Fishery Data Series No. 07-82

Upper Cook Inlet Salmon Escapement Studies, 2006

by

David L. Westerman

and

T. Mark Willette

December 2007

Alaska Department of Fish and Game **Divisions of Commercial Fish and Sport Fisheries**

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
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

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Measures (fisheries)

fork length	FL
mideye-to-fork	MEF
mideye-to-tail-fork	METF
standard length	SL
total length	TL

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$log_{2,}$ etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

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by
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TABLE OF CONTENTS

Page

LIST OF TABLES ii

LIST OF FIGURES iii

LIST OF APPENDICES iii

ABSTRACT 1

INTRODUCTION 1

METHODS 3

Sonar Counts 3
Fish Wheel Catch Sampling and Apportionment 5

RESULTS 6

Kenai River 6
Kasilof River 7
Crescent River 8
Yentna River 9

DISCUSSION 11

Kenai River 11
Kasilof River 12
Crescent River 13
Yentna River 14

ACKNOWLEDGMENTS 17

REFERENCES CITED 18

TABLES AND FIGURES 21

APPENDIX A. KENAI RIVER 83

APPENDIX B. KASILOF RIVER 111

APPENDIX C. CRESCENT RIVER 139

APPENDIX D. YENTNA RIVER 155

LIST OF TABLES

Table **Page**

1. Estimated sockeye salmon escapement recorded by side-looking sonar in the Kenai, Kasilof, Crescent, Yentna and Susitna rivers, 1978–2006. 22
2. Salmon escapement into the Kenai River, 1 July–31 August, 2006. 23
3. Cumulative proportion by date of sockeye salmon counts recorded in the Kenai River, 1990–2006. 24
4. Distribution of sockeye salmon escapement by bank (% of total count) recorded by side-scanning sonar in the Kenai, Kasilof, Crescent, and Yentna rivers, 1979–2006. 26
5. Fish distribution by sector (%) and average counting ranges for both banks of the Kenai, Kasilof, Crescent, and Yentna rivers, 2006. 27
6. Daily fish wheel catch by species for the north bank of the Kenai River, 1 July–31 August, 2006. 28
7. Daily fish wheel catch for the south bank of the Kenai River, 1 July–31 August, 2006. 30
8. Summary of actual catches and Catch Per Unit Effort (CPUE) of the north bank fish wheel, Kenai River, 1978–2006. 31
9. Summary of actual catches and Catch Per Unit Effort (CPUE) of the south bank fish wheel, Kenai River, 1978–2006. 32
10. Age composition of Kenai River sockeye salmon sampled from the Kenai River fish wheel, 1970–2006. 33
11. Average lengths of the major age classes of sockeye salmon sampled from the Kenai River fish wheel, 1980–2006. 34
12. Late-run sockeye salmon escapement counts in 8 index streams, Kenai River drainage, 1969–2006. 36
13. Estimated sockeye salmon escapement into the Kasilof River, 2006. 37
14. Cumulative proportion by date of salmon counts recorded in the Kasilof River, 1990–2006. 38
15. Daily fish wheel catch by species for the Kasilof River, 2006. 40
16. Summary of actual fish wheel catches and CPUE for the Kasilof River, 1983–2006. 41
17. Age composition of sockeye salmon sampled from the Kasilof River fish wheel catch, 1980–2006. 42
18. Length composition of the major age classes sampled from the Kasilof River fish wheel, 1980–2006. 43
19. Peak salmon ground and aerial surveys and weir counts in 7 index streams of the Kasilof River drainage, 1975–2006. 45
20. Estimated apportioned salmon escapement into the Crescent River, 24 June–10 August, 2006. 46
21. Cumulative proportion by date of sockeye salmon counts recorded in the Crescent River, 1990–2006. 47
22. Daily fish wheel catch by species for the Crescent River, 2006. 49
23. Summary of actual fish wheel catches and CPUE, Crescent River, 1993–2006. 50
24. Age composition of sockeye salmon sampled from the Crescent River, 1979–2006. 51
25. Mean length by age class of sockeye salmon sampled from the Crescent River fish wheel, 1979–2006. 52
26. Estimated salmon escapement into the Yentna River, 7 July–12 August, 2006. 54
27. Cumulative proportion by date of sockeye salmon counts recorded in the Yentna River, 1990–2006. 55
28. Summary of apportioned sonar counts by bank for the Yentna River, 1985–2006. 57
29. Daily fish wheel catch for the north bank of the Yentna River, 2006. 58
30. Daily fish wheel catch for the south bank of the Yentna River, 2006. 59
31. Summary of actual fish wheel catches and CPUE for the north bank of the Yentna River, 1985–2006. 60
32. Summary of actual fish wheel catches and CPUE for the south bank of the Yentna River, 1985–2006. 61
33. Proportion of fish wheel catch compared to daily sonar counts, by bank, on the Yentna River, 2006. 62
34. Age composition of sockeye salmon sampled from fish wheels on the Yentna River, 1986–2006. 63
35. Length composition of the major age classes of sockeye salmon sampled from the Yentna River fish wheels, 1986–2006. 64
36. Index counts of various northern district streams/rivers for 2006. 66

LIST OF FIGURES

Figure **Page**

1. Upper Cook Inlet, Alaska, and sites where salmon escapements were monitored with side-looking sonar. 67
2. Daily escapements of sockeye salmon into the Kenai, Kasilof, Crescent and Yentna rivers, 2006. 68
3. aily passage rates of sockeye salmon by bank into the Kenai, Kasilof, Crescent and Yentna rivers, 2006. 69
4. Daily water level (solid lines) fluctuations and daily run timing for all species (dashed line) for the Kenai, Kasilof, Crescent and Yentna rivers, 2006. 70
5. Mean hourly passages rates of salmon migrating past the Kenai, Kasilof, Crescent and Yentna rivers, 2006. 71
6. Four days of hourly sonar counts for the Kenai River showing times when the fish wheel operated (dashed lines) and did not operate (solid lines), 2006. 72
7. Linear relationships between Kenai River escapement and Russian Lake and Hidden Lake escapements, 1978–2006. 73
8. Linear regression analyses between 2 index streams and the Kasilof River sonar counts. 74
9. Time of peak daily sonar counts (x's and +'s) and daily high tides (solid lines) at Crescent River, 2006. 75
10. Migratory timing of sockeye, pink, chum, and coho salmon in the Yentna River, 2006. 76
11. The linear relationships between adjusted fish wheel catches and daily sonar counts on the north bank (top) and south bank (bottom) of the Yentna River, 2006. 77
12. Examples of the influence of fish wheel operation on the sonar counts from the North bank of the Yentna River, 2006. 78
13. Examples of the influence of fish wheel operation on the sonar counts from the South bank of the Yentna River, 2006. 79
14. Effect of water level on fish wheel efficiency for both banks of the Yentna River, 2006, showing (top) fish wheel efficiency (adjusted fish wheel catch/sonar count) and water level and (bottom) the linear relationship between fish wheel efficiency and water level. 80
15. Water level plotted with fish wheel catches (expanded to 24 hours) by date (top) and total sonar counts (bottom) for the Yentna River, 2006. 81

