STATE OF ALASKA

Pacific Salmon Treaty Implementation Cost and Federal Funding Gap

NOVEMBER 2018

The Pacific Salmon Treaty (Treaty) provides for the conservation and management of salmon that span the international borders between the U.S. and Canada. Since ratification in 1985, the Treaty has been instrumental in reducing interceptions, preventing overfishing, and improving salmon management.

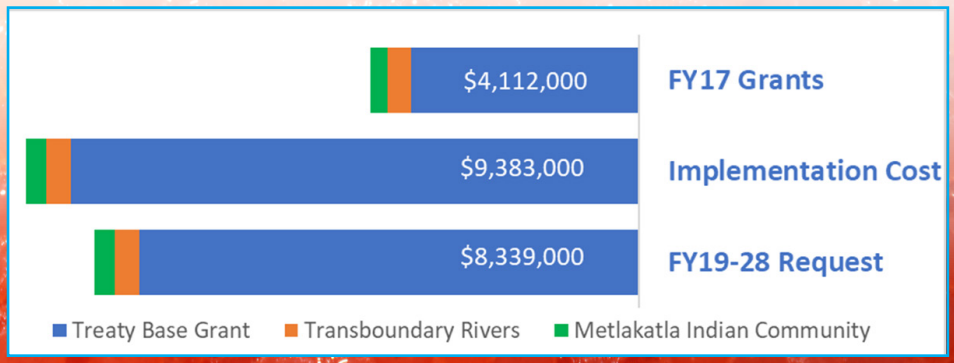
The Treaty includes provisions for fishery management and allocation for specific areas and/or salmon species. For Alaska, the primary chapters are:

- Chapter 1: Transboundary Rivers (Taku, Stikine, Alsek)
- Chapter 2: Northern Boundary (areas adjacent to Alaska's southern boundary with British Columbia)
- Chapter 3: Chinook Salmon (covers populations throughout the geographic range of the Treaty)

Implementation of the Treaty requires the collection and timely analysis of reliable stock assessment and fishery monitoring data. The states of Washington, Oregon, Alaska, and tribes have the primary responsibility for data collection, stock assessments, and fishery management activities that support the Treaty. Alaska received grants from the Department of Commerce (DOC) of $366,000 for transboundary river enhancement and $3.49 million for "base" Treaty implementation in FY17. In FY18, Alaska received DOC grants of $4.38 million. Additionally, the Metlakatla Indian Community received an FY17 grant from Department of Interior of $261,000.

Alaska identified a fiscal gap of $5.2 million in annual DOC base funding to fulfill the international obligations of the Treaty based on FY17 grant levels. Costs were estimated through a position-by-position accounting of salaries, benefits, goods and services, and other costs. The total cost of these activities is approximately $9 million annually with Alaska receiving only $3.85 million in FY17 in federal support. While recent federal grants have increased somewhat, actual implementation costs still lag considerably and represent a substantial fiscal burden to the State of Alaska.

Alaska, like other states involved with Treaty implementation, is not asking for full fiscal support to fulfill Treaty obligations. However, the majority of the costs should be provided by the federal government to meet the requirements of this international treaty. Alaska is asking for DOC to increase FY17 grant levels by $4.18 million for a total of $8.03 million. This reduces Alaska's burden to fund Treaty implementation from about $5 million per year to around $1 million per year.



Top: Taku Inlet ©ADF&G, photo by Dave Harris. Bottom: Salmon eggs ©ADF&G, photo by John Hyde.

COASTAL ALASKA COMMUNITIES RELY ON SALMON

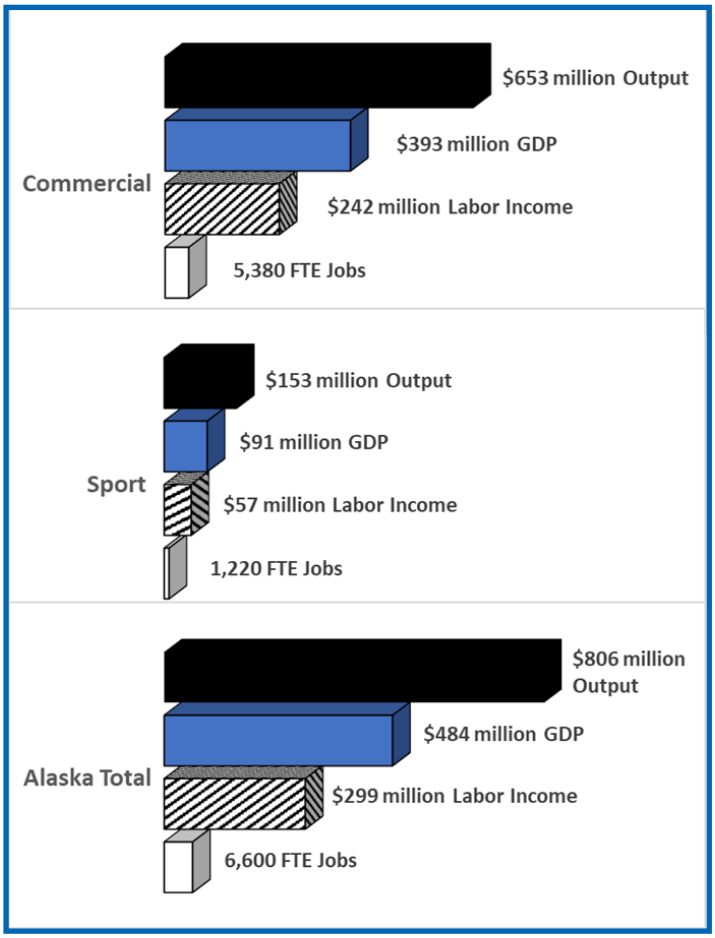
Salmon fisheries are vitally important to the regional economy of Southeast Alaska. A recent economic study prepared for the Pacific Salmon Commission found that the contribution of the commercial and sport salmon fisheries in Southeast Alaska averaged

