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ABSTRACT: Alaska's commercial salmon fisheries have harvested an average of 172 million salmon annually since 1990, ranging from 123 million to 221 million fish per year. This stands in stark contrast to the average annual harvest of 41 million fish during the 1950s—the final decade under federal management of the state's commercial salmon fisheries. When Alaska assumed management authority of its salmon fisheries in 1960, one year after statehood, many of the state's salmon runs were depressed and its salmon fisheries were in desperate shape. In this paper we describe how these once depleted salmon fisheries have been rebuilt over the last 45 years into one of the strongest and most sustainable fishery resources in the world. We review state policies and regulatory structure, describe how the resource is managed, and provide outputs from the management program including harvest levels and values, the number of fishermen involved, and the current status of Alaska's salmon stocks. Detailed information is provided for each of 11 commercial fishing areas in the state. We also provide information on funding levels and sources that the Alaska Department of Fish and Game has used to support its salmon management and assessment programs. Challenges faced by the state in maintaining and improving resource management and by the state and industry in improving fishery profitability are discussed.

INTRODUCTION

For centuries, indigenous people have used the salmon resources of Alaska for subsistence purposes. These salmon resources include Chinook *Oncorhynchus tshawytscha*, sockeye *O. nerka*, coho *O. kisutch*, pink *O. gorbuscha*, and chum *O. keta*.

During the latter part of the 18th century, Alaska was increasingly explored by various nations. The charter of the Russian-American Company in 1799 was the first attempt to control natural resources for economic reasons. However, the salmon resource during the Russian years was not used commercially, but instead was used as a subsistence resource as it had been for centuries. Alaska became a customs district under the U.S. Treasury after purchase from Russia in 1867. In 1868, the first salmon saltery was established; a year later the first cannery was established. Some fisheries research was conducted by the U.S. Fisheries

Commission but there was no attempt to manage fisheries; one treasury agent and an assistant enforced the law and monitored salmon fishing along 34,000 miles of the Alaskan coastline (Pennoyer 1988). In the late 1800s and early 1900s, the Alaska commercial salmon fishery quickly grew as technology improved and new markets were developed. By 1898, 59 canneries were operating in Alaska and by 1920, 160 canneries were operating (Cooley 1963). The annual average Alaskan commercial harvest from 1900 to 1910 was about 30 million salmon but doubled in the next decade to about 65 million salmon.

Under the American system of federalism, states have the power to regulate fisheries within their jurisdiction. However, for U.S. territories, the power to regulate fisheries sometimes remained with the federal government and was held in trust.

In 1884, Congress passed the first Organic Act for Alaska which provided limited self-government un-

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der a federally appointed governor, but the act did not transfer jurisdiction for fisheries management to the territorial government. The U.S. Fisheries Commission implemented general studies on Alaskan fishery resources but resisted attempts to be given management authority. Early U.S. Fisheries Commission investigators predicted the collapse of Alaskan salmon fisheries if left unregulated and showed particular concern over the use of barricades for harvest.

In 1889, Congress adopted the Alaska Salmon Fisheries Act and thus prohibited the erection of dams, barriers, or other obstructions in Alaskan rivers for the purpose of impeding salmon migrations. Funding for enforcement of the act was first available in 1892 and staffing was one fishery agent (Cooley 1963).

In 1896, Congress amended the Alaska Salmon Fisheries Act. Commercial fishing above tidewater in streams less than 500 feet wide was banned. Fishing below mean high tide remained unregulated. Weekly closed fishing periods were established except in Bristol Bay, Cook Inlet, and Prince William Sound. The amended act also required canneries to report harvests and to establish hatchery programs.

In 1903, Congress established the Department of Commerce and Labor and within it, a Bureau of Fisheries, which, along with other duties, became responsible for Alaskan fisheries. Bureau staff continued some investigations of Alaskan salmon but did little in the way of management and enforcement. The Alaska Salmon Fisheries Act of 1906 implemented a license tax on the salmon harvest along with a rebate to those companies operating hatcheries. Due to concerns that overfishing was depleting salmon runs in Alaska, there were 42 bills introduced in Congress between 1906 and 1924 proposing a variety of restrictive regulations on the commercial salmon fishery. All were defeated or seriously weakened by the lobbying efforts of the salmon canning industry (Regnart 1993).

The second Organic Act was passed in 1912. This act provided for a territorial legislature with limited self-government. However, the act contained a provision prohibiting the territorial legislature from passing any laws that would “alter, amend, modify or repeal any federal laws relating to the fisheries of Alaska.” Alaska remained the sole exception to the convention that new territories were given some degree of autonomy in the management of fisheries. Fishery management responsibility remained with the federal government until January of 1960, one year after statehood.

Congress adopted the White Act in 1924. This act denied the Bureau of Fisheries the power to control the amount of fishing gear, stating “no exclusive or

individual right to fisheries shall be granted.” While preventing the federal government from effectively limiting participants in the Alaskan commercial salmon fishery, the White Act gave broad authority to the Secretary of Commerce to regulate fisheries in all territorial waters including the authority to limit catch, size and type of fishing gear, and seasons. The White Act specified 36-hour weekend closures of the salmon fishery including the closure of fish traps. The act stated Congressional intent that not less than 50% of the salmon were to be allowed to escape the fishery in streams with wiers installed, representing one of the first attempts to regulate Alaska’s salmon fishery for sustained yield. The White Act did not allow federal agencies to manage salmon fisheries by limiting the number of participants. Instead salmon fishery management policies were adopted that decreased efficiency—such as limits on fishing time and gear type restrictions—which resulted in over-capitalization. Interest groups then sought to try shift the burden of conservation to other competing interest groups. Federal agencies were not consistent in enforcing fishing efficiency across Alaska. They encouraged technological advances in boats and gear in some areas of Alaska; at the same time they adopted regulations to reduce efficiency in others. For example, in Bristol Bay, commercial salmon fishing was restricted to sail boats, yet highly efficient fish traps were allowed for commercial salmon fishing in several other areas of Alaska.

Following World War I, prices paid for Alaskan salmon decreased and harvests increased. The annual average Alaskan commercial harvest from 1920 to 1929 was about 70 million salmon. Lacking Congressional action to limit fishing effort and the amount of gear being deployed in Alaskan salmon fisheries, a presidential order was issued in 1933 called the Southwest Alaska Fisheries Reservation. This order limited the case pack (harvest), the amount of gear that a fisherman could use, and the number of cannery operations. The new licensing system effectively limited a fisherman to working for a specific company on an assigned boat (Pennoyer 1979).

Between 1930 and 1939, the Alaskan commercial harvest averaged about 90 million salmon; the industry was prosperous and salmon prices increased. Industry lobbied hard in Washington D.C. to assure that new regulations restricting harvests proposed by the Bureau of Fisheries were abandoned or liberalized. Federal funding for fisheries research and enforcement dwindled.

In 1939, salmon runs had declined, the harvest decreased to about 75 million salmon, and attacks on the federal management program forced the Commissioner of the Bureau of Fisheries to resign. The Bureau was transferred to the Department of the Interior and merged

with the Bureau of Biological Survey to form the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service, through its Bureau of Commercial Fisheries, was responsible for management of Alaska's salmon fisheries through 1959.

The need for food production during World War II caused liberalization of commercial salmon fishery regulations. Prior closed areas were opened and prior weekly closed periods were abolished. Between 1940 and 1949, annual Alaskan commercial harvests averaged about 75 million salmon. Industry resisted proposals to restrict fishing after the war, arguing to do so would deprive returning veterans of employment (Cooley 1963). In an effort to rebuild overfished salmon runs, a 1951 proposal to prohibit fishing in several Kodiak Island fisheries was overturned by industry lobbyists who argued that allowing greater escapements would be wasteful (Roppel 1986). As the salmon runs declined throughout the 1950s, President Eisenhower declared parts of Alaska disaster areas, authorizing federal relief funds and the Department of Agriculture to provide food supplies. Between 1950 and 1959, annual Alaskan commercial harvests decreased to an average of about 40 million salmon. By the late 1950s there were 4 times as many fishermen as in the early 1900s yet the total harvest had decreased to about 25 million salmon in 1959.

The territorial legislature created the Alaska Department of Fisheries and the Alaska Fisheries Board in 1949, along with a territorial fish tax. The department had no specific authority, but did provide a mechanism for scientific research and review of federal regulations. The lack of self-rule in salmon management and the influence of the major lower 48 canning companies on federal salmon management were primary forces in Alaska for statehood. In the 1950s, the 6 largest canning companies owned 40% of the canneries and processed 50% of the salmon harvest (Regnart 1993). They maintained permanent legal staff in Washington D.C. to lobby federal fishery managers and law makers and they exercised direct influence in the Alaskan salmon fishery through ownership in fish traps. Of the 434 fish traps licensed in 1948, only 38 (9%) belonged to Alaskan residents while 245 (56%) were owned and operated by the 8 largest canning companies (Regnart 1993). Fish traps, due to their monopolistic control by canneries, created controversy throughout Alaska. Federal officials refused to ban fish traps even though traps had been outlawed in all other salmon fisheries in British Columbia and on the west coast of the U.S. Fish traps became a rallying issue for statehood when the federal government refused to ban this type of fishing gear.

According to Cooley (1963), "Alaska residents viewed themselves in a one-sided battle against 2 mammoth forces—the absentee capitalists and absentee government—neither of which seemed to have the welfare of the Alaska in mind."

Alaska achieved statehood in 1959. In January of 1960, in his message to the Joint Assembly of the First Alaska State Legislature, Governor William A. Egan had this to say: "On January 1 of this year, Alaska's Department of Fish and Game was handed the depleted remnants of what was once a rich and prolific fishery. From a peak of three-quarters of a billion pounds in 1936, production dropped in 1959 to its lowest in 60 years. On these ruins of a once great resource, the department must rebuild. Our gain is that we can profit by studying the destructive practices, mistakes and omissions of the past. The revival of the commercial fisheries is an absolute imperative. The livelihood of thousands of fishermen and the very existence of many communities scattered along thousands of miles of continental and island coastline depends upon improvement of the fisheries. To this end we will give our best efforts."

In June of 1960, in a speech on the floor of the U.S. Senate, Senator Ernest Gruening stated: "Had it not been for the Federal Government's neglecting and permitting the abuse of the salmon fisheries resource of Alaska, they would today constitute a great and rich heritage for this and future generations."

In 1963, Cooley stated: "The State of Alaska faces a tremendous task as it attempts to rehabilitate the salmon resources to something of its former grandeur. The lack of adequate biological knowledge and the need for much more study and research has already been stressed. The state must be willing and able to invest heavily in a large-scale program of research and management with little likelihood of a significant return on the investment for many years to come. While the willingness may be there, the ability to finance it remains a crucial question, for the state must meet many new financial obligations that are concurrent with statehood."

The intent of this paper is to present information concerning commercial salmon fisheries of Alaska (Figure 1); how this resource is managed and outputs from the management program including harvest levels, value of those harvests, and number of fishermen involved. Also provided will be summary information concerning the funding that the Alaska Department of Fish and Game (ADF&G) has used over the last 45 years to rebuild these once depleted salmon fisheries into one of the strongest and most sustainable fishery resources in the world.

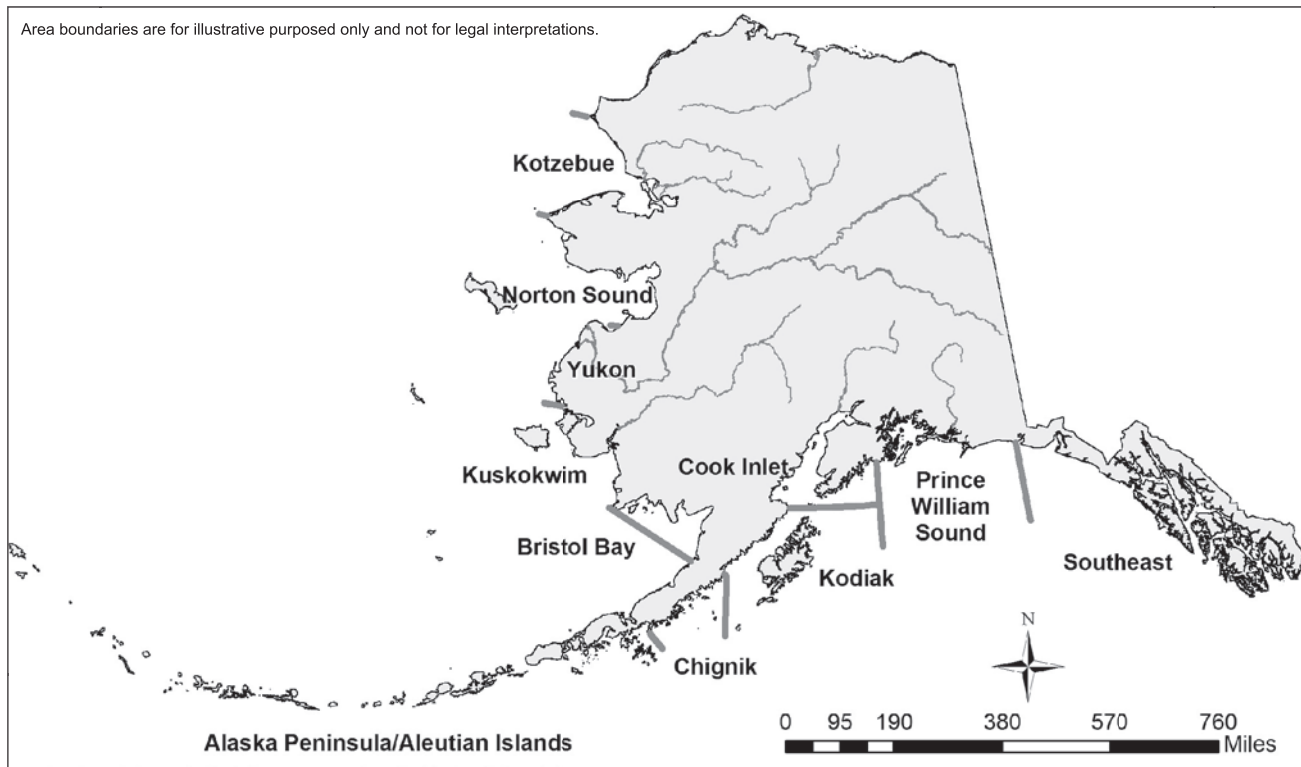


Figure 1. Map of Alaska showing the locations and approximate boundaries of 11 Alaska salmon fisheries.

