

Fishery Management Report No. 15-48

**Report on Selected Sport Fisheries of the Kodiak
Management Area, 2014**

by

Donn Tracy

and

Tyler Polum

January 2016

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

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Weights and measures (metric)		General		Mathematics, statistics	
centimeter	cm	Alaska Administrative Code	AAC	<i>all standard mathematical signs, symbols and abbreviations</i>	
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H_A
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	e
hectare	ha	at	@	catch per unit effort	CPUE
kilogram	kg	compass directions:		coefficient of variation	CV
kilometer	km	east	E	common test statistics	(F, t, χ^2 , etc.)
liter	L	north	N	confidence interval	CI
meter	m	south	S	correlation coefficient	
milliliter	mL	west	W	(multiple)	R
millimeter	mm	copyright	©	correlation coefficient (simple)	r
		corporate suffixes:		covariance	cov
Weights and measures (English)		Company	Co.	degree (angular)	$^\circ$
cubic feet per second	ft ³ /s	Corporation	Corp.	degrees of freedom	df
foot	ft	Incorporated	Inc.	expected value	E
gallon	gal	Limited	Ltd.	greater than	>
inch	in	District of Columbia	D.C.	greater than or equal to	\geq
mile	mi	et alii (and others)	et al.	harvest per unit effort	HPUE
nautical mile	nmi	et cetera (and so forth)	etc.	less than	<
ounce	oz	exempli gratia	e.g.	less than or equal to	\leq
pound	lb	(for example)		logarithm (natural)	ln
quart	qt	Federal Information Code	FIC	logarithm (base 10)	log
yard	yd	id est (that is)	i.e.	logarithm (specify base)	log ₂ , etc.
		latitude or longitude	lat or long	minute (angular)	'
Time and temperature		monetary symbols (U.S.)	\$, ¢	not significant	NS
day	d	months (tables and figures): first three letters	Jan, ..., Dec	null hypothesis	H_0
degrees Celsius	°C	registered trademark	®	percent	%
degrees Fahrenheit	°F	trademark	™	probability	P
degrees kelvin	K	United States (adjective)	U.S.	probability of a type I error (rejection of the null hypothesis when true)	α
hour	h	United States of America (noun)	USA	probability of a type II error (acceptance of the null hypothesis when false)	β
minute	min	U.S.C.	United States Code	second (angular)	"
second	s	U.S. state	use two-letter abbreviations (e.g., AK, WA)	standard deviation	SD
Physics and chemistry				standard error	SE
all atomic symbols				variance	
alternating current	AC			population sample	Var
ampere	A			sample	var
calorie	cal				
direct current	DC				
hertz	Hz				
horsepower	hp				
hydrogen ion activity (negative log of)	pH				
parts per million	ppm				
parts per thousand	ppt, ‰				
volts	V				
watts	W				

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by
Donn Tracy
and
Tyler Polum

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

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Donn Tracy
Alaska Department of Fish and Game, Division of Sport Fish
351 Research Court, Kodiak, Alaska 99615, USA

and

Tyler Polum
Alaska Department of Fish and Game, Division of Sport Fish
351 Research Court, Kodiak, Alaska 99615, USA

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ABSTRACT

This report provides a detailed summary of sport fisheries occurring within the Kodiak Management Area. The report includes an organizational and geographic description of the management area, a description of programs related to area management objectives, a historical overview of area sport fisheries, and a review of current management strategies, plus recent fisheries performance and salmon escapement information for 2014. Historical fisheries data dating to 2005 is also presented for comparative purposes.

Key words: Kodiak Management Area, Kodiak Regulatory Area, Alaska Peninsula–Aleutian Islands Regulatory Area, Kodiak Road Zone, Kodiak Remote Zone, stocked lakes, enhancement projects, escapement, Chinook salmon, *Oncorhynchus tshawytscha*, coho salmon, *O. kisutch*, sockeye salmon, *O. nerka*, steelhead, rainbow trout, *O. mykiss*, halibut, *Hippoglossus stenolepis*, rockfish, *Sebastes* spp., lingcod, *Ophiodon elongatus*, Alaska Board of Fisheries

INTRODUCTION

This report provides a summary of sport fisheries occurring within the Kodiak Management Area (KMA). Included is a description of the management area components and programs related to area management objectives. Fisheries are described and organized by regulatory areas and sub-units, species, and specific location. A historical overview and description of each fishery, historical harvests and salmon escapements, management objectives and implementation strategies, and fishery performance and escapements for 2014 are discussed.

DIVISION OF SPORT FISH STRATEGIC PLAN

The guiding document for the Alaska Department of Fish and Game (ADF&G), Division of Sport Fish (SF) continues to be the Strategic Plan (ADF&G 2010), which highlights key issues currently facing SF and guides division leaders in decision-making. The plan is also used to communicate internally as well as with the public about the most important issues for SF and the management of Alaska’s recreational fisheries, and it will be updated periodically to reflect future issues and needed changes in strategic direction. Annual work plans and budget submissions are also linked to this plan based on regional needs and priorities.

MANAGEMENT AREA DESCRIPTION

The Kodiak Management Area (KMA) (Figure 1) includes the following: 1) all freshwater drainages and adjacent marine waters of Alaska circumjacent to the Kodiak Archipelago, 2) all waters of Alaska on the south side of the Alaska Peninsula, including Pacific Ocean drainages west of the longitude of Cape Douglas, 3) waters on the north side of the Alaska Peninsula including Bering Sea drainages south of the latitude of Cape Menshikof, and 4) all waters of Alaska circumjacent to the Aleutian Islands, including the Pribilof Islands. With the exception of a number of road-accessible fisheries located on Kodiak, Unalaska, and Adak islands and near the community of Cold Bay on the Alaska Peninsula, virtually all significant sport fishing opportunities in the KMA are remote and relatively difficult to access. A coastal climate with high precipitation and mild temperatures characterizes much of the KMA.

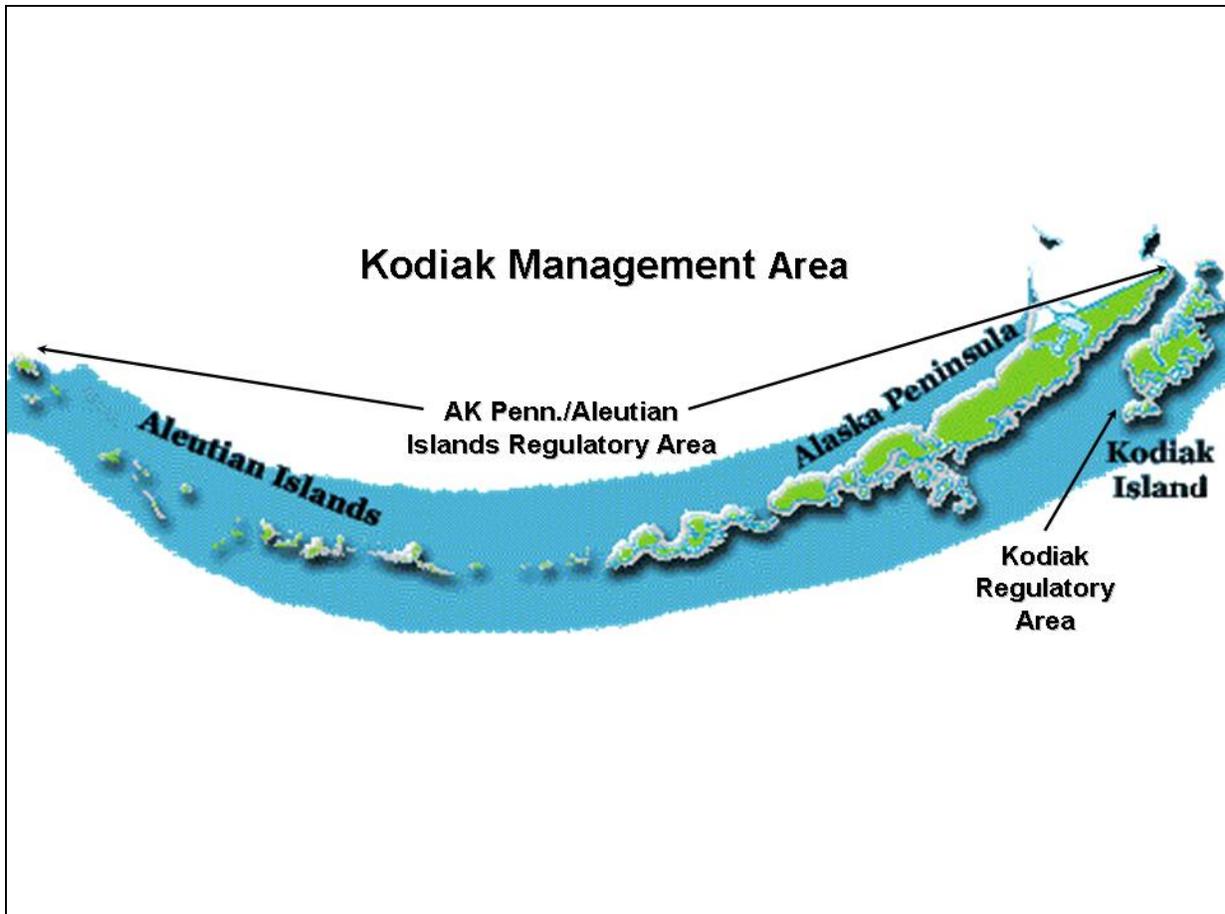


Figure 1.—Map of the Kodiak Management Area.

Principal land managers in the KMA include the United States Fish and Wildlife Service (USFWS), National Park Service (NPS), United States Forest Service (USFS), various Alaska Native corporations, and the State of Alaska.

The communities of Kodiak and Dutch Harbor—Unalaska, with current populations of approximately 13,000 and 4,350 respectively, are the 2 largest communities within the KMA, which also encompasses approximately 20 small villages.

The SF management and research operations within the KMA are administered through the division's Southcentral Region and based in the Kodiak Area Office. During the time span addressed in this report, area staff members stationed in Kodiak included 2 permanent full-time Fishery Biologists, 1 seasonal Biologist, 1 seasonal Program Technician, and several seasonal Fish and Wildlife Technicians. Additional support for the Kodiak office is provided through the regional headquarters office based in Anchorage. Programmatic functions of the Kodiak office include operating salmon counting weirs, collecting and analyzing biological samples, conducting angler creel and salmon escapement surveys, and implementing sport fisheries enhancement projects.

FISHERY DEVELOPMENT AND REGULATION

The KMA is composed of 2 sport fishing regulatory areas: the Kodiak Regulatory Area (KRA) and the Alaska Peninsula—Aleutian Islands Regulatory Area (AP—AIRA). The KRA is further

divided by regulation into the “Kodiak Road Zone” and the “Kodiak Remote Zone” (Figures 2 and 3). Codified regulations governing sport fisheries of the KRA are established in Chapter 64, Title 5 of the Alaska Administrative Code. Regulations pertaining to AP–AIRA fisheries are contained in Chapter 65 of the same title. Regulatory provisions of the KMA not specified in these 2 chapters may be found in the Chapter 75 administrative code pertaining to statewide regulation of Alaska sport fisheries.

The process of developing regulations for fisheries in the KMA occurs within the established Alaska Board of Fisheries (BOF) process. Public input concerning regulation changes and fishery allocation issues is accommodated in this process through various means including submission of proposals, direct testimony to the BOF, and participation in local fish and game advisory committee (AC) meetings. The ACs have been established throughout Alaska specifically to provide a conduit for public access to the BOF, and to assist the BOF in addressing fisheries issues. SF serves as technical advisor both at AC and BOF meetings. In this way, the meetings provide for direct public interaction with ADF&G staff involved with fish resource issues of local concern. Within the KMA, there are 7 ACs: Kodiak, Chignik, King Cove, False Pass, Nelson Lagoon, Sand Point, and Unalaska–Dutch Harbor. Under the current operating schedule, the BOF meets on a 3-year cycle based both on distinctions of geographic area and fish resource groupings. Regulatory proposals concerning KMA sport fisheries were most recently addressed in January 2011 (KRA), 2012 (AP–AIRA), and 2014 (KRA), although no changes were made in the most recent KRA meeting. The next regularly scheduled BOF meeting to address KMA issues is scheduled for February 2016 (AP–AIRA). Summaries of recent BOF regulatory actions are provided in Appendix A1.

MANAGEMENT PLANS

In order to resolve allocation conflicts between or within user groups while instituting effective conservation measures, the BOF may institute fishery-specific management plans and policies to guide ADF&G. These plans attempt to assure sustained yield of fish resources in conjunction with the establishment of allocations based on management actions and guidelines. A description of current regulatory management plans specific to sport fisheries occurring within the KMA is provided in Appendix B1.

OVERALL SPORT FISHING EFFORT, HARVEST, AND CATCH

Since 1977, recreational angler effort in the KMA has been estimated using the Statewide Harvest Survey (SWHS), a mail-out survey annually contacting approximately 10% of state sport fishing license recipients (Jennings et al. 2015). The current SWHS estimates total days of sport fishing effort (referred to as “angler-days”) expended by anglers fishing Alaskan waters, plus angler catch and harvest. Estimates of catch and harvest provide an estimate of numbers released (catch minus harvest). The survey is designed to provide total estimates of effort, catch, and harvest by fishing location, but does not estimate effort directed toward a single species. In addition to the SWHS, onsite creel surveys have been selectively used in the KMA for fisheries that require more detailed information or inseason management. Those statistics are detailed elsewhere in this report where appropriate, whereas the following summary of KMA sport fishing effort, catch, and harvest is based solely on the SWHS results¹.

¹ Alaska Sport Fishing Survey database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>

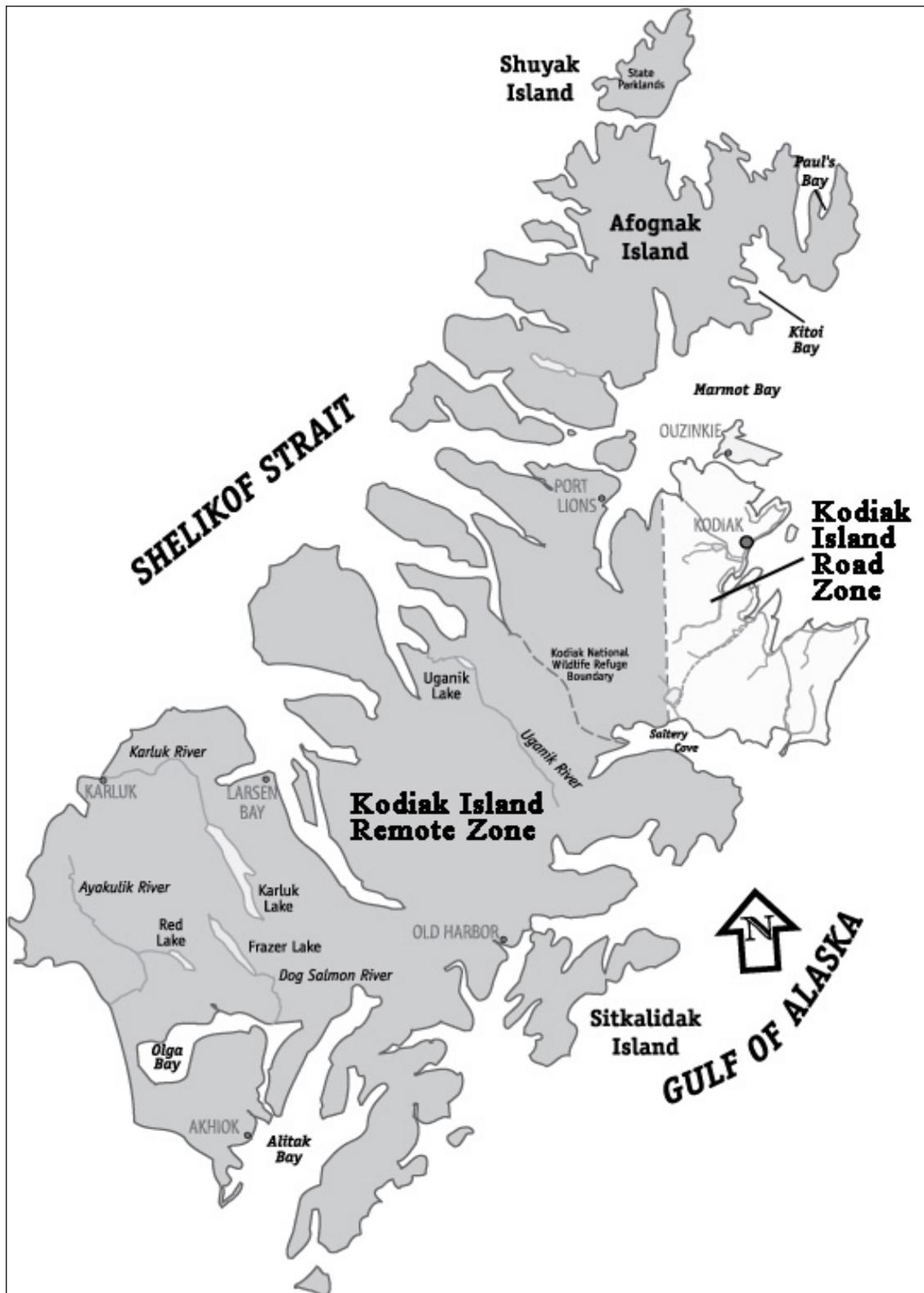


Figure 2.—Kodiak Regulatory Area including the Road Zone and the Remote Zone.

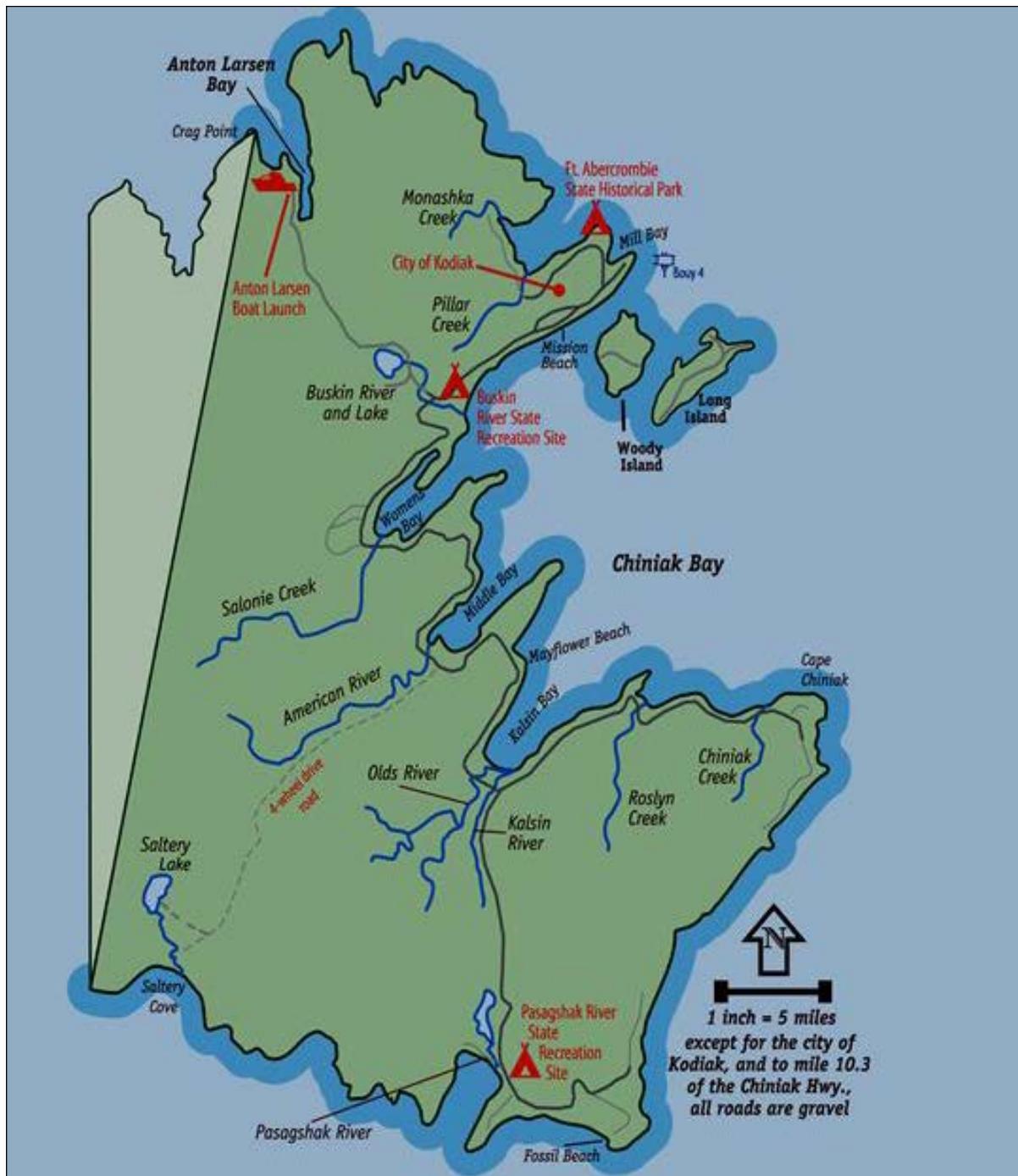


Figure 3.—Kodiak Island Road Zone.

The KMA is composed of 1 complete SWHS reporting area plus a portion of another. These areas include the following: 1) the entire Kodiak Area reporting unit (Area Q), and 2) part of the Naknek River drainage–Alaska Peninsula reporting unit (Area R). Area R SWHS statistics pertinent to the KMA include those from sport fisheries occurring within and around the Alaska Peninsula south of a line from Cape Douglas to Cape Menshikof and also the Aleutian Islands.

Effort

An average of 124,118 angler-days of effort were expended annually by anglers fishing KMA waters from 2005 through 2014 (Table 1). Historically, the effort expended by KMA anglers has represented an average of approximately 4% of the statewide total and 6% of total effort within the Southcentral Region². During this 10-year period, KRA angler effort peaked at 147,059 angler-days in 2013, following a slightly increasing annual trend from 2009 through 2012. During 2014, total KMA effort represented about 7–8% of the total Southcentral Region angling effort.

Anglers fishing the KRA, which includes all major fisheries within the KMA, expended an average of 99,962 angler-days from 2005 through 2014 (Table 1), representing about 80% of the total effort in KMA waters. A total of 110,985 angler-days were spent in this area during 2014.

Major fisheries in the KRA occur in fresh waters along the Kodiak Road Zone, which typically accounts for approximately 75% of the area total effort (Table 2). From 2005 to 2014, drainages within this area supported an average of 74,251 angler-days of fishing effort. The Buskin River, accessible from Kodiak’s main roadway, is the most heavily fished drainage in the KRA, averaging 17,109 angler-days of effort for the same period (Table 2). Other major fisheries within the KRA are also road accessible and include the Saltery River and Pasagshak River drainages. A large majority of the KRA marine waters fishery also occurs adjacent to the road network servicing the community of Kodiak.

Anglers fishing the AP–AIRA from 2005 through 2014 expended an average of 11,421 angler-days of effort (Table 3). This level of effort has represented an average of roughly 10% of the total effort in KMA waters during the same period. A total of 16,209 angler-days occurred during 2014, which was the second highest estimate of annual fishing effort during the most recent 10-year period. Major AP–AIRA fisheries occur in the Chignik River drainage. Other relatively significant fisheries consist of several drainages frequented by remote lodge operators based near Port Moller and Nelson Lagoon on the Alaska Peninsula and also drainages adjacent to the community of Unalaska in the Aleutian Islands. Due to the remote location and corresponding high cost to access most fishing destinations within the AP–AIRA, overall angler effort is modest by comparison to the remainder of the KMA to the extent that during most years, estimates of effort are unavailable due to a lack of respondents.

² ADF&G, Sport Fish Division, Southcentral Region (i.e., Region II) includes the following management areas: Anchorage Area, Bristol Bay, Kodiak-Aleutians, Lower Cook Inlet (Kenai), Northern Cook Inlet (Mat-Su), Prince William Sound Area, Seward North Gulf Coast, and Upper Kenai Peninsula.

Table 1.—Total angler-days of sport fishing effort expended in Kodiak Management Area waters, 2005–2014.

Regulatory area	Waters	Parameter	Year										10-year average
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Alaska Peninsula – Aleutian Islands													
	Salt water												
		Angler-days	8,714	7,201	11,944	7,734	7,303	5,297	4,616	9,037	5,241	7,848	7,494
		Percent	61	57	57	49	37	14	13	25	17	48	38
	Fresh water												
		Angler-days	5,673	5,504	8,870	8,117	12,310	33,635	31,585	26,937	25,626	8,361	16,662
		Percent	39	43	43	51	63	86	87	75	83	52	62
	Area total		14,387	12,705	20,814	15,851	19,613	38,932	36,201	35,974	30,867	16,209	24,155
	% of KMA		11	12	16	13	17	32	45	30	21	13	21
Kodiak Island ^a													
	Salt water												
		Angler-days	55,186	45,502	53,222	52,219	47,333	40,377	36,809	42,374	52,867	44,127	47,002
		Percent	48	48	48	51	49	50	44	50	45	40	47
	Fresh water												
		Angler-days	60,542	49,722	57,988	49,820	49,619	41,082	47,620	43,032	63,325	66,858	52,961
		Percent	52	52	52	49	51	50	56	50	55	60	53
	Area total		115,728	95,224	111,210	102,039	96,952	81,459	84,429	85,406	116,192	110,985	99,962
	% of KMA		89	88	84	87	83	68	70	70	79	87	80
KMA total			130,115	107,929	132,024	117,890	116,565	120,391	120,630	121,380	147,059	127,194	124,118

Source: Alaska Sport Fishing Survey database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Does not include the Barren Islands.

Table 2.—Total angler-days of sport fishing effort expended in the Kodiak Regulatory Area by drainage, 2005–2014.

Regulatory area	Drainage	Year										Average
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Kodiak Road Zone												
	Buskin River & Lake	17,575	19,875	17,124	15,068	18,695	13,365	13,879	13,996	21,497	20,015	17,109
	Pasagshak R & Lk Rose Tead	8,215	3,259	7,091	7,733	8,161	5,170	7,372	8,457	6,596	4,782	6,684
	Olds River ^a	7,708	5,247	6,994	3,362	4,826	4,653	4,421	3,829	7,432	10,739	5,921
	American River	7,787	3,648	6,597	4,602	3,760	4,362	4,601	2,850	5,448	5,236	4,889
	Saltery Cove Freshwater	4,189	2,460	2,196	4,127	3,204	3,453	3,947	2,101	5,601	6,644	3,792
	Other roadside lakes	969	861	848	496	1,033	651	2,152	847	2,558	2,637	1,305
	Other roadside streams ^b	4,408	5,286	5,642	5,299	3,525	3,634	4,212	5,195	8,391	7,084	5,268
	Chiniak Bay Boat	26,028	18,754	28,480	32,098	23,866	16,006	17,139	17,859	16,017	18,940	21,519
	Ugak Bay Boat	1,522	–	–	–	905	1,133	1,112	3,209	2,839	2,844	1,938
	Other roadside boat ^c	4,207	6,169	2,536	2,160	2,898	384	660	568	7,101	1,228	2,791
	Other roadside shoreline ^d	4,249	3,101	2,357	1,393	2,840	4,019	2,041	4,085	10,988	1,095	3,617
	Total	86,857	68,660	79,865	76,338	73,713	56,830	61,536	62,996	94,468	81,244	74,251
Kodiak Remote Zone												
	Karluk River System	3,332	2,896	5,311	2,302	2,541	1,095	2,125	990	1,167	860	2,262
	Ayakulik (Red) River System	2,515	2,807	1,482	1,905	1,210	960	–	–	–	2,066	1,849
	Other remote lakes	1,405	149	644	604	322	452	335	–	846	400	573
	Other remote streams	2,439	3,234	4,059	4,322	1,782	3,287	3,228	3,289	4,329	4,954	3,492
	Afognak Island Area Boat	7,063	5,488	6,550	6,226	4,521	6,199	3,619	3,629	6,968	5,471	5,573
	Shuyak Island Boat	734	1,549	729	–	1,924	–	837	–	–	–	1,155
	Uyak Bay Boat	1,494	2,417	3,246	3,156	3,415	2,933	1,627	–	3,475	3,389	2,795
	Other remote boat ^e	8,500	6,997	7,779	6,444	4,157	7,871	3,698	6,068	5,899	5,950	6,336
	Other remote shore ^f	1,389	1,027	1,545	742	789	1,632	1,052	505	–	779	1,051
	Total	28,871	26,564	31,345	25,701	20,661	24,429	16,521	14,481	22,684	23,869	23,513
Regulatory area total		115,728	95,224	111,210	102,039	94,374	81,459	78,057	77,477	117,152	105,113	97,783

Source: Alaska Sport Fishing Survey database [Internet]. 1996–. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Olds River includes unidentified Kalsin Bay streams.

^b Includes Russian River and unspecified streams.