- $806 million in Output
- $484 million in Gross Domestic Product (GDP)
- $299 million in Labor Income or Wages
- 6,600 Full Time Equivalent (FTE) or 19,000 seasonal jobs

The salmon industry in terms of fishing, handling, and processing is seasonal. The number of salmon jobs is three times the amount of Full Time Equivalent employment. In Southeast Alaska, up to 19,000 seasonal jobs rely on the salmon fishery.

The commercial salmon and sport fishing industry are an important and longstanding part of the social and economic fabric of Alaska coastal communities.

Sizeable economic impacts occur both inside and outside regions where salmon fisheries occur. There are substantial spillover impacts on the whole North American economy through the selling of salmon in stores and restaurants across the continent and through the multiplier impacts from regional spending in both commercial and recreational sectors.



Gillnetter. ©ADF&G. Photo by Scott Forbes.

Chinook salmon, Sitka. ©ADF&G.

Troller in the mist. ©Dennis Longstreth. Used with permission.

2019 REVISED FISHERY ARRANGEMENTS

Representatives from the U.S. and Canada agreed in September 2018 to recommend their governments approve new coast-wide fishing agreements under the Treaty. During talks to revise the Treaty, commissioners were confronted with dynamic environmental conditions such as wide swings in salmon survival rates, changes in salmon migration patterns, and continued declines in the productivity of numerous wild Chinook salmon populations. Commissioners are recommending fishery reductions for both nations, new conservation objectives for several salmon populations, enhanced stock assessments to inform decision-makers in both countries, and solicitation of fiscal resources to ensure the effective implementation of fisheries that target marked hatchery-origin salmon. The Treaty revisions directly affecting Alaska include the following:

Chapter 1: Transboundary Rivers (Taku, Stikine, Alsek)

The negotiations focused on harvest sharing between the fisheries in Canada and Alaska and sockeye salmon enhancement designed to improve the fisheries. The agreement builds upon the current abundance-based management system for conservation and harvest sharing of Chinook, sockeye, and coho salmon, and includes incentives for increased allocation to Canada and greater harvests by the U.S. if enhancement efforts for sockeye salmon are successful.

Chapter 2: Northern Boundary

The abundance-based fishery management provisions established in 1999 and renewed in 2009 were found to be largely working well for the U.S., but Canada sought additional protections for Nass and Skeena sockeye salmon. The new chapter is similar to the previous versions with some notable additions: including a 5-year Chapter review, development of scientifically defensible escapement goals for Nass and Skeena river sockeye salmon, and a review of the Alaska District 4 pink salmon fishery.

Chapter 3: Chinook Salmon

Many Washington, Oregon, and Idaho stocks are listed under the Endangered Species Act or are otherwise viewed as stocks of concern and these stocks undergo substantial allowable harvests in Canadian fisheries. Securing reductions in these Canadian harvests was a fundamental position of U.S. negotiators. Canada's negotiators insisted that Alaska make parallel reductions, in part to address conservation concerns that they allege for some of their stocks. The revised agreement calls for the following:

- Up to 12.5% reductions in the allowable harvests of the West Coast of Vancouver Island Chinook fisheries and a parallel reduction of up to 7.5% in Southeast Alaska Chinook fisheries;
- Several stock-specific reductions in U.S. and Canadian fisheries;
- An improved Chinook salmon model that generates salmon abundance estimates based on empirical data from the Southeast Alaska Chinook salmon fishery; and
- A renewed commitment to address respective conservation challenges and improved accountability provisions.

Set gillnet. ©ADF&G. Photo by Nicole Zeiser.