State of Alaska Salmon Management Authority

Authority for the management of the subsistence and commercial salmon fisheries of Alaska was primarily vested with ADF&G, Division of Commercial Fisheries at statehood. The Alaska constitution provided policy guidance. At statehood, the Alaska legislature created the Department of Fish and Game and the Division of Commercial Fisheries and gave them a mandated fishery management mission. The Alaska legislature has passed laws since statehood providing further authority and guidance. The Alaska Board of Fish and Game and later the Alaska Board of Fisheries has promulgated a diverse set of regulations and plans for management of Alaska's subsistence and commercial salmon fisheries that provide guidance for day-to-day management by area biologists of the Division of Commercial Fisheries. Since statehood, some major changes in authority for management of the Alaska salmon fishery have occurred.

Article VIII of the Alaska Constitution is dedicated to natural resources. Sections pertinent to the management of salmon include:

“Section 1. It is the policy of the State to encourage the settlement of its land and the development of its resources by making them available for maximum benefit of its people.

“Section 2. The legislature shall provide for the utilization, development, and conservation of all natural resources belonging to the State, including land and waters, for the maximum benefit of its people.

“Section 3. Wherever occurring in the natural state, fish, wildlife, and waters are reserved to the people for common use.

“Section 4. Fish, forests, wildlife, grasslands, and all other replenishable resources belonging to the State shall be utilized, developed, and maintained on the sustained yield principle, subject to preferences among beneficial uses.

“Section 15. No exclusive right or special privilege of fishery shall be created or authorized in the natural waters of the State.” Section 15 of the Alaska Constitution was included due to the special privileges granted to the salmon canning industry by the federal fishery management program prior to statehood, particularly the ownership and use of fish traps. Fish traps were quickly prohibited by regulation, but language in Section 15 prevented the Board of Fisheries and Game from implementing regulations to limit total fishing effort. In 1972, the Constitution was amended to facilitate a limited entry program for the Alaska commercial salmon fishery. Section 15 now reads “No exclusive right or special privilege of fishery shall be created or authorized in the natural waters of the State. This section does not restrict the power of

the State to limit entry into any fishery for purposes of resource conservation, to prevent economic distress among fishermen and those dependent upon them for a livelihood and to promote the efficient development of aquaculture in the State.”

In 1973, the Alaska legislature passed a bill creating the first comprehensive limited entry program in the United States. The limited entry program implemented for commercial salmon fisheries in Alaska stabilized the number of fishermen and therefore the amount of gear used in each of the State’s salmon fisheries. It improved management effectiveness and the ability of the fishery managers to regulate the fishery so that harvestable surpluses could be taken while still meeting escapement objectives in an orderly and predictable fishery. Limited entry also succeeded in maintaining a high proportion of Alaska resident participation in the state’s salmon fisheries.

The Alaska legislature created ADF&G with the commissioner as the principle executive and charged the commissioner to “manage, protect, maintain, improve, and extend the fish, game, and aquatic plant resources of the State in the interest of the economy and general well-being of the State.” At statehood, Alaska made 2 very significant departures from the prior federal fishery management regime. At statehood, Alaskans keenly understood the value of a decentralized salmon management program after dealing for decades with the centralized federal salmon management regime.

First, in an important organizational change, ADF&G offices were opened in numerous towns and villages across Alaska and staffed with area management biologists. Second, these area management biologists were provided with fishery management authority to address the rapidly changing inseason fishery management needs of the salmon fisheries in Alaska. Area biologists in the Division of Commercial Fisheries were charged with managing subsistence and commercial salmon fisheries while area biologists in Sport Fish Division were charged with managing sport fisheries for salmon. Since statehood, emergency order authority has been vested in area management biologists giving the department’s field staff authority to make regulatory announcements that carry the force of law and can be implemented immediately. AS 16.05.060, Emergency Orders, states: “(a) This chapter does not limit the power of the commissioner or an authorized designee, when circumstances require, to summarily open or close seasons or areas or to change weekly closed periods on fish or game by means of emergency orders” and “(c) An emergency order has the force and effect of law after announcement by the

commissioner or an authorized designee...”. Sustained yield management of commercial salmon fisheries requires precise timing of fishery openings and closures and adjustments in gear, often with short notice, to allow the harvest of surplus fish and simultaneously assuring adequate escapement of spawning fish. Prior to statehood, federal managers had been given limited authority to make field announcements, however, less than 25 such announcements were made per year across the State of Alaska by federal managers in the 1950s. In contrast, under State of Alaska management, in 2004, 745 emergency orders were issued by Division of Commercial Fisheries staff to manage salmon fisheries.

While a key ingredient to the effective salmon management program implemented in Alaska at statehood was the placement of local area management biologists with emergency order authority in area offices throughout the state, also at statehood, 4 regional offices were formed along with a headquarters office. These portions of the Division of Commercial Fisheries program were put in place to provide supervision and support for the states commercial fishery management program. Key staff in regional and headquarters offices were, and continue to be, vested with emergency order authority. The fact that the basic structure and organization of the Division of Commercial Fisheries was implemented 45 years ago and has largely stayed in place is a testament to the wisdom of the initial leadership of ADF&G and the long-term effectiveness of the organization structure implemented at statehood.

Regulations for prosecution of the commercial salmon fisheries in Alaska were promulgated by the Alaska Board of Fish and Game from statehood until 1975 when that Board was split and the Alaska Board of Fisheries was formed. The Board of Fisheries is defined in AS 16.05.251 as “for purposes of the conservation and development of the fishery resources of the State, there is created the Board of Fisheries composed of 7 members appointed by the governor, subject to confirmation by a majority of the members of the legislature in joint session. The governor shall appoint each member on the basis of interest in public affairs, good judgment, knowledge, and ability in the field of action of the board, and with a view to providing diversity of interest and points of view in the membership. The appointed members shall be residents of the State and shall be appointed without regard to political affiliation or geographic location of residence.” In part those authorities include: establishing fishing seasons, setting fishing quotas, setting bag limits, establishing harvest levels along with sex and

size limitations on these harvests, establishing means and methods employed in the pursuit, capture and transport of fish, and regulating commercial, sport, subsistence, and personal use fisheries. The Board of Fisheries has sole authority to allocate fishery resources among commercial, sport, personal use, and subsistence users. Regulations enacted by the Board of Fisheries for management of the Alaska salmon commercial fishery are extensive, taking up a substantial portion of the 1,147 page booklet entitled "Alaska Fish and Game Laws and Regulations Annotated, 2004–2005 Edition, Including updates to the Alaska Administrative Code through Register 171." These diverse and detailed fishery regulations provide much of the basis for management of the Alaska commercial salmon fishery. These regulations provide guidance but are supplemented by hundreds of emergency orders developed and announced by ADF&G area management biologists who are directly responsible for management of specific salmon fisheries across the State of Alaska.

In 2000, the Policy for the Management of Sustainable Salmon Fisheries was adopted into state regulation (5 AAC 39.222). Referred to as Alaska's Sustainable Salmon Fisheries Policy, the regulation states that "while, in the aggregate, Alaska's salmon fisheries are healthy and sustainable largely because of abundant pristine habitat and the application of sound, precautionary, conservation management practices, there is a need for a comprehensive policy for the regulation and management of sustainable salmon fisheries." The goal of the policy is to "ensure conservation of salmon and salmon's required marine and aquatic habitats, protection of customary and traditional uses and other uses, and the sustained economic health of Alaska's fishing communities." The landmark policy updates and strengthens long-standing principles of Alaska's salmon management program. Most importantly, it directs ADF&G and the Alaska Board of Fisheries to follow a systematic process for evaluating the health of salmon stocks throughout the state by requiring ADF&G to provide the Board, in concert with its regulatory cycle, with reports on the status of salmon stocks and fisheries under consideration for regulatory changes. The policy also defines a new process for identifying stocks of concern (stocks which have not met escapement goals or yield expectations), and requires ADF&G and the Alaska Board of Fisheries to develop action plans to rebuild these stocks through the use of management measures, improved research, and restoring and protecting habitat. Three levels of concern are identified; (1) a yield concern is the least severe and results from

an inability to maintain expected harvest levels over a 4- to 5-year period, (2) a management concern relates to the inability to maintain escapements within escapement goal ranges over a 4- to 5-year period despite the use of management measures, and (3) a conservation concern is the most severe and relates to the inability over a 4- to 5-year period to maintain escapements above a minimum threshold below which the stock's ability to sustain itself is jeopardized.

To comply with the new policy, ADF&G has expended considerable effort since 2000 to update salmon stock status information and review and update the scientific basis of salmon escapement goals—producing an extensive series of published reports in the process. There are currently over 270 escapement goals established for salmon stocks or stock aggregates throughout the state of Alaska. The goals are classified either as "biological escapement goals," which are scientifically-based and represent the escapement estimated to provide the greatest potential for maximum sustained yield, or as "sustainable escapement goals," which represent an escapement level that is known to provide for sustained yield over a 5- to 10-year period.

In contrast to the dismal state of many salmon runs in other areas of the west coast of North America, salmon stocks in Alaska are in excellent shape. No stocks have been identified as threatened or endangered under the Endangered Species Act. Relative to the criteria of Alaska's Sustainable Salmon Fisheries Policy, as of spring 2006 only 3 salmon stocks in Alaska are classified as stocks of management concern; Kvichak River sockeye salmon in the Bristol Bay area, Yukon River summer chum salmon and Nome subdistrict chum salmon in the Norton Sound area. An additional 5 stocks, all located in northern Alaska in the Yukon, Kuskokwim and Norton Sound areas, are identified as stocks of yield concern which are meeting escapement objectives but producing low levels of harvest. The Board of Fisheries and ADF&G have developed action plans to address rebuilding of each of these stocks.

The Alaska legislature delegated authority to the ADF&G commissioner to deputize employees as peace officers and to enforce fish and game laws and regulations. In territorial days, the protection of fish and game resources over vast expanses of water and land by a few fishery agents was ineffective. The Division of Fish and Wildlife Protection commissioned full-time enforcement officers at statehood and was initially assigned as a division within ADF&G. In 1971, the Division of Fish and Wildlife Protection was moved from ADF&G to the Department of Public

Safety and in 2003 was reorganized into a bureau. A massive improvement in salmon fishery law enforcement occurred at statehood and has continued as a result of the combined efforts of protection officers from Fish and Wildlife Protection and other deputized employees of the Department of Fish and Game.

A recent development that effects state authority to manage salmon fisheries in Alaska and that has led to a renewal of federal salmon fishery management authority is associated with subsistence fishing. When the U.S. Congress passed the Alaska National Interest Lands Conservation Act (ANILCA) in 1980, the act contained a provision that defined subsistence as “the customary and traditional uses by rural Alaska residents of wild renewable resources for direct personal or family consumption; and for customary trade.” Congress thereby defined subsistence entitlement by geography or demographics. The Alaska legislature and the Alaska Board of Fisheries attempted to adopt State laws and regulations so that State management would come into compliance with ANILCA. As part of this process, a new use designation was created—personal use—to accommodate Alaska citizens who would no longer qualify to subsistence fish for salmon under rural definition. In 1988, the Alaska Supreme Court prohibited Alaska from using rural residency as the basis for subsistence eligibility because such a restriction violated the common use principle of the Alaska Constitution. After years of additional State and Federal legal actions, in 1995 the U.S. Ninth Circuit Court ruled that the subsistence priority in ANILCA applies to waters in which the U.S. has reserved water rights. Federal management authority for salmon fisheries was reinitiated in 1998 with a Federal Board issuing regulations for salmon subsistence fisheries under a rural priority approach. While state and federal regulators and managers have attempted to implement a co-management approach, the direct federal authority to manage and regulate salmon fisheries in State of Alaska waters represents a distinct change from about 40 years of State of Alaska management, an issue of paramount importance during Alaska’s drive for Statehood.

High Seas Salmon Fishing

In the late 1930s, the Japanese had begun fishing salmon in international waters near Bristol Bay. After World War II, negotiations between the U.S., Canada, and Japan resulted in the International North Pacific Fisheries Convention (INPFC) and the establishment of a tripartite commission to deal with research and management of salmon harvested on the high seas.

