

ALASKA LEGISLATURE SPECIAL COMMITTEE / SUBJECT FILE 8672
1818 SCOMM 74: SEN. SPEC. COMM. ON DOMESTIC & INTL. FISH., 1991-92... 35

JSF

May 14, 1974

The Honorable William A. Egan
Governor
State of Alaska
Juneau, Alaska 99801

Re: CSHB 830 am S

Dear Governor Egan:

At your request, we have reviewed CSHB 830 am S.

This bill would authorize private ownership of salmon hatcheries by nonprofit corporations in order to assist in the rehabilitation of the state's depleted salmon fishery. The Commissioner of Fish and Game would be authorized to issue permits for operation of salmon hatcheries subject to such conditions as he deems appropriate. Hearings would be held prior to the granting of any permit. Permit holders would have to meet certain requirements in the operation of salmon hatcheries. If the Commissioner finds that a permit holder is violating such requirements or is otherwise conducting an operation not in the best interests of the public, he would be authorized to alter, suspend, or revoke the permit. Salmon produced by the hatcheries would be available to the public for common use while in open waters. Certain other specifications are made with respect to sale of fish or fish eggs by hatchery operators.

There is a possible problem with this bill stemming from proposed Section 16.10.450, providing that funds which exceed operating costs shall be used by hatchery operators for "fisheries research, salmon rehabilitation projects, and other fisheries activities". This language is sufficiently broad that it suggests that hatchery operators could lawfully engage in activities which are properly within the purview of the Department of Fish and Game. We do not consider this to be a serious problem, however, since the Commissioner is authorized to control the activities of hatchery operators generally through the permit process, and would thus be in a position to prevent any conflicts or overlaps.

We also note that salmon hatcheries are fully consistent with Sections 4 and 5 of Article VIII of the Alaska Constitution, providing that natural resources are to be developed and utilized

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on a sustained yield basis and that measures may be taken to increase utilization and yield. However, with respect to the provision in Section 16.10.440 of the bill, stating that released hatchery fish are subject to common use until they return to a specific location designated by the Department for harvest by the hatchery operator, care must be taken to achieve consistency with Section 3 of Article VIII (requiring common use of natural resources wherever they occur in their common state) and Section 15 of Article VIII (providing that there shall be created no exclusive right of fishery). The discretion allowed the Department in this section appears to be comprehensive enough to permit constitutional application of this authority.

It is our opinion that this bill is constitutional and in proper form.

Sincerely,

Norman C. Gorsuch
Attorney General

NCG:fw:JH

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1973 - 1974

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Ray



IN SEARCH OF THE SIMPLE LIFE

by Roger Fitzgerald

The Pink Plague

I've been thinking about all those pinks coming back to Prince William Sound this year. It used to be (back in the mid-1970s) that there weren't so many of them. In fact fishermen and processors got together and created the Prince William Sound Aquaculture Corporation to enhance the runs. I even contributed a few pennies myself. The success of PSWAC is one of the great stories of modern aquaculture.

Not only is Prince William Sound due to hit this year, but Kodiak and Southeast, which will be the first time all three came in at once. Usually it's boom here, bust there—but three booms at once is a lot of humpies. About 110 million, they're saying.

What with all these salmon coming back, you'd think everyone in Alaska

Department of Fish & Game doesn't want to forecast them, repudiating their predictions even as they make them—so no one will blame them for the plethora of pinks!

If fishermen don't catch pinks and processors don't process them—what will they do? Maybe they're expecting another oil spill. I don't know.

The problem is all that canned pink salmon (going back to 1985) still stacked up in the warehouses. Processors can't sell it fast enough to keep up with the harvests. The government (as I'm sure you've heard) may try to help them out by allowing foreign processors to ease the pain of all that salmon.

But surely we needn't bring the government into it. A more logical solution is to close the season every

address this excessive return of salmon to our waters. I've yet to hear them.

PSWAC, therefore, must be put under a moratorium not to produce any more salmon. In fact, they are. Not only are there "homeless" fishermen in Prince William Sound this year—fishermen without a market (about 60 boats, I hear)—but a homeless aquaculture corporation as well. Processors don't want to buy PSWAC's surplus pinks to keep them operating (to produce more damn salmon!). Fishermen are looking the other way because they don't want the competition. "It's real ugly up here right now," said a friend in Cordova.

Real "ugly" maybe—but nothing new. Here's part of a letter addressed to Governor Hammond by Rodger Painter of the United Fishermen of Alaska in 1981. (Italics are mine.)

Dear Governor Hammond:

"The news that the 1982 salmon season may produce the largest harvest in history has not been greeted with the enthusiasm one might expect from the fishing industry. Indeed, the Alaska Department of Fish and Game's pre-season forecast calling for the third consecutive catch topping 100 million salmon has caused more alarm than celebration.

"Processors are sitting on huge packs of canned salmon and it appears unlikely markets will improve significantly in the near future. The situation spells big trouble for the fishing industry, since roughly two-thirds of the 1982 salmon pack is expected to be pinks and all but a tiny fraction of that pack is canned.

"Most fishermen don't think the state's seafood processors have reacted yet to the unmistakable signs that there are going to be a lot of salmon available in Alaska over the long term... and there have been no efforts to forge major new markets in the U.S. . . . Massive quantities of fish were dumped four years ago in Southeast.

"The UFA thinks it is in the best interests of the State of Alaska to attempt to fully utilize our great salmon resources. The State of Alaska should play a lead role in deciding how Alaska's salmon resources are utilized. If the state chooses to do nothing, the same companies who have been making those decisions since early Territorial Days again will be calling the shots."
—November 5, 1981

One thing you'd expect to come out of all of this is a lower price for a can of pink salmon. If you don't develop new markets or new products, at least you can reduce the price to move the product. Most industries, I believe, do this when they can't sell something after a year or two. And I was encouraged to read in the *Homer*

News (March 14) that the Alaska Seafood Marketing Institute was "pushing canned salmon hard" and (according to marketing director Jerry Skene) the price of a one-pound can that cost \$3.29 in 1980 are now selling for \$1.70, which should pick up consumers who had turned to cheaper sources of protein.

For some reason, though, I can't find any of this bargain pink salmon in Seattle, although I admit my research has been limited to a handful of markets. The average price I found for a 7-1/2 oz. can of pink salmon was over \$2. At Ballard Market, for example, it was \$2.42 for a 7-1/2 oz. can of Bumble Bee Pink Salmon; you can buy the same size can of Chunk White Albacore for \$1.76. At QFC, it was \$2.44 a can, at the market at Fishermen's Terminal, \$2.99—and so on. Where were the \$1.70 cans? The cheapest pink salmon I found was at Safeway, where 7-1/2 oz. cans were on sale for \$1.99 (against albacore for \$1.49 and Chunk Light Tuna for 99 cents). I bought a can of Bumble Bee Pink Salmon and brought it back to my office for lunch.

Before opening the can, I asked Rick Lauber, vice president of the Pacific Seafood Processors Association, and reported my price findings. He told me I was mistaken: "that canned pinks were a bargain, and I wasn't shopping in the right places. He also pointed out that the prices at the supermarket shelves were not necessarily a reflection of what processors were selling it for. (True, it's possible that supermarkets were making a killing on it.)

My curiosity was piqued as to why pink salmon was so expensive compared to a Cadillac product like Chunk White Albacore Tuna. So I called up the Western Fishboat Owners' Association in California, and asked them what they were getting for a pound of albacore tuna. The price had just dropped to 75 cents, they told me (FOB Samoa). I asked for the recovery rate: 55 percent they said (the same as pink salmon). I still couldn't figure out why it was cheaper. Was it because fishermen got paid two-and-a-half times more for it than pink salmon? I'll leave it to the mathematicians to figure out.

This left only one thing to do: Eat the can of pink salmon. I opened it up and peered into the can. Not a pretty sight, to tell you the truth: it had bones and skin in it and dissolved as much as I probed it with my plastic fork. I had forgotten how bad the product really was. (I say this honestly, with all due respect.) It hasn't changed in 50 years. The people who used to eat it are all old dead. I think it's time to try something different with pink salmon. Maybe dye the cans a different color—or put dolphin-safe labels on them. Anything new would be welcome. □



Worker contemplates one of many pen loads of pinks harvested at the Armin Koernig hatchery.

would be dancing a jig. Down here in Washington they get excited if even one salmon returns. I refer to the one sockeye that made it back to the Snake River last year.

But in Alaska 110 million returning humpies is not a happy occasion; in fact (from what I read in the newspapers), the industry would just as soon the salmon stayed at sea. Fish processors don't want to process them, fishermen don't want to catch them (at 20 cents a pound), the Alaska

other year—to make it easier for processors. That way they'd have two years to market the pack instead of one. Or every three years—whatever is comfortable.

In the meantime, we need to enforce stricter measures against salmon enhancement—the root of Alaska's marketing problems. Any reasonable person would agree that if we reduced production by 50 percent, our marketing problems would be cut in half. If there are better ways to

For Grey.

ASMI FACT SHEET

THE SEAFOOD INDUSTRY AND ALASKA

-- About 5.5 billion pounds of fish are harvested annually off Alaska's 34,000 miles of shoreline. This includes the new offshore groundfish fishery. (NMFS)

-- There were more than 550 seafood processors in Alaska in 1989. (DEC)

-- Alaska leads all states in volume of seafood harvested with 2.6 billion pounds in 1988 (not counting the large offshore pollock and other groundfish fishery)--far surpassing Louisiana, a distant second with 1.4 billion pounds harvested. (NMFS)

-- The ex-vessel value of Alaska's seafood harvest (the price paid to fishermen by the processors), exclusive of the offshore groundfish fishery, was \$1.3 billion in 1988--more than four times the value of runner-up Louisiana with \$317 million. (NMFS)

-- Of the top ten seafood ports in 1988, six were Alaskan (#1 Kodiak, #3 Dutch Harbor/Unalaska, #4 Kenai, #6 Petersburg, #8 Cordova, and #10 Ketchikan). (NMFS)

-- Alaska produces 46% of all U.S. seafood, 24% of all North and Central America seafood, and 2% of the world production of seafood. (1989 McDowell study)

-- If Alaska were an independent nation, the state would rank in the top five in the world if seafood production were measured according to value of the harvest. Alaska would rank 11th in the world in seafood production--ahead of fishing nations like Norway, Iceland, Canada and Denmark. (1989 McDowell study)

-- Alaska's traditional commercial finfish fisheries (salmon, halibut, herring) accounted for 12% of the U.S. seafood production and 25% of the value of U.S. production in 1987. (1989 McDowell study)

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-- Alaska's offshore groundfish fishery accounted for 34% of the nation's volume but just 7% of the value of U.S. production in 1987. (1989 McDowell study)

-- Alaska's commercial fishermen caught 85% of the U.S. production of Pacific salmon in 1988. (U.S. Dept. of Commerce)

SEAFOOD AND ALASKA JOBS

-- Alaska's seafood industry directly accounted for 16.4% of the state's economic base and payroll in 1987. (1989 McDowell study)

-- The seafood payroll in Alaska was more than \$1 billion in 1988--more than oil and gas, tourism, timber products and mining combined. (1989 McDowell methodology, NMFS information)

-- Alaska's seafood industry in 1987 provided the equivalent of 19,232 year around jobs in the state (not counting the offshore groundfish fishery). That is more than oil and gas and tourism combined. (1989 McDowell study)

-- Another 13,800-18,950 induced and indirect jobs are created because of the Alaska seafood industry, not counting the offshore groundfish fishery. Induced jobs include employees in grocery stores, clothing stores, gas stations, banks, doctors' offices. Indirect jobs include employees of shipyards, marine hardware stores, marine fuel sales, and marine equipment and repair services. (1989 McDowell study)

-- Another 1,100 Alaskans are employed in state and federal agencies, regional aquaculture associations or nonprofits directly connected to the seafood industry. These additional non-private sector jobs have a payroll of \$40 million and operating budgets of \$82 million. (1989 McDowell study)

-- More than 30% of Alaska's 1987 employment base of 117,000 jobs were dependent upon the seafood industry when direct employment, indirect and induced employment and government and nonprofit employment are added together. (1989 McDowell study methodology and figures)

-- The average monthly wage for seafood industry employees is \$2,582 per month compared to the Alaska basic industry average of \$2,578. (1989 McDowell study)

-- The average monthly wage in the tourism industry is \$1,354 per month. (1989 McDowell study)

-- The average monthly wage in the oil and gas extraction industry is \$5,273 per month. (1989 McDowell study)

- 77.6% of all permits
are held by Alaska residents

-- In 1987, Alaska residents held 80% of all entry permits, comprised 66% of the harvesting crews and held 47% of the processing jobs. (1989 McDowell study)

-- In the salmon fleet, there are about 12,000 limited entry salmon permits and 25,000 skippers and crew. The halibut fishery has 3,200 vessels and 10,200 skippers and crew. There are 500 seiners and 1,400 gillnetters with skippers and crew totaling about 7,000 involved in the herring fishery. About 1,200 vessels harvest shellfish with 3,800 skippers and crew. In 1987, there were 42 factory trawlers with 4,000 workers and about 100 trawlers and 1,000 workers harvesting groundfish off Alaska. (1989 McDowell study)

-- Alaska's basic industries--defined as employment created by demand from outside the state--include, in descending order: national defense, 27% of basic employment; seafood, 16.4%; tourism, 8.4%; federal government exclusive of national defense, 8.2%; oil and gas, 7.1%; forest products, 2.6%; and mining, 0.5%. (1989 McDowell study)

-- Local government employment accounts for 16.3% of the employment in Alaska and state government accounts for 13.4%. (1989 McDowell study)

SEAFOOD AND THE ALASKA ECONOMY

-- Total investment by the seafood industry in Alaska is about \$4 billion (half in vessels, one-quarter in permits and one-quarter in processing plants and equipment). (1989 McDowell study)

-- Processors spend about \$90 million per year in Alaska to support their activity. (1989 McDowell study)

-- Harvesters spend about \$190 million per year in Alaska to support their activity. (1989 McDowell study)

-- The seafood industry's economic benefits spill across all parts of the state--rural and urban.

-- The seafood industry is the largest private employer in Southeast, Kodiak, Bristol Bay, the Aleutians, and Northwest Alaska. (1989 McDowell study)

-- Well over half of all private sector employment in Kodiak, the Aleutians and Bristol Bay is provided by the seafood industry. (1989 McDowell study)

-- Even though no significant commercial fisheries exist in interior and northern Alaska, 242 residents of those regions hold entry permits for other areas of Alaska and earned nearly \$4 million in 1987. (1989 McDowell study)

-- In Fairbanks, there are 101 entry permit holders who earned \$2.1 million in 1987. (1989 McDowell study)

-- In Anchorage, there are 873 permit holders who, in 1987, earned nearly \$31 million commercial fishing. (1989 McDowell study)

-- Anchorage fishermen in 1986 ranked third as a group (behind Kodiak and Dillingham fishermen) in gross earnings. Anchorage fishermen as a group earned more than Petersburg fishermen and were well ahead of the fishermen in Cordova, Homer, Ketchikan and other coastal communities. (1989 McDowell study)

-- Prince William Sound limited entry permits were selling for an average \$244,500 early in 1990 while a seat on the American Stock Exchange cost \$160,000. (CFEC and AMEX)

ALASKA SEAFOOD AND STATE TAXES

-- The severance tax, property tax and special income tax on petroleum and the raw fish tax are the primary revenue taxes in Alaska. (ISER)

-- In FY 89, the seafood industry paid nearly \$27 million in raw fish taxes. (Dept. of Revenue)

-- Fish taxes on the seafood industry in Alaska are consistent with the taxes on the seafood industry in other states--about 5% of value added. (ISER)

-- Mining paid less than 1% of its value added in Alaska taxes in 1987 compared with an average of 14% in other states. Agriculture and forestry tax receipts in Alaska are negligible, much less than 1% of its value added compared with a national average of about 4%. (ISER)

-- The \$27 million in raw fish taxes is many times the amount of state revenue generated by mining, timber harvesting and agriculture. If the timber harvesting, agriculture and mining industries were taxed at levels comparable to the national average, an additional \$10 million would be collected in taxes by Alaska. (ISER)

-- In addition to the \$27 million the seafood industry paid in fish taxes, the industry was also assessed by the state \$9.5 million for salmon enhancement (aquaculture) in FY 89 and \$3.3 million for Alaska Seafood Marketing Institute generic promotion campaigns. (Dept. of Revenue)

-- The seafood industry also paid a substantial portion of the \$7.2 million that was collected in FY 89 through the marine fuel tax. (Dept. of Revenue)

-- In addition to the direct tax revenues through the raw fish

tax and the marine fuel tax, the seafood industry provides millions more in local taxes (sales taxes and property taxes). This is a very important source of revenue for many cities and communities. (1989 McDowell study)

ALASKA SEAFOOD EXPORTS

-- One third of all U.S. seafood exports are exported directly from Alaska. This does not include seafood shipped from Alaska to Washington state before shipment overseas because Customs does not track origination. (1989 McDowell study)

-- Over \$550 million worth of seafood was shipped directly from Alaska to foreign nations in 1987. (1989 McDowell study and U.S. Dept. of Commerce)

-- The value of direct seafood exports from Alaska in 1987 (\$550 million) was double the value of direct seafood exports from Alaska in 1984. The value of direct seafood exports in 1989 (\$1 billion) was nearly double the value of direct seafood exports in 1987. (1989 McDowell study, U.S. Dept. of Commerce, and Center for International Business)

-- Japan accounts for over 95% of all exports from Alaska (\$999 million in 1989). (Center for International Business)

-- The major overseas fresh-frozen salmon markets in 1987 were Japan (\$457 million), France (\$57 million), Canada (\$38 million) and the United Kingdom (\$15 million). (1989 McDowell study and U.S. Dept. of Commerce)

-- The primary market for Alaska's herring products is Japan. In 1987, 60.2 million pounds of herring valued at \$41.2 million and 2.7 million pounds of herring roe valued at \$8.5 million were shipped to Japan. Korea, China and Canada took smaller amounts of Alaska herring. (1989 McDowell study and International Trade Administration)

-- Japan also was the principal export market for Alaska crab in 1987 taking 7.2 million pounds of king crab and 36.6 million pounds of snow crab in 1987. (1989 McDowell study and U.S. Dept. of Commerce)

THE ALASKA SEAFOOD INDUSTRY NOW

-- Groundfish harvesting off the coast of Alaska is the fastest growing U.S. fishery and ranks as the nation's largest in terms of volume (in 1978, the domestic pollock harvest was 9.2 million pounds, in 1988, the domestic pollock harvest was 1.3 billion pounds). (1989 McDowell study and NMFS)

-- Growth in the groundfish fishery primarily is the result of the Magnuson Act which "Americanized" the fishery by enabling Americans to first displace foreign catchers and then to replace foreign processors. (1989 McDowell study)

-- The McDowell Group believes the potential economic impact of the groundfish fishery on Alaska is limited at this time because of a lack of in-state organizational and support infrastructure. Inducements and incentives, the McDowell Group noted, could help establish an Alaska-based trawl fleet and on-shore processing for trawl catches. (1989 McDowell study)

-- Each factory trawler fishing pollock spends an estimated \$1 million per year in Alaska--45 percent of that is for fuel. (1989 McDowell study and Alaska Factory Trawlers Association)

-- There were 80 at-sea processors (including 26 longliner/processors, 4 pot/processors and 50 factory trawlers) and eight mother ships in 1989. In 1990, it is anticipated there will be 62 factory trawlers, 30 longliner/processors, 6 pot/processors and 15 mother ships involved in the offshore groundfish fishery. (NMFS)

-- The volume of groundfish processed in Alaska increased dramatically from 1986 to 1987 (44.7 million net pounds worth \$49 million in 1986 to 150.6 million net pounds valued at \$146.5 million in 1987). Pollock production, mostly in the form of surimi, jumped from 15.4 million net pounds in 1986 to 117.4 million net pounds in 1987. (1989 McDowell study)

-- The herring fishery dates back to the 1890s in Alaska. It became a highly profitable industry in the 1970s when a strong market for herring roe was developed in Japan. The volume of herring in Alaska increased from 20 million pounds in 1976 to 113.8 million pounds (valued at \$60 million) in 1988. (1989 McDowell study and NMFS)

-- The total Pacific halibut harvest climbed to 75 million pounds in 1962 but declined in the mid-70s to a point where the harvests never exceeded 30 million pounds. More than 81 million pounds were harvested in 1988. (1989 McDowell study and U.S. Dept. of Commerce)

-- In the 1970s, ADF&G drastically reduced salmon harvests to restore salmon production to historical highs. Beginning in 1980, salmon harvests began exceeding 100 million fish (up from a low of 22 million fish in 1974). (1989 McDowell study)

-- Canned salmon has declined from 70% of the salmon pack ten years ago to less than 40% in recent years. (1989 McDowell study)

THE ALASKA SEAFOOD INDUSTRY AND THE FUTURE

-- U.S. consumers spent an estimated \$28.8 billion for fish

products in 1988 (\$19.7 billion of that was spent in restaurants, on caterers and on take-outs indicating potential growth in the retail markets). (NMFS)

-- For the first 70 years of this century, seafood consumption in the U.S. hovered around 10 pounds per person per year. Since 1972, seafood consumption in the U.S. has grown to 15 pounds per person per year. (1989 McDowell study)

-- The world consumption of seafood is 26.7 pounds per person per year and is expected to rise to 34 pounds per person per year by the turn of the century.

HOWEVER

-- Alaska has been the world's salmon supplier but some now estimate production of pen-reared salmon will outstrip production of Alaska wild salmon by the year 2000. (1989 McDowell study)

-- A marketplace confrontation is building between fresh and frozen wild Alaska salmon and pen-reared salmon from Scandinavia, Chile, British Columbia, Washington state and other jurisdictions. (1989 McDowell study)

-- Pen-reared salmon have consistent quality, are reasonably priced, are available year-around and the product is closer to the marketplace. (McDowell study)

-- The manager of seafood marketing for a chainstore with 160 outlets in Texas was recently quoted as saying "I'm very sold on aquaculture product. For consistency in price, consistency in quality, consistency in availability, nothing touches the fresh product out of the Northeast. . .I don't even consider Alaska product anymore." (Alaska Fishermen's Journal, March, 1990)

-- "It's so easy for us to order farm-raised product. Why get all these headaches? Farmed product is always there--you're not waiting whether you want 500 or 5,000 pounds." (seafood buyer for a 148-store Washington, D.C., chain that carries fresh salmon, mostly from Scotland, as quoted in the Alaska Fishermen's Journal, March, 1990)

-- Salmon accounts for over half of the value of Alaska's fisheries (\$745 million ex-vessel value in 1988) and an even higher percentage of Alaska's fisheries employment. Market erosion due to competition from farmed salmon will hurt the Alaska fishing industry. (1989 McDowell study)

-- Japanese fish imports will remain at current levels. (Yoshihide Uchimura, president of Japanese Fisheries Association as quoted in Quick Frozen Foods International, January, 1990)

-- Traditional cooking patterns in Japan--such as grilling fish--are becoming less popular as more Japanese women pursue careers.

Demand in Japan is growing for processed foods (processed products now account for 60% of the Japanese fish and seafood markets). (Quick Frozen Foods International, January, 1990)

-- Norway and Denmark had trouble selling pen-reared salmon in Japan because the flesh wasn't pink enough so they developed a strain with pinker flesh. (Quick Frozen Foods International, January, 1990)

ALASKA SEAFOOD MARKETING

-- The Alaska Seafood Marketing Institute is a joint state-industry marketing agency formed in 1981 to promote Alaska seafood in the marketplace and encourage quality through proper handling of Alaska seafood. The promotion is generic and not brand-oriented. (ASMI)

-- The budget for ASMI in FY 89 was \$10.6 million (\$2.1 million in state funds, \$3.3 million in industry funds and \$5.2 million in federal export funds). (ASMI)

-- That portion of ASMI's FY 89 budget devoted to "overhead" and not marketing is less than 8%.

-- Seafood industry contributions to ASMI are the result of an assessment. Processors who buy more than \$50,000 worth of seafood product each year are taxed at a rate of .03% on the ex vessel value of the seafood they buy. The assessment is collected by the state based on fish ticket data.

-- In FY 82, the state paid 90% of ASMI's budget.

-- In FY 89, the state paid 21% of ASMI's budget.

-- For every \$1.00 the state is paying in FY 90 to market Alaska seafood, the Alaska seafood industry contributed \$1.55. (Dept. of Commerce operating budget)

-- For every \$1.00 the state is paying to market Alaska as a tourist destination in FY 90, the Alaska tourism industry pays 15 cents. (Dept. of Commerce operating budget)

-- In addition to the money the seafood industry commits to marketing 'generic' Alaska seafood through ASMI, the seafood industry, according to a recent survey, spent \$6 million in 1987 promoting their branded seafood products. (1989 McDowell study)

-- In addition to the \$3.3 million the seafood industry donated to ASMI in FY 89, industry also contributed an additional \$1.7 million in in-kind services, including time donated to serving on ASMI advisory committees.

-- In 1988, ASMI mailed 1,236,000 pieces of information.

-- In May, 1989, ASMI mailed in 207,980 pieces of promotional material as a result of inquiries to the agency (these include recipes, cookbooks, quality materials, posters, retail promotion materials, etc.).

-- Examples of ASMI product promotions include: "The All-American (Halibut) Steak--Hottest Steak on the Range"; "All-American Cod"; "Alaska Pollock: Lite, Economical, No Bones About It"; "Think Pink"; "Soup Up Your Sales With Alaska Canned Salmon" (joint promotion with Campbell's Soup Co.); "Go for the Big Red Bonus"; "Cooking Fish Is Easy"; "Legs You Win, Tails You Lose" (crab legs are tastier and less expensive than lobster tails); "Put the Squeeze on the King" (joint promotion with Sunkist Lemons); "Fresher Frozen"; and "Marine Cowboy".



It's been 20 years since the Alaska legislature approved construction of the state's first salmon hatcheries. In the opinion of Brian Allee, head of the Alaska Division of Fisheries Research, Enhancement, and Development (FRED), "there's probably no better success story anywhere."

Hatchery-raised fish have constituted up to 20% of the statewide salmon catch in recent years, and as much as 90% in some areas. Hatcheries have been called the state's answer to salmon farming, to lost spawning habitat and to severe autumn flooding. Hatchery fish are also used to settle allocation disputes, populate barren lakes, and rebuild fished-out streams. If Allee has his way, the future will see even more enhancement—not only of salmon, but black cod, herring, and king crab.

Not everyone shares Allee's enthusiasm, however. Bristol Bay permit holders recently shot down a proposed enhancement tax, and many Southeastern fishermen want to quit paying theirs. Alaska's declining budget threatens to close a number of hatcheries, but local fishermen have been reluctant to take over operations because the facilities aren't making money. And some scientists are voicing fears that hatchery programs may, in the long run, be detrimental to the very industry they are supposed to protect.

Alaska began its hatchery programs in the early 1970s, just as natural runs hit their lowest levels in more than 50 years. "I call that the 'Valley of

spring. Virtually anybody could start a so-called Mom-and-Pop hatchery if they could prove their viability beforehand; and the communities of Valdez in Prince William Sound and Douglas in Southeast Alaska have jumped in with their own operations. In all, 35 hatcheries have been built, Allee said, including 19 by the state.

Ownership and management of these facilities is a hodgepodge these days. Budget cuts forced the FRED division to give the reins of some hatcheries to regional associations, while other regionals are doing the opposite—paying FRED to operate them. Kodiak actually gave a complete hatchery over to the state. But no matter who owns or operates them, the hatcheries all serve the same function.

"They're a kind of life insurance policy," Allee said, to ensure the supply of fish when natural runs go bust. They were meant to rebuild dwindling runs, start new ones, and to even out the cyclical peaks and valleys inherent in salmon populations. Their very success, however, has made hatcheries a tough sell these days, according to Allee. "Now we're in a boom cycle. 1990 was the second best return in history, and no one wants to hear about hatcheries."

Bristol Bay fishermen apparently didn't when they voted down a proposed 1% enhancement tax last year—even though hatcheries weren't part of the plan, said Paula Cullenberg, who was the Sea Grant Marine Advisory Program agent in Dillingham at the time.

GROWING FISH

THE FUTURE OF ALASKA'S HATCHERIES



Despair," Allee said. In 1974, for example, Prince William Sound seiners never got to fish and the statewide total was less than 22 million salmon (compared to 151 million in 1990).

Help was already on the way, though. The Alaska legislature in 1971 made it legal for the state to build fish hatcheries. A few years later it paved the way for fishermen to start their own, by creating regional aquaculture associations and collecting an enhancement tax of up to 3% of fishing settlements. So far, five areas have followed that route—Prince William Sound, Cook Inlet, Kodiak, and northern and southern Southeast. Chignik fishermen will vote this

"There was no organized opposition," she said, just a general feeling that enhancement was unnecessary. "Things are going pretty well out there—last year was the second best year ever. So why worry?" Some fishermen may have balked at the idea of yet another tax from any quarter, and organizers may not have done enough to educate the 2,600 permit holders as to the benefits of an enhancement program, she said.