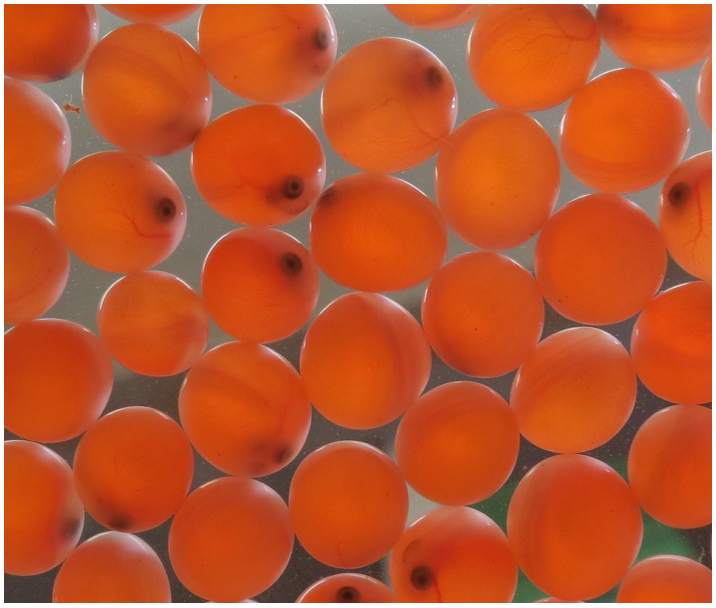
FISCAL YEARS 2020 & 2021: MITIGATION FUNDS

There are agreements amongst the Parties in the U.S. Section to aquire funding of important U.S. interests. This includes $22.4 million to help Alaska mitigate the substantial reductions in Chinook harvests in Southeast Alaska that were agreed to in order to facilitate the Canadian harvest reductions required to reduce impacts on salmon populations listed under the Endangered Species Act in the Pacific Northwest. The burden of those reductions will be significant in Southeast Alaska and mitigation is necessary. Funding also includes $31.2 million for the Pacific Northwest states and Tribes for efforts to address habitat and biological issues that are constraining the recovery of listed stocks in Puget Sound, and $3.5 million for equipment or short-term studies to ensure effective implementation of mark-selective fisheries to reduce impacts on natural stocks. In Alaska, the primary impacts of the 7.5% harvest reduction are on "hook and line fisheries," which include commercial troll, sport fish, and associated interests. The funding will provide the following:

- $11,200,000 to maintain and improve hatchery production of Alaska Chinook salmon
- $6,720,000 to mark the majority of hatchery production of Southeast Alaska Chinook salmon
- $4,480,000 for NOAA Fisheries Little Port Walter Hatchery Facility

These mitigation funds, although indirect, are intended to primarily compensate Alaska's user groups directly—through reduced operational costs for both producing and marking Southeast Alaska Chinook salmon hatchery production. It is also acknowledged that Alaska user groups are the only entity within the Pacific Salmon Treaty family that pay almost completely for their hatchery produced Chinook salmon without alternative funding sources.

Tagging salmon fry at Little Port Walter. ©ADF&G.



Eyed eggs. DIPAC. Used with permission.

Chinook salmon hatchery production ($11.2 million)

Hatcheries throughout Southeast Alaska produce, on average, about 7.0 million Chinook salmon smolts for ocean release each year. This supplemental production has been used to enable additional harvest opportunities and to mitigate harvest reductions associated with previous Pacific Salmon Treaty annexes. The funding for this hatchery production has been directly derived from taxation on gross salmon landings by limited entry permit holders (all gear groups). This mitigation funding will replace those funds with federal funds for approximately 5 years, thereby offering relief to permit holders for the harvest reductions agreed to as part of the 2019 Pacific Salmon Treaty annex.

Mass Marking of Southeast Alaska's Hatchery Chinook Salmon Production $6.72 million)

Coded wire tag. ©ADF&G.

The intent is to mass mark and coded wire tag the majority of the Chinook salmon hatchery production starting with releases in calendar year 2020. These marks make hatchery fish readily identifiable in harvests, and increased marking vastly improves both flexibility and accuracy for management activities to reduce impacts on natural stocks.

NOAA Fisheries Little Port Walter Hatchery Facility ($4.48 million)

The Little Port Walter (LPW) research station has been a mainstay of salmonid research in Southeast Alaska since the 1930s and is heralded as having one of the longest standing Chinook salmon hatchery release data sets on the Pacific Coast. There are numerous nearby lakes and streams which are available for salmonid experimentation and research. Despite its prominence and broad public support, budget cuts have threatened program viability. This funding will help keep this facility operational. There is broad-based public support for LPW because it is used to develop brood stocks, conduct critical salmon hatchery related research, and provide Chinook salmon for release—an important contributor to Alaska's fisheries.

Little Port Walter Research Station. NOAA. Photo by John Eiler.