^c Other roadside boat includes the categories “Boat–other” and “Boat–Unspecified sites.”

^d Roadside shoreline includes Chiniak Bay shoreline and unspecified roadside shoreline sites.

^e Other remote boat includes unspecified remote sites.

^f Includes other unspecified boat and shoreline effort.

Table 3.—Total angler-days of sport fishing effort expended in the Alaska Peninsula–Aleutian Islands Regulatory Area by drainage, 2005–2014.

Drainage	Year										10-year average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Cold Bay ^a	2,114	–	3,168	2,331	6,254	3,128	1,712	–	–	2,254	2,994
Unalaska ^b	3,085	2,535	6,712	2,778	2,291	991	1,759	5,250	1,271	4,070	3,074
Other streams ^c	2,836	4,687	3,699	5,033	3,773	3,942	4,479	5,674	5,872	5,834	4,583
Other lakes	723	817	537	753	3,949	913	486	478	–	273	992
Marine	3,085	2,535	5,246	2,778	3,957	991	1,759	5,250	5,241	7,848	3,869
Fresh water	5,673	5,504	8,870	8,117	12,310	7,983	6,677	6,152	5,872	8,361	7,552
Regulatory area total ^d	8,758	8,039	14,116	10,895	16,267	8,974	8,436	11,402	11,113	16,209	11,421

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996–. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Includes Russel Creek, Cold Bay Saltwaters (excluding King Cove), and other Cold Bay Area streams when reported in the SWHS.

^b Includes Unalaska Bay, Captain's Bay, Priest Rock, Reese Bay, and Summer Bay boat, shore, and freshwater when reported in the SWHS.

^c Includes Adak Island, Chignik, and Sapsuk (Nelson) rivers as well as unspecified streams on the Alaska Peninsula and Aleutian Islands.

^d Includes other unspecified locations in the Alaska Peninsula–Aleutian Islands SWHS Area.

Harvest

From 2005 through 2014, an average of 144,092 fish were harvested by anglers fishing KMA waters (Table 4). Halibut (*Hippoglossus stenolepis*), coho salmon (*Oncorhynchus kisutch*), and Chinook salmon (*O. tshawytscha*) accounted for roughly 21%, 26%, and 7% of the 10-year average harvest, respectively. In 2014, an annual total of 180,731 fish were harvested by anglers in KMA waters (Table 4). During the same year, coho salmon and halibut harvests were respectively above and below the recent 10-year average. The 2014 Chinook salmon harvest was slightly below the 10-year average at 9,257 fish.

Other species harvested in relatively large numbers between 2005 and 2014 included pink salmon (*O. gorbushka*) and sockeye salmon (*O. nerka*), which respectively averaged 10,923 and 16,362 fish taken per year during this period (Table 4). During 2014, the total sockeye salmon harvest of 28,884 was higher than all previous years. Pink salmon harvests were well below the 10-year average in 2014, totaling slightly over 7,700.

Catch

Estimates available from the SWHS of the total number of fish caught (harvest plus release) by anglers fishing KMA waters indicate that although release-harvest ratios vary substantially by species, overall between 2005 and 2014, an approximate average of 2.5 fish were released for every 1 harvested. Pink salmon, chum salmon (*O. keta*), Dolly Varden (*Salvelinus malma*), and rainbow trout (*O. mykiss*) were the most frequently released fish species during 2014 and also in previous years (Table 5). In both KRA and AP–AIRA waters during 2005–2014, the number of fish caught and released was greater than the number of fish harvested.

CHINOOK SALMON FISHERIES

Chinook salmon runs to the KMA are made up of a relatively small number of stocks and collectively make a minor contribution to total Chinook salmon production in Alaska. KRA stocks are found only in the Karluk River and Ayakulik River drainages but historically have been the most abundant populations within the entire management area. AP–AIRA stocks are more numerous and include populations in the Chignik, King Salmon, Meshik, Nelson, Ilnik, Sandy, and Cinder rivers plus several other drainages. Exploitation rates by anglers on AP–AIRA stocks are low to the extent that during most years, SWHS estimates of catch and harvest by drainage are unavailable. By comparison, angler interest in the stocks of the Karluk and Ayakulik rivers historically has been greater, likely as a result of lower access costs and more convenient travel logistics.

Although a variety of users have historically harvested KMA Chinook salmon runs, including freshwater and marine sport, commercial, and subsistence fisheries, the primary interest in utilizing these stocks has been from sport fishing anglers. Currently, a formal allocation of the Chinook salmon harvest has been established only for the marine waters sport fishery within the KRA (Kodiak Area Salt Water King Salmon Sport Fishery Management Plan, 5 AAC 64.060; Appendix C1).

Table 4.–Numbers of fish harvested by all anglers fishing Kodiak Management Area waters, 2005–2014.

Category	Species	Year										10-year average
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Salmon												
	Pink	12,586	11,545	19,814	9,238	13,833	6,074	6,998	10,898	10,542	7,705	10,923
	Coho	45,927	35,066	39,166	37,033	41,700	29,302	29,091	23,893	32,788	39,376	35,334
	Sockeye	11,848	6,946	16,342	19,606	15,445	12,635	11,409	14,294	26,213	28,884	16,362
	Chinook	10,259	12,437	12,290	10,263	9,354	7,145	7,926	7,695	9,951	9,257	9,658
	Chum	845	591	624	804	2,239	740	325	714	702	406	799
Marine												
	Clams	1,482	1,873	219	1,184	201	1,925	0	592	0	3,973	1,145
	Halibut	27,451	28,081	39,297	37,718	34,205	23,909	21,156	25,127	28,616	26,449	29,201
	Rockfish	18,151	12,831	14,050	16,884	16,586	20,378	15,539	20,506	21,113	31,177	18,722
	Lingcod	2,691	2,482	4,060	3,665	3,949	3,990	4,223	3,969	4,543	5,022	3,859
	Black cod	–	–	–	–	–	815	871	1,205	1,021	865	955
	Smelt	13	47	–	629	–	178	0	0	0	92	120
Freshwater												
	Dolly Varden	5,287	8,351	9,952	9,869	6,332	6,109	3,534	2,449	4,218	5,593	6,169
	Rainbow trout	240	84	285	193	102	284	596	66	302	5,593	775
	Steelhead	16	181	62	52	141	24	182	69	30	27	78
Other fish ^a		8,249	3,053	5,864	8,830	936	12,433	18,174	17,321	13,757	24,017	11,263
Total		145,045	123,568	162,025	155,968	145,023	125,941	120,024	128,798	153,796	180,731	144,092

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Includes lake trout, skate, Pacific cod, Tanner crab, Dungeness crab, and other unspecified species.

Table 5.—Numbers of fish caught by all anglers fishing Kodiak Management Area waters, 2005–2014.

Category	Year										10-year average
	2005	2006	2007	2008	2009	2010 ^a	2011	2012	2013	2014	
Salmon											
Pink	131,273	80,755	124,237	61,771	83,130	38,605	45,731	60,564	83,182	43,109	75,236
Coho	106,671	71,326	68,783	73,381	80,831	51,929	49,985	37,558	54,100	77,351	67,192
Sockeye	24,539	17,710	45,991	48,746	33,150	20,996	21,859	23,145	42,207	44,672	32,302
Chinook	27,787	24,095	26,181	16,960	16,908	11,863	14,122	13,578	16,066	16,990	18,455
Chum	18,556	5,051	14,514	10,635	16,013	9,502	5,027	5,023	6,800	10,439	10,156
Marine											
					0						
Clams	189	1,452	219	1,163	179	356	0	592	0	3,973	812
Halibut	50,421	48,706	65,680	71,379	58,625	41,341	42,588	41,110	45,285	41,984	50,712
Rockfish	46,525	29,206	37,142	42,149	42,208	47,011	32,281	38,775	35,429	49,978	40,070
Lingcod	5,883	4,112	6,497	6,656	7,868	6,298	7,239	6,118	6,353	7,493	6,452
Black cod	–	–	–	–	–	1,787	1,526	1,958	1,774	1,879	1,785
Smelt	39	47	–	629	–	178	0	0	0	301	149
Freshwater											
Dolly Varden	50,911	56,883	75,146	76,749	45,071	65,376	37,219	17,511	49,366	58,344	53,258
Arctic grayling	321	307	112	–	–	203	0	0	0	1,650	324
Rainbow trout	4,153	4,581	5,651	3,770	6,816	14,582	7,408	1,714	5,219	5,658	5,955
Steelhead	3,510	3,192	2,307	3,102	–	927	4,426	569	717	2,255	2,334
Total	470,778	347,423	472,460	417,090	390,799	310,954	269,411	248,215	346,498	366,076	363,970

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Does not include other unspecified streams in the Alaska Peninsula–Aleutian Islands SWHS Area.

The primary management objective for KMA Chinook salmon stocks is to achieve established escapement goals (EG). Several of the major Chinook salmon runs are monitored annually for escapement using weirs, whereas spawning assessment of other stocks has been limited to escapement index counts obtained from aerial surveys. To ensure EGs are attained, fishery managers may limit angler harvests by reducing daily and seasonal bag limits, prohibiting bait, and reducing time and areas open to fishing. Stocks that consistently fall below EG levels may be closed to sport fishing. Conversely, Chinook salmon sport fishing regulations may be liberalized by emergency order (EO) whenever harvestable surpluses are anticipated.

During the last 10 years, KMA Chinook salmon escapements have reflected a trend of above-average abundance for some stocks, while others have fallen to record low levels during the same period. Consequently, respective sport fisheries have concurrently been restricted and liberalized in order to adjust angler opportunity as needed. Chinook salmon harvests have fluctuated as a result, even though liberalized bag limits do not necessarily increase the numbers of fish taken because anglers often also consider other factors.

KARLUK RIVER

Fishery Description

The Karluk River, located on the southwest end of Kodiak Island approximately 60 miles from the City of Kodiak, is the second-largest drainage within the KRA. The river spans approximately 22 miles and is generally accessible to anglers only by aircraft. The Karluk River drainage supports 1 of 2 indigenous Chinook salmon populations in KRA waters, and it has historically supported the most popular Chinook salmon sport fishery within the entire KMA.

Chinook salmon typically return to the Karluk River drainage from late May through early July with peak immigration in mid to late June (Appendix D1). Spawning occurs throughout the mainstem but in most years appears to be concentrated within several miles of the Karluk Lake outlet and just below a reach known as “Karluk Portage.” Peak spawning typically occurs during mid-August.

Most uplands surrounding the Karluk River are privately owned and as a result of this, recent angler participation in the Chinook salmon fishery has been limited along approximately 10 miles of river leading downstream from the lake outlet. An easement agreement between the land owner and state and federal governments, which expired in 2012, contained provisions that capped daily visitor numbers at 70 within this 10-mile reach, and only 40% of these visitors could be unguided. Currently, angler participation elsewhere along the river is also directly limited by land status, although fee-based use permits may be required for upland access.

Historical Catch

Information about the Chinook salmon sport fishery is currently available from several sources. Until very recently, inseason surveys of sport harvest and fishing effort were collected annually from onsite angler interviews dating back to the early 1990s. Annual estimates of total effort and catch are also generated from the SWHS, and since 2005, complete guided angler statistics have also been available from the ADF&G Freshwater Sport Fish Guide Logbook Program (referred hereafter as the Freshwater Logbook Program).

Between 2005 and 2014, a SWHS annual average of 124 Chinook salmon were harvested from the Karluk River run, although annual harvests were 0 fish in 7 years during this period

(Table 6). Most of the decline since 2007 resulted from a progressive decrease in the abundance of fish in the run but also possibly from the aforementioned change in upland status, which served to limit angler participation. In some years, inseason management measures enacted to conserve escapements were responsible for complete closure of the sport fishery. Freshwater Logbook Program statistics and onsite interviews conducted between 2005 and 2013 also reflect a downward trend in harvests (Table 7) in conjunction with lower overall angler effort (Table 2). Occasional poor agreement during this time between SWHS estimates and harvest figures provided by interviews and logbooks is likely the result of SWHS measurement error attributable to relatively low overall angler participation levels in the fishery.

Table 6.—Weir counts and Statewide Harvest Survey estimates of Karluk River Chinook salmon sport catch (including harvest and numbers released), 2005–2014.

Year	Weir count	Sport harvest	Harvest above weir	Number released above weir	Escapement
2005	4,798	368	114	605	4,684
2006	4,112	670	439	2,180	3,673
2007	1,765	205	68	428	1,697
2008	752	0	0	96	752
2009	1,306	0	0	0	1,306
2010	2,917	0	0	–	2,917
2011	3,420	0	0	674	3,420
2012	3,197	0	0	–	3,197
2013	1,824	0	0	–	1,824
2014	1,182	0	0	47	1,182
Average 2005–2014	2,527	124	62	576	2,465

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

Table 7.—Comparison of catch (harvest and numbers released) obtained from onsite angler interviews and the Freshwater Logbook Program to estimates of catch from the Statewide Harvest Survey for Karluk River Chinook salmon, 2005–2014.

Year	On-site interviews		Guided logbook		SWHS	
	Harvest	Released	Harvest	Released	Harvest	Released
2005	187	576	372	1,149	368	1,183
2006	761	1,782	842	1,349	670	3,007
2007	156	262	194	410	205	733
2008	0	31	1	114	0	96
2009	0	22	0	80	0	0
2010	0	0	0	12	0	0
2011 ^a	0	0	0	238	0	793
2012	–	–	0	342	0	83
2013	–	–	0	80	0	161
2014	–	–	0	11	0	47

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. ADF&G Freshwater Sport Fish Guide Logbook Program.

^a The last year for on-site angler interviews at the Karluk River was 2011.

Escapement

Escapements of Karluk River Chinook salmon are monitored through operation of a salmon counting weir established in 1977 a short distance above the stream terminus. Harvests in the sport fishery occurring upstream of the weir are subtracted from the total count to estimate escapement in a given year.

Annual weir counts of Karluk River Chinook salmon recorded between 2005 and 2008 show a trend of decreasing abundance, which actually began in 2001 and culminated with a total count of just 752 fish in 2008 (Table 6). Continued poor counts annually through 2014 have resulted in chronic shortfalls to the attainment of the current Chinook salmon EG range of 3,000–6,000 on a total of 6 occasions since 2005, regardless of management measures taken to conserve escapements (Figure 4).

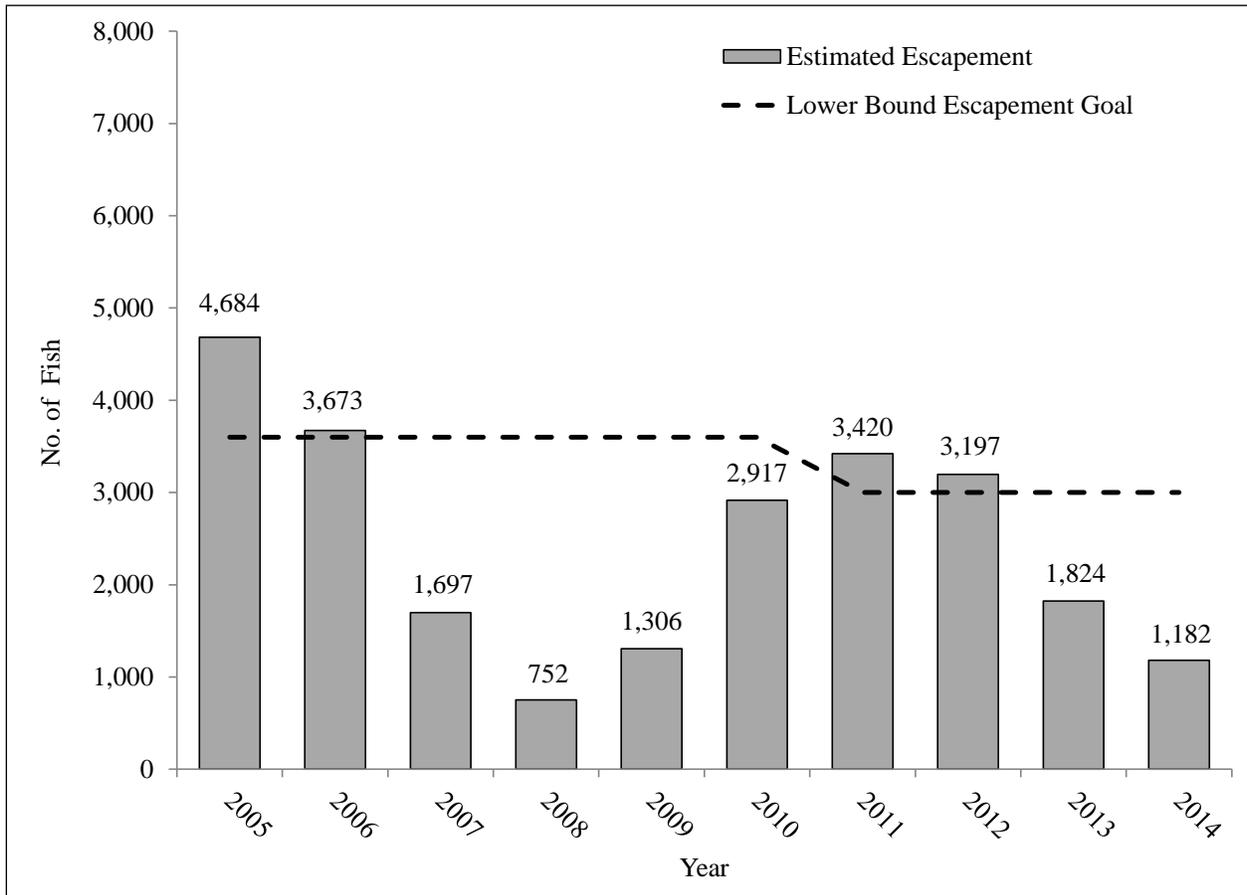


Figure 4.—Estimated escapement of Karluk River Chinook salmon, 2005–2014.

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

Fishery Management and Objectives

The Karluk River Chinook salmon fishing season is open by regulation from January 1 through July 25 with fishing permitted within the entire drainage throughout the season. A complete closure of the drainage to Chinook salmon fishing after July 25 is intended to afford protection

for spawning fish from anglers. A bag limit for Karluk River Chinook salmon over 20 inches in length is set at 2 per day, with an annual limit of 5.

Management of the Karluk River run is aimed at maximizing angler opportunity while ensuring attainment of the EG. The current EG of 3,000–6,000 is classified as a “Biological Escapement Goal” (BEG), which, according to existing regulatory policy, constitutes an estimate of escapement that over time most closely approximates the maximum sustainable productivity of the population. The BEG is based both on historical escapements and estimated age composition of the runs and is expressed as a range of values to account for uncertainty in the precision of the estimate.

2014 Fishery

The consistently poor escapements warranted preseason restrictions in 2014, which limited the sport fishery to catch-and-release and also a subsequent complete closure during the 2014 season (Appendix C1). Consequently, both estimated and reported Chinook salmon harvests were 0 during the 2014 season (Table 7). Angler effort in years just prior to 2014, as measured by logbook reports and onsite interviews, showed a substantial decrease in interest in the fishery when compared to historical effort levels, and was probably a direct consequence of reduced fishing opportunity.

Even with the preseason restrictions and subsequent closure of the sport fishery, historically low Chinook salmon escapement continued during the 2014 run, when just 1,182 fish were counted through the weir.

AYAKULIK RIVER

Fishery Description

The Ayakulik River drainage is approximately 20 miles south from the Karluk River and is the largest watershed within the KRA. The mainstem river, where nearly all sport fishing occurs, extends approximately 13 miles and is accessible via aircraft. The Ayakulik River sustains the second-largest native KRA Chinook salmon population and also the second most popular KMA Chinook salmon sport fishery.

Similar to the Karluk River run, Chinook salmon typically return to the Ayakulik River between late May and early July with the peak immigration during mid to late June (Appendix D2). Spawning occurs not only in the mainstem but also in a main tributary stream known as the “East Fork.” It is generally believed this spawning habitat is mostly utilized by the early portion of the run, with later-arriving fish preferring to spawn in the lower river. As with the Karluk River run, peak spawning typically occurs during mid-August.

With the exception of a privately owned 1-square-mile section encompassing the river mouth and lagoon, all uplands surrounding the Ayakulik River are within the Kodiak National Wildlife Refuge (KNWR). Unrestricted access to the sport fishery from KNWR lands is available to all unguided anglers, whereas guide operators and their clients are limited in number under the KNWR management policy. Currently, a total of 6 operators guiding as many as 35 anglers are permitted access to the sport fishery from KNWR lands during a single day.

Historical Catch

Current angler catch and effort information for Ayakulik River Chinook salmon is only intermittently obtainable from the SWHS and onsite angler interviews. However, guided angler statistics dating to 2005 are available annually from the Freshwater Logbook Program.

Between 2005 and 2014, SWHS estimated that angler harvests of Chinook salmon averaged 131, although no harvests since 2008 exceeded the 10-year average (Table 8). Declining harvests since 2006 are probably attributable to a concurrent decrease in the abundance of fish, which resulted in the implementation of inseason management measures to conserve escapements (Appendix C1). Onsite angler interviews conducted between 2005 and 2007 and Freshwater Logbook Program statistics through 2014 show decreased harvests (Table 9). Similar to the Karluk River fishery, disparities between SWHS estimates and statistics from interviews and logbooks are probably due to measurement error resulting from relatively low levels of angler effort.

Table 8.—Weir counts and Statewide Harvest Survey estimates of Ayakulik River Chinook salmon sport catch (harvest and numbers released), 2005–2014.

Year	Weir count	Sport harvests	Number released	Escapement
2005	8,340	489	7,545	7,851
2006	3,106	169	2,914	2,937
2007	6,535	303	3,779	6,232
2008	3,071	0	830	3,071
2009	2,615	0	354	2,615
2010	5,301	104	625	5,197
2011	4,316	85	–	4,231
2012	4,760	25	–	4,735
2013	2,369	–	–	2,369
2014	917	0	96	917
Average 2005–2014	4,133	131	2,306	4,016

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996–. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

Table 9.—Comparison of catch (harvest and release) obtained from onsite angler interviews and the Freshwater Logbook Program to estimates of catch from the Statewide Harvest Survey for Ayakulik River Chinook salmon, 2005–2014.

Year	Creel		Guided logbook		SWHS	
	Harvest	Released	Harvest	Released	Harvest	Released
2005	165	1,553	232	2,525	489	7,545
2006	50	544	54	897	169	2,914
2007	59	1,009	116	1,737	303	3,779
2008	12	300	2	329	0	830
2009	0	43	0	83	0	354
2010 ^a	2	41	2	185	104	625
2011	–	–	65	454	–	–
2012	–	–	23	554	–	–
2013	–	–	18	299	41	378
2014	–	–	0	59	0	96

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996–. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. ADF&G Freshwater Sport Fish Guide Logbook Program.

^a The last year for on-site angler interviews at the Ayakulik River was 2010.

Escapement

Ayakulik River Chinook salmon escapements are monitored through operation of a salmon counting weir established in 1970 a short distance above the lagoon. Harvests in the sport fishery occurring upstream of the weir are subtracted from the total count to estimate escapement in a given year.

From 2005 through 2014, the abundance of Ayakulik River Chinook salmon as measured by weir counts included some of the lowest on record. In 2006, one of the lowest counts occurred on record to date of 3,106 (Table 8). Since then, poor weir counts have continued annually through 2014, and regardless of associated management measures taken to conserve escapements, there has been a failure to achieve the current Chinook salmon EG range of 4,000–7,000 on a total of 4 occasions (Figure 5).

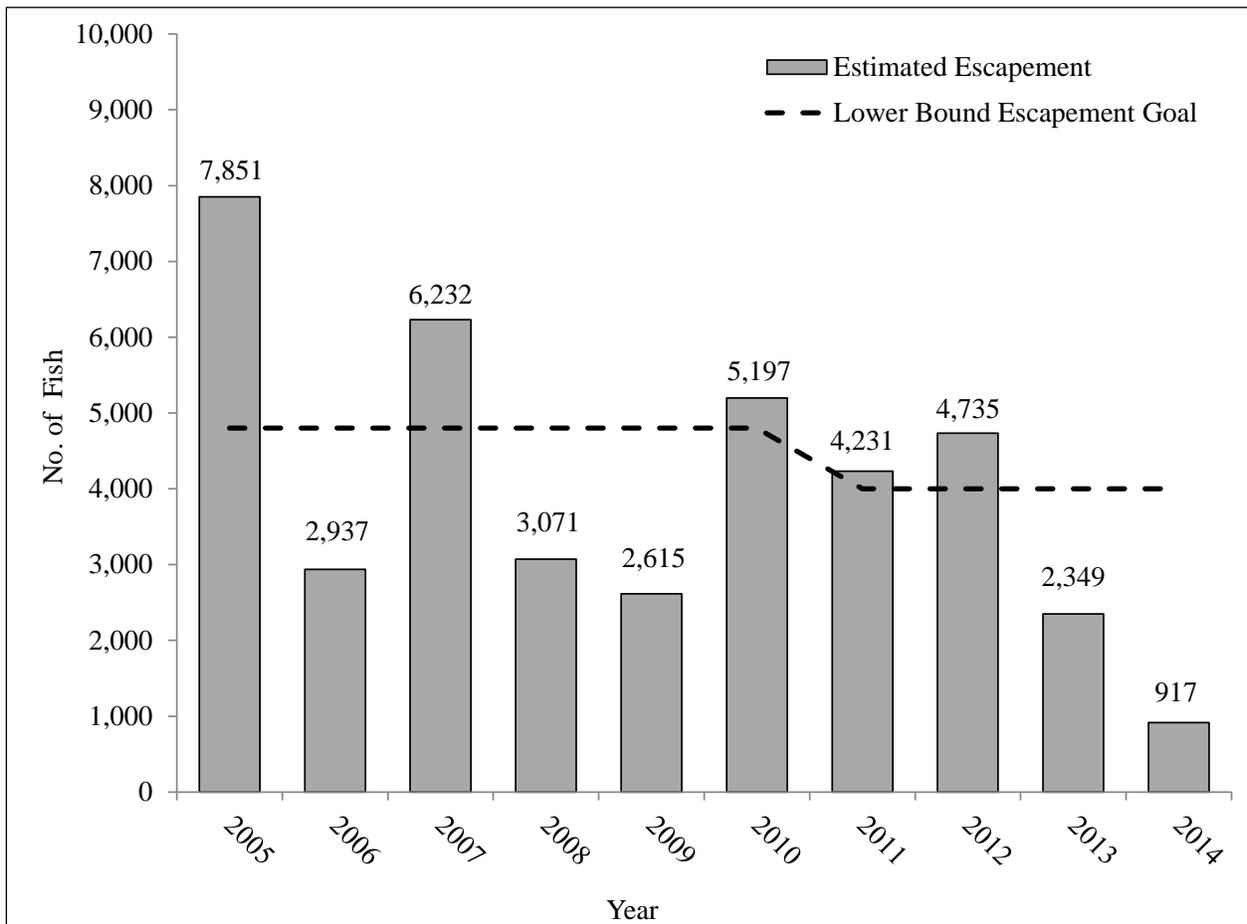


Figure 5.—Estimated escapement of Ayakulik River Chinook salmon, 2005–2014.

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

Fishery Management and Objectives

The Ayakulik River Chinook salmon fishing season is open by regulation from January 1 through July 25 with fishing permitted within the entire drainage throughout the season. A complete closure of the drainage to Chinook salmon fishing after July 25 is intended to afford protection for spawning fish from anglers. The bag limit for Ayakulik River Chinook salmon over 20 inches in length is 2 per day with an annual limit of 5.

The management strategy for the Ayakulik River sport fishery seeks to balance angler opportunity with consistent achievement of the EG. The current escapement objective of 4,000–7,000 is considered a BEG and is calculated to approximate the maximum sustainable productivity of the population over time. The Ayakulik River Chinook salmon BEG is based both on historical escapements and estimated age composition of the runs and is expressed as a range of values to account for uncertainty in precision of the estimate.

2014 Fishery

Expected low runs of Chinook salmon in 2014 resulted in preseason bag limit reductions in the sport fishery to 1 fish per day (Appendix C1). Further inseason measures included restrictions on anglers to catch-and-release only fishing, eventually followed by complete closure of the sport fishery. As a result, the estimated and reported Chinook salmon harvest was 0 fish (Table 9). Relatively high levels of angler effort, indicated by onsite interviews in 2004, diminished significantly through 2013 based on SWHS estimates (Table 2) and also Freshwater Logbook Program reports. Although it's probable that the poor runs and associated restrictions on angling opportunity were mostly to blame for the decreased effort, the concurrent inaccessibility of the lagoon to aircraft (which severely restricts angler access to the lower river reaches) since 2006 has probably also been a significant factor.

The 2014 Chinook salmon escapement of 917 fish was the lowest on record for the Ayakulik river run and less than 25% of the lower end of the 4,000–7,000 BEG range (Figure 5).