LIST OF APPENDICES

Appendix **Page**

A1. Estimated salmon escapement adjacent to the north bank of the Kenai River, 2006. 84
A2. Estimated salmon escapement adjacent to the south bank Kenai River, 2006. 86
A3. Kenai River north bank sonar counts (all species) by hour, 2006. 88
A4. Kenai River south bank sonar counts (all species) by hour, 2006. 92
A5. Proportion of Kenai River north bank sonar counts by hour, 2006. 96
A6. Proportion of Kenai River south bank sonar counts by hour, 2006. 98
A7. Kenai River north bank sonar counts by sector, 2006. 100
A8. Kenai River south bank sonar counts by sector, 2006. 102
A9. Proportion of Kenai River north bank sonar counts by sector, 2006. 104
A10. Proportion of Kenai River south bank sonar counts by sector, 2006. 106
A11. Minimum and maximum daily counting ranges for both banks of the Kenai River, 2006. 108
B1. Estimated salmon escapement adjacent to the north bank of the Kasilof River, 2006. 112
B2. Estimated salmon escapement adjacent to the south bank of the Kasilof River, 2006. 114
B3. Kasilof River north bank sonar counts by hour, 2006. 116
B4. Kasilof River south bank sonar counts by hour, 2006. 120
B5. Proportion of Kasilof River north bank sonar counts by hour, 2006. 124
B6. Proportion of Kasilof River south bank sonar counts by hour, 2006. 126
B7. Kasilof River north bank sonar counts by sector, 2006. 128
B8. Kasilof River south bank sonar counts by sector, 2006. 130
B9. Proportion of Kasilof River north bank sonar counts by sector, 2006. 132
B10. Proportion of Kasilof River south bank sonar counts by sector, 2006. 134

LIST OF APPENDICES (Continued)

Appendix **Page**

B11. Minimum and maximum daily counting ranges for both banks of the Kasilof River, 2006. 136
C1. Estimated salmon escapement adjacent to the north bank of the Crescent River, 2006. 140
C2. Estimated salmon escapement adjacent to the south bank of the Crescent River 2006. 141
C3. Crescent River north bank sonar counts by hour, 2006. 142
C4. Crescent River south bank sonar counts by hour, 2006. 144
C5. Proportion of Crescent River north bank sonar counts by hour, 2006. 146
C6. Proportion of Crescent River south bank sonar counts by hour, 2006. 148
C7. Crescent River north bank sonar counts by sector, 2006. 150
C8. Crescent River south bank sonar counts by sector, 2006. 151
C9. Proportion of Crescent River north bank sonar counts by sector, 2006. 152
C10. Proportion of Crescent River south bank sonar counts by sector, 2006. 153
C11. Minimum and maximum daily counting ranges for both banks of the Crescent River, 2006. 154
D1. Estimated salmon escapement adjacent to the north bank of the Yentna River, 2006. 156
D2. Estimated salmon escapement adjacent to the south bank of the Yentna River, 2006. 157
D3. Yentna River north bank sonar counts by hour, 2006. 158
D4. Yentna River south bank sonar counts by hour, 2006. 160
D5. Proportion of Yentna River north bank sonar counts by hour, 2006. 162
D6. Proportion of Yentna River south bank sonar counts by hour, 2006. 164
D7. Yentna River north bank sonar counts by sector, 2006. 166
D8. Yentna River south bank sonar counts by sector, 2006. 167
D9. Proportion of Yentna River north bank sonar counts by sector, 2006. 168
D10. Proportion of Yentna River south bank sonar counts by sector, 2006. 169
D11. Minimum and maximum daily counting ranges for both banks of the Yentna River, 2006. 170

ABSTRACT

Sockeye salmon *Oncorhynchus nerka* escapements into 4 river systems of Upper Cook Inlet, Alaska, were estimated using side-looking (formerly referred to as side-scanning) sonar equipment. Estimated sockeye salmon escapements were 1,499,692 into the Kenai River, 368,092 into the Kasilof River, 92,533 into the Crescent River, and 92,896 into the Yentna River. Species composition of fish wheel catches was used to apportion sonar counts in the Crescent and Yentna rivers during the entire sockeye salmon run and for Kenai and Kasilof rivers late in the sockeye salmon run. Incomplete indices of escapements of other salmonid species were also obtained by sonar for pink *O. gorbuscha* and coho salmon *O. kitsutch* in the Kenai and Kasilof rivers; for pink and chum salmon *O. keta* and Dolly Varden *Salvelinus malama* in the Crescent River; and pink, chum, and coho salmon in the Yentna River. The primary age classes for sockeye salmon in the Kenai River consisted of -1.2 (9.9%), -1.3 (38.7%), and -2.3 (44.0%); for the Kasilof River -1.2 (35.3%), -1.3 (30.5%) and -2.2 (27.4%); for the Crescent River age-1.3 (42.6%), -2.3 (36.2%), and -1.2 (14.3%); and for the Yentna River -1.2 (44.0%) -1.3 (39.3%), and -2.3 (5.8%). Sockeye salmon length and sex ratio data were within normal historical bounds in each river. The majority of fish counts were recorded within the onshore half of the ensonified range. Hourly peak salmon counts were typically recorded during the afternoon and evening hours along both banks in the Kenai River. Peak hourly counts along the north bank of the Kasilof River generally began in the morning hours and did not substantially decline until after midnight, when counts dropped sharply from the daytime and evening highs. Peak counts along the Kasilof south bank were highest in mid morning and lowest for several hours after midnight. Peak hourly counts along both banks of the Crescent River occurred in mid and late morning through the evening and reflected post meridiem high tides. Peak hourly counts along the north bank of the Yentna River occurred during the evening hours, whereas the south bank counts were highest from mid morning through the afternoon and into the evening, often declining substantially late in the evening. High water events were not a problem on any of the rivers except late in the season on the Yentna River. Two independent studies to estimate escapement were conducted on the Kenai and Yentna rivers in 2006. A DIDSON sonar counter was placed on both banks of the Kenai and Yentna rivers and the north bank of the Kasilof River to collect escapement data independent of the Bendix counter. A mark–recapture study was conducted to establish a third estimate of sockeye salmon run strength in both the Kenai and Susitna (including Yentna) rivers. Due to the mark–recapture studies, fish wheels were operated for atypically long periods every day, which may have impacted run timing on the Yentna River but not on the Kenai River. Results of these studies will be published in another report.

Key words: Upper Cook Inlet, sockeye salmon, Kenai River, Kasilof River, Crescent River, Yentna River, Susitna River, age, sex, length, sonar, escapement, fish wheel, substrate less, Bendix, DIDSON.

INTRODUCTION

The primary objectives of Upper Cook Inlet (UCI) salmon escapement projects in 2006 were to estimate: (1) the daily and cumulative escapement of sockeye *Oncorhynchus nerka* salmon into the Kenai, Kasilof, Crescent, and Yentna rivers and (2) the age, length, and sex composition of those escapements. Meeting these objectives aids fisheries biologists in making day-to-day fisheries management decisions for Upper Cook Inlet to achieve escapement goals.

The Alaska Board of Fisheries has set optimal escapement goals (OEG), (considers both biological and allocative issues) for sockeye salmon in the Kenai and Kasilof rivers. The OEG for late-run sockeye salmon into the Kenai River is between 500,000 and 1,000,000 sockeye salmon and is 150,000 to 300,000 sockeye salmon for the Kasilof River. A sustainable escapement goal (SEG), (an escapement index that provides for sustained yields over a 5–10 year period), was set for the Yentna River at 90,000 to 160,000 sockeye salmon. The Crescent River biological escapement goal (escapement that provides for greatest potential for maximum sustained yield - BEG) is 30,000 to 70,000 sockeye salmon.

Prior to 1968, sockeye salmon escapement estimates in UCI, Alaska (Figure 1) were based on surveys of clear water spawning areas and provided no information about the distribution or

number of sockeye salmon which spawned in glacially occluded waters (King et al. 1989). Commercial and recreational fishery management efforts were further hampered by lack of daily and cumulative estimates of escapement. These constraints were significantly reduced by the development of sonar techniques to enumerate sockeye salmon in certain glacial tributaries of UCI.