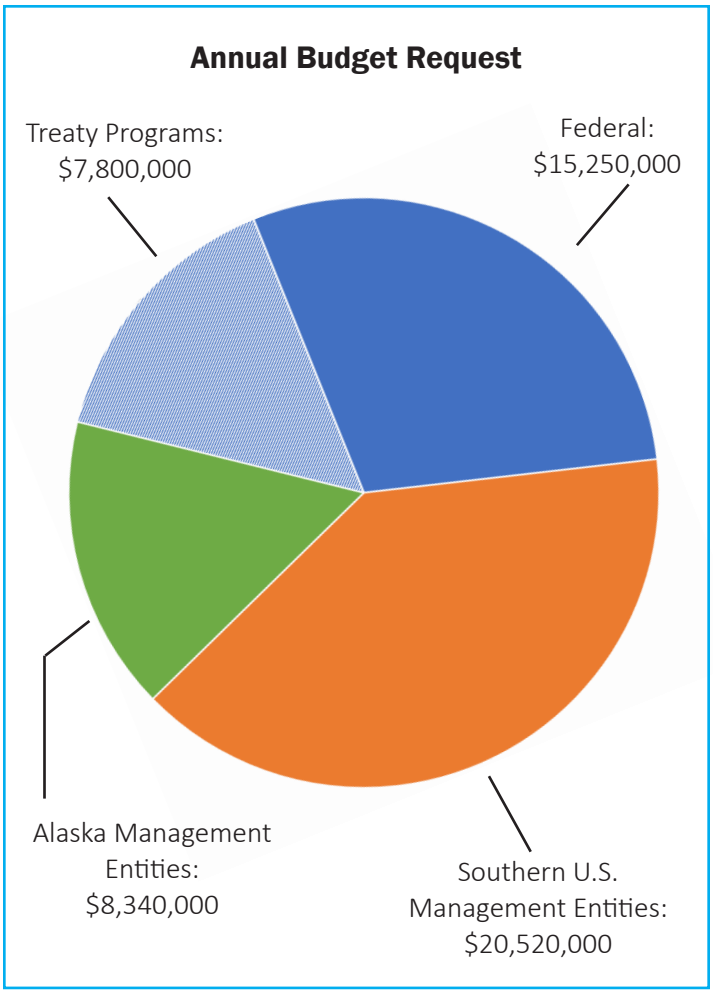
ANNUAL FUNDING: FISCAL YEARS 2020 THROUGH 2029

The 30-year history of the Pacific Salmon Treaty is impressive. Both nations have worked hard to put the "fish wars," including blockage of marine traffic, in the past. But for most of the last decade, despite some welcome small funding increases in recent years, the level of annual federal funding to implement the Treaty has not kept up with actual implementation costs.

Commissioners are requesting an increase in annual funding to total $51.9 million to fulfill the obligations of the revised treaty and associated Endangered Species Act consultation. A portion of the request will go toward filling existing gaps in fishery sampling and monitoring, estimating spawners, assessing fishery exploitation rates, and other activities essential to effectively implement the Treaty. Alaska requests annual Federal grants of $8.4 million, which is 16% of the total U.S. annual request. This amount includes an annual Department of Interior grant to the Metlakatla Indian Community.

Alaska is engaged in three Chapters of the Treaty, which necessitates participation in 2 Panels and 8 technical committees, as well as in the Commission itself. Thus, in addition to fiscal resources, it takes substantial effort to implement the Treaty. Alaska has a dedicated delegation of 53 people:

- 15 fishing industry representatives appointed by the Governor of Alaska
- 5 NOAA Fisheries staff
- 33 ADF&G staff



CHAPTER 1 TRANSBOUNDARY RIVERS

PST CHAPTER 1 REQUIRES INTENSIVE INTERPERSONAL COMMUNICATION

- Management obligations
- Forecasts
- Catch accounting
- Catch sampling
  - Genetics
  - Coded wire tags
  - Otoliths
  - Age-sex-size
- Enhancement planning
- Pathology
- Bilateral coordination
  - Run reconstructions
  - Escapement goals
  - Enhancement evaluations
  - Reporting

Current PST Support	$0.8 million
Funding Needed	$1.6 million
Total PST Cost	$2.4 million

Purpose: The Transboundary River Panel was established in 1999 for "salmon originating in the Alsek, Stikine and Taku river systems." More specifically, it applies to salmon that originate in the Canadian waters of these three watersheds.

Chapter 1 requires abundance-based management of Chinook and sockeye salmon returning to the Taku and Stikine rivers and coho salmon returning to the Taku River based upon specified stock assessments, required conservation measures, and harvest sharing agreements. Further, it specifies the obligation to develop and implement abundance-based management regimes for Stikine River coho salmon and Alsek River Chinook and sockeye salmon. Extensive participation in bilateral panel and technical committee processes is required. Lastly, a jointly implemented sockeye salmon enhancement program in the Taku and Stikine watersheds is required. The sockeye salmon enhancement specifications in Chapter 1 provide strong incentives for bilateral agreement and provide a bridge between the U.S. and Canada concerning catch shares in both rivers.

