

RC 17

**ALASKA DEPARTMENT OF FISH & GAME**



**AYAKULIK RIVER KING SALMON**

**ACTION PLAN**

January 11, 2020

# AYAKULIK RIVER KING SALMON STOCK STATUS AND ACTION PLAN, 2020

## INTRODUCTION

### SYNOPSIS

In October of 2019, the department recommended that the board designate Ayakulik River (Figure 1) king salmon as a stock of management concern at the regulatory board meeting for the Kodiak Management Area (KMA) in January of 2020<sup>1</sup>. This recommendation was based on guidelines established in the *Policy for Management of Sustainable Salmon Fisheries* (SSFP; 5 AAC 39.222). The SSFP states that “management concern means a concern arising from a chronic inability, despite use of specific management measures, to maintain escapements for a salmon stock within the bounds of the SEG, BEG, OEG, or other specific management objectives for the fishery...”. Chronic inability is further defined in the SSFP as “...the continuing or anticipated inability to meet escapement thresholds over a four to five-year period...” based on the generation time of most salmon species. Despite specific management measures taken by the department to reduce harvest in the sport, commercial, and subsistence fisheries since 2006 (Table 1; Figure 2 and 3), the Ayakulik River king salmon stock has continued to decline and failed to make the escapement goal for six of the past seven years (Figure 4).

This action plan summarizes historical assessment of annual run size and describes the existing regulations and emergency order (EO) authority that the department follows to manage Ayakulik River king salmon. Options are then presented for potential management actions for the commercial, sport, and subsistence fisheries, and research projects for the Ayakulik River king salmon stock.

### STOCK ASSESSMENT AND ESCAPEMENT GOAL HISTORY

The department has operated a weir to assess salmon escapement to the Ayakulik River since 1970 (Figure 1). The Ayakulik River king salmon escapement has ranged from 851 in 1974 to 24,830 fish in 2004 (Table 1; Figure 4). During the 10 years from 1996–2005, escapements averaged 14,992 king salmon. After 2006, there was a decline in productivity, as measured both by total harvest and escapement. From 2010 through 2019 (the recent 10-year period of reduced production), escapements decreased to an average of 3,245 fish. The decline in escapement was not due to increased harvests (sport, subsistence, and commercial combined), which also declined from an average of 2,810 (1996–2005) to 269 (2010–2019).

For each of the last three years (2017–2019), Ayakulik River king salmon escapement has been below the current biological escapement goal (BEG) of 4,800–8,400 fish (McKinley et al. 2019; Figure 4). During this period, escapements ranged from 1,948 fish in 2019 to 3,712 fish in 2017 (Table 1). This BEG has been in place since 2017, when it replaced the original BEG of 4,000–7,000 fish established in 2002.

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<sup>1</sup>Unpublished memorandum from Sam Rabung and Dave Rutz to Board of Fisheries, October 4, 2019.

## **HABITAT**

The Ayakulik River drainage is located within land managed by Kodiak National Wildlife Refuge. The habitat is considered pristine with no habitat-related concerns identified for Ayakulik River king salmon.

## **HARVEST MANAGEMENT**

Ayakulik River king salmon are harvested by a commercial fishery in saltwater and by intermittent subsistence and sport fisheries in fresh water and in the lagoon. There have been minimal harvests in the sport fishery since 2006 and no harvest since 2014 due to fishery restrictions. The Ayakulik River king salmon sport fishery is characterized by low participation rates in both the guided and unguided fishery to the extent that in most years the Statewide Harvest Survey does not provide estimates of sport harvest or effort and previously available freshwater guide logbook information is confidential with fewer than 4 guide businesses reporting. Based on available information over the last 10 years, an inseason estimate of 20 king salmon is used to approximate the sport harvest above the weir, when harvest is allowed, to estimate escapement postseason.

The department began taking inseason management actions in the sport fishery to conserve Ayakulik River king salmon in 2005 and has used the commissioner's EO authority to implement inseason bag limit restrictions, nonretention regulations, and/or total fishery closures annually from 2005 through 2019 (Figure 3). Preseason actions were implemented from 2007–2009 and 2011–2014 with a reduction in bag limit from two king salmon per day 20 inches or greater in length to one per day 20 inches or greater in length. In 2010, 2015 and 2017–2019, the king salmon fishery was restricted to nonretention preseason and in 2016 the king salmon fishery was closed preseason, though it was reopened on July 6 (Figure 3). Complete fishery closures have occurred in 2006, 2008–2010, 2013, 2014 and 2019.

The Kodiak area commercial seine fishery located in the Inner Ayakulik Section, Outer Ayakulik Section, and after June 22 the Halibut Bay Section, target Ayakulik River sockeye, pink, and coho salmon. During these fisheries, king salmon are harvested incidentally to the sockeye salmon fishery.

Beginning in 1984 the commercial harvest of king salmon in the Ayakulik sections increased well above previous annual commercial harvests (Table 1). These historically high king salmon harvests continued until the 2000s when a reduction in the productivity in the Ayakulik River sockeye salmon run resulted in low escapements of sockeye salmon and thus little-to-no commercial fishing opportunity in the Ayakulik sections (Table 2 and 3; Figure 2). The reported commercial king salmon harvests in the Ayakulik sections during the 1990s averaged 1,477 fish; during the period of low sockeye salmon productivity in the 2000s this harvest was 195 king salmon; and in 2010s when low to moderate fishing opportunity was allowed, due to average to below average sockeye salmon runs, an average of 134 king salmon were harvested per season (Table 3).

In 2011, the Karluk River king salmon run was listed as a stock of management concern, and the board passed a regulation stating that prior to July 30, commercial seine fishermen could not retain king salmon 28 inches or greater in length south of a latitude of Cape Kuliuk, which includes the Inner Ayakulik, Outer Ayakulik, and Halibut Bay sections (Figure 1). In 2014, the board established nonretention in the seine fleet for the entire Kodiak area prior to July 6. Since, 2010, the Ayakulik River sockeye salmon run has seen a slight increase in productivity, and escapement has been adequate to allow sporadic commercial fishing (Table 2). However, due to the multiple

regulations dealing with nonretention of king salmon, between 2010 and 2019, only 243 king salmon were harvested annually, on average, and most were harvested after July 15; these were likely not local fish due to run-timing of the Ayakulik River run occurring primarily in June and early July and because the nonretention regulation limits the harvest to small king salmon which are likely feeder king salmon of nonlocal origin. The mortality on king salmon released from commercial seine vessels in the KMA is unknown and there are no annual estimates of the number of king salmon caught and released in the KMA commercial salmon fishery.