The use of sonar to estimate salmon escapement, or run strength, began on the Kenai and Kasilof rivers in 1968 with the use of multiple transducer systems (MTS), which were arrayed linearly in up-looking positions (Namtvedt et al. 1979; David 1971). Transition from MTS to side-looking sonar (SSS) aimed horizontally atop an artificial substrate began in the Kenai River in 1977. Although all counts were derived with a 1974 model MTS, a 1977 model single transducer system was employed for the first time on the north bank between 12 July and 3 August. A similar unit was utilized for the first time on the north bank of the Kasilof River in 1977 (south bank counts were still derived by use of an MTS array). By 1979, both banks of the Kasilof River were utilizing side-looking sonar. Side-looking sonar has been used in the Crescent River since operations began in 1980 and although an attempt to utilize MTS equipment failed in the Susitna River in 1976, the use of side-looking sonar began with limited success in 1978.

All side-looking counters operated with the use of an artificial substrate. The artificial substrate was 60 ft in length and consisted of 6 in aluminum tubing positioned on the bottom of the river and was perpendicular to the bank, forcing fish to move across the artificial substrate (tube) and through the sonar beam. Because of the effect the artificial substrate had on fish behavior and constant maintenance problems, a transition to substrateless counters was initiated in the late 1980s. Substrateless counters were deployed for the first time in the Kenai River in 1987 (north bank) and 1993 (south bank); Crescent River (both banks) in 1988; Yentna River in 1994 (south bank) and 1995 (north bank); and in the Kasilof River in 2003 (both banks).

The location of all sonar sites has remained the same for the past 20–25 years but prior to that, in the late 1970s and mid 1980s, 3 of the sonar sites were located on different areas of each river. The Kenai River sonar site has always been located at river mile (RM) 19.5. In 1983, the Kasilof River counting site was relocated from the outlet area of Tustumena Lake (about 2 miles below the outlet of Tustumena Lake) to approximately RM 10.5, near the Sterling highway bridge, and closer to Cook Inlet. Escapement enumeration began at the Crescent River in 1980 below the outlet of Crescent Lake. The site was relocated nearer Cook Inlet (RM 1.5) in 1984. The Susitna River counting site was abandoned in 1985 when recurrent flooding rendered the site untenable. Counting operations were relocated to the Yentna River, nearly 6 miles upstream of the confluence with the Susitna River, in 1986.

In 2002 and 2003, we interfaced the Kenai River counters directly to Dell[1] laptop computers which allowed us to transfer the hourly sonar counts directly into an Excel spreadsheet (form 288) without having to manually enter the data. We expanded the concept to the Kasilof and Yentna river projects in 2004, interfacing the counters with hand-held DOS computers (Juniper Systems Pro 4000 field computer). We continued to interface the laptops with the Bendix counters in 2006. We still enter the Crescent River sonar counts manually into spreadsheets.

[1] Product names used in this report are included for scientific completeness but do not constitute a product endorsement.

METHODS

SONAR COUNTS

Bendix Corporation side-looking sonar counters (1978 and 1980 models) as described by King and Tarbox (1989a, b) Gaudet (1983) and Bendix Corporation (1980, 1984) were used to enumerate salmon escapements in 2006. We operated the Bendix counters at a pulse width of 100 ms, using a transducer with a frequency of 515 kHz and 2º and 4º transducer elements, both multiplexed in an alternating mode or on a single beam, and with a manufacturer preset counting threshold of approximately -38dB. (Swimming pool tests conducted in 2003 with a standard target of –41dB typically saturated the counters, indicating the counting threshold to be much lower than –38dB when operated at typical voltage output levels.)

We checked the counters before the season began for proper pulse rate, maximum output voltage (with a transducer attached), voltage return from a fish simulator, pulse width (100 μs), hits to count criteria, printer function and accuracy, cumulative counts to sector counts accuracy, and that transmit LEDs, and sector lights functioned properly. If a counter needed major repair work, Russ Thynes of Petersburg Electronics made the repairs.

We aimed transducers by remotely controlled rotators on the north bank of the Kenai River, the north bank of the Kasilof River, and both banks of the Yentna River. Manual aiming was required where remotely controlled rotators were unavailable. When a transducer was deployed (and occasionally during the operational period), we tested for proper aim of the acoustic axis using an artificial target (a sealed, weighted plastic sphere) with target strength approximately equal to that of an adult salmon. We moved the artificial target through the ensonified area at various, allowable distances from the transducer, verifying detection by the counter with a simultaneous visual recognition of the target on an oscilloscope. Our transducer placement from shore depended mostly on water depth and velocity. We placed short weirs (< 6 m long) immediately downstream of the transducer to prevent fish from passing behind or too close to the transducer, ensuring that most fish pass inside the sonar beam. Salmon that cross through the sonar beam are counted when preset 'hits to count' (by sector) criteria of the counter are met or exceeded. We cannot adjust the 'hits to count criteria' (except on the 1980 model long range counter used on the north bank of the Kenai River) so we calibrate the counters by adjusting the pulse repetition rate on a daily, sometimes hourly, basis to match the swim speeds of migrating salmon. If the counters detect, but fail to count fish (undercount), we increase the pulse repetition rate to match the swim speed of the fish and conversely, we will slow the pulse repetition rate if we overcount.

Receiver sensitivity is set early in the run and not adjusted for calibration purposes. The sensitivity for each counter is set to maximize detection of migrating fish yet not so high that background noise is a hindrance to target detection (background noise such as floating debris and/or acoustic noise from the surface or bottom). We typically set the sensitivity level to historical levels.

Although the data is automatically entered into Excel spreadsheets (except at Crescent River), we still need to edit false counts from the daily totals at all sites. All raw, false output data were scrutinized and edited to account for false counts created by debris, bottom echoes, or other sources of non-fish counts. Hourly sonar counts by day were entered into an Excel database program that calculated a daily average hourly count for sonar sectors (Ca) by

$$Ca = Cb/N \quad (1)$$

where:

Ca = average count per sector per hour;

Cb = valid hourly counts for affected sector and adjacent sectors; and

N = number of sector per hour units which contained only valid counts.

The average is substituted by the database program into any sector/hour block(s) where counts were deleted. Field technicians determine (mostly through direct observation) which counts should be deleted (debris) while finalizing the daily escapement estimate.

We generally monitored the counters from 0700 to 0300 hours on the Kenai River and 0700 to 0100 hours on the Kasilof River. At Crescent River, counters were monitored throughout the day, but observations were concentrated when passage rates were at daily peaks, often an hour or two before and after high tide. Yentna River counters were monitored from 0600 to 0200 hours on the south bank and 0700 to 0000 hours on the north bank. In addition to regularly scheduled monitoring, we intensified our monitoring efforts during episodic periods of high fish passage. In all cases except the Yentna River, we compared visual counts made from an oscilloscope to the counts produced by the counter during a minimum 10-minute period or for a minimum oscilloscope count of 100 fish. Because of the mixed species of fish running in the Yentna River, we required a minimum count over a 20-minute period or a minimum oscilloscope observation of 200 fish to accurately calibrate the counters (we have learned that different species will migrate at different swim speeds necessitating longer calibration times for the Yentna River). As stated above, the primary counter adjustment normally consisted of changing the pulse repetition rate. At all sites, our visual fish counts observed on an oscilloscope were compared to the Bendix counts and adjustments (calibration) to the counter were made if a relative error greater than 20% existed. However, technicians usually calibrated the counters when relative error was less than 10%. When fish passage rates were low (<500 fish per hour), Kenai River and Yentna River oscilloscope/counter observations were made at a minimum of 1 hour per bank each day. When passage rates reached 500 fish per hour or greater, we required that minimum observation time be increased to more than 2 hours per bank per day. Kasilof River and Crescent River counters were generally monitored for a minimum of 2 hours per bank per day.