Current Activities: Bilateral management of salmon returning to the Canadian waters of the Alsek, Taku, and Stikine rivers involves pre-season management plans based upon forecasts of stock strength. Once salmon return to terminal areas, in-season assessment programs supplant forecasts and are used as the basis for opening and closing fisheries. The major management challenge is being able to annually provide appropriate fishing opportunity in U.S. terminal areas while still passing adequate numbers of salmon upstream to provide appropriate spawning escapements and agreed harvest shares to Canadian in-river fisheries located above the border in all three rivers for each species. Rigorous stock assessment and stock identification methods are employed to achieve these management objectives. On a post-season basis, run reconstructions are estimated for review by technical and policy staff to determine if conservation and harvest

Gillnetter. ©ADF&G. Photo by Dave Harris.

sharing agreements for each stock were adequately achieved. When deviations are identified, the fishery managers and policy staff identify regulatory and program changes needed to meet Chapter 1 specifications.

The Transboundary enhancement program specifies the annual production target of 100,000 enhanced sockeye salmon in each river to supplement harvest opportunity in the terminal fisheries of each country. To bolster harvests for fishermen on both sides of the border, sockeye salmon eggs are collected in Canada, flown to the U.S. for incubation and hatching, and resulting fry are then transported back to Canada and released. Each year, the enhancement program is bilaterally reviewed, and annual enhancement plans are bilaterally agreed upon.

Implementation Needs: Fiscal costs are included in Treaty langauge for Chapter 1 ($2.4 million).

"Sockeye salmon enhancement provides the basis for cooperation between the Parties."

Sockeye salmon. ©Mark Emery. Used with permission.

Table 1.–Chapter 1 Transboundary Rivers annual budget, FY20–FY29.

Project	Treaty Base Allocation	Funding Gap	Total Cost
Taku Management	$ 51,000	$120,000	$171,000
Taku Fishery Accounting and Composition	-	$193,000	$193,000
Taku Stock Assessment	$186,000	$189,000	$375,000
Stikine Management	-	$129,000	$129,000
Stikine Fishery Accounting and Composition	$51,000	$308,000	$359,000
Stikine Stock Assessment	-	$164,000	$164,000
Alsek Management	$64,000	-	$64,000
Alsek Fishery Accounting and Composition	$30,000	$145,000	$175,000
Alsek Stock Assessment	$35,000	$140,000	$175,000
Enhancement	$357,000	$(31,000)	$326,000
Bilateral Committees and Coordination	-	$269,000	$269,000
Subtotal	$774,000	$1,626,000	$2,400,000

CHAPTER 2 NORTHERN BOUNDARY AREA

PST CHAPTER 2 INVOLVES EXTENSIVE FISHERY MONITORING

- Fishery management obligations
- Forecasts
- Fishery accounting
- Catch sampling
  - Genetics
  - Age-sex-size
  - Coded wire Tags
  - Otoliths
- Bilateral coordination
  - Run reconstructions
  - Escapement goals
  - Reporting

Current Treaty Support	$0.5 million
Funding Needed	$0.6 million
Total Cost	$1.1 million

Purpose: The Northern Boundary Panel was originally established in 1985 for "salmon originating in rivers with mouths situated between Cape Caution and Cape Suckling."

Chapter 2 defines obligations that limit (1) the interceptions of Canadian Nass and Skeena origin sockeye salmon in Southeast Alaska fisheries, and (2) the interceptions of Alaskan-origin pink salmon in Canadian fisheries through an abundance-based management regime. It also requires participation in bilateral panel and technical committee processes.

There are two Alaska Treaty fisheries related to northern boundary sockeye salmon: District 101 (Tree Point) drift gillnet, and District 104 purse seine. Management of these fisheries is built upon a detailed abundance-based approach that requires information about (1) fishing fleet effort, distribution, and harvest; (2) wild Alaska escapements; (3) harvest compositions by age, sex, and size; and (4) genetic stock identification of the stock composition of the harvests—all of which lead to run reconstructions and limits on interceptions of Canadian-origin sockeye salmon in Alaska.

Northern Boundary coho salmon obligations for both countries are also defined in Chapter 2. Analyses of troll and all-gear coho salmon harvest rates, and Area 6 troll harvest rates are used to define when restrictions are to be implemented in Alaska.

Canadian Area 3 net fisheries and Area 1 troll fisheries are managed for an annual allowable harvest share of southern Southeast Alaska pink salmon, which requires information about escapement and harvest in the Northern Boundary Area.

Seiner. ©ADF&G. Photo by Scott Walker.

Current Activities: Implementation of Chapter 2 requires active involvement by numerous ADF&G biologists and technicians throughout the year. During the summer months, ADF&G samples commercial catches of salmon at processing facilities throughout the region. In order to ensure adequate

Buoy. ©Dennis Longstreth. Used with permission.

precision of harvest estimates of Nass and Skeena river sockeye salmon, weekly sample size goals are targeted from fisheries in each District—requiring a tremendous amount of time, effort, and cost. Managers carefully monitor commercial openings in fisheries affected by the Treaty to ensure Alaska fisheries stay within annual allowable harvests of Canadian-origin sockeye salmon for that year. After the salmon fishing season, the genetic labs begin processing and analyzing tissue samples collected during the summer and provide detailed summaries of the stock composition of weekly harvests. During the late fall and winter, a team of U.S. biologists work with Canadian counterparts as members of the Northern Boundary Technical Committee to complete a run reconstruction of Nass and Skeena river sockeye salmon and determine the final run sizes, annual allowable harvests, and fishery performance in regards to those allowable harvests. The technical committee also produces a complete run reconstruction for Northern Boundary Area pink salmon in order to evaluate Canadian fishery performance in regards to their harvest of Alaska's pink salmon.

