# Triumph and Tragedy

The sacrifice made by salmon fishermen during the first two decades of statehood, as the Department of Fish and Game stuck to its policy of putting escapements first, was rewarded in 1980 when salmon returned to Alaska rivers in numbers not seen in 40 years. In the decade to come, salmon production pushed to heights never imagined.

In 1980, a record return of over 62 million sockeye salmon surged into Bristol Bay. Pink salmon returned to the waters off Kodiak and the Alaska Peninsula in levels not seen since the 1930s. Runs were strong in Southeast, Prince William Sound, and Cook Inlet. Even the Kuskokwim River saw its commercial harvest of chums and cohos top one million for the first time ever.

The statewide catch of 110 million salmon in 1980 ranked just below the record catches in the mid-1930s and would have been higher had not a lengthy price dispute limited the catch in Bristol Bay. History was made in 1983 when Bristol Bay fishermen landed a record 38 million sockeye salmon, a full 50 percent more than the previous record catch.

During the decade to come, salmon production in Cook Inlet more than doubled. As the FRED Division's new hatcheries came on line in Prince William Sound, five new catch records were set in seven years, topping out at 33 million salmon. Hatchery production helped boost the Southeast harvest to 30, 40, 50, and finally 66 million salmon.

Alaska's salmon catch set a record of 154 million fish by the end of the decade. The strength in returns was due to multiple factors: Fish and Game's diligence in managing for escapement goals, strong hatchery returns, reduced high-seas interceptions, and a change in climate in 1977, a shift from cold to warm that is now called the Pacific Decadal Oscillation.

"Sockeye salmon are plankton feeders. You ratchet the temperature up a degree or two and the plankton bloom increases with it," said former Bristol Bay biologist Jeff Skrade. "I really think that sockeye benefited from warmer water conditions. Certainly there's a point of diminishing returns but we haven't gotten there yet. That, plus the 200-mile limit and being really hard-nosed about getting escapements got the stocks back up."

A strong market for salmon, mainly in Japan, also boosted prices. When sockeye hit $2.40 a pound in 1988, Bristol Bay fishermen boasted that every salmon was worth more than a barrel of oil. The combined value of the Alaska's salmon catch to fishermen that year peaked at over $700 million.

While salmon was ascendant in the 1980s, the boom in shellfish turned to bust. The shrimp fishery off Kodiak Island and the Alaska Peninsula that peaked in the late 1970s began a slow decline until the fishery was finally closed in the early 1980s. Biologists say the same climate shift that favored salmon and other species had an opposite effect on the shrimp. Cod were also more abundant, but they fed on the shrimp and contributed to the latter's decline.

The fallout for king crab was even more severe. In the Bering Sea, the fishery peaked in 1980 with a record catch of 130 million pounds of red king crab, but the harvest was cut to just 33 million pounds the following year, 3 million pounds the next, and in 1983 the fishery was closed. Some blamed overfishing but other factors were involved.

"The crab population was going to crash and there was no controlling it," remembered Ken Griffin, then manager of the Bering Sea crab fisheries. "They later diagnosed a disease in them, a reproductive disease, and the cod population was decimating the larvae and the younger crab. Had we foreseen the crash, we might have been able to spread the harvest over a longer period of time and maybe lessened

*While salmon was ascendant in the 1980s, the boom in shellfish turned to bust.*

*Left: Gillnetter.*
Photo Steve Lee, courtesy of ASMI.

the impact on industry but it was going to happen."

The collapse was widespread. Crab disappeared from around the Aleutian and Pribilof Islands, the Alaska Peninsula, and Kodiak. While the Bristol Bay fishery later recovered at much more modest levels, other king crab fisheries including Kodiak, have not reopened to this day.

The financial impact for the fleet was severe. As million-dollar vessels were repossessed, a joke made the rounds in Seattle that if you opened a new bank account in Ballard, you were offered the choice of either a toaster or a crab boat. To many it wasn't funny. Those who survived moved into other fisheries, targeting other species of crab or the new fisheries that were evolving after passage of the Magnuson-Stevens Act.

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With the 200-mile limit in place, the North Pacific Fishery Management Council soon started to take control of the fisheries in the Gulf of Alaska and Bering Sea. The American fishing industry wasn't ready to take over immediately, so initially foreign fleets were allowed to continue fishing, under license, and for a fee. Some proposed forming partnerships with the foreigners, but it wasn't a popular idea.

*King crab fishery.*
Photo courtesy of ASMI.