The international fisheries expanded after 1960 and remained unmanaged except through treaty negotiations. A series of bilateral negotiations with Korea, Japan and Russia led to some control and regulation of foreign take, and from 1974 to 1977 the Japanese voluntarily restricted their high seas fishing fleet—perhaps in anticipation of the outcome of the ongoing Law of the Sea Conferences and the threat of extended jurisdiction (Pennoyer 1979). The Law of the Sea negotiations faltered and a number of Alaskan salmon stocks continued to decline. International interceptions of North American salmon stocks became a public issue and management conflicts increased. In 1976, Congress adopted the Magnuson-Stevens Fisheries Management and Conservation Act (MSFCMA). This legislation extended U.S. control of its fishery resources from 3 miles offshore to 200 miles offshore. The high seas harvest of Alaskan salmon stocks was substantially reduced immediately after passage of the MSFCMA. It is likely that high seas harvest of some western Alaska stocks of salmon were reduced by as much as 80% (Pennoyer 1979). Control of the exclusive economic zone in Alaska, the area from 3 to 200 miles offshore, is vested in the North Pacific Fishery Management Council (NPFMC), an 11-member council appointed by the Secretary of Commerce. Fishery management plans adopted by the council are codified by the Secretary of Commerce and implemented by the National Marine Fisheries Service (NMFS). The NPFMC developed a management plan for salmon caught in waters from 3 to 200 miles offshore of Southeast Alaska and the NMFS delegated authority to manage salmon fisheries in this area to the State of Alaska.

Pressure by the State of Alaska contributed to a continued international effort to control high seas fishing for salmon after the MSFCMA was enacted. Directed fishing of salmon by foreign fishing fleets within 200 miles of Alaska was banned. However, directed high seas fishing for salmon continued in waters outside of 200 miles offshore of Alaska. The INPFC was the mechanism used to attempt the control of high seas fishing of Alaskan-origin salmon through 1991. In 1992, the north Pacific nations (Canada, Japan, Russia, and the United States) with anadromous fish resources formed the North Pacific Anadromous Fish Commission (NPAFC) and closed the international waters of the North Pacific Ocean to directed fishing for salmon. The NPAFC has continued the role of research and enforcement previously conducted through the INPFC, but also included Russian participation and more recently Korean participation. Some Alaska-origin salmon continue to be caught in ocean fisheries that occur in the Russian exclusive economic zone. However, the

magnitude of interception of Alaska-origin salmon by Asian foreign fleets has markedly decreased as a result of the MSFCMA, INPFC, and NPAFC with resultant benefits accruing to inshore Alaskan fishermen.

Pacific Salmon Treaty

Coastal and freshwater salmon fisheries, such as those in Alaska, sometimes harvest salmon that spawn in other jurisdictions. Significant interceptions of Alaskan, southern U.S., and Canadian spawned salmon occur in coastal fisheries of Southeast Alaska, Canada, and Washington. Alaskan fisheries also intercept significant numbers of salmon that originate in Canadian waters of the Yukon River. A long series of negotiations between the U.S. and Canada concluded in the signing of the Pacific Salmon Treaty (PST) in 1985. The PST was renegotiated in 1999 with an increased effort to implement abundance based management regimes. The resultant U.S.–Canada agreement(s) through the Treaty process reflects a political balance of the fishing and conservation interests of Alaska, Washington, Oregon, Idaho, 24 southern U.S. treaty Indian tribes, and Canada. Various annexes in the PST provide policy guidance to the salmon management regimes in place in Southeast Alaska, specific limits are applied to Chinook salmon harvests in Southeast Alaska, limits are applied to sockeye salmon harvests in specific Alaskan fisheries near the U.S.–Canada border in the southern portion of the region, and limits are applied to harvests of salmon originating from Canadian waters of the 3 transboundary rivers (Taku, Stikine, and Alsek). The PST, through annexes, provides fishery management authority, direction, and policy guidance to ADF&G staff responsible for management of the salmon fisheries in Southeast Alaska. The PST also put into place a cooperative management program in the Yukon River that is intended to ensure adequate passage of Canadian origin Yukon River salmon through Alaskan fisheries for both conservation and continuation of Canadian fisheries that use these stocks. The PST through the Yukon Article thus provides fishery management authority, direction, and policy guidance to ADF&G staff responsible for fishery management of Yukon salmon fisheries.

Alaska Salmon Hatcheries

The first hatcheries in Alaska were developed in the early 1890s. Despite a long history of attempts at hatchery development and operation prior to statehood (Roppel 1982), little evidence exists to suggest these efforts were successful in significantly increasing

salmon returns to Alaska. At statehood, 3 small hatcheries were operating in Alaska primarily as research facilities. The modern Alaska hatchery program was initiated in the early 1970s, in response to a period of depressed commercial salmon fisheries in Alaska. In 1971, the Alaska Legislature created the Fisheries Rehabilitation, Enhancement and Development Division (FRED) of ADF&G to develop a coordinated salmon enhancement program. A major expansion in salmon aquaculture research and production began in the 1970s. The new program was intended to supplement, not supplant, wild stock production (McGee 2004), unlike hatchery programs operating in other areas of the Pacific Northwest where many hatcheries were developed as mitigation measures for degradation of salmon production due to loss of habitat or overfishing (Heard 2003). Formal policies and regulations were developed and enacted to minimize the potential for adverse effects of the enhancement program on wild stocks. These included a rigorous hatchery permitting process requiring location of hatcheries away from significant wild stocks and use of local brood sources, development of a genetics policy and pathology guidelines, and hatchery fish marking requirements (McGee 2004).

By the early 1980s, ADF&G was involved with construction and or operation of about 20 additional salmon aquaculture facilities located from southern Southeast Alaska to as far north as the Noatak River near Kotzebue. As State support for salmon enhancement developed, the Alaska legislature created a framework for private salmon enhancement through creation of private nonprofit corporations. North Slope oil revenues to Alaska declined in the 1980s and natural salmon production increased. As a result, Alaska explored the option of private sector operation of State salmon enhancement programs. In 1993, the Governor issued an executive order merging the FRED Division with the Division of Commercial Fisheries. By the mid-1990s, most state-run salmon aquaculture facilities were taken over by the private sector. State aquaculture facilities that primarily produced fish caught in sport fisheries were transferred to the Division of Sport Fish and by the later 1990s, the Division of Commercial Fisheries neither funded nor operated salmon hatcheries. The Division of Commercial Fisheries, however, has continued to provide much of the technical support to the salmon aquaculture facilities operated in Alaska (Figure 2). This support, such as such as disease screening and production evaluation, was formerly provided by FRED Division.

In commercial salmon fisheries in Southeast Alaska and Prince William Sound, a major responsibility of the area biologists is the management of enhanced salmon returns. Area biologists attempt to provide for

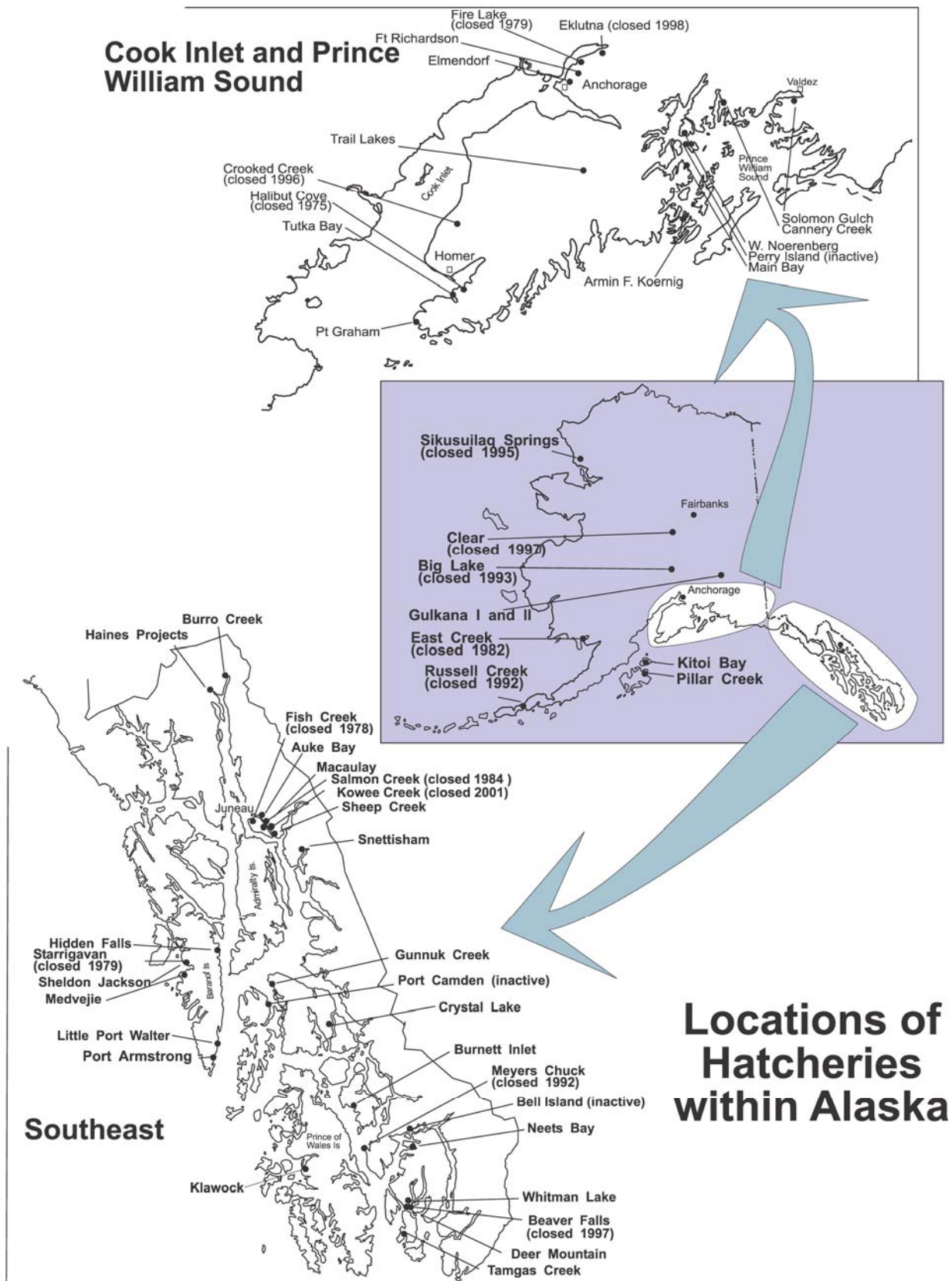


Figure 2. Locations of salmon hatcheries in Alaska.

the full harvest of surplus hatchery fish while providing adequate protection to wild stocks of salmon. In 2004, over 1.7 billion salmon eggs were collected by Alaskan salmon operators, over 1.6 billion fish were released, and over 20 million salmon originating from Alaskan hatcheries were harvested in common property commercial salmon fisheries as a result of the Alaska salmon hatchery program. The 2004 Alaska salmon enhancement program consisted of 29 private nonprofit salmon hatcheries, 2 federal operated salmon hatcheries, 2 state operated hatcheries, and several streamside incubation and restoration projects (White 2005).

While hatcheries play an important role in Alaska's salmon production, the practice of finfish farming, defined as raising fish to maturity in captivity for commercial purposes, is outlawed in Alaska. Salmon farming began in Washington State in the 1970s. By the 1980s, salmon farms in Washington and British Columbia were importing Atlantic salmon from eastern Canada and Europe. By 1990, the State of Alaska concluded that the dangers posed by salmon farming to its healthy wild salmon stocks, environment, and commercial salmon fishing industry were too great, and the legislature passed a law banning the practice. Hundreds of escaped Atlantic salmon from Washington and British Columbia salmon farms have been recovered in Alaska waters since 1991, and Alaskans remain very concerned about the possible deleterious impacts this exotic species could have on Alaska salmon (ADF&G 2002).

ADF&G Budget History and Fiscal Support for the Salmon Program

The State of Alaska assumed management authority over its salmon fisheries on January 1, 1960. The FY 60 ADF&G operational budget totaled a little over \$2 million and the FY 61 budget was almost \$4 million. The FY 60 budget included about \$406,000 in federal grants (17%) and the FY 61 budget included about \$560,000 in federal grants (14%). The Division of Commercial Fisheries budget totaled \$495,879 in FY 60 but increased to \$885,072 in FY 61 (Table 1). The Division of Commercial Fisheries funding source in FY 60 and FY 61 was entirely State of Alaska general funds, which have, ever since, provided the backbone of the funding for managing salmon fisheries. Given that the salmon fishery was the major commercial fishery at statehood, the majority of the FY 60 and FY 61 allocation was undoubtedly spent on very basic salmon management—the funding of area biologists, area office support costs, and operational costs associated with conducting escapement and fishery surveys.

Table 1. Budget allocations to ADF&G in FY 60 and FY 61.

ADF&G Program	FY 60 Expenditures	FY 61 Expenditures
Board of Fish and Game Administration	\$9,685	\$16,337
Commercial Fisheries	\$110,308	\$170,223
Biological Research	\$495,879	\$885,072
Sport Fish	\$253,313	\$319,989
Game	\$270,304	\$328,992
INPFC	\$371,799	\$538,120
Engineering	\$1,780	\$5,074
Bounty Payments	\$129,558	\$157,543
Protection	\$125,000	\$125,000
Total ADF&G Expenditures	\$397,800	\$1,224,424
	\$2,165,426	\$3,770,724

At statehood, the Division of Biological Research was an important component of ADF&G and a substantial portion of its funding was based upon federal grants. Much of the work accomplished by the Division of Biological Research was associated with assessing salmon stock strength. In FY 65, just a few years into statehood, the Division of Biological Research was combined with the Division of Commercial Fisheries, thus the Division of Commercial Fisheries thereafter had both a management component and a research component. With the research component came federal grant support for salmon stock assessment which totaled \$289,600 in the FY 65 budget.

An accurate and exact history of the amounts of funding used by ADF&G to manage salmon fisheries since statehood is not available because budget allocations were at the division level and the Division of Commercial Fisheries has always had responsibility for management of shellfish, herring, and other fishery resources in addition to salmon. However, trends in funding for salmon management and research can be elucidated through a summary of budget allocations at the division and department level.