We typically end sonar operations at any of the 4 rivers when daily sockeye salmon (apportioned) counts meet our cessation criteria, which is $\leq$1% of the cumulative count of sockeye salmon for 3 consecutive days. The cessation criteria for the Kenai River and Kasilof River escapement projects are not applied until commercial fishing has ceased. We have made exceptions to this criterion because of budgetary constraints and/or environmental factors such as high water, although in all exceptions we were still relatively close to the 1% cessation criteria.

From the raw data, we estimated fish distribution by hour, by bank, and by day. Our calibration data (i.e. counting ranges) and counts by sector allowed us to estimate the spatial distribution of fish from the transducer.

One note of interest: under a different project we tested an experimental sonar counter (DIDSON: dual frequency integrated sonar) side-by-side with the Bendix on both banks of the Kenai and Yentna rivers and on the north bank of the Kasilof River in 2006. Details of the methods and results will be reported in a separate report by Maxwell.

FISH WHEEL CATCH SAMPLING AND APPORTIONMENT

We typically use fish wheels at all UCI sonar sites to determine species composition of the run, apportion sonar counts where and when appropriate, and collect age, length (mideye to tail fork length in mm), and sex (ALS) composition data from sockeye salmon. Typically, fish wheels are located along the north bank of the Kenai River, north bank of Kasilof River, south bank of the Crescent River, and one on both banks of the Yentna River. In 2006, we installed a second fish wheel along the south bank of the Kenai River as part of a sockeye salmon mark–recapture/population study. However, the south bank fish wheel catch data was not included in the apportionment of sonar counts by species when apportioning became necessary. Only the north bank fish wheel was used for apportionment purposes to maintain consistency with the historical record.

In 2006, we planned to collect age, length, and sex composition data from 0.1% of the previous day's sockeye salmon escapement from the Kenai River and 0.2% of the Kasilof River escapement estimate (and for river-of-origin determination). The sampling goals for the Crescent and Yentna rivers were to collect ALS samples from 0.5% of the previous day's sockeye salmon escapement estimate.

Our criteria for apportioning species from the Kenai River sonar counts takes affect when the fish wheel species composition contains at least 5% of a species other than sockeye and in our best professional judgment the 5% (or better) composition is a trend. This guideline was developed primarily to accommodate situations where run timing of sockeye and pink salmon *O. gorbuscha* overlap on even-numbered years.

We have seldom apportioned other salmon species from the Kasilof River sonar counts because other species such as pink and coho *O. kisutch* salmon are typically a very small component of the overall escapement during sonar operations. In instances where apportionment of Kasilof stocks is necessary, we follow the same criteria used to apportion species on the Kenai River.

Daily fish wheel catches are used to apportion daily sonar counts by species on both the Crescent and Yentna rivers. The number of Dolly Varden *Salvelinus malma* char (>350 mm) is sufficient to apportion some of the Crescent River sonar estimate to this species. Typically, few Chinook *O. tshawytscha* salmon are captured in the fish wheel at Crescent River because of differences in run timing and offshore distribution. Prior to 2000, we combined Dolly Varden char and Chinook salmon counts, but beginning in 2000, sonar counts were apportioned to each of these species separately. Factors influencing the accuracy of escapement estimates for pink, coho, chum, and Chinook salmon in the Yentna River have been discussed by Tarbox et al. (1981, 1983).

Normally, we operate each of the Yentna River fish wheels during 3 different periods ($\leq$ 2 hr/period) of the day, between 0600 and 1200 hours, 1200 and 1800 hours, and between 1800 and 0000 hours. However, with the implementation of a sockeye salmon mark–recapture project on the Susitna River in 2006, the fish wheels were operated on a somewhat staggered and prolonged schedule that kept the wheels operating for about 15 hours per day, (two 7.5 hour shifts). We were aware that the fish wheels influenced fish behavior (and sonar counts) so, in 2006, we moved the south bank fish wheel downstream of its normal position about 120 m (~240 m below the transducer). We could not move the north bank fish wheel because of a poor selection of alternative sites, so we had to operate it in the usual location, about 40 m below the north bank transducer.

We conducted ground surveys on a number of index streams within the Kenai River and Kasilof River drainages, counting all live and dead salmon and noting predator activities on each of the streams. Stream surveys (aerial and ground) and weir counts were also conducted on a number of northern district streams and lakes by personnel from the Palmer office of the Alaska Department of Fish and Game (ADF&G; Division of Sport Fish), by Cook Inlet Aquaculture Association (CIAA) and by the Soldotna office of the ADF&G (Division of Commercial Fish).

RESULTS

KENAI RIVER

We accounted for 1,499,692 sockeye salmon, 351,953 pink salmon, 89,602 coho salmon and 8,083 Chinook salmon past the Kenai River sonar site between 8 August and 31 August (Tables 1 and 2). The preseason total run forecast for the Kenai River was 1.8 million sockeye salmon.

In 2006 we counted >80% of the sockeye salmon passage in a 33 day period with the midpoint occurring on 3 August, 9 days later than the historical mean (Table 3). We experienced 1 substantial peak in the daily passage rate of sockeye salmon occurring on 26 July when >83,000 fish passed the counters (Figure 2). Sockeye salmon escapement gradually dropped following the peak, until only 11,000 fish were counted on 11 August. However, after 11 August and the last day of the commercial fishing season, the passage rate steadily increased until a second, smaller peak occurred on 19 August when >38,000 sockeye passed the counters.

Run timing was similar for both banks (Figure 3) but fish distribution by bank differed, the south bank accounting for 59% of the escapement (Table 4). The difference between the banks was 12% more than the average difference through 2005. Typically, fish migrate farther from shore along the north bank than the south (Table 5) until the fish densities increase and water level and water velocity increases (Figure 4). Because of the offshore spatial distribution of sockeye salmon along the north bank, maximum counting ranges were greater and more variable than on the south bank, ranging from 15.2 to 24.4 m. We counted >80% of the escapement within 16.7 m of the north bank transducer. Our south bank counting ranges ranged from 4.1 to 6.4 m, with >80% of the migration occurring within 3.4 m of the transducer.

The trends in the hourly passage rate between banks were similar throughout the run (Figure 5). The average salmon passage rate along the north bank was more consistent throughout a 24-hour period and met or exceeded a constant daily rate of 4.2% over a 10-hour period (1600–0100 hours), when >50% of the total sockeye salmon escapement passed the counters. The passage rate along the south bank was less consistent than the north when larger numbers of salmon were counted over a shorter time span, meeting or exceeding 4.2% of the daily count in an 8-hour period (1600–2400 hours) when 75% of the fish migrated past the counter.

We operated 2 fish wheels in 2006, one on each bank, and caught (Table 6 and 7) mostly sockeye salmon (>80%). We deployed a fish wheel along the south bank about 0.7 km upstream of the sonar site to capture fish for a sockeye salmon mark–recapture project. We have not operated a fish wheel fulltime on the south bank since 1988. Our actual fish wheel catch totaled 12,285 sockeye salmon from the north-bank wheel and 5,967 sockeye salmon from the south-bank wheel. The catch per unit effort (CPUE) for salmon (and specifically for sockeye) in the north-bank fish wheel was nearly twice that of the south-bank fish wheel (Tables 8 and 9). Coho

and pink salmon were also caught in substantial numbers in both fish wheels but only north-bank fish wheel catches were used to apportion our sonar counts (by species) in August. Although the CPUE was substantially different between the 2 fish wheels, the species composition for each fish wheel was similar.

We were concerned with the effects of long term (14–16 hrs/day) fish wheel operations on our sonar counters for the north bank and found that the steady operation of the fish wheel did not cause any noticeable adverse trend or drop in sonar counts (Figure 6). The south bank fish wheel was located far enough upstream of our sonar counter to minimize any affect on our sonar counter.