But Cullenberg and other supporters saw it as a missed opportunity. The tax money would have been used for natural enhancement activities—everything from lake fertilization to blowing up beaver dams

ADFG circumvented a 30-foot waterfall in Cook Inlet by stocking Kirschner Lake above it with sockeye smolt.

to building fish passes—as well as research. Cullenberg said it would have been “a kind of insurance to permit holders that would keep the runs healthy... It seemed like a real good way for fishermen to insure a hand in the future, a stake in the control of where the management dollars are going.”

Southeast Alaska fishermen opted to have a hand in their fish returns when they voted in a 3% tax for enhancement back in 1979. But many now say that if the election were held tomorrow, the outcome might be different. The vote probably would break along gear types, with trollers likely to vote “yes,” while seiners and gillnetters leaned toward “no.”

While it's hard to argue with successful hatchery programs, there can be a negative side, too. In Alaska it's most evident in Southeast, where enhancement programs have been com-

plicated by geography, economics, biology and politics.

By state law, every hatchery must contribute to the common property fishery. The hatchery determines where to release the fish, but because virtually every salmon run in Alaska “belongs” to a certain gear type, either by tradition or state regulation, the question of where to release the fish also determines who will get them. And if one group of fishermen is paying tax to create fish in a hatchery, they won't be happy if they aren't catching any of them.

In Southeast, a permit holder can fish in any open district from north to south. But instead of creating one aquaculture association to serve their needs, fishermen in 1979 created two; one for the north, one for the south. Enhancement tax goes north or south depending on where the fish are sold.

Although state law also requires aquaculture associations to serve all the permit holders in its area, some hatchery runs have failed to materialize. Consequently, seiners are

relatively happy with the Northern Southeast Regional Aquaculture Association (NSRAA), but are disgusted with Southern Southeast (SSRAA). Gillnetters favor the south, not the north.

Seiners, in fact, are so angry about SSRAA that they want to explore the legal ramifications of pulling out, said Jim Bacon, president of Southeast Alaska Seinners. Bacon notes that seiners contribute a majority of the enhancement tax—55% according to the association—but from 1980 to 1989 the average return on their investment in SSRAA was only 1% per year. Over the same time period, the seiners' association estimates that Southeast gillnetters averaged 18% per year and trollers 9%.

“An increasing number of our members want [SSRAA] to start directing its energies to make things worthwhile for us,” Bacon said. “If we don't see that, we want to get the hell out.”

An aquaculture association gets its operating money in two ways: the



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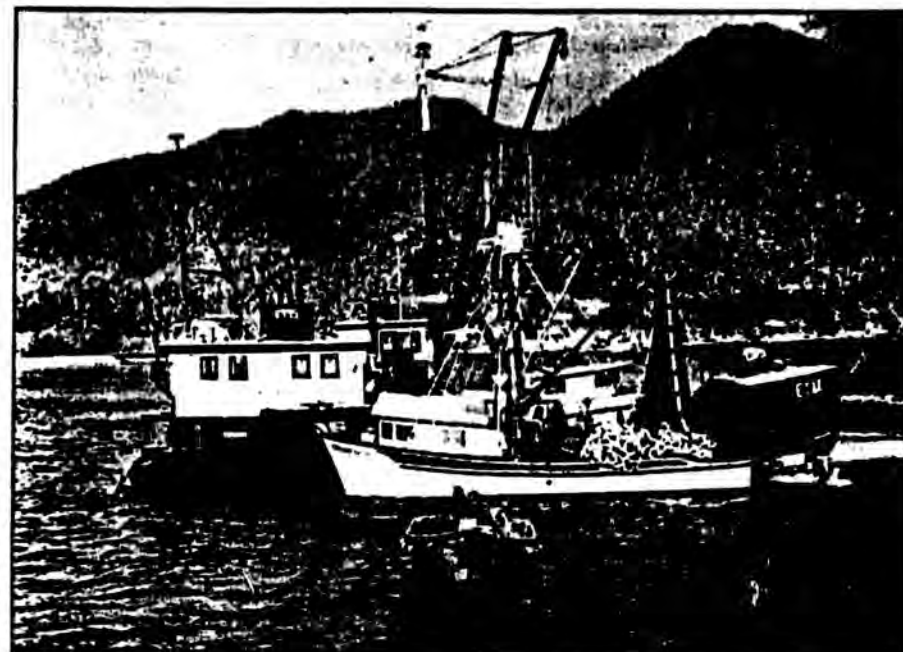
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enhancement tax, which is collected from fishermen's settlements by the canneries, turned over to the state and then returned to the association; and cost recovery, in which the hatchery catches and sells a percentage of the returning fish. Cost recovery is a sensitive issue at every hatchery. It is essential to raise money if the operation wants to produce more fish. Unfortunately, every fish that hatchery catches is one less available to fishermen, and the bigger the association's budget, the more fish it must catch to pay the bills.

And that's what sticks in the seiners' craw about SSRAA, Bacon said. The association has racked up \$10 million in construction debt, plus annual operations of \$2.5 million. But the only SSRAA fish available to seiners are at Neets Bay, and last year, every fish returning there went for cost recovery, leaving the seiners with nothing.

"It's like one of our board members



Seiners in southern Southeast Alaska have seen few hatchery fish for their dollars.

said: We have this pet alligator and we've kept feeding it, but now it wants to eat us," Bacon said. "We're just about in direct competition with them

[SSRAA]."

Seiners haven't benefited enough, said SSRAA general manager Don Amend, but it's not because the as-



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sociation hasn't tried. Poor survival rates in recent years have drastically reduced the association's contribution to the common property fishery, he said.

"The board recognizes the need to put new fish into the seiners' holds," Amend said, "and that's the direction we're going." But the first project aimed toward them, on Prince of Wales Island, won't see returns until 1994. And then the anticipated catch is just 300,000 chums. Though seiners are unhappy, Amend notes that drifters and trollers have benefited from SSRAA's work. Last year saw the best coho catches in years, and the future looks good as well.

The only enhancement program in Southeast that really benefits seiners, Bacon said, is the chum harvest at Hidden Falls Hatchery. This operation has been under the jurisdiction of NSRAA since 1988. Gillnet-

ters, on the other hand, are displeased with NSRAA, said Jim Becker, who holds one of the gillnet seats on the association's board. As with seiners' complaints of hatcheries in the southern district, economics and allocation are the sticky issues, according to Becker: gillnetters are paying too much in enhancement tax in the northern district and not getting enough back. Only a handful of programs are geared specifically toward them in the north, he said, whereas the southern association is doing a much better job. A few years ago drifters even talked about pulling out of NSRAA, but voted it down.

According to NSRAA general manager Pete Esquiro, "It's not that we've had a goal of not providing fish for gillnetters. We're doing everything we can to address those shortcomings. But working with fish, you can't do it overnight."

Gillnetters are also served by another hatchery in the north, one of the so-called Mom-and-Pop operations. Douglas Island Pink and Chum,

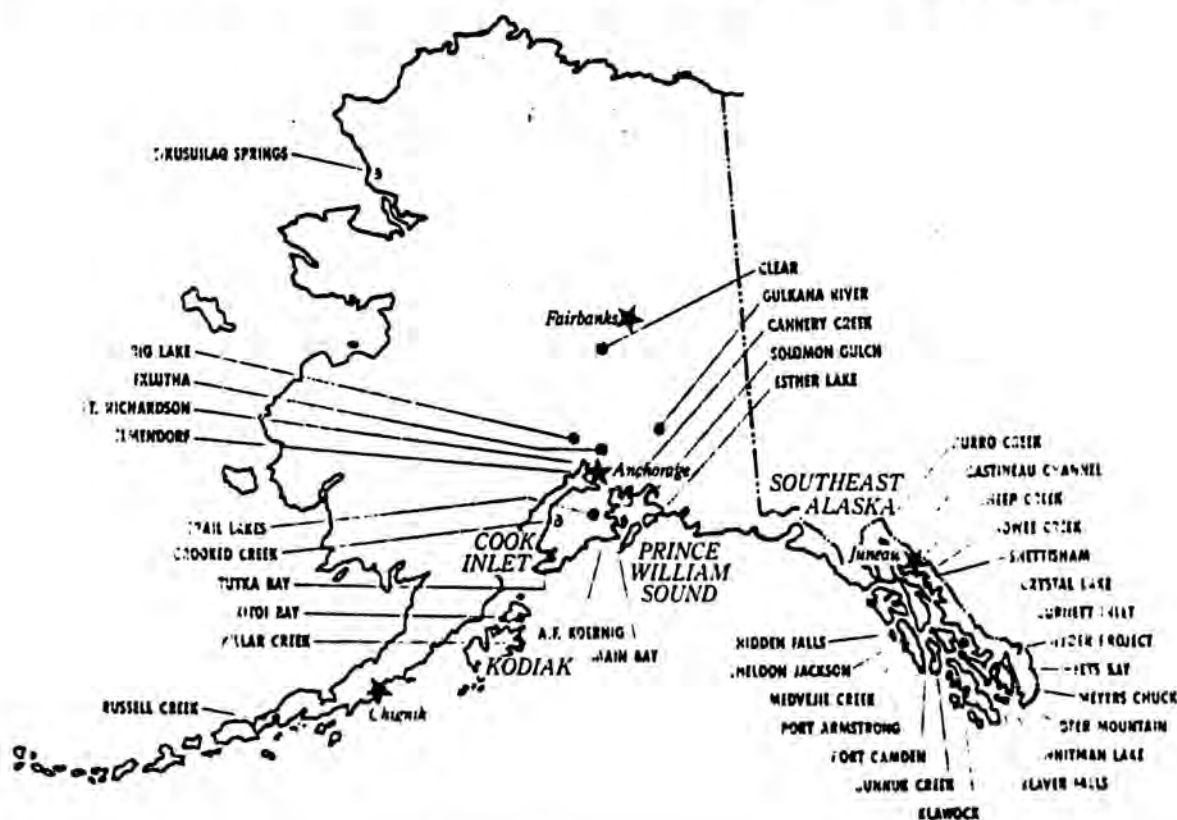
better known as DIPAC, works closely with NSRAA but is an independent facility, said director Ladd Macaulay.

It was started by a group of local fishermen who wanted to rebuild nearly-dead pink and chum runs in the Juneau area. Over the last 10 years, the tiny community-based operation has grown steadily, Macaulay said, creating fish for gillnetters, trollers and anglers. It now operates two hatcheries and is raising nearly 200 million chum, pink, coho, and chinook eggs and fry.

As DIPAC's returns have grown, however, so have demands for the fish. It's only natural, Macaulay said: "You see these fish and you want to catch them." That's fine, he said, to a point. DIPAC is bound by law to put 60% to 70% of its production into the common property fishery; the rest can be used for cost recovery. DIPAC relies solely on cost recovery to pay its bills.

But in 1988, no pinks returned to DIPAC's Gastineau Channel Hatchery. Macaulay thinks seiners caught them when Hawk Inlet shoreline on

STATE AND PRIVATE NONPROFIT HATCHERIES IN ALASKA



Admiralty Island opened briefly, targeting excess Taku River pinks. There was no way to identify those fish, though, so no one knows whether they were bound for DIPAC or not.

That interception created a furor, according to ADFG's regional commercial fisheries supervisor Scott Marshall. Five proposals to eliminate the seiners' Hawk Inlet fishery will come to the Board of Fisheries this winter. "It's a very, very contentious issue," he said.

DIPAC says shutting down Hawk Inlet will protect its returning fish, and therefore ensure cost recovery. The move would also benefit gillnetters and trollers, because of the complex migratory routes.

But seiners see it as another example of hatcheries not doing what they were meant to. "There's a fear that Fish and Game will start managing for the hatcheries, not the wild stocks," said Angoon seiner Dennis Eames. "I think that would be a bad precedent. Wild stocks should be the priority. If we hammer on hatchery stocks, so be it." Eames holds this opinion despite the fact that he sits on the NSRAA board of directors.

Allocation squabbles are not unique to Southeast. Prince William Sound fishermen were embroiled in a similar dispute several years ago and asked the Board of Fisheries to settle it. But the board turned to the local aquaculture corporation (PWSAC) and said, "You created the fish, you solve the problem."

It took time, money and lots of talk, according to corporation spokeswoman Heather McCarty; but the job is almost complete and everybody is pleased—so far.

PWSAC was the first regional association, formed by a group of Cordova seiners in 1974, McCarty said. "They got tired of being broke and said, 'Hey, we're going to make some fish.'" They turned an old cannery at Port San Juan into a hatchery, stocked it with 7 million pink eggs, and were in business. This year, PWSAC has 600 million eggs in three hatcheries, with plans to take over two state facilities in the near future.

The allocation plan says seiners and gillnetters should each get half the

value of PWSAC's enhancement fish. A production plan is being written that will ensure enough fish are created to fulfill the allocation quota.

But equally important is a new area-wide management plan that puts the allocation scheme into practical terms—it says who gets to fish when and where. It was written by the association, local fisheries groups and ADFG.

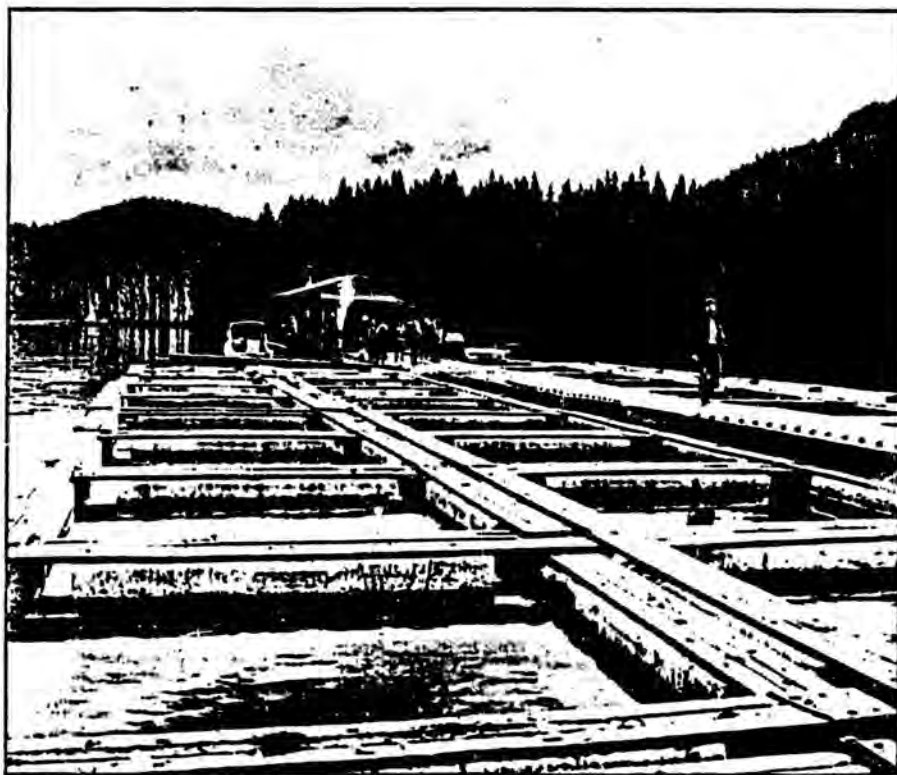
The whole process has been historic, McCarty said. "It's the first time the state and a private, non-profit association have worked so closely on allocation, production, and management," she said.

Southeast Alaska may be next in line for such a plan. NSRAA has been pushing for several years to develop a Southeast-wide allocation plan, said Pete Esquiro, and last fall SSRAA's board agreed to start talking about it. The Board of Fisheries could add fuel to the fire if the Hawk squabble between gillnetters and seiners turns ugly. Esquiro said the divisiveness over hatchery programs in Southeast might diminish if fishermen looked at enhancement results as a whole rather than North vs. South; as if there were one, not two, aquaculture associations

fishermen were paying into. "These production gaps we have probably become very narrow if we look at it Southeast-wide," he said.

The Kodiak Regional Aquaculture Association (KRAA) has worked around some of those allocation difficulties, said spokeswoman Norma Holt. The association has a pink hatchery on Kitoi Bay, which primarily benefits seiners, and its operations are funded solely through cost recovery, she said. Kodiak's other aquaculture operation, however, located on Pillar Creek, is a central incubation facility—fish are raised to the fry or smolt stage, then transported to a release site. Because the island's setnetters and beach seiners cannot move to the fish, KRAA is effectively moving these fish to them. And because all gear groups will benefit, everyone pays a 2% assessment to fund the program.

Technology will soon play a larger role in solving allocation disputes. Researchers have found an inexpensive way to mark large numbers of hatchery salmon, and to "read" those marks when the fish return as adults.



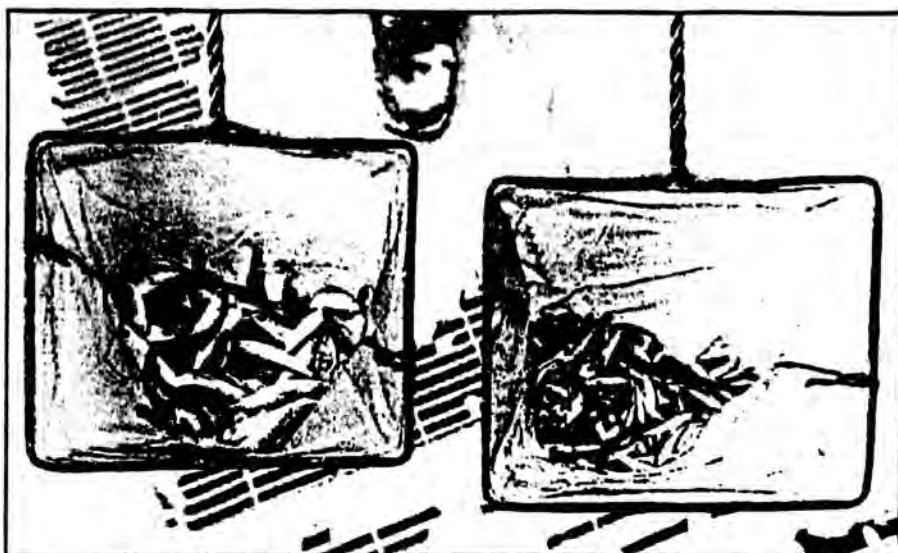
The Tutus Lagoon Hatchery in Kachemak Bay raises 50 million pink salmon eggs, and hopes to raise chums and sockeyes as well.

Such a program will make it easier to determine the composition of mixed stock fisheries.

The "thermal marking" process is simple. According to DIPAC's Macaulay, raising the water temperature 4 degrees for a certain period makes a distinctive mark on the otolith, or inner-ear bone, of a salmon fry. If different hatcheries coordinate their efforts, he said, researchers can tell one hatchery, or even batch of fish, from another.

"It's just like reading the bar code on a potato chip bag," Macaulay said.

Tracing the fish from egg to adult is just one of many ways in which ocean ranchers hope to improve their results, said Bob Burkett, chief of technology and development for the FRED division. But the big question for Burkett and his peers is that of survival: What



"Zero-check" sockeye fry (left) raised in warmer water than normal fry grow twice as fast in the hatchery and are released into the ocean sooner.

causes such extreme variation in the rate of return for hatchery fish? Pink survival, for example, can range from 25% to 16%.

Survival in the hatchery is rarely a problem. Even sockeyes, which are ex-

tremely disease-prone, have been raised by the millions by segregating them in discrete batches and paying meticulous attention to cleanliness. But when the fry or smolts are released into the ocean, Mother Nature

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Ocean survival may depend largely on the near-shore environmental conditions when fry are released, Burkett said; but no one knows for sure. No one knows whether there is a specific "carrying capacity" in, say, Prince William Sound every spring. Is there enough food for 600 million fry? For 1.6 billion?

"Evidence from the [Exxon] oil spill studies shows there isn't any significant near-shore carrying capacity being over-exceeded," Burkett said. "But then someone else comes in and says that spring was an exceptional year" for plankton, the microorganisms that fry and smolt feed on.

Burkett said the question of near-shore carrying capacity is the hottest one in his business these days, and the one he would attack first if he had the money. "It's something we can't afford not to pay attention to." But with state budget cuts looming, the money may not be forthcoming.

That's unnerving to biologists in the field, said ADFG's Sam Sharr, area

research biologist for PWS. He is concerned that hatchery production is outpacing the ability to understand it. "Enhancement can be a very good thing, as long as we understand what we're doing," he said.

He, too, wants to know more about near-shore carrying capacity; but also about whether hatchery releases increase the number of predators, and the effect of building up salmon stocks that have never before been numerous. Another big fear is that Prince William Sound will lose some genetic diversity if wild stocks are fished out.

"My only concern is that evaluation programs go hand in hand with hatchery expansion," he said. "I don't care who funds them, but someone has to. If they're not done, we are in a dangerous situation. We have no idea if we are over-harvesting the wild stocks in the process of maximizing the harvest of hatchery fish."

University of Washington fisheries professor Ray Hilborn goes a step

further—he says hatcheries are harmful to wild stocks, no matter what. A review of enhancement programs anywhere in the world, Hilborn said, shows an initial period of success followed by failure.

"All you end up doing is replacing wild fish with hatchery fish," he said. High survival rates the first five or 10 years lead to high exploitation of all stocks, and that jeopardizes natural runs. Then the facilities get old, diseases increase, the personnel lose interest. Survival rates drop and there is little left.

"My attitude is that hatcheries constitute the biggest single threat to commercial fishermen," Hilborn said. This is especially true on the dammed rivers of Washington and Oregon, but it holds for Alaska as well, he said.

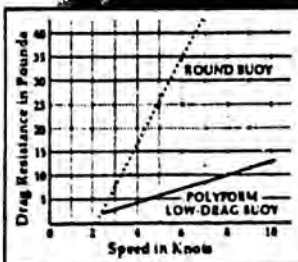
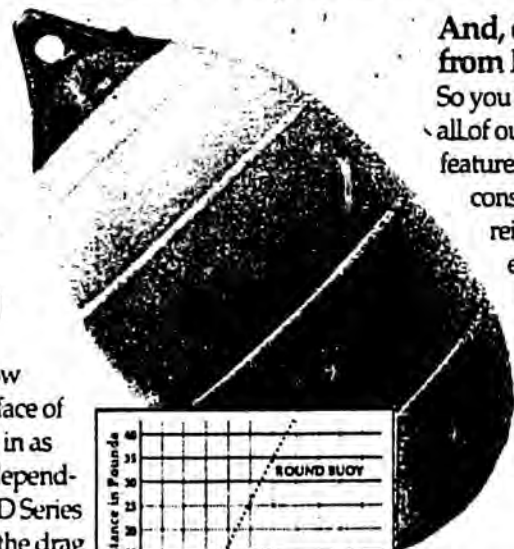
Brian Allee, head of Alaska's hatchery program, disagrees, saying Hilborn doesn't take into account the tremendous leaps in knowledge and technology over the past 10 years. "We've benefited from the history" of successes and failures all along the

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Pacific Coast, Allee said. Alaska has a broad-based program that doesn't rely on any one technique or species or area, unlike hatcheries in the Lower 48 which often rely on a few salmon species to seed many different rivers.

But it all takes money, and on that front the future looks dim. Governor Wally Hickel has vowed to cut state spending and his fisheries assistant, Clem Tillion, said fishermen should expect to shoulder more of the burden.

"I don't think the administration is going to abandon [the state's hatcheries]. But it's pretty hard to justify hatcheries for commercial fishermen that don't pay their way. The emphasis is going to be toward raising more sport fish unless commercial fishermen are willing to pay more of the share," Tillion said. The people who receive the benefits are going to have to be willing to pay for it." **PF**

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FISHERIES NEWSLETTER

Vol. X No. 7 3 June 1991

PROFESSORSHIP IN FISHERIES

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NEW FRED DIRECTOR

The former director of the FRED Division of the Alaska Department of Fish & Game, Dr. Brian Allee, recently accepted a position with Coastal Oysters in Washington state. The new director is Dr. Jeffery P. Koenings, previously in charge of the Limnology Laboratory of the FRED Division in Soldotna. Dr. Koenings has on many previous occasions collaborated with faculty members from the SFOS in various research projects.

THE LAST HURRAH FOR APPRISE

The Association of Primary

Production and Recruitment in a Subarctic Ecosystem (APPRISE) was a five year research program conducted in Auke Bay outside The Juneau Center for Fisheries and Ocean Sciences. The programmatic goals and objectives were to relate variations in primary productivity to variability in local climatic patterns, and to relate the energy transferred to herbivorous zooplankton to the spring phytoplankton bloom. Finally, meiofaunal recruitment was related to the input of organic matter via sedimentation of phytoplankton.

All the findings have been assembled in a 416 page book published by The School of Fisheries and Ocean Sciences, Fairbanks, AK and The Oceanic Institute, Honolulu, HI. In order to produce a smaller and conceptual description of the studied relationship a workshop was held in Kent, WA 16-17 May, which will result in a final APPRISE document.

INTERACTION OF WILD AND ENHANCED STOCKS OF SALMON

A public discussion on this topic was initiated at a Symposium in Norway in April 1990 on "Interaction between Cultured and Wild Atlantic Salmon." It is being followed by another Symposium in Nanaimo, B. C. called

Alaska Seafood Industry Study

A Summary

March 1989

CORRECTION

**THIS DOCUMENT
HAS BEEN REPHOTOGRAPHED
TO ASSURE LEGIBILITY**



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"International Symposium on Biological Interactions of Enhanced and Wild Salmon" 17-20 June 1991. A few days later there will be a NATO sponsored Symposium on "Genetic Conservation of Salmonid Fishes" from 24 June through 5 July 1991 in Moscow, Idaho and Pullman, WA. An important goal of the meeting is to identify scientific advances that are required to preserve the populations and germplasm of salmonid stocks. Concerns for preserving wild stocks of salmonid fishes are being expressed around the world.

Because of this great interest in the scientific community and public inquiries, Senate President Dick Eliason, of the Alaska State Legislature, called a meeting of the Senate Special Committee on Fisheries and considered questions and topics from legislative review and research such as: What are the goals and purposes of hatcheries in Alaska? What should the State's role be in hatcheries from now on? There were fisheries management questions, others on private non profit hatcheries operations, and those related to market/economic problems.

A second meeting was held 25 May at which committees were established to prepare an action plan for preparing background material which the next Legislature will need in their deliberations.

VISITORS

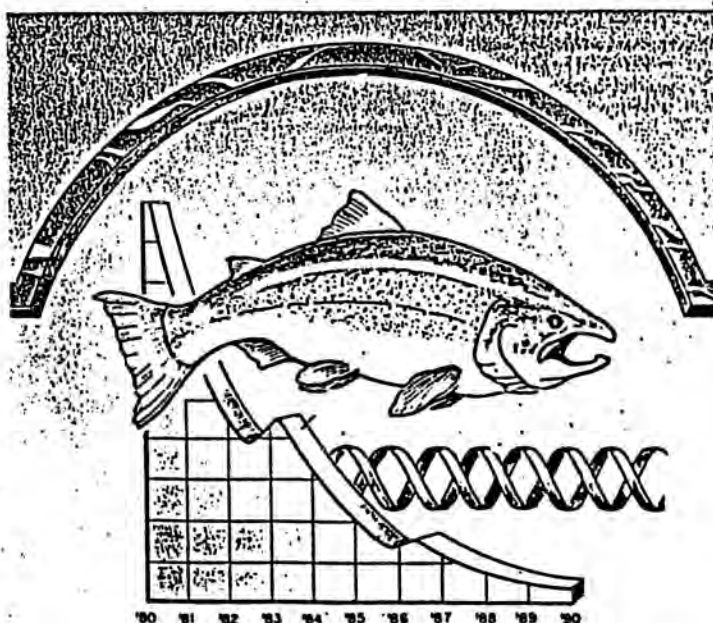
Dr. D. G. Chapman, former Dean of College of Fisheries, University of Washington and founder and first Director of

The Center for Quantitative Studies in Forestry and Fisheries visited the Juneau Center Friday, 31 May.

TRAVEL

O. A. Mathisen recently returned from a week's visit to the Faculty of Fisheries, Hokkaido University in Hakodate where he worked on papers with Drs. Hatano, Yamauchi and Takahashi related to the maturation process of sockeye salmon. Part of the material came from Steep Creek near the Mendenhall Glacier. Other samples were taken from the Gulf of Alaska during a survey by T/V Oshoro Maru.

GENETIC CONSERVATION — OF — SALMONID FISHES



June 24 through July 5, 1991
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Alaska Seafood Industry Study

A Summary

March 1989

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Harbor Lights, by John Fehringer, Juneau.

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Contents, early morning seiners, John Hyde, Alaska Department of Fish and Game (ADF&G); p. 3, clockwise from top left: ADF&G technicians taking scale samples, J. Hyde, ADF&G; woman handling salmon net, Marion Stirrup; two women, man holding salmon, and two men with iced salmon, all from Alaska Seafood Marketing Institute (ASMI); p. 5, salmon cannery, J.E. Thwaites collection, Alaska State Library; p. 6, halibut on dock, p. 7, herring eggs and herring fleet, and p. 8, groundfish in net bag, all by J. Hyde, ADF&G; p. 8, sablefish, Alaska Sea Grant College Program; p. 9, purse seiner, Donald Kramer, Alaska Sea Grant Marine Advisory Program (MAP); p. 10, offloading halibut, ASMI; p. 12, shrimp, Deborah Mercy, MAP; p. 12, crab, J. Hyde, ADF&G; p. 13, container vessel, and p. 14, Kodiak Harbor, both by M. Stirrup; p. 17, woman in salmon cannery, D. Mercy, MAP; p. 19, Sitka Harbor, J. Hyde, ADF&G; p. 20, crab pots, Craig Wiese, MAP; p. 21, chum salmon and salmon fry, both by J. Hyde, ADF&G; p. 22, stacking seine web, ADF&G.

