seine fishery. In past years such proposals have been adamantly rejected by some fishermen who prefer the competitive nature of the industry. However, a recent scheme designed to limit new entrants into this fishery has been wholeheartedly accepted by the existing purse seine operators.

During the 1975 spring herring sac roe season, 130 fishermen on 26 purse seine boats landed 2,148 tons of roe herring having an estimated average ex-vessel value of \$387,000. Six tender boats employing 19 tendermen delivered and unloaded the product to processors in five southeast Alaska communities. The final wholesale value of the roe product was in excess of \$1 million. Approximately 188 individuals processed this product for an average of 9 days (20 days for roe extraction), for a total period of 2,810 man-days. The total roe herring processing payroll was an estimated \$140,500.

## WINTER BAIT FISHERY

The winter herring fishery currently appears to be limited by the demand for bait herring, much of which is marketed in Seattle and sold to Alaska king crab fishing boat operators. Also, Alaska herring fillet marketing is undergoing development and has not yet reached full potential.

An additional limiting factor on the southeastern winter herring fishery is the lack of sophistication in herring stock assessment and prediction techniques. Processors find it difficult to make pre-season management and investment decisions based upon information derived from the existing assessment techniques.

The 1974-75 southeast Alaska winter herring fishery involved 12 boats and employed 60 individuals. Two tenders were also involved; 11,805,000 pounds of product were landed, valued at \$295,125 ex-vessel, and in excess of \$1 million for the wholesale value for all the finished products. The total southeast Alaska winter herring processing labor force was an estimated 136 individuals who worked a total of 6,229 man-days and earned wages totaling \$152,000.

In summary, it is apparent from the above income estimates for both fisheries that although the herring roe fishery is short in duration, it is extremely labor intensive in that processing labor earnings were not substantially less than income earned in the

winter herring fishery. The average vessel operator's earnings from the roe fishery were greater, \$14,580 compared to \$12,700 averaged in the winter bait fishery, although there were almost three times the number of boats participating in spring fishing. It should be noted that vessel operators in the winter herring fishery, in areas where the major production occurred, had average gross earnings of over \$25,000.

The conclusion should not be reached that the roe fishery is more valuable to the overall economy than the winter herring fishery in southeast Alaska because employment sustained over a long time period can result in more economic benefits than short-term intensive employment.

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