A dual-managed state/federal subsistence fishery also takes place on the Ayakulik system. A state permit is required to participate in both the state and federal subsistence fishery. The estimated mean annual subsistence king salmon harvest from 1995 to 2005, as reported by permit returns, was 16 fish and ranged from a low of 0 fish in several years to 37 fish in 2002 (Table 1). In response to poor king salmon returns, beginning in 2008, the department began restricting the king salmon subsistence fishery in the Ayakulik River drainage. Part of the reason for the department restricting the subsistence fishery was due to federal regulations that allowed qualified users to use rod and reel as a legal subsistence gear type. Prior to Alaska Board of Fisheries action in 2011, federally qualified sport fishing guides could supply their subsistence fish to clients when the sport fishery was restricted to catch-and-release. Between 2013 and 2015, the department restricted the subsistence fishery on the Ayakulik River in response to poor king salmon returns. However, since 2016, there has been little to no subsistence king salmon harvested on the Ayakulik River drainage, and despite poor Ayakulik River king salmon returns, no subsistence restrictions have been made.

Return per spawner of Ayakulik River king salmon are no longer estimated since age composition samples have not been collected since 2010, however Ayakulik River king salmon production and return per spawner have been somewhat cyclical.

## **ACTION PLAN FOR ADDRESSING STOCK OF CONCERN**

### **COMMERCIAL FISHERIES MANAGEMENT ACTIONS**

#### **Past Management Actions**

Although there are no commercial fisheries management plans for king salmon in the KMA, fisheries managers have responded to the recent declines with inseason management actions designed to reduce harvests when king salmon runs were low. In 2005, the board adopted a commercial fishery regulation that directs the department to mandate nonretention of king salmon over 28 inches in the commercial fishery within the Inner and Outer Ayakulik sections if king salmon runs were weak (5 AAC 18.395). In 2011, in response to the board listing the Karluk River king salmon run as a stock of management concern, the board adopted a commercial salmon fishery regulation that directs the department to mandate nonretention of king salmon over 28 inches in the commercial fishery within the Northwest and Southwest Kodiak districts south of a latitude of Cape Kuliuk (Figure 1) through July 30, which includes the Inner and Outer Ayakulik and Halibut Bay sections. In 2014, the board adopted a commercial fishery regulation that directs the department to mandate nonretention of king salmon over 28 inches in the entire KMA through July 5. While the department does not specifically manage the commercial harvest of king salmon, these regulations were put into effect due to low king salmon runs.

5 AAC 18.362(e) *Westside Kodiak Salmon Management Plan* describes the management priorities for managing commercial sockeye salmon fisheries in the Inner and Outer Ayakulik sections. It should be noted that for 6 of the 9 years that the Ayakulik system has not achieved the lower value

of the king salmon BEG, the Inner Ayakulik Section was not open during the king salmon run (Table 2). The department has been successful managing sockeye salmon escapement to the Ayakulik River by opening the Outer Ayakulik Section during moderate to below average sockeye salmon runs (Table 2).

## **Recommended Management Action**

### **Action #1**

Status quo. Maintain regulations as currently specified in 5 AAC 18.362. *Westside Kodiak Salmon Management Plan* and 5 AAC 18.395. The plan regulates commercial seine and setnet fisheries on the westside of the KMA (including the Inner and Outer Ayakulik sections) for sockeye, coho, pink, and chum salmon and 5 AAC 18.395 prohibits retention of king salmon over 28 inches in length taken in commercial fisheries by EO in the Inner and Outer Ayakulik sections.

### **Specific Actions:**

Since 2003, the department has managed the Ayakulik River system commercial sockeye salmon fishery conservatively due to weak to moderate sockeye salmon returns (Table 2). Ninety-seven percent of the Ayakulik River king salmon escapement takes place during the Ayakulik River drainage early-run sockeye salmon run (Table 2). The department targets the mid-point of the Ayakulik River drainage early-run sockeye salmon SEG of 140,000–280,000 fish., The department establishes the majority of the commercial salmon openings in the Outer Ayakulik Section of the Southwest Kodiak District while keeping the Inner Ayakulik Section closed except when added time and area are needed to control sockeye salmon escapement (Table 2; Figure 1). The department considers this a precautionary approach to limit the number of local king salmon caught incidentally when fishermen are targeting sockeye salmon. The Inner Ayakulik Section has not opened during the king salmon run for the past four seasons. The department has been successful managing sockeye salmon escapement to the Ayakulik River by opening the Outer Ayakulik Section during moderate to below average sockeye salmon runs (Table 2).

When king salmon runs to the Ayakulik system are weak, the department would continue to use EO authority to invoke and enforce nonretention of king salmon greater than 28 inches in length in Inner and Outer Ayakulik sections of the Southwest Kodiak District.

### **Background:**

King salmon harvests in the KMA commercial fisheries are incidental. Currently, there are no management plans for the KMA that provide specific direction about king salmon management. However, the department does have EO authority to limit the harvest of king salmon by requiring the release of king salmon over 28 inches in length within the Inner and Outer Ayakulik sections. By regulation, no king salmon over 28 inches can be retained area wide in June in the Northwest and Southwest Kodiak districts south of latitude of Cape Kuliuk. (Figure 4).

### **Benefits:**

The current plan allows the department to effectively manage the sockeye and pink salmon runs to the Ayakulik system while releasing king salmon in years of weak king salmon runs. By targeting the midpoint of the Ayakulik River sockeye salmon SEG range and limiting openings in the Inner Ayakulik Section, the department provides a large buffer area for king salmon.

**Detriments:**

Mortality on king salmon released from commercial purse seines in the KMA is unknown and there is no estimate of the number of king salmon caught and released annually in the KMA fishery. In 1997, the Pacific Salmon Commission Joint Chinook Technical Committee (CTC; 1997) reviewed incidental Chinook Salmon mortality associated with seine fisheries. They determined size specific differences for immediate mortality, and recommended rates of 62.8% for small Chinook, 50.5% for medium Chinook and 28% for large Chinook. The CTC;1997 also reviewed delayed mortality and revised previous estimates of delayed mortality due to seining down to 23% as an average value. The CTC also noted that extremely low values of delayed mortality could be achieved in situations where fish were within 45 to 60 days of spawning (CTC 2004).

**Action #2**

Adopt a regulation that limits the department's ability to open the Inner Ayakulik Section of the Southwest Kodiak District until the department determines that the midpoint of the early-run sockeye salmon SEG range will be achieved.

**Specific Actions:**

Since 2003, the department has managed the Ayakulik system commercial sockeye salmon fishery conservatively due to weak to moderate sockeye salmon returns (Table 2). Ninety-seven percent of the Ayakulik River king salmon escapement takes place during the Ayakulik River drainage early-run sockeye salmon run. The department targets the mid-point of the Ayakulik River drainage early-run sockeye salmon SEG range of 140,000–280,000 fish. The department establishes the majority of the commercial salmon openings in the Outer Ayakulik Section of the Southwest Kodiak District while keeping the Inner Ayakulik Section closed except when added time and area are needed to control sockeye salmon escapement (Table 2; Figure 1). The department considers this a precautionary approach to limit the number of local king salmon caught incidentally when fishermen are targeting sockeye salmon. The Inner Ayakulik Section has not opened during the king salmon run for the past four seasons. The department has been successful managing sockeye salmon escapement to the Ayakulik River by opening the Outer Ayakulik Section during moderate to below average sockeye salmon runs (Table 2).