This publication was designed and produced under the direction of the Alaska Seafood Industry Study Commission by the Alaska Sea Grant College Program. The Alaska Sea Grant College Program is cooperatively supported by (1) the U.S. Department of Commerce, NOAA Office of Sea Grant and Extramural Programs, grant no. NA86AA-D-SG041, project no. A/75-01, and (2) the University of Alaska with funds appropriated by the State of Alaska.

Elmer E. Rasmuson Library Cataloging-in-Publication Data

McDowell Group

Alaska seafood industry study : a summary.

(Sea grant education publication; no. 2)

1. Fishery processing industries--Alaska. 2. Fisheries--
Economic aspects--Alaska. 3. Fisheries--Alaska
I. McDowell, Eric. II. Calvin, Jim. III. Gilbertsen, Neal W.
IV. Alaska Seafood Industry Study Commission. V. Title.
VI. Series

SH335 M33 1989

Alaska Seafood Industry Study

A Summary

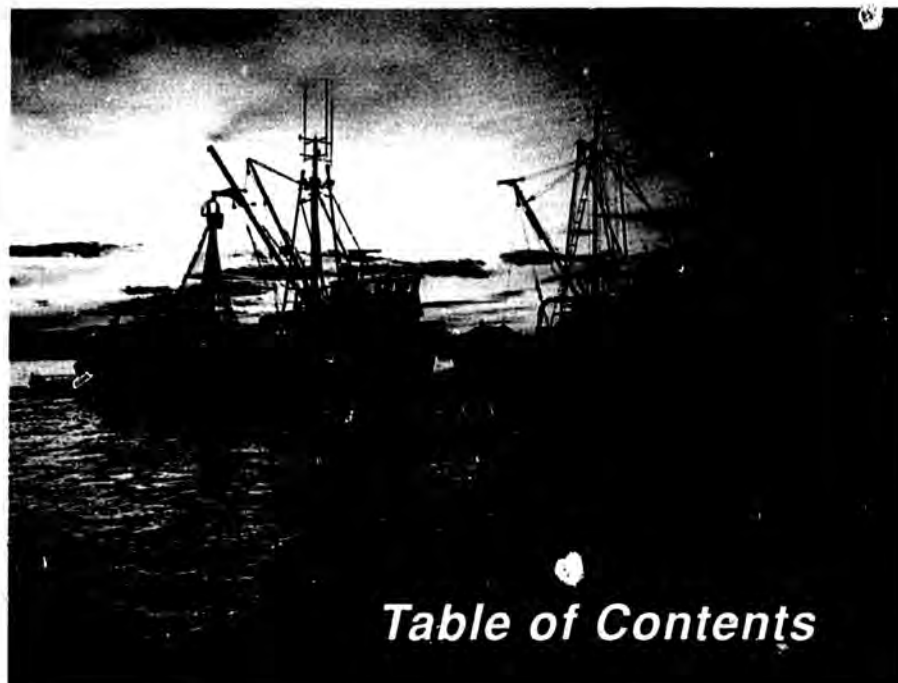
prepared for

**Alaska Seafood Industry
Study Commission
Anchorage, Alaska**

by

**The McDowell Group
A Division of Data Decisions Group, Inc.
Economic and Market Consultants
Juneau, Alaska**

March 1989



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Introduction

The *Alaska Seafood Industry Study: A Summary** has two purposes. The first is to highlight the effects of the state's largest private basic industry on the economy of Alaska. There is a general lack of standard economic data for the seafood industry, and research and analysis performed for this study fills that void.

The second purpose is to describe this complex and diverse industry to the Alaskan public. Most of Alaska's population and economy is concentrated in a few urban areas. In contrast, most of the seafood industry is conducted in coastal areas well away from the population centers. As a result, Alaskans are uninformed about the seafood industry. This document is designed to increase awareness and knowledge.

The Alaska Seafood Industry Study Commission is a cooperative organization formed to produce this study. Selected to conduct the study was The McDowell Group of Juneau, Alaskan economic and market consultants who have conducted 300 studies of the economy, industries and businesses of Alaska over the past 17 years. A comprehensive (technical) document supporting this summary, the *Alaska Seafood Industry Study: A Technical Report*, was also produced by the study team. Both documents are available from the University of Alaska Sea Grant College Program.

The study, conducted from July to December of 1988, included surveys of processors, factory trawlers and seafood organizations and agencies. Volumes of existing data from state, federal, international and private sources were collected and analyzed, the most important data being provided by the Commercial Fisheries Entry Commission. Finally, methods were developed for measuring harvest, employment and payroll and the role of the industry in the economy.

Commission Members

Alaska Commercial Fishing and
Agriculture Bank
Alaska Department of Commerce and
Economic Development
Alaska Department of Fish and Game
Alaska Department of Labor
Alaska Driggers Association
Alaska Factory Trawlers Association
Alaska Fisheries Development Foundation
Alaska Longline Fishermen's Association
Alaska Seafood Marketing Institute
Alaska Setnetters Association
Alaska Trollers Association
Bering Sea Fishermen's Association
Bristol Bay Driftnetters Association
Commercial Fisheries Entry Commission

Copper River Fishermen's Cooperative
Cordova District Fishermen United
Kenai Peninsula Fishermen's Association
Northern Southeast Regional Aquaculture Association
Pacific Seafood Processors Association
Petersburg Vessel Owners Association
Prince William Sound Aquaculture Corporation
Seafood Producers Cooperative
Southeast Alaska Seiners Association
United Fishermen of Alaska
United Fishermen's Marketing Association
United Southeast Alaska Gillnetters
University of Alaska Institute for Social
and Economic Research
University of Alaska Marine Advisory Program
University of Alaska Sea Grant College Program

* Sources of data in this document, Alaska Sea Grant Education Publication No. 2, can be found in the complete report, *Alaska Seafood Industry Study: A Technical Report*. This summary and the full report are available from the Alaska Sea Grant College Program, Communications Office, 138 Irving II, Fairbanks, AK 99775-5040. Telephone (907) 474-7086.

Summary

Jobs: The seafood industry is Alaska's largest private basic industry employer, providing nearly 70,000 seasonal jobs which translates to 33,000 direct, indirect and induced year-round jobs.

Payroll: The total seafood industry payroll in 1987 was the largest among private basic industries, estimated at \$596 million.

Revenue: The seafood industry is the second largest revenue generator in the state. The industry paid \$27 million in fish taxes during 1987 and is the major contributor to the \$5 million marine fuel tax.

Expenditures: Expenditures in Alaska on goods and services in support of processing and harvesting are nearly \$300 million.

Harvest Value: Alaska leads the nation in value of commercial seafood landings. The 1987 Alaska seafood harvest was worth \$1.1 billion, and the estimate for 1988 is a record \$1.8 billion. The salmon fishery is the most important, bringing in 42% of all harvest income.

Wholesale Value: The 1987 Alaska seafood harvest was worth \$1.9 billion at the first wholesale level, after primary processing. It rose to \$3 billion in 1988.

Exports: Alaska exported \$561 million in seafood during 1987, a third of all U.S. seafood exports. Japan received 95%.

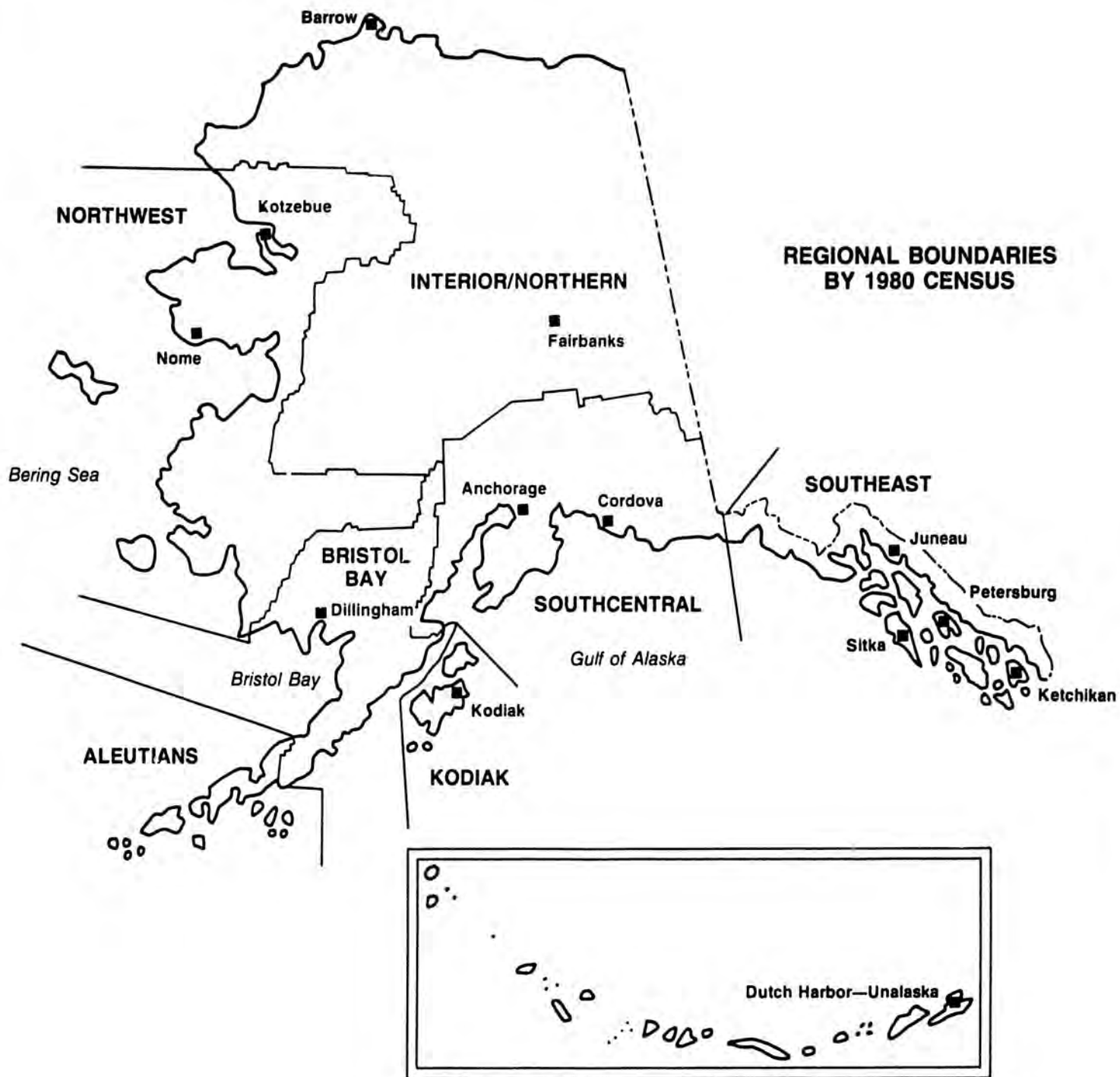
Capital Assets: Total investment by the Alaska seafood industry is estimated at \$4 billion.

- The salmon fleet has a capital investment of \$800 million in vessels and onboard equipment, and \$900 million in permits.
- The offshore groundfish industry accounts for \$500 million, and crabbers account for \$400 million in capital investment.
- The value of processing plants and tenders is estimated at \$1 billion.

Regional Impacts: The Alaska seafood industry is the most important employer in five regions of the state — Southeast, Kodiak, Aleutians, Bristol Bay and Northwest Alaska.

Community Impacts: The leading beneficiaries of seafood harvesting are Kodiak, where residents earned \$86 million in 1986; Dillingham, \$46 million; and Anchorage, \$31 million.





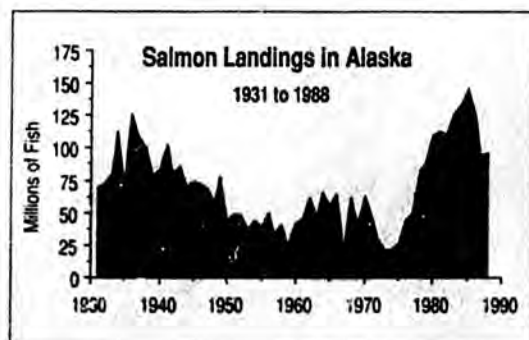
History of Alaska's Fisheries



Alaska's history as a commercial seafood producer can be divided into three phases: Alaska's territorial phase, statehood, and most recently, extended jurisdiction in U.S. waters. The territorial days were characterized by fish traps, canneries, resource over-exploitation, long distance federal management and political conflict. With statehood in 1959, Alaskans assumed responsibility for management of their nearshore seafood resources. This period was marked by responsible biological management, limited entry for the salmon fishery, and full recovery of the once-depleted salmon resource. Alaska recently entered a third phase with the 1976 enactment of the Magnuson Act. This act transferred to the U.S. government jurisdiction of the fisheries in the Exclusive Economic Zone (EEZ), which extends from 3 to 200 miles offshore. This area includes the vast groundfish resource of the Gulf of Alaska and Bering Sea.

Salmon

Exploitation of Alaska's salmon resource dates back to the first canneries in Alaska in 1878. Over the next 50 years the Seattle-based salmon canneries developed into the dominant force in Alaska's seafood industry. By 1929, there were 159 canneries operating in Alaska. When Alaska became a state, it took over management of the salmon fishery. Under state management, Alaska's salmon



The 1987 halibut catch from Alaska waters totaled 57 million pounds and earned an estimated \$70 million for harvesters.



Halibut on dock awaiting transport to processor. Over 10,000 fishermen earned \$70 million for their 1987 halibut catch.

harvest fell to an all-time low of 22 million fish in 1974 and climbed to a high of 147 million fish in 1985.

The Alaska salmon fishery, conducted from Ketchikan to Kotzebue, harvests five species of salmon — king (chinook), red (sockeye), silver (coho), chum (dog) and pink (humpy). The fishery employs about 25,000 skippers and crew members. Four types of gear are used — seine, gillnet, set-net and troll — depending on the area and species targeted.

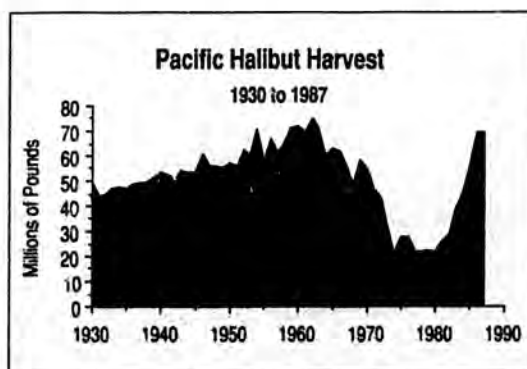
The salmon fishery is Alaska's most valuable. The 1988 harvest was worth an all-time high of \$742 million ex-vessel, a 50% increase over the 1987 total of \$478 million (fish sales by harvesters are expressed as ex-vessel values). About 65% of Alaska's salmon harvest was marketed fresh or frozen (and a small amount salted) in 1987, continuing a trend away from canned salmon.

Sockeye accounted for about 50% of Alaska's fresh, frozen and salted production weight in 1987, at just under 123 million pounds. Chum salmon was next at 44 million pounds. Coho production was 16 million pounds, pink salmon 35 million pounds, and king salmon 10 million pounds.

Halibut

Commercial harvest of Alaska's halibut began about 1910 when the Puget Sound schooner fleet ventured into northern waters. The total Pacific halibut harvest peaked at 75 million pounds in 1962 but declined to 21 million pounds between 1974 and 1978. The halibut harvest has since climbed back to near-record levels, though the 24-hour halibut derbies bear little resemblance to the longer fishing seasons of years past.

With 10,200 skippers and crew, the halibut fishery attracts more participants than any fishery except salmon. Halibut fishermen use longline gear with baited hooks.



The 1987 halibut catch from Alaska waters totaled 57 million pounds and earned an estimated \$70 million for harvesters. The 1987 catch was down slightly from 1986 in pounds harvested but up about 10% in ex-vessel value.

Herring

The Alaska herring fishery dates back to the saltery days of the 1890s. The fishery was reborn in the mid-1970s with development of a Japanese market for herring sac roe (eggs), valued highly as a holiday delicacy. When herring eggs are ripe for spawning in spring, the allowable quota is usually caught in a matter of hours with seine and gillnet gear.



Skippers and crew number nearly 7,000.

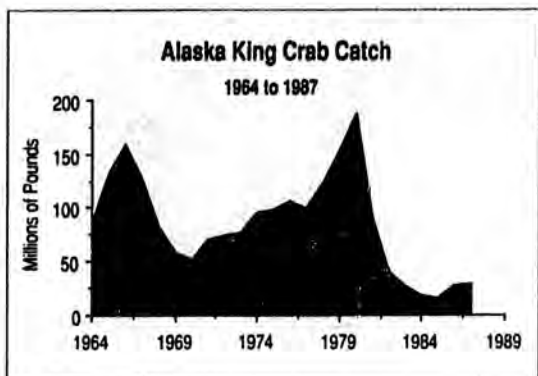
In 1987, sac roe, food and bait herring harvested from Alaska waters were worth an estimated \$43 million ex-vessel. Alaska sac roe herring harvest peaked in 1985, but the value of the harvest is still on the rise. The value of the 1988 harvest reached an estimated \$56 million, the highest ever.

Shellfish

The shellfish fisheries — king, tanner and Dungeness crab, shrimp and scallops — are conducted along most of the Alaska coast by 3,800 skippers and crew. Baited wire mesh pots are set along the bottom, trapping the crab inside. Shrimp are usually caught by dragging trawls along the bottom.

The king crab fishery evolved from a primarily Japanese and Soviet fishery in the 1930s and 1940s into an important domestic fishery in the 1950s. The domestic Alaska king crab harvest increased from just 5 million pounds in 1953 to 188 million pounds in 1980, with a value greater than the Alaska salmon harvest. But the king crab harvest collapsed to 15 million pounds only 5 years later. Now the king crab fishery may be on the rebound.





The 1987 shellfish harvest was worth an estimated \$214 million ex-vessel. The tanner (snow) crab harvest accounted for about two-thirds of the total Alaska shellfish catch. The king crab harvest represented about one-fifth of the total. Alaska's shellfish harvest has increased over 80% since the industry's low in 1984, but is still well below the peak years of the early 1980s.

Groundfish

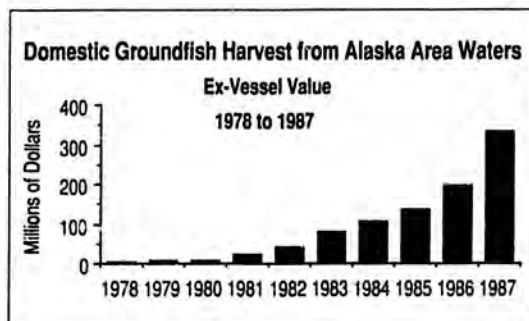
Today, only a small fraction of the groundfish taken off Alaska is harvested by foreign operators. Joint venture (JV) operations, where American catchers sell to foreign processors at sea, accounted for the majority of the offshore groundfish harvest in 1988, while domestic operations will account for the majority in 1989.

In order of value, groundfish species are pollock, Pacific cod, sablefish (black cod)

and rockfish. Most groundfish are taken in the Bering Sea using trawl gear, open-ended sock-shaped nets. In 1988, the groundfish fleet consisted of 100 trawlers with about 5,000 workers.

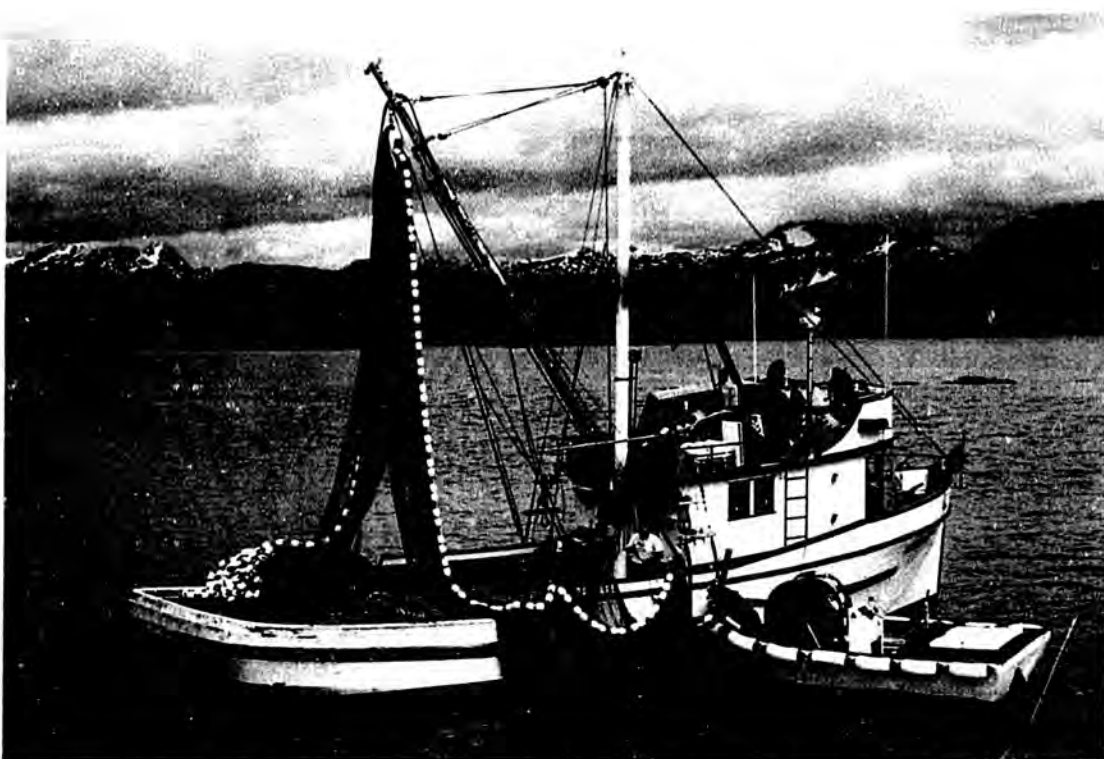
For the 1987 Bering Sea and Gulf of Alaska groundfish harvest, JV operators accounted for about 78% of the total catch. The value of the 1987 domestic and JV groundfish harvest reached an estimated \$331 million ex-vessel, 67% higher than the value of the 1986 harvest.

Though three-fourths of the 1987 groundfish harvest was foreign processed, an increasing share is being processed by domestic seafood producers. In 1987, the total domestic groundfish production value at the first wholesale level was estimated at \$472 million, 50 times that in 1980. The value of groundfish processed on shore in Alaska has increased remarkably from \$49 million in 1986 to \$147 million in 1987.



Left— Groundfish, mostly rockfish, in net bag. Above— Sablefish. Groundfish include pollock, Pacific cod, sablefish (black cod), rockfish, flatfish, Atka mackerel, and Pacific ocean perch. As a result of "Americanization" of the Bering Sea and Gulf of Alaska fishery, the 1987 domestic groundfish wholesale production value was 50 times greater than in 1980.

Overview of Alaska's Seafood Industry



A salmon seiner in Prince William Sound. Most of the owner-operators and crews for small boats like this are Alaska residents. Overall, Alaskans hold 70% of Alaska's seafood harvesting jobs.

The Alaska seafood industry is based on a natural resource that is the common property of the people.

The Alaska fishing industry can be divided into two parts — the small boat, near-shore fisheries and the offshore highly capitalized fisheries. The small boat, nearshore fleets concentrate on seasonal salmon, herring, halibut, black cod and to a lesser extent on Dungeness, king and tanner crab. Vessels are mostly 30 to 45 feet long and valued under \$500,000. Participants in these fisheries tend to be resident Alaskans, and the majority of these fisheries are managed by the State of Alaska. Time, areas, and gear fished are regulated in nearly all of these fisheries. The historical and regulatory patterns in these nearshore fisheries have cre-

ated a climate suited almost exclusively to owner-operated fishing businesses.

The highly capitalized groundfish fishery and most of the king and tanner crab harvests are conducted well offshore in the Bering Sea and western Gulf of Alaska and are subject to federal management. These fisheries demand much larger vessels, substantial capital investments and large crews. Vessel values range from less than \$1 million to \$40 million for large factory trawlers. Nonresidents dominate these fisheries, and ownership tends to be corporate. Time, areas, gear, harvests and participation are far less limited than in the nearshore fisheries.

Resident harvesters concentrate in the traditional fisheries, especially salmon, where they hold nearly 80% of the permits.

Residency

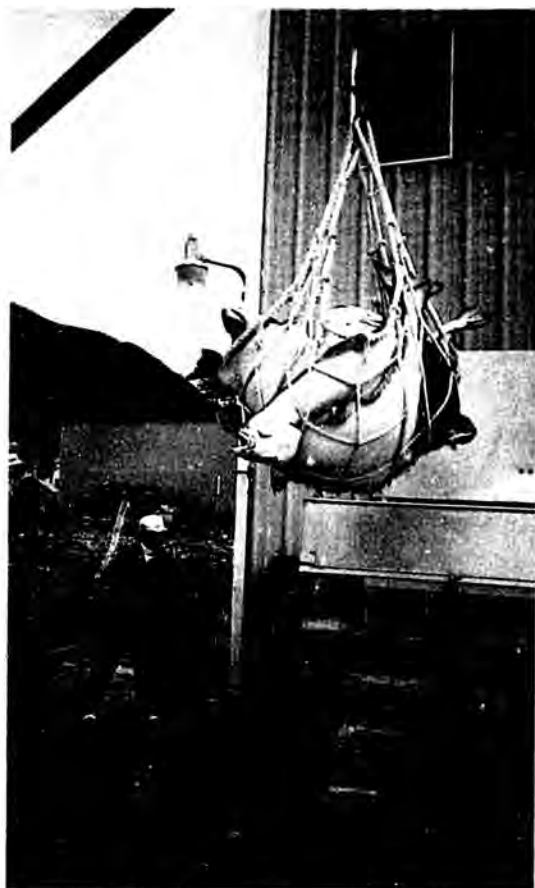
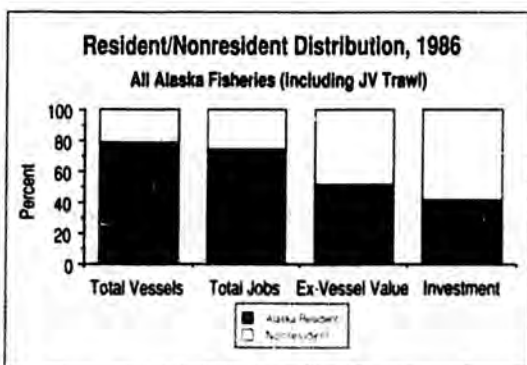
Both residents and nonresidents participate in the Alaska seafood industry. In seafood harvesting, where most of the employment occurs, 70% of the participants are Alaskans, compared to the 77% average resident composition for all Alaska private industry. In seafood processing, 47% of the participants are Alaskans.

Resident harvesters concentrate in the traditional fisheries, especially salmon, where they hold nearly 80% of the permits. Residents also are concentrated in the small boat and subsistence-oriented fisheries.

Nonresident harvesters are more likely to dominate the heavily capitalized and large boat fisheries. Thus, while Alaskans own most of the vessels and permits and hold most of the harvesting jobs, nonresidents have a higher level of investment and, on average, produce more than residents.

Obviously, the more resident participation and catch value, the greater the benefits to the Alaska economy because residents spend their take-home pay in the state. However, the process by which Alaskans might acquire more permits and make greater investments in vessels and equipment is not apparent, especially in the highly capitalized offshore fisheries.

Apart from the JV and factory trawl fisheries, nonresidents hold 21% of the permits and captured 40% of the gross harvest earnings in 1986. Alaska permit holders participate in more fisheries than nonresidents, but nonresidents net greater yield per fishery.



Offloading chilled halibut. This popular species is managed by a joint U.S./Canadian commission. Overharvest seriously reduced halibut stocks in the 1970s, but strict controls have helped return halibut harvests to near record levels.

Management of the Fisheries

The Alaska seafood industry is based on a natural resource (fish and shellfish) that is the common property of the people. The management responsibilities of the state government are defined by the state constitution and statutes. The fisheries management responsibilities of the federal government are primarily defined by the Magnuson Act which gave the United States authority over the living resources in the EEZ and on the continental shelf.

Management of Alaska's fisheries is a complex, sometimes fragmented process with responsibility sprinkled among state, national and international bodies. Alaska Department of Fish and Game (ADFG) manages most fisheries up to three miles off-

shore. A lay Board of Fisheries sets regulations for fisheries in state waters. The EEZ is managed by the National Marine Fisheries Service (NMFS) which is directed by the North Pacific Fishery Management Council (NPFMC). NMFS manages the emerging groundfish fishery. Halibut decisions are made by the International Pacific Halibut Commission which includes representatives from Canada, Alaska and Washington. For all king salmon and minor amounts of sockeye in southeast Alaska, decisions are made by the International Pacific Salmon Fisheries Commission, which administers the terms of the U.S./Canada Pacific Salmon Treaty. Other bodies such as the International North Pacific Fisheries Commission deal with concerns of nations that use North Pacific resources, including Japan, Canada and the United States.