CHIGNIK RIVER

Fishery Description

The Chignik River drainage is located within the AP–AIRA on the south side of the Alaska Peninsula, approximately 459 miles southwest of the City of Anchorage and adjacent to the village communities of Chignik Lagoon and Chignik Lake. The mainstem river, where the Chinook salmon sport fishery occurs, extends approximately 2.5 miles and is mainly accessible by boat from the villages. Because of its accessibility and proximity to one of the area's larger communities, the Chignik River supports the largest AP–AIRA Chinook salmon sport fishery.

Chinook salmon normally return to the Chignik River between late June and mid-August, with peak immigration during mid to late July (Appendix D3). Spawning reportedly occurs mostly in the mainstem but may also occur in several tributary streams to Chignik Lake. Peak spawning typically occurs during late August and early September.

With the exception of some municipal, state-owned, and individually owned private lands, most uplands surrounding the Chignik River drainage are under ownership of Alaska Native corporation interests. The entire watershed is bounded within the Alaska Peninsula National Wildlife Refuge (APNWR). Angler access to the sport fishery is generally unrestricted because

watercraft are principally used for transportation to and from the river. Permitted access to the fishery may also be available across Alaska Native–owned uplands.

Historical Catch

Due to a relatively low level of angler effort, published catch and harvest estimates for Chignik River Chinook salmon are rarely available from the SWHS. However, since 2005, guided angler statistics have been obtainable from the Freshwater Logbook Program database.

Between 2005 and 2014, the average estimated inriver harvest of Chinook salmon was 207 (Table 10). During the same period, anglers released about 2 fish for each 1 harvested. Annual Chignik River Chinook salmon harvests reported in logbooks since 2005 have ranged between 61 and 361 fish (Table 11).

Table 10.–Weir counts and Statewide Harvest Survey estimates of Chignik River Chinook salmon sport catch (harvest and numbers released), 2005–2014.

Year ^a	Weir count	Sport harvest	Released	Escapement
2005	6,486	411	1,401	6,075
2006	3,535	295	857	3,240
2007	2,000	240	586	1,760
2008	1,730	115	250	1,615
2009	1,680	153	401	1,527
2010	3,679	250	586	3,429
2011	2,728	305	461	2,423
2012	1,449	111	216	1,338
2013	1,253	133	165	1,120
2014	2,895	59	168	2,836
Average 2005–2014	2,744	207	509	2,536

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

^a Harvest and numbers released for 2005–2014 were estimated from ADF&G Freshwater Sport Fish Guide Logbook Program and inseason observations of catch and effort for all anglers.

Table 11.–Guided angler sport catch (harvest and numbers released) of Chignik River Chinook salmon, 2005–2014.

Year	Chinook		Coho		Sockeye		Dolly Varden		Rainbow	
	Harvest	Released	Harv.	Rel.	Harv.	Rel.	Harv.	Rel.	Harv.	Rel.
2005	361	990	20	10	8	97	1	178	0	0
2006	245	562	0	42	0	0	0	10	0	0
2007	190	346	25	12	15	22	0	370	0	7
2008	65	135	71	69	10	20	0	370	0	0
2009	103	248	32	68	23	27	5	69	0	0
2010	200	336	6	0	7	0	4	0	0	0
2011	255	156	0	0	16	31	34	0	0	0
2012	61	105	44	0	6	6	0	558	0	0
2013	83	32	75	20	14	2	4	57	0	0
2014	88	253	75	162	2	0	1	7	0	0

Source: ADF&G Freshwater Sport Fish Guide Logbook Program.

Escapement

Chignik River Chinook salmon escapements are monitored through operation of a salmon counting weir established in 1922 and operated by ADF&G since 1959, just upstream of the intertidal zone. Total daily weir counts are extrapolated from timed visual counts (using underwater video) for the first 10 minutes of each hour the weir is in operation. Harvests in the sport fishery above the weir are subtracted from the total count to estimate escapement in a given year.

From 2005 through 2014, Chignik River Chinook salmon weir counts ranged from a near record high count of 6,486 in 2005 to an all-time record low of 1,253 in 2013 (Table 10). Even so, final estimates of annual escapement have met or exceeded the current Chinook salmon EG range of 1,300–2,700 in every other year since 2005 (Figure 6).

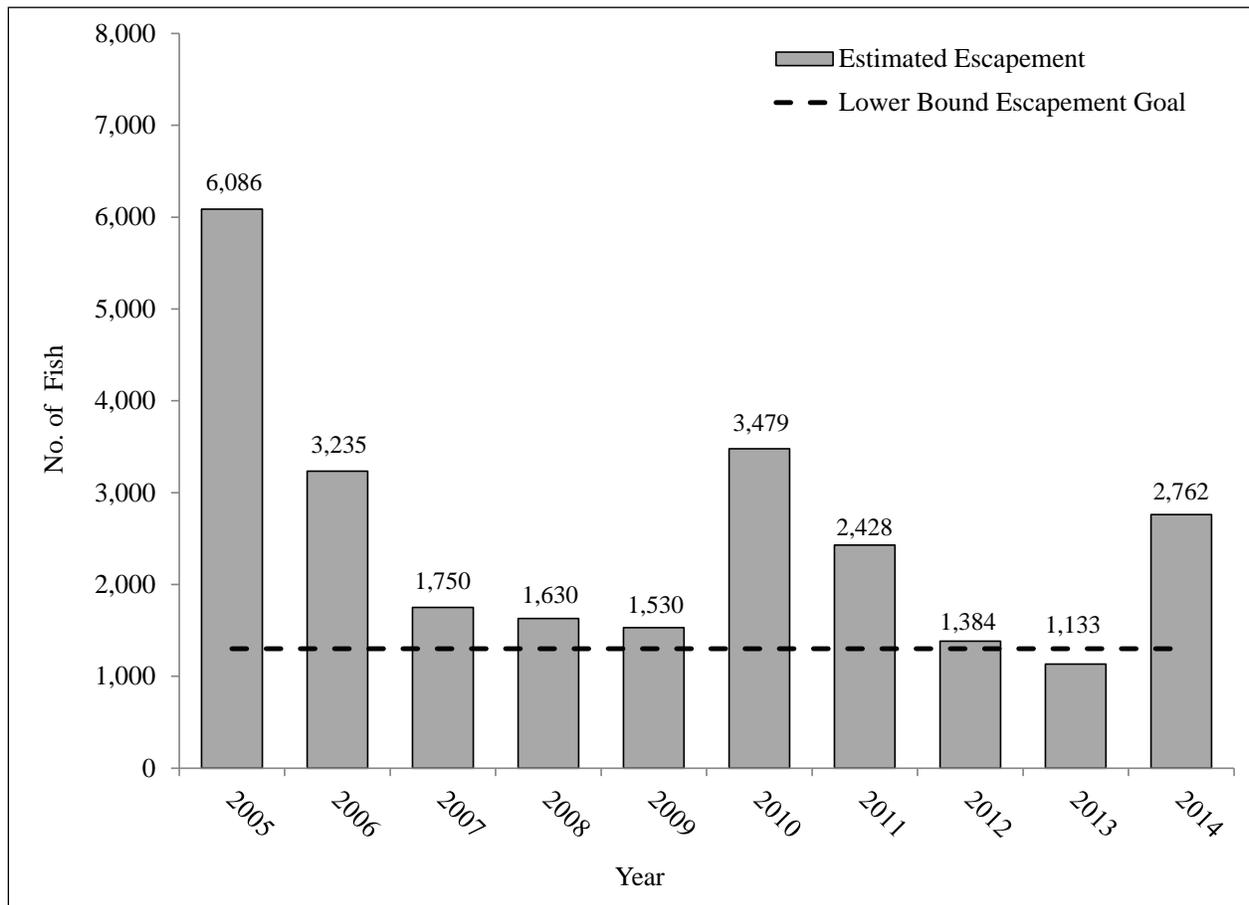


Figure 6.—Estimated escapement of Chignik River Chinook salmon, 2005–2014.

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

Fishery Management and Objectives

The Chignik River Chinook salmon fishing season is open by regulation from January 1 through August 9 with fishing permitted within the entire drainage throughout the season. A complete closure of the drainage to Chinook salmon fishing after August 9 is intended to afford protection

for spawning fish from anglers. A bag limit for Chignik River Chinook salmon over 20 inches in length is set at 2 per day. An annual limit of 5 fish over 20 inches is also in effect.

The primary objective for management of the Chignik River sport fishery is achievement of the EG in combination with maximized opportunity for anglers. The current annual conservation target of 1,300–2,700 is classified as a BEG, which approximates the maximum productivity potential of the run. The Chignik River Chinook salmon BEG is derived not only from historical escapements and the estimated age composition of the runs but also a habitat-based model using watershed volume as a measure of population carrying capacity.

2014 Fishery

Using weir counts as an indicator of overall abundance, the 2014 run of Chignik River Chinook salmon was slightly higher than the mean value for the most recent 10-year period (Table 10). Poor daily weir counts in 2013 and the expectation of low numbers of fish the following year resulted in a preseason restriction of the sport fishery to 1 fish per day and 2 annually in order to conserve escapement (Appendix C1). Daily weir counts throughout the 2014 run indicated that the projected escapement would achieve the EG, and after mid-July, the preseason restrictions on the sport fishery were lifted. Logsheets received for guided anglers reported 88 Chinook salmon harvested from the 2014 run (Table 11), although guided anglers released nearly 2 Chinook salmon for every 1 harvested. Published SWHS estimates of catch and harvest are not available for either year due to an inadequate number of responses to the survey. This fact indicates overall effort on the Chignik River sport fishery is probably low, and has remained relatively stable over time.

Unlike the previous year when the Chinook salmon BEG was not achieved for the first time, the 2014 escapement slightly exceeded the lower end range of 2,700 fish.

MARINE WATERS

Fishery Description

Over the past 20 years, a marine waters Chinook salmon sport fishery has developed within the KRA, mostly in waters adjacent to the City of Kodiak but more recently from a number of remote lodges and the community of Old Harbor as well. Waters surrounding the Kodiak Archipelago and northern Alaska Peninsula provide ocean rearing for Chinook salmon populations across the North Pacific. Previous recoveries of tagged fish harvested around Kodiak Island identified wild and enhanced stocks of origin not only in Alaska but also Canada and the Pacific Northwest (Schwarz et al. 2002). Most of the marine waters harvest by KRA anglers is taken from the waters of Chiniak Bay.

Development of the KRA fishery has coincided with growth of a Kodiak chartered vessel boat fleet, which is primarily based from the City of Kodiak. In recent years, harvests of Chinook salmon by charter vessel clients have averaged 42% of the annual total (Figure 7).

The KRA marine waters Chinook salmon fishery occurs under provisions of a regulatory management plan established in 2005 and amended in 2008, which prescribes an annual guideline harvest level (GHL) of 11,000 fish (Appendix B1). Additional provisions stipulate periodic review of the plan by the BOF when a recent harvest trend exceeds this allocation. Achievement of the GHL is measured by the SWHS. Angler effort for marine waters Chinook salmon in the AP–AIRA is not governed by a regulatory management plan. The daily bag and

possession limit for Chinook salmon in all marine waters of the KMA is currently set at 2. There is no annual limit established for this fishery.

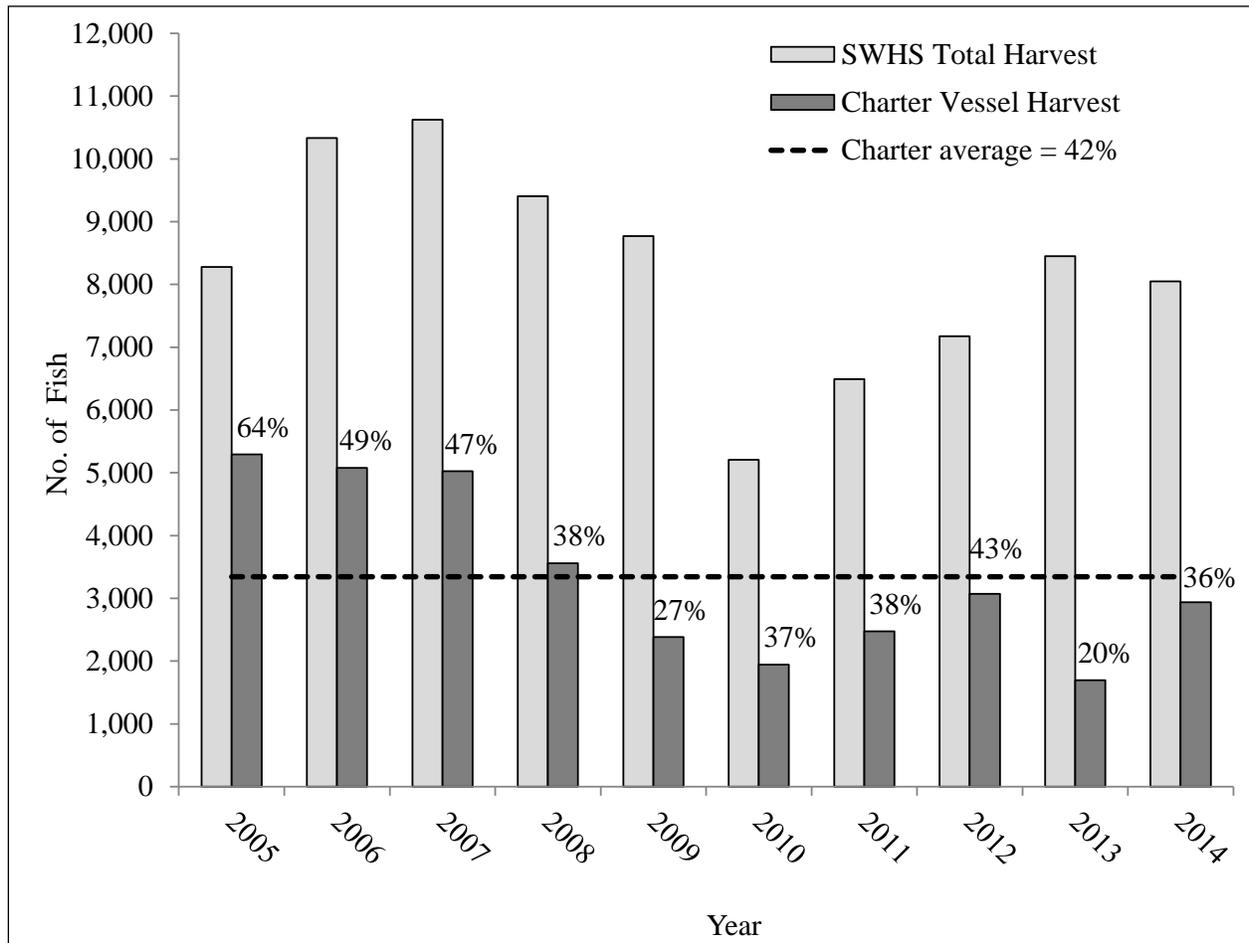


Figure 7.—Comparison of Statewide Harvest Survey estimates of total marine water Chinook salmon harvest to total reported charter boat Chinook salmon harvest by guided anglers in the Kodiak Regulatory Area, 2005–2014.

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>. ADF&G Freshwater Sport Fish Guide Logbook Program.

Historical Catch

Overall angler catch and effort information for marine waters Chinook salmon is currently provided by the SWHS. Guided angler statistics for chartered vessel trips are also available from ADF&G’s Saltwater Logbook Database.

Between 2005 and 2014, the SWHS estimated that angler harvests of KMA Chinook salmon ranged between 5,496 and 10,908, averaging 8,665 (Table 12). Harvests from AP–AIRA waters were a nominal percentage, averaging just 203 Chinook salmon and never totaling more than 467 in a single year. Saltwater Logbook Database statistics showed a clear trend of growth in the charter vessel fishery in earlier years, which led to the establishment of the current regulatory

management plan in 2002, but during 2005–2014, the guided sectors harvest dropped as much as 75% from 5,053 in 2006 to 1,697 in 2013 (Table 13).

Table 12.–Statewide Harvest Survey estimates of Kodiak Management Area marine waters Chinook salmon harvest and catch, 2005–2014.

Year	Harvest			Catch ^a		
	Alaska Peninsula Regulatory Area	Kodiak Regulatory Area	Kodiak Management Area total	Alaska Peninsula Regulatory Area	Kodiak Regulatory Area	Kodiak Management Area total
2005	335	8,278	8,613	456	12,808	13,264
2006	27	10,333	10,360	215	13,217	13,432
2007	282	10,626	10,908	427	14,334	14,761
2008	63	9,408	9,471	140	11,499	11,639
2009	36	8,773	8,809	118	11,694	11,812
2010	288	5,208	5,496	338	6,839	7,177
2011	467	7,926	8,393	2,745	13,093	15,838
2012	399	7,558	7,957	1,604	13,095	14,699
2013	30	8,452	8,482	45	11,844	11,889
2014	107	8,049	8,156	107	11,648	11,755
Average						
2005–2014	203	8,461	8,665	620	12,007	12,627

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Fishery Management and Objectives

A primary management objective for the KRA marine waters Chinook salmon sport fishery is to contain harvests within the current GH L level established by the BOF. Due a lack of adequate inseason catch and effort information available to managers, achievement of this objective is assessed on the basis of trends detectable in SWHS results viewed over time. Because of the mixed-stock nature of the entire KMA marine waters fishery and the lack of resources for separating harvests into genetic stocks, it is not possible to determine the contribution of local and regional Chinook salmon stocks to harvests, either annually or by geographic location. In addition to establishment of the GH L for KRA waters, a relatively conservative daily bag limit established by the BOF for the entire management area is intended to control growth of harvests.

2014 Fishery

The 2014 Chinook salmon KMA harvest of 8,156 was very close to the most recent 10-year average (Table 12). The guided angler Chinook salmon harvest reported in logbooks equaled 2,937 fish (Table 13) and was 36 % of the SWHS total estimate for all anglers.

Without expansion of effort by unguided anglers, it’s uncertain whether future KRA harvest levels will increase. Furthermore, recently implemented federal groundfish regulations for charter boat operators limit prospects for additional growth of this industry within the KRA. In contrast, charter boat operators fishing AP–AIRA waters remain unaffected by these regulations but relatively stable historical Chinook salmon harvest levels indicate that a large increase in catch from this regulatory area is unlikely in the near future.

Table 13.—Guided angler effort and catch (harvest and number released) of Kodiak Management Area marine waters Chinook salmon, 2005–2014.

Location	Year	Total effort ^a		Chinook salmon	
		Vessels	Total clients	Harvest	Released
Chinkiak Bay					
	2005	55	6,015	2,917	139
	2006	61	6,589	2,737	21
	2007	59	5,909	3,812	21
	2008	69	5,468	2,705	13
	2009	54	3,573	1,331	264
	2010	51	4,303	601	16
	2011	47	3,488	1,334	23
	2012	47	3,470	1,070	21
	2013	21	1,821	384	26
	2014	20	2,963	377	19
Afognak and Shuyak islands					
	2005	38	2,358	117	36
	2006	45	2,629	134	2
	2007	51	3,741	232	4
	2008	47	2,903	161	10
	2009	49	2,824	229	70
	2010	50	3,118	363	164
	2011	49	2,126	201	27
	2012	36	1,926	521	12
	2013	41	3,515	513	212
	2014	45	2,968	357	140
Kodiak Regulatory Area ^b					
	2005	141	12,759	4,836	456
	2006	156	14,312	5,011	68
	2007	158	15,504	4,984	40
	2008	144	13,625	3,527	33
	2009	131	11,250	2,124	259
	2010	123	12,039	1,524	581
	2011	125	15,134	2,230	131
	2012	121	14,268	3,036	193
	2013	104	12,319	1,687	295
	2014	103	12,805	2,925	337

-continued-

Table 13.–Page 2 of 2.

Location	Year	Total effort ^a		Chinook salmon	
		Vessels	Total clients	Harvest	Released
Alaska Peninsula–Aleutians Regulatory Area					
	2005	6	466	1	4
	2006	12	546	146	2
	2007	16	673	225	9
	2008	18	581	176	0
	2009	28	719	23	5
	2010	32	995	38	5
	2011	25	314	20	0
	2012	8	335	1	0
	2013	7	325	10	0
	2014	5	130	12	0
Total Kodiak Management Area ^c					
	2005	147	16,418	4,840	456
	2006	168	17,272	5,053	71
	2007	174	17,953	5,003	42
	2008	162	15,471	3,730	36
	2009	159	13,047	2,365	280
	2010	155	14,149	1,969	312
	2011	150	15,448	2,488	159
	2012	129	14,603	3,037	193
	2013	111	12,644	1,697	285
	2014	108	12,935	2,937	337

Source: ADF&G's Saltwater Logbook Database.

^a Includes all charter vessel effort for all species.

^b Includes sum of effort and catch for Chiniak Bay, Afognak and Shuyak islands, and other waters of the Kodiak Regulatory Area.

^c Includes sum of effort, catch, and harvest for Kodiak and Alaska Peninsula–Aleutian Islands Regulatory Areas.

OTHER FISHERIES

Although relatively large runs of Chinook salmon are present in several AP–AIRA drainages, the remote location and associated high cost of accessing these fisheries has largely limited current angling effort to a small number of remote lodges offering exclusive services. Very few unguided anglers frequent any of these fisheries. The low effort levels preclude reliable estimates for catch and harvest from the SWHS. However, statistics available from guided angler logbooks are generally reflective of total effort due to the lack of participation by unguided anglers. The limited number of guide operators utilizing these Chinook salmon stocks requires that logbook catches remain confidential, and therefore are not presented in this report. Drainages in the AP–AIRA supporting Chinook salmon populations currently exploited by sport fisheries include the Nelson (Sapsuck), Ilnik, Cinder, Sandy, Meshik, and King Salmon rivers.

COHO SALMON FISHERIES

Coho salmon runs to the KMA include a substantial number of large and small stocks, which in aggregate support the area's most popular sport fishery for both resident and nonresident anglers. Because of this abundant resource, the highest angler effort levels are concentrated near population centers where the least expensive access to the sport fishery is available. Accordingly, drainages intersecting or adjacent to the Kodiak Road Zone are the most heavily exploited and are consequently prioritized for escapement monitoring and responsive management. The marine waters coho salmon sport fishery is also mostly utilized near the Kodiak Road Zone, particularly within the area of Chiniak Bay. In general, angler exploitation rates in the sport fishery outside the Road Zone are relatively light in comparison to the historical abundance of fish. Remotely accessible coho salmon fishing is most popular in nearshore marine waters next to streams draining Shuyak Island and also at several locations along the northern end of nearby Afognak Island. Like the Chinook salmon fisheries, angler effort levels on coho salmon stocks in the AP-AIRA are small to the extent that annual estimates of catch and harvest by individual location are rarely available from the SWHS.

Although KMA coho salmon are also harvested by subsistence fishermen and are a target species in local commercial fisheries, a formal allocation of these stocks through the BOF has not occurred or been deemed necessary by users. Consequently, at the current time there are no coho salmon regulatory management plans pertaining to sport fisheries occurring within the management area.

The primary management objective for KMA coho salmon stocks is to achieve and maintain sustained yield of the stocks through fisheries monitoring and attainment of established EGs. Because of run timing and associated environmental factors as well as budgetary constraints, few KMA coho salmon runs are annually monitored for escapement using weirs. Consequently, spawning assessment is mostly limited to escapement index counts obtained from ground surveys, and relative run strength germane to commercial harvesting is measured on the basis of fishery performance. To ensure stocks are conserved, when necessary, angler harvests can be limited by reducing daily and seasonal bag limits, prohibiting bait, and reducing time and areas open to fishing. However, none of these measures have been instituted within the KMA for at least a decade as a result of monitoring-based perceptions by managers of sustained and healthy returns. In fact, during the same period, coho salmon sport fishing regulations along the Road Zone have been liberalized by emergency order (EO) to allow increased angler opportunity on verifiable harvest surpluses.

During the last 10 years, selected KMA coho salmon freshwater harvests have ranged from 8,938 to 21,586 fish, although harvest statistics varied by an even wider margin in the same period for some individual drainages (Table 14). Some of these locations reported stable to declining harvests, while others showed increases greater than 100% during consecutive years. Any correlated increases or declines in angler participation are hard to detect, due to the fact that the SWHS does not measure species-specific effort.

Table 14.—Statewide Harvest Survey estimates of fresh waters coho salmon harvest and catch for selected locations within the Kodiak Management Area, 2005–2014.

Location		Year										Average 2005– 2014	
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013		2014
Buskin River													
	Harvest	4,860	3,010	6,567	5,215	4,259	5,207	2,847	3,640	1,926	4,926	5,388	4,299
	Catch	8,562	5,006	11,468	8,434	6,469	8,014	4,492	5,376	2,680	7,698	7,385	6,702
Pasagshak River													
	Harvest	2,441	3,655	1,121	2,095	2,836	2,257	2,417	3,509	2,125	2,023	2,457	2,450
	Catch	5,617	8,135	2,459	4,964	5,588	3,942	4,371	7,138	3,055	3,991	3,962	4,761
American River													
	Harvest	1,283	1,636	835	980	799	401	390	710	409	790	1,323	827
	Catch	3,536	2,637	1,963	1,910	1,339	659	1,533	1,499	779	1,203	2,245	1,577
Olds River													
	Harvest	2,082	1,993	1,617	1,401	696	1,864	1,253	1,351	734	1,047	5,343	1,730
	Catch	4,155	8,565	3,453	2,620	1,938	2,427	2,124	2,574	1,230	2,906	8,836	3,667
Saltery Cove													
	Harvest	1,071	1,569	1,023	580	823	798	1,142	1,301	533	1,574	2,010	1,135
	Catch	6,129	3,335	1,981	909	1,771	1,448	1,683	2,398	856	3,698	4,259	2,234
Karluk River and Lagoon ^a													
	Harvest	822	1,771	2,832	1,365	1,236	1,872	710	721	694	1,200	447	1,285
	Catch	2,282	8,964	5,315	5,191	4,755	8,350	2,810	3,049	1,109	2,081	826	4,245
Ayakulik River													
	Harvest	561	786	752	391	593	236	47	–	–	–	330	448
	Catch	4,935	6,836	2,957	3,828	4,742	2,724	1,723	–	–	–	4,756	3,938
Alaska Peninsula–Aleutian Islands													
	Harvest	2,243	2,175	2,182	2,218	4,641	6,257	3,351	2,510	2,517	1,950	4,288	3,209
	Catch	10,928	11,152	7,772	4,472	15,022	12,875	8,608	5,510	10,728	5,299	16,880	9,832
Total													
	Harvest	15,363	16,595	16,929	14,245	15,883	18,892	12,157	13,742	8,938	13,510	21,586	15,248
	Catch	46,144	54,630	37,368	32,328	41,624	40,439	27,344	27,544	20,437	26,876	49,149	35,774

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996–. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Harvest and catch in the Karluk River and Lagoon are reported for only below the weir in 2010 and 2014 in the SWHS.

KODIAK ROAD ZONE

Fishery Description

With logistically convenient access for anglers and a historically high abundance of fish, the freshwaters of the Kodiak Road Zone are a mainstay of the KMA coho salmon sport fishery. Kodiak roads are intersected by 13 fishable streams supporting modest to large coho salmon runs plus 2 nearby drainages accessible by ATV trail routes and aircraft. Some of the more productive road system coho salmon stocks are in the Buskin, Pasagshak, Saltery, Olds, Miam, and American rivers (Figure 3).

Coho salmon runs in Road Zone streams typically begin during mid-August and, in some drainages, continue through early November. Spawning occurs from late October through December and typically peaks in mid-November. Spawning areas include both mainstem stream sections well above intertidal zones and most tributary creeks. Some shoal spawning reportedly also occurs within the Pasagshak River drainage along the northeastern shoreline of Lake Rose Tead.

Uplands surrounding Road Zone streams targeted by coho salmon anglers include municipal, state, and Alaska Native corporate landownership. Angler access to the sport fishery has historically been mostly unrestricted, due in part to a recently settled 30-year ownership dispute over the majority of Alaska Native controlled lands. Current public access to the fishery across these uplands is on a permit-only basis.

Historical Catch

From 2005 to 2014, published SWHS estimates of freshwater catch and harvest of Road Zone coho salmon have consistently been available only for the Buskin, Pasagshak, American, Olds, and Saltery river drainages. Among these individual locations, most fish were taken from Buskin River waters, with an annual average harvest of 4,299 accounting for nearly 30% of the KMA average harvest of these locations in the same period (Table 14). By comparison, 10-year average harvests for Pasagshak, American, Olds, and Saltery river drainages ranged between 827 and 2,450 fish. Despite some large fluctuations in annually estimated harvest totals by individual stream, between 2005 and 2014, harvest levels for these Road Zone drainages remained relatively stable or even declined. For all 5 locations, anglers reported releasing an average of between 2 and 4 coho salmon for each 1 harvested.