From the 1,315 sockeye salmon sampled for age, length, and sex information (Table 10), the largest age component of sockeye salmon was age-1.3 fish (38.7%) and -2.3 fish (44.0%) (Table 10). Mean length by sex and a male-to-female ratio of 0.8:1 for all age classes (Table 11) were within historical bounds.

ADF&G, Division of Sport Fish personnel, counted 89,160 late run sockeye salmon through the Russian River weir (P. Berkhahn, Sport Fish Biologist, ADF&G, Soldotna; personal communication 2006) in July and August 2006 (Table 12). An additional 18,452 sockeye salmon were counted below the Russian River weir bringing the total Russian River sockeye salmon escapement estimate to 107,612 fish. CIAA personnel (T. Dodson, Biologist, Cook Inlet Aquaculture Association, Soldotna; personal communication) counted 38,542 sockeye salmon through the Hidden Creek weir in July and August. Linear regression analyses indicating the relationships between the Russian River and Hidden Creek weir counts and the Kenai River sonar escapement estimates are shown in Figure 7. We also conducted stream foot surveys in Quartz Creek (28,335 sockeye salmon), Ptarmigan Creek (3,461 sockeye salmon) and Moose Creek (971 sockeye salmon).

Supporting data are provided in Appendix Tables A1–11.

KASILOF RIVER

We counted 368,092 sockeye salmon past the Kasilof River sonar site between 15 June and 18 August (Table 13); one of the highest sonar counts for the Kasilof River on record. Other species of salmon were apportioned from the escapement estimates beginning 14 August when consistent fish wheel catches of pink and coho salmon exceeded 5% of the fish wheel catch. The apportioned pink, coho, and Chinook salmon counts are not accurate indices of escapement for these species.

In 2006, we counted 80% of the escapement in a 46 d period (Table 14) with the midpoint occurring on 24 July, 10 days later than the historical mean (1979–2005). The biggest peak in the sockeye salmon escapement (>31,000 fish) occurred on 29 June with 1 lesser peak (>15,000 fish) occurring on 15 July (Figure 2).

Approximately 67% of the salmon migrated along the north bank, which is substantially greater than the south bank but typical for the Kasilof River (Table 4; Figure 3). Overall, we did not see a substantial difference in offshore spatial distribution between the north and south banks in 2006 (Table 5), although some variation occurred at different times during the season. As the water level rose to its yearly peak flow in early August (Figure 4), fish moved inshore. About 80% of the fish passage (north bank) occurred within 4.4 m of the transducer. The counting range for the north bank was reduced from 15.8 m in June to 4.4 m near the end of operations in August.

We counted >80% of the fish within 5.9 m of the transducer along the south bank, with the counting range reduced from 16.8 m in June to 5.2 m at the end of operations in August.

Daily run timing was similar for both banks, although hourly timing was more variable. During mid-day hours, the north bank counts had a tendency to increase while the south bank counts decreased (Figure 5). With the exception of midday, hourly run timing was similar. We counted > 77% of the fish along the north bank between the hours of 0700 and 2300 hours when the passage rate was near or exceeded a constant daily passage rate (4.2%). We counted nearly 49% of the fish along the south bank between the hours of 0500 and 1300, and at 1900 hours when the passage rate met or exceeded the constant daily passage rate.

Our fish wheel catch (Table 15) totaled 1,630 sockeye salmon, 39 pink salmon, 24 coho, and 34 Chinook salmon. The fish wheel CPUE (Table 16) was average compared to the past 4 years but only about half of the historical mean. Most pink, coho, and Chinook salmon were caught in August and the data were used to apportion our sonar counts by species beginning 14 August.

From the 1,630 sockeye salmon caught in the fish wheel, 720 were sampled for age, length, and sex characteristics (Table 17). Age-1.2 (35.3%), -1.3 (30.5%) and -2.2 (27.4%) sockeye salmon were the predominant age classes. Mean lengths for the major age classes and an average male to female ratio of 0.8:1 fell within historical bounds (Table 18).

We conducted a series of ground surveys to estimate relative fish abundance on Bear, Moose, and Glacier Flats creeks (Table 19) that drain into Tustumena Lake. Our peak sockeye salmon counts were (live and dead) 23,413 in Bear Creek, 11,471 in Moose Creek and 4,814 in Glacier Flats Creek. A linear regression analysis comparing stream survey results from Moose and Glacier Flat Creeks to the Kasilof River sonar counts is shown in Figure 8.

Supporting data are provided in Appendix Tables B1–11.

CRESCENT RIVER

We apportioned 92,533 sockeye salmon, 2,282 pink salmon, 1,380 chum salmon, 315 Chinook salmon, 262 coho salmon and 2,607 Dolly Varden char from the Crescent River sonar counts between 24 June and 10 August (Table 20).

In 2006, we counted 80% of the sockeye salmon escapement in 34 days with the midpoint of the migration occurring on 20 July, 3 days later than the historical (1984–2005) mean (Table 21). The escapement had several peaks in daily sockeye salmon passage; 2 similar peaks occurred on 15 July when we estimated 4,961 sockeye salmon past the counters and again on 3 August (Figure 2) when we estimated 4,956 sockeye salmon passed the counters. Smaller peaks occurred on 29 June, 20 July, 25 July, and 3 August.

Run timing for both banks was similar (Figure 3) and the distribution by bank was typical for the Crescent River with 54% of the fish migrating along the north bank (Table 4). The spatial distribution of fish targets were shore oriented along both banks, with 89% of the counts within the first 4.1 m of the north bank transducer (Table 5) and >90% of the counts within the first 1.7 m of the south bank transducer. Our maximum counting ranges varied between 6.1 m and 11.0 m on the north bank and from 3.7 m to 6.7 m on the south bank.

Salmon passage rates along the north bank exceeded 4.2% (constant daily passage rate) between 0800 and 1500 hours and between 1700 and 2200 hours (Figure 5) when 69.3% of the fish passed the counter. The highest hourly passage rates along the south bank (≥4.2%) occurred

between 1100 and 2200 hours when 72.7% of the fish passed the counter. Because our counters are located near Cook Inlet, daily peaks in the passage rate usually followed within 2 to 4 hours of the afternoon high tide (Figure 9), with peak timing less obvious on morning high tides.

The Crescent River fish wheel captured 2,210 sockeye salmon (94.0%) out of a total catch of 2,391 fish (Table 22). Pink (2.3%) and chum salmon (0.9%) were just beginning to show in the fish wheel catch when operations ceased on 10 August and are not a true indicator of run strength. The fish wheel CPUE (Table 23) was slightly lower than the historical mean for all species combined and for sockeye salmon specifically. Dolly Varden char are frequently found in the fish wheel catch and are included in our sonar apportionment by species because of their size (> 350 mm).

We sampled 484 sockeye salmon for age, length, and sex data (Table 24 and 25) and determined that the largest age components of the sample were age-1.3 (42.6%), -2.3 (36.2%) and -1.2 (14.3%) fish. Mean lengths for all age classes were substantially smaller than average but the male-to-female ratios (females accounting for 56% of the sample) fell within historical bounds.

No index counts were conducted on Crescent River spawning streams.

Supporting data are provided in Appendix Tables C1–11.

YENTNA RIVER

We counted 519,070 salmon past the Yentna River sonar counters between 7 July and 12 August (Table 26), which includes 92,896 (17.9%) apportioned to sockeye salmon; 282,920 (54.5%) pink salmon; 130,952 (25.2%) coho salmon and 11,745 (2.3%) chum salmon.