Markets for Alaska's Seafood

Alaska's seafood industry is enjoying the benefits of unprecedented increases in per capita seafood consumption by health conscious consumers worldwide, and of a declining U.S. dollar that has made Alaska products very attractive. But changing con-

sumer preferences combined with new products from competing producers are challenging Alaska seafood in the marketplace. However, the Alaska seafood industry is now producing many bottomfish products that once were only foreign produced. Examples of new products include frozen cod and pollock fillets, frozen headed and gutted cod and pollock, pollock roe, frozen flatfish fillets, and pollock surimi, used to make foods such as imitation crab.

Alaska's seafood processors and the state of Alaska are responding to change in the seafood market with aggressive private and public/private cooperative efforts to promote seafood products. Indeed, Alaska seafood processors spent an estimated \$6 million on promotion and advertising in 1987. These efforts have been directed at maintaining existing markets and developing new markets for Alaska's variety of seafood products.

One-third of all U.S. seafood exports is shipped directly from Alaska. Over half a billion dollars worth of seafood was exported from Alaska to foreign nations in 1987, twice the value of direct exports in 1984. In addition, a significant portion of Alaska's seafood is shipped to the state of

One-third of all U.S. seafood exports is shipped directly from Alaska.



Left— Broiled pollock. Pollock, a member of the cod family, is harvested extensively in the Bering Sea and Gulf of Alaska. Right— Japan is Alaska's leading seafood customer, buying from Alaska nearly \$530 million in seafood in 1987.



Left— Shrimp. Right— Dungeness crab. Alaska's 1987 shrimp harvest totaled almost 3 million pounds. The 1987 shellfish harvest produced over \$213 million in gross income for fishermen.

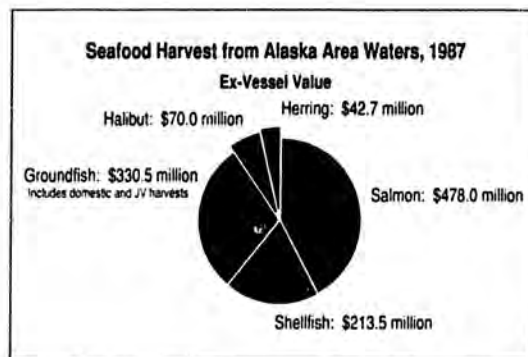
Washington before being exported. Overall, the United States exported 783 million pounds of seafood products in 1987, valued at \$1.58 billion.

Alaska's leading export customer is Japan, which in 1987 received about 95% of Alaska's direct seafood exports, valued at \$530 million. The second largest direct customer is Korea, purchaser of \$20 million in Alaska seafood products in 1987. Canada is third with \$9 million in purchases of Alaska seafood.

Selected Trends

Harvest Value

The late 1970s and 1980s have been a period of dramatic change in Alaska's commercial fisheries. Salmon production recovered from the all-time lows of the early and mid-1970s to the sustained highs of the 1980s. Both the herring and halibut fisheries saw a steady growth in value, while Alaska shellfish production collapsed in the 1982-1985 period and then started to recover. Finally, the dramatic events surrounding the increase in U.S. fisheries operations in the EEZ has seen groundfish production become the largest component of total U.S. harvest. Total harvest value rose from \$493 million to \$1.1 billion, including the offshore groundfish fishery, over the 1978-1987 period.



Diversification

In 1978, salmon and shellfish accounted for 92% of the total Alaska fisheries harvest by value. With halibut, this percentage rises to 98%, leaving a meager 2% for herring and groundfish combined. The dependence on salmon and shellfish in 1978 left the Alaska fisheries vulnerable to biological and economic fluctuations. Fortunately, herring and groundfish development diversified the industry to partially offset the 1984 shellfish failure.

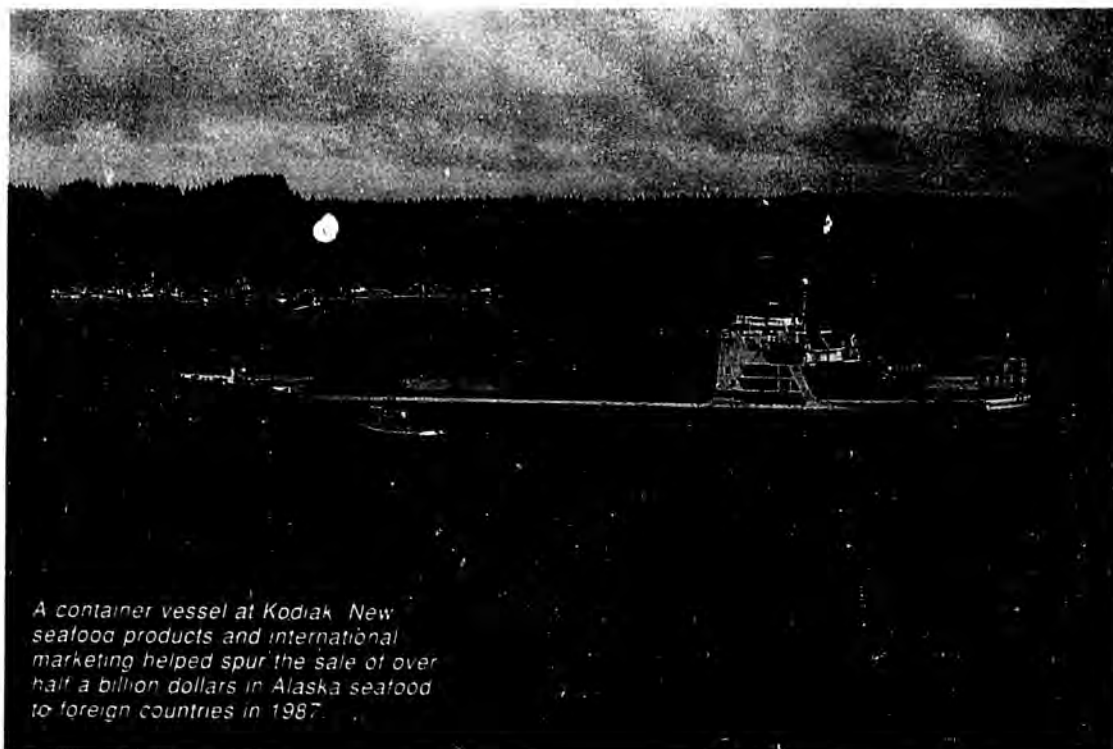
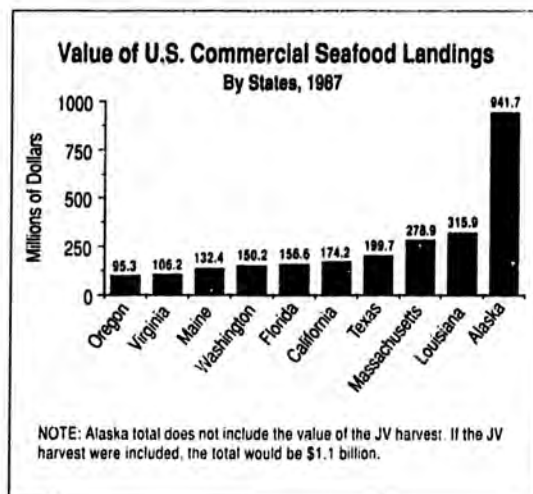
Though salmon was still the most important income source in 1987 at \$478 million, groundfish (\$331 million), shellfish (\$213 million) and halibut (\$70 million) all contributed heavily. Even herring, the least significant of the five major fisheries, brought \$43 million in gross earnings to harvesters.

Alaska's Role in the U.S. and World Seafood Industries

Had Alaska been an independent nation in 1986, it would have ranked eleventh in world fisheries production by volume, and probably much higher in value. While it lagged far behind such giants as Japan and the Soviet Union, whose distant water fleets roam the oceans of the world, Alaska out-produced such well known fishing nations as Norway, Denmark, Iceland and Canada. Although Alaska harvests accounted for only 2% of the world's total catch by volume, they represented 24% of North and Central American seafood production, and 46% of total U.S. production.

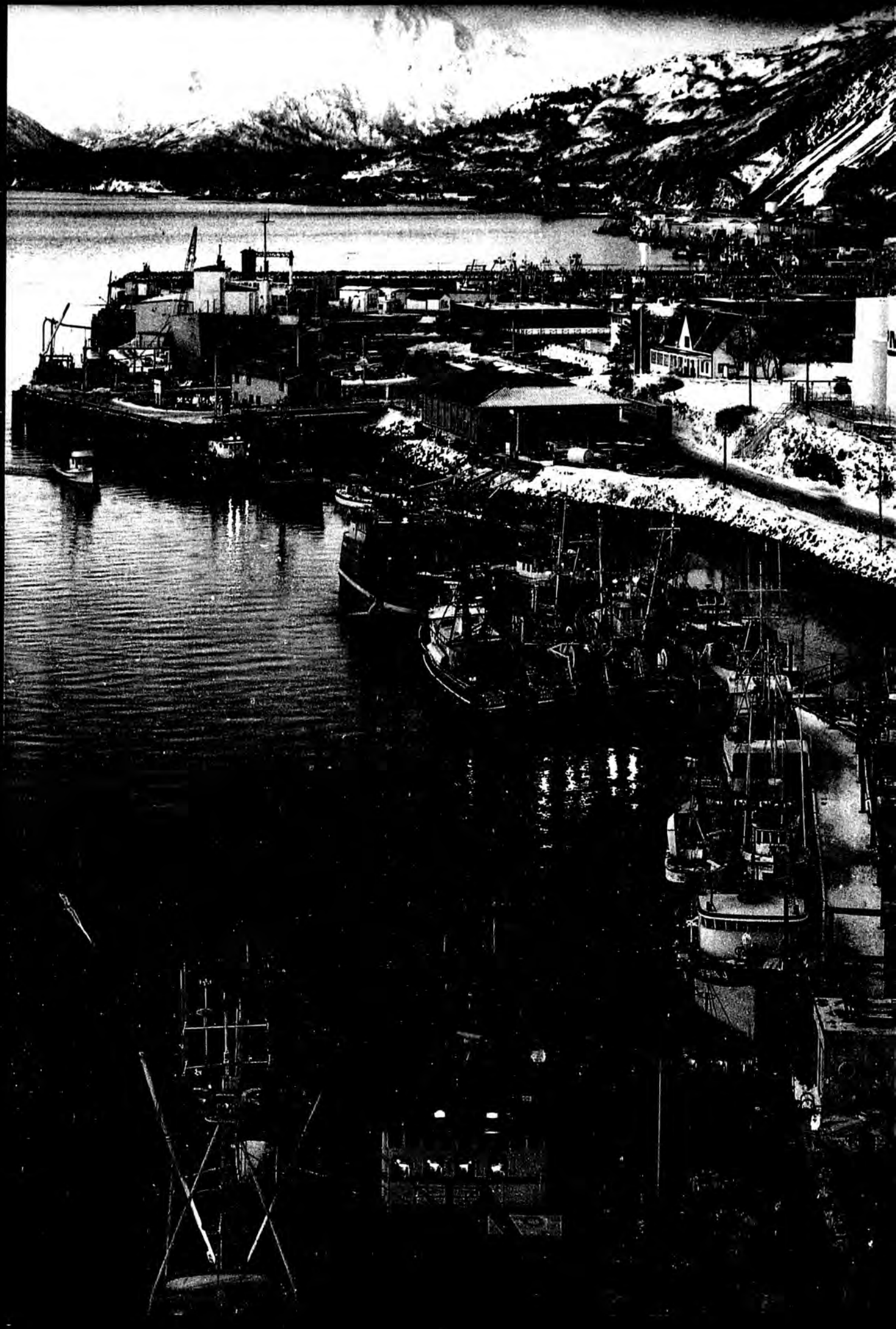
The 1987 total value of Alaska's commercial seafood landings at \$942 million is over three times that of Louisiana, which ranks second. Alaska accounted for over 30% of the total value of U.S. seafood landings in 1987. If the value of the harvest rises at the current rate, Alaska will soon account for over 50% of the total U.S. production by volume, and 40% of the total value of U.S. commercial fisheries.

Measured in value of seafood landings, four Alaska communities were among the nation's top ten commercial fishing ports in 1987: Kodiak (ranked 2), with \$132 million in landings, Dutch Harbor-Unalaska (4), Cordova (9) and Petersburg (10). Sitka (15) and Ketchikan (24) also recorded multi-million dollar seafood landings. In 1988, Kodiak led the nation with \$166 million in seafood landings.



A container vessel at Kodiak. New seafood products and international marketing helped spur the sale of over half a billion dollars in Alaska seafood to foreign countries in 1987.

Had Alaska been an independent nation in 1986, it would have ranked eleventh in world fisheries production by volume....



Economic Contribution of the Seafood Industry

Importance to Alaska's Economy

The seafood industry is Alaska's largest private basic industry employer and ranks second to defense among Alaska basic industries. Nearly one-sixth of all Alaska basic industry employment and payroll is in the seafood industry.

Alaska's basic economy produces goods and services for export, meeting demand originating outside the state. Alaska's basic industries are — in order of average annual employment — national defense, seafood, the portions of local and state government that result from oil and gas tax revenue, tourism, civilian federal government serving national interests other than defense, oil and gas, forest products and non-petroleum mining.

The seafood harvesting average monthly wage is higher than average at an estimated \$3,135. Seafood processing is lower at \$1,572. The highest paying industry is oil and gas extraction at \$5,273 per month, double the basic industry average, while tourism pays least at \$1,354 per month.

Indirect and Induced Employment

Thousands of jobs are created in Alaska's service and supply sector in support of seafood industry activities. For example, the



seafood industry indirectly generates jobs in Alaska's transportation industry, which handles nearly \$2 billion in seafood products each year. Coastal communities see employment created in marine hardware stores, shipyards, fuel suppliers, equipment repair and service businesses, and in many other sectors of the economy.

One step removed from the harvester and processor, but still the result of the seafood industry's presence in Alaska, is the employment created in support of seafood industry workers and their families. These jobs, which in economic jargon are termed "induced," are in grocery stores, clothing stores, schools, gas stations, doctors' offices, banks and local and state government — virtually all across the economy. Together, indirect and induced jobs comprise support industry employment. Alaska's 1987 basic

Estimates of Alaska Seafood Industry Employment, 1987

Average Annual Employment in Harvesting and Processing	19,232
Indirect and Induced Employment	13,800 to 18,950
Total Average Annual Direct, Indirect and Induced Employment Attributable to the Alaska Seafood Industry	33,032 to 38,182

Nearly 48,000 people participate in Alaska's billion dollar seafood harvest....

industry employment of 117,284 generated support employment of 126,700, for a total employment of 243,984, including seafood harvesting.

Seafood Harvesting Employment and Payroll

Nearly 48,000 people participate in Alaska's billion dollar seafood harvest, not counting the decreasing number of foreign operators in the offshore groundfish harvest. Included in the total are 13,310 active permit holders, 31,159 crew members, and an estimated 3,000 participants in the domestic and JV groundfish industries.

Estimated employment and payroll for Alaska's seafood harvesting industry is presented in the accompanying table. The salmon fisheries provide most of the employment in Alaska's seafood harvesting industry, employing over 20,000 people.

However, most of these 20,000 people do not work year-round in seafood harvesting. Thus, spread over one year, their total months worked are equal to 6,836 full-time

jobs. Economists call this the *average annual equivalent*.

Of the various gear groups involved in salmon fishing, drift gillnetters account for the annual equivalent of 2,502 jobs, seiners 1,690 jobs, setnetters 847 jobs, power trollers 655 jobs, hand trollers 198 jobs. Other salmon fisheries account for an annual equivalent of 944 jobs.

Significant growth in employment is occurring in Alaska's offshore groundfish fisheries. Employment on catcher/processors increased about 50% in 1988, and a similar increase is expected between 1988 and 1989.

Seafood Processing Employment and Payroll

Employment in Alaska's seafood processing industry reached a 6-year high in 1987 with an annual equivalent employment level of 6,611 jobs. Peak seasonal employment was 14,970 workers. Total seasonal participation in seafood processing in Alaska probably exceeded 21,000 workers earning \$125 million, the highest processing payroll to date.

Employment and Payroll in Alaska's Seafood Harvesting Industry, 1986

Fishery	Permits Fished	People Employed	Annual Equivalent Employment	Estimated Payroll (\$ million)
Salmon	10,228	24,979	6,836	185.0
Herring	1,855	6,844	571	22.2
Halibut, Black Cod and other	4,013	13,516	1,357	80.6
Shellfish	1,174	3,794	1,857	84.7
SUBTOTAL ¹	17,270	47,469	10,621	372.5
Groundfish (Offshore, 1987)				
Domestic & JV Trawl	110 vessels	900	600	56.2
Catcher/Processors	35 vessels	2,100	1,400	42.4
Total		3,000	2,000	98.6
GRAND TOTAL		49,569	12,621	\$471.1

¹Totals eliminate double counting of harvesters active in more than one salmon fishery. Therefore, totals are not sums.



Woman in salmon cannery. The number of seasonal jobs in canneries is decreasing, but increased shore-based groundfish processing is creating more year-round employment and higher average salaries.

Employment in Alaska's seafood processing industry reached a 6-year high in 1987....

Seafood processing employment in Alaska peaked in 1981 at 7,065 jobs. Employment declined to a low of 5,417 in 1984. The crash of the king crab stocks accounted for some of the decline, but a major factor was the shift from canned to fresh/frozen product, which requires less labor. The increase in shore-based groundfish production in Alaska is partly responsible for a trend toward greater year-round employment even as peak season employment declines. More year-round business in the seafood processing industry means greater stability, more resident participation and higher average salaries.

Kodiak led Alaska communities in seafood processing employment in 1987 with 1,996 jobs and an annual average of 1,495 jobs. Dutch Harbor recorded 1,063 with an annual average of 880 seafood processing jobs, an indication of year-round stability. Petersburg led Southeast in seafood processing employment with a summer peak of 806 jobs and an annual average of 330, reflecting a dependence on the seasonal salmon fisheries.

Among all basic industries in Alaska, seafood processing has the largest component of nonresidents in its workforce. In 1987, an estimated 46.5% of the 23,676 food processing workers in Alaska were nonre-

sidents. Though most seafood processing companies operating in Alaska actively recruit resident workers, the seasonal nature of processing jobs and the low wages discourage some residents. Further, many processing operations are remote and local labor cannot meet demand. The Department of Labor states that the processing industry places more job orders than can be filled by the Alaska labor force.

Importance to Regional Economies

The seafood industry is the largest private sector employer in five of the seven Alaska regions discussed below. In the Kodiak, Bristol Bay and Aleutian regions, seafood is the dominant basic industry. In southcentral Alaska, which contains over half the state's economy, seafood employs three-fourths as many people as the oil and gas industry and nearly half as many as state government.

The following table shows the distribution of permit ownership and earnings in Alaska. Residents of southcentral Alaska earned the most in 1986, \$131 million before expenses and boat and permit payments. Residents of the city of Kodiak grossed \$86 million, highest of any community.

*Anchorage... is
Alaska's third
largest seafood
harvesting
money earner.*

Southeast: The seafood industry, with average annual employment of 3,993, is southeast Alaska's largest private industry. Southeast is the state's largest seafood region in employment, just ahead of Southcentral. Twenty-one percent of the state's seafood jobs are in southeast Alaska. Based on 1986 gross harvest earnings Southeast ranks second with \$109 million, compared to \$131 million earned by Southcentral residents.

Southcentral: This region is the economic heart of Alaska with over half of the state's employment. Anchorage serves as the transportation, finance and trade center for most of Alaska and alone is Alaska's third largest seafood harvesting money earner.

The seafood industry employs 3,735 in Southcentral. Residents earn more from seafood harvesting (\$131 million) than any other Alaska region. Another \$30 million in net income is earned by seafood processing workers. Southcentral residents earn 28% of all resident seafood harvesting gross income and 24% of all processing wages.

Kodiak: Kodiak is one of three Alaska regions in which the seafood industry is the dominant economic activity. With an aver-

age annual employment of nearly 2,600, Kodiak's seafood industry accounts for 55% of private sector employment and 38% of total employment. The Kodiak region accounts for nearly one in four of the state's seafood processing jobs and 14% of all seafood employment.

Aleutians: The Aleutian region has a very sparse population and an economy dominated by the seafood industry, which employs 64% of all private sector workers. The Aleutian seafood industry has an annual average employment of 2,989, 36% of the total regional employment.

The Aleutian share of the Alaska seafood industry accounts for 16% of all seafood employment and 17% of the processing workforce. In 1986 Aleutian residents captured \$47 million in gross harvesting earnings. These harvesters are the state's most productive.

Bristol Bay: This region of the legendary salmon runs is more dependent on the seafood industry than any other. Over 70% of the region's private industry employment is in seafood with an annual average of 2,550 people employed in 1987. Seafood domi-

Seafood Harvesting Participation and Earnings, 1986
by Region of Residence

Region	Permit Holders	Permits Fished	Pounds Harvested (millions)	Gross Earnings (\$ million)
Southeast	2,724	4,725	162.5	109.3
Southcentral	2,977	4,125	172.7	130.6
Anchorage	873	1,015	36.1	30.8
Kodiak (region)	811	1,563	161.2	95.2
Aleutians	326	556	57.2	46.7
Bristol Bay	1,178	1,431	49.1	55.9
Northwest	2,251	2,460	33.7	19.2
Other Alaska	242	261	3.4	3.5
Fairbanks	101	112	2.0	2.1
TOTAL ALASKA	10,496	15,121	639.8	\$460.6



Sitka Harbor. In 1987, 34 million pounds of seafood were landed in this southeast Alaska community.

...101 Fairbanks resident permit holders grossed \$2.1 million in 1986 fishing elsewhere in the state.

nates the Bristol Bay economy with 51% of all employment. Residents earned \$56 million in harvesting gross income in 1986, or about 12% of the Alaska total.

Northwest: In the Northwest region, one of four private sector jobs is in seafood harvesting or processing. The seafood industry directly accounts for 13% of the nearly 11,000 average annual total employment.

The seafood harvesting industry in the Northwest region is very labor intensive. Residents earned \$19 million in harvesting gross income in 1986, and processing workers took home paychecks totaling over \$5 million in 1987.

Interior/Northern: This region has no significant commercial fishery. However, the 242 residents who earned nearly \$4 million in harvesting gross income (about 1% of the Alaska total) hold permits for fisheries located in other areas of the state. For example, 101 Fairbanks resident permit holders grossed \$2.1 million in 1986 fishing elsewhere in the state.

Offshore and Undetermined: This category consists of the estimated 2,000 average annual employment in the offshore and domestic trawl fisheries, which account for about 10% of Alaska's seafood industry employment. These jobs have little effect on Alaska's economy because workers are mostly non-residents and spend little or no time ashore in Alaska. There are also 2,037 other jobs that have no specifically determined geographic location in Alaska.





Stacked king crab pots and floats. Alaska crabbers have a capital investment of about \$400 million.

Capital Investment

Investment in Alaska's seafood industry is estimated at \$4 billion. Investment in fishing vessels in Alaska's nearshore and offshore fisheries is between \$1.8 billion and \$2.0 billion, plus an additional \$200 million to \$300 million in onboard equipment. The salmon fisheries account for an estimated \$800 million of this total, and the offshore groundfish industry accounts for \$500 million. Harvesters have invested another \$900 million in permits for Alaska's limited entry salmon fisheries. Investment in other types of permits adds another \$100 million to the total. Investment in seafood processing plants and equipment may approach \$1 billion, measured in insured or assessed value.

Expenditures in Alaska

In-state expenditures by processors exceeded \$90 million in 1987, not including fish purchases or payroll. This spending is on such goods and services as fuel, electrical power,

transportation, hardware, repair services, supplies and food.

An estimate of expenditures by harvesters places in-state spending on goods and services in support of Alaska's harvesting fleets at about \$190 million, including \$33 million from the factory trawl fleet. Fleet support expenditures are spread throughout the economy and include repair and maintenance services, insurance, food, gear, equipment, fuel, crew transportation, bait, ice, professional services and many other items.

In total, spending on goods and services in support of harvesting and processing may reach \$300 million or more.

The industry paid raw fish taxes of \$27 million in 1987 and is the major contributor to the \$5 million marine fuel tax. Harvesters also tax themselves in excess of \$4 million annually for support of regional aquaculture programs. License fees and local sales and property taxes generate millions from seafood industry activities.

Estimated Capital Investment in Alaska's Seafood Industry, 1988

Investment in Harvesting Vessels and Onboard Equipment	\$2.0 billion to \$2.3 billion
Investment in Commercial Fishery Permits	\$900 million to \$1.0 billion
Investment in Seafood Processing Plants and Equipment	\$800 million to \$1.0 billion
Total Capital Investment in Alaska's Seafood Industry	\$3.7 billion to \$4.3 billion

Seafood-Related Agencies and Organizations

Important to any major industry are the support organizations and government agencies which regulate and serve that industry. In Alaska, these entities make a substantial contribution to the state's economy in general, and to the seafood industry in particular.

For example, among government agencies the Alaska Department of Fish and Game operates hatcheries that contribute to common property fisheries. The University of Alaska offers education, training, basic and applied research, and field advisory services in support of the industry. The National Marine Fisheries Service performs biological and technical research, as well as enforcement services to protect Alaska's fisheries. One unique and beneficial program is the cooperative marketing program financed jointly by the State of Alaska, the federal government and the industry through

the Alaska Seafood Marketing Institute.

Both state-run hatcheries and private non-profit hatcheries produce fish for the common property fishery. These fish are worth many times the costs of hatchery production.

Other groups, such as harvester and processor organizations, lobby for programs and legislation on behalf of the entire industry.

While these industry benefits are great, the economic benefits to the state are also significant. The agencies and organizations are both support sector (education, research, lobbying) and basic sector (fish production) contributors to the economy. Agencies and organizations directly related to the seafood industry in Alaska contribute a minimum of 1,100 jobs in average annual employment; an annual payroll of at least \$40 million; and a total annual budget in support of the seafood industry of \$82 million, the majority of it State of Alaska money.

Agencies and organizations directly related to the seafood industry in Alaska contribute... an annual payroll of at least \$40 million....



Hatchery-spawned chum salmon. In 1988, 24% of the total Alaska commercial and sport fishing salmon harvest originated in Alaska's state-run and private non-profit hatcheries. Inset— Pink salmon yolk fry. At this early development stage, salmon rely on nutrients stored in their yolk sacs, and are especially vulnerable to environmental contaminants. Cooperative state and federal research programs are developing more productive ways to ensure a consistent supply of healthy hatchery salmon.

Conclusion

The Alaska seafood industry is a diverse and evolving giant in the Alaska economy and its rhythms underlie the lifestyles of communities throughout the state. It provides jobs and income for more Alaskans and in more locations than any other private industry. Economic benefits of this multi-billion dollar industry are distributed from Ketchikan to Kotzebue, in urban and remote areas.

The industry's politics and management span Juneau, Anchorage, Washington, D.C. and other states and countries, and its markets are widespread. The sometimes exasperating political web often helps (and sometimes hinders) the industry's growth.

Extending U.S. fishing efforts into the Exclusive Economic Zone is a national success, and it is now Alaska's challenge to make it a state success. Marketing can be an effective means of improving the appeal of the industry's products. Hatchery production, limited entry, rejuvenated salmon runs, a bank devoted to seafood industry finance, and reductions in foreign interception are other examples of political and regulatory successes.

Finally, the lifeblood is the individual drive of the men and women who harvest, process, distribute, transport, market, and support Alaska's renewable resource.





A P-I
SPECIAL
REPORT

FIRST
OF
THREE
PARTS

Hatching Trouble

Wild salmon in upstream fight for life

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By Rob Taylor
P-I Reporter

In the century since the first one opened, the Northwest's fish hatcheries have come to be seen as the solution to a host of problems wiping out wild salmon.

In recent years, however, a disturbing irony has become increasingly apparent: Hatcheries themselves are part of the problem.

Hatcheries are helping to push wild salmon toward extinction across the region, scientists say. Furthermore, they say, the resulting loss of genetic diversity may sow the seeds of the hatcheries' own decline.

"Promotion of the hatcheries has been at a major cost to wild fish in this state," says Rolland Schmitt, regional director of the National Marine Fisheries Service.