Chapter 2 requires extensive genetic sampling of sockeye salmon from all southern Southeast Alaska net fisheries and analysis of thousands of tissue samples.

Sampled sockeye salmon catch. ©ADF&G. Photo by Anne Reynolds-Manney.

Implementation Needs: Fiscal costs are included in Treaty language for Chapter 2 ($1.2 million). The current budget shortfall is $591,000.

Table 2.–Chapter 2 Northern Boundary Area annual budget, FY20–FY29.

Project	Treaty Base Allocation	Funding Gap	Total Cost
Sockeye Fisheries Management	$361,000	$177,000	$538,000
Sockeye Fisheries Accounting	$147,000	$366,000	$513,000
Coho Fisheries Management	$0	$5,000	$5,000
Bilateral Coordination	$0	$43,000	$43,000
Subtotal	**$508,000**	**$591,000**	**$1,099,000**

CHAPTER 3 CHINOOK SALMON

PST CHAPTER 3 IS DATA INTENSIVE

- Fishery management obligations
- Forecasts
- Fishery accounting
- Catch sampling
  - Genetics
  - Age-sex-size
  - Coded wire Tags
  - Otoliths
- Bilateral coordination
  - Run reconstructions
  - Escapement goals
  - Reporting

Current Treaty Support	$2.6 million
Funding Needed	$3.0 million
Total Cost	$5.6 million

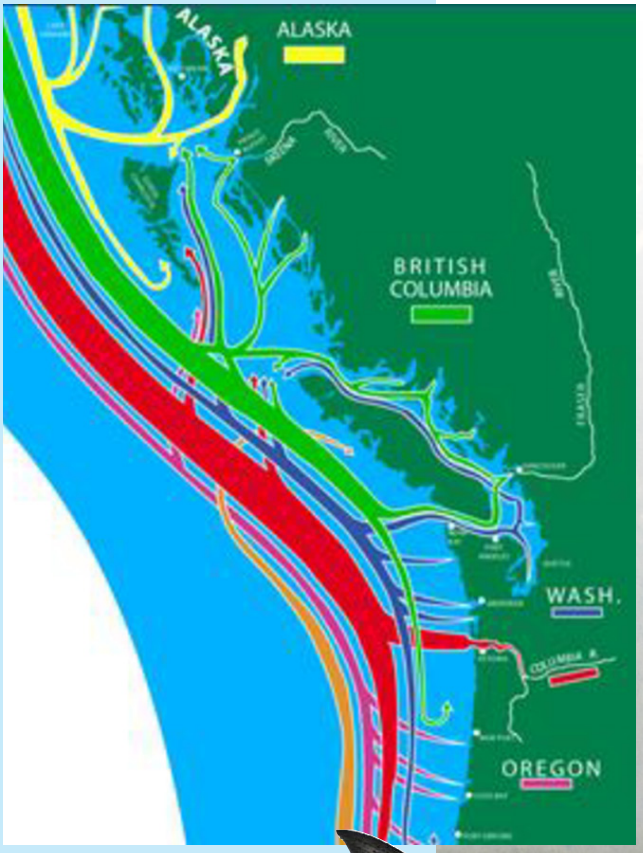
Purpose: Chapter 3 outlines a coast-wide approach to management of Chinook salmon fisheries that was designed to provide a healthy and productive Chinook salmon resource that imparts sustainable benefits to both Parties through implementation of abundance-based fishery regimes that meet escapement and/or harvest rate objectives.

The Chinook Chapter is complex—it lists individual stocks or stock groups with specific management and monitoring measures, identifies several specific funding mechanisms to augment agency programs, and lists extensive duties and assignments to the Chinook Technical Committee. Chapter 3 obligations include annual estimation of catch for all Treaty fisheries, exploitation rates and escapement, as well as forecasting annual abundance indices. Thus, the management regime is data intensive, and as such, it is difficult and costly to fully implement.

Current Activities: Core-level data needs associated with Chapter 3 to meet Treaty obligations requires annual estimation of spawning escapements, enumeration of catches of these stocks in specified Treaty waters, stock and age composition estimates of those catches, stock-specific exploitation rates, and incidental mortality in fisheries.

