

ALASKA DEPARTMENT OF FISH & GAME



SUSITNA SOCKEYE SALMON ACTION PLAN

February 8, 2008

SUSITNA RIVER SOCKEYE SALMON STOCK STATUS AND ACTION PLAN, 2008

INTRODUCTION

SYNOPSIS

In response to the guidelines established in the Sustainable Salmon Fisheries Policy (SSFP; 5 AAC 39.222), the Board of Fisheries has identified the Susitna River sockeye salmon stock as a stock of yield concern. For this determination, the estimated Susitna River commercial harvest for the most recent 5-year average was compared to the previous 10- and 20-year averages for the Central District drift and Northern District fisheries. Identification of Susitna River sockeye salmon as a stock of yield concern is based on the definition of “yield concern” contained in SSFP. A “yield concern” is defined as “a concern arising from a chronic inability, despite the use of specific management measures, to maintain expected yields, or harvestable surpluses, above a stock’s escapement needs; a yield concern is less severe than a management concern, which is less severe than a conservation concern” [5 AAC 39.222 (f) (42)]. The policy defines “chronic inability” as “the continuing or anticipated inability to meet escapement thresholds over a four to five year period, which is approximately the generation time of most salmon species” [5 AAC 39.222 (f) (5)].

This report describes the existing management plans and Emergency Order authority that the department follows to conserve Susitna River sockeye salmon. In addition to the existing management plans, options have been presented regarding management of the Northern District set gillnet fishery and Susitna River sport fishery. In light of increased uncertainty of the department’s ability to accurately assess escapements of sockeye salmon into the Susitna River, a research plan has been developed to improve the department’s ability to assess sockeye salmon stocks within the drainage. With these ongoing studies, the department will have better information on the productivity and sustainability of the stock at the 2011 Upper Cook Inlet Board of Fisheries meeting.

STOCK ASSESSMENT

Since 1981 the Yentna River daily sonar estimates have been used as an indicator of sockeye salmon escapement into the Susitna River drainage. The sockeye salmon escapement in the Yentna River has been thought to be approximately one half of the total Susitna River sockeye salmon escapement based on a combination of 1981–1985 capture-recapture abundance estimates passing Sunshine (1982-1985; Susitna River rkm 116), and sonar abundance estimates passing Yentna (1981-1985; Yentna River rkm 7) and Susitna Station (1981; Susitna River rkm 116; Westerman and Willette 2006).

Based on Bendix sonar estimates since 1981, the number of Yentna River spawners has ranged from approximately 37,000 to 181,000 sockeye salmon. The sonar estimate of sockeye salmon escapement into the Yentna River has not met the current SEG range of 90,000 to 160,000 for 5 of the past 8 years.

Although sockeye salmon escapements are estimated via a Bendix sonar system, there is great uncertainty surrounding their accuracy and precision. The high variability observed between

various methods of escapement assessment (i.e., ongoing Bendix estimates compared with recent estimates from capture-recapture and DIDSON sonar projects; Yanusz et al. 2007) has added to the uncertainty regarding our previous assessments.

In the Central District drift gillnet fishery, the estimated commercial harvest of Susitna River sockeye salmon for the most recent 5-year average (2003–2007) is 59% of the previous 10-year (1993–2002) average and 49% of the previous 20-year (1983–2002) average. In the Northern District, the most recent 5-year average is 31% of the previous 10-year average and 22% of the previous 20-year average. Since the total Upper Cook Inlet (UCI) commercial harvest averages 2.9 million sockeye salmon and the age composition allocation model estimate of the Susitna sockeye salmon harvest is only 8.4% of the total, the department has low confidence in the accuracy of our estimate of the Susitna sockeye salmon harvest.