The State of Alaska increased general fund support to ADF&G in a continuous fashion from statehood until the mid-1980s, going from a general fund allocation level of under \$2 million in FY 60 to a level of over \$52 million in FY 85 (Figure 3). General fund support to ADF&G decreased from the mid-1980s through the current time with the FY 05 general fund allocation to ADF&G being \$26,167,000. While general fund support to ADF&G decreased since the mid-1980s, total funding continued to increase, primarily due to increases in federal funding. Total ADF&G funding since statehood increased from a level of about \$2 million in FY 60 to a level in excess of \$140 million in FY 05.

The consumer price index as provided by the U.S. Bureau of Labor and Statistics (web site: <http://>

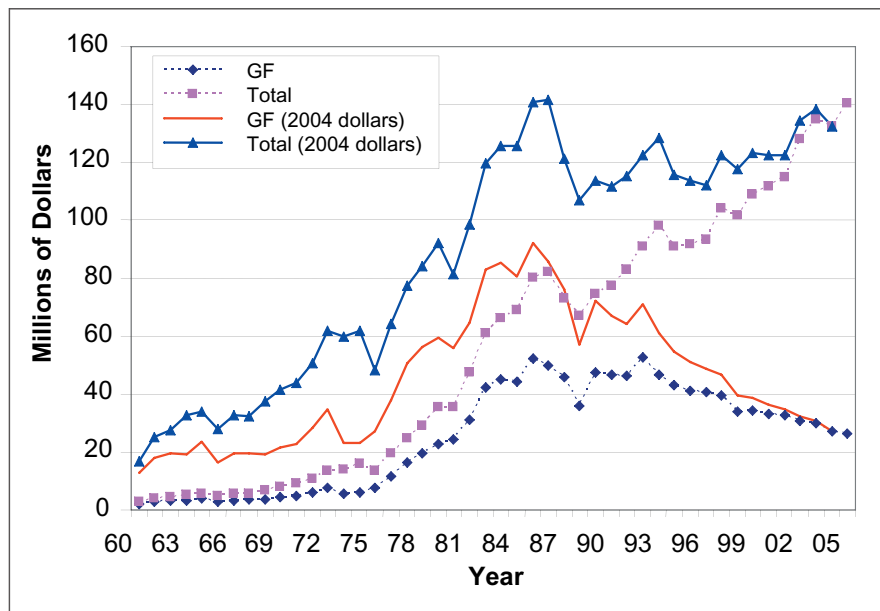


Figure 3. ADF&G budget trends (general fund and total), fiscal year 1960–2005.

(<http://www.bls.gov/>) was used to approximate historic budget allocations into 2004 dollar equivalents. This adjustment provides the ability to compare buying power since FY 60 and indicates that the ADF&G general fund budget peaked from the mid-1980s through the early 1990s and has since decreased to about the buying power of the late 1970s. Currently, the ADF&G total budget in terms of buying power is equivalent to about the level it was in the mid-1980s.

The State of Alaska increased general fund support to the Division of Commercial Fisheries in a fairly continuous fashion from statehood until the early 1990s, going from a general fund allocation level of less than half a million dollars in FY 60 to a level of over \$23 million in FY 92 (Figure 4). General fund support to the Division of Commercial Fisheries decreased slightly in FY 93 and FY 94, but increased substantially in FY 95 once the FRED Division merger occurred.¹ The merger resulted in a fisheries development component being created within the Division of Commercial Fisheries with an FY 95 budget allocation of \$8,158,200 of which \$6,039,400 were general funds. Since FY 95, when the allocation of general funds to the Division of Commercial Fisheries totaled \$30,376,400 (80%

fishery management and 20% fishery development), the general fund allocation has steadily decreased with an allocation of \$22,281,500 in FY 05. General funds have been the major source of revenue for salmon management and stock assessment activities in the Division of Commercial Fisheries since statehood. General fund allocations, once adjusted for inflation show that the buying power increased from statehood until the early 1980s, then varied around \$30 million (in 2004 dollars) until FY 95, when it increased with the FRED Division merger and the additional responsibilities assumed by the Division. Since FY 95, buying power of the general fund budget has decreased, with current funding equivalent to late 1970s levels of buying power (Figure 4).

Federal funding was first used within the Division of Commercial Fisheries in FY 65 when the Division of Biological Research was merged with the Division of Commercial Fisheries. In some areas of Alaska, the current Division of Commercial Fisheries management program for salmon is heavily dependent upon federal funding. Federal support for the Division of Commercial Fisheries operations has steadily increased since FY 65. Hence, total funding has steadily increased from FY 60 when the total operational budget allocation was under \$500,000 (100% general funds) to FY 05 when the budget allocation totaled \$48,980,200 (45% general fund). As the Division of Commercial Fisheries has relied more and more on federal support for its overall budget, the same trend has occurred for the salmon management and assessment program. The

¹ General fund support for the FRED Division program started in FY 72 with a budget of \$831,100, increased to a peak in FY 85 of \$14,878,800 and then decreased to nothing by FY 95. Total funding for FRED Division operations peaked in FY 93 at \$24,891,100 while in that same fiscal year the Division of Commercial Fisheries total budget allocation was \$28,888,000.

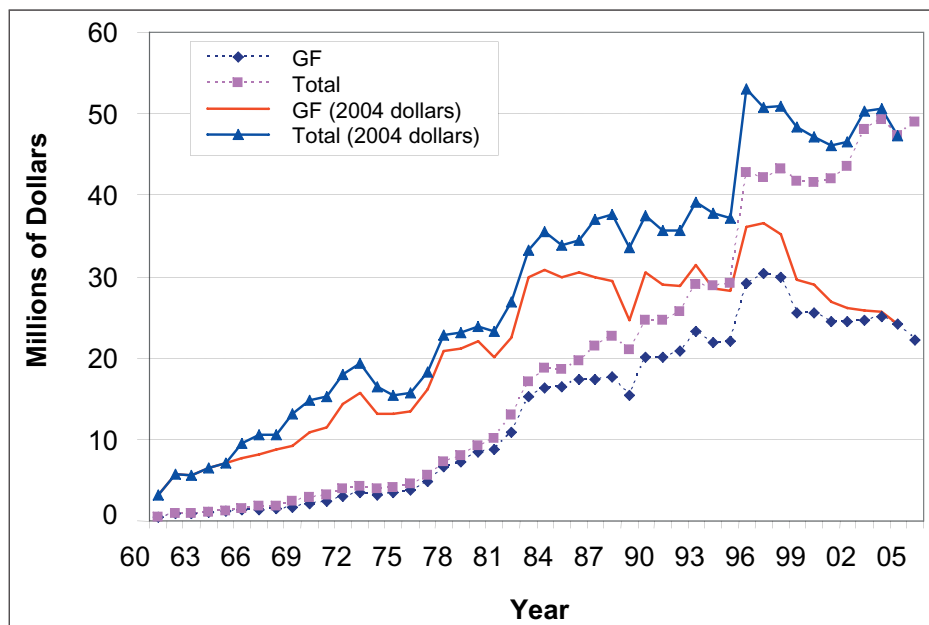


Figure 4. Division of Commercial Fisheries budget trends (general fund and total), fiscal year 1960–2005.

buying power of the total allocation to the Division of Commercial Fisheries in the last few years is higher than it was in the 1980s and early 1990s, however, much of that buying power is associated with specific federal grants and the Division has much less flexibility in use of its fiscal resources than was the case in the first 30 years of state management. The portion of the total budget that the Division of Commercial Fisheries spends on salmon management and stock assessment has decreased over the last 20 years as other commercial fisheries have developed and increased in value. Further, as will be discussed later in this paper, the loss in the Division's overall fiscal flexibility due to recent increased reliance on federal grants and the incremental loss of general fund buying power has resulted in some commercial salmon fisheries having substantially more fiscal support than other salmon fisheries with greater fiscal needs.

As state-generated fiscal support for commercial salmon fishery management and stock assessment waned in the early 1990s, the Division of Sport Fish has shouldered an increased portion of the salmon stock assessment program implemented in Alaska. The Division of Sport Fish budget allocation increased from a level of \$270,304 in FY 60 to an allocation level of \$39,179,400 in FY 05. Much of the Division of Sport Fish program involves management of salmon sport fisheries and like Division of Commercial Fisheries area biologists, Division of Sport Fish area biologists are heavily dependent upon salmon stock assessment information. Management of salmon fish-

eries has become more complex and data intensive as area biologists of both divisions strive to provide as much fishing opportunity as possible while still securing salmon escapements. As a result, over the last 15 years, more and more salmon stock assessment efforts—such as the operational cost of the Situk River weir near Yakutat—that were funded by the Division of Commercial Fisheries have been picked up and funded by Division of Sport Fish. As state fiscal support for commercial salmon management has waned over the last 10 years, the Division of Sport Fish has become a leader in much of the technical planning and review functions associated with the management of salmon fisheries in Alaska.

While it is nearly impossible to summarize total salmon management and stock assessment expenditures since statehood by the Division of Commercial Fisheries in a precise and accurate fashion, information can be provided concerning allocations made at the fishery-specific level. Salmon fishery information provided later in this paper will be presented for 11 areas of Alaska. Fiscal Year 05 allocations of state funds for these 11 salmon fisheries totaled \$11,406,000 (Table 2). While Table 2 provides a summary of the direct state allocations supporting the Alaska commercial salmon fishery, it is an incomplete accounting of the total cost of the state salmon management program because other activities that are directed at salmon management in Alaska and supported with general funds are not included. Funds such as those used to support the ADF&G coded-wire tag and otolith lab,

Table 2. Number of area offices in Alaska with Division of Commercial Fisheries area management biologists present, number of area biologists with emergency order authority, and State of Alaska FY 05 operational budget allocations for salmon management and stock assessment. Federal and other grants are not included in these budget allocations.

Area	No. of Area Offices	No. of Area Management Biologists	FY 05 Allocation Basic Salmon Management ^a	FY 05 Allocation Salmon Stock Assessment ^b	FY 05 Allocation Salmon Test Fishing ^c	FY 05 Total Allocation
Southeast–Yakutat	8	14	\$1,553,100	\$695,700	\$108,600	\$2,357,400
Prince William Sound	1	2	\$363,500	\$588,300	–	\$951,800
Cook Inlet	2	3	\$548,500	\$686,300	\$97,000	\$1,331,800
Kodiak	1	2	\$412,800	\$287,100	\$33,600	\$733,500
Chignik	1	2	\$274,700	\$37,600	\$60,600	\$372,900
Peninsula–Aleutians	3	4	\$749,600	\$144,700	\$67,300	\$961,600
Bristol Bay	3	4	\$622,800	\$863,500	\$405,100	\$1,891,400
Kuskokwim	1	3	\$486,600	\$482,700	\$2,800	\$972,100
Yukon	3	4	\$663,100	\$371,000	\$4,000	\$1,038,100
Norton Sound	2	2	\$368,200	\$363,400	–	\$731,600
Kotzebue	0	0	\$41,300	\$22,500	–	\$63,800
Totals	23	40	\$6,084,200	\$4,542,800	\$779,000	\$11,406,000

^a Includes the cost of area biologists, office support costs, and funds used for surveys of fisheries and indices of escapements; these are general funds and are the activities that represent the very basic salmon management program adopted by Alaska at statehood.

^b Includes general funds used for weirs, towers, sonar, and other methods for enumerating total escapements, catch sampling efforts, and all other salmon stock assessment activities supported with general funds.

^c Funding from the sales of salmon caught during ADF&G test fishing activities and subsequently used for salmon related stock assessment activities.

the ADF&G genetics lab, the ADF&G pathology lab, the fish ticket system used in Alaska to document salmon harvests, and funds used for planning, review, and supervision of the salmon program but funded at the regional and headquarters level, are not included in Table 2. General fund allocations to the 3 labs alone totaled \$1,893,500 in FY 05 and all 3 lab's activities are almost entirely associated with support of the Alaska salmon management and stock assessment program. When taking into account the direct salmon management and stock assessment allocations included in Table 2 with these other activities, it is apparent that the majority of the general funds allocated to the Division of Commercial Fisheries are used to support the salmon program. A reasonable estimate in FY 05 is about 75% of the general funds allocated to the Division of Commercial Fisheries was used to support the state's salmon management and stock assessment program.

Because general funds are the major source of support for commercial fishery salmon management and stock assessment, and because buying power has decreased since the period of stability from the early 1980s to mid-1990s (Figure 4), an informative comparison involves general fund allocations by fishery in the early 1980s to current general fund allocations. General fund support allocated and used for management and stock assessment for the 11 salmon fisheries increased by about \$3.6 million between FY 82 and FY

05 (Table 3). The consumer price index as discussed earlier was used to approximate the FY 82 general fund allocations into 2004 dollar equivalents. Once adjusted for inflation, the buying power of the general funds used for these 11 salmon fisheries is estimated to have decreased by about \$4 million. However, the effect of these fiscal changes was variable on an area-by-area basis (Figure 5). For instance, buying power associated with general fund allocations for management and stock assessment of the Kuskokwim salmon fishery are about the same between FY 82 and FY 05. Buying power associated with the Kodiak and Peninsula–Aleutians salmon fisheries substantially increased, and buying power associated with the other 8 salmon fisheries decreased. In the case of the Kotzebue salmon fishery, the reduction in funding and buying power of 89% was massive; while the Kotzebue salmon fishery is a small fishery with low exvessel value, this loss of budget support has resulted in a very weakened stock assessment and fishery management program in the area. Loss of general fund buying power for the Southeast–Yakutat salmon fishery was also massive—a loss of about 50% in a major salmon fishery with high exvessel value and the largest number of limited entry permits in Alaska. Other salmon fisheries with large reductions in funding support include the Bristol Bay and Yukon salmon fisheries. Federal funding has been used to partially fill these large funding gaps in the Southeast–Yakutat and Yukon fisheries. However, for

Table 3. Comparison of Division of Commercial Fisheries general fund budget allocations for salmon management and stock assessment in FY 82 and FY 05.