Specific core-level Treaty related activities required of Alaska to meet obligations include the following:

- Annual estimates of Chinook salmon escapements. Escapements of wild indicator stocks in Alaska are assessed annually. Aerial surveys, mark-recapture, and weirs are used to estimate the total spawning abundance. Fish in escapements are sampled to estimate age composition.
- Monitoring commercial, sport, and subsistence catches of Chinook salmon. Catches of Chinook salmon by fishery, regional locations, and gear type are enumerated and sampled. Coded wire tag data and genetic analysis are used to estimate the stock of origin. Coded wire tag expansions and otoliths are used to partition the catch into natural and hatchery origin. Scales, otoliths, and coded wire tags are used to determine age.



Chinook salmon migratory patterns.

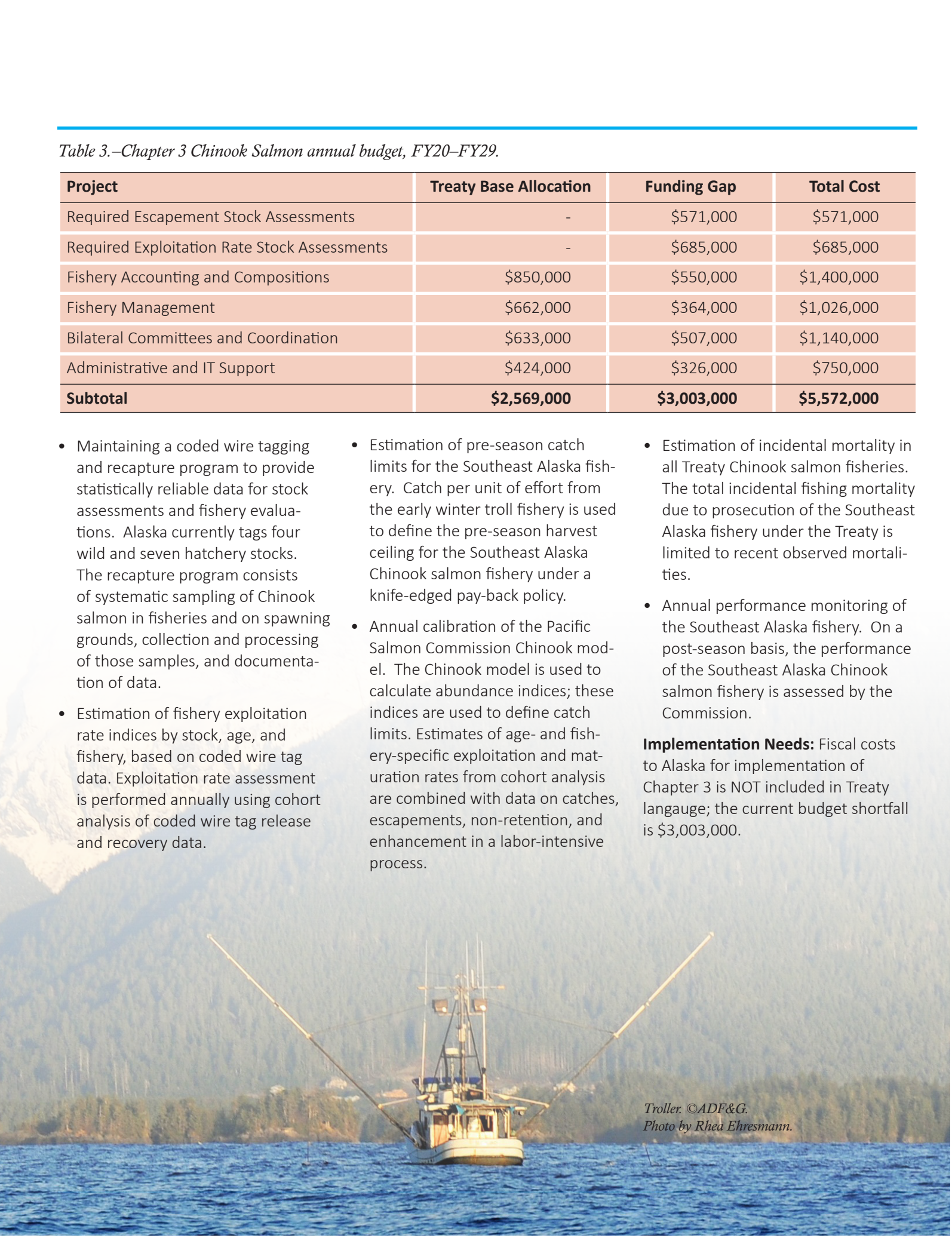
Chinook salmon. ©ADF&G.

Table 3.–Chapter 3 Chinook Salmon annual budget, FY20–FY29.