ESCAPEMENT GOAL HISTORY

An escapement goal of 200,000 sockeye salmon was established for the Susitna River in 1979. It was set using a return-per-spawner value of 4, and an assumption that the Susitna River could produce about 800,000 adult sockeye salmon. A review of the goal in 1989 based on euphotic volume of rearing lakes suggested the existing goal was valid. In 1986, the sonar site at Susitna Station was destroyed by a flood, and no alternative hydroacoustic site could be found on the mainstem of the Susitna. Therefore, hydroacoustic estimates from a Yentna River site were used to assess total Susitna River escapement. Based on comparisons of estimates for the Yentna and the Susitna Rivers over 5 years, 1981-1985, it was decided that an escapement of 100,000 to 150,000 sockeye salmon into the Yentna River should result in a total escapement of at least 200,000 sockeye salmon into the entire Susitna drainage (Fried 1994). This was based on the average proportion of the total Susitna River escapement, which entered the Yentna River (49%) during the 5 years studied, as well as the range of annual proportions (41-59%) for these 5 years.

In 2001, the biological escapement goal for the Yentna River was changed to a sustainable escapement goal of 90,000-160,000 sockeye salmon based on Yentna sonar data from 1981-2000, because reliable estimates of total return to the system were not available (Bue and Hasbrouck *Unpublished*). Escapement goal reviews since 2001 have resulted in no change recommended to this goal type or range (Hasbrouck and Edmundson 2007, Fair et al. 2007). In 2005, an optimal escapement goal of 75,000-180,000 Yentna River sockeye salmon was adopted by the Alaska Board of Fisheries contingent on the sockeye salmon run to the Kenai River being projected to exceed 4 million.

ACTION PLAN FOR ADDRESSING STOCK OF CONCERN

MANAGEMENT ACTIONS

Commercial Fisheries

There are currently no actions in the Central District Upper Subdistrict (Eastside) set gillnet fishery for the conservation of northern bound salmon stocks. However, in the Northern District set gillnet fishery, the department's primary tools to reduce exploitation on Susitna stocks is to reduce gear from three nets to two or one from July 20 through July 31, or to close the commercial fishery. In practice, the department has done both concurrently, but most commonly the fishery has been closed. For example, from 2005 through 2007, the department closed the

entire Northern District 17 times. In the Central District drift gillnet fishery two regular drift gillnet fishing periods between July 9-15 are restricted to Area 1 (Figure 1) to conserve Susitna sockeye salmon stocks. Furthermore, from July 16-31 the drift gillnet fishery is to be restricted for two regular fishing periods to drift Area 1 when Kenai River sockeye salmon runs are less than two million fish, or drift Area 1 & 2 (Figure 1) when Kenai runs are between two and four million sockeye salmon. These restrictions are for both sockeye and coho salmon conservation. The department will continue to conserve Susitna River sockeye salmon through prescribed management plans and the use of Emergency Order authority.

CURRENT ACTIONS IN NORTHERN DISTRICT SALMON PLAN FOR SALMON CONSERVATION

5 AAC 21.358 **Northern District Salmon Management Plan** (a) The purposes of this management plan are to minimize the harvest of coho salmon bound for the Northern District of upper Cook Inlet and to provide the department direction for management of salmon stocks. The department shall manage the chum, pink, and sockeye salmon stocks primarily for commercial uses to provide commercial fisherman with an economic yield from the harvest of these salmon resources based on abundance. The department shall also manage the chum, pink, and sockeye salmon stocks to minimize the harvest of Northern District coho salmon, to provide sport and guided sport fisherman a reasonable opportunity to harvest these salmon resources over the entire run, as measured by the frequency of inriver restrictions, or as specified in this section and other regulations.

(b) The department shall manage the Northern District commercial salmon fisheries based on the abundance of Yentna River sockeye salmon, the Yentna River escapement goal, or other salmon abundance indices as it deems appropriate. Achievement of the lower end of the Yentna River optimal escapement goal shall take priority over not exceeding the upper end of the Kenai River escapement goal. When the sockeye salmon returns to the Kenai River are four million or greater, the optimal escapement goal is 75,000 to 180,000 sockeye salmon in the Yentna River.