"Joint ventures had been talked about early on but the Council was dead set against it initially," said Jim Branson the first director of the North Pacific Fishery Management Council. "People weren't interested in doing anything with the foreigners that looked like it might help them. They had the idea that a joint venture might be too good for them and not good enough for us. Turned out it didn't work that way."

Eventually, the Council realized that joint ventures were a step toward Americanization of the fishery. It produced some surprises. One foggy spring morning in the mid-1980s, Togiak herring fishermen were shocked to wake and find themselves surrounded by huge factory ships flying the hammer and sickle, a joint venture between American fishermen and Soviets for yellowfin sole.

Joint ventures peaked in 1987 when almost 75% of the Alaska groundfish catch was landed by American fishermen and delivered to foreign partners. It was also just a transition. The domestic industry was fast investing in the factory trawlers and shore plants needed to handle the annual catch of 4 billion pounds of groundfish. But Americanization of the North Pacific wasn't exactly going according to plan.

After being kicked out of Alaska's Exclusive Economic Zone, many Japanese, Korean, and Taiwanese fishing vessels turned their attention to driftnetting in the North Pacific. Using monofilament gillnets intended to catch squid and other species, they also caught salmon, tuna, seabirds, and marine mammals. Critics called the driftnets "curtains of death." At the peak of the fishery, over 700 squid boats fished the North Pacific, joined by hundreds of other driftnet vessels that set out tens of thousands of miles of driftnets every night. Many openly fished north of their fishing zone where they targeted not squid, but Alaska salmon.

Many foreign trawlers also moved into international waters. In 1988, two fishermen chartered an airplane out of Dutch Harbor and flew to the middle of the Bering Sea, an area of international waters beyond the 200-mile limits of both the United States and Soviet Union known as the "Donut Hole." As their plane descended beneath the clouds, Ted Evans and Sam Hjelle found a fleet of foreign trawlers actively at work, some fishing well within the U.S. boundary. "We caught them red-handed," Evans later told the press. The 200-mile limit may have pushed the foreign fleet over the horizon but they were still a threat, catching over 2 billion pounds of Bering Sea pollock a year.

Meanwhile, the rapidly growing domestic fleet that entered the fishery wasn't necessarily what the framers of Americanization had envisioned either. "The rise and fall of the JV fleet created an opportunity for entrepreneurs who came through the Gulf of Alaska in 1989 and took the entire quota in one fell swoop," recalled Dave Benton, then Fish and Game's director of international fisheries. "They did it by roe stripping. They were taking the pollock, stripping out the roe, and throwing the rest overboard in huge quantities. They shut down Kodiak then moved into the Bering Sea and took all the quota there. That's how they could move through it so fast. It was very lucrative and very wasteful." And it was not destined to last.

In the history of Alaska's commercial fisheries, the 1980s was a decade like none other. Salmon returned in record numbers, a new, lucrative fishery emerged for sac roe herring and joint venture fishermen were Americanizing species once scorned as trash fish. New challenges emerged in the Donut Hole and from roe stripping and driftnets. Fishermen and entire fishing communities still struggled with the collapse of king crab and shrimp, but the survivors had already turned their attention to other species like tanner and snow crab or the new opportunities offered by the Magnuson-Stevens Act.

None were prepared for the tragic climax to the decade. It came early in the morning on another Good Friday, March 24, 1989, when the Valdez marine radio crackled with word that a tanker had fetched up hard aground on Prince William Sound's Bligh Reef and evidently was leaking some oil.

*Oil-covered Harbor seals by Little Smith Island.*
Photo ADF&G.

## Exxon Valdez

*The Exxon Valdez oil spill eventually covered 11,000 square miles.*
Map ADF&G.



*Above: Dead, oil-covered seabird. Left: ADF&G employee lifts a dead, oil-covered otter.*
Photos ADF&G.

Alaska fishermen have long had an uneasy relationship with oil. As Fish and Game struggled to rebuild salmon runs after statehood, oil took over the dominant position in Alaska's economy. But after some notable gas well blowouts in Cook Inlet, fishermen became worried about possible impacts to their fisheries. With the discovery of the giant Prudhoe Bay field in the late 1960s and completion of the pipeline terminal in Valdez almost a decade later, that concern was shared in Prince William Sound.

Fishermen's worst fears came true on another Good Friday, 25 years after the devastating 1964 earthquake. Early in the morning of March 24, 1989, the tanker *Exxon Valdez*, under the command of a lapsed alcoholic and with a junior officer at the helm, veered from the tanker shipping lanes to avoid ice and grounded on a charted reef in Prince William Sound, spilling 11 million gallons of crude oil.