Catch reports since 2005 from the ADF&G Freshwater Logbook Program for the Kodiak Road Zone include significant guided angler activity at Pasagshak and Saltery rivers. At Pasagshak River, annual harvests have been moderate, ranging between 10 and 98 (Table 15). Reported Saltery River harvests were much higher, although following a peak harvest in 2005 of 724, the number of fish annually taken has more recently been about 340 fish (Table 15). At both drainages, guided anglers have reportedly released between 1 and 5 coho salmon for each 1 harvested (Table 16).

Table 15.—Guided angler freshwater coho salmon harvest from selected KMA drainages, 2005–2014.

Stream	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ayakulik River	896	502	984	184	216	199	477	295	289	232
Olga Bay streams	74	90	256	214	272	295	539	398	432	264
Karluk River	441	1,222	511	604	595	100	134	533	320	98
Little River	11	9	5	3	3	2	10	3	13	7
Pasagshak River	65	12	19	50	10	5	98	16	45	23
Saltery River	724	593	294	484	295	236	565	340	347	343
Uganik River	74	122	136	55	54	31	234	102	166	103
Zachar Bay streams	142	227	236	74	109	82	11	10	44	71
Big River	464	473	110	147	197	15	206	104	0	0
Cinder River	70	0	0	210	337	187	316	114	0	174
Cold Bay streams	246	125	111	110	74	91	40	99	22	32
Ilnik River	377	417	195	74	297	135	0	0	0	0
Meshik River	180	0	267	295	99	15	88	79	0	31
Nakalilok Bay streams	0	0	11	15	9	12	2	14	11	18
Ocean River	236	514	537	262	183	199	119	173	282	82
Sapsuk River	0	0	250	335	555	607	470	462	548	232
Swishak River	83	12	240	257	186	169	356	375	422	407
Yantarni Creek	2	3	5	2	12	1	17	16	8	0

Source: ADF&G Freshwater Sport Fish Guide Logbook Program.

Table 16.—Freshwater coho salmon caught and released by guided anglers from selected KMA drainages, 2005–2014.

Stream	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ayakulik River	2329	1440	3586	1743	1932	1483	2000	1142	1503	3313
Olga Bay streams	119	61	200	122	236	135	277	76	137	84
Karluk River	532	1696	410	423	571	196	510	131	380	81
Little River	724	772	98	124	190	75	677	187	951	157
Pasagshak River	224	17	84	209	99	58	50	92	129	122
Saltery River	1287	737	523	283	479	94	1145	366	1088	562
Uganik River	441	972	357	178	135	197	904	165	304	77
Zachar Bay streams	460	69	294	72	36	26	9	16	53	23
Big River	1367	1957	148	64	334	9	289	0	0	0
Cinder River	130	0	0	963	2024	1053	1896	1174	0	472
Cold Bay streams	266	410	305	152	11	149	372	68	24	0
Ilnik River	753	1559	133	205	182	159	0	0	0	0
Meshik River	71	0	547	518	203	45	89	54	0	54
Nakalilok Bay streams	0	0	169	313	764	208	673	112	92	120
Ocean River	133	1169	740	424	127	178	207	123	710	119
Sapsuk River	0	0	27	2576	2004	3352	4368	3689	1914	3107
Swishak River	384	101	295	590	389	248	932	574	564	574
Yantarni Creek	791	1233	616	708	793	308	1716	414	302	167

Source: ADF&G Freshwater Sport Fish Guide Logbook Program.

Escapement

Because of high exploitation rates by anglers as well as other users, coho salmon escapements to Road Zone drainages are monitored more closely than those for other stocks within the KMA. Buskin River escapements are monitored by SF through operation of a salmon counting weir established in 1985 approximately one-half mile above the stream terminus. Harvests in the sport fishery occurring upstream of the weir are subtracted from the total count to estimate escapement in a given year.

From 2005 through 2014, weir counts of Buskin River coho salmon ranged from 5,291 to 16,596 fish and averaged 9,052 (Appendix D4). Estimated escapements during the same period followed a downward trend beginning in 2010 that culminated in 2013 with the lowest escapement on record of 4,401 (Figure 8). It should be noted that during most years, some proportion of the total Buskin River count is derived from interpolated values to substitute for daily counts lost as a result of periodic high water events that render the weir inoperable. Even with the recent and pronounced downward trend in abundance of spawning fish, Buskin River coho salmon escapements have consistently achieved the Buskin River coho salmon BEG range in effect at the time.

Coho salmon runs to other Road Zone drainages are annually monitored by late-season ground-based surveys to obtain index counts of escapement. In addition to the Buskin River, coho salmon SEG threshold escapement goals have been established for 3 Road Zone drainages: Pasagshak River (1,200), American River (400), and Olds River (1,100). A summary of counts obtained for these and other streams between 2005 and 2014 are provided in Table 17.

Fishery Management and Objectives

Regulations for the Road Zone coho salmon sport fishery are more restrictive than elsewhere in the KMA due to the relatively high levels of angler effort and associated potential for overharvest. With the exception of Buskin River, which has more liberalized regulations resulting from a long trend of escapements in surplus to the EG, nearly all streams intersecting Road Zone highways are annually closed to upstream salmon fishing from August 1 to September 15 in order to conserve inriver runs. In addition, Road Zone coho salmon daily bag and possession limits are uniformly set at 2 fish to help limit harvest rates. Because Buskin River runs are monitored by use of the weir, bag limits can be reduced or increased inseason as needed to achieve the BEG. A lack of inseason run strength information for the other Road Zone streams prescribes a more passive management approach, with regulatory changes to angler methods and means instituted in response to escapement trends over time based on results of the postfishery index surveys.

2014 Fishery

During 2014, a total 5,388 coho salmon were harvested from the Buskin River, which was approximately 1,000 fish above the 2005–2014 mean harvest (Table 14). Persistent flood conditions during the 2014 season precluded efficient operation of the Buskin River weir and a precise inseason assessment of the coho salmon run. Consequently, both final and inseason escapement was partially estimated using extrapolated values derived from counts of coho salmon passing through a separate weir at Buskin Lake. Following verification from the lake weir counts that the upper end of the coho salmon BEG would not be achieved, bag and possession limits remained at 2 fish during the entire run. However, the final 2014 estimated

escapement of 6,730 coho salmon (Figure 8) exceeded the lower end of the current 4,700–9,600 BEG range.

Anglers reported average catches of coho salmon at other Road Zone drainages throughout the 2014 run. Guided angler catch and harvests reported for the Pasagshak and Saltery rivers were comparable to those from the preceding 3 years (Table 15). With some exceptions, postfishery escapement indices generally compared favorably with average historical counts for each stream surveyed because index counts were comparable to the 2005–2014 mean for 6 of 11 streams surveyed (Table 17). Survey counts indicated that current SEG threshold numbers were achieved in 2014 for the American, Pasagshak, and Olds rivers.

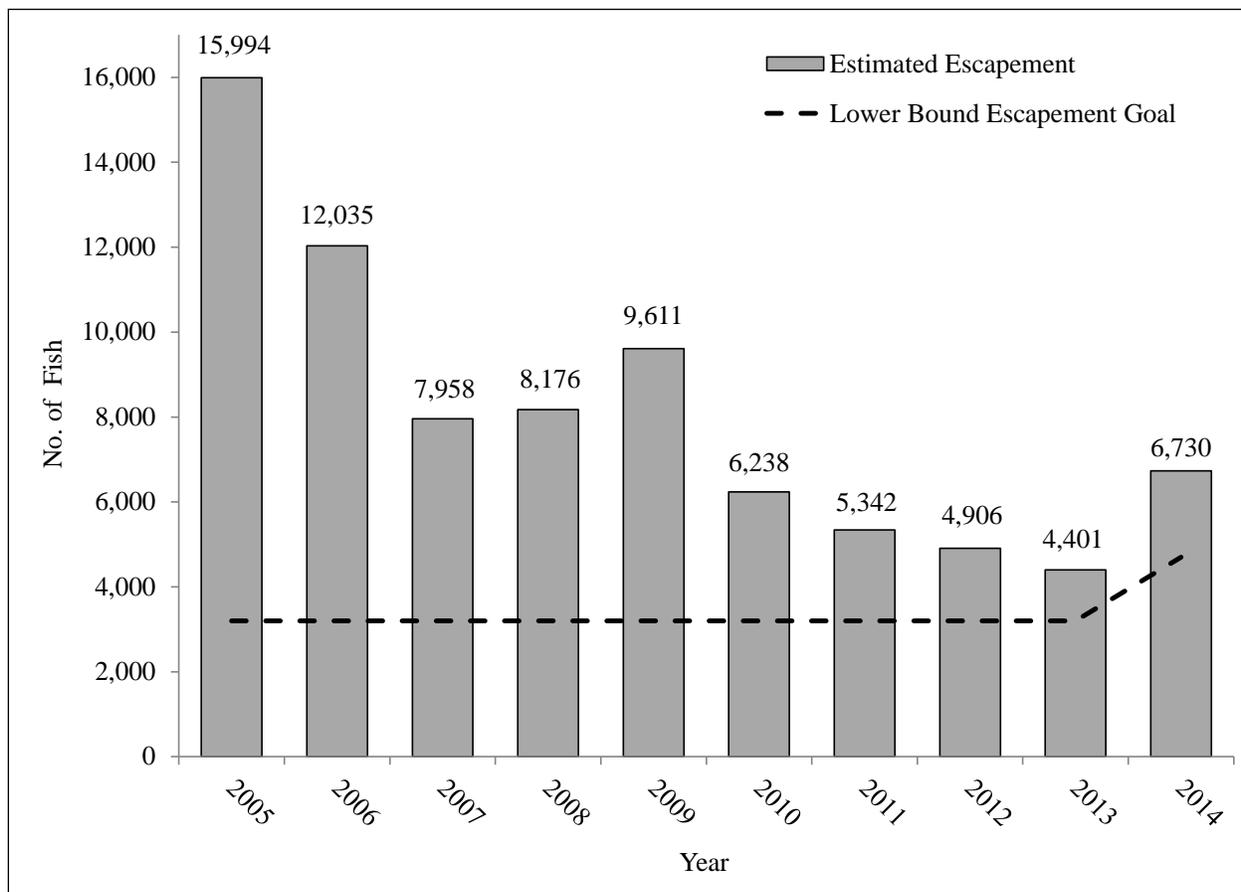


Figure 8.—Estimated escapement of Buskin River coho salmon, 2005–2014.

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

Table 17.—Coho salmon escapement survey index counts for selected drainages within the Kodiak Road Zone, 2005–2014.

Location	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
American River	339	2,033	307	700	639	58	1,061	427	841	1,595	800
Chiniak Creek	308	127	161	21	17	1	20	66	43	31	80
Felton Creek	160	166	83	232	160	ns	633	17	50	22	169
Monashka Creek ^a	282	238	185	19	132	37	36	300	679	230	214
Myrtle Creek	204	61	25	ns	0	ns	ns	ns	ns	ns	73
Olds River	2,495	1,912	868	656	697	127	1,003	624	2,145	1,320	1,185
Pasagshak River	3,773	937	1,896	3,875	2,385	1,971	1,083	3,132	1,648	4,934	2,563
Pillar Creek ^a	285	300	130	78	89	56	248	858	1,043	750	384
Roslyn Creek	687	328	198	87	ns	18	293	159	460	3,900	681
Russian Creek	570	694	463	262	144	97	158	39	214	246	289
Salonie Creek	345	1,111	326	970	ns	90	942	304	286	509	543
Sargent Creek	260	334	241	264	74	44	135	90	40	75	156
Twin Creek	79	37	34	13	27	ns	ns	ns	ns	ns	38
Total	9,787	8,278	4,917	7,177	4,364	2,499	5,612	6,016	7,449	13,612	6,971

Source: Data archives, ADF&G Division of Sport Fish, Kodiak Area Office.

Note: The abbreviation “ns” means not surveyed.

^a Monashka and Pillar creeks coho salmon runs were influenced by the release of hatchery fish in 2012–2014.

MARINE WATERS

Fishery Description

Trolling for coho salmon in marine waters of the KMA is a well-established sport fishery which, like the troll fishery for Chinook salmon, largely occurs in nearshore waters adjacent to the City of Kodiak. Angler reports indicate that although the fishery generally lasts from mid-July through mid-September, peak effort occurs between mid and late August. Many harvested fish taken later in the season are probably stocks of local origin, whereas those caught earlier may also consist of migratory fish because of the calendar disparity between early season harvests and the typical run timing for most KMA stocks. Studies of the coho salmon marine waters sport fishery harvest composition have not been conducted, although it’s likely that later season harvests in nearshore waters consist mostly of local stocks. It’s also possible that as a result of the typical run timing of coho salmon to the Kitoi Bay hatchery facility located on Afognak Island, coho salmon production from this facility, which has occurred since the early 1990s, has significantly supplemented the marine waters sport fishery during July and early August³.

Similar to the KRA marine waters Chinook salmon fishery, increased local interest in trolling for coho salmon has coincided with growth of the guided angler sport fishery. Harvests of coho salmon by charter vessel clients currently make up approximately one-third of the annual total.

³ Kodiak Regional Aquaculture Association. 2014. Kitoi Bay Hatchery Annual Management Plan. Kodiak Regional Aquaculture Association, Kodiak.

Angler harvests of coho salmon in marine waters of the AP–AIRA are relatively negligible, typically accounting for less than 1% the total KMA harvest annually estimated by the SWHS.

Historical Catch

Marine waters KMA coho salmon harvests averaged more than 17,291 fish in the KMA from 2005 to 2014 (Table 18). The KRA waters harvests during this period comprised 95% of the overall total. Relatively few caught fish were released during any years reported, averaging less than 1 fish thrown back for every 1 harvested.

Guided angler coho salmon harvests reported in logbooks since 2005 have ranged between 3,418 and 13,814 fish, with the AP–AIRA harvest composing a very small fraction of the annual total (Table 19). The most significant annual fluctuations in harvest have occurred in Chiniak Bay waters within and adjacent to the Kodiak Road Zone, where more than 6,600 fish were reported in 2005 but less than 2,000 two years later. Unlike SWHS estimates for all anglers, historical coho salmon catches reported in logbooks show that typically few fish are released. During most years, and regardless of fishing location, virtually every caught fish was subsequently harvested.

Table 18.—Statewide Harvest Survey estimates of Kodiak Management Area marine water coho salmon harvest and catch, 2005–2014.

Year	Chiniak Bay		Afognak and Shuyak islands		Total Kodiak Regulatory Area ^a		Alaska Peninsula and Aleutian Islands ^b		Total Kodiak Management Area	
	Harvest	Catch	Harv.	Catch	Harv.	Catch	Harv.	Catch	Harv.	Catch
2005	11,532	15,981	5,938	9,675	26,054	40,963	801	2,659	26,855	43,622
2006	6,221	9,200	3,800	5,922	15,622	24,148	694	2,033	16,316	26,181
2007	9,003	10,450	4,962	7,138	21,925	29,725	1,459	2,274	23,384	31,999
2008	10,820	13,372	3,136	4,250	18,652	24,578	325	1,716	18,977	26,294
2009	8,244	9,821	1,918	2,923	17,612	23,978	1,010	3,039	18,622	27,017
2010	4,609	5,271	3,857	4,814	14,569	18,591	1,022	1,492	15,591	20,083
2011	5,377	7,433	2,826	4,282	13,735	18,416	582	1,177	14,317	19,593
2012	4,906	5,769	2,211	2,993	12,897	15,328	718	1,361	13,615	16,689
2013	3,311	3,698	4,594	5,665	13,428	17,448	763	1,179	14,191	18,627
2014	3,186	3,586	1,915	2,589	10,391	13,874	646	768	11,037	14,642
Average										
2005–2014	6,721	8,458	3,516	5,025	16,489	22,705	802	1,770	17,291	24,475

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Note: Catch is the total number of fish caught by anglers (harvest and release).

^a Includes harvest and catch estimates reported in the SWHS for the entire KRA (including “other” categories)

^b Includes harvest or catch from other unspecified locations in the Alaska Peninsula and Aleutian Islands SWHS area.

Table 19.—Guided angler effort and sport catch (harvest and numbers released) of Kodiak Management Area marine waters coho salmon, 2005–2014.

Location	Year	Total effort ^a		Coho salmon	
		Vessels	Clients	Harvest	Released
Chiniak Bay					
	2005	55	6,015	6,610	408
	2006	61	6,589	3,404	54
	2007	59	5,909	1,936	62
	2008	69	5,468	3,166	88
	2009	54	3,573	1,551	—
	2010	51	4,303	775	—
	2011	47	3,488	1,459	—
	2012	47	3,470	963	—
	2013	21	1,821	339	—
	2014	20	2,963	211	—
Afognak and Shuyak islands					
	2005	38	2,358	2,576	628
	2006	45	2,629	2,477	438
	2007	51	3,741	4,082	513
	2008	47	2,903	2,514	106
	2009	49	2,824	2,876	—
	2010	50	3,118	2,858	—
	2011	49	2,126	3,012	—
	2012	36	1,926	1,611	—
	2013	41	3,515	1,652	—
	2014	45	2,968	2,112	—
Total Kodiak Regulatory Area ^b					
	2005	141	12,759	13,675	1,431
	2006	156	14,312	9,706	1,264
	2007	158	15,504	10,593	903
	2008	144	13,625	8,597	260
	2009	131	11,250	8,010	—
	2010	123	12,039	7,734	—
	2011	125	15,134	9,144	—
	2012	121	14,268	4,323	—
	2013	104	12,319	3,382	—
	2014	103	12,805	5,262	—
Alaska Peninsula and Aleutian Islands Regulatory Area					
	2005	6	466	129	8
	2006	12	546	57	1
	2007	16	673	42	7
	2008	18	581	53	24
	2009	28	719	349	—
	2010	32	995	515	—
	2011	25	314	312	—
	2012	8	335	20	—
	2013	7	325	36	—
	2014	5	130	130	—

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Table 19.–Page 2 of 2.

Location	Year	Total effort ^a		Coho salmon	
		Vessels	Clients	Harvest	Released
Total Kodiak Management Area ^c					
	2005	147	16,418	13,814	1,439
	2006	168	17,272	9,852	1,293
	2007	174	17,953	10,673	903
	2008	162	15,471	9,048	335
	2009	159	13,047	9,442	–
	2010	155	14,149	8,996	–
	2011	150	15,448	9,987	–
	2012	129	14,603	4,343	–
	2013	111	12,644	3,418	–
	2014	108	12,935	5,392	–

Source: ADF&G's Saltwater Logbook Database.

^a Includes all charter vessel effort for all species.

^b Includes sum of effort, numbers released, and harvest for Chiniak Bay, Afognak and Shuyak islands, and other waters of the Kodiak Regulatory Area.

Fishery Management and Objectives

The KMA marine waters coho salmon fishery is managed passively through the establishment of regulatory daily bag and possession limits applied uniformly in all waters except within 1 mile of the coastline bordering the Kodiak Road Zone and Spruce Island, where more restrictive limits prevail to provide a conservation buffer for local coho salmon stocks. The daily bag and possession limits for coho salmon outside the 1-mile boundary are 5 fish, whereas inside the Road Zone perimeter, the bag and possession limits are currently set at 2 fish. There is no annual limit established for this fishery.

2014 Fishery

Coho salmon harvests totaling 11,037 fish in areawide marine waters in 2014 were substantially lower than the recent 10-year average of 17,291 fish (Table 18). However, the 2014 SWHS estimated harvest in Chiniak Bay of 3,186 fish dropped just over 100 fish from the 2013 estimate. The overall KRA harvest dropped by more than 3,000 fish between 2013 and 2014. Harvest in the AP–AIRA remained virtually the same in 2014 compared to the previous year, but at 646 fish, this harvest still equaled less than 4% of the KMA marine waters total.

OTHER FISHERIES

Although dispersed angler effort for coho salmon occurs annually at or within marine waters adjacent to numerous KMA drainages outside the Kodiak Road Zone, those most significant to the sport fishery overall include the marine waters near the Afognak River, Pauls and Portage river drainages located on the north end of Afognak Island, Shuyak Island streams, and the Uganik, Karluk, and Ayakulik rivers along the west side of Kodiak Island. Individually, these locations rarely support effort levels adequately captured by the SWHS, which indicates that exploitation rates on the affected coho salmon stocks are probably low. Guided angler effort at

Afognak Island and Shuyak Island locations appears mostly in Saltwater Logbook Database records, and harvests for these locations have ranged between 1,611 and 4,082 since 2005 (Table 19). Unguided anglers also frequent these and other remote locations, although where available, guided angler logbook harvest statistics generally represent a majority of total effort. In aggregate, annual coho salmon harvests in freshwaters outside the Kodiak Road Zone typically account for well below one-half the number taken within Road Zone lakes and streams.

SOCKEYE SALMON FISHERIES

KODIAK ROAD ZONE

Fishery Description

Although there are approximately 13 individual KMA sockeye salmon stocks that are of interest to anglers, most sport fishing for this species occurs within the Kodiak Road Zone and targets stocks at the Saltery, Pasagshak, and Buskin rivers (Figure 3). Average annual harvests from the Road Zone fishery annually account for more than one-half of the KMA total. Exploitation rates by anglers fishing these streams are significant enough to warrant formal consideration of sport harvests for inseason fisheries management and stock assessment purposes. All other KMA stocks are lightly exploited by anglers in terms of both harvest magnitude and proportion of adult population size.

Historical Catch

Guided and unguided angler combined sport harvests of sockeye salmon from the Saltery, Pasagshak, and Buskin river drainages estimated from the SWHS between 2005 and 2014 ranged from 3,189 to 15,408 fish and averaged 7,618 (Table 20). Saltery River accounted for the single largest proportion of the 10-year average total, at 4,456 fish. Large declines in Saltery River annual harvests from 2004 to 2007 were due to the discontinuation of a counting weir in 2004, which accumulated sockeye salmon inriver and made them more available to anglers. Annual weir operations on the Buskin River near the lake outlet have also helped sustain fishing opportunity for sockeye salmon directly downstream, although anglers also target natural aggregations of Buskin River fish at a major tributary confluence.

With a few exceptions, the ratio of sockeye salmon released to those harvested in the Kodiak Road fishery remained relatively consistent from year to year irrespective of drainage, to the extent that generally less than 1 fish was released for every 1 harvested. Consequently, from 2005 to 2014, an average combined total of 6,869 fish were released annually by anglers fishing the 3 Road Zone drainages.

In contrast to harvest statistics reflective of all angling effort, guided sport fishing harvests of sockeye salmon recorded in logbooks indicate that little activity occurs at Road Zone drainages, with Saltery River being the only location where guided anglers harvested more than 150 fish in a given year between 2005 and 2014. In terms of harvest and total catch, annual guided effort on Saltery River sockeye salmon was substantial during these years, ranging as high as 2,278 fish harvested (Table 21).

Table 20.—SWHS estimates of freshwater sockeye salmon harvest and numbers released for selected locations within the Kodiak Management Area, 2005–2014.

Zone	Location		Year										Average	
			2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
Kodiak Road	Buskin River	Harvest	1,540	1,577	1,509	1,159	687	332	1,277	1,484	1,310	4,237	1,511	
		Release	1,311	1,065	1,634	401	730	699	1,008	454	1,085	6,165	1,455	
	Pasagshak River	Harvest	2,482	1,159	1,721	3,218	1,021	1,027	1,592	2,080	1,685	522	1,651	
		Release	1,269	915	924	1,309	325	1,351	1,024	892	821	735	957	
	Saltery River	Harvest	796	453	564	5,693	4,916	4,303	3,905	3,339	9,940	10,649	4,456	
		Release	1,009	178	3,010	10,109	2,502	6,082	2,241	692	5,163	13,590	4,458	
	Total	Harvest	4,818	3,189	3,794	10,070	6,624	5,662	6,774	6,903	12,935	15,408	7,618	
		Release	3,589	2,158	5,568	11,819	3,557	8,132	4,273	2,038	7,069	20,490	6,869	
	Kodiak Remote	Karluk River and Lagoon ^a	Harvest	2,325	977	5,342	638	1,872	590	424	256	1,792	841	1,506
			Release	3,844	2,654	7,304	3,507	3,073	1,527	1,218	1,608	2,423	2,123	2,928
Ayakulik River		Harvest	226	478	379	1,579	899	617	–	–	–	1,340	788	
		Release	523	1,323	911	6,420	4,725	1,849	–	–	–	3,730	2,783	
Alaska Peninsula-Aleutian Islands ^b		Harvest	297	374	1,375	1,377	3,311	1,229	1,012	998	760	1,425	1,216	
		Release	1,415	2,003	1,530	2,211	2,099	1,883	3,321	815	443	2,609	1,833	
Grand Total		Harvest	7,666	5,018	10,890	13,664	12,706	8,098	8,210	8,157	15,487	19,014	10,891	
		Release	9,371	8,138	15,313	23,957	13,454	13,391	8,812	4,461	9,935	28,952	13,578	

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996–. Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Harvest and catch in the Karluk River and Lagoon are only reported for below the weir in 2010 and 2014 in the SWHS.

^b Includes harvest and release in unspecified locations in the Alaska Peninsula–Aleutian Islands SWHS area.

Table 21.—Guided angler freshwater sockeye harvest and number released for selected locations within the KMA, 2005–2014.

Location		Year									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ayakulik River Drainage	Harvest	820	528	661	619	848	434	384	718	396	544
	Release	2,544	1,928	1,811	2,551	2,190	1,061	653	2,185	733	710
Dog Salmon Creek	Harvest	479	210	516	894	796	782	790	709	679	576
	Release	673	403	178	1,181	628	701	761	946	615	439
Olga Bay	Harvest	55	35	122	175	145	156	13	400	130	132
	Release	136	60	280	451	235	107	3	160	23	77
Karluk River Drainage	Harvest	1,522	1,113	2,132	611	642	64	8	364	132	54
	Release	152	1,053	2,281	892	933	127	56	397	319	50
Saltery River Drainage	Harvest	184	114	80	1,150	868	1,305	2,278	1,335	1,225	1,207
	Release	58	115	37	894	218	926	1,757	788	620	827
King Salmon–Bear River Drainage	Harvest	8	62	82	135	296	245	369	130	0	0
	Release	20	51	263	69	200	106	454	141	0	0
Ilnik Drainage	Harvest	1	0	61	0	0	0	0	0	0	0
	Release	8	1	111	5	0	0	0	0	0	0
Ocean River	Harvest	357	228	107	197	184	32	206	111	0	82
	Release	274	799	227	304	93	88	125	63	0	44
Sapsuk River	Harvest	0	0	54	22	247	387	371	197	294	402
	Release	0	0	24	61	131	915	193	415	565	738

Source: ADF&G Freshwater Sport Fish Guide Logbook Program.

Escapement

Sockeye salmon runs are monitored mostly to enable management of commercial fisheries in numerous drainages throughout the KMA; many of the runs occurring within the KRA have counting weirs installed annually for this purpose. Escapements for some sockeye salmon runs within the AP–AIRA are also censused using weirs, including those within the Chignik, Sapsuck, Ilnik, King Salmon, Sandy, Bear, Orzinski, and McLees river drainages. Monitoring of other stocks in both regulatory areas is accomplished through aerial escapement index surveys.

One of the principal sockeye salmon runs targeted by sport fishing anglers in the KMA is the Buskin River within the KRA. SF annually operates counting weirs on the Buskin River to permit inseason management of this important sport fishery. Annual weir counts and documentation of harvest removals by the sport fishery and other users has allowed establishment and periodic review of a Buskin River sockeye salmon BEG, currently expressed as a range of 5,000 to 8,000 fish. Timing of the Buskin River run typically peaks during the month of June and is 95% complete by mid-July (Appendix D5). Between 2005 and 2014, sockeye salmon escapements have ranged from 17,734 fish in 2005 to just 5,900 in 2008 (Figure 9). During this 10-year period, the lower bound of the current BEG was achieved in each year.

Due to funding constraints, within the last decade Saltery River sockeye salmon escapements have been monitored both through the operation of a counting weir and the periodic use of aerial-based surveys. An annual escapement goal for the Saltery River population is based on the monitoring method used and includes a range of 15,000 to 35,000 fish. Escapements documented annually since 2008 using a weir have averaged 35,987 (Table 22). The Saltery River run peaks later than that of the nearby Buskin River, usually in late July (Appendix D6). Escapement in 2014 (31,772 fish) was below the most recent 10-year average (38,602 fish).

Fishery Management and Objectives

Regulations for sockeye salmon sport fisheries in KMA follow general regulations for other salmon species besides Chinook salmon. Due to elevated levels of angler effort and the potential for overexploitation of stocks, the bag and possession limits in Kodiak Road Zone waters are 2 fish over 20 inches in length whereas for all other locations, the limits are increased to 5. A total of 10 sockeye salmon under 20 inches may be harvested per day in all KMA waters.