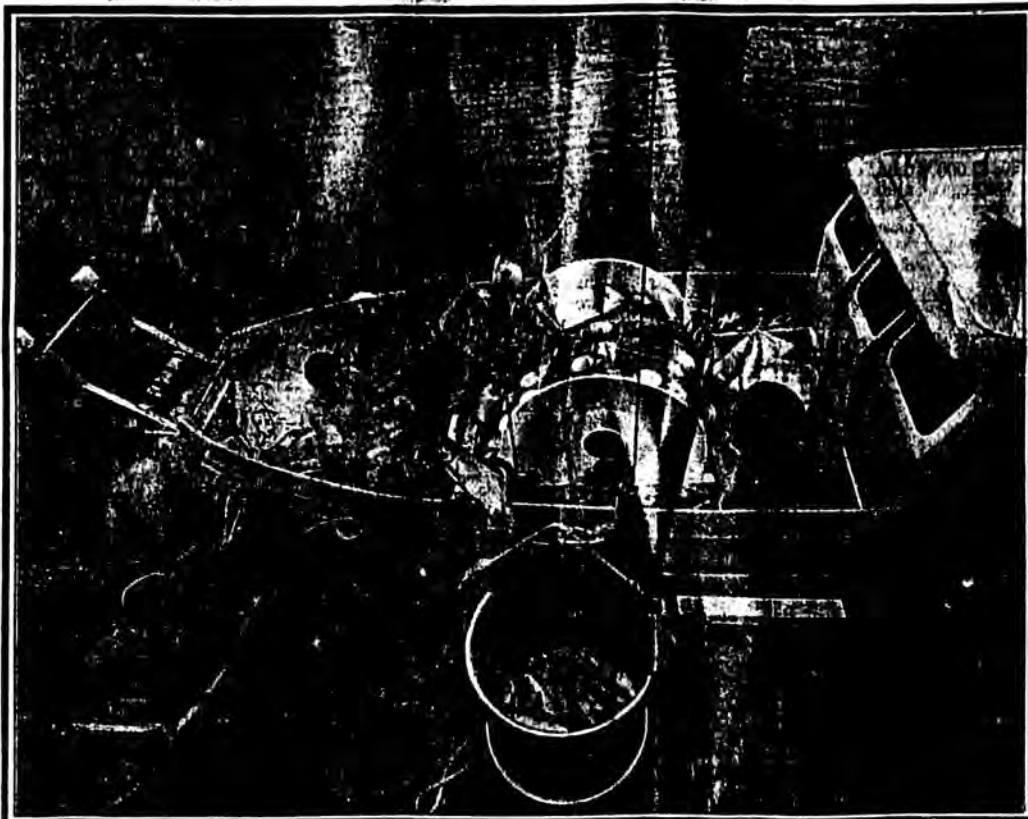
Genetic diversity enables fish to adapt to environmental change, so the range of genes present in wild fish is crucial to the long-term health of fisheries, says Anne Kapuscinski, a geneticist retained by the Northwest Power Planning Council. As they are depleted, she cautions, "we run the risk that the hatchery runs will not be able to adjust in the future, and they'll start crashing on us."

While that dire forecast is not universally accepted, its influence is growing. And with the Endangered Species Act amplifying such concerns, hatcheries may never be the same.

"At this point," Schmitt says, "we need to focus our energies on putting wild-fish needs ahead of the hatcheries."

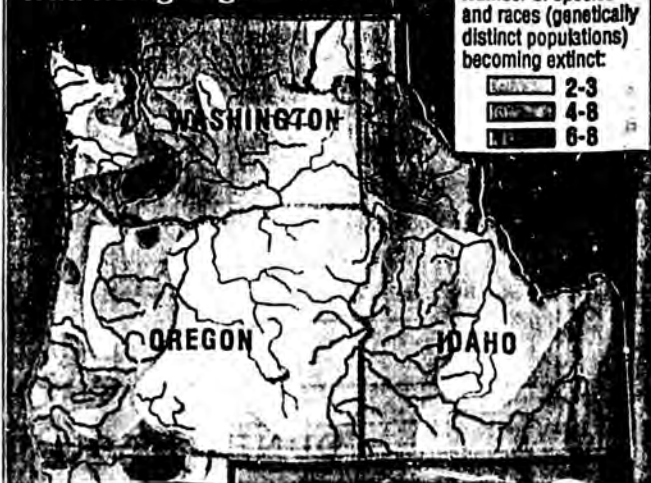
The evolving shift threatens a big enterprise. Since Washington's Lower Kalama Hatchery was dedicated in 1895, Washington and Oregon alone have sprouted more than 100 state and tribal hatcheries. They cost about \$50 million a year and provide some 70 percent of the region's coho, chinook and steelhead catch.

Hatcheries have increasing



Salmon are unloaded from the gillnetter *Jupilar* after a good night of fishing out of Bellingham. From left are Francisco Mata, Monty McIntyre and Josue Plata. Hatchery spawned fish have increased the catch but may be threatening its future.

Wild fish going extinct



■ **Today:** Hatcheries have helped fill fishermen's nets but are pushing wild salmon and steelhead runs toward extinction — and causing a genetic loss that may lead to the hatcheries' own decline.

■ **Tomorrow:** Hatchery fish are often less hardy than their wild cousins but can push the wild fish out or breed ill-suited genes into their runs. Some recreational fishermen revere wild fish.

■ **Friday:** Spurred by endangered-species concerns, fishery managers are considering changes to boost wild runs. This could cut harvests but fend off greater losses.

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HATCHING TROUBLE

Hatcheries: 'Good way to augment wild fish' or pacifying 'narcotic'?

From Page 1

ly propped up fish harvests as logging, development, dams and diversions have devastated streams and rivers. From Prince William Sound in Alaska to Oregon's Rogue River, fishermen want salmon they can sell on the docks or take home to their families. Hatcheries remain the quickest way to get them.

Steve Arbaugh, president of the Puget Sound Gillnetters Association, presses for more hatchery construction.

"We've lost a lot of habitat, and we're not going to get it back," Arbaugh says. He calls hatcheries "a good way to augment wild fish."

But developments in recent years have bolstered arguments against hatcheries, particularly the maximum-production methods critics say have caused most of the problems.

Studies show wild fish are dying out at an alarming rate. More and more scientists say that strong fish catches can't be sustained without them.

Critics say hatchery fish can harm their wild cousins in a variety of ways. Besides narrowing genetic diversity, the hatchery fish push wild ones off feeding stations, compete for food, attract predators and fishermen and spread disease.

By helping to prop up fish production, the critics add, hatcheries have blinded people to widespread destruction of river and stream habitat for fish and other creatures.

Hatcheries "have become a narcotic served to pacify society, to block society's awareness of what is really going on in our coastal ecosystem," writes Bob Francis, head of the University of Washington's Fisheries Research Institute.

Take the Nooksack River near Bellingham, for example. Biologists say decades of heavy fishing geared to hatchery production have pushed the river's wild coho to the brink of extinction.

Every spring, the state hatchery on Kendall Creek and the Lummi Tribe's Skookum Hatchery on the South Fork spew out about 4 million coho.

When the fish return after six to 18 months at sea, they typically face a seven-day-a-week gantlet of nets that one biologist calls "almost a wipe-out" fishery. Non-Indian fishermen prowling Bellingham Bay, Lummi stakenets and skiffs cut off fish along the shoreline. More Lummi fish the first few miles of the river, and Nooksack Indians wait upstream.

The state and tribes set the allowable catch to maximize harvest while letting through enough spawners to rear the next hatchery generation. Hatcheries sharply cut mortality in the first months of life, so only about 5 percent of the run is needed.

But hatchery and wild fish get scooped up together in fishermen's nets. So the 5 percent survival rate applies to the wild run, too — a mere 500 wild spawners.

There is no mystery about what this does: It gradually exterminates the wild stocks, which biologists say generally cannot sustain harvest rates above 60 percent or 70 percent.

The 5 percent survival rate for wild fish is "ludicrous," concedes Larry Peck, director of salmon culture for the state Department of Fisheries. "It ought to be much higher."

"The assumption is you're overharvesting the wild fish," says Tim Flint, a department biologist. "You'd expect to see a long-term decline."

Fishermen haven't complained. They say hatcheries have kept local catches from falling due to habitat loss, mostly from logging.

For harvest managers, "the pressure is intense to overharvest," says Bill Graeber, another of the department's biologists. They seldom hear complaints that too few wild fish reached their spawning beds. But when hatcheries get back more spawners than they need, "all the user groups jump up and down and say, 'Why are you letting all these fish go to waste?'" Graeber says.

This year, however, the Nooksack hatchery run stumbled. Only a trickle of returning coho slipped past Lummi Island and up the river. Fishermen were lucky to get their gas money back.

No one is certain why; biology isn't that precise. But the drop offered a glimpse of what some scientists and fishery managers warn could someday be common if wild runs die out and genetically uniform hatchery fish can't adjust to change.

In Washington, harvest for 36 of 101 managed stocks are currently geared to meet the needs of hatcheries rather than wild fish.

Given the demand for fish and the decline of

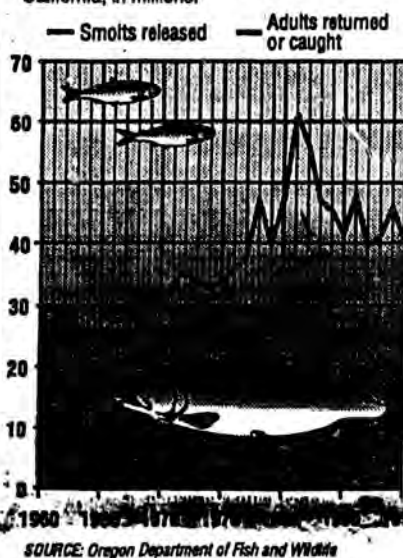


Cruising the Nooksack, members of the Lummi Tribe hunt for a place to net salmon for hatchery breeding. The normal return wasn't enough.

GRANT M. HALLER/P-I

Diminishing returns

■ Output of coho smolts from hatcheries in the Columbia Basin and rivers feeding the Pacific Ocean from the Columbia River to northern California, in millions.



SOURCE: Oregon Department of Fish and Wildlife

DUANE HOFF/MANIP-I

natural habitat, "it's about the appropriate mix," says Joseph Blum, Department of Fisheries director. Jim Lichtowich, former research chief of Oregon's Department of Fish and Wildlife, strongly disagrees. "There has never been any scientific proof that that is the right mix," he says.

Oregon, in fact, has already stopped gearing management toward hatcheries' needs along coastal streams and plans to protect all wild runs there.

The threat in hatchery-management areas is not only to the numbers of wild fish but to their genetic integrity, as well. The wild Nooksack coho may already have been genetically altered by interbreeding with hatchery fish, which have been imported from other watersheds as recently as two years ago.

The Nooksack run has plenty of company under this genetic cloud.

British Columbia is "all but annihilating" wild

chinook in some areas with overfishing geared to hatcheries, says Brian Riddell, a biologist for Canada's Department of Fisheries and Oceans.

The lower Columbia coho may have disappeared, federal officials say. Though it lived below the dams, it has been caught between tens of millions of hatchery fish and intense fishing for them.

Along the Pacific Coast, 160 native wild salmon, steelhead and cutthroat trout runs face a moderate to high risk of extinction, according to the American Fisheries Society, the leading fishery biologists' professional group. More than 100 of those runs face high risk of being mongrelized by interbreeding with hatchery fish, the group says.

Europe and Asia, too, have seen wild runs disappear, and many areas have reported declines in hatchery productivity.

Hatcheries, of course, are only one of many threats to wild fish; dams and urbanization outweigh their impact. But many scientists argue that hatcheries bear major complicity. "Their role is so intertwined with all the other factors that it is impossible to pull out," Lichtowich says.

Concern about wild stocks stems from the belief that genetic diversity is crucial to survival of all species and particularly to salmon.

Over millennia, wild salmon have evolved many genetically distinct races, or stocks, many of them uniquely suited to a native lake, river or stream.

That diversity is valuable in fish runs for the same reason it is valuable in a stock portfolio: for stability. One strain of coho may be vulnerable to a disease, a change in ocean currents, or global warming. But with many fish stocks, scientists say, chances are good that some will continue to prosper.

The demise of wild runs and careless hatchery breeding have already narrowed this genetic diversity. Continued over time, some scientists say, that could leave wild and hatchery runs with too narrow a genetic base to survive changing conditions.

Some managers scoff at gloomy forecasts. Bill Hopley, assistant director of salmon culture for Washington's Department of Fisheries, dismisses

the threat of a crash as "theoretical" and far off even if it were to happen. He notes that Northwest hatcheries have operated for almost a century without a genetic catastrophe.

Fred Allendorf takes little comfort from that fact. The University of Montana geneticist likes to show slides of native Montana cherry trees prospering while a nearby orchard of imported cherry trees is cut into firewood. The non-native trees survived for 80 years but all died in a 1989 cold snap.

"Just because something has survived in that environment for 50 years or so," Allendorf says, "doesn't mean they can survive long term."

A dearth of scientific information and public debate clouds the issue.

Federal and state officials admit they have no genetic information on the wild Nooksack coho, for example. They don't know if it has valuable genetic traits or even if its original genes have survived. There is talk of broad surveys of fish populations.

Fishery managers have been "knowingly causing extinction of wild populations" without scientific justification or public discussion, charges Bill Bakke, director of Oregon Trout, a leading advocacy group for wild salmon.

"If they're going to continue that policy," Bakke says, "it should at least be a public process."

Any major policy shift could be painful and face stiff resistance. Managing the Nooksack harvest to protect wild fish, for example, would require sharp cutbacks in fishing and create big surpluses of spawners at hatcheries, says Flint, the Department of Fisheries biologist. Fishermen regard them as waste because they are too near death to be sold for human food.

"It would defeat the purpose of the hatchery system," Flint says.

Even G.I. James, fishery manager of the Lummi Tribe, who reveres wild salmon, defends the high harvests that depress wild fish. His people can ill afford to forgo any income, he says.

"There are needs of the fish," James says, "but there are also needs of the people."

SEATTLE POST-INTELLIGENCER
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DATE: THURSDAY November 28, 1991

PAGE: A1

SECTION: News

ILLUSTRATION: Color Drawing & Photo

SOURCE: By Rob Taylor P-I Reporter

MEMO: A P-I SPECIAL REPORT: Hatching Trouble -- SECOND OF THREE PARTS
c. 1991 Seattle Post-Intelligencer

EDITION: FINAL

LENGTH: Long

SALMON HATCHERIES SPAWNING DANGER FOR STATE'S WILD FISH

Tiny wild salmon waited patiently, dispersed under logs and behind boulders, facing upstream as they watched for food to float by.

Hatchery fry burst in like a mob. Milling about in dense packs, they shunned the natives' time-tested technique. They raced after drifting debris, mistaking it for food. They let the current carry them downstream. And in what some call the "Pied Piper effect," about half the wild chinook joined the stampede.

The scene, watched by snorkeling scientists, followed the Leavenworth Hatchery's release of young spring chinook into Icicle Creek and the Wenatchee River a few years ago. It illustrates two problems with hatchery fish: Compared with their wild cousins, they are ill-suited for survival, and yet by sheer strength of numbers, they often displace wild fish.

Hatcheries "take eggs and make schmucks out of them," grumbles one fishery biologist. "Their behavior is completely different from wild fish."

Hatcheries are, to be sure, usually a substitute for habitat trashed by dams, logging and urban growth. They greatly expand fish survival through the early months of life. That has helped to meet a rising demand for fish, but at a cost.

Hatchery programs contribute to the decline of wild fish and often provide poor substitutes. Scientists worry that the decline of wild runs could lead to a kind of genetic bottleneck that could depress entire fisheries. This year, as the Endangered Species Act has been invoked to protect three wild salmon runs on the Snake River, agencies are taking a new look at hatcheries' benefits and costs.

Ray Hilborn, a University of Washington professor of fishery biology, claims the costs are high - in dollars and lost wild fish - and that the benefits have been overstated.

Many hatcheries' adult survival rates are abysmal, Hilborn says. The Leavenworth Hatchery produces only about three adult fish - caught or returned to spawn - for each 1,000 released.

Low returns can drive the cost of fish far above their market value. A UW study of four British Columbia hatcheries found that the adult catch from one, the Fraser River's Quesnel Hatchery, cost about \$500 per fish, Hilborn says. The cheapest, he asserts, cost about \$5 a pound even without counting the costs of catching, cleaning and selling the fish.

Some justify the costs as the price of urbanization or cheap hydroelectricity. But Hilborn contends the money would be better spent on improving habitat.

The Leavenworth Hatchery, he says, "is not doing anybody any good. It's just driving the wild fish into the ground."

In the wild, superiority of wild fish is well-documented. Studies have

shown they produce two to nine times more returning adults than hatchery fish mating in the wild. Wild fish survive better at sea and return more surely to their native spawning grounds.

At the extreme, hatcheries can even cause a net loss of fish. A multiyear Oregon study compared coastal streams seeded with hatchery fry with those that were not. The seeded streams suffered a 40 percent drop in wild fish. And despite a slight increase in the initial adult returns, seeded streams contained 32 percent fewer fish overall in the second generation.

That study shook Oregon's fishery programs. They cut back seeding of coastal streams and capped hatcheries and harvests there to protect wild fish.

Where hatcheries do succeed, Hilborn contends, they usually drive out wild fish but have trouble sustaining their initial production. "Ten years down the road, they get half or a quarter of what they initially got."

Since the early 1960s, for instance, hatcheries from southern Washington to northern California have doubled their output of coho smolts, but their returning adults have dropped since the mid-1970s.

Scientists are divided on the cause of such declines. Some blame factors such as ocean conditions rather than hatchery shortcomings.

Not all areas are seeing production fall. Bill Koss, assistant director of the Washington Department of Fisheries salmon program, says the state's total salmon production has grown, thanks largely to hatcheries, to an average of about 8 million salmon in the late 1980s from 5 million in the early 1960s.

"We can have coexistence of wild fisheries and hatchery fisheries, without having one negatively affecting the other," Koss asserts.

Hilborn calls that claim "one of the great lies."

Despite their differences, both sides agree that in many places more hatcheries would bring diminishing added returns, if any. The Columbia River system, for example, now receives more juvenile fish each year than ever by Hilborn's count. Its returning adults, however, have dropped to between one-fifth and one-eighth of their historic abundance.

Bob Francis, head of the UW's Fisheries Research Institute, argues that hatcheries may have bumped against the limit of the Columbia's present capacity.

For hatchery fish, low survival stems partly from conditioning. Fed pellets in crowded pools, they fail to recognize predators and know little about scavenging in the wild. They charge food, wasting valuable energy.

Genetically, non-native hatchery stocks tend to be less adapted to local conditions than natives. Human management may exacerbate the problem. And narrow genetic heritage may reduce their ability to adapt to future change.

Selective breeding can backfire. A state Department of Wildlife effort to breed bigger steelhead produced a lot of albino fish. Taking eggs and sperm from the first fish to return, once a common cost-cutting move, has reduced survival rates of hatchery fish in the wild; their eggs hatched during winter floods.

Another harmful practice has been the transfer of eggs and fish from one watershed to another. The Columbia River's Bonneville Hatchery has received chinook eggs from as far away as Eastern Washington, Southern Oregon and even Alaska.

Such exchanges are now more tightly controlled, but throughout the Northwest they have eroded genetic differences among both hatchery and wild stocks.

Agricultural science has demonstrated the costs of such uniformity, as new hybrids gave farmers higher yields but new vulnerability. The National Academy of Sciences blamed genetic similarity for an epidemic of corn blight in 1970

and 1971. Corn plants "had become as alike as identical twins," the academy said. "Whatever made one plant susceptible made them all susceptible."

The Lyons Ferry Hatchery provides an unusually clear example of how hatcheries can promote such uniformity. Built by the Washington Department of Fisheries to compensate for the toll dams had taken on the Snake River fall chinook, Lyons Ferry, instead, may have helped push the run into extinction.

The Snake River's fall chinook run once was one of the most productive in the Northwest, but it dwindled in the 1960s and '70s as seven huge dams converted pools and rapids to a chain of tepid lakes. By last year, the late-summer flood of quicksilver had tailed off to a trickle of 78 fish.

For several years, even as the run declined, the hatchery steadily culled almost one-third of the wild spawners in a vain effort to meet its assigned production goal: replacing 18,300 returning fall chinook lost to the dams. It never came close.

"They've been taking way too many of the wild fish," says Rolland Schmitt, regional administrator of the National Marine Fisheries Service.

If the Lyons Ferry managers erred, Oregon officials did worse. They flooded the Snake River with genetic outsiders: strays from a mismanaged effort to restore runs in the Umatilla River.

Adult fish returned to find irrigators had left only a trickle of water in the Umatilla. Spawners didn't have a chance of staying there, says Larry Peck, director of salmon culture for the Washington Fisheries Department.

Since the mid-1980s, countless Umatilla hatchery fish have glided past the river's parched mouth and up the Snake River, where Lyons Ferry managers unwittingly mixed them with the fall chinook they bred in captivity.

There are signs the same thing has happened in the wild. Stream surveys last year found that hatchery fish made up as much as three-quarters of the fish on Snake River spawning grounds.

Interbreeding "severely contaminated what we have known as wild Snake River fall chinook," Schmitt says. The incident "raises the question of whether we even have any wild chinook left."

Schmitt's agency has proposed listing the run as "threatened" under the Endangered Species Act and said in a report that hatchery operations "pose clear and immediate threats" to its genetic integrity.

Fred Allendorf, biology professor at the University of Montana, Missoula, warns that many such losses "will lead to disastrous losses of biodiversity." If remaining fish are left with a narrow range of genes, he warns, they could fail to adapt to changing conditions and collapse.

Bill Hopley, assistant chief of salmon culture at the Department of Fisheries, dismisses the threat of a crash as "theoretical."

Research is so sketchy "that nobody can claim for a fact to know" that salmon stocks will crash, he says. If it were to happen, he suggests, such a catastrophe would be far distant. "We're talking evolutionary time scales here."

Jim Lichatowich, former head of research for Oregon's Department of Fish and Wildlife, says waiting for irrefutable proof risks disaster.

"To prove it," Lichatowich says, "you would have to bring the resource close to collapse. That's not a responsible policy."

CAPTION: (1) DUANE HOFFMANN/P-I

(2) GRANT M. HALLER/P-I -- "There's just something wrong there," Pete Soverel says of hatchery fish, which rush toward men, expecting food - an unnatural behavior. He wants some hatcheries phased out and their budgets used to repair habitat.

SEATTLE POST-INTELLIGENCER
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DATE: THURSDAY November 28, 1991

PAGE: A4

SECTION: News

SOURCE: By Rob Taylor P-I Reporter

DATELINE: SKYKOMISH RIVER, NEAR GOLD BAR

MEMO: A P-I SPECIAL REPORT --*HATCHING*TROUBLE*

c. 1991 Seattle Post-Intelligencer

EDITION: FINAL

LENGTH: Medium

ANGLERS SEE DECLINE OF WILD FISH AS MORE THAN LOSS OF SPORT

A wall of firs and white mist looms behind the river. Three mergansers shoot past, bank left with the stream and are gone. Pete Soverel's eye returns to his fly, angling across a green ripple 80 feet downstream.

Soverel's hat brim drips with drizzle - perfect weather for a fly-fishing fanatic. And Soverel, who spends 50 days a year up to his thighs in rushing green water, is certifiable.

His target is the wild steelhead, a silvery ghost that can explode from smooth water like a bolt of lightning. One swirls by Soverel's No. 6 caddis fly. "Yeaahh," exclaims the fisherman. He gathers armloads of line to cast again.

Chairman of the steelhead committee of the Federation of Fly Fishers, Soverel worships fish that have never eaten pellet food or milled about in rearing ponds.

Wild fish "take their time" returning from the sea, he says. They disperse along the river to lie in fast-moving, streamy water. They hit a fly more aggressively and fight harder than their domesticated cousins.

Hatchery fish, Soverel figures, behave more like nervous commuters. Returning adults rush back to their hatchery site, leaving anglers crowding by the outlet pipes to catch them.

They behave unnaturally, rushing toward men, expecting food. "There's just something wrong there," he says.

Here in the Skykomish, he says, wild runs are depressed.

Soverel calls hatcheries "perhaps the worst" of the calamities that have befallen Northwest salmon and steelhead. His distaste is part science, part aesthetics and part "Pete theories," accumulated in 30 years casting lines.

Soverel wants hatcheries phased out where they conflict with wild runs and their budgets converted to repairing habitat.

His group favors making anglers release wild steelhead until studies show runs are healthy. Anglers could keep hatchery fish, which can be marked.

In a step in that direction, the Wildlife Department proposes to require the release of wild steelhead caught in Western Washington from June to November 1992.

For every Pete Soverel, there appear to be plenty of fishermen who are glad to have hatchery fish. The fact is that about 80 percent of steelhead caught in the Northwest come from hatcheries, and the proportions for coho and chinook are almost as high.

Hatchery fish "are just as big and fight just as hard as natural-spawning fish," says John Kelly of the King County Outdoors Sportsman Council.

"We need hatcheries," agrees Geoff Lebon, president of the Washington Trollers Association, an ocean-fishing group.

"We've ruined our habitat," Lebon says, "especially in the middle of the

Puget Sound. Without hatcheries, we wouldn't have much of a fishery.'

But many anglers take Soverel's approach, revering wild fish and viewing their peril as an index of environmental damage.

Bruce McNae, president of Washington Steelhead Flyfishermen, says, 'They're the coal miner's canary.'



A P-I
SPECIAL
REPORT

Hatching Trouble

LAST OF
THREE
PARTS

Pressure grows for correction in hatchery course

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By Rob Taylor
P-I Reporter

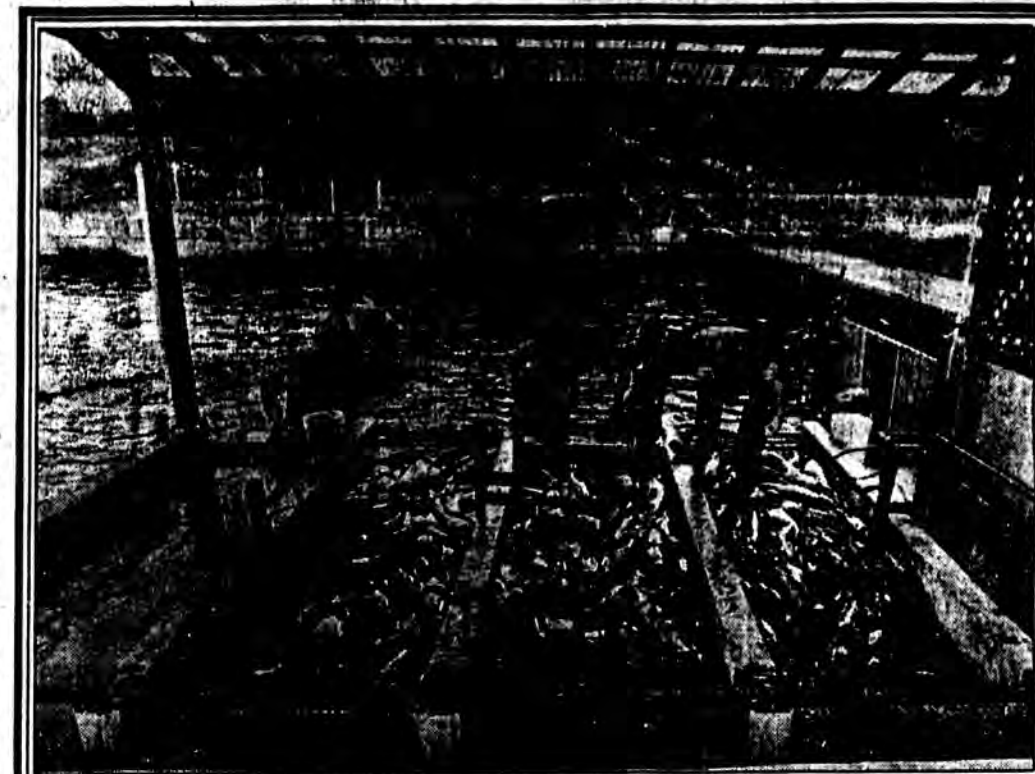
Northwest fishery managers shaken by recent moves to protect endangered salmon runs are reconsidering long-accepted conflicts between hatcheries and wild fish.

Managers have been learning a lot, says Anne Kapuscinski, a University of Minnesota fishery geneticist who has studied the region. They have "finally realized" in their gut that they have to think about the long-term prospects of these fish populations.

Yet it remains to be seen whether their gut can override their ears. Politicians, fishermen and Indian tribes still clamor for larger catches and more hatchery production. Scores of new projects are planned for the Columbia Basin alone, despite concerns that they may do genetic mischief.

The next few years will see sharp debate over how far the region will go to protect its wild salmon and steelhead runs. There is growing pressure for a course correction that redesigns hatchery programs, controls their expansion and selectively reduces their output. And while managers are searching for easy solutions, significant change threatens to be both contentious and painful.

Biologists have long complained that hatcheries take a toll on wild fish. Until recently, fishery managers have brushed aside such concerns in their pursuit of ever-larger harvests. If that pattern doesn't change,



GRANT M. HALLER/P-I

Department of Fisheries employees take eggs from chinook salmon at the George Adams Hatchery. Debate over hatcheries has intensified, but almost no one expects sweeping closures. Instead, some fishery managers are considering changes.

Kapuscinski warns, it will further deplete wild stocks, narrow the species' genetic diversity and raise the risk of eventual decline in the total catch.

Spurring fishery managers is a fear that environmentalists will barrage them with demands to protect specific runs under the Endangered Species Act. Already, the act is expected to force major change on hatch-

eries in the Columbia-Snake Basin, where protection was extended Nov. 14 to one run and has been proposed for two others. With an estimated 211 other wild runs reportedly in trouble across the Pacific Coast, agencies are re-examining entire programs.

"We're going to see these

See HATCHERIES, Page A4

■ **Today:** Fishery managers are considering changes to boost wild runs.