"I was laying in bed in Anchorage when I got a phone call from the staff in Cordova," recalled biologist Chuck Meacham, Junior, then research supervisor for the central region that included Prince William Sound. "They filled me in and I was on the first available flight to Cordova." Like many other Alaskans who responded to the spill, *Exxon Valdez* would soon take over his life. Meacham was assigned the job of fisheries research leader for the oil spill response.

"One of the first decisions was whether to divert our vessel which was doing the spring fry and egg digs around Prince William Sound," Meacham said. "People were interested in pulling it off for oil spill-related response and who knows what. At the time it seemed incredibly important to me to document what went on with that oil relative to our salmon streams and intertidal spawning areas. There was a bit of a battle to keep the vessel on task, paying attention to fisheries biology, but I still feel it was the right thing to have done."

Meacham also decided to base his headquarters in Cordova to stay away from the madness occurring in Valdez were the spill response was centered and international media converged. He was not far from the impact of the spill.

"It was amazing, the stench in the air; the oil everywhere. The thing that most surprised me was how once you got into oil you couldn't get rid of it. We would take a skiff into a small salmon stream, throw the anchor overboard, do our survey, come back and there's a little bit of oil on anchor line. Pulling it up, you'd let a little oil get on you and then it gets on the boat and your raingear and

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your boots and everything else you touch. Once you touch this stuff or it touches you, there was no escaping it."

There was also no escaping the spill's impacts to the commercial fishing industry. The herring fishery in Prince William Sound was the first to be closed, soon followed by shrimp, crab, and finally salmon, both wild and hatchery production. More closures followed as the oil spread to Cook Inlet, Kodiak, and as far as Chignik. Fish and Game adopted a "zero tolerance" policy to fishing in oiled areas to prevent any contaminated seafood from entering the market. The financial loss to fishermen, processors, hatcheries, and fishing communities was huge.

Meacham witnessed the impacts to the people and industry as he documented the spill's biological impacts and years later, the Sound's recovery.

"Clearly the greatest damage was to people: fishermen and subsistence users. There's a lot of trauma that will take generations to get through," Meacham said. "There's no question the spill had a devastating impact on birds and marine mammals. On the fish side, it was less clear, primarily because you don't find dead fish as easily as other oiled animals. There were lots of subtle and not so subtle impacts on finfish and shellfish but I would say by-and-large Mother Nature is amazing in its ability to recover from these kinds of body blows. Slowly but surely over the next number of years the fish came back. With the possible exception of herring."

While salmon and other species rebounded from the spill faster even than the courts could deal with its aftermath, the herring never recovered. Some strong catches followed in the years immediately after the spill but the return of herring from 1989 was one of the poorest on record and subsequent year classes were also poor. As the biomass steadily declined in the wake of the *Exxon Valdez*, the Prince William Sound herring fishery was finally closed. It has remained closed ever since.

*Right: Examining an oil-covered otter. Below: Exxon Valdez crude oil.*
Photos ADF&G.



*"Once you touch this stuff or it touches you, there was no escaping it."*

—Chuck Meacham Jr.

## Sac Roe Herring

A big change created by the Magnuson-Stevens Act involved a little fish. Alaskans had long fished for herring, an abundant but low-value species occasionally used for food and bait, but most often rendered down for its oil. This reduction fishery, as it was called, grew in the late 1930s to over 110,000 tons annually, but waned after World War II when cheaper species like sardines and anchovies dominated the fish oil market. There was still demand abroad, however, and as foreign fleets moved into the Bering Sea and Gulf of Alaska, the herring harvest off Alaska peaked at almost 170,000 tons in 1970. This booming foreign fishery was soon closed by the 200-mile limit.

"We didn't realize there was that large a biomass out there and it had gone almost unexploited," recalled Jeff Skrade, manager of Bristol Bay's Togiak herring fishery. "There was a lot of foreign high-seas effort. They were 12 miles out; you could see them off of the Nushagak and Togiak. Magnuson-Stevens, though, created a void on the market and the response by the American industry was immediate."

Not only was there a void to be filled, a new and lucrative market had emerged. Herring eggs, called sac roe, were a delicacy in Japan, a New Year's Day treat that they were willing to pay big money for—over $1,000 a ton for high quality herring. From Kah Shakes near Ketchikan to Prince William Sound, Cook Inlet, Kodiak, Togiak, and as far north as Norton Sound, fishermen and processors rushed into the herring fishery in the late 1970s. In 1980, the sac roe herring harvest almost doubled to over 40,000 tons.