With the exception of the 3 sockeye salmon stocks within the Kodiak Road Zone where harvest rates by anglers could deplete the abundance of fish needed for spawning, other populations within the KMA are lightly exploited so that sport harvests have negligible relevance to sustainability. In nearly all the Remote Zone sockeye salmon fisheries, the biological consequences of sport fishing removals cannot be measured, which simplifies management and minimizes the conservation burden borne by anglers. For stocks monitored through the use of weirs, inseason restrictions can be imposed whenever necessary, and conversely, bag limits can be liberalized to allow additional angling opportunity. Sockeye salmon sport fisheries occurring in KMA waters without inseason escapement monitoring are managed passively; the employment of relatively conservative catch limits coupled with low effort levels generally provides adequate measures for conserving individual stocks.

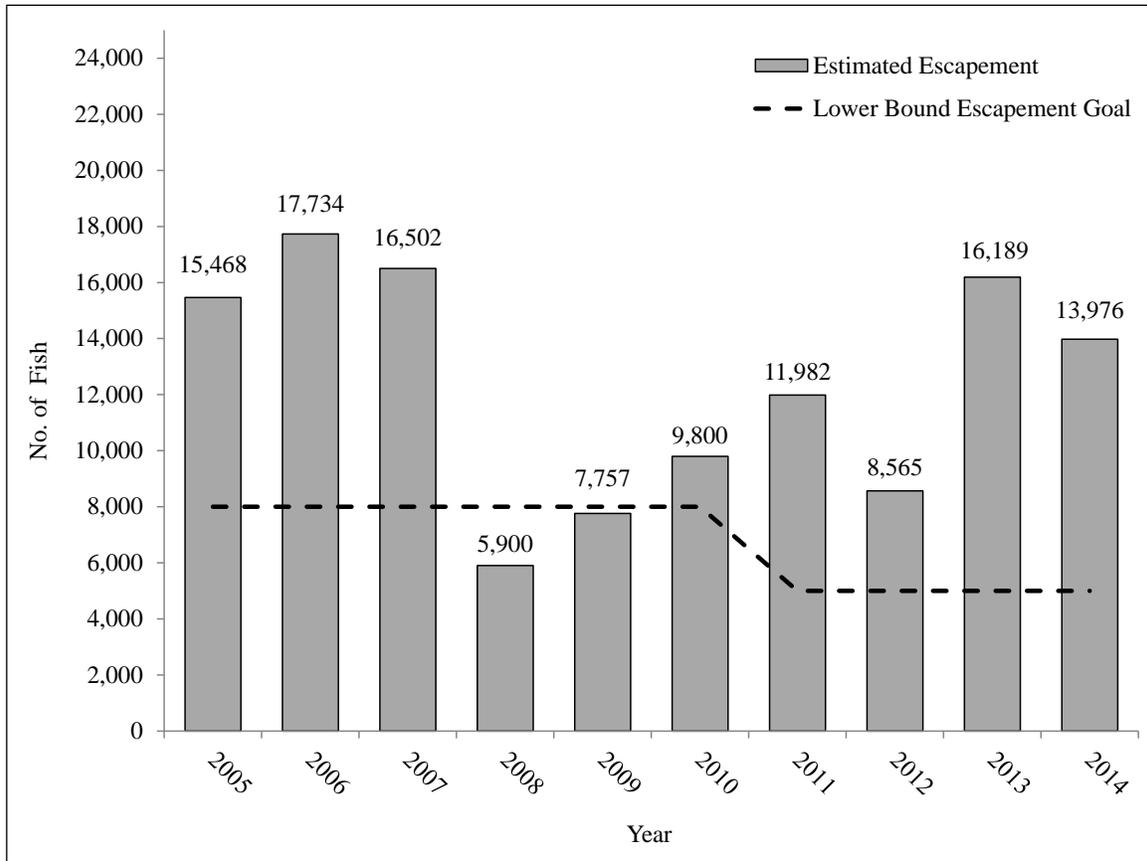


Figure 9.—Estimated escapement of Buskin River sockeye salmon, 2005–2014.

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

Table 22.—Sockeye salmon weir counts for selected locations within the Kodiak Management Area, 2005–2014.

Year	Buskin River	Saltery River ^a	Karluk River (early run)	Ayakulik River	Dog Salmon Creek	Total
2005	15,468	–	268,301	251,906	152,959	688,634
2006	17,734	–	200,641	87,780	108,343	414,498
2007	16,502	–	279,390	283,042	139,808	718,742
2008	5,900	49,266	82,071	162,888	153,276	453,401
2009	7,757	45,651	52,466	315,154	147,798	568,826
2010	9,800	26,809	70,544	262,327	135,100	504,580
2011	11,982	30,768	86,642	261,141	180,603	571,136
2012	8,565	28,188	186,810	328,254	154,416	706,233
2013	16,189	39,456	232,936	282,164	136,059	706,804
2014	13,976	31,772	236,144	297,711	217,461	797,064
Average 2005–2014	12,387	35,987	169,595	253,237	152,582	612,992

^a Saltery River weir was not operated from 2004 to 2007.

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

Source: Fuerst 2015.

2014 Fishery

The combined 2014 Kodiak Road Zone sockeye salmon harvest (15,408 fish) was much larger than the recent 10-year average of 7,618 fish (Table 20). In 2013, Road Zone harvests climbed to 12,935 due entirely to a 3-fold increase of the Saltery River harvest over the preceding year. Release rates of sockeye salmon in 2014 by anglers fishing the Buskin and Pasagshak rivers were comparable to those at the Saltery River, at about 3 fish released for every 2 harvested (Table 20).

The 2014 guided angler catch of 2,034 sockeye salmon at the Saltery River included 827 fish that were subsequently released (Table 21). Saltery River sockeye salmon release-harvest ratios by guided anglers have been fairly consistent over time at 1 fish released for every 2 retained. Similar to coho salmon catches, less than 1 sockeye salmon was released for each 1 harvested at other Road Zone streams during 2014.

OTHER FISHERIES

Several streams on the southwest end of Kodiak Island that are also popular with sockeye salmon anglers include the Karluk and Ayakulik rivers and to a lesser extent the Uganik, Dog Salmon, and Olga rivers. Due to the remote locations and lack of access of these fly-in fisheries, most angler effort is guided. Fly-fishing is usually the preferred catch method. The numbers of caught sockeye salmon that are subsequently released are higher in comparison to rates documented for Road Zone streams. This is probably a result of angler preferences and the inconvenience of processing large numbers of fish in the field.

Although annual SWHS sockeye salmon harvests from the Karluk and Ayakulik rivers have varied considerably since 2005, averages through 2014 respectively totaled 1,506 and 788 fish (Table 20). Harvest at Karluk River in 2014 (841 fish) was less than the 10-year average (1,506 fish). Due to low SWHS response rates, annual estimates of sockeye salmon harvests for the Ayakulik River were unavailable between 2010 and 2013, although in 2014 the SWHS total harvest equaled 1,340 fish. With few exceptions, the annual ratio of release to harvested fish in both fisheries was relatively high compared to the Kodiak road system, with an average of 3 fish released for each 1 retained. In some years as many as 5 fish were released for each 1 harvested.

Since 2005, guided angler harvest statistics from the Freshwater Logbook Program have been more consistently available between years than SWHS estimates for both the Karluk and Ayakulik river fisheries, as well as other locations within the KRA. In any given year, only Karluk River and Saltery River guided harvests have exceeded 1,000 fish (Table 21). Although in many years, including 2014, strong sockeye salmon escapements have resulted in inseason liberalization of bag limits at the Karluk, Ayakulik, and Dog Salmon rivers, increased angler opportunity at these locations did not appear to have a direct impact on harvest levels (Table 21). Ayakulik River guided angler harvests through 2014 have ranged from around 384 to 820 fish, and for each fish annually harvested, approximately 3 were caught and subsequently released.

As mentioned previously, by comparison to sport harvests, the typical escapements of sockeye salmon to the Karluk and Ayakulik rivers are very large, respectively averaging more than 169,000 (early run) and 250,000 from 2005 to 2014 (Table 22). Possibly as a result of optimal escapements during parental years, the 2014 Karluk River sockeye salmon escapement increased to the highest level since 2007. This circumstance triggered the aforementioned liberalization of the sport fishery during those years. Ayakulik River sockeye salmon runs followed a similar

trend to that of the Karluk River, with the 2014 escapement of 297,711 constituting one of the larger on record during the last decade.

In terms of catch, sport fishing effort for sockeye salmon in the AP–AIRA is nominal in comparison to KRA levels and typically accounts for less than 10% of the overall annual KMA catch. In 2014, the SWHS estimated a total harvest of 1,425 sockeye salmon, which is similar to the previous year’s harvest and close to the 10-year average harvest of 1,216 (Table 20). Similarly, catch (harvest plus release) information for guided anglers obtained from the Freshwater Logbook Program for several AP–AIRA drainages, including the Sapsuck (Nelson), Ocean, and King–Bear rivers, which represent a large majority of overall effort in the AP–AIRA, did not show an overall decrease from 2013 to 2014. According to the logbooks, combined guided sport fishing harvests for the 3 streams was less than 500 fish (Table 21).

STEELHEAD–RAINBOW TROUT FISHERIES

Most angling effort on wild rainbow trout (*Oncorhynchus mykiss*) populations within the KMA targets steelhead, although several streams on Kodiak and Afognak islands support some targeted fishing for resident rainbow trout, and anglers that target other species annually produce incidental catches of resident rainbow trout in numerous other streams. The Karluk and Ayakulik rivers are the most popular streams with anglers targeting steelhead, and most of the fishing effort occurs during October through early November. Other KRA drainages supporting the steelhead sport fishery include the Uganik, Dog Salmon, Little, Afognak, Buskin, and Saltery rivers. ADF&G Freshwater Logbook Program records indicate that within the AP–AIRA, steelhead are targeted annually by small numbers of guided anglers fishing the Sandy, Sapsuck, Cinder, and King Salmon river drainages.

Annual stock assessment of steelhead populations is currently limited to documenting kelt numbers migrating out of drainages where weirs are otherwise used to monitor inriver salmon runs. Steelhead research conducted previously on KMA stocks has included mark–recapture experiments to estimate single-year spawning abundance of Ayakulik and Little rivers populations (Kevin VanHatten, Fishery Biologist, Kodiak National Wildlife Refuge; personal communication), and a multiyear study of the Karluk River run in order to estimate total spawners during any year using kelt age composition and abundance (Begich 1992).

Without more adequate knowledge of steelhead population dynamics, a current management strategy for the sport fishery relies on conservative regulations, which include year-round catch-and-release only fishing within the Kodiak Road Zone and the Sandy River drainage (located within the AP–AIRA), and an annual harvest limit of 2 fish over 20 inches in all other KMA fresh waters. Where harvesting is allowed, the daily bag limit for steelhead is 2, only 1 of which may be longer than 20 inches. Historical harvest statistics available from logbooks and the SWHS indicate that anglers rarely retain steelhead in waters where it’s permissible. Anecdotal information suggests that fly-fishing is the preferred capture method for steelhead in the KMA sport fishery.

Resident rainbow trout are periodically sought by anglers in just a few KMA locations, including the Buskin, Uganik, Saltery, and Afognak rivers. Directed effort on freshwater resident rainbow trout is too small to yield annual estimates from the SWHS. Most angler interest in resident populations within KRA waters is limited to those introduced through enhancement, which is discussed in a subsequent report section.

KARLUK RIVER

The Karluk River steelhead sport fishery is probably better known to anglers than any other within the KMA. The combined guided and unguided effort is extensive enough to be captured annually in SWHS statistics. Guided angler activity is also recorded in the ADF&G Freshwater Logbook Program. Most effort occurs near the Karluk River Portage, approximately 7 miles below Karluk Lake. From 2005 through 2014, anglers annually caught between 22 and 2,196 Karluk River steelhead per year and averaged 860 (Table 23). Estimated catch in 2014 was well below the 10-year average, totaling 108 fish. Anglers reported harvesting very few steelhead during the same period, with SWHS annual totals from 2005 to 2014 only exceeding 100 fish during 1 year and averaging just 23. The highest single-year estimated harvest occurred in 2009 at 107 fish.

Table 23.—Statewide Harvest Survey estimates of freshwater steelhead harvest and catch for selected locations within the Kodiak Management Area, 2005–2014.

Year	Karluk River		Ayakulik River		Total	
	Harvest	Catch ^a	Harvest	Catch	Harvest	Catch
2005	16	1,683	0	1,501	16	3,184
2006	52	754	14	930	66	1,684
2007	9	968	0	886	9	1,854
2008	18	2,196	10	329	28	2,525
2009	107	859	0	190	107	1,049
2010 ^b	6	216	0	123	6	339
2011	6	1,556	–	–	6	1,556
2012	0	236	–	–	0	236
2013	8	22	–	–	8	22
2014 ^b	7	108	0	290	7	398
Average 2005–2014	23	860	3	607	25	1,285

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Catch includes both harvest and release.

^b Harvest and catch in the Karluk River and Lagoon were only reported below the weir in 2010 and 2014 in the SWHS.

ADF&G Freshwater Logbook Program records show that guided anglers annually released between 248 and 702 Karluk River steelhead from 2005 through 2014 (Table 24). Guided effort reflected in logbooks (Table 24) mostly accounted for less than one-half of the annual total harvest by all anglers estimated by the SWHS (Table 23) and ranged between 5 and 10 fish per year.

Karluk River steelhead kelt counts fluctuated widely during the same years reported for the sport fishery, ranging as high as 3,688 in 2011 and then falling to 836 the very next year (Table 25). In general, angler success (measured in terms of harvest and release) appeared to have no correlation to kelt abundance in a particular year. However, kelt counts can be highly unreliable as an index of a particular year's spawning population because high water events and other unanticipated circumstances occasionally allow the unmonitored passage of fish. In addition, scheduled weir removals may occur well before a full census of the kelt population has been obtained.

Table 24.–Guided angler freshwater steelhead harvest and numbers released within the KMA, 2005–2014.

Location	Year									
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Ayakulik River										
Harvest	0	2	3	0	0	0	3	0	1	0
Release	354	550	828	357	135	65	118	54	64	39
Dog Salmon Creek										
Harvest	0	0	0	0	0	0	0	0	0	0
Release	45	14	46	51	4	2	0	0	0	0
Karluk River										
Harvest	5	10	10	6	6	2	5	6	2	3
Release	475	540	369	342	702	665	447	503	248	485
Saltery River										
Harvest	0	0	0	0	0	0	0	0	0	0
Release	16	15	54	3	1	0	88	8	1	2
Little River										
Harvest	1	0	1	0	0	0	0	0	0	0
Release	173	160	63	30	51	47	38	49	30	49
Sandy River										
Harvest	0	0	0	0	0	0	2	0	0	0
Release	679	336	419	446	171	0	67	0	0	199
Sapsuk River										
Harvest	0	0	0	0	0	0	0	0	0	0
Release	0	0	6	44	10	0	10	0	0	18

Source: ADF&G Freshwater Sport Fish Guide Logbook Program.

Table 25.–Steelhead kelt counts through the weir on the Karluk and Ayakulik rivers, 2005–2014.

Year	Karluk River	Ayakulik River	Total
2005	1,366	591	1,957
2006	1,685	319	2,004
2007	2,285	342	2,627
2008	1,429	750	2,179
2009	1,879	769	2,648
2010	2,203	585	2,788
2011	3,688	547	4,235
2012	836	459	1,295
2013	1,605	673	2,278
2014	1,381	259	1,640
Average 2005–2014	1,836	529	2,365

Source: Fuerst 2015.

AYAKULIK RIVER

Based on historical SWHS catch levels, the Ayakulik River steelhead fishery is similar to the Karluk River fishery in terms of its importance to anglers. Between 2005 and 2010, estimates of the number of steelhead caught annually ranged between 123 and 1,501, with an annual average of 607 (Table 23). Response rates to the SWHS from 2011 to 2013 were below those needed to estimate steelhead sport fishing catch and harvest. According to logbook records from 2005 to 2014, guided anglers harvested a total of just 9 fish (Table 24). Steelhead releases by guided anglers during the same period ranged from a low of 39 in 2014 to a high of 828 in 2007.

The number of Ayakulik River outmigrating steelhead kelt annually counted through the weir from 2004 to 2013 fluctuated between a high of 769 fish in 2009 and a low of just 259 in 2014, although counts during most other years during this period were relatively close to the 10-year average of 529 (Table 25). Kelt counts during 2014 totaled 259 fish.

OTHER FISHERIES

Sport fishing effort for steelhead elsewhere in the KMA is mostly limited to guided anglers. Unguided effort is minor and sporadic to the extent that SWHS estimates of catch and harvest are generally unavailable. Within AP–AIRA waters, the Sandy River receives the most guided effort; between 0 and 679 fish were caught between 2005 and 2014 (Table 24). During this 10-year period, a total of 2 steelhead were harvested from the Sandy River. In the KRA, besides the Karluk and Ayakulik rivers, steelhead catches by guided anglers since 2005 were principally taken at the Dog Salmon, Saltery, and Little rivers, although during most years fewer than 100 steelhead were caught and released at any individual location, and an aggregate of just 2 fish were harvested.

GROUNDFISH FISHERIES

HALIBUT

Fishery Description

As with all other areas of the state, halibut (*Hippoglossus stenolepis*) is the groundfish species mostly commonly targeted by sport fishing anglers in KMA waters. The majority of angler effort occurs between late April and early September, and although halibut are harvested throughout the entire management area, a majority of the catch is taken from Chiniak Bay. Because of the popularity of this fishery and widespread angler effort, fairly reliable catch statistics for the KMA are available annually from the SWHS. In addition, ADF&G Saltwater Logbook Database records also fully document harvest and numbers released for halibut in the guided angler sector.

Historical Catch

Between 2005 and 2014, halibut catches estimated by the SWHS remained relatively stable throughout the KRA, with total numbers of fish harvested averaging 26,961 (Table 26). Harvest in 2014 was roughly 1,200 fish more than the number of halibut taken during 2005, although harvest increases in the 3-year period from 2007 to 2009 were substantially higher. Within Chiniak Bay, harvests estimated by the SWHS differed by slightly more than 1,000 fish between 2005 and 2014, and annually averaged 12,687. Annual harvests from Chiniak Bay between 2007 and 2009 composed nearly 50% of the KMA total, although the proportion was closer to 30%

prior and after. Like the KRA harvests, AP–AIRA halibut harvests also remained fairly stable over time, with the 2005–2014 harvests ranging from 1,063 to 3,960 and averaging 2,827 (Table 26). The entire KMA recent 10-year average harvest through 2014 equaled 29,788 fish.

Due to a temporary change in ADF&G reporting policy, halibut catches on chartered vessels were not documented recently until 2006, when 25,718 halibut were harvested by guided anglers in KMA waters overall, 10,810 of which were reported for Chiniak Bay (Table 27). In the following years through 2014, guided angler halibut harvests decreased steadily in Chiniak Bay and also within the KMA overall, to the extent that 14,813 halibut were reported for the entire management area in 2014, of which only 2,809 fish were taken from waters of Chiniak Bay. KRA halibut harvests also declined during the same period but to a lesser extent, dropping to 14,745 in 2014 from a peak of 20,123 fish reported in 2007.

Fishery Management and Objectives

Halibut stocks throughout Alaska are managed by the federal government through an international treaty with Canada. Direct regulatory authority rests with the International Pacific Halibut Commission and by delegation from the commission to the North Pacific Fishery Management Council. All regulations adopted for the halibut sport fishery by the State of Alaska must reflect those previously established in federal law.

All KMA waters fall within 2 of 4 federal management areas which constitute the geographic basis for establishment of regulations. Most of the KRA is included as part of federal Subarea 3A, whereas the AP–AIRA is divided between 3 subareas: 3B, 4A, and 4B. Within these subareas, sport fishing regulations for unguided anglers include a daily bag limit of 2 halibut and a possession limit of 4. Although there are no individual or collective annual harvest limits for unguided anglers, the guided sector of the halibut sport fishery in Subarea 3A is subject to an annual guideline harvest level. Additionally, a limited entry program for Subarea 3A halibut guides became effective in 2011.

Table 26.—Statewide Harvest Survey estimates of halibut and other groundfish harvest and catch for selected locations within the KMA, 2005–2014.

Species	Year	Chiniak Bay		Total Kodiak Regulatory Area		Alaska Peninsula–Aleutian Islands ^a		Total Kodiak Management Area	
		Harvest	Catch ^b	Harvest	Catch	Harvest	Catch	Harvest	Catch
Halibut									
	2005	10,338	19,510	24,122	43,307	3,329	7,114	27,451	50,421
	2006	11,541	18,206	25,219	43,802	2,862	4,904	28,081	48,706
	2007	18,845	28,230	35,337	58,503	3,960	7,177	39,297	65,680
	2008	18,145	29,775	33,999	62,591	3,719	8,788	37,718	71,379
	2009	16,865	26,705	31,590	53,756	3,300	6,149	34,890	59,905
	2010	10,669	16,484	23,063	39,910	2,352	3,679	25,415	43,589
	2011	9,814	16,859	21,156	39,856	2,034	4,564	23,190	44,420
	2012	10,000	16,298	23,145	38,032	3,625	5,884	26,770	43,916
	2013	9,227	15,007	26,591	42,464	2,025	2,823	28,616	45,287
	2014	11,424	15,186	25,386	40,488	1,063	1,496	26,449	41,984
	Average	12,687	20,226	26,961	46,271	2,827	5,258	29,788	51,529
Rockfish									
	2005	8,163	23,866	15,392	38,293	2,759	8,232	18,151	46,525
	2006	5,040	11,781	11,688	23,891	1,143	5,315	12,831	29,206
	2007	7,845	18,399	12,551	31,346	1,499	5,796	14,050	37,142
	2008	9,635	21,674	15,596	38,964	1,288	3,185	16,884	42,149
	2009	10,538	22,689	15,937	40,569	649	2,375	16,586	42,944
	2010	12,310	27,222	19,897	46,404	763	3,325	20,660	49,729
	2011	9,083	20,951	15,539	32,262	368	954	15,907	33,216
	2012	8,372	15,752	18,511	34,202	2,455	6,758	20,966	40,960
	2013	8,229	14,697	19,861	33,739	1,252	1,690	21,113	35,429
	2014	18,570	25,355	29,733	47,182	1,444	2,796	31,177	49,978
	Average	9,779	20,239	17,471	36,685	1,362	4,043	18,833	40,728
Lingcod									
	2005	975	2,039	2,604	5,690	87	193	2,691	5,883
	2006	834	1,148	2,447	3,915	35	197	2,482	4,112
	2007	1,557	2,257	3,203	5,548	857	949	4,060	6,497
	2008	1,748	2,516	3,518	6,201	147	455	3,665	6,656
	2009	1,660	2,520	3,736	6,812	298	1,159	4,034	7,971
	2010	2,419	3,777	3,966	6,274	47	95	4,013	6,369
	2011	2,445	3,509	4,233	7,087	15	167	4,248	7,254
	2012	1,519	2,246	3,969	6,118	149	235	4,118	6,353
	2013	1,416	2,201	4,344	6,137	199	216	4,543	6,353
	2014	2,270	2,681	4,434	6,600	588	893	5,022	7,493
	Average	1,684	2,489	3,645	6,038	242	456	3,888	6,494

Source: Alaska Sport Fishing Survey (SWHS) database [Internet]. 1996– . Anchorage, AK: Alaska Department of Fish and Game, Division of Sport Fish (cited November 2015). Available from: <http://www.adfg.alaska.gov/sf/sportfishingsurvey/>.

^a Includes harvest and catch from an unspecified location in Alaska Peninsula–Aleutian Islands Area.

^b Catch includes harvest and number released.

Table 27.—Guided angler logbook records of halibut and other groundfish harvest and numbers released for selected locations within the Kodiak Management Area, 2005–2014.

Location	Year	Halibut		Rockfish		Lingcod	
		Harvest	Release	Harvest	Release	Harvest	Release
Chiniak Bay							
	2005	–	–	5,160	4,264	464	107
	2006	10,810	7,293	4,411	2,023	534	130
	2007	9,490	6,833	7,396	3,427	704	114
	2008	8,448	7,194	7,752	2,079	908	238
	2009	6,235	5,613	8,095	1,684	598	185
	2010	6,468	3,202	9,902	1,855	1,075	134
	2011	8,087	5,308	8,384	1,545	879	77
	2012	4,597	2,758	6,739	928	484	45
	2013	3,264	1,180	6,452	493	451	47
	2014	2,809	748	7,640	578	359	19
Afognak–Shuyak Islands							
	2005	–	–	1,176	1,257	718	262
	2006	2,540	3,796	808	730	606	161
	2007	3,254	4,417	1,999	2,702	882	348
	2008	3,138	4,128	2,145	963	1,074	305
	2009	2,856	3,988	3,325	1,253	888	318
	2010	3,119	3,360	2,731	1,164	865	264
	2011	3,117	3,478	2,555	2,131	724	149
	2012	5,867	5,826	3,113	1,300	1,266	339
	2013	3,859	3,595	2,955	1,727	1,137	439
	2014	3,835	5,001	3,664	2,303	1,070	239
Total Kodiak Regulatory Area ^a							
	2005	–	–	8,361	6,459	1,351	445
	2006	19,445	20,442	7,020	3,548	1,350	422
	2007	20,123	20,537	13,775	7,975	2,173	675
	2008	18,349	21,306	13,477	5,101	2,601	1,046
	2009	14,237	19,096	14,798	4,367	2,013	758
	2010	14,447	14,986	15,332	4,046	2,553	727
	2011	15,941	18,497	13,722	4,702	2,300	541
	2012	18,378	17,620	16,091	3,531	2,549	529
	2013	15,549	12,767	18,075	4,133	2,401	625
	2014	14,725	11,856	22,088	5,434	1,905	359

-continued-

Table 27.–Page 2 of 2.

Location	Year	Halibut		Rockfish		Lingcod	
		Harvest	Release	Harvest	Release	Harvest	Release
Alaska Peninsula–Aleutian Islands Regulatory Area							
	2005	–	–	77	253	0	0
	2006	925	1,608	91	393	0	2
	2007	1,336	2,227	192	549	7	5
	2008	1,336	2,222	123	421	24	42
	2009	1,177	2,151	181	192	40	11
	2010	1,276	1,396	682	118	83	5
	2011	790	752	435	85	57	28
	2012	490	594	124	155	1	0
	2013	361	333	69	99	18	3
	2014	88	35	106	197	4	0
Total Kodiak Management Area ^b							
	2005	–	–	8,799	6,724	1,494	549
	2006	25,718	29,718	7,370	4,130	1,483	493
	2007	24,507	26,284	14,210	8,559	2,317	754
	2008	21,762	25,385	13,801	5,569	2,858	1,173
	2009	17,654	22,278	15,296	4,743	2,311	923
	2010	18,195	18,853	16,302	4,340	2,863	821
	2011	20,830	24,704	14,423	4,839	2,557	649
	2012	18,868	18,214	16,215	3,686	2,550	529
	2013	15,910	13,100	18,144	4,232	2,419	628
	2014	14,813	11,891	22,194	5,631	1,909	359

Source: ADF&G's Saltwater Logbook Database.

^a Includes sum of harvest or numbers released for Chiniak Bay, Afognak–Shuyak Islands, and other waters of the Kodiak Regulatory Area.

^b Includes sum of harvest or numbers released for Kodiak and Alaska Peninsula–Aleutian Islands Regulatory Areas.

2014 Fishery

The SWHS has recorded a 10-year trend of relatively stable halibut harvests from 2005 through 2014, although the estimated KMA total harvest of 26,449 fish in 2014 was lower than the inclusive 10-year average of more than 29,000 fish (Table 26). Catch in 2014 for the KMA was also lower than the 2005–2014 average but fairly close to totals estimated annually since 2010.

Saltwater Logbook Database records of the 2014 halibut catch reflected a declining trend in harvests in the KMA with the exception of the Afognak–Shuyak Islands waters, where the 2014 reported harvest of 3,835 fish was nearly the same as the 2013 total (Table 27). In 2014, the total KMA guided angler halibut harvest of 14,813 reflected a decrease of about 1,000 fish from the year before, when 15,910 halibut were taken.

OTHER GROUND FISH

In addition to halibut, other groundfish targeted in KMA fisheries include lingcod (*Ophiodon elongates*) and both pelagic and nonpelagic rockfishes (*Sebastes spp*). Pelagic species catches consist primarily of black (*S. melanops*) and dusky (*S. ciliates*) rockfish, whereas nonpelagic catches consist mainly of yelloweye rockfish (*S. ruberrimus*). Pelagic species historically have constituted most of the rockfish catch. Although a portion of annual lingcod and rockfish catches are taken incidentally by anglers targeting halibut and salmon, there is also directed effort for all of these species, especially the pelagic rockfishes.