Project	Treaty Base Allocation	Funding Gap	Total Cost
Required Escapement Stock Assessments	-	$571,000	$571,000
Required Exploitation Rate Stock Assessments	-	$685,000	$685,000
Fishery Accounting and Compositions	$850,000	$550,000	$1,400,000
Fishery Management	$662,000	$364,000	$1,026,000
Bilateral Committees and Coordination	$633,000	$507,000	$1,140,000
Administrative and IT Support	$424,000	$326,000	$750,000
Subtotal	**$2,569,000**	**$3,003,000**	**$5,572,000**

- Maintaining a coded wire tagging and recapture program to provide statistically reliable data for stock assessments and fishery evaluations. Alaska currently tags four wild and seven hatchery stocks. The recapture program consists of systematic sampling of Chinook salmon in fisheries and on spawning grounds, collection and processing of those samples, and documentation of data.
- Estimation of fishery exploitation rate indices by stock, age, and fishery, based on coded wire tag data. Exploitation rate assessment is performed annually using cohort analysis of coded wire tag release and recovery data.
- Estimation of pre-season catch limits for the Southeast Alaska fishery. Catch per unit of effort from the early winter troll fishery is used to define the pre-season harvest ceiling for the Southeast Alaska Chinook salmon fishery under a knife-edged pay-back policy.
- Annual calibration of the Pacific Salmon Commission Chinook model. The Chinook model is used to calculate abundance indices; these indices are used to define catch limits. Estimates of age- and fishery-specific exploitation and maturation rates from cohort analysis are combined with data on catches, escapements, non-retention, and enhancement in a labor-intensive process.
- Estimation of incidental mortality in all Treaty Chinook salmon fisheries. The total incidental fishing mortality due to prosecution of the Southeast Alaska fishery under the Treaty is limited to recent observed mortalities.
- Annual performance monitoring of the Southeast Alaska fishery. On a post-season basis, the performance of the Southeast Alaska Chinook salmon fishery is assessed by the Commission.

Implementation Needs: Fiscal costs to Alaska for implementation of Chapter 3 is NOT included in Treaty langauge; the current budget shortfall is $3,003,000.

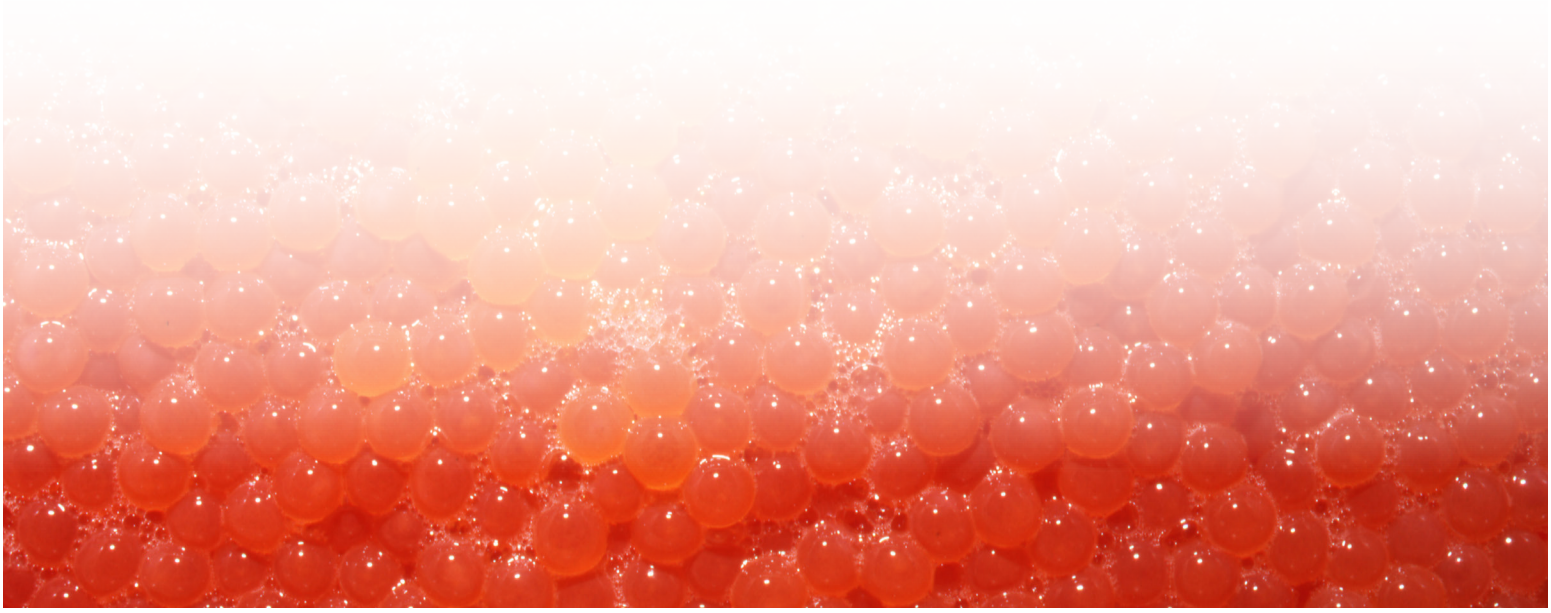


Troller. ©ADF&G. Photo by Rhea Ehresmann.

Sitka harbor. ©Dennis Longstreth. Used with permission.

CONTACT INFORMATION

Charlie Swanton
Alaska Treaty Commissioner
907-321-0955



Salmon eggs. ©ADF&G. Photo by John Hyde.