With an additional regulation limiting commercial seine openings in the Inner Ayakulik Section until the department determines the midpoint of the Ayakulik River drainage early-run sockeye salmon SEG range will be achieved, the Inner Ayakulik Section will be closed more during moderate to strong sockeye salmon runs. Furthermore, when king salmon runs to the Ayakulik system are weak, the department would continue to use emergency order authority to invoke and enforce nonretention of king salmon greater than 28 inches in length in Inner and Outer Ayakulik sections of the Southwest Kodiak District.

**Background:**

Currently there is no regulation that limits the department's ability to control early-run sockeye salmon escapement in the Inner and Outer Ayakulik sections. This has worked successfully in the past two decades to manage for the sockeye salmon SEG range.

King salmon harvests in the KMA commercial fisheries are incidental. Currently, there are no management plans for the KMA that provide specific direction about king salmon management. However, the department does have EO authority to limit the harvest of king salmon by requiring the release of king salmon over 28 inches in length within the Inner and Outer Ayakulik sections. The department has invoked and enforced this provision when it became apparent the king salmon runs were weak (Figure 4).

**Benefits:**

Restricting the commercial seine fishery in the Inner Ayakulik until the midpoint of the early-run sockeye salmon SEG range will provide for a larger closed waters area during moderate to strong sockeye salmon runs and provide protection to Ayakulik River king salmon returning to spawn.

**Detriments:**

Limiting commercial seine openings in the Inner Ayakulik Section will diminish the department's ability to control Ayakulik River early-run sockeye salmon escapement and may require extended fishing time in the Outer Ayakulik and Halibut Bay sections to ensure Ayakulik River early-run sockeye salmon escapement remains within the SEG range. Mortality on king salmon released from commercial purse seines in the KMA is unknown and there is no estimate of the number of king salmon caught and released annually in the KMA fishery. In 1997, the Pacific Salmon Commission Joint Chinook Technical Committee (CTC; 1997) reviewed incidental Chinook Salmon mortality associated with seine fisheries. They determined size specific differences for immediate mortality, and recommended rates of 62.8% for small Chinook, 50.5% for medium Chinook and 28% for large Chinook. The CTC;1997 also reviewed delayed mortality and revised previous estimates of delayed mortality due to seining down to 23% as an average value. The CTC also noted that extremely low values of delayed mortality could be achieved in situations where fish were within 45 to 60 days of spawning (CTC 2004).

**Action #3**

Adopt a regulation that limits the department's ability to open the Inner Ayakulik Section of the Southwest Kodiak District until the department determines that the upper bound of the early-run sockeye salmon SEG range will be achieved.

**Specific Actions:**

Since 2003, the department has managed the Ayakulik system commercial sockeye salmon fishery conservatively due to weak to moderate sockeye salmon returns (Table 2). Ninety-seven percent of the Ayakulik River king salmon escapement takes place during the Ayakulik River drainage early-run sockeye salmon run. The department targets the mid-point of the Ayakulik River drainage early-run sockeye salmon SEG range of 140,000–280,000 fish. The department establishes the majority of the commercial salmon openings in the Outer Ayakulik Section of the Southwest Kodiak District while keeping the Inner Ayakulik Section closed except when added time and area are needed to control sockeye salmon escapement (Table 2; Figure 1). The department considers this a precautionary approach to limit the number of local king salmon caught incidentally when fishermen are targeting sockeye salmon. The Inner Ayakulik Section has not opened during the king salmon run for the past four seasons. The department has been successful managing sockeye salmon escapement to the Ayakulik by opening the Outer Ayakulik Section during moderate to below average sockeye salmon runs (Table 2).

With an additional regulation limiting commercial seine openings in the Inner Ayakulik Section until the department determines the upper bound of the Ayakulik River early-run sockeye salmon SEG range will be achieved, the Inner Ayakulik Section will be closed more during moderate to strong sockeye salmon runs. Furthermore, when king salmon runs to the Ayakulik system are weak, the department would continue to use emergency order authority to invoke and enforce nonretention of king salmon greater than 28 inches in length in Inner and Outer Ayakulik sections of the Southwest Kodiak District.

**Background:**

Currently there is no regulation that limits the department's ability to control early-run sockeye salmon escapement in the Inner and Outer Ayakulik sections. This has worked successfully in the past two decades to manage for the sockeye salmon SEG range.

King salmon harvests in the KMA commercial fisheries are incidental. Currently, there are no management plans for the KMA that provide specific direction about king salmon management. However, the department does have EO authority to limit the harvest of king salmon by requiring the release of king salmon over 28 inches in length within the Inner and Outer Ayakulik sections. The department has invoked and enforced this provision when it became apparent the king salmon runs were weak (Figure 4).

**Benefits:**

Restricting the commercial seine fishery in the Inner Ayakulik until the upper bound of the early-run sockeye salmon SEG range is expected to be achieved will provide for a larger closed waters area to protect Ayakulik River king salmon during moderate to strong sockeye salmon runs.

**Detriments:**

Limiting commercial seine openings in the Inner Ayakulik Section will diminish the department's ability to control early-run sockeye salmon escapement and may require extended fishing time in the Outer Ayakulik and Halibut Bay sections to ensure Ayakulik River early-run sockeye salmon escapement remains within the SEG range. Mortality on king salmon released from commercial purse seines in the KMA is unknown and there is no estimate of the number of king salmon caught and released annually in the KMA fishery. In 1997, the Pacific Salmon Commission Joint Chinook Technical Committee (CTC; 1997) reviewed incidental Chinook Salmon mortality associated with seine fisheries. They determined size specific differences for immediate mortality, and recommended rates of 62.8% for small Chinook, 50.5% for medium Chinook and 28% for large Chinook. The CTC;1997 also reviewed delayed mortality and revised previous estimates of delayed mortality due to seining down to 23% as an average value. The CTC also noted that extremely low values of delayed mortality could be achieved in situations where fish were within 45 to 60 days of spawning (CTC 2004).

**SUBSISTENCE FISHERIES MANAGEMENT ACTIONS**

**Past Management Actions**

In 2005, the board made a positive customary and traditional subsistence use finding for salmon in the entire Kodiak Area. The amount reasonably necessary for subsistence is 26,800-44,700

salmon, all species combined, in the Kodiak Area (5 AAC 01.536). The subsistence fishery was closed by emergency order within the entire drainage in 2008 and 2009 and again in 2013 through 2015. However, despite not achieving the goal in 2017 through 2019, no subsistence restrictions have been made. There are currently no subsistence users that target king salmon in the Ayakulik River drainage, and it is illegal for seine vessels actively fishing in the KMA commercial salmon fishery to take subsistence fish during the Ayakulik River king salmon run as well as for sport fishing guides to supply their clients with subsistence caught king salmon.

## **Potential Management Actions**

### **Action #1**

Status quo. The department is tasked with the management of salmon and uses EO authority to manage subsistence fisheries.

### **Specific Actions:**

When king salmon runs to the Ayakulik system are weak, the department can enforce nonretention of king salmon in the subsistence fishery in the Ayakulik drainage.