(c) From July 20 through July 31, if the department's assessment of abundance indicates that restrictions are necessary to achieve the escapement goal, the commissioner may, by emergency order, close the commercial set gillnet fishery in the Northern District and immediately reopen the season during which the number of set gillnets that may be used is limited to the following options selected at the discretion of the commissioner:

- (1) three set gillnets that are not more than 105 fathoms in aggregate length;**
- (2) two set gillnets that are not more than 70 fathoms in aggregate length;**
- (3) one set gillnet that is not more than 35 fathoms in length.**

(d) In addition to the provisions specified in (b) and (c) of this section, the department shall manage the Northern District commercial salmon fisheries to minimize the incidental take of coho salmon stocks bound for the Northern District in the following manner:

- (1) additional fishing periods, other than the weekly fishing periods described in 5 AAC [21.320\(a\)](#) (1), may not be provided when coho salmon are expected to be the most abundant species harvested during that period; additional fishing periods may not be provided based on the abundance of Northern District coho salmon;
- (2) after August 15, the department shall limit the harvest of coho salmon in the Northern

District by limiting commercial fishing time to the weekly fishing periods described in 5 AAC [21.320\(a\)](#) (1).

Potential Modifications to 5 AAC 21.358 Northern District Salmon Management Plan

(c) In light of recent department data revealing concerns about the validity of Yentna River sockeye salmon enumeration data, it is the intent of the Board that Susitna River sockeye salmon stocks will be conservatively managed while the Department continues its studies in this drainage. Until the UCI BOF finfish meeting in 2011, Susitna River sockeye salmon will be managed as follows:

(1) From the beginning of the regular commercial salmon fishing season, which occurs on or after June 25, through July 19, the Northern District set gillnet fishery will fish no more than two regular 12-hour Monday and Thursday fishing periods per week.

(2) From July 20 through August 7, the Northern District set gillnet fishery will fish regular 12-hour Monday and Thursday fishing periods, but will be limited to no more than one 35-fathom set gillnet per permit. If it is determined by the Department that the Yentna River sockeye salmon [SEG or OEG] will be achieved during this time frame, the Department may increase the allowable fishing gear from one 35-fathom set gillnet per permit to two 35-fathom set gillnets per permit or the full complement of three set gillnets that are not more than 105 fathoms in aggregate length per permit.

(3) On the first regular fishing period after August 7, and thereafter, the Northern District set gillnet fishery will again return to a full complement of fishing gear of three set gillnets that are not more than 105 fathoms in aggregate length per permit, unless restricted or closed by emergency order.

(4) The Central District drift gillnet fishery will be managed to conserve Susitna drainage sockeye salmon as follows:

(i) The Department will implement all of the provisions of 5AAC 21.353 Central District Drift Gillnet Fishery management plan.

CURRENT ACTIONS IN DRIFT GILLNET PLAN FOR SALMON CONSERVATION

For the Central District drift gillnet fishery, there are two types of possible restrictions currently in place designed to conserve northern bound stocks. First, beginning July 9 the department must restrict the drift gillnet fishing fleet to Area 1 (Figure 1) of the Central District (section A below), which is that area south of the south end of Kalgin Island, and to the Kenai and Kasilof Sections (the corridor). Prior to 2005, restrictions were made to the drift fleet for one period to the Kenai and Kasilof Sections during this time frame, and for one inlet-wide period. In 2005 the BOF also provided the department with an option of an additional period in Area 1 during this time, if the Kenai River sockeye salmon run was greater than 2 million. This option has never been used.