Area	FY 82	FY 82	FY 05	FY 82 to FY 05	FY 82 to FY 05
	General Fund Allocation	Adjusted for Inflation and Expressed as Current Dollars	General Fund Allocation	Actual Dollar Change	Buying Power Dollar Change
Southeast–Yakutat	\$2,135,000	\$4,436,760	\$2,248,800	+\$113,800	–\$2,187,960
Prince William Sound	\$532,600	\$1,106,800	\$951,800	+\$419,200	–\$155,000
Cook Inlet	\$771,800	\$1,603,884	\$1,234,800	+\$463,000	–\$369,084
Kodiak	\$261,800	\$544,049	\$699,900	+\$438,100	+\$155,851
Chignik	\$164,700	\$342,264	\$312,300	+\$147,600	–\$29,964
Peninsula–Aleutians	\$234,500	\$487,316	\$894,300	+\$659,800	+\$406,984
Bristol Bay	\$1,047,400	\$2,176,610	\$1,486,300	+\$438,900	–\$690,310
Kuskokwim	\$468,800	\$974,217	\$969,300	+\$500,500	–\$4,917
Yukon	\$760,500	\$1,580,401	\$1,034,100	+\$273,600	–\$546,301
Norton Sound	\$402,500	\$836,438	\$731,600	+\$329,100	–\$104,838
Kotzebue	\$277,900	\$577,506	\$63,800	–\$214,100	–\$513,706
Totals	\$7,057,500	\$14,666,246	\$10,627,000	+\$3,569,500	–\$4,039,246

the salmon fishery in Bristol Bay, which has the second highest number of permits in Alaska, there has been very little infusion of federal funding support; instead, substantial reductions in stock assessment activities have occurred.

Alaska Commercial Salmon Fishery Users

Fishermen can only participate in the commercial salmon fisheries in Alaska by holding a limited entry permit or by working as a crew member for a limited

entry permit holder. As of August 31, 2005, there were a total of 11,301 valid commercial salmon limited entry permits (Table 4).

Each limited entry permit is valid for a specific gear type and area in Alaska. Gillnet permits issued for western Alaska (Kuskokwim, Yukon, Norton Sound, and Kotzebue) do not specify set gillnetting or drift gillnetting, but regulations by the Board of Fisheries restrict fishing in Kotzebue to set gillnet fishing only. Drift gillnet permits are the most common gear, representing about 32% of all valid permits to fish for salmon in Alaska. There are more valid permits issued for the Southeast–Yakutat area salmon fishery (3,133 permits, 28% of total) than for any of the other salmon fisheries in Alaska. The Bristol Bay salmon fishery includes 2,866 valid permits (25% of total), the second highest number of permits issued for salmon fisheries in Alaska. Limited entry permits are bought and sold on the open market and their value is based upon gear type and area (Table 5). Based on average market value in 2004, as determined from permit sales, the most valuable limited entry permit types in Alaska were purse seine permits in the Chignik area with an estimated value of about \$182,000. The least valuable permits, based upon permit transactions in 2004, were gillnet permits for the Kotzebue salmon fishery which were worth about \$2,000. Across Alaska, the most valuable permit type was drift gillnet permits, with a weighted average value of about \$32,700 and the least valued type of permit was hand troll permits with an average value of about \$4,100. Based upon the number of valid permits issued and average value per permit, the estimated value of the 11,301 commercial salmon limited entry permits in 2004 was about \$228 million.

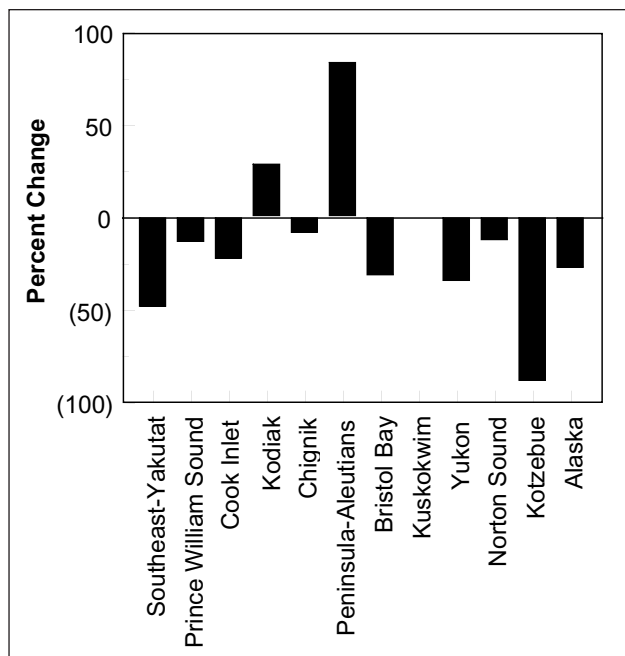


Figure 5. Percent change in the buying power of Division of Commercial Fisheries general fund allocations from FY 82 to FY 05 by salmon fishery.

Table 4. Number of Alaska commercial salmon limited entry permits by area and gear type. Information provided by the Alaska Commercial Fishery Limited Entry Commission, August 31, 2005.

Area	Drift Gill Net	Set Gill Net	Gill Net	Purse Seine	Hand Troll	Power Troll	Beach Seine	Fish Wheel	Totals
Southeast–Yakutat	478	168		415	1,112	960	–	–	3,133
Prince William Sound	538	30		266	–	–	–	–	834
Cook Inlet	571	737		82	–	–	–	–	1,390
Kodiak	–	188		374	–	–	31	–	593
Chignik	–	–		99	–	–	–	–	99
Peninsula–Aleutians	162	115		119	–	–	–	–	396
Bristol Bay	1,878	988		–	–	–	–	–	2,866
Kuskokwim	–	–	770	–	–	–	–	–	770
Yukon	–	–	758	–	–	–	–	135	893
Norton Sound	–	–	154	–	–	–	–	–	154
Kotzebue	–	–	173	–	–	–	–	–	173
Totals	3,627	2,226	1,855	1,355	1,112	960	31	135	11,301

Table 5. Estimated average value of Alaska commercial salmon limited entry permits based on permit transactions in 2004. Information provided by the Alaska Commercial Fishery Limited Entry Commission, August 31, 2005.

Area	Drift Gill Net	Set Gill Net	Gill Net	Purse Seine	Hand Troll	Power Troll	Beach Seine	Fish Wheel
Southeast–Yakutat	\$21,800	\$10,800		\$32,100	\$4,100	\$16,400		
Prince William Sound	\$40,400	\$62,800		\$14,000				
Cook Inlet	\$20,300	\$7,600		\$9,600				
Kodiak		\$44,400		\$10,200			\$13,500	
Chignik				\$182,000				
Peninsula–Aleutians	\$28,000	\$38,100		\$17,300				
Bristol Bay	\$37,400	\$14,700						
Kuskokwim			\$5,900					
Yukon ^a			\$7,350					\$6,400
Norton Sound			\$4,400					
Kotzebue			\$2,000					
Weighted Average	\$32,700	\$16,400	\$6,000	\$30,800	\$4,100	\$16,400	\$13,500	\$6,400

^a Average of lower and upper Yukon areas.

Not all permits are fished each year. As prices paid to commercial fishermen declined in the 1990s due to the availability of farmed salmon, the number of permits fished in Alaska commercial salmon fisheries declined. As the prices started to increase recently, the number of permits fished has increased (Figure 6). In 2004, 7,179 of the valid limited entry permits in Alaska were fished (64%).

Each of the limited permits for commercial salmon fishing in Alaska represents the equivalent of a small independent business. When the permit is fished it represents a business with employees; in most cases, a crew is used for commercial salmon fishing and thus jobs are created, wages are paid, and the fishing activity adds to the economic foundation within Alaska.

Alaska Commercial Salmon Fishery Harvests

Commercial harvests of salmon in Alaska are monitored through the fish ticket system, which are sales

receipts issued to commercial fishermen upon selling their catch to processors. As a result, harvest data is available by fishing district and opening date. The last year of federal management of the commercial salmon fishery in Alaska was 1959; in that year the harvest totaled only 25.1 million salmon. The average commercial harvest in the 1950s was 41.4 million salmon, the lowest decadal average since the early 1900s (Figure 7, Panel F). State managers in the 1960s made judgment calls concerning appropriate escapement levels needed and took management actions to achieve the spawning goals. The salmon stock assessment program improved in the 1970s, goal setting improved, and salmon managers used emergency order authority to achieve the spawning goals. Commercial harvests of salmon averaged about 50 million salmon during the 20-year period from 1960 to 1979. By the 1970s, budget support for salmon management had increased substantially, an Alaska salmon plan was developed, and payoff from investments in salmon escapements,

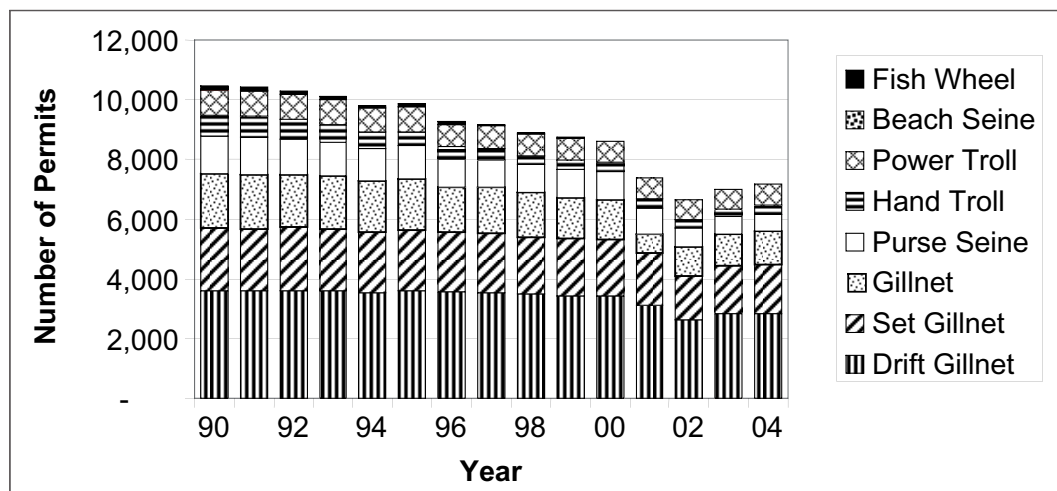


Figure 6. Number of Alaska commercial salmon limited entry permits fished annually during the years 1990–2004.

salmon stock assessment programs, and inseason salmon management started to accrue to the Alaska commercial salmon fisheries. The average commercial harvest level in the 1980s increased to 122 million salmon, a 2-fold increase over the prior period. Budget support for the commercial salmon management program peaked in the 1980s and payoff from better management, improved stock assessment tools, and prior investments in the Alaska salmon hatchery program combined to result in another significant increase in sustained harvest levels. The average commercial harvest in the 1990s was about 175 million salmon. So far, the average commercial harvest in the 2000s has been similar to the 1990s average of about 167 million salmon.

Trends by species in the commercial salmon harvests have been variable. Chinook harvests by the commercial fishery in Alaska have not varied much over the past 90 years (Figure 7, Panel A), with the last ten decadal averages ranging from about 600,000 to 800,000 fish. On the other hand, significant use of Chinook salmon in Alaska occurs in sport and subsistence fisheries and those harvests have increased substantially. In several areas of Alaska, Chinook harvests in the commercial fishery are restricted to provide for other users. Alaskan Chinook salmon populations are currently at high levels of abundance.

Recent sockeye salmon harvests by the Alaska commercial fishery have been higher than occurred historically; harvests since 1980 have averaged about 41 million sockeye; the highest decadal average prior to that was in the 1910s (Figure 7, Panel B). Most major stocks of sockeye salmon in Alaska are managed for scientifically-based escapement goals; sustained harvests are high and productive annual escapement strength is maintained on an annual basis. The pre-

statehood coho commercial harvests peaked in the 1940s with a decadal average of about 3.1 million fish. The average commercial harvest since 1980 for coho salmon has been about 5.1 million fish—about 65% higher than in the 1940s (Figure 7, Panel C).

Coho salmon in many parts of Alaska are important to sport fisheries, which have grown substantially in the last few decades. In several areas of Alaska, coho salmon are underused.

Commercial fishery harvest trends for pink salmon are similar to coho salmon, a historic peak in the 1940s of about 49 million, with harvests since 1980 being about 92.6 million fish—about 53% higher than in the 1940s (Figure 7, Panel D). While hatchery programs have been responsible for some of the increase in pink salmon production, a major factor has been regulation of harvest and achievement of escapements. In some parts of Alaska, pink salmon are underused due to low market value.

Chum salmon commercial harvests in Alaska were relatively stable from 1910 to 1980, averaging about 6.9 million fish. As a result of the Alaska hatchery program, harvests were 11.3 million in the 1980s, 15.3 million in the 1990s and 16.5 million in the 2000s. Like pink salmon, chum salmon are underused in some parts of Alaska due to low prices. Further improvements in the salmon stock assessment program could lead to increased production and harvests of all 5 species of salmon if such improvements could be maintained over a long period of time.