### **Background:**

In the past 14 years, there has not been a subsistence harvest of king salmon in the Ayakulik River drainage. Currently, there are no management plans directing the department with regard to king salmon subsistence management. However, the department does have EO authority to limit the harvest of king salmon. In conjunction with federal subsistence fishery managers, the department has enforced nonretention of king salmon in the subsistence fishery when it became apparent the king salmon runs were weak (Figure 4).

### **Benefits:**

Currently, the department does have the ability to apply conservation measures to protect Ayakulik River king salmon in years when runs are weak.

### **Detriments:**

None.

## **SPORT FISHERY MANAGEMENT ACTIONS**

### **Past Management Actions**

The commissioner may, by emergency order, change bag and possession limits and annual limits and alter methods and means in sport fisheries (5 AAC 75.003). These changes may not reduce the allocation of harvest among other user groups. An emergency order may not supersede provisions for increasing or decreasing bag and possession limits or changing methods and means specified in regulatory management plans established by the Alaska Board of Fisheries.

The department began taking inseason management actions to conserve Ayakulik River king salmon in 2005 and has used EO authority to implement inseason bag limit restrictions, nonretention regulations, and/or total fishery closures annually. Preseason actions were implemented beginning in 2007 with a reduction in bag limit from two king salmon per day 20

inches or greater in length to one per day 20 inches or greater in length and in 2010 restricted to nonretention preseason. Since 2015, the king salmon fishery was restricted to nonretention preseason or closed by EO preseason. Total sport fish closures were implemented for all or part of the seasons from 2005–2010, 2013–2014, 2016 and 2019 (Figure 3).

## **Potential Management Actions**

### **Action #1**

Status quo. Preseason or inseason sport fishery closures, as in many recent years, are the most restrictive management actions that can be implemented by the department. The department will continue to use its EO authority to manage the Ayakulik River king salmon stock to achieve the escapement goal and rebuild from the recent period of low productivity.

#### **Specific Action:**

Use EO authority to restrict bag limits or methods and means or close the Ayakulik River king salmon sport fishery, as needed, inseason.

#### **Background:**

Ayakulik River is open to fishing for king salmon January 1–July 25. The king salmon bag and possession limit is two fish, 20 inches or greater in length; 10 fish less than 20 inches in length; and a five fish annual limit for fish 20 inches or greater in length. The department began taking inseason management actions to conserve Ayakulik River king salmon in 2005 and has used EO authority to implement inseason bag limit restrictions, nonretention regulations, and/or total fishery closures annually in all years since in the Ayakulik River drainage (Figure 3).

#### **Benefits:**

The benefits of providing the department the flexibility to manage Ayakulik River king salmon stocks inseason with EO authority are timely and meaningful management actions based on current run strength. The department has, and has used, EO authority to manage the sport fishery to achieve established escapement goals. As the Ayakulik River king salmon run rebuilds, the department would have the ability to return to more liberal bag limits and provide angler opportunity prior to the next board meeting.

#### **Detriments:**

Since inseason actions are based on current data and are implemented in response to the strength or weakness of a run, there is less predictability for anglers on when particular management actions may be used, or which actions may be taken. Most anglers traveling to the Ayakulik River are with a guide service or coming from off island and plan their trips 6–18 months in advance.

### **Action #2**

Adopt a regulation that would create an Ayakulik River king salmon nonretention fishery, as well as restrict the use of bait and treble hooks.

#### **Specific Action:**

Take board action to create new regulations for the Ayakulik River sport fishery.

**Background:**

Ayakulik River is open to fishing for king salmon January 1–July 25. The king salmon bag and possession limit is two fish, 20 inches or greater in length; 10 fish less than 20 inches in length; and a five fish annual limit for fish 20 inches or greater in length. The department began taking inseason management actions to conserve Ayakulik River king salmon in 2005 and has used EO authority to implement inseason bag limit restrictions, nonretention regulations, and/or total fishery closures annually in all years since in the Ayakulik River drainage (Figure 3).

**Benefits:**

Sport fishery restrictions in regulation would provide the most stable situation for anglers, most of whom are traveling to the Ayakulik River with a guide service or travel from off island, nearly all of which plan their trips 6–18 months in advance. Few anglers traveling to the Ayakulik River expect to harvest king salmon, however, a nonretention fishery would provide opportunity for catch-and-release fishing with minimal impact to the run. An existing sockeye salmon sport fishery incidentally catches Ayakulik River king salmon at the present.

**Detriments:**

Restricting the fishery by regulation could limit the department's ability to react to run strength inseason and liberalize the fishery if inseason run strength was better than anticipated and could not be addressed until the next scheduled Kodiak board meeting.

**Action #3**

Adopt a regulation that would close the king salmon sport fishery in the Ayakulik River, as well as prohibit the use of bait and treble hooks in the drainage.

**Specific Action:**

Take board action to create new regulations closing the Ayakulik River king salmon sport fishery and prohibiting the use of bait and treble hooks.

**Background:**

Ayakulik River is open to fishing for king salmon January 1–July 25. The king salmon bag and possession limit is two fish, 20 inches or greater in length; 10 fish less than 20 inches in length; and a five fish annual limit for fish 20 inches or greater in length. The department began taking inseason management actions to conserve Ayakulik River king salmon in 2005 and has used EO authority to implement inseason bag limit restrictions, nonretention regulations, and/or total fishery closures annually in all years since in the Ayakulik River drainage (Figure 3).

**Benefits:**

A fishery closure in regulation would eliminate anglers targeting king salmon in the Ayakulik River and likely reduce catch and mortality of king salmon. An existing sockeye salmon sport fishery incidentally catches Ayakulik River king salmon at the present and would likely continue to do so in the event of a closure of the king salmon sport fishery.

**Detriments:**

Restricting the fishery by regulation would limit the department's ability to provide king salmon sport fishing opportunity if king salmon escapement goals were achieved and there was harvestable surplus and could not be addressed until the next scheduled Kodiak board meeting. It is unknown what reduction of hooking mortality would occur from a complete king salmon fishery closure in the Ayakulik River since sport fishing effort in the drainage is very low and inriver sport fisheries targeting other species such as sockeye salmon would continue to incidentally catch-and-release king salmon.

**Summary of Potential Management Actions:**

<b>Fishery/Action number</b>	<b>Summary</b>	<b>Specific Action</b>
<b>CF/#1</b>	<b>Status quo. Maintain current regulations, including nonretention of commercially-caught king salmon 28 inches or greater.</b>	<b>Continue using current nonretention regulations.</b>
<b>CF/#2</b>	<b>Restrict openings in the Inner Ayakulik Section until the department determines the midpoint of the Ayakulik early-run sockeye salmon run will be achieved.</b>	<b>Board action needed to create regulations.</b>
<b>CF/#3</b>	<b>Restrict openings in the Inner Ayakulik Section until the department determines the upper bound of the Ayakulik early-run sockeye salmon run will be achieved</b>	<b>Board action needed to create regulations.</b>
<b>Sub/#1</b>	<b>Status quo. Maintain current EO management for subsistence harvests.</b>	<b>Continue using EO authority when necessary.</b>
<b>SF/#1</b>	<b>Status quo. Continue to use EO authority to manage the Ayakulik River king salmon stock to achieve the escapement goal and rebuild from the recent period of low productivity.</b>	<b>Use EO authority to restrict the Ayakulik River king salmon sport fishery with additional restrictions or closures, as needed, inseason</b>
<b>SF/#2</b>	<b>Restrict the Ayakulik River sport fishery by creating a nonretention fishery for king salmon and restrict the use of bait and treble hooks.</b>	<b>Board action needed to create regulations.</b>
<b>SF/#3</b>	<b>Close the Ayakulik River king salmon sport fishery by regulation and restrict the use of bait and treble hooks.</b>	<b>Board action needed to create regulations.</b>

**RESEARCH PLAN**

The department currently assesses Ayakulik River king salmon escapement and harvests annually. The following research projects include current and past projects used to gather detailed information about king salmon in the Ayakulik River. Due to current budget constraints, there are no future research projects planned for the Ayakulik River.