Secondly, restrictions to the drift fleet for the conservation of Susitna stocks can occur from July 16-31 (section B below). For Kenai River sockeye salmon runs less than 2 million, the department must restrict the drift fleet to Area 1 (and the Kenai and Kasilof Sections); for runs of 2 million to 4 million, the drift fleet is restricted to Area 1 and Area 2 (and the Kenai and Kasilof Sections); and for runs greater than 4 million there are no mandatory restrictions. These restrictions apply to any two regular periods during this time frame. The purpose of the July 9-15 restrictions are to allow for the passage of northern-bound sockeye salmon, while the July 16-31 restrictions are primarily for northern-bound sockeye and coho salmon.

5 AAC 21.353. Central District Drift Gillnet Fishery Management Plan

(a) The department shall manage the Central District commercial drift gillnet fishery as follows:

(1) weekly fishing periods are as described in 5 AAC [21.320\(b\)](#) ;

(2) the fishing season will open the third Monday in June or June 19, whichever is later, and

(A) from July 9 through July 15,

(i) fishing during the two regular fishing periods is restricted to the Kenai and Kasilof Sections and Drift Gillnet Area 1;

(ii) at run strengths greater than 2,000,000 sockeye salmon to the Kenai River, the commissioner may, by emergency order, open one additional 12-hour fishing period in the Kenai and Kasilof Sections of the Upper Subdistrict and Drift Gillnet Area 1;

(B) from July 16 through July 31

(i) at run strengths of less than 2,000,000 sockeye salmon to the Kenai River, fishing during the two regular 12-hour fishing periods is restricted to the Kenai and Kasilof Sections of the Upper Subdistrict and Drift Gillnet Area 1;

(ii) at run strengths of 2,000,000 to 4,000,000 sockeye salmon to the Kenai River, fishing during the two regular 12-hour fishing periods is restricted to the Kenai and Kasilof Sections of the Upper Subdistrict and Drift Gillnet Areas 1 and 2;

(iii) at run strengths greater than 4,000,000 sockeye salmon to the Kenai River, there will be no mandatory restrictions during regular fishing periods;

(C) from August 11 until closed by emergency order,

(i) Drift Gillnet Areas 3 and 4 are open for fishing during regular fishing periods;

(ii) through the 2007 fishing season, Chinitna Bay may be opened by emergency order.

(b) For the purposes of this section,

(1) "Drift Gillnet Area 1" means those waters of the Central District south of Kalgin Island at 60° 20.43' N. lat.;

(2) "Drift Gillnet Area 2" means those waters of the Central District enclosed by a line from 60° 20.43' N. lat., 151° 54.83' W. long. to a point at 60° 41.08' N. lat., 151° 39.00' W. long. to a point at 60° 41.08' N. lat., 151° 24.00' W. long. to a point at 60° 27.10' N. lat., 151° 25.70' W. long. to a point at 60° 20.43' N. lat., 151° 28.55' W. long.;

(3) "Drift Gillnet Area 3" means those waters of the Central District within one mile of mean lower low water (zero tide) south of a point on the West Foreland at 60° 42.70' N. lat., 151° 42.30' W. long.;

(4) "Drift Gillnet Area 4" means those waters of the Central District enclosed by a line from 60° 04.70' N. lat., 152° 34.74' W. long. to the Kalgin Buoy at 60° 04.70' N. lat., 152° 09.90' W. long. to a point at 59° 46.15' N. lat., 152° 18.62' W. long. to a point on the western shore at 59° 46.15' N. lat., 153° 00.20' W. long., not including the waters of the Chinitna Bay Subdistrict.