In 2006, we counted 80% of the sockeye salmon escapement over a 19 day period with the midpoint occurring on 29 July, 6 days later than the historical (1981–2005) mean (Table 27). We recorded 2 substantial peaks (Figure 2) in the daily passage rate of sockeye salmon; the first on 19 July (6,740 sockeye salmon) and the second on 29 July (9,809 sockeye salmon). Pink salmon peaked on 28 July, coho salmon peaked on 29 July, and chum salmon peaked on 20 July and again on 3 August (Figure 10).

Substantially more sockeye and coho salmon were counted along the south bank than the north bank whereas pink, chum and Chinook salmon were more evenly divided between the 2 banks. The sonar counts indicate that salmon passage was shore oriented on both banks throughout the season (Table 5). We observed >80% of the salmon within the first 4.1 m of the north bank transducer and >80% within the first 3.7 m of the south bank transducer. The north bank counting range varied from 6.9 m to 10.8 m and the south bank counting range varied from 5.2 m to 8.8 m. The sockeye salmon escapement estimate by bank is typical for the Yentna River (Table 28). We estimated that 5.8% of the north bank sonar count and 23.8% of the south bank sonar count consisted of sockeye salmon. Although the proportion of sockeye salmon for 2006 is lower than the historical mean, the proportional difference between banks is typical.

Hourly fish passage rates were typically variable along each bank and usually peaked in the late afternoon and evening hours (Figure 5). Salmon passage rates along the north bank exceeded a constant daily passage rate (4.2%) mostly between 1800 and 0200 hours (2300 hours is the lone exception) when 41.6% of the fish passed the counter. The highest hourly passage rates along the south bank (≥4.2%) generally occurred between 0800 and 2100 hours (1200 hours is the lone exception) when 59.9% of the fish passed the counter.

Our south bank fish wheel CPUE was greater than the north-bank fish wheel CPUE (Tables 29 and 30), which is typical for the Yentna River. The CPUE for our north-bank fish wheel was 40.5 salmon per hour for a total catch of 25,979 salmon, consisting mostly of pink (75.0%) and coho salmon (16.5%). Sockeye salmon comprised only 5.7% of the north-bank fish wheel catch. Our south bank fish wheel CPUE was 55.3 salmon per hour consisting mostly of pink (43%) coho (28%), and sockeye salmon (26%), for a total catch of 35,181 salmon. The CPUE for both fish wheels in 2006 was higher than the historical mean, but it fell within historical bounds for each species (Tables 31 and 32). Our north-bank catch of pink and coho salmon was higher than the historical mean. South bank fish wheel catches by species were typical except for coho, which was slightly more than twice the historical mean. The total fish wheel catch on each bank was 15% of the total north bank sonar count and 14% of the total south bank sonar count (Table 33).

We experienced a relatively good relationship between daily fish wheel catches (adjusted) and our daily (not necessarily hourly) sonar counts for both banks (Figure 11) in 2006. Typically, when water levels rise more than normal, usually a foot or more over a short time period, sonar counts decrease without a subsequent decrease in fish wheel catch. Such an event did not occur until very late in the season. We were concerned that long-term (14–16 hrs/d) fish wheel operations would affect fish behavior and sonar counts for each bank. We found that the operation of the north bank (and to a lesser extent the south bank) fish wheel was consistently associated with a corresponding decline in hourly sonar estimates for both the Bendix and DIDSON sonar counters (Figure 12 and 13).

We know that water level can influence fish wheel efficiency and sonar operations (Westerman and Willette 2007), so we conducted regression analyses to test whether fish wheel efficiency and water level were correlated in 2006. We found that fish wheel efficiency remained relatively steady in July and early August when water level was generally on the decline (Figure 14) and it was not until a substantial rise in water level between 10–12 August that we saw a substantial increase in fish wheel efficiency on both banks. We also plotted fish wheel efficiency (adjusted fish wheel catch/daily sonar count) against relative water level, and a time series of total sonar counts and relative water level for both banks (Figure 15). We noticed that a higher water level slightly increased south bank fish wheel catch, but there was no noticeable change on the north bank.

We sampled 605 sockeye salmon for age, sex, and length data (Table 34), and determined the majority of sockeye salmon were ages -1.3 (39.3%) and -1.2 (44.0%). The proportion of age-2.3 fish (5.8%) in 2006 was the lowest on record. The average lengths for adult sockeye salmon fell within historical bounds for all age classes (Table 35). Male-to-female ratios were typical for the river with females composing 46% of the major age classes sampled. An abundance index for stream and lake surveys and weir counts conducted in 2006 in northern Cook Inlet is provided in Table 36. Personnel from CIAA counted nearly 125,000 sockeye salmon through weirs at Chelatna, Hewitt, Judd, and Shell lakes, ~33,000 more sockeye salmon than the Yentna River sonar escapement estimate.

Supporting data are provided in Appendix Tables D1–11.

DISCUSSION

The year 2006 marked the fourth consecutive year that we have exceeded the maximum escapement goals for the Kenai, Kasilof, and the Crescent rivers and the first time in 3 years that we were able to meet the minimum goal for the Yentna River. Counting conditions and sonar criteria were typical for all rivers and were within design and operational tolerances of the Bendix side-looking sonar system because: 1) salmon passage was inshore with most fish near the bottom; 2) was generally adequate for calibrating the counters; and 3) sockeye salmon composed most of the passage except in the Yentna River.

KENAI RIVER

The sockeye salmon escapement in 2006 was the third highest since sonar operations began on the Kenai River in 1970, with higher escapements occurring only in 1987 and 1989. We attribute the higher sockeye salmon counts to the Glacier Bay oil spill (1987) and the Exxon Valdez oil spill (1989) when commercial fishing was restricted for part of or all of the fishing season. The total Kenai River sockeye salmon return fell within historical bounds in 2006 (>2.5 million fish; J. Fox, Commercial Fisheries Biologist, ADFG, Soldotna; personal communication). The strong 2006 escapement can be attributed primarily to late run timing, with greater than 57% of the escapement occurring after 1 August, and an unusually high proportion (~36%) entering the river after the mandatory 10 August closure of commercial fishing. This is the latest on record we have operated the counters to meet our shutdown criteria, and it is the third year in succession that we have kept the counters in the water past 15 August. The lateness of the run (particularly 2004–2006) appears to be a part of a trend that has been occurring since at least 1979. We can consider many factors in an attempt to explain this trend such as environmental changes and management practices currently mandated for Upper Cook Inlet. Although run timing was later than usual, the proportion of fish migrating along each bank was typical as was fish distribution from shore, with fish dispersed farther offshore along the north bank early in July when water level was lowest. Fish migrating along the south bank were bank oriented during the entire migration because of deeper water and a higher velocity than on the north bank. In mid July the fish moved inshore along the north bank as fish densities and water levels increased.

Species apportionment of Kenai River sonar counts was discontinued in 1995 and ensuing years because we perceived a potential problem in the process when a disproportionate number of non-sockeye salmon species (Chinook salmon) appeared in the fish wheel catch (Davis 2001). We also considered other species insignificant when sockeye salmon typically migrate past the sonar site except for even-numbered years when pink salmon arrive in large numbers in August. Prior to 1999, we required a minimum fish wheel sample of 150 fish to constitute a period for apportioning sonar counts. However, during periods of low passage rates, several days were often required to attain an adequate sample size. Apportioning sonar counts based on a 150-fish sample size was replaced by daily apportionment based on actual daily fish wheel catches in 2000 and thereafter. Altering the method by which sonar counts were apportioned did not significantly change the final estimates ($p<0.05$; S. Carlson, Biometrician, ADF&G, Soldotna; personal communication) and was more defensible. We began using criteria for species apportionment in August 1999 when species other than sockeye salmon exceeded 5% of the total fish wheel catch. Counts of species other than sockeye salmon are of limited value as indices of

total escapement because of (1) late run timing, (2) frequent passage outside of the ensonified area (Chinook salmon), and (3) disproportionate fish wheel catches.