**CURRENT MONITORING PROJECTS**

Salmon returning to the Ayakulik River are counted at a weir located 1.3 km (0.8 mi) upstream from Ayakulik Lagoon, operated primarily for sockeye and pink salmon. King salmon return from

late May through early September, with the peak of the run usually from June 15 to June 30 (Fuerst 2018). The weir is operated from late May to late August. All king salmon are counted as they pass upstream of the weir. It is currently anticipated that weir operation will continue in future years.

### **PAST RESEARCH PROJECTS**

In the past king salmon age, sex, and length (ASL) data were collected then used to monitor quality, track productivity, and generate data needed to review and update escapement goals. However, for the past 9 years (since 2011), due to budget constraints, king salmon ASL data have not been collected. It is doubtful ASL data will be collected in the future.

A creel survey of anglers fishing the Ayakulik River during the king salmon run was conducted through 2007 as well, ending prior to much of the decline in the king salmon run and fishing effort. It is unlikely this project will occur in the near future.

A king salmon genetics study was implemented for the KMA from 2014 through 2016. Stock composition data can be found in the *Genetic Stock Composition of the Commercial Harvest of Chinook Salmon in Kodiak Management Area, 2014–2016* (Shedd et al. 2016). In those years, the estimated genetic stock specific harvest of Kodiak area king salmon for the combined Southwest Kodiak and Alitak Districts was 56 fish in 2014, 153 fish in 2015, and 16 fish in 2016 (Shedd et al. 2016).

### **CONDITIONS FOR REDUCING MANAGEMENT RESTRICTIONS OR DELISTING A STOCK OF CONCERN**

1. If the lower bound of the biological escapement goal range is met or exceeded in 3 consecutive years and expecting to meet the goal range in future years, or is met in 4 out of 6 consecutive years and expecting to meet the goal range in future years, the department will recommend removing Ayakulik River king salmon as a stock of management concern at the first Kodiak board meeting after this condition is met.
2. Management measures could be relaxed in specific areas if updated stock composition and harvest data indicates areas where restrictions are no longer needed to ensure the escapement goal is met.
3. In the event that 2 consecutive years of escapements are near the upper bound of the escapement goal range or above the range, management restrictions may be relaxed or set aside using EO authority.

Stock status, action plan performance (including information on harvest rate, distribution, and timing in commercial fisheries), and escapement goal review will be updated in a report to the board at the 2023 Kodiak meeting.

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**Table 1.** –Ayakulik River king salmon harvest, and escapement, 1970–2019.

Run Year	Commercial Harvest <sup>a</sup>	Subsistence Harvest <sup>b</sup>	Sport Harvest <sup>c</sup>	Weir Count <sup>d</sup>	Escapement <sup>e</sup>
1970	21	-	-	1,264	1,264
1971	0	-	-	1,500	1,500
1972	121	-	-	1,644	1,644
1973	49	-	-	1,262	1,262
1974	24	-	-	851	851
1975	0	-	-	1,053	1,053
1976	36	-	-	1,493	1,493
1977	380	-	-	5,163	5,163
1978	671	-	-	4,739	4,739
1979	70	-	-	4,833	4,833
1980	3	-	-	974	974
1981	474	-	-	8,018	8,018
1982	222	-	-	3,230	3,230
1983	662	-	145	15,497	15,352
1984	1,515	-	437	6,499	6,062
1985	3,074	-	76	8,144	8,068
1986	1,868	-	76	6,371	6,295
1987	729	-	126	15,630	15,504
1988	2,562	-	600	21,332	20,732
1989	0	-	390	15,431	15,041
1990	5,680	-	252	11,236	10,984
1991	5,141	-	563	12,983	12,420
1992	5,017	-	776	9,130	8,354
1993	2,739	-	1004	7,806	6,802
1994	29	-	948	9,136	8,188
1995	2,466	4	200	17,692	17,488
1996	3,806	0	419	10,342	9,923
1997	826	0	1190	14,349	13,159
1998	3,960	0	259	14,027	13,768
1999	3,618	26	609	13,492	12,857
2000	3,432	38	805	20,513	19,670

-continued-

Run Year	Commercial Harvest <sup>a</sup>	Subsistence Harvest <sup>b</sup>	Sport Harvest <sup>c</sup>	Weir Count <sup>d</sup>	Escapement <sup>e</sup>
2001	6,731	14	568	13,928	13,346
2002	71 <sup>f</sup>	37	362	12,552	12,153
2003	0 <sup>f</sup>	7	344	17,550	17,199
2004	160	16	304	24,830	24,510
2005	2 <sup>f</sup>	8	489	8,337	7,840
2006	4 <sup>f</sup>	0	169 <sup>i</sup>	3,106	2,937 <sup>j</sup>
2007	15 <sup>f</sup>	0	303 <sup>i</sup>	6,534	6,231
2008	5 <sup>f</sup>	0 <sup>h</sup>	0 <sup>i</sup>	3,061	3,061
2009	5 <sup>f</sup>	0 <sup>h</sup>	0 <sup>i</sup>	2,615	2,615 <sup>j</sup>
2010	228	0	104 <sup>i</sup>	5,301	5,197
2011	210 <sup>g</sup>	0	65	4,311	4,246
2012	165 <sup>g</sup>	0	23	4,760	4,737
2013	692 <sup>g</sup>	0 <sup>h</sup>	18 <sup>i</sup>	2,363	2,345 <sup>j</sup>
2014	81 <sup>g</sup>	0 <sup>h</sup>	0 <sup>i</sup>	917	917 <sup>j</sup>
2015	485 <sup>g</sup>	0 <sup>h</sup>	0 <sup>i</sup>	2,392	2,392 <sup>j</sup>
2016	177 <sup>f g</sup>	0	20 <sup>i</sup>	4,594	4,574
2017	144 <sup>g</sup>	0	0 <sup>i</sup>	3,712	3,712 <sup>j</sup>
2018	207 <sup>g</sup>	0	0 <sup>i</sup>	2,149	2,149 <sup>j</sup>
2019	71 <sup>f g</sup>	0	0 <sup>i</sup>	1,948	1,948 <sup>j</sup>
2010–2019 AVG	246	0	23	3,245	4,689
2015–2019 AVG	217	0	4	2,959	4,574

<sup>-</sup> No Data.