Sport Fisheries

5 AAC 75.003. Emergency order authority

The commissioner may, by emergency order, change bag and possession limits and annual limits and alter methods and means in sport fisheries. These changes may not reduce the allocation of harvest among other user groups. An emergency order may not supersede bag and possession limits or methods and means established in regulatory management plans established by the Board of Fisheries. The commissioner will use emergency order authority to manage sport fishing opportunity in the following circumstances:

(1) The commissioner or an authorized designee may decrease sport fish bag and possession limits and annual limits and restrict methods and means of harvest by emergency order when

(A) the total escapement of a species of anadromous fish is projected to be less than the escapement goal for that species listed in management plans that have been adopted by the Board of Fisheries or established by the department; or

(B) the recreational harvest must be curtailed in any fishery for conservation reasons; the department may issue a "catch and release only" emergency order when the estimated hooking mortality is not projected to reduce the population of fish below the number required for spawning escapement or, in the case of resident species, below the level required for maintenance of the desired age and size distribution of the population; "catch and release" as a tool to address conservation under this section shall be labeled "conservation catch and release" to differentiate from catch and release regulations adopted by the Board of Fisheries for special management to create diversity in sport fisheries.

(2) The commissioner or an authorized designee may increase sport fish bag and possession limits and annual limits and liberalize methods and means of harvest by emergency order when

(A) the total escapement of a species of anadromous fish is projected to exceed the escapement goal for that species listed in management plans that have been adopted by the Board of Fisheries or established by the department, if the total harvest under the increased bag and possession limit will not reduce the escapement below the escapement goal; or

(B) hatchery-produced fish escape through existing fisheries to designated harvest areas in numbers that exceed broodstock needs, any natural spawning requirements, or cost recovery goals of private nonprofit hatcheries; the intent of this subparagraph is to allow harvest when there are no other competing user groups.

(3) For purposes of data collection to improve harvest or stock assessment, or for purposes of enforcement of bag and size limits, the commissioner or an authorized designee may establish, by emergency order, times and areas when anglers may not fillet, mutilate, or otherwise disfigure a specific species of fish in a manner that would prevent species identification, examination of the adipose fin of salmonids, recovery of tags, or determination of the number, sex, age, or length of fish taken until the fish are brought to shore and offloaded from a vessel or removed from a shoreline fishing site. The commissioner or an authorized designee may also require in the emergency order that certain parts of a fish remain attached for the purpose of species identification or data collection. However, during these periods, an angler may gill and gut a fish before the fish is brought to shore and offloaded from a vessel or removed from a shoreline fishing site. This section does not prohibit the consumption or preservation of fish aboard a vessel. For the purposes of this section, "shoreline fishing site" means the shoreline where the fish is hooked and removed from the water and becomes part of the angler's bag limit.

Potential Modification to Sport Fishery in Susitna River drainage

(5) The sockeye salmon sport fishery in the Susitna River drainage will be prosecuted with a bag limit of 3 fish. If the Northern District set gillnet fishery is closed to conserve sockeye salmon, the Susitna River drainage sport fisheries will remain open unless the board directs otherwise. The Susitna River sport harvest is not used to determine spawning escapement or in the development of escapement goals.

RESEARCH PLAN

The department currently assesses Yentna River sockeye salmon escapement and commercial and sport harvests annually. The following research projects include current and proposed projects used to gather detailed information about sockeye salmon stocks in the Susitna River.

CURRENT SUSITNA RIVER DRAINAGE SOCKEYE SALMON RESEARCH PROJECTS

YENTNA RIVER SALMON ESCAPEMENT

Objectives: The primary objectives of this project are to estimate (1) the daily and cumulative escapement of sockeye salmon into the Yentna River, and (2) the age, length, and sex composition of those escapements.

Description: Fish passage into the Yentna River is estimated using side-looking (formerly referred to as side-scanning) Bendix sonar. Fish caught and sampled at companion fish wheels are used to apportion sonar counts to estimate species composition of fish passage (i.e., estimate abundance of sockeye salmon) and the age, length, and sex composition of the inriver sockeye salmon run.

COMPARING BENDIX AND DIDSON SONAR PASSAGE ESTIMATES IN THE YENTNA RIVER

Objective: The primary objective of this project is to compare the Bendix sonar estimates of migrating salmon in the Yentna River with estimates from a Dual frequency IDentification SONar (DIDSON).