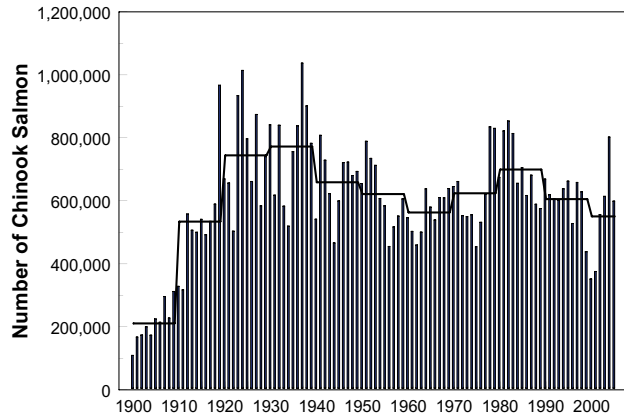
The Southeast–Yakutat area harvests of salmon from 1980 to 2004 represented about 35% of the total Alaska harvest, the largest percentage of the 11 areas (Figure 8). The Prince William Sound area represented about 20% of the Alaska harvest of salmon and Bristol Bay about 17% of the harvest. The 4 areas

within the Arctic–Yukon–Kuskokwim Region (Kuskokwim, Yukon, Norton Sound, and Kotzebue) in total represented about 1.5% of the statewide commercial harvest. Harvest trend information within each of the

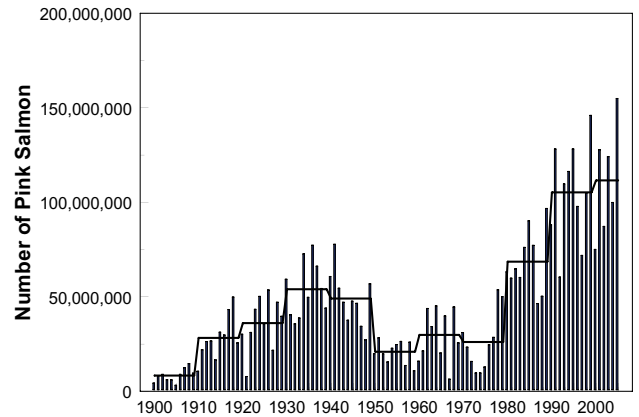
11 commercial salmon fishing areas of Alaska will be provided later in this paper.

In the early 1970s, Governor Hammond instructed ADF&G to develop an Alaska salmon plan. The plan

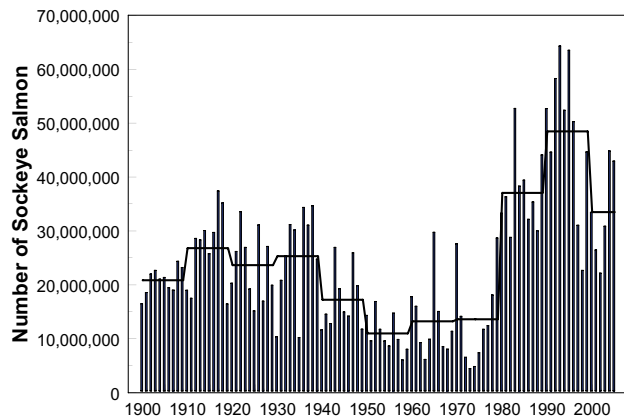
Panel A Chinook Salmon



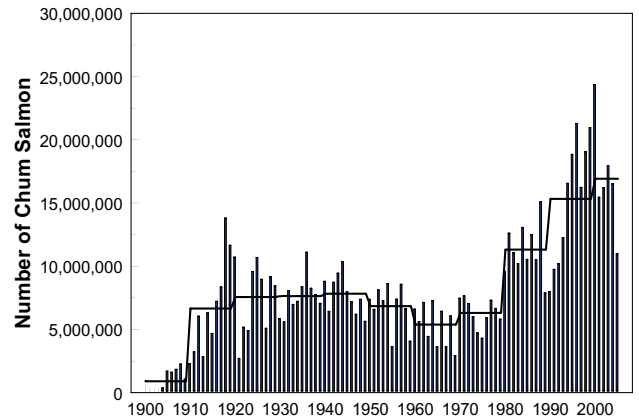
Panel D Pink Salmon



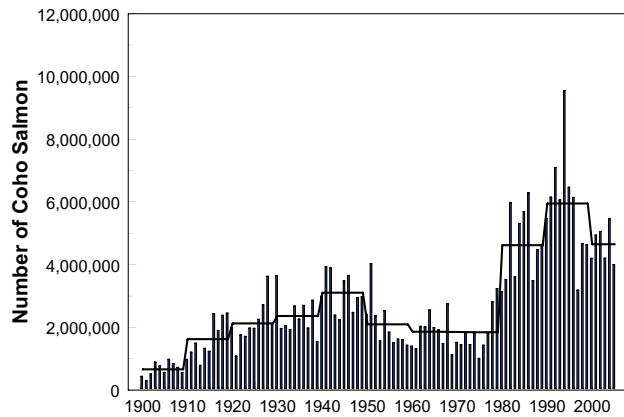
Panel B Sockeye Salmon



Panel E Chum Salmon



Panel C Coho Salmon



Panel F All Salmon

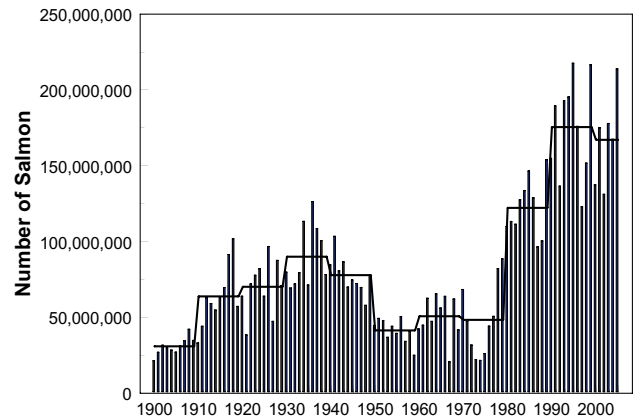


Figure 7. Commercial salmon harvests in Alaska from 1900–2005; bars provide annual catches and lines provide decade averages.

was completed in 1976 (Table 6) and was used to assist the State of Alaska in developing and implementing the Alaska hatchery program. It was also used as a focus for improved stock assessment and management of salmon. With support from the Governor’s office and the Legislature, the operational budget for the Division of Commercial Fisheries increased substantially from the early 1970s through the mid-1980s.

The Alaska salmon plan suggested the salmon resources of Alaska could support a commercial fishery with average annual harvests in excess of 100 million salmon—given reasonable survival conditions, improved management technology, and improved budget support (Table 6). At the time the plan was written, the highest decadal commercial harvest level was in the 1930s when the average harvest was about

90 million salmon. At the time, many salmon stocks had been overfished, the runs depleted, and in need of rehabilitation. Plan developers in the early 1970s were optimistic that with improved management tools and better inseason management, these historic harvest levels could be surpassed. While most people familiar today with the Alaska salmon fishery would consider annual commercial salmon harvests of less than 100 million as a disaster, from the inception of the salmon fishery in the late 1800s through the 1970s, such harvest levels were considered a godsend. Prior to the plan being written, annual commercial harvest levels in excess of 100 million salmon had only happened in 6 years (1918, 1934, 1936 to 1938, and 1941; only 6% of the years prior to 1980). Since 1980, the Alaska commercial salmon fishery has only once (4% of the years)

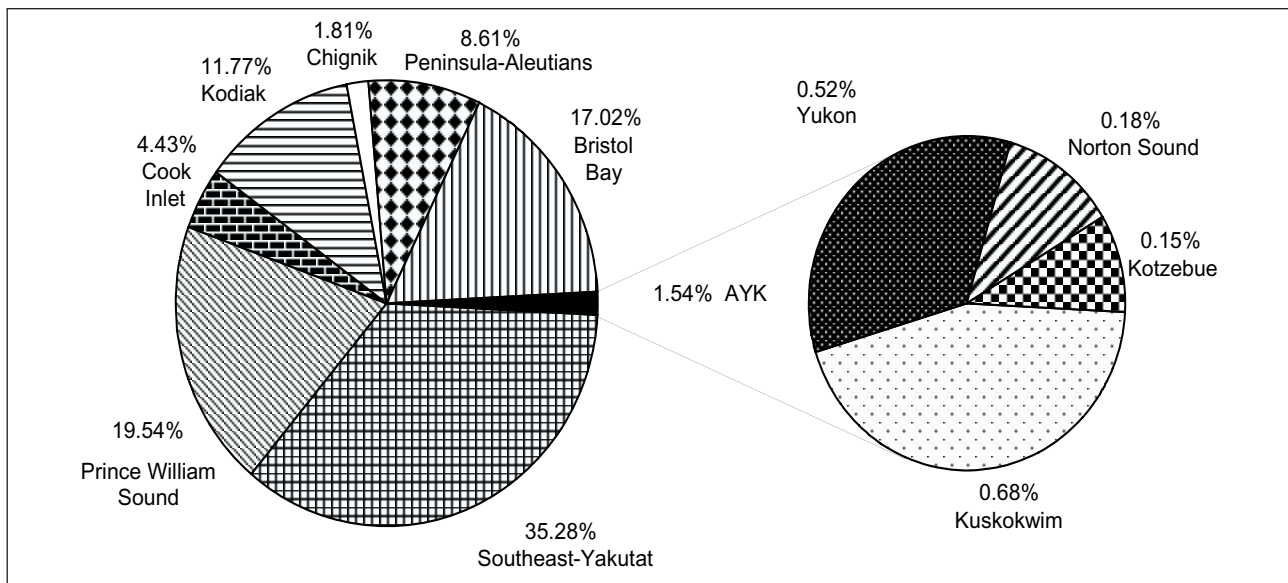


Figure 8. The percent of the total commercial salmon harvested from 1980–2004 in 11 areas of Alaska.

Table 6. Commercial salmon harvest objectives as described in the Alaska salmon plan developed in the mid 1970s and as used in the Division of Commercial Fisheries budget documents in the early to mid 1980s. These wild salmon harvest objectives were based on stock status determinations, assumed long-term average survival conditions, increasing funding levels and improved technological abilities for salmon management.

Area	Chinook	sockeye	Coho	Pink	Chum	Total
Southeast–Yakutat	315,000	840,000	1,500,000	19,300,000	3,000,000	24,955,000
Prince William Sound	20,000	855,000	317,000	5,305,000	401,000	6,898,000
Cook Inlet	100,000	15,250,000	265,000	5,000,000	1,050,000	21,665,000
Kodiak	2,000	2,500,000	100,000	10,000,000	825,000	13,427,000
Chignik	1,500	1,500,000	40,000	950,000	250,000	2,741,500
Peninsula–Aleutians	12,000	1,410,000	175,000	4,960,000	1,205,000	7,762,000
Bristol Bay	100,000	15,000,000	250,000	2,500,000	750,000	18,600,000
Kuskokwim	90,000	30,000	240,000	100,000	475,000	935,000
Yukon	120,000	–	20,000	–	2,000,000	2,140,000
Norton Sound	6,000	–	10,000	500,000	250,000	766,000
Kotzebue	–	–	–	–	250,000	250,000
Totals	766,500	37,385,000	2,917,000	48,615,000	10,456,000	100,139,500

harvested less than 100 million salmon—in 1987, the harvest was 96.6 million fish. The Alaska commercial salmon harvest history ably demonstrates that the plan developers were right—given long-term average survival conditions, coupled with better support to the salmon managers of Alaska through improved technological abilities and funding, the overall Alaska salmon resource could support sustained production in excess of 100 million salmon per year. In fact, the Alaska salmon management program is one of the most successful natural resource management programs in the world. While overall commercial salmon harvests have exceeded expectations listed in the Alaska salmon plan, salmon harvests for some species in some areas have not met the plan objectives (Table 7). Notable exceptions include Chinook salmon harvests in some areas of Alaska, and pink and chum harvests in much of western Alaska. The Board of Fisheries decisions concerning allocation of Chinook among commercial, sport, and subsistence fisheries, along with the U.S.-Canada Treaty limits on harvest of Chinook, reduced commercial harvests of Chinook in Alaska. Lack of market interest in pink and chum salmon, coupled with remoteness, played a part in the failure to achieve plan objectives in western Alaska.

Currently in North America, the scientific rhetoric most often heard associated with salmon stock status and management bemoans the condition of salmon. Topics of concern are: (1) the U.S. Endangered Species Act listing of many salmon stocks in Washington, Oregon, Idaho, and California, (2) conditions of salmon stocks in Canada, (3) downturns in stock strength of some salmon stocks in western Alaska that resulted in disaster declarations, and (4) unending arguments within some scientific circles that claim escapement goal setting associated with salmon stocks in Alaska is inadequate. A careful and thoughtful examination of the success of the Alaskan salmon management pro-

gram with its demonstrated long-term sustainability of the stocks might be prudent by management entities and fishery scientists. Possibly the least understood part of the Alaska salmon management program is the reliance on inseason stock assessment and swift management response. There are no other salmon management programs in North America where—depending upon inseason stock strength—field level managers have both the responsibility and the full authority to act quickly to provide additional fishing opportunity or to take such opportunity away. From 2000 to 2004, an average of 713 emergency orders were issued inseason by Division of Commercial Fishery managers just to manage Alaskan commercial salmon fisheries (Table 8); additional emergency orders were issued inseason that regulated sport, personal use, and subsistence fisheries. A thorough understanding of the Alaska salmon management program needs to take this important aspect and fact of the Alaska management program into account.