Current KMA sport fishing regulations for harvesting rockfishes are split between the 2 regulatory areas, with those in the KRA consisting of a daily bag limit of 5 and a possession limit of 10, only 2 and 4 of which respectively may be nonpelagic species. In AP–AIRA waters, the combined species bag limit is 10 fish and the possession limit is 20. There are no size or annual limits established for either regulatory area, and no annual harvest reporting requirements. Regulations for lingcod are standard for the entire KMA and include a bag limit of 2 fish and a possession limit of 4, with no size restrictions or annual limit. Lingcod can only be harvested from July 1 to December 31.

Throughout the KMA, annual SWHS estimates of rockfish sport catches since 2005 have followed a strong upward trend, although the increases have been disparate within the KRA and the AP–AIRA due to more overall catch in the former area and more of the fish caught being subsequently released in the latter area. Total estimates of KMA rockfish harvests through 2014 almost doubled in magnitude from 2005, totaling 31,177 fish (Table 26). Within KRA waters during the same period, rockfish harvests also doubled and on average composed about 93% of the KMA total harvest. In Chiniak Bay, rockfish harvests increased from 8,163 in 2005 to 18,570 during the 2014 fishery.

In 2014, the KMA rockfish harvest increased by nearly 10,000 over the 2013 estimate and was more than 12,000 more than the inclusive 10-year average. The 2014 Chiniak Bay harvest also increased by approximately 10,000 fish from the previous year’s SWHS estimate (Table 26).

Except for Chiniak Bay, catch trends for guided anglers fishing the KRA waters since 2005 as reflected by ADF&G Saltwater Logbook Database records were consistent with SWHS estimates during the same period. Within Chiniak Bay, the guided angler harvest through 2014 had increased by around 2,000 fish over 2005, totaling 7,640 (Table 27). The entire KRA rockfish harvest grew during the same period from 8,361 to 22,088 fish. Rockfish catches in the AP–AIRA remained a small percentage of the KMA total, annually totaling less than 200 fish in 8 of the preceding 10 years.

Lingcod catches in KMA waters historically have remained much lower than those of rockfishes, averaging 3,888 fish per year between 2005 and 2014 by SWHS estimates (Table 26). However, similar to a recent 10-year trend in the rockfish fishery, SWHS estimates of lingcod catches increased steadily beginning in 2005, and catch in 2014 was a 10-year peak at 5,022. The ratio of harvested to released lingcod was roughly 2:1 in the 10-year average catch, and varied little during any individual year through 2014.

Logbook records of lingcod catches since 2005 showed higher retention rates (harvest per catch) than the SWHS estimates. In general, guided anglers retained between 2 and 3 lingcod for each 1

released and accounted for an increased total KMA harvest of roughly 400 more fish during the 2014 fishery than was documented in 2005.

ENHANCED FISHERIES

Although ADF&G has historically stocked salmonids for sport fisheries at numerous locations throughout the KMA, current SF fisheries enhancement activities are limited to several projects conducted annually in waters encompassed within the Kodiak Road Zone. Through a formal cooperative agreement with the Kodiak Regional Aquaculture Association (KRAA), ADF&G funds production and releases of anadromous Chinook and coho salmon in addition to landlocked coho salmon and rainbow trout.

All enhanced landlocked lakes represent new sport fisheries because stocked species were not present before stocking occurred. A majority of the stocking is directed toward road-accessible lakes that offer alternative opportunity to angling for local wild salmon and Dolly Varden. Anadromous releases of coho salmon supplement other Road Zone fisheries for this species and generally occur at locations directly accessible from Kodiak City by vehicle. Chinook salmon released as smolt provide angling opportunity for this species in Kodiak Island freshwaters that would otherwise be limited to the Karluk and Ayakulik rivers. A large number of fish from the hatchery Chinook salmon stocking are also taken by marine anglers fishing Chiniak Bay.

KMA rainbow trout stocking became widespread as early as 1953 and at times has extended as far geographically as Adak Island. Historically, the broodstock has come from steelhead from the Karluk River and rainbow trout from various locations in Alaska, as well as rainbow trout from hatcheries located in Montana and Washington. In recent years, hatchery coho salmon production has been mostly sustained by local broodstock obtained from the Buskin River and reared at KRAA's Pillar Creek Hatchery. Chignik River Chinook salmon were used as a brood source for Road Zone stocking in the 1970s and 1980s, but current smolt releases are the result of egg takes on hatchery broodstock originally obtained from the Karluk River.

All stocking is conducted in accordance with current guidelines set forth in the SF Statewide Stocking Plan for Recreational Fisheries⁴ (SSP), which is a 5-year stocking document updated annually to reflect stocking needs based on funding, changes in land status, or other considerations. Annual hatchery production actually dictates the numbers of fish by species that are stocked into lakes each year.

LANDLOCKED STOCKED LAKES

Since 2005, a total of up to 20 Road Zone lakes have been stocked annually with rainbow trout (Table 28). Yearly total hatchery production has roughly varied between 32,000 and 68,000 fish due to occasional losses resulting from transport-release mortality. Prior to 2007, all stocked fish were reared at the now-defunct SF Fort Richardson hatchery facility in Anchorage and subsequently transported to Kodiak Island shortly before being released. Since then, fertilized eggs from the current SF Anchorage facility, William J. Hernandez Hatchery, have been transported to the KRAA's Pillar Creek Hatchery and the resultant rainbow trout fry reared locally. This practice has increased survival rates so that at least 50,000 fish have been released in each year through 2014.

⁴ Available at <http://www.adfg.alaska.gov/static/fishing/pdfs/hatcheries/15region2.pdf> (Accessed December 2015).

Table 28.—Kodiak Management Area landlocked lake stockings by species and location, 2005–2014.

Species	Location	Year									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Rainbow trout	Abercrombie	3,784	2,580	4,700	4,810	5,051	4,656	5,142	4,972	6,162	2,550
	Aurel L.	3,084	2,145	3,000	3,900	4,095	3,964	4,169	3,975	3,464	0
	Big–Kings Diner L.	3,684	2,666	4,600	4,680	4,914	4,824	5,003	4,185	4,915	2,747
	Bull L.	2,084	1,290	3,000	2,600	2,730	2,685	2,779	2,643	3,038	3,312
	Caroline L.	1,484	975	1,900	1,820	1,911	1,854	1,946	1,865	2,154	2,647
	Cicely L.	1,284	855	1,700	1,560	1,638	1,587	1,668	1,826	1,138	2,794
	Dark L.	0	0	0	0	0	0	5,003	4,879	6,123	2,535
	Dolgoi L.	4,084	2,064	3,462	5,200	4,055	5,287	0	0	0	0
	Dragonfly L.	1,684	865	2,100	2,080	2,184	2,110	2,224	2,215	2,215	1,471
	Heitman L.	3,384	2,150	3,352	4,932	4,455	4,952	4,586	4,457	5,000	5,005
	Horseshoe L.	1,084	870	1,500	1,300	1,365	1,326	1,390	1,336	1,408	0
	Island L.	0	0	0	0	0	0	5,559	5,378	6,538	2,559
	Jack L.	1,084	865	1,500	1,300	1,365	1,319	0	0	0	0
	Jupiter L.	3,684	2,322	2,253	3,702	4,860	3,923	0	0	0	0
	Lee L.	2,884	2,159	3,300	3,640	3,822	3,700	3,891	3,668	3,250	0
	Lilly Pad L.	1,684	946	11,124	1,430	2,184	2,055	2,224	2,102	2,692	3,369
	Long L.	3,684	2,150	3,791	4,680	3,658	3,556	6,580	4,220	4,398	4,371
	Long Lagoon L.	0	0	0	0	0	0	0	2,451	3,571	4,731
	Margaret L.	1,684	1,032	0	0	0	0	0	0	0	0
	Mosquito L.	0	0	0	0	0	0	3,335	1,576	1,490	2,191
Saturn L.	2,484	1,548	3,462	3,005	3,240	2,523	0	0	0	0	
Tanignak L.	4,084	2,064	3,736	5,200	4,055	5,283	7,420	6,882	4,872	4,457	
Twin L.	4,084	2,535	5,000	5,200	5,460	5,447	5,559	5,547	5,363	5,562	
	Total	50,996	32,081	63,480	61,039	61,042	61,051	68,478	64,177	67,791	50,301
Coho salmon	Abercrombie	0	3,486	3,472	3,486	0	3,839	3,500	3,500	3,505	3,465
	Barry Lagoon	0	0	0	0	0	0	24,910	30,000	22,059	22,500
	Big–Kings Diner L.	0	5,257	5,008	0	0	10,973	0	0	10,916	10,655
	Chiniak L.	0	0	11,018	14,557	20,437	22,000	0	0	0	0
	Margaret L.	3,505	3,499	0	0	0	0	0	0	0	0
	Southern L.	0	0	3,280	3,485	3,495	3,838	0	0	0	0
	Total	3,505	12,242	22,778	21,528	23,932	40,650	28,410	33,500	36,480	36,620
Grand total	54,501	44,323	86,258	82,567	84,974	101,701	96,888	97,677	104,271	86,921	

Source: ADF&G SF Kodiak Area Office data archives.

All rainbow trout are stocked as fingerlings, historically weighing less than 0.5 g at release but currently averaging 2–3 g. Releases occur within the egg-take brood year, currently during the month of September. Past age composition studies have shown that fingerlings released at less than 1 g reach catchable size (100 g) within 2–3 years after being released. Larger fish released since 2007 may become available to anglers sooner.

Current SSP objectives for non-anadromous hatchery releases along the Kodiak Road Zone include providing anglers at least 1,000 additional days of sport fishing effort annually. Anglers typically harvest Kodiak's enhanced rainbow trout populations both on open water and through the ice. Estimates of total catch from the SWHS are unreliable due to relatively small numbers of respondents captured by the survey. However, anecdotal evidence suggests that most fishing effort is attributable to local residents who frequent the stocked lakes on a regular basis but consequently make up a small angler demographic to be adequately represented by SWHS sampling methodology. Current Kodiak sport fishing regulations for enhanced rainbow trout allow a daily bag and possession limit of 10 fish, only 1 of which may exceed 20 inches in length. There is no annual limit.

Since 2005, up to 6 Road Zone lakes have been selected for enhancement with landlocked coho salmon, although just 3 lakes were stocked in 2014 (Table 28). As with rainbow trout enhancement, annual coho salmon stocking goals are prescribed in the SSP, although both the lakes actually selected and the numbers of fish released have also been based on variables including hatchery production and changes in land status affecting public access for sport fishing. Additionally, provisions of the recent cooperative agreement between SF and KRAA allow for supplemental anadromous coho salmon production whenever Chinook salmon stocking goals, also stipulated in the agreement, are not achieved. Consequently, overall annual coho salmon stocking levels from 2005 to 2014 have ranged between 3,505 and 40,650 fish. Current SSP goals call for stocking up to 37,000 landlocked coho salmon whenever sufficient numbers of fish are available.

Coho salmon are normally stocked as 3–5 g fingerlings between March and May of the year following each egg take, but on occasion, coho salmon have also been stocked as presmolt at weights ranging from 11 to 20 g. In landlocked locations, both fingerlings and presmolt probably achieve a harvestable size (6–12 in) at age 2, the year following release. Landlocked coho salmon not harvested by age 3 become sexually mature and subsequently die after attempting to spawn. Anecdotal information on declining catch rates in lakes with interrupted stocking suggests that most lakes rely on regular replenishment through hatchery releases to sustain populations, although some amount of natural reproduction of landlocked coho salmon is known to occur in Chiniak Lake.

As with rainbow trout, Road Zone anglers target landlocked coho salmon populations year round. Regulations for this sport fishery include a daily bag and possession limit of 10 fish, only 1 of which may exceed 20 inches in length, and no annual limit.

ANADROMOUS FISHERIES

Chinook Salmon

To increase road-accessible harvest opportunities and ensure sustainability of the area's wild Chinook salmon populations, in 2000 SF began a cooperative program with KRAA to stock Chinook salmon at Monashka Creek (Figure 3). Karluk River Chinook salmon were originally

used as a brood source with the purpose of eventually collecting eggs to sustain the project directly from enhanced returns. Since 2004, Chinook salmon egg takes have solely utilized the enhanced Monashka Creek run. Further development of the enhancement project was accomplished in 2007, when Chinook salmon releases were expanded to include the American and Olds rivers, and again in 2014, when the Salonie River was designated as an additional release location. Currently, about three-fourths of juvenile Chinook salmon produced annually at KRAA's Pillar Creek Hatchery facility are released into these drainages, and the remainder are used to sustain the Monashka Creek brood source.

All Chinook salmon stocked for the Road Zone project are released as smolt. Current provisions of the SF-KRAA cooperative agreement and SSP goals identify a target release size of 15 g, although actual average smolt size through 2014 has ranged from 11 to 30 g. Smolt are stocked annually during May and June, after 1 year of hatchery rearing. All fish are imprinted in holding pens for at least 2 weeks prior to release. Adults return in small percentages as ocean-age-1 and -2 males, and in larger numbers at ages 3 and 4. Any returning adult Chinook salmon not harvested by the sport fishery or other users remains reproductively viable before naturally expiring.

Due to annually fluctuating levels of Chinook salmon production resulting from both variable hatchery survival rates and brood stock mortality, smolt releases into Monashka Creek have ranged between 29,153 to approximately 82,000 (Table 29). Accordingly, individual releases of smolt at the American and Olds rivers have also varied, from approximately 10,000 to 80,000. First year smolt releases into Salonie Creek during 2014 totaled 71,042. Although large adult fish from Monashka Creek have been available for the sport fishery and project egg takes since 2005, runs to the American and Olds rivers did not include full-sized adult fish until 2011. Full-sized adult Chinook salmon will return to Salonie River beginning in 2017. In recent years, SWHS estimates of effort and catch attributable to the enhancement project have been intermittently available for some or all locations of the enhanced Chinook salmon sport fishery. Additionally, anecdotes from both freshwater and marine anglers targeting returns to Monashka Creek indicate that possibly a few hundred of these adult fish have been harvested annually in recent years.

Anglers targeting Chinook salmon within the Kodiak Road Zone are subject to the same freshwater and marine bag, possession, and annual limits in effect for the remainder of the KRA. However, Chinook salmon harvested in Monashka Bay are excluded from the current marine waters guideline harvest level.

Table 29.—Kodiak Management Area anadromous waters stockings by species and location, 2005–2014.

Species	Location	Year									
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Coho salmon fingerling											
	Dark L.	0	3,976	7,479	7,495	7,491	8,235	7,500	7,500	7,767	7,500
	Island L.	10,034	12,097	30,922	22,495	22,497	24,731	22,500	22,500	25,000	31,481
	Mayflower L.	4,656	0	5,008	6,469	6,836	7,150	6,500	6,500	6,488	6,500
	Mission L.	22,580	6,614	12,487	12,482	12,484	13,724	12,500	12,500	13,394	13,141
	Potatoe Patch L.	9,490	5,012	5,008	9,484	9,483	10,429	9,500	9,500	10,391	10,192
	Total	46,760	27,699	60,904	58,425	58,791	64,269	58,500	58,500	63,040	68,814
Coho salmon smolt											
	Big-Kings Diner L.	0	9,534	0	0	0	0	0	0	0	0
	Dark L.	0	0	0	0	0	0	0	0	0	0
	Island L.	10,134	22,071	8,451	0	0	0	0	0	0	0
	Mission	10,097	0	0	0	0	0	0	0	0	0
	Monashka Creek	9,850	10,000	0	0	0	0	45,216	34,765	28,020	0
	Pillar Creek	0	0	0	0	0	0	47,014	28,936	28,070	0
	Total	30,081	41,605	8,451	0	0	0	92,230	63,701	56,090	0
Chinook salmon smolt											
	Monashka Creek	72,558	29,153	46,825	68,100	79,000	82,000	39,000	39,279	51,207	75,082
	American River	0	0	28,156	40,000	51,000	80,000	10,000	39,740	50,072	73,272
	Olds River	0	0	28,313	40,000	52,000	80,000	10,000	39,300	40,000	75,044
	Salonie Creek	0	0	0	0	0	0	0	0	0	71,042
	Total	72,558	29,153	103,294	148,100	182,000	242,000	59,000	118,319	141,279	294,440
Grand total		149,399	98,457	172,649	206,525	240,791	306,269	209,730	240,520	260,409	363,254

Source: ADF&G SF Kodiak Area Office data archives.

Coho Salmon

Releases of anadromous coho salmon have occurred annually at several Road Zone locations since the 1980s (Schwarz et al. 2002). Since 2005, coho salmon smolt production, substituting for Chinook salmon smolt production shortfalls, has supplemented coho salmon fingerling releases in 2 drainages and has also been used to supplement wild coho salmon abundance at 2 others.

As a result of changing SSP goals and variable survival rates, total coho salmon fingerling releases since 2005 have ranged between 27,669 and 68,814 (Table 29). Smolt releases have also varied considerably, from zero fish to 92,230.

Target release sizes for coho salmon fingerlings and smolt specified in the SSP and the SF-KRAA cooperative agreement are respectively set at 3 g and 15 g. Fingerlings typically are released during August, whereas smolt stocking usually occurs between March and May. Unlike the Chinook salmon releases, coho salmon smolt generally are not held artificially for imprinting, although the timing of each stocking is designed to promote a reasonable period of acclimation and natural rearing. Adults return exclusively at ocean-age-1, and a small percentage are known to survive long enough to spawn.

Current SSP goals include production of up to 1,600 harvestable coho salmon from the anadromous releases to provide a potential of 1,500 angler-days of additional sport fishing opportunity along the Kodiak Road Zone. Nearly all sport fishing effort in this enhanced fishery occurs in the nearshore marine waters of Mill Bay and Monashka Bay, as well as waters adjacent to Mayflower and Mission beaches (Figure 3).

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**APPENDIX A: RECENT BOARD OF FISHERIES
REGULATORY ACTIONS FOR THE KODIAK
MANAGEMENT AREA**

Appendix A1.–Chronology and description of recent Board of Fisheries regulatory actions for the Kodiak Management Area.

2011 Kodiak Regulatory Area Board of Fisheries:

1. 5AAC 64.022. Waters; seasons; bag, possession, and size limits; and special provisions for the Kodiak Area

The BOF removed an August 1 to September 15 closure of the Buskin River drainage to salmon fishing upstream from the location known as “Bridge #1.”

2. 5AAC 64.022. Waters; seasons; bag, possession, and size limits; and special provisions for the Kodiak Area

The BOF removed a year-round closure of the Pillar Creek drainage to salmon fishing below the Monashka Highway.

3. 5 AAC 64.051. Waters closed to sport fishing in the Kodiak Area

The BOF closed Pillar and Monashka creeks year-round to sport fishing above the Monashka Highway.

4. 5AAC 64.022. Waters; seasons; bag, possession, and size limits; and special provisions for the Kodiak Area

The BOF lowered the Chinook salmon daily bag limit in fresh waters for Chinook salmon longer than 20 inches from 3 fish , only 2 of which could be longer than 28 inches, to 2 fish, regardless of size greater than 20 inches.

5. 5 AAC 64.060. Kodiak Area Salt Water King Salmon Sport Fishery Management Plan

The BOF increased the guideline harvest level for the salt water Chinook (king) salmon taken in saltwater from 8,000 to 11,000 fish.

2013 Alaska Peninsula–Aleutian Islands Regulatory Area Board of Fisheries:

1. 5 AAC 65.022. Special provisions for methods and means in the Alaska Peninsula and Aleutian Islands Area

The BOF established a catch-and-release-only, single-hook, no-bait sport fishery for Chinook salmon in the Sapsuck (Nelson River) drainage.

2. 5 AAC 65.051. Waters closed to sport fishing in the Alaska Peninsula and Aleutian Islands Area

The BOF closed waters in the Illiuliuk drainage to salmon fishing above a stream section known as the “Church Hole.”

**APPENDIX B: CURRENT FISHERY MANAGEMENT
PLANS OF THE KODIAK MANAGEMENT AREA**

5 AAC 64.060. Kodiak Area Salt Water King⁵ Salmon Sport Fishery Management Plan

(a) The purpose of the management plan under this section is to meet the Board of Fisheries' goal of stabilizing the sport harvest of king salmon in the salt waters of the Kodiak Area.

(b) In the Kodiak Area salt water king salmon sport fishery,

- (1) the guideline harvest level is 11,000 king salmon;
- (2) the sport harvest will be estimated annually by the department's statewide harvest survey;
- (3) king salmon taken in Monashka Bay will not count towards the guideline harvest level established in (1) of this subsection;
- (4) the bag and possession limit for king salmon is two fish, with no size limit;
- (5) the annual limit and harvest record specified in 5 AAC 64.022 and 5 AAC 64.025 do not apply.

(c) If the guideline harvest level is exceeded, the board will consider restrictions that may be necessary to avoid exceeding the guideline harvest level at a regularly scheduled meeting for the Kodiak Area. If the board finds that restrictions are necessary, the board will adopt one or more of the following restrictions in the following order:

- (1) reduce the nonresident bag and possession limit for king salmon in salt waters to one fish;
- (2) prohibit a sport fishing guide from taking a king salmon while a client is present or is within the guide's control or responsibility;
- (3) allow only king salmon 28 inches or greater in length to be retained;
- (4) reduce the resident bag and possession limit for king salmon in salt waters to one fish.

⁵ In the regulatory language, Chinook salmon are called "king" salmon and "the board" refers to the Alaska Board of Fisheries.

**APPENDIX C: 2014 EMERGENCY ORDERS FOR KODIAK
MANAGEMENT AREAS FISHERIES**

2014 Emergency Orders:

1. E.O. No. 2-KS-4-11-14 prohibited the filleting, mutilating, and deheading of Chinook salmon by marine waters anglers returning to Kodiak city ports from May 31 to August 31, 2014.
2. E.O. No. 2-KS-4-12-14 reduced the daily bag and possession limit to 1 Chinook salmon 20 inches or greater in length, and reduced the annual limit for king salmon 20 inches or greater in length to 2 in the Ayakulik River drainage, effective June 1–July 25.
3. E.O. No. 2-KS-4-13-14 reduced the daily bag and possession limit to 1 king salmon 20 inches or greater in length, and reduced the annual limit for king salmon 20 inches or greater in length to 2 in the Chignik River drainage, effective June 1–August 9.
4. E.O. No. 2-KS-4-14-14 closed the Karluk River drainage to retention of Chinook salmon 20 inches or greater in length and prohibited the use of bait for all sport fishing in Karluk River drainage below Karluk lake, effective June 1–July 25.
5. E.O. No. 2-RS-4-15-14 increased the Afognak River drainage sockeye salmon daily bag limit from 5 to 10 fish, effective June 6–December 31.
6. E.O. No. 2-RS-4-17-14 increased the Buskin River drainage sockeye salmon daily bag limit possession from 2 to 5 fish, effective June 12–December 31.
7. E.O. No. 2-RS-4-18-14 increased the Ayakulik River drainage sockeye salmon daily bag and possession limit from 5 to 10 fish, effective June 12–December 31.
8. E.O. No. 2-RS-4-19-14 increased the Karluk River drainage sockeye salmon daily bag and possession limit from 5 to 10 fish, effective June 13–December 31.
9. E.O. No. 2-KS-4-22-14 closed Karluk River drainage to sport fishing for Chinook salmon, effective June 21–July 25.
10. E.O. No. 2-KS-4-23-14 closed the Ayakulik River drainage to sport fishing for Chinook salmon, effective June 21–July 25.
11. E.O. No. 2-RS-4-29-14 increased the Dog Salmon River drainage sockeye salmon daily bag and possession limit from 5 to 10 fish, effective June 27–December 31.
12. E.O. No. 2-RS-4-34-12 closed sport fishing for Chinook salmon in the Monashka Creek drainage and waters of Monashka Bay, effective June 28–August 1.
13. E.O. No. 2-KS-4-38-14 increased the daily bag and possession limit to 2 Chinook salmon 20 inches or greater in length, and increased the annual limit for Chinook salmon 20 inches or greater in length to 5 in the Chignik River drainage, effective July 12–August 9.

**APPENDIX D: SELECTED 2005–2014 KODIAK
MANAGEMENT AREA DAILY WEIR COUNTS**

Appendix D1.–Karluk River Chinook salmon daily cumulative weir counts, 2005–2014.

Date	Year										Average	
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
21 May	0	1	0	0	0	0	0	0	0	0	0	0
22 May	0	1	0	0	0	0	0	0	0	0	0	0
23 May	0	5	0	0	0	0	1	0	0	0	0	1
24 May	0	17	1	0	0	0	1	0	8	0	0	3
25 May	0	28	3	1	0	0	4	0	30	0	0	7
26 May	0	54	5	2	3	5	7	0	55	5	0	14
27 May	0	73	8	2	4	6	9	8	60	6	0	18
28 May	2	82	18	2	5	12	30	15	60	7	0	23
29 May	3	113	32	2	6	20	34	15	66	23	0	31
30 May	3	113	37	2	9	23	52	24	72	25	0	36
31 May	18	113	38	8	13	25	57	29	118	41	0	46
1 Jun	33	197	42	10	22	44	84	30	129	50	0	64
2 Jun	52	222	64	10	23	55	139	49	207	61	0	88
3 Jun	57	277	75	10	33	88	156	98	210	66	0	107
4 Jun	89	344	112	10	45	135	172	106	305	87	0	141
5 Jun	168	382	118	13	52	150	211	120	463	106	0	178
6 Jun	183	436	132	14	58	196	243	163	521	113	0	206
7 Jun	199	516	145	14	113	246	298	164	588	121	0	240
8 Jun	215	521	156	29	134	264	311	198	604	131	0	256
9 Jun	217	849	300	38	174	302	328	220	632	142	0	320
10 Jun	260	984	427	42	192	337	351	285	689	160	0	373
11 Jun	270	1,202	493	53	250	392	411	304	764	170	0	431
12 Jun	292	1,385	514	63	318	424	517	370	798	195	0	488
13 Jun	347	1,522	576	68	377	526	658	627	867	212	0	578
14 Jun	449	1,540	643	94	415	535	737	936	974	223	0	655
15 Jun	581	1,584	668	126	423	592	873	1,136	1,031	237	0	725
16 Jun	891	1,815	775	134	436	612	1,015	1,163	1,059	244	0	814
17 Jun	1,117	1,872	778	144	442	745	1,134	1,369	1,101	256	0	896
18 Jun	1,505	1,951	780	203	474	806	1,214	1,492	1,128	297	0	985
19 Jun	1,663	2,061	841	245	494	1,069	1,414	1,632	1,264	349	0	1,103
20 Jun	1,677	2,376	865	288	535	1,296	1,646	1,815	1,332	449	0	1,228
21 Jun	1,916	2,615	1,100	320	600	1,570	1,698	1,969	1,350	626	0	1,376
22 Jun	2,009	2,732	1,140	320	637	1,637	1,825	2,163	1,356	651	0	1,447
23 Jun	2,106	2,864	1,145	343	657	1,714	1,859	2,318	1,439	767	0	1,521
24 Jun	2,240	2,886	1,245	364	703	1,794	1,964	2,440	1,475	786	0	1,590
25 Jun	2,323	2,906	1,264	394	727	1,949	2,164	2,505	1,495	808	0	1,654
26 Jun	2,329	2,928	1,295	411	786	1,990	2,248	2,579	1,522	841	0	1,693
27 Jun	2,568	3,002	1,343	453	795	2,072	2,329	2,629	1,530	865	0	1,759
28 Jun	2,822	3,037	1,344	453	833	2,088	2,397	2,700	1,558	874	0	1,811
29 Jun	3,069	3,049	1,360	475	852	2,134	2,530	2,722	1,594	904	0	1,869
30 Jun	3,187	3,050	1,363	520	855	2,221	2,670	2,753	1,598	919	0	1,914