Description: A DIDSON sonar is placed on both banks of the Yentna River to collect fish passage data independent of the existing Bendix sonar. Both types of sonar equipment are operated at the same time and ensonify the same/similar area of the river so that the passage data is directly comparable.

INRIVER ABUNDANCE AND SPAWNER DISTRIBUTION OF SUSITNA RIVER SOCKEYE SALMON

Objectives: The primary objectives of this study are to (1) estimate the inriver abundance of adult sockeye salmon migrating into the Susitna River with a capture-recapture experiment, and (2) identify sockeye salmon spawning areas in the Susitna River.

Description: In 2006-2008, a capture-recapture experiment is conducted to estimate sockeye salmon abundance in the entire Susitna River. Radio telemetry is used to estimate the spawning distribution throughout the watershed.

EVALUATION OF SOCKEYE SALMON PRODUCTION FROM LAKES IN THE SUSITNA RIVER WATERSHED

Objectives: The primary objectives of this study are to (1) evaluate limnological conditions in seven lakes considered important (major) to sockeye salmon production and compare current conditions to those observed in the 1980s and 1990s, (2) estimate the abundance and mean body size of juvenile sockeye salmon and other juvenile fishes rearing in each lake in the fall, (3) estimate the age composition of the juvenile sockeye salmon in each lake, and (4) evaluate the survival from potential egg deposition to fall fry and from fall fry to smolt.

Description: Estimates of smolt and fall fry abundance, and limnological characteristics such as water chemistry and zooplankton abundance by species are collected (Chelatna, Shell, Byers, Swan, Larson, Stephan, and Judd lakes). Analyses focus on determining carrying capacity of the lakes for sockeye salmon fry and assessing the adequacy of spawning escapements over time.

BIOLOGICAL COMPOSITION OF COMMERCIAL SOCKEYE SALMON HARVEST IN UPPER COOK INLET

Objective: The primary objective of this project is to estimate the age and sex composition of the commercial salmon harvest.

Description: Sockeye salmon harvested in various commercial fisheries in UCI are sampled using a stratified systematic sampling design. Area strata are determined *a priori* using established fishery districts and subdistricts. Temporal stratification is determined post season based on catch patterns in each fishery and the number of samples collected.

STOCK COMPOSITION OF THE UPPER COOK INLET SOCKEYE SALMON COMMERCIAL HARVEST

Objectives: The primary objectives of this study are to (1) estimate the stock composition of sockeye salmon harvested in major commercial fisheries in spatial/time strata, and (2) compare

stock composition among substrata (i.e., fish processors for the drift gillnet fishery and beaches within each management subdistrict for the set gillnet fishery).

Description: This project uses new single nucleotide polymorphism (SNPs) genetic stock identification (GSI) methods to estimate stock-specific composition of the commercial harvest in UCI.

PROPOSED SUSITNA RIVER DRAINAGE SOCKEYE SALMON RESEARCH PROJECTS

A recent review of Division of Commercial Fisheries and Sport Fish Division programs in the Susitna River drainage identified the need for improved escapement, smolt, and habitat information for sockeye salmon. The following research programs are planned to gather further detailed information about sockeye salmon stocks in the Susitna River drainage:

SUSITNA RIVER SOCKEYE SALMON MAJOR SYSTEM ADULT WEIRS

Objective: The primary objective of this project is to estimate the abundance of sockeye salmon spawners entering 7 major rearing lakes in the Susitna River watershed.

Description: Adult weirs will be collaboratively operated by the Department and the Cook Inlet Aquaculture Association (CIAA) on 7 major sockeye salmon rearing lakes (Chelatna, Shell, Byers, Swan, Larson, Stephan, and Judd lakes) in the Susitna River watershed to estimate spawner abundance. The age, sex, and length composition of the adult sockeye salmon escapement will be estimated at each weir. Environmental conditions will be recorded daily (i.e., percent cloud cover, precipitation, and stream and air temperature). Sockeye salmon spawner abundance estimates will be used to (1) evaluate the accuracy of sockeye salmon passage estimates from the Yentna River sonar project, (2) help set escapement goals, and (3) estimate freshwater production of sockeye salmon in the watershed (in conjunction with smolt production project described below).