Other Alaska Salmon Harvests

While the intent of this paper is to provide information concerning the Alaskan commercial salmon fishery, an understanding of the commercial fishery would be incomplete without providing information on harvests by other user groups. Since statehood, as the population in Alaska has grown, the recreational use of the Alaskan salmon resource has also increased. The subsistence harvest of salmon has historically been, and continues to be, an integral part of the lifestyle of Alaskans in many villages and towns across rural Alaska.

Since the late 1970s, the Division of Sport Fish has implemented an annual postal survey of sport fishermen in an effort to document sport fishing effort and harvests. This data source was used to develop estimates of the sport fishery harvest levels

Table 7. Percent deviations of average 1980–2004 Alaska commercial salmon harvests from the stated harvest objectives listed in the Alaska salmon plan developed in the mid-1970s.

Area	Chinook	Sockeye	Coho	Pink	Chum	Total
Southeast–Yakutat	–10%	112%	80%	115%	136%	113%
Prince William Sound	113%	99%	64%	377%	373%	327%
Cook Inlet	–80%	–73%	53%	–67%	–51%	–69%
Kodiak	632%	21%	186%	36%	5%	32%
Chignik	216%	3%	283%	–11%	–28%	–1%
Peninsula–Aleutians	86%	203%	124%	36%	29%	67%
Bristol Bay	–8%	60%	–32%	–84%	36%	38%
Kuskokwim	–43%	302%	101%	–87%	–23%	10%
Yukon	–22%		61%		–67%	–63%
Norton Sound	2%		348%	–71%	–68%	–64%
Kotzebue					–11%	–11%
Totals	–18%	8%	78%	85%	37%	51%

Table 8. Number of emergency orders issued by area management biologists while directly managing Alaska commercial salmon fisheries from 2000–2004.

Salmon Fishery	2000	2001	2002	2003	2004	Average
Southeast–Yakutat	156	132	136	117	121	132
Prince William Sound	88	114	101	140	123	113
Cook Inlet	45	44	47	54	80	54
Kodiak	39	30	41	44	34	38
Chignik	36	34	42	46	30	38
Peninsula–Aleutians	172	132	173	152	111	148
Bristol Bay	126	117	118	122	134	123
Kuskokwim	28	42	41	31	24	33
Yukon	5	0	22	25	29	16
Norton Sound	20	18	9	9	4	12
Kotzebue	8	16	1	1	1	5
Sum/Average	723	679	731	741	691	713

for salmon in the 11 areas of Alaska discussed in this paper. Sport harvests of salmon across Alaska have steadily increased over the last 25 years. Average sport harvest levels in Alaska since 2000 are about 176,000 Chinook salmon, 414,000 sockeye salmon, 771,000 coho salmon, 161,000 pink salmon, and 34,000 chum salmon (Table 9). Currently, average harvest levels in the 2000s show increases over harvest levels in the 1980s of about 90% for Chinook and sockeye salmon, about 3.5-fold for coho salmon, about 10% for pink salmon, and about 50% for chum salmon.

The average salmon harvest by sport fishermen in Alaska from 2000 to 2004 was about 1.6 million fish; the commercial salmon harvest during the same time frame was about 158 million fish, a commercial to sport ratio of about 100:1. The commercial to sport ratio by salmon species from 2000 to 2004 was about 3:1 for Chinook salmon, about 75:1 for sockeye salmon, about 6:1 for coho salmon, about 640:1 for pink salmon, and about 530:1 for chum salmon.

Monitoring subsistence harvests of salmon in Alaska is not as comprehensive as monitoring commercial fisheries and sport fisheries. Some subsistence harvests are monitored through permits issued and returned to ADF&G while other subsistence harvests are estimated based upon fishermen, household, or community surveys. Comparable subsistence harvest data is available from 1994 to 2003. In some cases, but not all, harvests of salmon taken under personal

Table 9. Average annual harvest of salmon in the Alaska sport fishery.

Species	1980–1989	1990–1999	2000–2004
Chinook	91,795	164,959	175,896
Sockeye	216,480	306,628	413,537
Coho	218,519	447,897	771,395
Pink	145,378	149,966	160,882
Chum	23,413	24,754	34,457
Total	695,585	1,094,204	1,556,167

use regulations are included in the available harvest estimates for Alaska subsistence fisheries.

The average annual harvest of salmon in subsistence fisheries during the 10-year period of 1994 to 2003 was about 1.1 million salmon (Table 10). Sockeye salmon represented about 40% of the average annual subsistence harvest, followed by chum salmon (30%), Chinook salmon (15%), coho salmon (10%), and pink salmon (5%). The Yukon area had the largest subsistence harvest of salmon in Alaska from 1994 to 2003, with an annual average of about 251,000 salmon representing about 22% of the Alaska total (Figure 9). Other areas in Alaska with large subsistence harvests of salmon were the Kuskokwim with an average of about 217,000 salmon (19%), Prince William Sound with an average of about 196,000 salmon (17%), and Bristol Bay with an average of about 135,000 salmon (12%). Average annual subsistence harvests of salmon from 1994 to 2003 in the Cook Inlet, Kodiak, Chignik, and Peninsula–Aleutian areas were each less than 50,000 salmon during the 10-year period from 1994 to 2003 (Figure 9).

Commercial fishery area biologists manage salmon subsistence fisheries in state-managed waters of Alaska. In most areas, few emergency orders are issued annually restricting or revising subsistence fishing regulations because the harvest in these fisheries is small

Table 10. Average annual subsistence harvests of salmon in Alaska, 1994–2003. Primary data source: ADF&G 2005.

Species	Lowest Annual Harvest	Highest Annual Harvest	Average Annual Harvest
Chinook	134,000	188,000	167,000
Sockeye	386,000	525,000	448,000
Coho	92,000	139,000	108,000
Pink	33,000	95,000	63,000
Chum	230,000	500,000	337,000
Total	956,000	1,285,000	1,123,000

relative to salmon abundance and commercial harvest levels. However, in some areas of Alaska, significant inseason management of the salmon subsistence fisheries occurs. Table 11 provides a summary of the number of emergency orders issued by Division of Commercial Fisheries managers in Alaska from 2000 to 2004 that were specific to subsistence salmon fisheries. As can be seen, extensive inseason management occurred in the Yukon and Norton Sound areas.

Economic Value of the Alaska Commercial Salmon Fishery

Commercial salmon fisheries are vital to the economy of Alaska. A report on the impacts of the seafood industry on Alaska’s economy in 2001 (Northern

Economics Inc. 2003) demonstrated that: (1) about 53,900 persons earned all or some of their income in 2001 from the seafood harvesting or processing sectors, (2) the seafood industry in Alaska provided more jobs than oil, gas, mining, agriculture, and forestry combined plus their associated primary processing industries, (3) the salmon fishery accounted for 40% of the direct seafood industry jobs, (4) the seafood industry generated an estimated \$932 million in direct payments to labor in 2001, and (5) the seafood industry paid more taxes to the State of Alaska general fund than any other industry in Alaska except oil and gas. Some areas within Alaska are economically more dependent upon commercial fisheries than others. Hartman (2002) reported that: (1) the commercial fishing industry in Southeast Alaska in 1994 contributed about \$224 million in personal income, (2) the commercial fishery in Southeast Alaska provided about 7,500 jobs, and (3) the seafood industry in Southeast Alaska was the largest private sector employer accounting for about 45% of the region’s private sector employment. Some areas of Alaska, like Cook Inlet, are less economically dependent upon commercial salmon fishing than Southeast Alaska, while others such as the Kodiak and Bristol Bay areas, are even more dependent upon commercial salmon fishing.

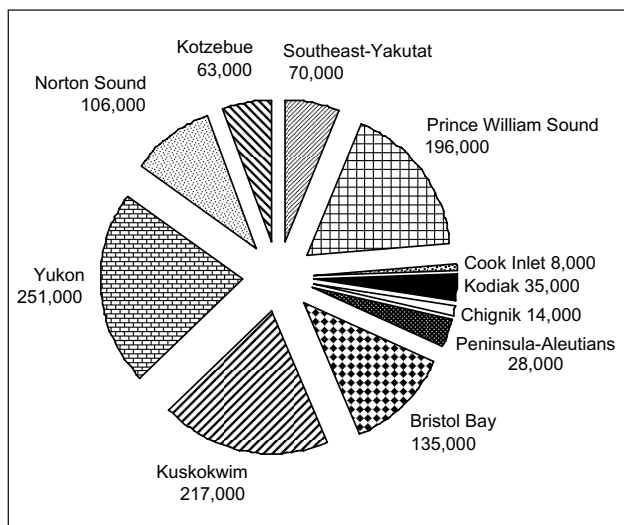


Figure 9. Average subsistence harvests of salmon from 1994–2003 in 11 areas of Alaska.

Table 11. Number of emergency orders issued by Commercial Fishery Division area biologists from 2000–2004 that were specific to management of subsistence fisheries for salmon. These emergency orders are in addition to those presented in Table 8; many of the emergency orders included in Table 8 changed legal fishing requirements simultaneously for both commercial and subsistence users.

Salmon Fishery	2000–2004 Sum
Southeast–Yakutat	19
Prince William Sound	1
Kodiak	8
Chignik	2
Peninsula–Aleutians	1
Kuskokwim	21
Yukon	141
Norton Sound	77
All	270

This report will not provide a detailed description of the economic importance of the commercial salmon fishery to Alaska. Instead, information concerning exvessel values and first wholesale values of the Alaska commercial salmon fishery will be provided along with information concerning importance of the various species of salmon and the areas where these harvests occur. Value data was compiled from the ADF&G fish ticket (ZEPHYR) and commercial operators annual reports (COAR) data bases.

The annual exvessel value of the Alaska salmon fishery from 1985 to 2004 ranged from a low of about \$165 million in 2002 to a high of about \$780 million in 1988. Annual exvessel value of the Alaskan commercial salmon fishery generally decreased from the late 1980s until 2002, while modest increases occurred in 2003 and 2004 (Figure 10). The consumer price index as described earlier was used to approximate exvessel values for the years between 1984 and 2003 into 2004 dollar equivalents. Once inflation was taken into account, the downturn in exvessel value of the Alaskan commercial salmon fishery is even more pronounced. The reason for the downward trend is reduced prices paid to salmon fishermen in Alaska as a result of the increased availability of farm-raised salmonids. Harvests of salmon in Alaska across this 20-year period were consistently high (Figure 7). Fishery

statistics have demonstrated that management of the commercial fishery has been biologically successful and that with timely inseason stock assessment and emergency order regulatory adjustments, the salmon runs in Alaska can sustain harvests in excess of 100 million fish per year over 95% of the time.

Annual first wholesale value from 1985 to 2004 for the Alaska salmon fishery once adjusted to 2004 dollar equivalents ranged from a low of about \$540 million in 2002 to a high of about 1.8 billion in 1988. Trends in the 20 year period are similar to exvessel trends whether inflation is accounted for or not. The reduced trend in first wholesale value of the Alaska commercial salmon fishery reflects the changing worldwide market conditions that have occurred over the last 20 years.

From a species perspective, exvessel sales of sockeye salmon represented about 63% of the total salmon sales from 1985 to 2004. Pink salmon were next most important (15%), followed by chum salmon (9%), coho salmon (8%), and Chinook salmon (5%). Annual exvessel value of sockeye salmon from 1985 to 2004 ranged from a low of about \$82 million in 2002 to a high of about \$457 million in 1992, a 5.5-fold level of variation. Similar values for other species were as follows: pink salmon range was \$30 million (2002) to \$144 million (1989) a 4.8-fold level of variation, chum salmon range was \$23 million (2003) to \$105 mil-

lion (1988) a 4.5-fold level of variation, coho salmon range was \$14 million (2002) to \$67 million (1994) a 4.7-fold level of variation, and Chinook salmon range was \$11 million (2001) to \$25 million (2004) a 2.2-fold level of variation. Annual trends in exvessel value by species adjusted to 2004 dollar equivalents are provided in Figure 11.

Exvessel value of the Alaskan salmon fishery from 1985 to 2004, split into the 11 areas of Alaska, show that the Bristol Bay salmon fishery has the highest exvessel value, accounting for 31.6% of the total Alaskan commercial salmon fishery exvessel value over that 20-year period (Figure 12). The next most valuable fishery was the Southeast–Yakutat salmon fishery with 23.46% of the total. Listed in decreasing order of proportional value is the Prince William Sound salmon fishery (11.55%), the Cook Inlet commercial fishery (10.16%), the Peninsula–Aleutians commercial fishery (8.85%), the Kodiak commercial fishery (8.46%), the Chignik commercial fishery (3.33%), the Yukon commercial fishery (1.35%), the Kuskokwim commercial fishery (1.01%), the Norton Sound commercial fishery (0.13%), and the Kotzebue commercial fishery (0.12%).