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
1 Jul	3,209	3,088	1,367	526	946	2,230	2,734	2,891	1,629	930	1,955
2 Jul	3,262	3,120	1,389	530	990	2,363	2,849	2,894	1,629	955	1,998
3 Jul	3,387	3,185	1,399	548	994	2,442	2,931	2,935	1,648	963	2,043
4 Jul	3,431	3,242	1,399	553	994	2,472	3,003	2,953	1,668	973	2,069
5 Jul	3,431	3,367	1,404	562	1,011	2,531	3,062	2,988	1,675	1,005	2,104
6 Jul	3,461	3,492	1,409	570	1,014	2,545	3,114	3,020	1,686	1,021	2,133
7 Jul	3,463	3,630	1,415	573	1,023	2,571	3,140	3,057	1,718	1,040	2,163
8 Jul	3,497	3,647	1,417	575	1,025	2,635	3,156	3,075	1,721	1,044	2,179
9 Jul	3,541	3,650	1,423	579	1,028	2,647	3,175	3,082	1,725	1,052	2,190
10 Jul	3,859	3,668	1,425	582	1,028	2,665	3,186	3,089	1,725	1,076	2,230
11 Jul	3,878	3,755	1,432	582	1,040	2,671	3,198	3,089	1,726	1,084	2,246
12 Jul	4,051	3,792	1,432	585	1,071	2,678	3,225	3,099	1,731	1,098	2,276
13 Jul	4,137	3,797	1,460	585	1,071	2,700	3,248	3,105	1,735	1,133	2,297
14 Jul	4,147	3,799	1,460	586	1,071	2,708	3,272	3,116	1,735	1,138	2,303
15 Jul	4,151	3,808	1,461	586	1,071	2,724	3,277	3,122	1,736	1,149	2,309
16 Jul	4,156	3,830	1,470	586	1,072	2,730	3,288	3,124	1,743	1,157	2,316
17 Jul	4,183	3,830	1,558	588	1,073	2,743	3,298	3,126	1,745	1,158	2,330
18 Jul	4,196	3,830	1,558	588	1,073	2,744	3,306	3,128	1,748	1,158	2,333
19 Jul	4,224	3,830	1,560	590	1,075	2,751	3,314	3,131	1,748	1,159	2,338
20 Jul	4,241	3,831	1,565	594	1,086	2,757	3,324	3,134	1,750	1,162	2,344
21 Jul	4,475	3,831	1,568	598	1,086	2,763	3,327	3,138	1,750	1,162	2,370
22 Jul	4,478	3,831	1,569	598	1,087	2,763	3,330	3,139	1,750	1,163	2,371
23 Jul	4,538	3,831	1,570	599	1,088	2,763	3,333	3,140	1,754	1,167	2,378
24 Jul	4,550	3,832	1,570	602	1,088	2,765	3,334	3,145	1,754	1,168	2,381
25 Jul	4,555	3,833	1,576	683	1,088	2,769	3,335	3,147	1,756	1,168	2,391
26 Jul	4,616	3,835	1,605	686	1,090	2,791	3,338	3,148	1,759	1,169	2,404
27 Jul	4,625	3,835	1,605	686	1,098	2,793	3,341	3,153	1,761	1,174	2,407
28 Jul	4,626	3,837	1,612	688	1,098	2,796	3,343	3,159	1,762	1,174	2,410
29 Jul	4,630	3,837	1,613	690	1,098	2,815	3,346	3,160	1,766	1,176	2,413
30 Jul	4,642	3,837	1,618	691	1,098	2,831	3,359	3,166	1,767	1,176	2,419
31 Jul	4,645	3,837	1,631	692	1,100	2,841	3,365	3,167	1,767	1,177	2,422

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
1 Aug	4,661	3,838	1,632	699	1,100	2,851	3,367	3,167	1,769	1,177	2,426
2 Aug	4,661	3,838	1,634	704	1,100	2,851	3,378	3,172	1,772	1,177	2,429
3 Aug	4,665	3,839	1,635	705	1,101	2,853	3,384	3,174	1,772	1,177	2,431
4 Aug	4,666	3,904	1,635	706	1,104	2,856	3,385	3,177	1,772	1,177	2,438
5 Aug	4,666	3,906	1,667	707	1,110	2,870	3,385	3,181	1,772	1,178	2,444
6 Aug	4,667	3,906	1,667	728	1,110	2,875	3,385	3,183	1,787	1,178	2,449
7 Aug	4,671	3,906	1,667	728	1,112	2,877	3,389	3,184	1,788	1,178	2,450
8 Aug	4,673	3,910	1,669	733	1,112	2,877	3,390	3,185	1,789	1,178	2,452
9 Aug	4,677	3,932	1,669	734	1,113	2,893	3,390	3,186	1,795	1,178	2,457
10 Aug	4,680	3,935	1,669	734	1,122	2,896	3,392	3,187	1,796	1,179	2,459
11 Aug	4,680	3,954	1,670	734	1,126	2,899	3,398	3,187	1,797	1,179	2,462
12 Aug	4,681	3,983	1,671	734	1,129	2,901	3,399	3,187	1,800	1,179	2,466
13 Aug	4,682	3,989	1,671	734	1,145	2,902	3,399	3,187	1,803	1,180	2,469
14 Aug	4,684	3,995	1,678	734	1,146	2,904	3,402	3,187	1,804	1,180	2,471
15 Aug	4,685	4,012	1,679	735	1,163	2,906	3,403	3,187	1,805	1,181	2,476
16 Aug	4,690	4,036	1,684	735	1,165	2,908	3,404	3,188	1,805	1,181	2,480
17 Aug	4,712	4,067	1,689	736	1,166	2,911	3,407	3,189	1,805	1,181	2,486
18 Aug	4,716	4,086	1,690	736	1,167	2,911	3,408	3,189	1,809	1,181	2,489
19 Aug	4,735	4,088	1,695	736	1,167	2,912	3,411	3,189	1,811	1,181	2,493
20 Aug	4,748	4,100	1,696	739	1,183	2,912	3,413	3,191	1,815	1,182	2,498
21 Aug	4,754	4,102	1,699	740	1,195	2,913	3,413	3,191	1,817	1,182	2,501
22 Aug	4,756	4,104	1,699	740	1,197	2,913	3,413	3,191	1,820	1,182	2,502
23 Aug	4,777	4,106	1,699	740	1,222	2,913	3,414	3,196	1,820	1,182	2,507
24 Aug	4,780	4,106	1,708	741	1,226	2,914	3,414	3,197	1,820	1,182	2,509
25 Aug	4,782	4,107	1,710	742	1,253	2,916	3,420	3,197	1,820	1,182	2,513
26 Aug	4,782	4,108	1,711	743	1,262	2,916	3,420	3,197	1,820	1,182	2,514
27 Aug	4,784	4,109	1,731	743	1,268	2,916	3,420	3,197	1,820	1,182	2,517
28 Aug	4,788	4,112	1,736	745	1,269	2,916	3,420	3,197	1,820	1,182	2,519
29 Aug	4,788	4,112	1,748	745	1,294	2,916	3,420	3,197	1,820	1,182	2,522
30 Aug	4,789	4,112	1,759	745	1,299	2,916	3,420	3,197	1,820	1,182	2,524
31 Aug	4,790	4,112	1,759	745	1,299	2,916	3,420	3,197	1,820	1,182	2,524
1 Sep	4,792	4,112	1,759	745	1,299	2,916	3,420	3,197	1,823	1,182	2,525
2 Sep	4,792	4,112	1,759	745	1,301	2,916	3,420	3,197	1,824	1,182	2,525
3 Sep	4,794	4,112	1,759	746	1,302	2,916	3,420	3,197	1,824	1,182	2,525
4 Sep	4,795	4,112	1,759	746	1,306	2,916	3,420	3,197	1,824	1,182	2,526
5 Sep	4,796	4,112	1,760	746	1,306	2,916	3,420	3,197	1,824	1,182	2,526
6 Sep	4,798	4,112	1,760	746	1,306	2,917	3,420	3,197	1,824	1,182	2,526
7 Sep	4,798	4,112	1,760	746	1,306	2,917	3,420	3,197	1,824	1,182	2,526
8 Sep	4,798	4,112	1,763	746	1,306	2,917	3,420	3,197	1,824	1,182	2,527
9 Sep	4,798	4,112	1,765	746	1,306	2,917	3,420	3,197	1,824	1,182	2,527
10 Sep	4,798	4,112	1,765	746	1,306	2,917	3,420	3,197	1,824	1,182	2,527
11 Sep	4,798	4,112	1,765	748	1,307	2,917	3,420	3,197	1,824	1,182	2,527
12 Sep	4,798	4,112	1,765	752	1,307	2,917	3,420	3,197	1,824	1,182	2,527

Source: Fuerst 2015.

Appendix D2.–Ayakulik River Chinook salmon daily cumulative weir counts, 2005–2014.

Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
20 May	0	0	0	0	0	0	0	0	0	0	0
21 May	0	0	0	0	0	0	0	0	0	0	0
22 May	1	0	14	0	0	0	0	2	0	0	2
23 May	5	0	14	0	1	2	0	5	0	0	3
24 May	5	0	14	0	1	3	0	19	0	0	4
25 May	5	0	14	0	2	3	3	19	0	1	5
26 May	5	0	14	0	3	3	17	32	1	4	8
27 May	11	0	14	0	3	20	27	33	8	4	12
28 May	11	0	14	0	3	20	34	33	15	13	14
29 May	19	0	18	0	7	26	44	42	22	21	20
30 May	34	0	18	0	7	49	58	54	41	28	29
31 May	40	0	25	0	7	58	74	71	47	35	36
1 Jun	49	32	27	0	12	93	141	78	60	45	54
2 Jun	53	74	31	1	16	111	172	86	80	97	72
3 Jun	159	94	52	1	17	112	177	106	87	111	92
4 Jun	267	101	61	10	72	137	197	124	123	127	122
5 Jun	357	104	71	11	98	265	212	127	135	167	155
6 Jun	540	128	192	16	130	338	232	156	198	179	211
7 Jun	555	136	222	16	176	368	282	168	361	179	246
8 Jun	764	192	365	17	176	392	317	179	363	184	295
9 Jun	955	206	438	31	284	514	392	224	476	196	372
10 Jun	958	238	438	36	370	668	432	302	488	203	413
11 Jun	1,101	272	477	88	391	773	463	331	562	212	467
12 Jun	1,112	319	644	98	478	804	563	392	644	214	527
13 Jun	1,248	360	734	122	629	836	980	527	699	238	637
14 Jun	1,812	637	988	209	645	866	1,158	755	774	254	810
15 Jun	2,321	668	1,346	216	763	904	1,231	812	892	277	943
16 Jun	3,028	668	1,637	411	863	934	1,310	957	897	320	1,103
17 Jun	3,226	748	1,702	481	871	960	1,420	1,038	1,078	350	1,187
18 Jun	3,538	750	1,707	499	941	1,110	1,496	1,161	1,110	365	1,268
19 Jun	3,588	951	1,819	547	1,029	1,452	1,687	1,371	1,275	370	1,409
20 Jun	3,609	1,574	1,944	920	1,065	1,721	1,893	1,423	1,339	426	1,591
21 Jun	3,809	1,583	2,009	1,084	1,127	1,763	2,127	1,679	1,354	449	1,698
22 Jun	4,045	1,740	2,103	1,216	1,133	2,183	2,314	1,961	1,363	476	1,853
23 Jun	4,234	1,762	2,400	1,248	1,266	2,451	2,389	1,978	1,455	510	1,969
24 Jun	4,271	1,898	2,482	1,495	1,364	2,555	2,529	2,077	1,573	551	2,080
25 Jun	5,379	1,925	2,576	1,495	1,430	2,886	2,618	2,135	1,718	592	2,275
26 Jun	5,646	1,931	2,612	1,588	1,484	3,169	2,885	2,158	1,806	612	2,389
27 Jun	6,207	1,932	3,081	1,653	1,558	3,285	2,942	2,420	1,821	618	2,552
28 Jun	6,231	1,935	3,813	1,888	1,631	3,436	3,060	2,673	1,829	636	2,713
29 Jun	6,325	1,951	4,175	2,128	1,788	3,663	3,107	2,969	1,897	660	2,866
30 Jun	6,623	1,961	4,475	2,232	1,861	4,006	3,254	3,275	1,900	692	3,028

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
1 Jul	6,758	2,234	5,057	2,346	1,882	4,175	3,410	3,391	1,939	702	3,189
2 Jul	6,761	2,291	5,128	2,367	2,009	4,217	3,570	3,498	1,964	703	3,251
3 Jul	6,878	2,424	5,448	2,468	2,058	4,442	3,704	3,702	1,964	713	3,380
4 Jul	7,621	2,531	5,602	2,490	2,163	4,703	3,774	3,765	1,988	727	3,536
5 Jul	7,646	2,549	5,801	2,564	2,235	4,840	3,849	3,873	2,009	745	3,611
6 Jul	7,686	2,568	5,936	2,569	2,250	4,900	3,888	4,273	2,009	820	3,690
7 Jul	7,798	2,568	6,051	2,572	2,300	5,015	3,910	4,325	2,055	825	3,742
8 Jul	7,802	2,568	6,164	2,583	2,357	5,061	3,973	4,356	2,096	831	3,779
9 Jul	7,855	2,576	6,197	2,588	2,396	5,082	4,039	4,389	2,114	849	3,809
10 Jul	7,855	2,581	6,211	2,605	2,478	5,125	4,061	4,444	2,142	882	3,838
11 Jul	7,867	2,723	6,291	2,652	2,492	5,184	4,084	4,482	2,249	891	3,892
12 Jul	7,867	2,831	6,385	2,740	2,516	5,186	4,150	4,539	2,249	895	3,936
13 Jul	7,867	2,845	6,420	2,823	2,523	5,189	4,160	4,565	2,249	896	3,954
14 Jul	8,007	2,845	6,451	2,832	2,541	5,240	4,183	4,572	2,255	899	3,983
15 Jul	8,021	2,847	6,457	2,860	2,561	5,240	4,194	4,620	2,258	901	3,996
16 Jul	8,041	2,848	6,471	2,910	2,564	5,251	4,215	4,621	2,263	905	4,009
17 Jul	8,073	2,856	6,472	2,960	2,572	5,259	4,225	4,622	2,283	905	4,023
18 Jul	8,075	2,866	6,475	2,960	2,576	5,272	4,227	4,623	2,283	907	4,026
19 Jul	8,079	2,922	6,485	2,974	2,580	5,272	4,227	4,635	2,286	907	4,037
20 Jul	8,134	2,924	6,492	2,982	2,587	5,274	4,232	4,651	2,299	907	4,048
21 Jul	8,143	3,007	6,493	2,985	2,589	5,280	4,237	4,655	2,302	908	4,060
22 Jul	8,198	3,007	6,495	2,985	2,592	5,283	4,248	4,657	2,303	910	4,068
23 Jul	8,201	3,007	6,497	2,985	2,592	5,283	4,270	4,667	2,307	912	4,072
24 Jul	8,201	3,056	6,499	2,986	2,596	5,283	4,275	4,689	2,307	913	4,081
25 Jul	8,201	3,062	6,501	2,989	2,597	5,283	4,280	4,693	2,324	913	4,084
26 Jul	8,221	3,066	6,508	3,000	2,597	5,287	4,281	4,693	2,337	913	4,090
27 Jul	8,289	3,066	6,514	3,038	2,597	5,291	4,284	4,696	2,338	914	4,103
28 Jul	8,292	3,066	6,515	3,048	2,597	5,291	4,289	4,706	2,340	914	4,106
29 Jul	8,295	3,067	6,515	3,048	2,597	5,292	4,292	4,707	2,340	914	4,107
30 Jul	8,297	3,067	6,515	3,054	2,602	5,293	4,294	4,716	2,342	914	4,109
31 Jul	8,301	3,069	6,515	3,054	2,609	5,295	4,297	4,719	2,343	914	4,112

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
1 Aug	8,302	3,069	6,515	3,057	2,609	5,296	4,297	4,719	2,345	914	4,112
2 Aug	8,304	3,072	6,515	3,060	2,609	5,296	4,299	4,721	2,345	914	4,114
3 Aug	8,304	3,073	6,517	3,060	2,609	5,298	4,300	4,728	2,345	914	4,115
4 Aug	8,304	3,079	6,518	3,060	2,612	5,298	4,300	4,728	2,345	914	4,116
5 Aug	8,304	3,081	6,518	3,062	2,612	5,298	4,300	4,732	2,345	914	4,117
6 Aug	8,305	3,088	6,518	3,063	2,612	5,300	4,300	4,733	2,357	914	4,119
7 Aug	8,305	3,088	6,526	3,065	2,612	5,300	4,301	4,737	2,362	914	4,121
8 Aug	8,305	3,093	6,526	3,066	2,612	5,300	4,301	4,742	2,362	914	4,122
9 Aug	8,305	3,094	6,526	3,066	2,612	5,300	4,301	4,743	2,362	915	4,122
10 Aug	8,305	3,094	6,526	3,066	2,613	5,300	4,301	4,746	2,362	915	4,123
11 Aug	8,305	3,099	6,526	3,067	2,614	5,300	4,301	4,748	2,362	915	4,124
12 Aug	8,305	3,102	6,526	3,067	2,614	5,300	4,301	4,751	2,362	916	4,124
13 Aug	8,309	3,104	6,526	3,067	2,614	5,301	4,302	4,751	2,362	916	4,125
14 Aug	8,309	3,106	6,526	3,067	2,614	5,301	4,315	4,752	2,363	916	4,127
15 Aug	8,311	3,106	6,526	3,069	2,614	5,301	4,315	4,757	2,365	916	4,128
16 Aug	8,315	3,106	6,527	3,070	2,614	5,301	4,316	4,758	2,367	916	4,129
17 Aug	8,317	3,106	6,527	3,071	2,614	5,301	4,316	4,760	2,367	916	4,130
18 Aug	8,317	3,106	6,527	3,071	2,615	5,301	4,316	4,760	2,369	916	4,130
19 Aug	8,319	3,106	6,527	3,071	2,615	5,301	4,316	4,760	2,369	916	4,130
20 Aug	8,325	3,106	6,531	3,071	2,615	5,301	4,316	4,760	2,369	916	4,131
21 Aug	8,326	3,106	6,531	3,071	2,615	5,301	4,316	4,760	2,369	916	4,131
22 Aug	8,333	3,106	6,531	3,071	2,615	5,301	4,316	4,760	2,369	916	4,132
23 Aug	8,336	3,106	6,531	3,071	2,615	5,301	4,316	4,760	2,369	916	4,132
24 Aug	8,338	3,106	6,531	3,071	2,615	5,301	4,316	4,760	2,369	916	4,132
25 Aug	8,338	3,106	6,534	3,071	2,615	5,301	4,316	4,760	2,369	916	4,133
26 Aug	8,338	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
27 Aug	8,338	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
28 Aug	8,338	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
29 Aug	8,338	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
30 Aug	8,339	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
31 Aug	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
1 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
2 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
3 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
4 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
5 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
6 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
7 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
8 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
9 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133
10 Sep	8,340	3,106	6,535	3,071	2,615	5,301	4,316	4,760	2,369	917	4,133

Source: Fuerst 2015.

Appendix D3.–Chignik River Chinook salmon daily cumulative weir counts, 2005–2014.

Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
16 Jun	0	0	0	0	0	0	6	0	12	12	3
17 Jun	0	18	6	0	0	6	6	0	12	36	8
18 Jun	0	18	6	0	0	6	18	0	12	42	10
19 Jun	0	24	6	6	18	6	18	0	12	60	15
20 Jun	6	24	6	6	18	6	18	0	18	66	17
21 Jun	84	24	12	6	18	18	18	0	24	72	28
22 Jun	117	24	12	6	18	24	24	6	30	90	35
23 Jun	196	30	12	6	18	30	31	12	36	103	47
24 Jun	262	42	24	6	18	30	43	12	36	127	60
25 Jun	292	72	30	18	18	30	43	12	36	165	72
26 Jun	470	84	42	18	42	31	61	18	60	195	102
27 Jun	615	138	48	18	48	31	85	18	60	267	133
28 Jun	729	150	48	18	48	55	115	18	84	291	156
29 Jun	909	162	54	24	48	61	115	18	90	339	182
30 Jun	1,065	162	54	30	72	61	139	30	90	405	211
1 Jul	1,223	180	54	30	84	73	181	48	90	465	243
2 Jul	1,345	222	66	36	120	157	248	55	120	561	293
3 Jul	1,579	246	84	66	162	205	302	68	120	633	347
4 Jul	1,982	288	114	108	180	247	350	86	133	723	421
5 Jul	2,144	324	120	114	237	319	398	94	171	875	480
6 Jul	2,338	396	138	144	253	355	494	118	195	1,067	550
7 Jul	2,569	574	156	162	345	463	650	156	219	1,199	649
8 Jul	2,894	745	228	180	387	499	729	181	243	1,283	737
9 Jul	3,452	864	258	228	429	595	738	211	263	1,435	847
10 Jul	3,742	921	372	241	543	799	813	241	299	1,554	953
11 Jul	3,875	980	440	265	597	895	885	298	347	1,722	1,030
12 Jul	4,055	1,034	626	308	706	1,225	990	352	413	1,789	1,150
13 Jul	4,211	1,200	668	353	713	1,399	1,259	478	503	1,879	1,266
14 Jul	4,358	1,388	718	384	755	1,537	1,393	532	546	1,934	1,355
15 Jul	4,461	1,448	782	482	773	1,735	1,621	634	612	1,970	1,452
16 Jul	4,609	1,540	839	560	779	1,759	1,669	652	649	1,994	1,505
17 Jul	4,794	1,668	876	709	827	1,841	1,771	736	709	2,114	1,605
18 Jul	4,932	1,720	1,037	829	863	1,944	1,867	838	727	2,190	1,695
19 Jul	5,106	2,044	1,199	927	989	2,002	1,951	911	781	2,312	1,822
20 Jul	5,204	2,226	1,321	1,019	1,055	2,170	2,071	929	835	2,397	1,923
21 Jul	5,337	2,310	1,327	1,110	1,157	2,404	2,150	969	854	2,475	2,009
22 Jul	5,513	2,424	1,375	1,146	1,229	2,609	2,216	1,017	890	2,493	2,091
23 Jul	5,622	2,508	1,400	1,172	1,259	2,687	2,276	1,053	927	2,552	2,146
24 Jul	5,904	2,694	1,462	1,220	1,283	2,759	2,366	1,065	957	2,609	2,232
25 Jul	5,976	2,795	1,511	1,251	1,301	2,933	2,390	1,113	987	2,628	2,289
26 Jul	6,000	2,871	1,541	1,288	1,331	3,065	2,420	1,133	1,005	2,630	2,328

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
27 Jul	6,099	2,917	1,545	1,343	1,337	3,141	2,456	1,151	1,035	2,672	2,370
28 Jul	6,147	2,991	1,559	1,391	1,367	3,207	2,475	1,200	1,053	2,686	2,408
29 Jul	6,196	3,058	1,589	1,423	1,385	3,243	2,487	1,236	1,065	2,716	2,440
30 Jul	6,202	3,105	1,610	1,461	1,403	3,328	2,505	1,261	1,101	2,722	2,470
31 Jul	6,214	3,159	1,622	1,486	1,403	3,358	2,535	1,261	1,119	2,735	2,489
1 Aug	6,226	3,202	1,651	1,498	1,409	3,382	2,553	1,273	1,155	2,742	2,509
2 Aug	6,232	3,208	1,677	1,504	1,421	3,406	2,595	1,309	1,162	2,755	2,527
3 Aug	6,253	3,280	1,684	1,516	1,457	3,412	2,613	1,309	1,162	2,761	2,545
4 Aug	6,273	3,305	1,720	1,540	1,488	3,442	2,619	1,321	1,174	2,777	2,566
5 Aug	6,273	3,329	1,732	1,564	1,506	3,454	2,625	1,333	1,174	2,791	2,578
6 Aug	6,291	3,353	1,732	1,572	1,518	3,454	2,625	1,346	1,180	2,791	2,586
7 Aug	6,321	3,365	1,732	1,578	1,529	3,479	2,631	1,352	1,180	2,799	2,597
8 Aug	6,351	3,390	1,750	1,584	1,547	3,497	2,636	1,364	1,186	2,799	2,610
9 Aug	6,351	3,408	1,768	1,590	1,571	3,515	2,641	1,376	1,192	2,808	2,622
10 Aug	6,352	3,414	1,808	1,596	1,571	3,533	2,642	1,382	1,216	2,820	2,633
11 Aug	6,354	3,450	1,808	1,603	1,571	3,539	2,649	1,394	1,223	2,838	2,643
12 Aug	6,366	3,468	1,809	1,609	1,577	3,539	2,673	1,400	1,223	2,844	2,651
13 Aug	6,374	3,474	1,827	1,628	1,577	3,539	2,673	1,400	1,223	2,850	2,657
14 Aug	6,398	3,493	1,830	1,629	1,577	3,551	2,685	1,412	1,229	2,862	2,667
15 Aug	6,428	3,505	1,831	1,629	1,577	3,569	2,685	1,412	1,235	2,881	2,675
16 Aug	6,446	3,511	1,843	1,629	1,578	3,581	2,697	1,418	1,235	2,881	2,682
17 Aug	6,458	3,517	1,856	1,636	1,584	3,599	2,703	1,424	1,235	2,887	2,690
18 Aug	6,464	3,517	1,862	1,666	1,596	3,623	2,703	1,424	1,235	2,887	2,698
19 Aug	6,468	3,517	1,910	1,678	1,602	3,629	2,703	1,424	1,241	2,887	2,706
20 Aug	6,468	3,529	1,913	1,694	1,614	3,629	2,709	1,424	1,247	2,887	2,711
21 Aug	6,474	3,529	1,931	1,700	1,620	3,629	2,716	1,430	1,247	2,887	2,716
22 Aug	6,480	3,535	1,939	1,706	1,620	3,629	2,716	1,430	1,247	2,887	2,719
23 Aug	6,486	3,535	1,957	1,718	1,620	3,629	2,716	1,443	1,247	2,887	2,724
24 Aug	6,486	3,535	1,957	1,718	1,626	3,647	2,716	1,449	1,247	2,889	2,727
25 Aug	6,486	3,535	1,963	1,724	1,626	3,649	2,716	1,449	1,247	2,889	2,728
26 Aug	6,486	3,535	1,969	1,730	1,644	3,661	2,716	1,449	1,247	2,889	2,733
27 Aug	6,486	3,535	1,976	1,730	1,662	3,661	2,716	1,449	1,247	2,895	2,736
28 Aug	6,486	3,535	1,982	1,730	1,668	3,661	2,716	1,449	1,247	2,895	2,737
29 Aug	6,486	3,535	1,994	1,730	1,674	3,661	2,716	1,449	1,247	2,895	2,739
30 Aug	6,486	3,535	1,994	1,730	1,674	3,679	2,716	1,449	1,247	2,895	2,741
31 Aug	6,486	3,535	2,000	1,730	1,680	3,679	2,716	1,449	1,247	2,895	2,742
1 Sep	6,486	3,535	2,000	1,730	1,680	3,679	2,722	1,449	1,247	2,895	2,742
2 Sep	6,486	3,535	2,000	1,730	1,680	3,679	2,728	1,449	1,253	2,895	2,744

Source: Fuerst 2015.

Appendix D4.–Buskin River coho salmon daily cumulative weir counts, 2005–2014.