<sup>a</sup> Source: ADF&G, Statewide Harvest Receipt (fish ticket) database. Commercial harvest is the harvest of king salmon from Inner and Outer Ayakulik statistical areas (256-10; 256-15; 256-20).

<sup>b</sup> Based on subsistence harvest records maintained by the Westward Region of ADF&G's Division of Commercial Fisheries; includes all reported harvest in the Red River Section. Database began in 1995.

<sup>c</sup> Sport harvest is from the Statewide Harvest Survey through 2013 and from 2014 to present a proxy of 20 fish is used based on available information due to a lack of formal harvest estimates.

<sup>d</sup> Source: ADF&G, Division of Commercial Fisheries Kodiak weir count database.

<sup>e</sup> Escapement is the weir count minus the sport and subsistence harvest.

<sup>f</sup> Commercial seine fishery closed for most of the king salmon run due to poor Ayakulik sockeye salmon run.

<sup>g</sup> Non-retention regulation enforced in the commercial seine fishery in the Inner and Outer Ayakulik sections.

<sup>h</sup> Year subsistence fishery was closed for part or all the season.

<sup>i</sup> Year sport fishery was made nonretention or closed for part or all the season.

<sup>j</sup> Year the Ayakulik River did not achieve the minimum king salmon escapement value.

Table 2.—Commercial salmon openings in the Inner and Outer Ayakulik sections for the past 23 years during the king salmon run.

Date	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	10-Year Avg King Escapement
5-Jan																							5%
6-Jan																							6%
7-Jan																							7%
8-Jan																							8%
9-Jan	open			open	open																		10%
10-Jan	open			open	open																		11%
11-Jan				open	open																		13%
12-Jan				open	open																		15%
13-Jan				open	open																		18%
14-Jan				open	open																		21%
15-Jan				open	open																		23%
16-Jan				open	open																		26%
17-Jan				open	open																		30%
18-Jan				open	open																		34%
19-Jan				open	open																		38%
20-Jan				open	open																		41%
21-Jan				open	open																		44%
22-Jan				open	open																		47%
23-Jan				open	open																		51%
24-Jan				open	open																		54%
25-Jan				open	open																		57%
26-Jan				open	open																		61%
27-Jan				open	open																		66%
28-Jan				open	open																		70%
29-Jan				open	open																		74%
30-Jan				open	open																		77%
1-Jul				open	open																		79%
2-Jul				open	open																		82%
3-Jul				open	open																		85%
4-Jul				open	open																		87%
5-Jul				open	open																		89%
6-Jul				open	open																		90%
7-Jul				open	open																		91%
8-Jul				open	open																		92%
9-Jul				open	open																		93%
10-Jul				open	open																		94%
11-Jul				open	open																		95%
12-Jul				open	open																		96%
13-Jul				open	open																		96%
14-Jul				open	open																		97%
15-Jul				open	open																		97%

Open Outer Ayakulik Open  
Inner Ayakulik Open

**Table 3.—Commercial harvests of king and sockeye salmon in proximity to the Ayakulik River and Ayakulik River sockeye salmon escapements prior to July 16.**

Year	Permits	Landings	Number of kings harvested <sup>a</sup>	Number of sockeye harvested <sup>b</sup>	Ayakulik River sockeye escapement prior to July 16
1990	254	2,760	5,416	1,213,308	196,695
1991	248	1,935	4,907	863,988	321,985
1992	277	2,085	5,283	946,852	219,723
1993	202	1,206	3,315	580,995	195,701
1994	0	0	0	0	241,811
1995	168	1,143	2,636	558,184	198,864
1996	188	1,452	3,763	977,037	213,229
1997	140	818	1,251	286,870	206,346
1998	154	1,750	4,276	1,050,515	313,739
1999	175	1,621	4,189	755,753	204,552
2000	143	693	3,606	289,871	174,297
2001	122	957	7,093	436,644	177,822
2002	12	16	71	4,313	194,187
2003	0	0	0	0	162,708
2004	59	286	368	254,288	245,123
2005	0	0	0	0	139,246
2006	0	0	0	0	59,315
2007	0	0	0	0	169,596
2008	0	0	0	0	96,912
2009	0	0	0	0	200,648
2010	38	74	65	91,916	201,933
2011	41	53	84	28,789	177,480
2012	46	86	133	111,354	213,501
2013	39	96	847	69,184	214,969
2014	87	331	188	258,055	210,040
2015	90	476	608	452,862	218,178
2016	21	26	93	48,619	182,589
2017	42	79	179	39,696	204,497
2018	34	87	207	94,045	189,008
2019	16	28	23	78,644	162,430
<b>Decade Average</b>					
1990 – 1999	181	1,477	3,504	723,350	231,265
2000 – 2009	34	195	1,114	98,512	161,985
2010 – 2019	45	134	243	127,316	197,463

<sup>a</sup> Includes harvest from Inner and Outer Ayakulik Sections (256-10, 256-15, 256-20) June 1-July 15.

<sup>b</sup> Includes harvest from Inner and Outer Ayakulik Sections (256-10, 256-15, 256-20) June 1-July 15 and the Halibut Bay Section (256-25, 256-30) June 22-July 15.