In 2006, the sockeye salmon age composition was atypical of the Kenai River escapement. We found a proportionately higher number of age-2.2 and -2.3 sockeye in the fish wheel catch throughout the entire season. Typically, the numbers of age -2.3 fish will decline as the run progresses but in 2006, the numbers remained consistent throughout the season. The number of age-2.3 sockeye salmon was about four times greater than expected, suggesting that these fish stayed in fresh water longer than normal. The age-1.3 component, conversely, was substantially lower than the historical mean suggesting that large numbers of fry from this age class either stayed in fresh water an extra year or did not survive. If a holdover occurred, we could see a similar influence on the proportionality of the age-2.3 component in 2007. A lake survey conducted in Skilak Lake in the fall of 2002 confirmed that a higher than average number of fry stayed in Skilak Lake an extra year (DeCino and Edmundson 2003). We think the holdover of fry in 2002 was probably a result of a combination of environmental conditions and intraspecific competition for the food source. The fall lake study of 2003 did not indicate a higher than usual proportion of age-1 fry as we expected (DeCino and Edmundson 2004). We can only speculate that the small proportion of age-1 fry indicates either an exodus from the lake as smolt in the spring of 2003, poor survival, or there was an unusually high number of age-0 fry in the lake. Assuming our sample data from previous lake surveys and historical age composition data is a good indicator of survival, we suspect most of the age-1 fry exited the lake as smolt.

Our stream survey estimates indicate the Quartz Creek escapement for the past 5 years (2001–2006) has nearly doubled from the years 1995–2000. Only in 2005 did the survey estimate dip below 10,000 fish. We walked the creek once in 2006 when the escapement was expected to be at its peak; however, relatively good numbers of sockeye were observed spawning in Quartz Creek at the end of September. This late spawning date has never been documented before and a lack of anecdotal evidence suggests this event is highly unusual. These late spawners undoubtedly were the last of the fish to cross the counters in late August. The stream survey estimate for Ptarmigan Creek was consistent with the previous 2 years. The Russian River weir counts indicate another strong run of late run sockeye salmon, culminating with a final escapement estimate that fell within the bounds of the escapement goal of 30,000–110,000 fish. The last time we did not meet the Russian River escapement goal was in 2003 and 2004 when we exceeded the upper limit of the goal both years.

KASILOF RIVER

The escapement of sockeye salmon into the Kasilof River in 2006 was the fourth highest estimate on record and the latest we have ever had to operate our counters. The trend toward later run timing in the Kasilof River sockeye salmon escapement is similar to that of the Kenai River and is explained above. This is the fourth year in a row and the sixth time in the last 8 years that we have exceeded the upper end of the OEG. Environment factors and/or management regulations could be responsible for the over escapement of sockeye salmon into the Kasilof River system but additional evidence and research may be necessary to make any conclusions at this time.

Fish orientation and spatial distribution from shore was typical of sockeye salmon migration in the Kasilof River. At the start of operations, our counting ranges were as long as possible on both banks because fish were farther from shore. Fish moved inshore as the water level rose,

which allowed us to shorten our counting range as the season progressed. We are confident that the majority of fish passed within the counting range (ensonified area of the transducer beam) throughout the operational period.

Fish wheel catch efficiency has typically been low in August, which we attribute to fast current, deep water, a relatively steep slope, and a substrate consisting of large rocks. Efforts to counteract the problems inseason have failed to improve fish wheel catch efficiency. In 2005, we relocated the fish wheel approximately 15–20 meters upstream, where the substrate is flatter and rock size smaller. Unfortunately, the new location is shallower and we were unable to operate the fish wheel until 2 weeks after the start of sonar operations in 2006. Although total catch was one of the lowest on record because of the delay, the CPUE was about average for the past 3 years but less than the historical mean. However, we caught enough fish in August to satisfy our needs for age, sex, and length sampling.

Sonar escapement estimates are incomplete for pink, coho, and Chinook salmon because of run timing differences in relation to sonar operations, counter limitations (such as offshore distribution of Chinook salmon), and frequent spawning that occurs downriver from the sonar site. Pink and coho salmon were caught in the fish wheel in sufficient numbers in August to apportion sonar counts. Pink salmon return to the Kasilof in even-numbered years, but usually not in sufficient numbers that require apportionment (except in 2006). The majority of coho salmon enter the river in August, generally after cessation of sonar operations. Chinook salmon are not apportioned from the sonar counts because the ratio of sockeye to Chinook salmon captured in the fish wheel is believed to be biased toward Chinook salmon late in the sockeye run. We feel that a slightly inflated sockeye salmon estimate would be more acceptable than an inflated Chinook salmon estimate. Fish wheel location, river current and depth, or other (unknown) environmental factors could be influencing Chinook salmon migration patterns at this site. The historical proportion of Chinook salmon in the fish wheel catch ranges between 0.01% and 5.1%.

The Bear Creek weir has not operated since 2003 to provide us with accurate sockeye salmon escapement numbers. We conducted ground surveys on the lower 3 km of Bear Creek, counting both live and dead fish (sockeye salmon) to obtain an index of escapement strength. The proportion of dead fish was greater in 2 follow-up surveys with the peak survey coming at the end of August. All major Tustumena Lake spawning creeks are small in width, about 5–10 meter, and shallow, averaging less than .5 m throughout most of the survey areas. Competition for spawning in confined areas is probably a limiting factor in the productivity of sockeye salmon in Tustumena Lake streams. Late arriving fish could easily be destroying some redds from early spawners. Apparently, large numbers of sockeye salmon were observed by the public spawning in Bear Creek in mid October (no follow-up survey was made to confirm this report). We also conducted single ground surveys on Moose Creek and Glacier Flats Creek. Bears, gulls, Dolly Varden, and eagles were abundant on all surveyed streams.

For the second consecutive year, we operated a DIDSON sonar unit next to the Bendix counter on the north bank. The results from the 2006 DIDSON comparison tests are still in preparation.

CRESCENT RIVER

The sockeye salmon escapement estimate for 2006 was the seventh highest on record since sonar began operating on the Crescent River in 1979 and marks the fourth consecutive year, and fifth of the past 6 years, that we have exceeded the upper end of the BEG. The end date (10 August)

for operations is the latest end date on record but may be tempered slightly by the fact that some years we have had to end operations prematurely because of budget constraints or high water. We have noticed a slight trend in the lateness of the run timing but nothing comparable to the trend of the Kenai and Kasilof rivers.

Flooding in the fall of 2003 caused a change in the river channel but did not impair our ability to count salmon in succeeding years. Submerged gravel bars that existed in mid river above and below the sonar site prior to the flooding were eliminated resulting in a channel more suited to sonar operations. The south bank still provides a short counting range while the north bank now provides us with a longer, more consistent slope than before the flood. We are confident that the majority of fish passed within the counting range of the counters on both banks in 2006. Fish distribution by bank has not changed substantially since the flood.

Prior to 1993, drift gill nets and a fish trap were used to capture fish for species apportionment. The installation and use of a fish wheel in 1993 provided a larger sample size and probably reduced or eliminated size selectivity (and species) biases inherent to the former gear types. Dolly Varden char appeared in the fish wheel catch in sufficient numbers in 1993 (Davis and King 1994a, b). The captured char were of adequate size (>350 mm) to meet target detection thresholds and are now included in the apportionment of daily sonar counts (Davis and King 1993). We also assumed that these fish are migratory based on morphological characteristics and results of marking studies from 1993 through 1995 (Davis and King 1996). Of the Dolly Varden char marked in 1993 through 1995, none were recaptured. The high proportion (18.6%) of char in the fish wheel catch in 1994 led us to believe that the sockeye salmon escapement may have been historically overestimated. The proportion of char in 1993 (0.5%) and 1995 (0.7%) may be more indicative of the degree of historical over apportionment to sockeye salmon than the high proportion observed in 1994. In 2006, fish wheel catches resulted in 2.4% of the sonar counts apportioned to Dolly Varden char. The total CPUE of the fish wheel was slightly less than the 12-year mean.