Date	Year											Average
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
17 Jul	0	0	0	0	0	0	0	0	0	0	0	0
18 Jul	0	0	0	0	0	0	0	0	0	0	0	0
19 Jul	0	0	0	0	0	0	0	0	0	0	0	0
20 Jul	0	0	0	0	0	0	0	0	0	0	0	0
21 Jul	0	0	0	0	0	0	0	0	0	0	0	0
22 Jul	0	0	0	0	0	0	0	0	0	0	0	0
23 Jul	0	0	0	1	0	0	0	0	0	0	0	0
24 Jul	0	0	0	1	0	0	0	0	0	0	0	0
25 Jul	0	0	0	1	0	0	0	0	0	0	0	0
26 Jul	1	0	0	1	0	0	0	0	0	0	0	0
27 Jul	1	0	0	1	0	0	0	0	0	0	0	0
28 Jul	2	0	0	1	0	0	0	0	0	0	0	0
29 Jul	5	1	0	2	0	0	0	0	0	0	0	0
30 Jul	5	1	0	2	0	0	0	0	0	0	0	0
31 Jul	5	1	0	2	0	0	0	0	0	0	0	0
1 Aug	7	1	0	2	1	0	0	0	0	0	0	0
2 Aug	9	1	0	2	1	0	0	0	0	0	0	0
3 Aug	23	1	0	2	2	2	0	0	0	3	0	1
4 Aug	31	1	2	2	3	6	0	0	0	7	0	2
5 Aug	34	1	7	2	8	8	0	0	0	9	0	4
6 Aug	45	1	9	2	8	8	0	0	0	10	0	4
7 Aug	57	1	20	4	8	17	0	0	0	10	0	6
8 Aug	75	5	34	4	16	27	5	0	0	10	0	10
9 Aug	79	10	61	5	26	33	20	0	0	18	3	18
10 Aug	101	24	82	5	34	35	31	0	0	38	3	25
11 Aug	139	39	103	7	50	52	40	0	3	54	4	35
12 Aug	165	53	121	11	85	70	44	0	17	59	6	47
13 Aug	220	63	154	14	103	81	49	0	50	75	7	60
14 Aug	282	69	195	29	210	91	60	0	109	79	463	131
15 Aug	344	92	208	34	251	94	79	0	147	93	463	146
16 Aug	406	127	220	38	392	115	109	0	166	110	473	175
17 Aug	467	185	256	42	476	131	139	0	207	129	511	208
18 Aug	630	244	327	98	512	160	221	10	213	165	521	247
19 Aug	891	315	414	120	571	179	267	13	300	177	540	290
20 Aug	1,112	360	520	122	653	207	284	21	334	193	573	327
21 Aug	1,274	448	910	131	741	232	298	31	339	206	573	391
22 Aug	1,333	539	1,059	160	790	251	398	56	346	280	576	446
23 Aug	1,458	647	1,138	232	959	260	419	69	347	367	586	502
24 Aug	1,683	681	1,370	299	1,107	267	461	81	358	486	678	579
25 Aug	1,875	735	1,554	346	1,185	280	492	255	363	613	762	659
26 Aug	2,257	775	1,726	415	1,304	297	523	396	368	727	854	739

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Date	Year											Average
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
27 Aug	2,749	789	2,038	701	1,380	357	546	679	372	823	1,072	876
28 Aug	3,377	803	2,318	1,250	1,466	626	561	826	375	855	1,112	1,019
29 Aug	3,999	823	2,639	1,450	1,486	894	578	963	384	1,533	1,146	1,190
30 Aug	4,496	834	3,907	1,700	1,519	1,113	584	1,121	397	2,033	1,203	1,441
31 Aug	5,248	839	4,270	1,839	1,785	1,253	605	1,250	415	2,439	1,308	1,600
1 Sep	5,830	850	4,819	2,121	2,006	1,354	612	1,367	428	2,488	1,337	1,738
2 Sep	6,081	866	5,301	2,205	2,494	1,424	619	1,462	433	2,686	1,417	1,891
3 Sep	6,545	870	6,028	2,632	2,583	1,678	634	1,583	443	2,745	1,580	2,078
4 Sep	6,672	872	6,579	3,437	2,861	1,874	719	1,711	450	2,850	2,442	2,380
5 Sep	6,722	873	7,166	3,670	3,138	2,075	922	1,814	469	3,011	2,779	2,592
6 Sep	6,793	873	7,705	3,961	3,438	2,317	943	1,907	471	3,354	2,997	2,797
7 Sep	6,808	880	8,365	4,281	3,738	2,663	1,091	2,022	473	3,697	3,043	3,025
8 Sep	6,824	883	8,940	4,598	4,038	3,436	1,171	2,148	474	3,840	3,228	3,276
9 Sep	6,828	907	9,237	4,819	4,528	3,771	1,441	2,309	479	4,073	3,305	3,487
10 Sep	6,864	916	9,467	4,981	5,017	4,041	1,471	2,439	482	4,306	3,427	3,655
11 Sep	6,891	928	9,632	5,327	5,328	4,323	1,475	2,574	506	4,441	3,820	3,835
12 Sep	6,927	944	9,663	5,701	5,662	4,605	1,488	2,720	526	4,560	4,298	4,017
13 Sep	6,962	964	9,697	5,856	6,127	4,777	1,492	2,833	529	4,763	4,917	4,196
14 Sep	6,972	968	10,114	5,999	6,266	5,146	1,538	2,988	532	4,788	5,048	4,339
15 Sep	6,985	1,016	10,523	6,272	6,406	5,602	1,545	3,109	788	4,840	6,397	4,650
16 Sep	7,003	1,178	10,729	6,439	6,583	5,602	1,551	3,191	1,023	4,849	6,940	4,809
17 Sep	7,056	1,439	11,131	6,487	6,614	5,911	1,553	3,312	1,079	4,856	7,403	4,979
18 Sep	7,086	2,169	11,530	6,536	7,155	6,583	1,556	3,499	1,424	4,890	7,711	5,305
19 Sep	7,815	2,466	12,518	6,619	7,678	7,248	1,576	3,740	1,974	4,949	7,917	5,669
20 Sep	7,921	2,663	12,770	6,713	7,962	8,567	1,578	3,934	2,361	5,009	8,044	5,960
21 Sep	8,101	2,781	13,348	6,810	7,999	8,860	1,598	4,062	2,591	5,124	8,192	6,137
22 Sep	8,253	2,906	13,348	6,911	8,087	9,390	1,901	4,239	2,891	5,269	8,195	6,314
23 Sep	8,421	3,161	13,348	7,448	8,312	9,715	1,946	4,399	3,191	5,284	8,214	6,502
24 Sep	8,544	3,371	13,348	8,171	8,398	9,810	2,819	4,657	3,491	5,285	8,216	6,757
25 Sep	8,775	3,475	13,348	8,292	8,699	10,244	3,064	4,908	3,791	5,323	8,219	6,936
26 Sep	9,292	3,559	13,348	8,366	8,834	10,304	3,174	5,073	4,091	5,327	8,222	7,030
27 Sep	9,361	8,168	13,348	8,444	8,939	10,502	3,260	5,407	4,391	5,386	8,332	7,618
28 Sep	9,494	12,909	13,348	8,752	9,003	10,573	3,301	5,753	4,691	5,386	8,413	8,213
29 Sep	9,557	14,515	13,348	9,000	9,028	10,624	3,307	5,915	4,991	5,386	8,413	8,453
30 Sep	9,599	14,910	13,348	9,001	9,028	10,624	3,309	5,941	5,291	5,386	8,413	8,525
1 Oct	9,599	15,275	13,348	9,001	9,028	10,624	5,794	5,961	5,291	5,386	8,413	8,812
2 Oct	9,599	15,411	13,348	9,001	9,028	10,624	6,028	5,969	5,291	5,386	8,413	8,850
3 Oct	9,599	15,622	13,348	9,001	9,028	10,624	6,237	5,982	5,291	5,386	8,413	8,893
4 Oct	9,599	15,796	13,348	9,001	9,028	10,624	6,537	6,026	5,291	5,386	8,413	8,945
5 Oct	9,599	16,596	13,348	9,001	9,028	10,624	6,766	6,026	5,291	5,386	8,413	9,048
6 Oct	9,599	16,596	13,348	9,001	9,028	10,624	6,803	6,026	5,291	5,386	8,413	9,052
7 Oct	9,599	16,596	13,348	9,001	9,028	10,624	6,808	6,026	5,291	5,386	8,413	9,052

Source: Fuerst 2015.

Appendix D5.–Buskin River sockeye salmon daily cumulative weir counts, 2005–2014.

Date	Year										Average	
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014		
17 May	0	0	0	0	0	0	0	0	0	0	0	0
18 May	0	0	0	0	0	0	0	0	0	0	0	0
19 May	0	1	0	0	0	0	0	0	0	0	10	1
20 May	0	1	0	0	0	0	0	0	0	0	46	5
21 May	0	10	0	0	0	0	0	0	0	1	48	6
22 May	0	20	0	0	2	0	0	0	0	1	51	7
23 May	0	20	10	0	2	0	0	0	0	2	53	9
24 May	181	20	48	0	2	0	0	7	2	191	45	45
25 May	218	20	57	0	2	0	0	80	89	206	67	67
26 May	424	20	61	0	2	0	0	225	89	208	103	103
27 May	491	20	61	0	2	0	0	311	116	374	138	138
28 May	661	20	61	0	2	0	40	313	179	554	183	183
29 May	676	20	61	0	102	288	323	336	251	628	269	269
30 May	851	20	61	0	116	309	495	337	425	1,061	368	368
31 May	1,114	20	63	0	116	332	677	402	676	1,202	460	460
1 Jun	1,136	20	64	4	116	383	835	544	844	1,422	537	537
2 Jun	1,136	20	112	4	116	650	960	870	1,004	1,455	633	633
3 Jun	2,003	148	380	4	183	662	1,161	870	1,325	1,637	837	837
4 Jun	2,774	406	487	13	183	946	1,313	983	1,612	1,738	1,046	1,046
5 Jun	2,779	434	927	13	428	974	1,479	1,014	1,827	1,877	1,175	1,175
6 Jun	2,930	434	1,319	79	431	976	1,541	1,179	2,050	2,565	1,350	1,350
7 Jun	4,795	723	2,072	81	444	1033	2,340	1,569	2,696	2,565	1,832	1,832
8 Jun	5,380	3,004	2,403	106	448	1337	2,840	1,780	3,382	3,464	2,414	2,414
9 Jun	6,240	4,104	2,707	231	458	1531	2,982	1,870	3,836	4,260	2,822	2,822
10 Jun	6,652	4,607	3,002	289	1,258	1809	3,360	2,027	4,057	4,637	3,170	3,170
11 Jun	6,748	5,188	5,250	467	1,268	1998	3,540	2,489	4,790	4,977	3,672	3,672
12 Jun	7,268	5,976	6,351	680	1,268	2129	3,895	2,592	5,379	5,930	4,147	4,147
13 Jun	7,406	6,268	6,679	764	1,324	2515	4,256	2,813	5,933	6,639	4,460	4,460
14 Jun	7,691	7,091	6,792	805	1,805	2769	4,522	2,923	6,663	6,813	4,787	4,787
15 Jun	8,089	7,512	7,399	964	1,835	3054	5,310	3,080	7,450	7,172	5,187	5,187
16 Jun	8,334	7,812	8,423	1,020	1,860	3,083	5,659	3,344	7,813	7,516	5,486	5,486
17 Jun	8,838	8,665	8,868	1,036	2,937	3,210	6,381	4,286	9,125	7,949	6,130	6,130
18 Jun	8,974	9,116	9,221	1,242	3,107	3,806	6,972	4,395	9,880	8,450	6,516	6,516
19 Jun	9,767	9,337	9,328	1,385	3,143	3,951	7,537	4,472	10,278	8,882	6,808	6,808
20 Jun	9,921	9,635	9,657	1,430	3,556	4,256	7,752	4,494	10,841	9,267	7,081	7,081
21 Jun	9,933	11,091	10,015	1,517	3,821	4,516	8,064	4,666	10,969	9,339	7,393	7,393
22 Jun	10,336	11,148	10,346	1,783	4,129	4,557	8,383	5,317	11,240	9,603	7,684	7,684
23 Jun	10,419	11,154	10,507	1,859	4,237	4,721	8,517	5,624	11,883	9,733	7,865	7,865
24 Jun	10,505	11,388	10,595	1,945	4,352	4,799	8,806	5,632	12,270	9,897	8,019	8,019
25 Jun	10,509	11,626	10,904	2,583	4,476	5,264	9,055	5,885	12,509	10,015	8,283	8,283

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
26 Jun	10,825	11,779	11,100	2,608	4,640	5,797	9,183	5,938	12,797	10,144	8,481
27 Jun	10,974	11,939	11,914	2,830	4,979	6,006	9,273	6,215	13,064	10,208	8,740
28 Jun	11,210	12,225	11,914	3,008	5,242	6,074	9,562	6,236	13,629	10,353	8,945
29 Jun	11,211	12,375	12,039	3,069	5,370	6,126	9,619	6,357	13,792	10,470	9,043
30 Jun	11,274	12,405	12,145	3,648	5,642	6,174	9,773	6,624	13,925	10,547	9,216
1 Jul	11,362	12,442	12,243	3,745	5,666	6,201	9,791	6,699	14,039	10,631	9,282
2 Jul	11,416	12,467	12,319	3,802	5,746	6,582	9,810	6,753	14,124	10,680	9,370
3 Jul	11,667	12,671	12,720	4,150	5,753	7,131	9,822	6,836	14,224	10,746	9,572
4 Jul	11,693	13,108	12,951	4,235	5,756	7,131	10,059	6,910	14,272	10,825	9,694
5 Jul	12,087	13,123	13,069	4,235	5,807	7,140	10,085	6,933	14,289	10,956	9,772
6 Jul	12,190	13,136	13,620	4,244	5,825	7,310	10,180	6,947	14,318	11,018	9,879
7 Jul	12,437	13,142	13,659	4,281	5,903	7,387	10,221	6,992	14,404	11,185	9,961
8 Jul	12,470	13,239	13,669	4,302	6,255	7,762	10,270	7,169	14,475	12,151	10,176
9 Jul	12,512	14,201	13,887	4,401	6,297	8,370	10,328	7,224	14,546	12,195	10,396
10 Jul	12,550	14,368	14,150	4,402	6,313	8,437	10,460	7,225	14,978	12,242	10,513
11 Jul	12,685	14,938	14,213	4,403	6,375	8,503	10,477	7,622	15,070	12,276	10,656
12 Jul	13,420	15,019	14,258	4,587	6,376	8,583	10,530	7,690	15,089	12,294	10,785
13 Jul	13,444	15,032	14,462	4,658	6,385	8,625	10,539	7,700	15,113	12,310	10,827
14 Jul	13,457	15,059	14,465	4,658	6,435	8,643	10,771	7,709	15,145	12,388	10,873
15 Jul	13,498	15,061	14,466	4,664	6,527	9,196	10,774	7,713	15,256	12,416	10,957
16 Jul	13,500	15,218	14,574	4,680	6,887	9,197	10,779	7,717	15,264	12,698	11,051
17 Jul	14,109	15,221	14,579	4,770	6,889	9,197	10,780	7,729	15,281	12,743	11,130
18 Jul	14,125	15,224	14,641	4,777	6,910	9,261	10,782	7,784	15,295	12,795	11,159
19 Jul	14,125	15,489	14,662	4,777	6,911	9,327	10,782	7,801	15,301	12,810	11,199
20 Jul	14,126	15,531	14,698	4,777	6,921	9,396	10,783	7,859	15,307	13,078	11,248
21 Jul	14,199	15,631	14,776	4,785	7,007	9,409	10,786	7,867	15,320	13,101	11,288
22 Jul	14,203	15,637	14,829	4,787	7,060	9,416	10,851	7,877	15,322	13,106	11,309
23 Jul	14,204	15,637	14,872	4,787	7,067	9,428	10,856	7,900	15,341	13,111	11,320
24 Jul	14,204	15,637	15,135	4,990	7,068	9,428	10,865	7,906	15,345	13,118	11,370
25 Jul	14,361	15,940	15,335	5,043	7,289	9,430	10,871	7,911	15,363	13,120	11,466
26 Jul	14,457	15,951	15,335	5,044	7,395	9,608	10,872	7,917	15,387	13,124	11,509
27 Jul	14,885	15,972	15,335	5,045	7,399	9,617	10,878	7,947	15,390	13,145	11,561
28 Jul	14,910	16,031	15,685	5,050	7,421	9,617	10,887	7,990	15,392	13,148	11,613
29 Jul	14,935	16,078	15,774	5,412	7,461	9,617	10,914	7,991	15,413	13,149	11,674
30 Jul	14,976	16,079	15,811	5,441	7,480	9,638	10,915	8,033	15,440	13,196	11,701
31 Jul	15,031	16,081	15,822	5,466	7,502	9,650	10,915	8,049	15,448	13,198	11,716
1 Aug	15,033	16,094	15,827	5,486	7,516	9,652	10,916	8,049	15,530	13,200	11,730
2 Aug	15,035	16,146	15,879	5,503	7,516	9,653	10,933	8,049	15,587	13,201	11,750
3 Aug	15,035	16,207	15,948	5,521	7,519	9,656	10,935	8,057	15,691	13,419	11,799
4 Aug	15,035	16,264	15,979	5,538	7,572	9,656	10,935	8,077	15,732	13,425	11,821
5 Aug	15,035	16,380	16,013	5,562	7,579	9,661	10,965	8,195	15,746	13,438	11,857
6 Aug	15,035	16,479	16,047	5,570	7,584	9,665	10,965	8,199	15,789	13,447	11,878
7 Aug	15,045	16,606	16,073	5,578	7,596	9,666	10,965	8,199	15,789	13,450	11,897
8 Aug	15,055	16,663	16,085	5,589	7,615	9,680	10,965	8,200	15,789	13,466	11,911

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
9 Aug	15,067	16,776	16,104	5,592	7,635	9,680	10,965	8,207	15,809	13,647	11,948
10 Aug	15,086	16,818	16,132	5,608	7,637	9,682	10,985	8,208	15,833	13,698	11,969
11 Aug	15,114	16,876	16,146	5,639	7,643	9,682	10,987	8,211	15,837	13,710	11,985
12 Aug	15,136	16,918	16,162	5,660	7,644	9,682	10,987	8,240	15,844	13,720	11,999
13 Aug	15,164	16,963	16,175	5,661	7,647	9,683	10,988	8,242	15,848	13,730	12,010
14 Aug	15,185	17,017	16,197	5,858	7,658	9,698	10,993	8,414	15,851	13,739	12,061
15 Aug	15,214	17,059	16,217	5,862	7,659	9,709	10,993	8,452	15,858	13,749	12,077
16 Aug	15,238	17,077	16,219	5,875	7,663	9,710	10,994	8,453	15,859	13,751	12,084
17 Aug	15,269	17,109	16,226	5,878	7,668	9,720	10,995	8,453	15,893	13,753	12,096
18 Aug	15,285	17,150	16,269	5,882	7,674	9,739	11,024	8,454	15,936	13,754	12,117
19 Aug	15,303	17,186	16,285	5,882	7,683	9,751	11,251	8,455	15,947	13,761	12,150
20 Aug	15,323	17,238	16,286	5,882	7,689	9,755	11,254	8,455	15,955	13,763	12,160
21 Aug	15,338	17,281	16,295	5,883	7,693	9,761	11,263	8,460	15,957	13,764	12,170
22 Aug	15,354	17,304	16,303	5,883	7,700	9,761	11,274	8,460	15,962	13,772	12,177
23 Aug	15,366	17,332	16,314	5,886	7,701	9,764	11,290	8,464	15,972	13,776	12,187
24 Aug	15,379	17,457	16,328	5,887	7,703	9,766	11,292	8,465	15,998	13,791	12,207
25 Aug	15,390	17,495	16,339	5,889	7,706	9,766	11,369	8,465	16,001	13,801	12,222
26 Aug	15,393	17,522	16,347	5,889	7,708	9,769	11,561	8,465	16,003	13,813	12,247
27 Aug	15,397	17,571	16,380	5,890	7,716	9,769	11,684	8,466	16,013	13,817	12,270
28 Aug	15,403	17,586	16,380	5,890	7,716	9,771	11,795	8,466	16,013	13,838	12,286
29 Aug	15,404	17,607	16,380	5,890	7,728	9,771	11,801	8,466	16,023	13,842	12,291
30 Aug	15,404	17,656	16,394	5,890	7,731	9,771	11,806	8,466	16,024	13,845	12,299
31 Aug	15,408	17,668	16,400	5,892	7,731	9,772	11,816	8,467	16,024	13,845	12,302
1 Sep	15,409	17,674	16,408	5,894	7,731	9,772	11,823	8,467	16,049	13,850	12,308
2 Sep	15,410	17,692	16,413	5,894	7,731	9,774	11,904	8,467	16,050	13,852	12,319
3 Sep	15,412	17,699	16,424	5,898	7,732	9,775	11,950	8,467	16,064	13,853	12,327
4 Sep	15,412	17,706	16,461	5,898	7,733	9,779	11,955	8,467	16,071	13,864	12,335
5 Sep	15,412	17,714	16,463	5,898	7,734	9,780	11,973	8,469	16,077	13,882	12,340
6 Sep	15,412	17,719	16,473	5,898	7,734	9,780	11,973	8,470	16,142	13,886	12,349
7 Sep	15,412	17,723	16,477	5,898	7,736	9,780	11,973	8,470	16,160	13,887	12,352
8 Sep	15,412	17,728	16,480	5,898	7,739	9,780	11,975	8,471	16,168	13,887	12,354
9 Sep	15,412	17,728	16,480	5,898	7,743	9,780	11,979	8,471	16,175	13,900	12,357
10 Sep	15,414	17,730	16,484	5,898	7,743	9,781	11,979	8,472	16,178	13,905	12,358
11 Sep	15,415	17,732	16,486	5,898	7,745	9,781	11,980	8,474	16,179	13,905	12,360
12 Sep	15,416	17,734	16,488	5,898	7,747	9,781	11,982	8,478	16,179	13,947	12,365
13 Sep	15,416	17,734	16,491	5,898	7,747	9,783	11,982	8,479	16,180	13,961	12,367
14 Sep	15,416	17,734	16,491	5,898	7,747	9,785	11,982	8,479	16,180	13,961	12,367
15 Sep	15,421	17,734	16,491	5,898	7,748	9,787	11,982	8,481	16,180	13,967	12,369
16 Sep	15,423	17,734	16,492	5,898	7,749	9,787	11,982	8,486	16,180	13,969	12,370
17 Sep	15,427	17,734	16,493	5,898	7,750	9,787	11,982	8,490	16,180	13,972	12,371
18 Sep	15,442	17,734	16,494	5,898	7,751	9,788	11,982	8,500	16,183	13,972	12,374
19 Sep	15,445	17,734	16,495	5,898	7,751	9,788	11,982	8,521	16,186	13,974	12,377
20 Sep	15,449	17,734	16,496	5,898	7,753	9,788	11,982	8,528	16,186	13,974	12,379

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Date	Year										Average
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	
21 Sep	15,450	17,734	16,496	5,898	7,753	9,788	11,982	8,530	16,186	13,974	12,379
22 Sep	15,454	17,734	16,496	5,898	7,754	9,788	11,982	8,558	16,187	13,976	12,383
23 Sep	15,456	17,734	16,496	5,898	7,754	9,788	11,982	8,561	16,187	13,976	12,383
24 Sep	15,456	17,734	16,498	5,899	7,754	9,788	11,982	8,564	16,187	13,976	12,384
25 Sep	15,456	17,734	16,498	5,899	7,755	9,788	11,982	8,565	16,187	13,976	12,384
26 Sep	15,456	17,734	16,499	5,900	7,756	9,788	11,982	8,565	16,187	13,976	12,384
27 Sep	15,464	17,734	16,500	5,900	7,757	9,788	11,982	8,565	16,189	13,976	12,386
28 Sep	15,467	17,734	16,501	5,900	7,757	9,788	11,982	8,565	16,189	13,976	12,386
29 Sep	15,468	17,734	16,502	5,900	7,757	9,788	11,982	8,565	16,189	13,976	12,386
30 Sep	15,468	17,734	16,502	5,900	7,757	9,788	11,982	8,565	16,189	13,976	12,386
1 Oct	15,468	17,734	16,502	5,900	7,757	9,797	11,982	8,565	16,189	13,976	12,387

Source: Fuerst 2015.

Appendix D6.—Saltery River sockeye salmon daily cumulative weir counts, 2002–2003 and 2008–2014.

Date	Year									Average
	2002	2003	2008	2009	2010	2011	2012	2013	2014	
19 Jun	0	112	0	0	0	19	0	1,033	24	132
20 Jun	0	1,114	0	0	0	128	0	1,261	104	290
21 Jun	0	1,345	0	0	0	492	246	1,284	172	393
22 Jun	0	1,770	0	0	0	775	451	1,427	275	522
23 Jun	0	2,047	0	0	63	912	860	1,538	375	644
24 Jun	0	2,777	0	141	509	1,175	1,380	2,232	398	957
25 Jun	0	3,319	0	658	610	1,212	2,143	3,043	405	1,266
26 Jun	0	3,512	0	1,691	674	1,421	2,974	5,949	507	1,859
27 Jun	0	4,306	200	2,222	739	1,624	3,427	7,652	641	2,312
28 Jun	0	5,287	399	2,704	1212	2,103	4,024	8,889	760	2,820
29 Jun	0	7,663	589	2,950	1494	2,276	4,277	9,347	814	3,268
30 Jun	501	9,088	749	3,265	1546	2,426	4,466	10,773	993	3,756
1 Jul	3,247	10,106	3,473	3,413	1,586	2,520	4,847	11,807	1,002	4,667
2 Jul	5,826	11,896	8,711	3,744	1,607	3,404	5,198	12,292	1,082	5,973
3 Jul	11,900	12,589	9,354	4,230	1,673	4,184	5,695	12,915	1,225	7,085
4 Jul	14,021	13,544	9,921	4,384	2,693	4,492	6,020	13,596	1,279	7,772
5 Jul	14,958	14,116	10,638	4,744	2,770	6,146	6,283	14,651	1,944	8,472
6 Jul	15,316	16,243	10,906	5,204	3,651	7,318	6,345	14,964	3,009	9,217
7 Jul	15,468	17,250	11,194	6,796	3,933	7,715	6,895	15,422	4,182	9,873
8 Jul	15,815	19,095	11,654	8,371	4,033	7,869	7,241	15,940	4,877	10,544
9 Jul	15,848	20,520	12,970	9,653	4,855	8,036	7,414	17,253	5,734	11,365
10 Jul	15,917	21,403	13,820	10,847	5,799	8,208	7,432	17,876	6,251	11,950
11 Jul	16,268	22,529	14,440	11,217	6,236	8,430	7,950	18,281	6,735	12,454
12 Jul	16,382	23,679	15,754	11,623	6,489	9,417	8,287	19,333	7,088	13,117
13 Jul	16,512	24,501	19,080	12,210	7,009	9,961	9,397	20,229	7,730	14,070
14 Jul	16,633	25,752	20,990	13,077	8,083	12,371	10,058	21,366	8,597	15,214
15 Jul	16,953	28,244	21,770	14,032	8,815	13,554	10,665	21,794	11,169	16,333
16 Jul	17,424	29,989	22,592	14,266	9,584	13,771	11,529	22,461	12,819	17,159
17 Jul	17,983	31,278	23,684	14,711	10,574	14,027	12,086	23,068	14,188	17,955
18 Jul	18,452	32,953	24,371	15,433	11,562	14,385	12,675	24,227	16,948	19,001
19 Jul	20,222	34,169	24,917	16,590	13,034	14,756	13,023	25,853	17,342	19,990
20 Jul	20,886	35,960	26,972	17,824	14,535	14,982	14,743	26,380	18,424	21,190
21 Jul	21,984	38,824	27,913	20,978	14,702	15,408	16,160	26,927	18,599	22,388
22 Jul	22,530	40,998	28,403	21,233	15,250	16,557	17,121	27,733	19,004	23,203
23 Jul	23,923	43,423	29,350	21,663	15,990	17,542	17,561	28,132	21,048	24,292
24 Jul	24,553	45,168	31,960	24,096	16,834	18,149	17,985	29,354	22,335	25,604
25 Jul	25,627	46,697	34,628	27,757	16,905	19,499	19,246	30,078	22,987	27,047
26 Jul	27,131	47,630	34,883	29,507	17,234	20,625	19,376	31,352	23,354	27,899
27 Jul	27,589	49,353	35,262	30,357	17,565	21,855	20,450	32,086	24,129	28,738
28 Jul	28,507	50,410	36,934	32,099	19,874	23,445	21,304	32,456	24,281	29,923
29 Jul	29,566	51,512	39,110	34,439	20,901	23,781	21,595	32,826	25,342	31,008
30 Jul	30,158	52,610	40,030	35,915	23,219	25,361	22,360	33,271	25,824	32,083
31 Jul	31,698	53,197	40,831	37,543	23,247	26,640	22,687	33,470	26,470	32,865

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Date	Year									Average
	2002	2003	2008	2009	2010	2011	2012	2013	2014	
1 Aug	32,771	53,591	43,231	38,444	23,297	26,916	23,517	33,519	26,553	33,538
2 Aug	33,036	54,312	43,621	39,966	23,458	27,741	23,890	33,914	27,189	34,125
3 Aug	33,339	54,707	44,077	40,649	23,876	27,853	24,980	35,518	27,449	34,716
4 Aug	33,580	54,959	45,578	42,421	24,287	28,065	25,774	35,952	28,100	35,413
5 Aug	33,697	55,324	46,978	43,129	25,332	28,379	26,281	36,097	28,494	35,968
6 Aug	33,796	55,638	47,266	43,564	25,781	29,251	26,522	39,697	29,110	36,736
7 Aug	34,088	55,926	47,266	44,034	26,466	29,747	26,683	39,697	29,307	37,024
8 Aug	34,490	56,178	49,266	44,628	26,798	29,838	27,100	39,697	30,772	37,641
9 Aug	34,566	56,446	49,266	45,207	26,809	29,858	27,188	39,697	31,772	37,868
10 Aug	34,860	56,548	49,266	45,655	26,809	30,768	28,188	39,697	31,772	38,174
11 Aug	34,980	56,853	49,266	45,791	26,809	30,768	28,188	39,697	31,772	38,236
12 Aug	35,789	57,090	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,441
13 Aug	35,822	57,177	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,454
14 Aug	35,872	57,259	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,469
15 Aug	35,884	57,294	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,474
16 Aug	35,910	57,363	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,485
17 Aug	35,940	57,393	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,492
18 Aug	35,947	57,458	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,500
19 Aug	35,959	57,470	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,502
20 Aug	35,978	57,481	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,506
21 Aug	35,998	57,498	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,510
22 Aug	35,999	57,518	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,512
23 Aug	36,000	57,532	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,514
24 Aug	36,015	57,536	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,516
25 Aug	36,062	57,546	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,522
26 Aug	36,068	57,558	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,524
27 Aug	36,106	57,590	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,532
28 Aug	36,116	57,593	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,533
29 Aug	36,128	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,579
30 Aug	36,171	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,584
31 Aug	36,183	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,585
1 Sep	36,195	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,587
2 Sep	36,214	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,589
3 Sep	36,218	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,589
4 Sep	36,227	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,590
5 Sep	36,229	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,590
6 Sep	36,238	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,591
7 Sep	36,257	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,593
8 Sep	36,312	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,600
9 Sep	36,324	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,601
10 Sep	36,335	57,993	49,266	46,591	26,809	30,768	28,188	39,697	31,772	38,602

Source: Fuerst 2015.