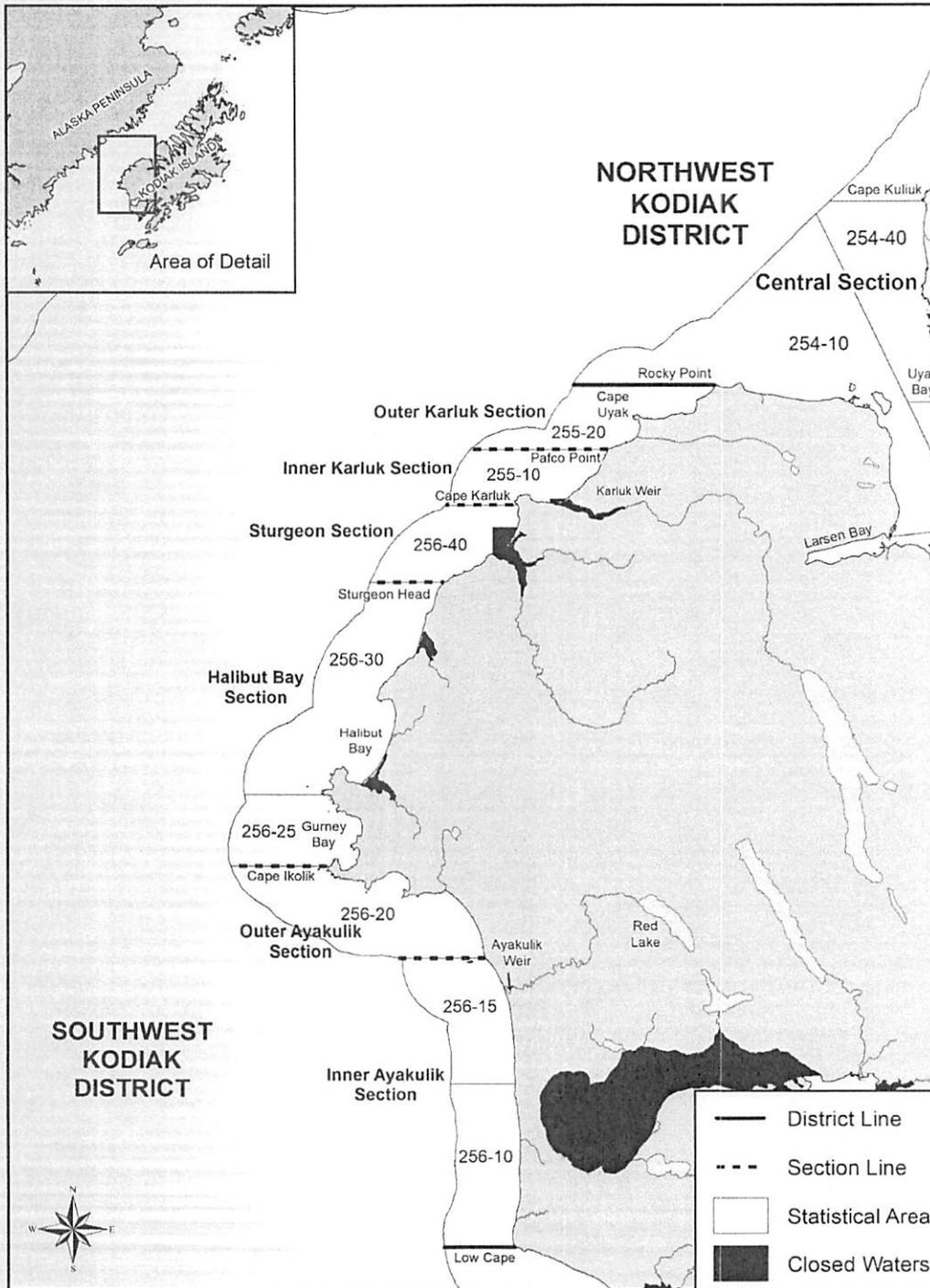
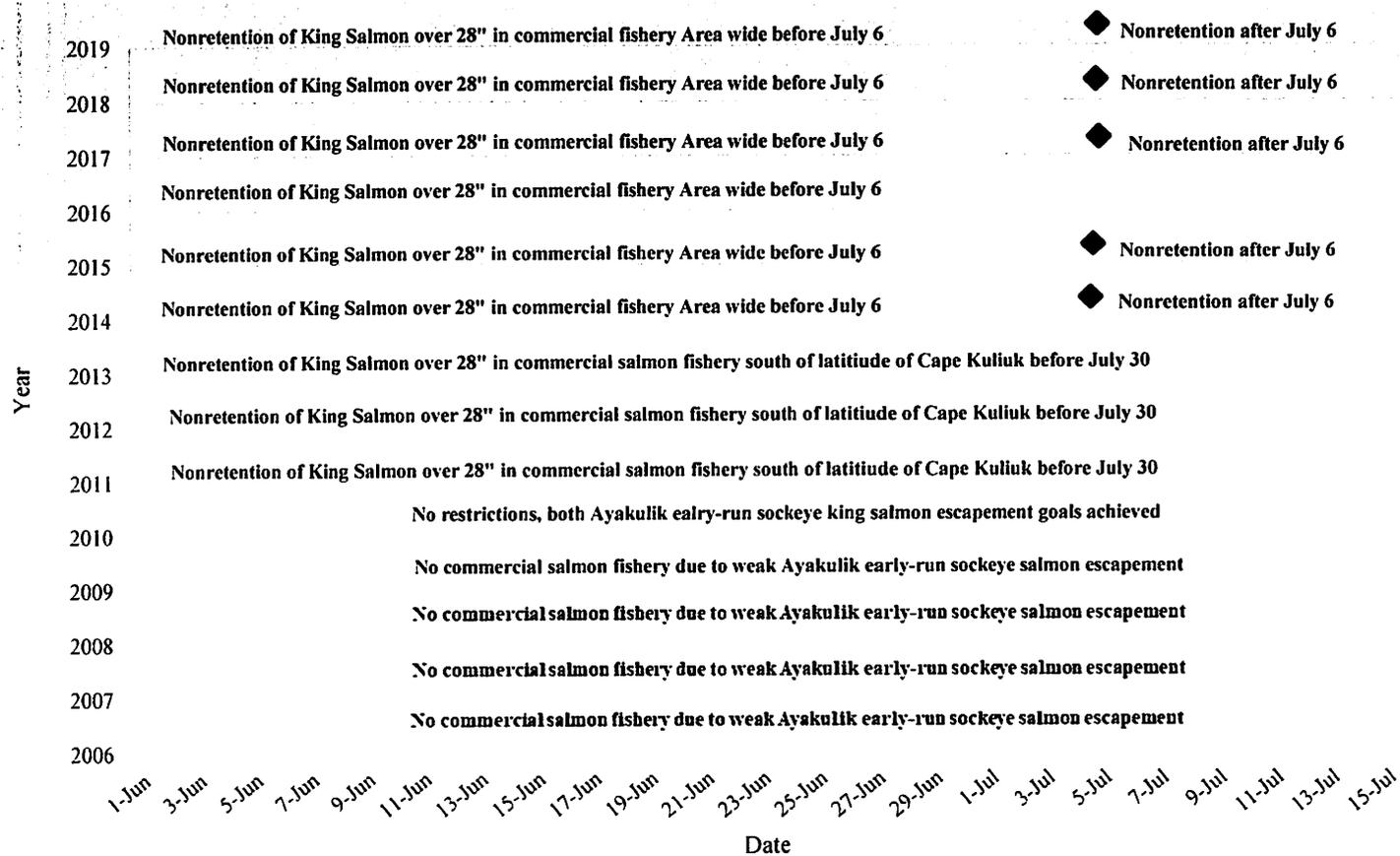