■ **Yesterday:** Some recreational fishermen revere wild fish.

■ **Wednesday:** Hatcheries help fishermen but are pushing wild fish toward extinction.

Hatcheries: Casting about for a model that harmonizes with nature

From Previous Page

would displace wild fish without increasing harvests.

Lawmakers also keep demanding more. Both the state Legislature and the Northwest Power Planning Council have called for doubling fish runs. The Columbia Basin System Plan, prepared by all agencies and tribes in the basin, calls for more than 60 new hatchery production projects.

Hilborn, the UW biologist, calls the doubling goal "the most dangerous thing I've ever seen."

"We've got to be weaned from the attitude that when you have a problem the solution is a hatch-

ery," he says. "It's fantasy to believe we can have a lot more fish by relying on hatcheries."

Kapuscinski worries that a willy-nilly hatchery boom would only "further erode the genetic resources and deplete wild populations."

Ironically, some managers offer special hatchery programs as the best hope for restoring threatened wild runs. Though controversial, the idea has won support from some critics of traditional hatcheries.

Hatchery mismanagement contributed to the decline of the Snake River fall chinook, for instance, but Larry Peck, head of

Salmon Culture for the Department of Fisheries, says hatchery breeding is crucial to that run's recovery. He notes hatcheries' success at preserving a White River spring chinook run that was nearly wiped out by urbanization.

Hatchery proponents are casting about for a new model that harmonizes with wild-fish runs.

The Bonneville Power Administration plans a massive test of such a concept. Its \$40 million Yakima Project seeks to harness hatcheries to rebuild wild runs, rather than just churn out more fish.

The Yakima Project plans to incorporate the best science and

make hatchery conditions more natural. Plans call for releasing fry from many remote ponds to improve homing and disperse their impact. Biologists say the project would use only wild-fish eggs, release fish early and perhaps wean them on insects and expose them to a few predators.

Some fishery managers view the project as a "possible panacea," says Lars Moberg, a consultant on the project. And similar proposals to supplement wild fish are multiplying.

Private groups are trying the same thing. Long Live the Kings, a non-profit group, has been rearing threatened Olympic Peninsula

salmon for five years.

"We're not trying to create new hatchery runs," says John Sayre, head of the group. "We're trying to get naturally spawning fish to where they can sustain themselves, and then we'll get out of there."

The Northwest Power Planning Council is talking of seeding streams with many more hatchery fish where wild runs have declined, says council spokesman Ed Sheets.

Many biologists are skeptical, noting that such projects have often failed to help wild populations.

"If not done properly, it can

have an adverse effect on the genetic diversity of wild stocks," Sheets concedes.

The Yakima plan "seems like a kinder, gentler way to run a hatchery," says Craig Busack, a Department of Fisheries geneticist. "If it doesn't work, that says something serious about hatchery options for boosting natural production."

Kapuscinski warns against sweeping generalizations. While hatcheries "may have been part of the problem, they can be part of the solution in the future."

But she urges caution. "I'm leery of having your cake and eating it, too."

Hatcheries: Some fishery managers look at stressing production quality

From Page 1

petitions come in whether we like it or not," says one state Department of Fisheries official. "We want to be ready to be either doing something already or to have policies to deal with wild-fish problems."

Fishery managers want to avoid the fate of their counterparts at the U.S. Forest Service, whose reluctance to protect the northern spotted owl led federal courts to seize control of their timber harvest.

The only sure way to avoid harm to wild fish from hatcheries is to "just say no" to hatcheries, says Robin Waples, a National Marine Fisheries Service geneticist. Calling that position unrealistic, however, he says agencies should try "to minimize (hatcheries') adverse genetic consequences."

Almost no one expects sweeping hatchery closures. Joseph Blum, director of the Department of Fisheries, states flatly, "Hatcheries will be part of the mix in the state of Washington forever."

Instead, some fishery managers are talking about stressing quality: producing fewer hatchery fish with better survival rates and less effect on their wild cousins.

"Fisheries managers have focused for three decades on getting the maximum number of fish through hatcheries. That's what the public wanted," says Rolland Schmitt, regional administrator of the National Marine Fisheries Service and a former Department of Fisheries chief.

The challenge today, Schmitt says, "is to do what's necessary for wild stocks."

Preparing to meet that challenge, fishery managers are making plans to reduce conflicts between hatcheries and wild fish, shore up the genetics of hatchery runs, boost healthy wild runs and protect shaky ones.

For some old hands, changes already have been breathtaking. Oregon has established a policy to protect wild stocks in coastal streams and rivers. It curbs releases of genetically different hatchery fish that can overwhelm wild fish through interbreeding. Washington has tightened its breeding guidelines to avoid loss of valuable genes.

Both states have clamped down on transfers of fish and eggs round the region. Through interbreeding, such transfers can lessen the genetic distinctiveness of local stocks that gives resilience to the species as a whole.

Still, genetic safeguards in the region have a long way to go, says Kapuscinski, who reviewed them for the Northwest Power Planning Council. Her draft report said a number of policies "may be incon-



P-1/1987

Fisheries chief Joseph Blum: "Hatcheries will be part of the mix in the state of Washington forever."

sistent with the goal of conserving genetic resources in fish stocks."

Skeptics question if the revolution will go beyond a paper exercise.

Though Oregon is considered progressive, officials of its Department of Fish and Wildlife concede that many releases of non-native steelhead violate their own wild-fish protection policy and that the policy doesn't even apply to its portion of the Columbia Basin. Oregon also is shrugging off objections to releasing fall chinook from the Rogue River into the Columbia Basin, an entirely separate drainage.

Washington's policies are less progressive and no better enforced.

"They don't have any quality-control programs," claims Phillip Mundy, manager of fishery science for the Columbia River Inter-Tribal Fish Commission, which speaks for tribes on the Columbia. Washington's hatchery managers, he says, are "virtually autonomous."

Critics say the agencies need to avoid imposing hatcheries on rivers with viable wild populations. They talk of relieving fishing pressure temporarily in places to let wild stocks rebuild. And some want to divert money from hatcheries to repair and protect stream habitat. Kapuscinski says hatcheries should usually be temporary expedients that are closed once habitat is restored.

Others have proposed much stronger medicine. Reginald Reisenbichler, a U.S. Fish and Wildlife Service researcher who pioneered the study of hatchery impacts, has recommended that hatchery releases be kept small relative to wild populations, that harvest rates be limited to what wild runs can sustain, that hatch-

ery fish be kept genetically similar to local wild runs, and that harvests be targeted more precisely on hatchery returnees.

The ideas extend to the radical. One consultant has suggested that Columbia fishermen use live traps instead of nets, so that wild fish can be released alive. Others have even suggested sterilizing hatchery fish so they can't pass on their weaknesses.

Political and economic barriers to change are formidable. Hatcheries are a pillar of the region's fishing industry, providing about 70 percent of coho and chinook catches. Many hatchery supporters contend that no viable substitute exists.

"We've so degraded the environment that we cannot keep fish without hatcheries," says Mundy, the tribal biologist.

Protecting all wild runs would mean "that we'd have a lot less fish," says Jim Ames, one of the Department of Fisheries' biologists. "The public is just not going to accept that."

This generates strong emotions and heavy pressures. Inside fishery agencies, officials who criticize hatcheries say they have been ignored and faced reprisals. Several spoke only after they were promised anonymity.

One bitter insider charges that biologists "are making wild stocks extinct left and right, and they're afraid to say anything. They're meek, mild people, and they don't want to lose their jobs."

"I know a number who would like to do the biologically correct thing, but they're not allowed to," agrees a consultant. "It's all set on political and economic grounds. If they base their position on biological grounds, they would get fired or their boss would get fired."

A chasm separates the poles of the debate. Ames contends that in many instances, hatcheries' impact on wild fish is "very small." University of Washington Professor Ray Hilborn counters, "Anywhere you have hatchery stocks go in, you almost always see the wild stocks disappearing." Research is too sparse to prove either claim as a general rule, scientists say.

Though few Northwest hatcheries have been built in the past decade, pressure to build them continues.

Indian tribes are boosting demands for hatcheries. A tribal hatchery was dedicated last summer on the Nisqually River. Another is being built on the Umatilla River. A huge, new hatchery complex is planned for the Yakima and Klickitat rivers. And the Quinault Tribe plans two on the Olympic Peninsula, despite a state study that found one of them

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Anchorage Daily News

VOL. XLVI, NO. 227, 108 PAGES

ANCHORAGE, ALASKA, THURSDAY, AUGUST 15, 1991

PRICE 25 CENTS

Millions of hatchery pinks waste away

Location of Prince William Sound Salmon Hatcheries



RON ENGSTROM / Anchorage Daily News



BILL ROTH / Anchorage Daily News

Glut of returns finds no takers

By HAL BERNTON
Daily News business reporter

Several million pink salmon may rot unharvested in the dead-end bays of Prince William Sound hatcheries as weak markets, a shortage of processors, and weird fish behavior create a chaotic climax to the 1991 salmon season.

"The fish will stay around in the bays until they roll over and die," said John McMullen, president of Prince William Sound Aquaculture Corp. "I can see at least 4 million fish perishing — or more."

The aquaculture association is the nation's largest producer of hatchery fish. It normally sells a portion of the salmon returning to hatchery bays to help finance operation.

But this year the salmon run is the latest in history, 10 days behind schedule. And the pinks are darkening and taking on spawning hues as they mill-around hatchery

vs.

Prince William Sound pink salmon. Buyers are lacking this year.

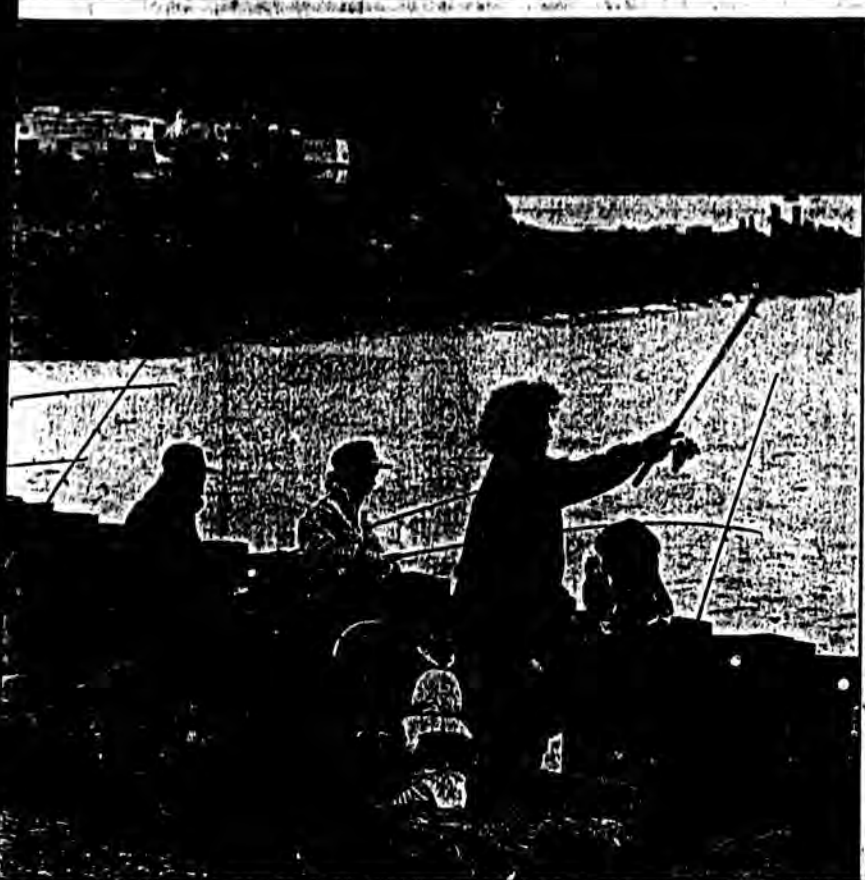
Please see Back Page, PINKS

logist

COMING HOME WITH HIS DAUGHTERS

Weather
curtains

THE BACK PAGE



BILL ROTH / Anchorage Daily News

ay during the 36th Annual Seward Silver Salmon Derby. Story in Sports, C-4

ng opens way for Native hunting

0. The animals were nearly wiped and down the West Coast by widespread and American commercial in the late 1800s. d stressed in his ruling. This should not be construed as authorization for all killing of hundreds of sea Roberts (and other Natives) who he ban say they foresee limited of the animals and want to work government to write a management protect otter populations.

the mid-1980s, the last time many hunted sea otters in Alaska, fewer animals a year were killed. The issue goes back to 1985 and a collected teddy bears made from sea otter hide by a Larsen Bay woman, Marina Hoff, they and other sea otter clothing were seized by federal agents. Kodiak gift shop.

1972 act, which is intended to protect seals, otters and other sea mammals. ing most common hunting, he allows Alaska Natives to continue them for subsistence and to make native articles of handicrafts and "Non-Natives cannot hunt marine s for any reason."

law is vague about what "authentic" out in the case of the teddy bears, its argued they weren't traditional. eventually also seized the sea otter

parka and hat of a Tlingit from Sitka, arguing his metal snaps and zippers weren't traditional either. The Natives went to court.

Eventually, the Fish and Wildlife Service ruled that no sea otter handicrafts or clothing could be sold by Natives and that it was illegal to hunt otters to make the items. The service argued there was no commercial use of sea otters in 1972, when the marine mammal act passed, and therefore none should be allowed now.

But Holland criticized the government's rationale, and much of his ruling centers on the question of what is traditional.

The judge noted that Native cultures thrived here before the arrival of whites in the 1700s, but that traditions began to change — including those involving sea otters.

To satisfy the Russian demand for sea otter pelts, Lord Baranoff issued an edict in 1792 forbidding Alaskan natives from hunting sea otters, the judge wrote. In their zeal to harvest sea otter pelts, the Russians enslaved the Aleuts of Alaska's coast, forcing them to harvest the species to near extinction.

The fact that Alaskan natives were prevented by circumstances beyond their control from exercising a tradition for a given period of time, Holland wrote, "does not mean that it has been lost forever or that it has become any less of a tradition."

PINKS: Buyers lacking for fish

Continued from Page A-1

Processors are spurning them in favor of fresher fish caught further out in the Sound.

"Ours are still very acceptable. But they want the brightest fish possible," McMullen said.

Only a fraction of the returning hatchery pinks are needed for eggs and sperm. The rest, if not harvested, simply die in the bays. The bust in pink sales could be a major financial blow to the aquaculture association, a non-profit organization formed by Sound fishermen. The association hoped to sell \$7 million worth of salmon but so far has less than \$1 million in sales.

Fishermen also are having big problems finding processors willing to buy pinks. One frustrated seine crew — unable to sell its catch — began a makeshift salting operation to keep the pinks from spoiling. "We're filleting out the fish on the back of the deck," said David Hall, a crewman with the Elizabeth.

Fishermen say the hatchery runs have been building for at least a week, but that salmon have shown an unusual reluctance to migrate toward the dead-end bays where they were first released.

State fishery managers didn't want to allow a wide-open harvest for fear that fishermen would also sweep up many wild pinks, which have had extremely weak returns to the Sound, according to James.

Finally, on Monday, biologists — under intense pressure from fishermen — opened up several large areas of the Sound to the fleets. The fishermen caught 3.5 million salmon — a record catch for a single 12-hour period — and promptly flooded processors with fish. That brought the total pink catch to date to more than 15 million.

On Wednesday, the state Department of Fish and Game again opened up harvest areas, but by then many processors were refusing to buy fish. "It's in the toilet," said Floyd Hutchens, a Sound seine boat skipper. "The entire system is plugged."

Many angry, frustrated fishermen ended up sitting out Wednesday's opening, tied to docks at Chenega Bay as fish jumped all around.

Processors say they are doing the best they can to keep up with the late run of fish.

But Gary Greenwood, a senior vice president of Peter Pan Seafoods of Valdez, said his plant got all the pink salmon it could handle in Monday's opening and didn't need any fish Wednesday.

Peter Pan does plan to buy some fishermen's harvests during an opening scheduled for today, but none from the hatcheries.

Greenwood said there also is no demand for pinks outside the Sound, because processors in Kodiak and Southeast also are swamped with big pink harvests.

Prices paid fishermen remain stuck at 12 cents a pound, the lowest in more than a decade.

Prince William Sound Aquaculture Association officials have feared for months that they might be faced with a huge wave of fish that nobody wanted.

Most of the pinks wind up in cans. Canned markets have been weakening for years, as surpluses of unsold product kept building. Then last year, biologists predicted a record Alaska pink harvest of more than 100 million fish, and a Commerce Department study indicated there wouldn't be enough processors to buy all the catch.

That prompted the aquaculture association to lobby state officials to help bring in more floating processors to handle the Sound catch.

Clem Tillion, Hicken's special fisheries assistant, said the state had persuaded several new processors to enter the Sound and there would be enough capacity.

But none of those processors showed up, said McMullen, the aquaculture association's president.

Hatchery officials put more than 1 million pounds of bay pinks up for sale earlier this week, and the only two bidders ended up backing out of their deals, McMullen said.

a cuts it short, gets praise, criticism

Alyeska ended se nearly two safety of the haul in the other clean-up. The drill, 10 a.m., should at least noon.

l, the cleanup, ued, he said. boats used in o a factor in to shut down Ed Thompson.

Coast Guard ice in Valdez, quite successful. The

more than 300 fishing vessels for cleanup help. During a real spill, even during the fishing season, an estimated 50 boats of all sizes would work the clean-up, Mitchell said.

Riki Ott, a commercial fisherwoman and president of the Oil Reform Alliance, criticized Alyeska's decision to cancel a drill when conditions are bad. Norwegians go ahead with spill drills regardless of the weather, she said.

Large emergency response vessels, tug boats and barges with oil-sucking skimmers mounted aboard them weren't affected by the weather and

Alyeska's decision to hold a major exercise outside the sheltered waters of Valdez Arm was a "major success," she said. Alyeska company showed a willingness learn from the shortcomings of this drill, she said.

Provant from the DEC said one of the four Transac oil skimmers aboard cleanup barges broke down. "This (new) piece of equipment should have been debugged before it was sent out on drill," Provant said.

Although the skimmer malfunctioned, company crews were able to repair it on the barge during the drill, Mitchell said. Mixed with his criticism, Provant

Anchorage Daily News

VOL. XLVI, NO. 236, 80 PAGES

ANCHORAGE, ALASKA, SATURDAY, AUGUST 24, 1991

PRICE 25 CENTS

Yeltsin upstages president

Gorbachev, Russian purge power structure

By FEN MONTAIGNE
Knight-Ridder Newspapers

MOSCOW — Russian Republic President Boris Yeltsin, riding high after playing a pivotal role in stopping a right-wing coup, launched an all-out assault on the Communist Party on Friday and pushed Soviet President Mikhail Gorbachev to name democratic reformers to head the military, the KGB and the Interior Ministry.

Yeltsin suspended Communist Party activity on Russian territory, banned party cells in the military and KGB, sealed the

SOVIET



CRISIS

party's Central Committee building and temporarily closed Pravda and five other hard-line communist papers.

Gorbachev announced that he had dismissed Foreign Minister Alexander Bessmertnykh because he had not opposed the three-day coup.

FROM FOOD FISH TO FISH FOOD



David Dominique, a crew member aboard the tender Baltic Sea, directs the hose Friday as his boat pumps 90,000 pounds of dead pink salmon out of its hold into Montague Strait in Prince William Sound.

BILL ROTH / Anchorage Daily News

YELTSIN: Gorbachev upstaged

Continued from Page A-1

"Why don't you read it now? You read this document."

A few minutes later, Gorbachev read it.

The Soviet president's appointments of the heads of the KGB, the military and Interior Ministry show that he may be realizing that the coup has provided him with an unprecedented chance to sweep away the reactionary forces that have resisted his perestroika reforms. The former heads of those departments all participated in the plot against Gorbachev.

Yeltsin, who pushed Gorbachev to make the appointments, actually announced them first — during a speech he made to the crowd gathered around the site of the toppled statue of Felix Dzerzhinsky, founder of the Soviet secret police. The statue was pulled down Thursday night.

The new defense minister will be Gen. Yevgeny Shaposhnikov, 49, the former commander of the Soviet air force who refused to obey the orders of the so-called eight-member State of Emergency Committee, which staged the botched coup.

Gorbachev appointed as deputy defense minister Lt. Gen. Pavel Grachev, 43, a commander of airborne troops who, during the coup, ordered his troops into position to defend the Russian Parliament from the hard liners.

Shaposhnikov — who replaces Dmitri Yazov, now under arrest — called in



GENNADY GALPERIN / Reuters

Russian President Boris Yeltsin, right, instructs Soviet President Mikhail Gorbachev during Gorbachev's address to the Russian Parliament on Friday.

sion reported today that Prime Minister Valetin Pavlov has been arrested for helping to lead the coup. He reportedly was ill when the coup began and has been in a hospital under guard since Gorbachev regained power.

Former Interior Minister Boris Pugo, one of the architects of the coup, shot and killed himself Thursday as police were on their way to arrest him.

Gorbachev said that Yeltsin and leaders from eight

ti-communist charge Friday. As Gorbachev looked on and legislators stood and clapped in unison, Yeltsin signed an order suspending the activities of the Communist Party in the Russian republic. The ban is to remain in effect pending an investigation into the coup.

The scene was another humiliation for Gorbachev, who could do little but stand at the podium and watch red-faced as Yeltsin pulled out a pen and announced

SALMON: Excess pinks taken to Montague Strait dump site

Continued from Page A-1

sea-going dump truck in the first day of a gargantuan effort to deep-six millions of pink salmon.

The darkening pinks have returned to their home waters in front of three Prince William Sound hatcheries where they were released last spring.

The bays are now crammed with more than 5 million fish, and Prince William Sound Aquaculture Corp., the non-profit association that operates the hatcheries, expects a total return of up to 10 million fish. That's enough fish to make salmon filet dinners for 20 million people.

Processors don't want to buy these pinks and have largely shut down operations throughout the Sound in a season of huge Alaska pink returns and weak markets.

Hatchery officials are working with the state to save some of the fish. But, with the aid of \$150,000 in state money, they also are moving ahead with a disposal effort that today is scheduled to dump as many as 2.5 million pinks at sea.

Hatchery officials want the fish removed as soon as possible because they are interfering with hatchery operations and, if not removed, would foul the bay as they rotted and sank.

The first dumping effort began Thursday morning at the Port San Juan hatchery in the southwest Sound. On this blue-sky day, there was a sound like heavy rain, a million and a half pink salmon jammed into the tail end of the hatchery bay, leaping out of the water and splashing back down.

"It's like having your worst nightmare, waking up and finding it's reality. But we might as well get started on the job," said Floyd Hutchens, a veteran Sound fisherman who has scrambled to set up his own processing line and hustled to find new markets to save some of his fish.

But he also had promised to aid in the hatchery clean-up. He volunteered the use of the Baltic Sea, and recruited a few other fishermen to aid in the effort.

The Thursday dump began with the set of a lifetime by Jim Hutchens, Floyd's younger brother. It was a set that in better times would be the stuff of fishing legend, a tale to be savored and retold during the winter months. Jim Hutchens, skipper of the MJB, eased out a quarter of his net and a skiff quickly guided the end around a tightly packed school.

The net was partly closed, then cinched between the seine boat and the tender and left in the water.

For more than three hours, the tender boat's pump pulled fish from the net. A normal set in the Sound might have taken 12,000 pounds of fish. This net held more than seven times as much. Five skiff crews helped hold up the net corks so the web wouldn't sink and allow the fish to escape.

The pinks were pulled in to the Baltic Sea's pump, then thrust up onto a stainless steel conveyor that sent them shimmying into the hold. Females with darkened backs of green and white bellies heavy with roe, and males with the first signs of humps and snaggle teeth.

But overall, the fish were of surprisingly good quality, not much different from some of the loads delivered to processors, according to several of the fishermen.

The fish kept pouring into the hold until it was full. Then they started to spill on deck, as three crewmen jumped on the slimy cargo to try to pack it down.

Finally, the Baltic Sea could take no more. The pump was shut down and Jim Hutchens lowered the corks so the remaining fish could swim free.

As the Baltic Sea headed out to the dumping site, fresh fish were jumping off the headlands, awaiting the right moment to head into the bay.

EXXON: Company offers \$2 million to process fish destined for Soviets

ESTONIA REJOICES: and the country began asking all its top leaders where they had stood when the hard liners seized power.

In an unprecedented development, Yeltsin and leaders of other republics played the key role in deciding who the new KGB and military heads would be.

The announcements of major government personnel changes were made at a tumultuous session of the Russian Parliament that reflected the dizzying shifts in the Soviet power structure since the failure of the coup.

Legislators shouted derisive questions at Gorbachev and Yeltsin — who now wields as much power as Gorbachev, if not more — at times literally told the Soviet president what to do.

It was a humiliating session for Gorbachev. He seemed stunned, as if he was just beginning to realize that he is far out of touch with Soviet society, now gripped by a fierce anti-communist fervor.

"I am just another human being standing before you," Gorbachev told the restive legislators when they interrupted his speech. "Don't make it hard for me. My situation isn't easy as it is."

At one point, Yeltsin brandished a document summarizing how nearly all of the Soviet president's Cabinet had supported the coup. Gorbachev said he had not seen the report, and Yeltsin — with tens of millions of viewers watching live on TV — shoved the paper at Gorbachev and said,

Please see Back Page, **YELTSIN**

Crews push to remove pinks

Exxon pledges \$2 million to ship pinks to Soviets

By **WESLEY LOY**

Daily News business reporter

Exxon Corp. pledged \$2 million Friday to help pay for Gov. Wally Hickel's desperation effort to salvage millions of dying, surplus pink salmon and send them to the Soviet Union.

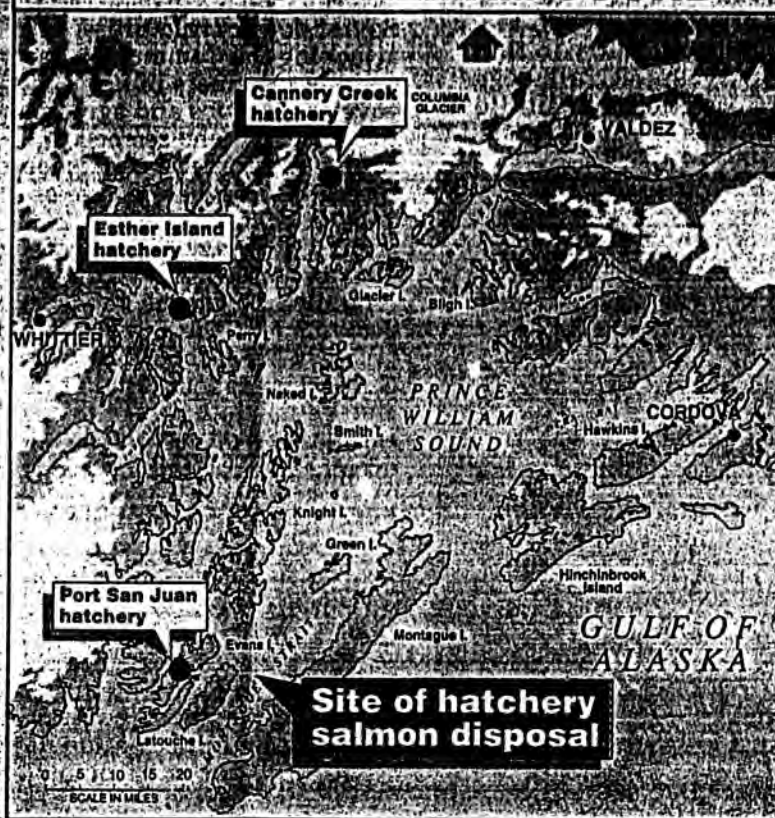
The fish, gathered in Prince William Sound, are the direct offspring of salmon that swam through the Exxon Valdez oil spill to spawn two years ago.

According to Hickel spokesman Eric Rehmann, the governor called Exxon President Lee Raymond in Texas on Friday and asked if the company would donate money for the salmon-for-Soviets effort. The \$2 million donation came almost immediately, Rehmann said.

Details were still evolving late Friday, but Rehmann

Please see Back Page, **EXXON**

SALMON HATCHERY LOCATIONS IN PRINCE WILLIAM SOUND



KEVIN POWELL / Anchorage Daily News

Tender carts tons of hatchery salmon to Montague Strait

By **HAL BERNTON**

Daily News business reporter

ABOARD THE BALTIC SEA — David Dominique braced the big gray hose on his shoulder as if were a giant bazooka and aimed it over the rail. As shipboard pumps whirled into action, hundreds of dead pink salmon shot out of the nozzle and quickly sank 1,000 feet to the bottom of Montague Strait.

The pump worked for more than two hours to suck salmon from the ship's hold and spew them into the sea. When the pumps finally stilled, 90,000 pounds of fish — at least 45,000 pounds of edible protein — had gone overboard.

"It's a lot of time and effort down the tubes," said Dominique, a 27-year-old from Massachusetts working his first season in Alaska as a crewman aboard the Baltic Sea. "It's not what I expected."