On a species basis, first wholesale value of sockeye salmon represented about 54% of the total salmon sales from 1985 to 2004. Pink salmon were next most important (25%), followed by chum salmon (11%),

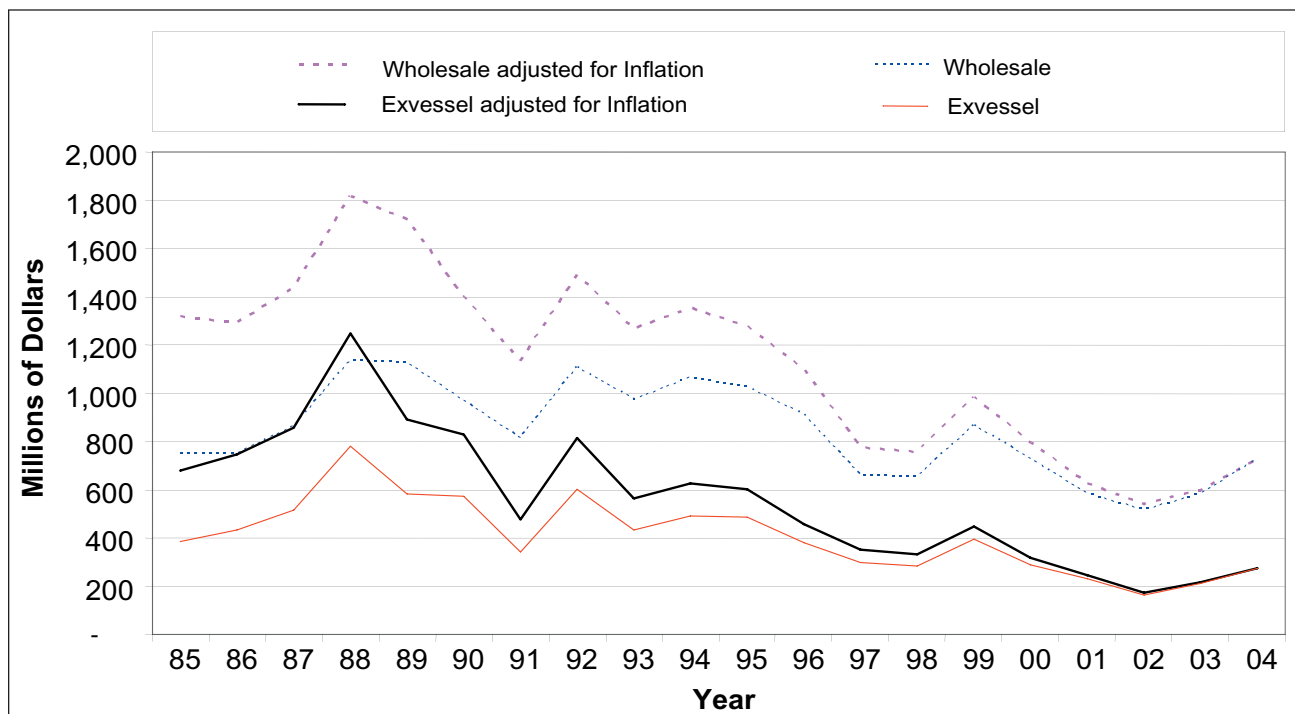


Figure 10. Exvessel and first wholesale values of the Alaskan commercial salmon fishery, 1985–2004, presented as annual values unadjusted for inflation and as annual values adjusted for inflation into 2004 dollars.

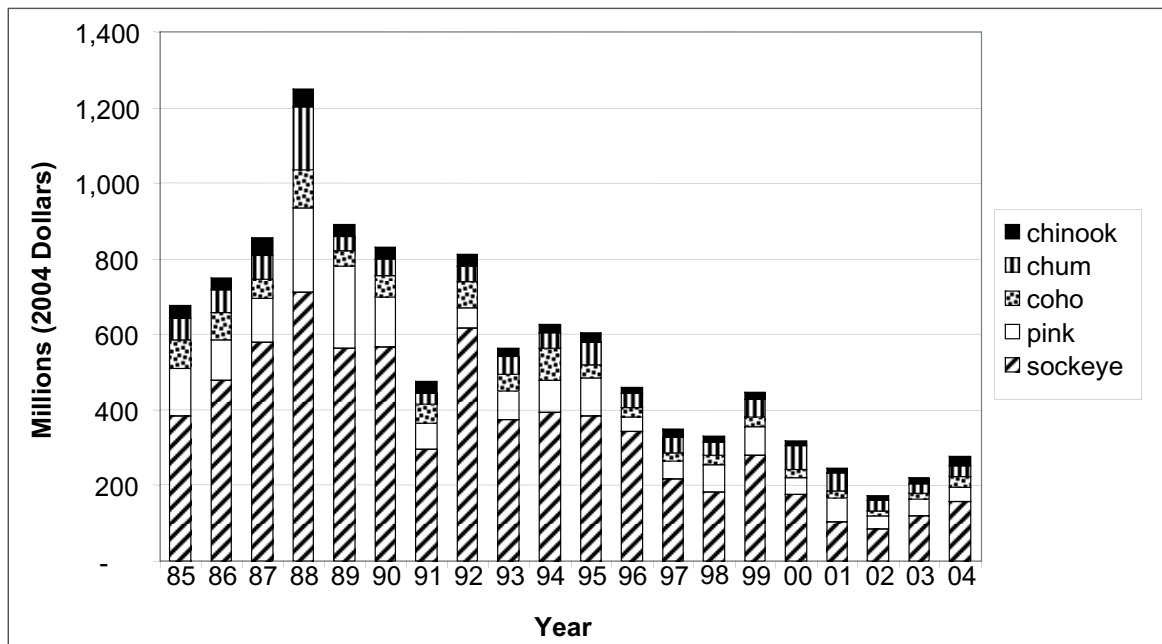


Figure 11. Exvessel value of the Alaskan commercial salmon fishery by species, 1985–2004, adjusted for inflation into 2004 dollars.

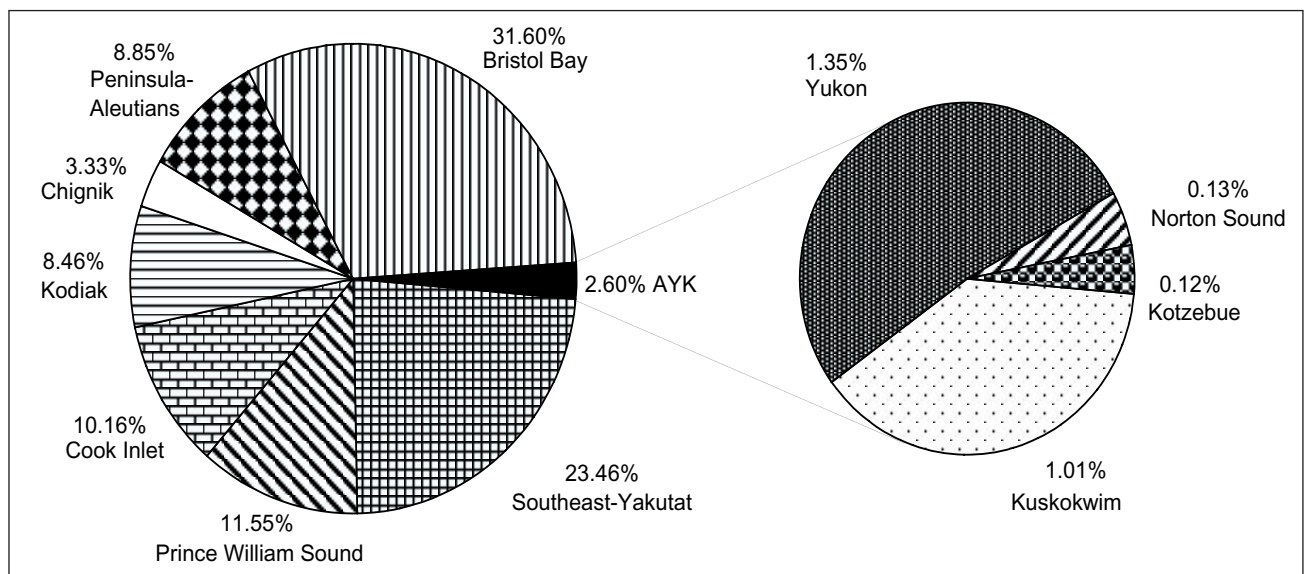


Figure 12. Proportions of the total exvessel value from the 11 Alaskan salmon commercial fisheries during 1984–2004.

coho salmon (7%), and Chinook salmon (3%). Annual trends by species are provided in Figure 13. First wholesale value of the Alaska salmon fishery split out by area cannot be provided for some of the 11 areas because of confidentiality of data; in some areas less than 4 processors purchased salmon some of the years.

As described earlier in this report, the State of Alaska allocates operational funding to the Division of Commercial Fisheries on an annual basis for man-

agement of Alaska’s commercial fisheries. Within the Division of Commercial Fisheries, funding is allocated each year to the area level for salmon management and stock assessment. The relative investment in salmon management among salmon fisheries in Alaska can be obtained by dividing fiscal allocations by long-term average value of the fisheries being managed (Table 12). This comparison does not include funding within the Division of Commercial Fisheries for non-area

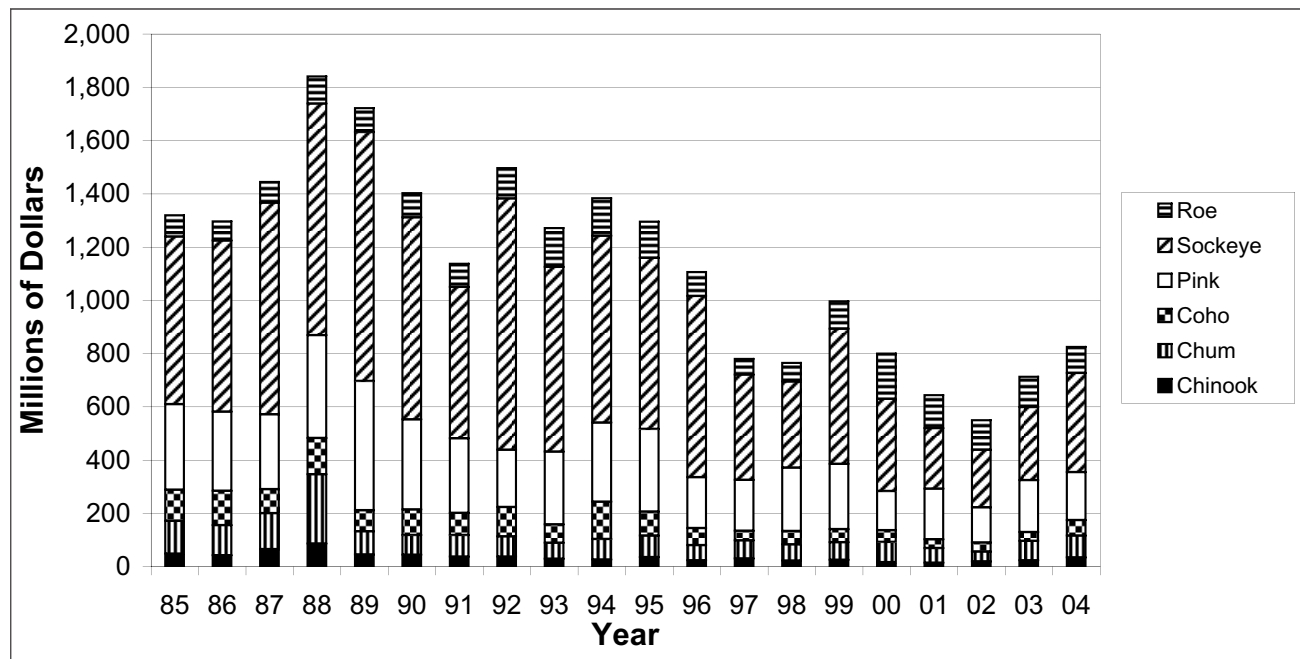


Figure 13. First wholesale value of the Alaskan commercial salmon fishery by species, 1985–2004, adjusted for inflation into 2004 dollars.

level activities, or funding by the State of Alaska (but allocated to entities other than the Division of Commercial Fisheries) to support these salmon fisheries. However, the comparison does provide a perspective of relative investment within the commercial salmon management program. The comparison indicates that on a statewide basis, the funding used for direct management and stock assessment of salmon in FY 05 was equivalent to about 2% of the recent 20-year average in inflation-adjusted exvessel value. Relative investment in the large major salmon fisheries of Alaska (Southeast–Yakutat, Prince William

Sound, Kodiak, Peninsula–Aleutians, and Bristol Bay) tended to be less than 2%. Relative investment in the Bristol Bay salmon fishery was least at 1.1%. Relative investment in Arctic–Yukon–Kuskokwim salmon fisheries was highest, ranging from 8.7% for the Kotzebue fishery to 98.9% for the Norton Sound salmon fishery.

The remainder of this paper will provide more detailed information concerning these 11 Alaskan commercial salmon fisheries, including historic catches, exvessel values, trends in escapement, and explanations of the management program in place.

Table 12. Average inflation-adjusted exvessel value of the Alaska commercial salmon fishery by area, State of Alaska funds allocated for management and stock assessment of salmon by area in FY 05, and the relative investment by Alaska in the direct management of these commercial salmon fisheries by area.

Alaska Salmon Commercial Fishing Area	1985–2004 Average Exvessel Value Expressed in 2004 Dollars	FY 05 Allocation of Alaska State Funds	State of Alaska Investment in Direct Area Management and Stock Assessment
Southeast–Yakutat	\$127,783,180	\$2,357,400	1.8%
Prince William Sound	\$62,880,186	\$951,800	1.5%
Cook Inlet	\$59,419,360	\$1,331,800	2.2%
Kodiak	\$46,934,292	\$733,500	1.6%
Chignik	\$18,742,534	\$372,900	2.0%
Peninsula–Aleutians	\$50,065,642	\$961,600	1.9%
Bristol Bay	\$176,729,030	\$1,891,400	1.1%
Kuskokwim	\$5,816,024	\$972,100	16.7%
Yukon	\$7,750,080	\$1,038,100	13.4%
Norton Sound	\$739,749	\$731,600	98.9%
Kotzebue	\$733,479	\$63,800	8.7%
Totals	\$557,593,557	\$11,406,000	2.0%