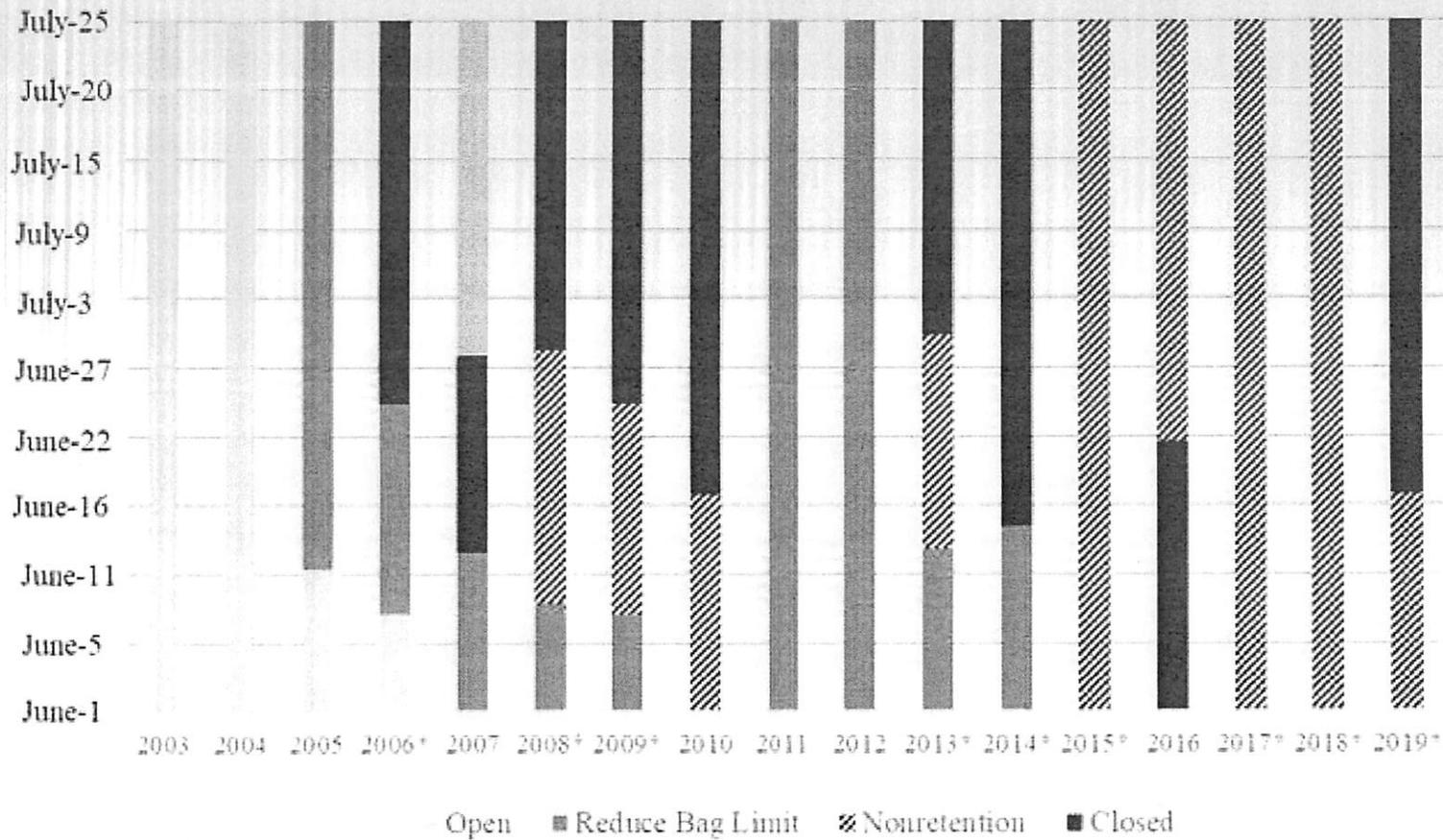
Figure 1.—Map of the Ayakulik River watershed and commercial fishery sections.

## Commercial Fishery Management Actions



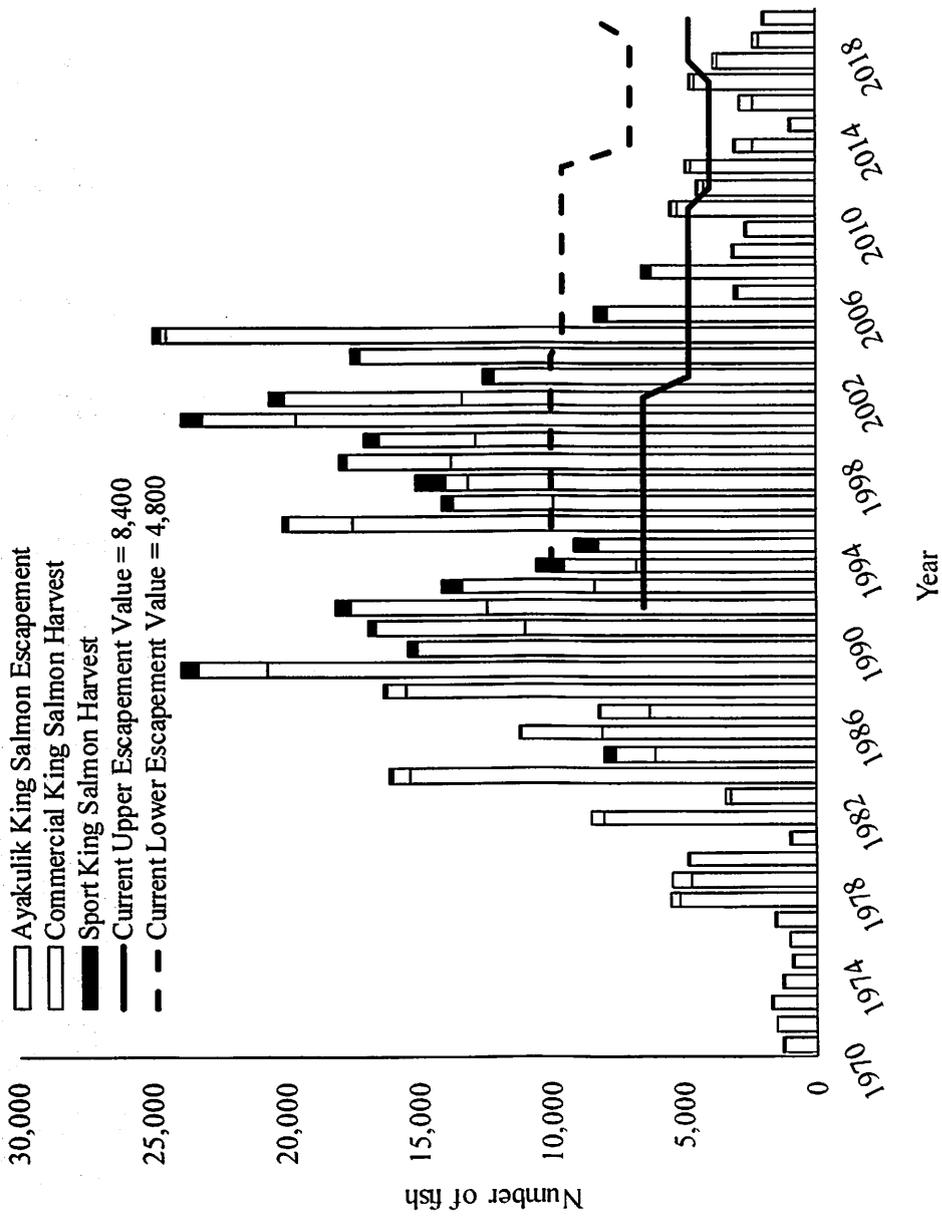
**Figure 2.** –Ayakulik River king salmon commercial fishery management actions, 2006–2019.

### Ayakulik River King Salmon Sport Fishery Management Actions, 2003-2019



Note: Years with asterisk indicate escapement goal was not achieved.

Figure 3.—Ayakulik River king salmon sport fishery management actions, 2002–2019.



**Figure 4.**—Sport and commercial harvest and escapement of Ayakulik River king salmon, 1970 –2019. Note: Subsistence harvest is too small to be seen at this scale.