The Baltic Sea is a tender boat that normally shuttles salmon from the fishing grounds to processing plants. But on Thursday it was operating as a

Please see Back Page, **SALMON**

Discontent dots Citizens' profitable past

Arizona, California problems are isolated, says spokesman for firm seeking to buy ATU

By **STEVE RINEHART**
and **CHARLES WOHLFORTH**
Daily News reporters

Citizens Utilities Co. has built a national reputation for profitability, but within its sterling financial history are complaints that the company has ignored consumers and played loose with regulators.

Citizens has about 750,000 telephone, gas, water and electric customers in 13 states.

Utility — said those are isolated cases that do not reflect the company's style of doing business.

"They are not indicative of what the other 99.5 percent of our customers experience," Citizens vice president Mike Love said.

A consumer advocate in Anchorage urged voters to scrutinize Citizens' record elsewhere before deciding on Oct. 1 whether to

parent company of Alascom. "Some of that should have been done before the evaluation committee even met," he said.

While PTI is well known in Alaska, operating telephone exchanges on the Kenai Peninsula, in Juneau and other areas, Citizens is new to the neighborhood. In the political and advertising campaign surrounding the ATU sale, the company has adopted what one of its advisers called the

SATURDAY

RAIN

80 percent chance of rain. High near 60; low near 52.
Details, A-10
Weatherline, 278-7000

SECTIONS

NATION & WORLD	Section A	CLASSIFIED	Section E
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Keeping tabs on Alaska's fish

Tiny tags helping scientists unravel salmon's secrets

By SHERRY SIMPSON

THE JUNEAU EMPIRE

Fisheries biologist Kevin Brownlee held the tiny chum fry gingerly and inserted its head into a small machine called a tag injector. A needle punctured a speck of stainless steel wire marked with a code into the fry's head, which was not much more than huge eyeballs, sinus and brain.

"These are real small fish, and there's not much room for error when you tag," Brownlee said, letting the fish slide through a chute into a waiting bucket.

At a nearby table, technician Jill Robinson gently snipped off an adipose fin with surgical scissors. Several fry, each weighing less than a gram, floated in an anesthetic solution, awaiting their clip-and-tag treatment.

Outside the makeshift tagging shack, three million chum fry dimpled the waters in nylon net pens floating in Limestone Inlet, about 25 miles southeast of Juneau. As they grew last spring, the juvenile fish imprinted on the inlet's mossy green waters rather than their birthplace at nearby Snettisham Hatchery. The survivors will head for the inlet when they're mature, anywhere from two to five years from now.

For several weeks, Department of Fish and Game workers carefully tended the fish, feeding them food pellets every half hour from 7 a.m. to 7 p.m., or "fingertaking," as they called it.

"It's like working on a dairy farm. You've got to be there every day," Robinson said.

The fry were released in May when tests showed the ocean's plankton at its greatest abundance, giving the liberated fish a nutritious headstart as they embarked on their mysterious life cycle. About 30,000 of the chums carried the 0.5 millimeter tag in their snouts.

The tags eventually will help answer some of the questions biologists have about the perilous journey salmon make through Alaska waters during their lifetime.

They also produce information that allows hatcheries, fishermen, and fisheries managers to make important decisions about raising, catching and allocating valuable salmon stocks.

A few years from now, some of Limestone Inlet's tagged chum will end up, like their cousins now flooding the department's coded-wire tag processing lab in the lab is part of the state's Division of Fisheries Enhancement, Rehabilitation and Development and is headed by Karen Crandall.

There, another crew of technicians is working overtime these days to recover the minuscule tags from the heads of salmon caught all over the state. The missing adipose fin tips off field workers in ports that a fish may have been tagged. They collect the heads, attach a identifying number, record information about where and how the fish was caught, and freight frozen batches of fish heads to the lab.

A slightly fishy undertone permeates the lab, where a 42-pound mounted chinook and several fish prints by employee Detlef Butner represent the only whole fish in the place.

One at a time, the technicians grab a thawing fish head from boxes and bins, hold it with a paper towel, and wave it near a device called a field sampling detector. A red light blinks when it detects changes in a magnetic field, indicating the presence of a tag.

The workers then slice the head into successively smaller sections until the glint of a tag appears. So far this season, workers have repeated that process on about 38,000 fish heads, with more heads still to come, says lab supervisor Sam Bertoni.

This year, if we keep going on the way we're do-



BRIAN WALLACE/JUNEAU EMPIRE

Sam Bertoni, supervisor of state tag-processing lab: The ultimate aim is to try to understand what's going on.

ing, we will do probably 55,000 fish," he said. That's far above last year's record-setting 40,000.

Finding the tag is only the first step. The tag is bagged with its corresponding sampling number and sent to another room to be "read." There readers examine the silver of wire under a microscope. The tags are either 0.5 millimeter or 1 millimeter long, depending on the size of the fry when tagged.

"A lot of practice goes into handling that small tag," Bertoni says.

The microscope magnifies the tag up to 100 times its actual size, revealing a series of lines arranged in binary code. The reader translates the code into an ordinary number and taps it into a computer with other information.

That number is the linchpin in the entire tagging program. With it, the computer's vast data base instantly reveals the origin of a particular cohort. It was hatched at Hugh Smith Lake as part of brood 88. Information collected in the field from the fisherman tells the rest of the story: that it was taken with traditional gear during week 34 of the fishing season and landed at Petersburg. Altogether, there are several hundred bits of data that may relate to each fish.

"The ultimate aim is to try to understand what's going on," Bertoni says. "It's basically what you would call a management tool. From that information we know who is catching whose fish."

The information plays an increasingly valuable role in fisheries management in Alaska. Every week, the division sends reports to ports, hatcheries, and other Pacific states.

Alaska is the only state with such a quick turnaround that allows biologists to manage fisheries in-season. That's particularly critical for chinook troll fisheries, which are subject to an international treaty with Canada that limits the number of fish Alaska fishermen can take.

"It's pretty amazing," Bertoni says of the system.

The tag data is used in many different ways. Comparing the number of tagged salmon released to the number of fish recovered indicates how specific hatcheries or remote release sites contribute to fisher-

ies. It also reveals clues about the timing and paths of migrating salmon, as well as how many of certain stocks are intercepted by fishermen and how many escape to spawn.

Other statistics are important when negotiators set harvest levels as part of the U.S.-Canada Pacific Salmon Treaty. And the division is also collecting information for several studies examining how the Exxon Valdez oil spill in Prince William Sound may have affected salmon stocks there.

The lab is excruciatingly careful about collecting and documenting every tag. At night, workers run a magnet over floor sweepings to check for strays. A fish head that doesn't register a tag is examined with a more sensitive tubular detector. If the instrument doesn't detect a tag, the head is magnetized and checked again, in case the tag was not properly magnetized to begin with.

Also, two different readers must examine each coded tag to eliminate mistakes, reducing the error rate to tenths of a percent, Bertoni said.

The system works. This year, only 22 tags disappeared out of 38,000 heads screened, he said.

Such care is necessary because every recovered tag is precious — practically miraculous, when the odds are considered.

"We only recover a fraction of those fish that are tagged," Bertoni said.

In the Pacific Northwest, two billion salmon are produced in hatcheries each year, he said. Of that, 40 to 60 million are tagged, as well as a small number of wild fish.

Natural mortality reduces the chances of recovering fish further. About 280,000 tagged adults are recovered on the West Coast each year, about 50,000 of them in Alaska.

Aside from processing the fish and storing the mountain of data, the lab also sends a few thousand letters to the sport and commercial fishermen who caught the fish to let them know about their fish.

"They're real interested in the fish they get, where it's from. It's kind of a nice sidelight," Bertoni says.

Seattle P.I. 3-18-92

Fishery in big trouble

The salmon fishery off the coasts of Washington, Oregon and California is in trouble, and this means federal regulators must step up to the challenge of conserving the fishery for the future.

The Pacific Fishery Management Council says the salmon are so scarce that for the first time, one of the options it has under consideration is to have no commercial or sports salmon fishing season at all this year.

Ocean conditions and habitat degradation are playing a key role in the drop-off in coho and chinook salmon, according to council biologists. This unpleasant news is further

evidence of the urgent need to make systemwide improvements in river habitat and coastal management to enhance the numbers of returning salmon.

The council has fashioned a draft proposal, to be taken to public hearings this month, that narrows the choices to no fishing, or fishing at roughly half the level of last year. Whichever of those is the final decision, it will mean hard economic times in coastal fishing communities.

Council chairman Philip Anderson has set the right course in addressing this painful scenario. Says he: "We're not in the business of mortgaging our future to create fishing this year."

Fish Ketchikan March 28-29 funding

Options for SSRAA mulled

By NIKKI MURRAY JONES
Daily News Staff Writer

Representatives from various sportfish-related groups will meet the week of March 30 to develop a list of fund-raising options to help pay for fish enhancement.

About 40 people met Friday afternoon at Jeremiah's to talk about raising revenue for the Southeast Regional Aquaculture Association. SSRAA must come up with \$473,000 to pay state loans this year, said Don Amend, SSRAA executive director. It has already paid more than \$600,000 on the loans, he said.

Angelo Martin had announced the meeting with an advertisement in the Ketchikan Daily News.

He said he called the meeting because he had been contacted by sportfishermen who said they would be willing to help SSRAA.

"I'm battling for you folks," he said to the audience of mostly fishermen.

SSRAA is a non-profit organization that raises and releases king, coho, chum (major production) and sockeye salmon that are caught by commercial and sport fishermen. Commercial fishermen pay a 3 percent state fish tax and revenue generated from that is returned through grants to SSRAA. That provides about 60 percent of SSRAA's funding, Amend said Friday. The other 40 percent comes from direct sales by SSRAA of its fish (called cost recovery) that return to Neets Bay after escaping commercial capture. It has used the cost recovery plan in the past two years on king salmon at Carroll Inlet and proposes to do it in 1992. It hasn't done any cost recovery at its remote sites, but that could change if revenue is needed, said Amend.

Martin serves on the SSRAA board as the Ketchikan Chamber of Commerce representative. He told the audience that the hatchery organization didn't go to him looking for funding.

"Sportfishermen contacted me saying they want to do something to enhance salmon," Martin said. "I don't want to get into trouble out there, but it was the sportfishermen that called. I put the ad in the paper because individuals were calling me." Then he went to SSRAA because of the calls he had received.

Martin said that Ketchikan area sportfishermen caught 6,000 king and 15,000 coho in 1991. Sportfishermen (residents and non-residents) bought 40,000 licenses in the area. Resident sportfish licenses cost \$10. Non-residents pay more depending on how long

See 'Fish funding,' page A-2

Fish funding

Continued from page A-1

they plan to fish.

Amend said SSRAA's costs run about \$10 for a king and about \$5 for a coho.

Boro funds a possibility

The borough has already designated \$100,000 (25 percent) of its raw fish tax receipts from the state for fisheries enhancement, said Ketchikan Gateway Borough Manager Dave Crow. That line item in the economic development category was set up several years ago. The Borough Assembly would have to be asked to give that money to SSRAA.

Crow threw out other ideas for funding: possibility of imposing a borough surcharge on fishing licenses; developing a borough fish tax; and boat taxes. He said all the suggestions he mentioned would need to be researched for feasibility and legality.

Suggestions proposed by the audience included a raffle to raise needed funds immediately, a dedicated tax similar to Ketchikan's bed tax, a percentage of charter profits, a \$10 flat fee when buying fishing licenses, and donations.

SSRAA would need to know soon what plan would be implemented and how much revenue it could be counted on to generate, Martin said. The organization needs a guaranteed figure for planning.

Accountability questioned

Martin's comment raised questions from the audience about accountability. Would the money collected be guaranteed to go to enhancement? Would it guarantee coho production? How would it be used within the organization?

Charter boat owner Ed Stahl said he is willing to contribute something to

"I make my living off SSRAA fish," Stahl said. "I don't put a penny in. I just feel Ketchikan made a lot of money off hatchery fish without paying for it."

"Everyone I talk to says they're willing to help out," said Jack Lee, speaking as a sportfisherman.

"I just want to get things started," Martin said. "Where do you want to start?" He asked for volunteers to meet as a committee.

Audience members who agreed to meet to suggest ways to raise money for SSRAA were Steve Gruwell, representing Ketchikan Sports and Wildlife Club; Willi Herff, Waterfall Resort; Ed Stahl, charters; and Martin, who is a sportfisherman.

Amend said the SSRAA board meets on May 8. However, it might have an emergency board meeting because the state declined on Thursday to defer some of SSRAA's loan payments. It would be helpful to have an idea ahead of time if assistance might be coming from sportfishermen, he said.

Amend told the audience that he expected SSRAA to be out of financial difficulties by 1994. The help it needs is just for two years.

"Would that \$100,000 from the borough help?" Martin asked.

"It'll all help," Amend said.

Amend said SSRAA would look within the organization to trim, but couldn't cut \$400,000 without cutting programs. SSRAA would like to avoid cutting programs because it would have a detrimental effect on future fish enhancement.

A-4

3-31 Ketchikan

Editorial

By the people

Two recent meetings remind us that the spirit of self-governing democracy is thriving in Ketchikan.

On Friday, a group of sportfishermen met with a Southern Southeast Regional Aquaculture Association official to consider ways in which to help the hatchery organization survive its current financial crunch.

A solution wasn't arrived at during the meeting, but participants said they felt it is fair that they contribute something to the aquaculture association that has produced king and coho salmon that they catch.

On Thursday, local people spoke at a hearing on Department of Natural Resource user fees. Again, people attending the hearing felt DNR's intent to ensure public and environmental safety, and its search for funding sources was fair. Their comments were directed to how to make a fee structure fair and workable.

Statistics show that the United States has a low voter turnout, but percentages aren't the whole story. People stay away from the voting booth for a variety of reasons, although we would prefer that they go even if they're unhappy with candidates, issues, taxation or other reasons.

Still, despite the fact that fewer than all registered or potential voters show up at the polls, the two recent meetings show that people at least are thinking about political, social and economic issues.

Concern over declining state oil revenues and wanting to watchdog public agencies and issues are two reasons that might account for residents' interest.

We believe other factors also are at work -- the right of dissent, an interest in fairness, and a belief that each individual's opinion has worth.

Both meetings were examples of all of those factors. In each, speakers were articulate, had thought about their comments, and said either directly or by implication that they want fair solutions.

The willingness of people to comment at public forums shows they believe it is important that citizens speak up. People need to let elected representatives and others in leadership positions know what they think so those leaders can represent their constituents.

In this way, government is for the people, of the people and by the people, as President Abraham Lincoln said more than 100 years ago.

It's good to know that concept is still important.

— other editors

Saturday-Sunday, March 7-8, 1992

Hatcheries

Legislators review enhancement programs

By BELINDA CHASE

Daily News Staff Writer

Issues running the gamut from management to marketing on the fishery enhancement programs in the state are addressed in a draft legislative report.

The document called "Draft Report of the Legislative Review of the Alaska Salmon Enhancement Program" was prepared by legislative staff for the Senate's Special Committee on Domestic and International Commercial Fisheries.

Committee Chairman Sen. Dick

Ellison, D-Juneau, said in a letter attached to the report that the draft is a starting point.

"Our goal now is to fine-tune the chapters contained in this draft report, see what conclusions can be reached with the information before us, and develop those options which we can act on right away," he said.

The draft report was released in February. A separate economic analysis being done by the University of Alaska and is expected to be finished in a few months, according to Ellison's letter.

The committee requested the study because the enhancement efforts in the state had not been reviewed since the program's inception about 20 years ago.

Started in the 1970s

In the 1970s, laws were enacted to develop enhancement programs including creation of the state Division of Fisheries Rehabilitation, Enhancement and Development; passage of bond issues authorizing capital improvements for state hatchery facilities; authorization of private, non-profit corporation hatcheries and creation of regional aquaculture associations.

The state now operates 12 hatcheries and private, non-profits operate 5 hatcheries. Hatchery fish represented 24 percent of Alaska's commercial harvest in 1990, according to the report's executive summary.

The report is separated into different sections as follows:

Fisheries management

How to control fishing effort in mixed stock fisheries that include hatchery and wild stocks is a management issue addressed in the report. The quality of fish returning to hatcheries and tagging efforts also are reviewed.

Legislators might want to develop a state policy on managing mixed stock fisheries, according to the report. Other alternatives mostly focus on tagging efforts, such as providing funding and research for tagging programs. Clarifying the roles and uses of tagging also is suggested.

Legal issues

The Board of Fisheries has voiced concern to the Legislature over perceived ambiguities in the statutes regarding wild stock and hatchery fish management.

One problem is that there is no clear statutory policy for the board to follow when it must make decision that would favor wild stocks over hatchery fish or vice-versa. An additional problem is that the statutes are unclear about the state's duty to provide for hatchery broodstock and cost recovery, and about the hatcheries' obligation to contribute

St. George raises fish

By IMRE NEMETH

Times Business Writer

Reprinted from

the Anchorage Times

A group of St. George islanders plan to release 100,000 pink salmon fry in the rocky ocean waters surrounding their volcanic home in an unprecedented attempt to start a commercial fishery from scratch.

If successful, about 1,000 adult pink salmon would return to the tiny island in the middle of the Bering Sea in two years. St. George, one of two Pribilof Islands, had its local economy nearly wiped out when the federal government banned the harvest of fur seals in the early 1980s.

"Basically, the only reason we don't have salmon runs is we don't have any streams," said Chris Mierzejek, hatchery manager for the newly established operation.

The project is the dream of local Native village corporation, Tanaq Corp., the city of St. George and the St. George Traditional Council.

Bristol Bay, Alaska's most valuable salmon region, lies 300 miles due east of St. George. Unlike Bristol, which is the confluence of the mighty Nushagak and Kvichak Rivers where many species of salmon return to spawn, St. George has only a few gurgling brooks.

"Hopefully, this salmon experiment will pan out and lead to the diversification of the island," said

See ST. G. page B-5

On the Waterfront

Russian ship visits

A Russian pulp ship visited Ward Cove, taking on 1,000 tons of pulp. The ship, a 6,300-gross-ton vessel, is taking the cargo to Southeast St. Petersburg, Russia, according to Southeast St. Petersburg officials. The ship is a Russian crew. This is the first time a Russian pulp ship has visited Ward Cove since the early 1980s that the area was closed to pulp from Russia.

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Fish and Game urges participants to review the conditions in their herring pound permits, along with the 1992 Management Plan before placing the herring in the water. For more information, contact Fish and Game.

AG assigned to ADFG

John G. Giesberg has been named senior assistant attorney general assigned to the Department of Fish and Game by the Attorney General's office. He will concentrate on international salmon treaty negotiations and other international agreements between Fish and Game and foreign governments, according to a press release from the Office of

discussion of fishery issues, said Pat Pondleton, from the cooperative's Bell-Ingham office.

Historic vessel honored

The U.S. Forest Service's vessel Chagach docked in Petersburg has been added to the National Register of Historic Places, the nation's catalog of significant historic properties.

Launched in 1935, the Chagach is the last of the Forest Service's wooden fleet remaining in commission in Alaska, according to an Alaska Department of Natural Resources press release.

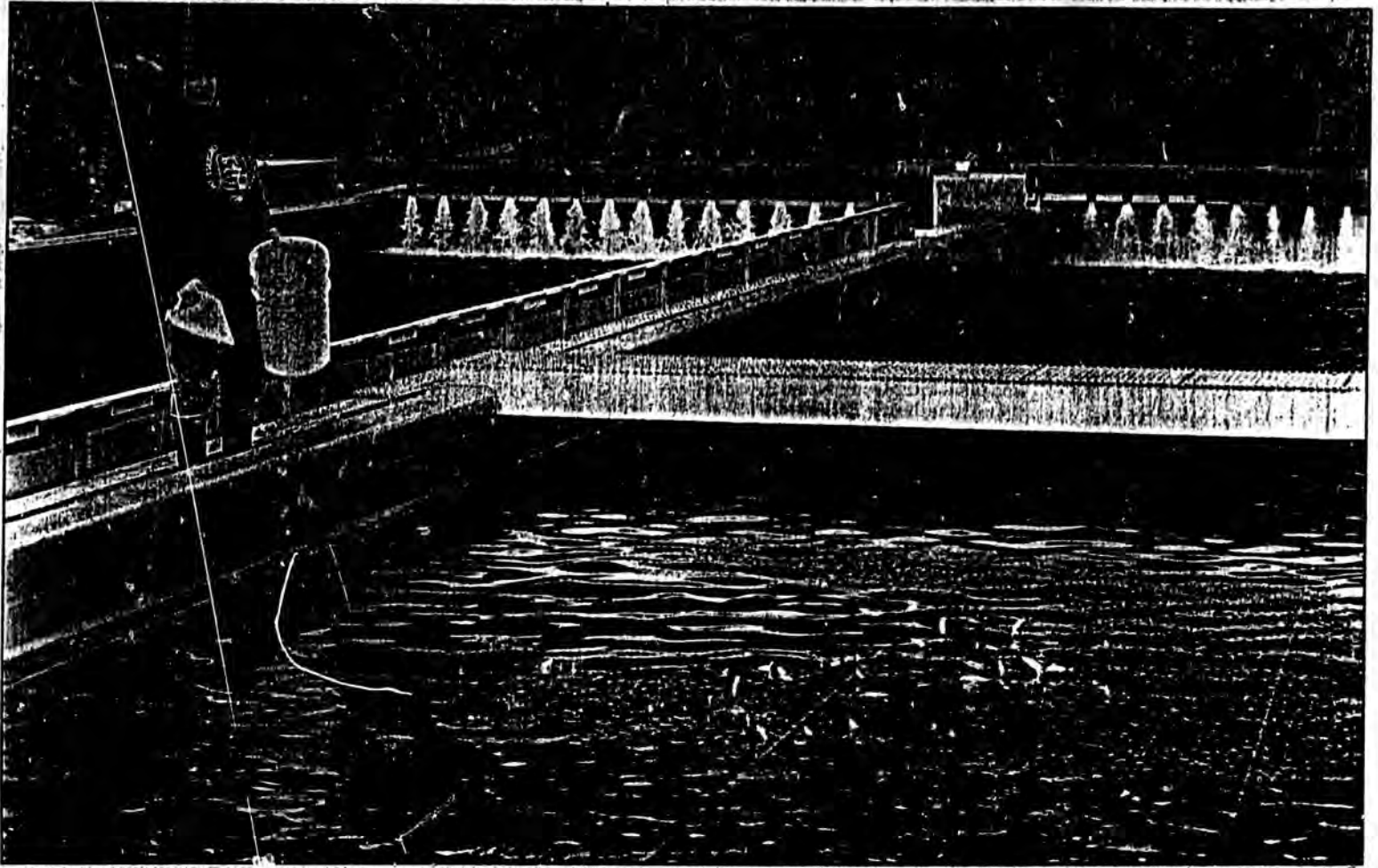
The boat is named after southeastern Alaska's Chagach National Forest and is

man, who use the fish for person from the federal permit and requirements.

Young favors tax rep

A U.S. House Committee voted last week for a graduated repeal of the recreational boat user fee -- a tax requires boat owners to pay a fee on the size of their recreational vessel, according to a press release from Rep. Don Young's office.

Young voted in favor of repealing the boat tax during a hearing of the House Committee on Merchant Marine and Fisheries, of which Young is a member.



Southern Southeast Regional Aquaculture technician Michelle Lertz feeds king fry this week at the private, non-profit organization's Whitman Lake Hatchery, south of Ketchikan. SSRAA began operations in 1976. Staff photo by Hall Anderson

to the common property fisheries," according to the report's executive summary.

Options for consideration include placing a wild stock priority into state statutes or making wild and hatchery stock status of equal priority. Clarifying whether the board is required to provide for hatchery broodstock or for cost-recovery fisheries, along with clarifying the board's authority to restrict hatchery production are other items for consideration.

Planning and permitting
The lack of statewide goals and objective for enhancement programs; regional v. statewide planning; funding and support for planning; composition of regional planning teams; allocation issues; management issues; uniform review; operation performance reviews; and permit revocation are issues under this section. Options for consideration touch upon on the various issues.

Biological issues
According to the report, there is no scientific consensus on the effect of wild stock co-existing with hatchery stock. "Although poor hatchery practices can clearly endanger wild salmon populations, scientists do not agree on the extent to which hatcheries with sound practices can co-exist with sustained healthy runs of wild salmon," according

to the executive summary.

The report touches upon the genetic effects of hatcheries, ocean-carrying capacity, disease and the state genetics program.

Funding
Funding for enhancement programs come from bonds, state general fund appropriations, salmon enhancement taxes paid by fishermen, state loans and cost-recovery sales of fish.

Don Amend told the committee in a legislative teleconference Feb. 24, that the funding chapter needs more work. Amend is the general manager of the private, non-profit Southern Southeast Regional Aquaculture Association.

When the Legislature established the enhancement program it provided a deferral on low-interest state loans of six to 10 years, he said. However, there has never been a written policy on the regulation. The state has since used the minimal time and maximum interest rates for payback of the loans.

That is a major concern by the fishermen and is causing problems for the associations, he said. The associations are incurring debt that is unnecessary and it is slowing the development of programs, he said.

The issue is not addressed in the report, he said.

The report does include options that

would require a more extensive public benefit-cost analysis before providing enhancement loans; eliminating the statutory loan repayment deferral requirement on operating loans; analyzing the enhancement tax program and analyzing an increase of the enhancement tax so fishermen who benefit from the program will pay for more of the costs.

Economics
This is section is being done separately from the report and will focus on whether current levels of Alaska salmon harvests are over or under-supplied on the world market level and whether increased hatchery production will lower prices, fishing and processing revenues.

Marketing
This section mainly addresses the work being done by the Alaska Seafood Marketing Institute. Options for consideration include reviewing the state's role in marketing and providing funding for ASMI's Salmon Recovery Proposal, which would work on increasing annual per capita U.S. salmon consumption from 1.1 to 1.5 pounds.

Other options include addressing fish quality issues, analyzing ASMI privatization and encouraging the development of a national salmon marketing council.

International treaties

The report also delves into the role that enhancement programs play in international treaties, such as the U.S.-Canada Pacific Salmon Treaty. Options for consideration include evaluating the effectiveness of enhancement as a treaty component; requiring a feasibility and benefit-cost enhancement analysis in treaty proposals before treaty agreements; and developing an auditing tool to determine if fishermen impacted by treaty agreements are benefiting from enhancement programs.

Hatcheries and sport fish
The enhancement programs in the state supports a large part of total sport and commercial fishing harvests. According to the report, legislators may want to consider initiating an on-going enhancement program review of sport and commercial fishing effort; increasing sport fish license fees to pay for a larger part of the enhancement projects; and encourage Congress to increase federal funds to support increased sport fishery enhancement efforts.

People interested in receiving a copy of the 30-page executive summary can contact Ellason's office in Juneau. The committee has not set a deadline for comments on the report. Written comments may be sent to Sen. Dick Ellason, Senate Fisheries Committee, State Capitol, Juneau, Alaska 99801-1182.

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man, who use the fish for personal bait, from the federal permit and reporting requirements.

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Dispute could stall breakwater project

KODIAK (AP) — A \$32 million harbor breakwater project here could be derailed for up to two years by a dispute over where the rock for the project would come from. At issue is the city council's demand for a guarantee that rock for the St. Herman Harbor breakwater would be quarried from adjacent Near Island. The Army Corps of Engineers, which oversees the project, told the city at a recent meeting that it could make no such guarantee without sending the

removed from the island we "have a level area for upland development," he said. "Now we're down to the 11th hour and we're talking about getting the rock from somewhere else?" Shadrick said one factor is a 1969 change in Corps policy, giving the contractor with the lowest bid the right to choose the rock source. That would not necessarily preclude Near Island. Corps Real Estate specialist Guy Hopson said the agency would have to certify the quality and quantity of Near Island rock if it were to designate it as

BRIEFLY House

Southeast

Fishermen sue state over chinook limit: A coalition of Southeast charter-boat operators, anglers and lodge owners have sued the state over the decision to limit chinook sport fishermen to one fish per day starting May 15. The plaintiffs are asking the court to set aside the emergency restrictions announced last month, claiming the state Board of Fisheries committed procedural violations in dividing up the Southeast chinook catch. The board in March divided up mostly wild chinook salmon normally shared with commercial trollers and sport fishermen under terms of the U.S.-Canada Pacific Salmon Treaty. The Alaska Trollers Association had asked the board to divide the catch, claiming the charter-boat industry was threatening their livelihood.

The board gave anglers 41,300 chinook, and 201,690 for trollers.

Dale Holzmeister, the president of the Tongass Sport Fishing Association in Ketchikan, said today the board should not have given commercial fishermen a break over sport fishermen. His association, which is comprised of charter-boat operators and anglers, is one of nine sport, charter and lodge organizations that filed the suit Thursday in state Superior Court in Juneau. The Juneau Charter Boat Operator's Association also is a party to the suit.

"We caught 17 percent last year, and we expect to catch more than 17 percent this year," Holzmeister said. "Automatically, that restricts us."

The suit claims, among other things, that the board should not have considered the trollers' petition, that the board went beyond its statutory and constitutional authority and did not follow proper procedures in making the chinook allocation. The suit asks for a temporary injunction stopping the chinook limit from being enforced.

By BRIAN S. AKRE

THE ASSOCIATED PRESS
Legislation that would felony to commit "hate" such as painting swastikas in a temple, has passed without opposition.