With a large resource and strong market, sac roe herring had a gold rush atmosphere. The fishery was fast-paced and furious, caught in gillnets and purse seines, as spotter planes circled overhead to guide the nets. Fishermen's imaginations were set afire by the prospect of a million-dollar set, a single seine that encircled a thousand tons of high value herring.

The rapid interest in herring took Fish and Game by surprise. When the Togiak fishery started, the regulation book stated simply, "There is no closed season on herring." That didn't last long. A surge in effort forced Fish and Game to take steps to control the harvest, but at times, it seemed the industry grew faster than Fish and Game could react.

"One year in the early 80s we went out for a short test fishery, you know, take a little bite," said Skrade. "We knew there was some fish around but didn't know how much so we called a 20-minute opening and they harvested 20,000 tons. I'll never forget it. We were all flabbergasted."

Biologists soon developed methods to estimate the biomass and set catch quotas to ensure the sustainability of the resource. The fishery also prompted a shift in the sometimes adversarial relationship between the Department and industry. Biologists still set the catch quotas, but since the market depended on the maturity of the roe, they worked with industry to time openings when the quality and value was at its peak. At Togiak, the meetings became known as beach parties.

"The beach parties were fun," Skrade said. "We would send out boats to a whole bunch of different areas to get samples from known concentrations of fish, bring those to a central location at Nunavachak beach or Summit Island, and then lay them out. Basically, it was trying to share the agony with industry about when the best time to open was. Again, we were on a learning curve and respected the opinions of a lot of the people who were participating."

*Record-setting Sitka herring set.*
Photo ADF&G.

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*Checking roe maturity: Togiak beach party fare.*
Photo courtesy of Bob King.

Across Alaska, sac roe herring catches soared in the 1980s to over 50,000 tons annually and peaked at over 60,000 tons in 1992. In the years that followed, Japan's taste for herring roe slowly faded. Prices fell and effort waned. The herring resource, however, remained healthy and the fishery still grabbed fishermen's imaginations. In 2008, headlines flashed across Alaska when Sitka seiners landed $5.5 million worth of herring in just 60 minutes.

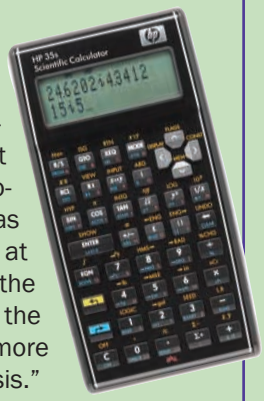
## Computers

Computers are so ever-present today it's hard to remember life before them, but Hal Geiger does. Geiger joined the FRED Division as a biometrician in 1982, just as microcomputers were coming of age. The change they brought, he says, was revolutionary.

"Before microcomputers, we had Hewlett Packard calculators," Geiger recalled. "I had the job of figuring out how many hatchery fish there were. I had two people work with me and we sat there with our calculators for weeks, crunching numbers and double checking each other. On a computer, I could do this by myself in less time than it took three of us with calculators."

But getting the new technology wasn't easy. The state invested in a large mainframe computer and expected all departments to use it. For scientists like Geiger, it was useless. The mainframe was designed for administrative functions like accounting and printing checks. All programming was done in a business language called COBOL.

"They had no idea what scientists wanted to use computers for or what we could do with them but they had an interest in keeping people tied into the mainframe," Geiger said. "We kept trying to get microcomputers but it was like being on trial at Nuremberg. And the verdict was always the same: you need more cost/benefit analysis."



Some eventually just bought their own computers. Geiger shelled out $1,600 for a then state-of-the-art Kaypro II with 64K of RAM, two 5¼-inch floppy drives and a 9-inch green phosphor screen. Set in an aluminum case, the Kaypro was billed as "portable." But weighing in at 29 pounds, owners described it as "luggable." Geiger called it "Darth Vader's lunch box."

As the technology rapidly improved, software became more user-friendly, prices and weights both fell, and microcomputers quickly spread in use at Fish and Game and elsewhere. Some longtime biologists never joined the computer revolution and as they retired, it was the passing of a generation. Biologists who stored and processed data in their own minds, not a hard drive, had a feel for fishery management that could never be replicated on a spreadsheet.

The change to computers was revolutionary, Geiger said, and not just in ways you'd expect from a biometrician. "People think of computers as helping you go through data faster but what it really did was allow people to communicate," Geiger said. "It helped people write better. It helped them take data and graph it in different ways; to find mistakes and correct them easily and quickly. It allowed us to communicate what we had learned and that was what really revolutionized fishery biology."


*Left: Kaypro 330 computer.*
*Above: Hewlett-Packard calculator.*