SUSITNA RIVER SOCKEYE SALMON ADDITIONAL SYSTEM ADULT WEIRS

Objective: The primary objective of this project is to estimate the abundance of sockeye salmon spawners entering 7 additional rearing lakes in the Susitna River watershed.

Description: Adult weirs will be collaboratively operated by the Department and CIAA on 7 additional sockeye salmon rearing lakes (Whiskey, Hewitt, Lockwood, Trapper, Red Shirt, Spink, and Trinity lakes) in the Susitna River watershed to estimate spawner abundance. The age, sex, and length composition of the adult sockeye salmon escapement will be estimated at each weir. Environmental conditions will be recorded daily (i.e., percent cloud cover, precipitation, and stream and air temperature). Sockeye salmon spawner abundance estimates will be used to (1) evaluate the accuracy of sockeye salmon passage estimates from the Yentna River sonar project, (2) help set escapement goals, and (3) estimate freshwater production of sockeye salmon in the watershed (in conjunction with smolt production project described below).

SUSITNA RIVER SOCKEYE SALMON MAJOR SYSTEM SMOLT PRODUCTION

Objective: The primary objective of this project is to estimate the abundance of sockeye salmon smolt emigrating from 7 major rearing lakes in the Susitna River watershed.

Description: The abundance of sockeye salmon smolt emigrating from 7 major sockeye salmon rearing lakes (Chelatna, Shell, Byers, Swan, Larson, Stephan, and Judd lakes) in the Susitna River watershed will be collaboratively estimated by the Department and CIAA. Fyke nets will be operated from late May through June at 6 of the lakes to provide a total smolt enumeration. At the remaining lake (Chelatna Lake), three inclined-plane traps will be operated from late May

through August, and smolt population size will be estimated using standard mark-recapture techniques. Age, weight and length of smolts will be estimated from samples collected daily at each site. Smolt abundance estimates will be used to (1) forecast adult returns, and (2) estimate freshwater production of sockeye salmon in the watershed (in conjunction with adult escapement estimates).

SUSITNA RIVER SOCKEYE SALMON ADDITIONAL SYSTEM SMOLT PRODUCTION

Objective: The primary objective of this project is to estimate the abundance of sockeye salmon smolt emigrating from 7 additional rearing lakes in the Susitna River watershed.

Description: The abundance of sockeye salmon smolt emigrating from 7 additional sockeye salmon rearing lakes (Whiskey, Hewitt, Lockwood, Trapper, Red Shirt, Spink, and Trinity lakes) in the Susitna River watershed will be collaboratively estimated by the Department and CIAA. Fyke nets will be operated from late May through June at all of these lakes to provide a total smolt enumeration. Age, weight and length of smolts will be estimated from samples collected daily at each site. Smolt abundance estimates will be used to (1) forecast adult returns, and (2) estimate freshwater production of sockeye salmon in the watershed (in conjunction with adult escapement estimates).

SUSITNA RIVER FISH PASSAGE RESTORATION

Objective: The primary objective of this project is to restore and improve salmonid access to upstream spawning and rearing habitats in the lower Susitna River.

Description: Upstream access to historically occupied salmonid habitats will be evaluated in the lower Susitna River to facilitate removal of culvert barriers or other in-stream obstructions. As many as 10 upstream fish passage barriers will be identified, prioritized according to cost-benefit analyses of fishery values and project costs, and upstream access improved and restored. During construction and after the fish passage restoration projects have been completed, an established monitoring protocol will be used to track individual restoration project performance.