The House also approved that would require the direct Workers' Compensation to be confirmed by the Work-pensation Board. The bill sponse to the controversy for Linda Rexwinkel.

The hate-crimes bill, 534, would make interfere person's constitutional rights a felony, punishable five years in prison and fine.

Rep. Max Gruenberg, age, said he introduced it to the vandalism of an temple two years ago. He other Jewish leaders were learn that state law treat-crime as a misdemeanor.

The bill also would make for the state to hold r events in any establishm

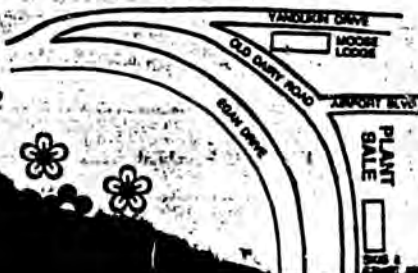
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Columbia salmon travel by barge

Army Corps moves salmon to the ocean

By JOHN DAVIES

JOURNAL OF COMMERCE

Columbia River towboat companies have begun hauling bargeloads of young fish from Idaho to the Pacific Ocean in an expanded effort to boost survival of steelhead and salmon.

The Army Corps of Engineers began offering the so-called taxi rides for migrating fish more than a decade ago, when National Marine Fisheries Service research found that they greatly improved survival rates. Now the Corps is expanding the transport another 140 miles to Astoria, Ore., where the river meets the ocean.

Barge operators will continue to load tank barges with young fish above the highest dam on the Snake River, but two barges a week now will continue down the river to Astoria, instead of unloading their fish just below Bonneville Dam.

Brix Maritime Co. of Portland, Ore., which has this year's contract to provide tugs for the barges, Wednesday moved the first test barge of fish to Astoria, a spokeswoman for the Columbia River Towboat Association said.

Biologists at the fisheries service suspect that returning runs of steelhead and salmon might be even stronger if young fish were taken an extra 140 miles by barge to the mouth of the Columbia River, instead of being released as far up the river as they now are.

Gene Matthews, a research biologist with the agency, said the main objective of releasing fish near Astoria is to learn whether birds or other kinds of fish are eating salmon or

steelhead after their release below Bonneville. Taking the fish the extra distance and releasing them on an outgoing tide might cut such losses, he said.

The barges continually circulate river water through their tanks, allowing young fish to imprint on the changing chemistry of the water they pass. Biologists theorize that this allows them to recognize the water chemistry and use it when they return to spawn.

Steelhead may not return for several years, Matthews said, so it will be several years before results of the Astoria tests are clear. But Matthews said earlier transport programs had helped steelhead in par-

ticular, that experience with release of hatchery fish at the mouth of the river was positive, and that similar methods have been used in Scandinavian countries.

The Astoria tests are the latest development in the Corps of Engineers' juvenile fish transportation program. As many as 20 million fish — 70 to 80 percent of the entire fish migration on the rivers — will be barged past the dams.

Jerry McMahon, Pacific vice president for the American Waterways Operators, called the barge transport program "a good example of a rational plan" as opposed to "knee-jerk responses to endangered species listing."

Canada

Boys save grandparents from fire: A 9-year-old boy woke his sleeping grandparents and, with help from a friend, pulled them out of their burning trailer house moments before the structure engulfed them. Third-grader Brandon Stickle and Lindsey Lohrenz, were riding their bicycles to Brandon's home Thursday evening when they noticed smoke coming from the trailer's attached wagon. The youngsters ran inside and found Dick Stickle, 64, asleep in a bedroom and Phyllis Stickle, 56, asleep in a bedroom. Smoke was filling the living room. The two children couldn't awaken the adults at first and had to clap their hands next to his ear to wake him. Brandon said flames were leaping out of the spigots in the bathroom. Stickle said. Everyone rushed outside, bending over to avoid the smoke that had fanned out at head-level. Brandon ran to the phone to call for help.

Kills boy on Vancouver Island: An 8-year-old boy was mauled by a cougar as his father and about a dozen other people watched in horror at the elementary school playground at the Nootka Indian community on Vancouver Island, B.C. Jermaine was attacked Tuesday evening as he sat on the grass. He was pulled from a forest bordering the playground and was killed. The boy's father and a teacher at the school, hurried to the scene. He watched helplessly as children screamed in pain. The school's janitor shot and killed the 60-pound animal. "It was a terrible thing to go through," said janitor Peter Skilton. "I came to grips with it."

Williams took the unconscious boy to a first-aid station. One of 250 residents, but the youngster died from his wounds. "This is a sad, sad day," said Richard Leo, a community leader. "We're all just shocked and sickened."

The community is turning to anger as parents ignore the danger from wild animals. The school board for years that this was a problem. Repeatedly for a fence to be put around the playground. Nothing has been done. Maybe the school board should have said the incident was a tragedy. Further comment.

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NOTICE OF ROAD CLOSURE

The Department of Transportation and Public Facilities advises the public that Old Glacier Highway from Highland Drive to the river will be CLOSED Wednesday, May 13, from 9:30 a.m. to 4:30 p.m. This closure is to assist Harborview Elementary School in the safety of children participating in National Fun Day. Information may be obtained by contacting the Department of Transportation and Public Facilities at 789-6211.

Published: May 8, 11, 12, 1992

Summit

Mom's love to fish, too!

Just ask Linda Egan 1001 Winner!

Hatchery studies are funded

Work not to be completed in time for legislature

by BOB TKACZ

An analysis of statewide salmon enhancement programs got a \$48,000 boost this month with approval by the Legislative Council of three research contracts with the University of Alaska. But the work being purchased is not due until more than a month after the end of next year's legislative session.

Results after public comments

Even preliminary results of the research are not expected until one month before the end of next year's legislative session, and well after already postponed public participation in the project has been concluded.

The analysis is being prepared by the staff of the Senate Special Committee on International and Domestic Fisheries.

According to the committee, it was to probe five major subjects: eas relating to state and private hatcheries and other fisheries enhancement projects, and was to be presented to the legislature by January 15, 1992.

The research contract with the university does not require work to begin until November 15, and sets a completion date of June 30, 1992.

Only a preliminary analysis of the university work will be sent to the Senate committee on about April 1, about five weeks before the end of the legislative session, according to Molly McCammon, aide to Sen. Lyman Hoffman (D-Bethel) and coordinator of the project.

Eliason requests funds

Under the pressure of a "request" from special committee chairman and Senate president Dick Eliason (R-Sitka) for a unanimous vote on the expenditures, the Legislative Council unanimously approved "reimbursable service agreements" for preparation of a salmon fishing cost computer model for \$20,000; a "worldwide demand analysis for Alaska salmon", for \$18,000; and a public policy simulation model, for \$10,000.

The Legislative Council is a House/Senate Committee that manages lawmakers' affairs between sessions.

UAF to do research

The research will be conducted by faculty of the Economics Department of the UAF School of Management, with some assistance from the Commercial Fisheries Entry Commission, according to Kodiak representative Cliff Davidson.

When the overall analysis was begun in mid-June, Eliason emphasized the need for public participation in the study.

"I cannot emphasize enough how strongly we believe that your participation in this process is vital," Eliason said in a letter inviting public participation.

Public will have go at staff work

At the November 1 Legislative Council meeting it appeared fishermen and the general public would get their say after staff work is completed, but before the technical research was available.

Rep. Gene Kubina (D-Valdez) expressed concern that regional workshops that were to be part of the analysis have been canceled.

McCammon said public participation was postponed because of difficulty finding available time between various fish expo, Board of Fisheries and North Pacific Council meetings and legislators' travel plans. She said workshops may be scheduled for early December after the draft analysis, and university research is completed, and hearings during the coming legislative session.

session.

Ginny Fay, an aide to Sen. Sam Cotten (D-Eagle River), added that the public would have more to comment on after the research work was underway.

But with the UA studies expected with about five weeks left in the legislative session time for public review and comment is likely to be short.

Three months behind

"We don't anticipate leaving any particular group out," Eliason said during the meeting, adding that the project was running about a month behind schedule.

McCammon said work is actually "closer to three months" behind schedule, largely because of preparation of the RSAs.

"Do you want haphazard work, or do you want something meaningful. We just don't want to pay a lot of money and get nothing for it," McCammon said.

The delay means elimination of much of the work on economics of present and potential future hatchery operations, McCammon said.

The study is the first in depth look at Alaska's hatchery system in 20 years, according to McCammon.



MARKET REPORT

Early reports from Kodiak estimated that Gulf of Alaska longliners would deliver between 13 and 14 million pounds of halibut to processors in early May. What fishermen receive for halibut, and several other species these days, is no longer called payment. It's called "an advance." Early ex-vessel advances, then, ranged from \$1.70 to \$1.90 a pound, depending on fish size.

While 14 million pounds of halibut is still a big pile of flatfish, the May derby was characterized as a relatively mediocre opening in Kodiak, thanks to generally poor weather and a spotty bite, both out deep and in shallow. Despite some blown-out windows and tangled gear, the word was that the fishing was worse than the weather. Average Kodiak deliveries were reported in the 20,000- to 40,000-pound range.

Speaking of halibut in the news, the topic rated front-page coverage in the May 8 issue of *The New York Times*. Not far from the Brady handgun control bill and the President's thyroid gland was a special report from Seward, Alaska, titled, "Frenzy and Plenty of Blood, In One-Day Halibut Season." The two-column story was pressed tightly against a photograph of two small children going hungry in storm-ravaged Bangladesh.

If the word was not out before, it's certainly out now. "You've got absolute madness out there," Bob Alverson is quoted in the article. Perhaps it was the tone reporter Timothy Egan was fishing for. He certainly had trouble shaking it, as he relayed the images of the Alaska halibut harvest: "the Oklahoma land rush of commercial fishing... one of the most intense food-gathering rituals in North America... a marathon of misery... the torture of a spring day in the Gulf of Alaska... a 25-mile-long line of hooks with bloody shanks of herring..."—you get the picture.

For many, in case you're lucky enough not to know any of 'em, *The New York Times* is the fountain of ALL news, no matter where it occurs. So expect to see a rash of follow-up stories on halibut—halibut quality, halibut IQs, halibut-related death and dismemberment, etc.—in a host of other, less prestigious publications in coming weeks. The press is on the scent, so tidy up the boat and keep your fish on ice.

Meanwhile, back on the "armed vs. wild salmon battlefield," a May 2 report from the Alaska trade office in Tokyo contained news of a victory for wild fish producers. While the translation left a bit to the imagination, it nevertheless had some good news for fishermen and some very disturbing news for fish farmers.

According to K. Muguruma of the trade office, Japanese importers and wholesalers are rethinking their farmed salmon purchases from Norway, Chile, Canada and Great Britain, and "looking at Alaskan natural, wild salmon again." That's good news.

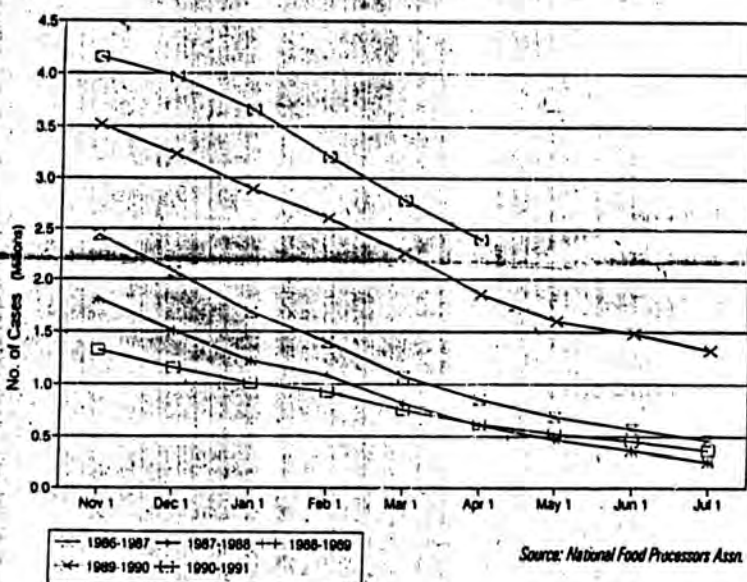
The disturbing part is what Muguruma reports about farmed fish. The renewed interest in wild fish, he says, is "because farmed fish, not only salmon, has a serious problem for some kinds of pathogenic organ, and Atlantic salmon seems to be anxious about nuclear radiation for the Japanese people." What the report appears to indicate is that Japanese buyers are not only concerned about tainted farmed fish, but they are worried about nuclear radiation affecting fish from Norway. As any politician knows, it doesn't have to be true to affect public preference.

Despite the misfortunes of farmed salmon, the Tokyo wholesale price for fresh 7- to 11-pound Norwegian Atlantics was about \$4.86 a pound as of April 30. Few frozen, wild salmon could command a similar yen. Interestingly enough, large Canadian troll kings were only slightly behind, selling for \$4.69 a pound, the same price as 6- to 9-pound Canadian troll sockeye. That's right, the boys in B.C. have not only learned how to catch sockeye on troll gear; they've learned to market them, too. Bristol Bay net sockeye, 6 to 9 pounds, were selling for \$3.43 a pound. Cook Inlet fish the same size were pegged at \$3.62.

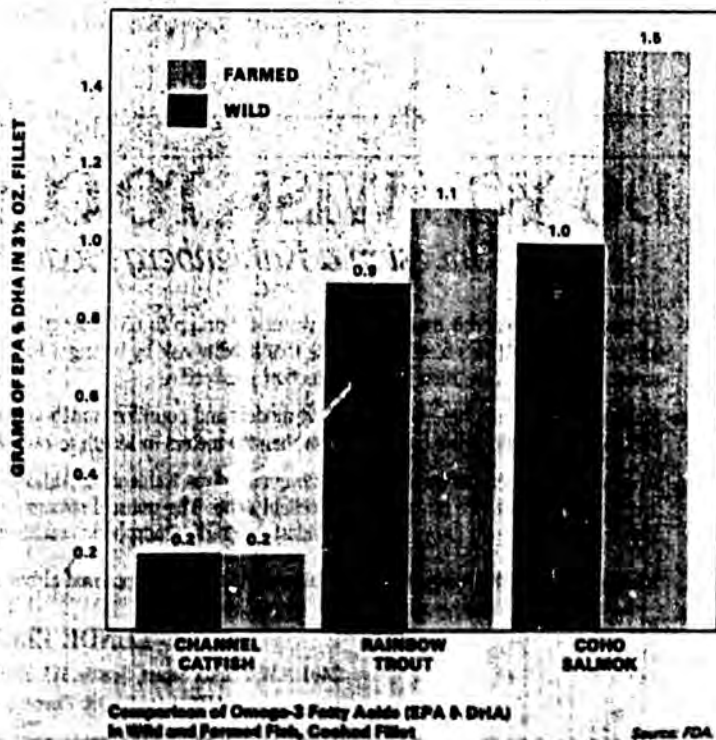
Just how much salmon is there on the world market? According to Canadian government sources, the total salmon supply in 1989 was 930,000 metric tons—up 81,000 tons since 1985. Of that, 171,000 tons were farmed-raised Atlantic salmon—about 4.5 times what was produced in pens in 1985. The farm culture of Pacific salmon is also on the rise. Figures for 1985 show farmed Pacific salmon production was only 7,600 mt. By 1989 the volume had grown to 41,200 mt.

One fish that's having no trouble commanding a price lately is the once-lowly pollock. Shatter-pack pollock fillet prices continue to nip at the heels of King Cod. Even the small 2- to 4-ounce fillets were testing \$2.00 a pound (F.O.B. Seattle) in late April and block prices ranged from \$1.60 to \$1.75. Larger, 8-ounce and up fillets were selling for \$2.25, just about 60 cents cheaper than cod. □

CANNED SALMON — TOTAL STOCKS (BASIS 48 TALE)



Omega-3 Content



Too Many Fish?

Rising concern about plugged salmon markets, low fish prices and the small physical size of returning pink salmon has prompted a governor's task force and legislative study group to question whether state and non-profit salmon hatcheries are doing their jobs too well. Some have suggested that the flood of hatchery fish has not only soured the salmon market but contributed to the over-grazing of the ocean as well.

While it is fitting to question the cost/benefits and environmental consequences of aggressive hatchery programs, let's not turn the process into a self-destructive witch hunt. Fishermen thin in the wallet this year should be skeptical of simplistic scientific and economic hypotheses. Cutting hatchery budgets will not turn back the clock for the Alaska salmon industry.

If there is a lesson to be learned from the state's battle over salmon farms, it's that Alaska does not control the valve of world salmon supply. Outlawing the pen production of salmon in Alaska did nothing to prevent the growth of salmon farming elsewhere. One glance at a menu or stroll by a seafood case should be enough to convince anyone that the state's ban did nothing to reduce market competition from farmed fish, either. It's foolish to think that cutting Alaska's hatchery production will significantly limit world salmon supply or do anything to improve Alaska's share of the marketplace.

If there's one thing that really does make a salmon farmer nervous it is Alaska's potential to increase, not decrease, the supply of high-quality, reasonably priced wild salmon products. But let's face it—a skin-on, bone-in canned salmon will never fill that bill. The product belongs in a museum with the "iron chink" that produced it. So, it's time to move on, and we're lucky to be sitting on enough raw material to wage a revolution. What we have to do is get on with it.

—JuA

Legislators begin examination of hatcheries

by BOB TKACZ

Another state group has been formed to look into the future of salmon fishing in Alaska. This one, the Hatchery Research Project Study Group, belongs to the Alaska Legislature. Its work plan calls for a report to the Senate Special Committee on International and Domestic Fisheries on January 15, 1992.

Five major subject areas will be researched by about a dozen staffers of Fisheries Committee senators who are inviting involvement from some 70 people or groups involved in hatchery and enhancement projects.

Aquaculture associations, private non-profit hatchery operators and others have been urged in a letter from committee member and Senate president Dick Eliason to participate in the project.

"Some people have expressed concern about what the intent of this group might be," Eliason wrote in the June 28 letter. "I want to put your fears at rest."

According to Eliason, the first stage of the project will identify "issues, concerns and conflicts" cited by participants in the hatchery/enhancement business. "I cannot emphasize enough how strongly we believe that your participation in this process is vital," Eliason declares.

Once top issues of concern are set out in a draft report, participants will be asked for suggestions to improve "and possibly redirect" the state's enhancement program.

An "intensive workshop" this fall to discuss the future of the hatchery program as well as extensive formal hearings during the 1992 legislative session are also planned, according to the Senate president.

The work group is scheduled to complete a status report on September 1, and brief legislators on November 1. No schedule of meetings involving the public or has yet been set.

The main topic areas the work groups will study include the history and development of hatcheries; economics and marketing; fisheries management; roles and responsibilities in a statewide enhancement program; and recommendations for a statewide enhancement program.

Allocation of hatchery fish will also be a major element of the Senate working group's study.

"In the past when you've developed a regional hatchery plan the regional team has always been told to stay out of allocations," said Molly McCammon, a staff aide to Sen. Lyman Hoffman (D-Bethel) and chief coordinator of the working group. Nevertheless, fishermen and state and private hatchery operators in Prince William Sound developed the state's first regional hatchery management plan that included

allocation issues in a marathon effort that was completed early in 1990. And the Board of Fisheries has warned Southeast hatchery operators and fishermen that they should bring a proposal for their own management plan to the board's next meeting on their region's issues during the 1993-94 meeting cycle. If no comprehensive hatchery plan is offered the board will impose one on the region, chairman Mike Martin warned during last winter's session.

Non-state entities have been under pressure from the legislature to take over management, or at least provide funding for, the state hatcheries in their areas. In the current climate of reduced state spending under the Hickel administration that pressure has become more intense.

In addition, various legislators, for a variety of reasons, are pushing for changes, if not reductions, in the state hatchery system.

Sen. Hoffman, for at least two years, has been critical of what he has viewed as the Department of Fish and Game's slow progress in the transfer of hatcheries to aquaculture control. "His [Hoffman's] interest is definitely to free up more money to focus on other areas of the state. I think there are a number of other legislators who are looking to free up money to put into the general fund," McCammon said.

Hoffman has also complained that Southeast and Southcentral Alaska have received the vast majority of hatchery funding while the westward and Arctic regions have a right to equal funding and a greater need for the economic development they can foster.

"One of the things that we're definitely looking at is what are the goals of the hatchery program and how much should they be viewed as a tool for economic

Participants will be asked for suggestions to improve "and possibly redirect" the state's enhancement program.

—Sen. Dick Eliason

development in a region," McCammon noted.

The working group's study plan lists reviews of a wide variety of hatchery funding issues including gear group and federal funding for enhancement as well as funding for sport fish and subsistence hatcheries. "There may be a growing reluctance by the legislature to fund hatcheries and growing concern from different interest groups on what effect hatchery production is having on overall production and management schemes," McCammon noted.

Hatchery economics could take a licking from a variety of quarters during the project. At a forum on hatchery issues last March, sponsored by the Fisheries Rehabilitation, Enhancement and Development Division of ADF&G, some fishermen complained that hatchery production of pink salmon in particular was driving down prices. Although this season's pinks run has not yet reached the record levels ADF&G projected, many commercial fishermen, including Sen. Eliason, feel continued hatchery production of humpies is a waste of state dollars.



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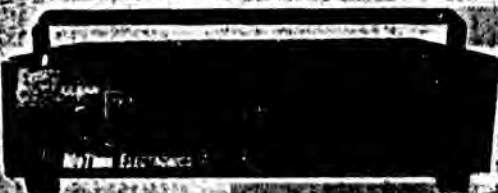
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1991 fish shorter and skinnier

by DONNA PARKER

With every eye in Prince William Sound scanning the horizon for jumpers that weren't showing up for the forecasted record return of pink salmon, lots of questions were being bandied around on the back deck of boats everywhere.

Fishermen are not the only ones querying the cause for reduced runs and weight of pink and chum salmon from Prince William Sound to Chignik. And while some fishermen want to blame it on the 1989 Exxon oil spill, scientists believe cooling ocean temperature, decreased food supply and increased hatchery production (see related story) are the more likely culprits.

According to research being conducted by the Cooperative Fisheries and Oceanographic Studies Program, the nearshore temperature of the Gulf of Alaska began to decline last year as part of a 20-year cycle that historically corresponds with decreasing salmon stocks.

In the past year alone, it has dropped a startling two degrees, that not only reduces plankton production, it also reduces the digesting metabolism of fish. Both those factors hamper the growth rate of fry and make them more vulnerable to predation.

The Cooperative Fisheries and Oceanographic Studies program is a joint venture that includes participation by the University of Alaska, Prince William Sound hatchery corporations and the Alaska Department of Fish and Game in Cordova. Its director, Ted Cooney, believes that the precipitous decline in north Gulf temperatures may be confusing the salmon while at sea.

That caused Cooney, on August 6, to

"[Return of fish] has to do with what the ocean has tossed up for a food supply for the fish this particular year."

—Ted Cooney

remain hopeful while everyone else had virtually given up on the bit PWS pink run.

"This ocean cooling may have interrupted normal migration, causing this year's return to be late and perhaps weak...so I think the run will materialize, but it will be late," said Cooney.

Cooney credits his optimism on fairly charitable environmental conditions that existed last spring. Those conditions peaked in 1989 and caused a record pink run to return to the Sound in 1990. Though temperatures and plankton production began to deteriorate last year, Cooney said, there should have been plenty of food to sustain the emerging fry.

Next year is another story. "A temperature decline of two degrees was noted when we estimated 1.2 billion wild and hatchery fry entered the salt-water environment in the Sound this year."

"So based on conditions for growth of the fry, things look pretty bleak for fish returning next year. As far as I can tell, that has nothing to do with the oil spill or increased competition for food; it has to do with what the ocean has tossed up for a food supply for the fish this particular year," he said.

Concern spreading on impacts of hatchery fish on wild species

by DONNA PARKER

There is growing evidence that increased hatchery production may be harming wild stocks and confounding the management of mixed salmon fisheries in Alaska.

It is a development that has emerged worldwide and spurred international conferences in Vancouver and the Soviet Union this summer. And though Alaska's hatchery program is considered a world model, the issue is heating up for public debate this year. A special state Senate investigation was recently launched (ACF, August 2) and the Prince William Sound Science Center and University of Alaska are sponsoring an international "think tank" on Alaska hatchery and wild salmon interaction in November.

According to Alaska Department of Fish and Game commissioner Carl Rosier, emerging trends in salmon returns are leading biologists to reevaluate the relationship between hatchery and wild stocks.

"There is a fair amount of concern, being expressed on this issue all along the coast. We're beginning to think in terms of wild stock protection areas, but we haven't really looked at the question of the carrying capacity of the ocean. We've been at this for 15 years now and it's been extremely successful at producing fish. But it's time to get some of these answers and determine where we are going," Rosier said.

Emerging trends

Mid-season assessment of run strength indicates that pink and chum runs in Prince William Sound, Cook Inlet and Kodiak may be in trouble. Chum and pink emerge from streams as fry and compete during early marine life cycles. Some runs have

already been called a "bust," others called "weak or late" and all are seeing very small fish. Generally, small fish mean big runs, but with the possibility of that not occurring in some regions for the second year in a row, biologists are beginning to speculate that there may no longer be enough carrying capacity in the ocean to adequately feed the dramatically increased hatchery and wild runs of the past decade.

Two ADF&G studies submitted to the Vancouver conference concluded that declining wild pink salmon runs in PWS appear to be the result of lower escapement levels caused by their overharvest when traveling with strong hatchery runs.

The return of wild pink ad chums to PWS this year may already be in trouble. By early August, the chum runs were so poor that minimum escapement goals were far from being met and fish managers do not anticipate commercial harvests of those fish this year. Wild pink escapement levels also lag far behind. Only 30 percent of hatchery chums returned, causing the Prince William Aquaculture Corporation to lose \$2 million in cost recovery monies expected from that fishery. Far more shortfalls might occur if the record pink hatchery forecast return fails to materialize.

One of the ADF&G papers examined the interaction of hatchery and wild stocks in PWS, Cook Inlet and Kodiak. It linked increased hatchery production with decreased fish weight in those areas. (Researchers say not enough data currently exist to do a similar analysis in Southeast.)

According to the report, 296 million pink fry were released from PWS hatcheries in 1988. That nearly doubled to 531 million

See: Possible harm, page 7)

Attention Fishermen

GREAT ALASKAN PUMP SALE

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pink salmon fry the following year. This year 700 million salmon of all species were released from PWS Sound hatcheries. More than 200 million hatchery fry released from Cook Inlet and Kodiak hatcheries join the Prince William Sound smolt as they move into north Gulf currents with wild stocks from those areas.

The report, authored by ADF&G biologists Doug Eggers, Larry Peltz, Brian Bue and Mark Willete concluded that the decreasing trend in average weight in PWS, Cook Inlet and Kodiak was due to increasing trends in run magnitude which, to some extent, has been due to increasing hatchery runs.

Their findings paralleled a similar discovery by Japanese scientists. The abundance of hatchery chum salmon in Japan has increased from five to 50 million in the past decade. A paper presented by Japanese scientists at the Vancouver conference concluded that the exponential increase of the hatchery population caused a decrease in average fish size. The report also concluded there was little evidence linking increased salmon mortality to bolstered hatchery production. However, the authors expressed fears that hatchery production was depleting the gene variability of wild stocks.

Three wild chinook and one coho run on the Columbia River in Washington state have already been decimated by the introduction of non-indigenous hatchery stocks. That caused the National Marine Fisheries Service in June to recommend that the chinook stock be designated as endangered. It also determined one native coho stock no longer exists. If the chinook are classified as endangered, that could halt commercial and sport harvests of salmon returning to the Lower Columbia River.

Though that scenario is far from being realized in Alaska, there is concern that

some wild stocks may be in need of intervention. So far concern is limited to the wild pink and chum stocks of Prince William Sound. Both ADF&G papers cite excessive harvesting of wild stocks while intermingling with returning hatchery fish.

The department is currently considering wild stock protection areas to save existing gene pools located near hatcheries. But according to ADF&H biologist Mark Willete, there is not yet good evidence to support growing speculation that the increased hatchery production has topped the ocean's carrying capacity and is causing mortality both inside and downstream of the Sound.

"There may be a negative effect in early marine life, but that is very difficult to measure. So there probably is not yet a problem with the carrying capacity of the ocean. But we haven't looked at all the data. The ability of the ocean to support a large abundance of fish changes," Willete said.

That is supported by research being conducted by the Cooperative Fisheries and Oceanographic Program which indicates PWS fry consume only five percent of current plankton production in the region. However, director Ted Cooney admits it is not yet known how much plankton is needed to support the remaining marine life in the area.

Though that view is pervasive within the department, there is increasing concern from management biologists downstream of PWS, that hatchery production there is hampering return of fish downstream in Cook Inlet and Kodiak.

Cook Inlet and Kodiak

From monitoring the Exxon oil spill, biologists know that the Gulf of Alaska currents move from Prince William Sound, into Cook Inlet, and then south toward

(See: *Possible harm*, page 8)



(Photo by MATT MILLER)

KITOI BAY HATCHERY EMPLOYEES Mary Hermon and Jamie Hushower use pipes to brain mature salmon before their eggs and milk sacs are removed. During the moderate chum runs, hatchery employees usually worked five hours daily to slaughter the 1500 salmon that made it up the hatchery's ladder overnight.

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