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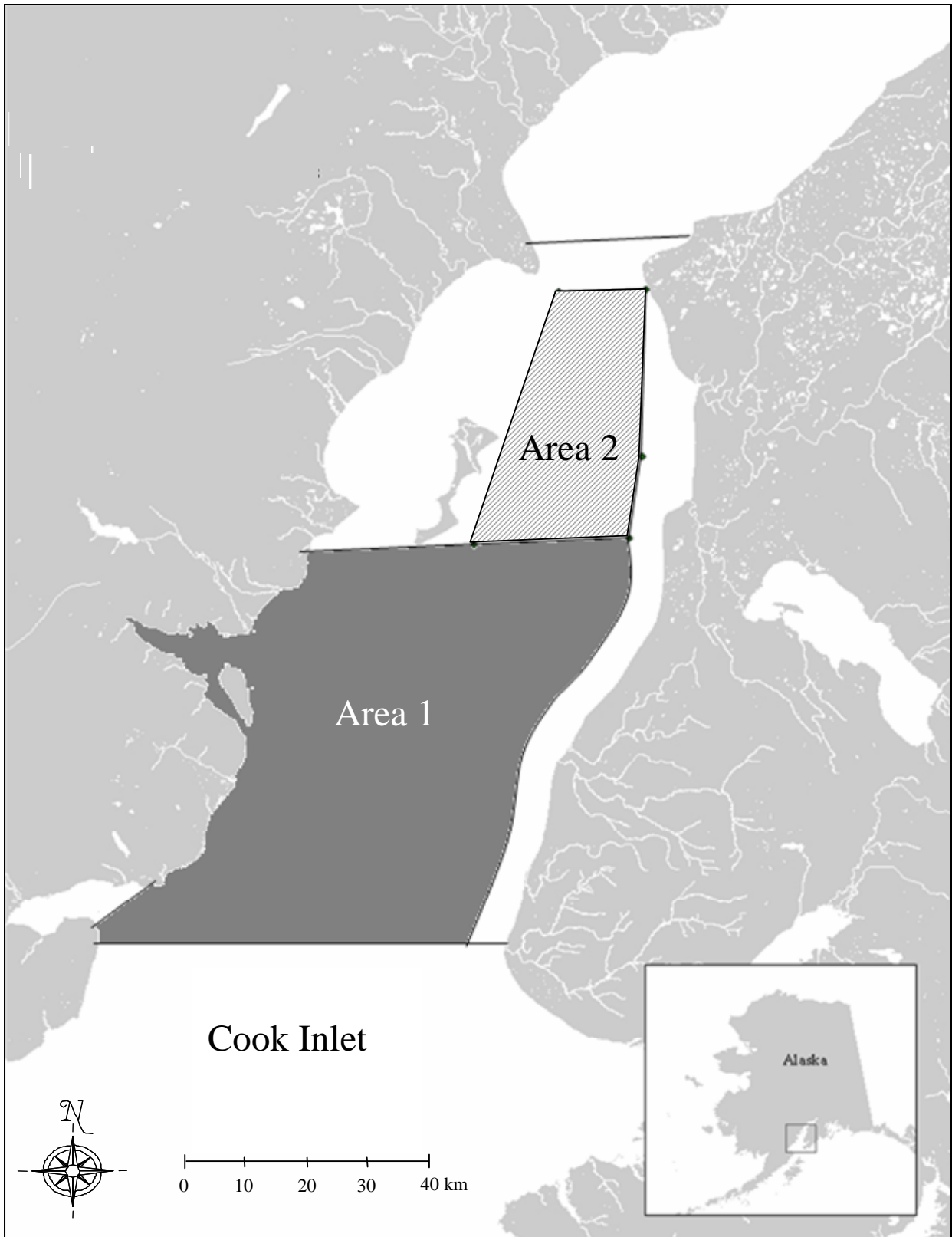


Figure 1.—Map of Central Cook Inlet showing management fishing boundaries for Area 1 and Area 2 for drift gillnet fisheries.