YENTNA RIVER

Run timing and the end date was typical for the Yentna River in 2006. Unlike the Kenai and Kasilof rivers, the end dates appear to be occurring earlier, especially between 2000 and 2003, but cessation of operations has often been a result of high water or budgetary constraints and not necessarily on our cessation criteria.

The overall sockeye salmon escapement barely made the lower end of the SEG. The apportioned coho salmon estimate was the highest on record but we know historically that the coho escapement estimates are biased low because coho typically continue to run after sonar operations cease. Runs of pink and chum salmon were typical.

Yentna River escapement estimates are affected by a combination of environmental factors more than any other (monitored) system in Upper Cook Inlet. Environmental factors include but may not necessarily be limited to the river width, bottom profile, depth, water velocity, turbidity, and the species using the waterway. Certain features of the sonar counters, particularly a narrow beam width and aiming requirements, inhibit our ability to adjust or adapt to these environmental factors and events. Our methods have been consistent from year to year and our results have provided a useful index of sockeye salmon escapement.

In previous years migratory timing information and escapement estimates have not been reliable for pink, chum, and coho salmon, because sufficient migration usually continued beyond the end of sonar operations. This was not the case in 2006 when the catch of pink and coho salmon in our fish wheels coupled with low sonar counts had decreased substantially by the end of operations, leading us to assume that the run for each species was nearly complete. Substantial numbers of chum salmon did not appear in the fish wheel catches in 2006. We do not consider Chinook salmon escapement estimates a reliable index of run strength because they are less bank–oriented than sockeye salmon, passing beyond the counting range of the Bendix counter and the reach of the fish wheels.

As usual, the south bank had a higher passage (74% of the total sonar count) of salmon than the north bank. Our fish wheels CPUEs also support a strong south-bank preference of migrating fish but not at the same level as the sonar counters (58% for the south versus 42% for the north). Most of the major spawning tributaries/rearing areas (Judd, Shell and Hewitt lakes) flow into the Yentna from the south, which could explain a strong south-bank migratory preference. Chelatna Lake and its outlet stream, Lake Creek, is the only major anadromous stream that flows from the north. The 2006 weir counts from Judd, Shell and Hewitt Lakes (CIAA) and results from a 1997 Susitna drainage escapement study (Todd et al. 2001) support a south-bank preference. The study in 1997 showed the majority of tagged fish recoveries from Judd Lake were initially captured and tagged from the south-bank fish wheel and Chelatna Lake recoveries were captured and tagged from the north bank fish wheel. We suspect by the time the fish reach the Yentna sonar site, most fish are oriented to their stream of origin, and most likely will not crossover without cause.

Davis (1997) implied that south-bank fish wheel efficiency was comparably high with low sonar counts and suggested that the south-bank counter may be undercounting if high fish wheel catches (CPUE) are any indication of run strength. We did not see a dramatic shift or a negative relationship in fish wheel catch in 2006 as water level dropped through the month of July and early August. We did see an increase in fish wheel catch on the south bank (with simultaneous decreases in sonar counts) during the last 3 days of the season (10–12 August), when rains quickly raised the water level. Rising (or deeper) water is consistently associated with lower sonar counts that we assume is a result of an inshore movement of salmon putting in the dead zone or above the transducer. To test this idea, we examined fish wheel efficiency in relation to our sonar counts for the years 2002–2005 and concluded that as water level rose, sonar counts often decreased while fish wheel efficiency increased (Westerman and Willette 2007). Fish wheel efficiency was significantly correlated ($p<0.05$) with water level during the 4 sample years (2002–2005) on the south bank and in 2 of the 4 years on the north bank. We do not think the fish wheel is necessarily more efficient during higher water, we think salmon are more likely to be undercounted by the sonar counter because of the possibility of an unknown number of fish swimming over the narrowest part of the sonar beam (near shore). If true, we are probably undercounting the escapement whenever we experience high water events. An alternative sonar method such as Dual frequency Identification System (DIDSON) which has a wider beam (12° by 29°) capable of detecting fish at close range will be required for a more realistic escapement estimate.

King and Tarbox (1990) suggest that sockeye and pink salmon exhibit differential run timing on a daily basis in the Yentna River. They found that sockeye salmon were proportionally higher in the fish wheel catches from 1200 to 2400 hours, and more pink salmon were frequently captured

from 0600 to 1200 hours. This observation identified a potential source of error in the use of total daily adjusted fish wheel catches to apportion sonar counts. To evaluate this potential bias, fish wheels were operated in three 6-hour time blocks over a 24-hour period in 1993 and 1994. Analyses of data from these 2 years indicated the degree of bias did not justify the additional expense of operating the fish wheels in this manner, so this method of fish wheel operation was discontinued in 1995. We looked at the daily run timing by species from the 2006 fish wheel catch data but found no differences.

We were required to operate the fish wheels for extended periods in 2006 (~15 hrs/d) as part of a project to make a third sockeye escapement estimate into the Susitna River watershed. We realized from the start that extended fish wheel running times could influence fish behavior and disrupt migratory timing and affect sonar estimates. We attempted to minimize the impact of fish wheel operations on fish behavior and sonar operations by moving the south-bank fish wheel to a location ~120 m downstream of the normal fish wheel site. The move increased the distance between the transducer and the fish wheel to ~240 m. Despite the move, hourly sonar counts were still affected by the constant running of the south-bank fish wheel. The north bank fish wheel could not be moved because of a lack of suitable sites along the north bank; it too affected migratory behavior, and hourly sonar counts. We think the operating fish wheels delayed upstream movement because our sonar counts generally showed a sharp increase after the fish wheel was turned off. We also considered the possibility that fish moved offshore and possibly out of range of our sonar counters but found no strong evidence to prove this. Offshore (10–30 m) estimates produced by DIDSON (S. Maxwell, Commercial Fisheries Biologist, Soldotna; personal communication) found small numbers (~10% on the north and ~1% on the south bank) of migrating fish beyond the average range (8 m north bank; 7 m south bank) of the Bendix transducers. We assumed that constant fish wheel operations were impairing or slowing the upriver movement of fish but probably did not force fish outside the counting range of our Bendix counters. The constant running of the fish wheels undoubtedly influenced our hourly counts but not necessarily our total daily counts.

Daily river levels were typically variable but did not halt sonar operations in 2006, although rising water the last 3 days of the operation made working conditions difficult. On warm, sunny days, we normally experience a water level rise of 0.2 to 0.3 ft. every afternoon and evening followed by a drop of 0.2 to 0.3 ft during the night and early morning hours. On cloudy days, the rise and fall of the river may be less pronounced unless it rains upstream. Studies by Barrett (1985) utilizing marked fish indicated that upstream migration in this system is slowed during episodic high flow events. We think water level did not have much impact on the salmon migration until very late in the season in 2006.

Weir counts of sockeye salmon at Judd, Chelatna, Shell and Hewitt lakes were substantially higher than the number of sockeye salmon estimated by the Yentna River Bendix sonar project. Our preliminary DIDSON estimate (~160,000) is substantially higher than the Bendix counts (S. Maxwell, Commercial Fisheries Biologist, Soldotna; personal communication). We suspect the difference in counts increases with high densities of migrating salmon. Individual or small groups of fish are probably swimming above the narrow sonar beam of the Bendix transducer and not being counted. The weir counts from Judd, Chelatna, Shell and Hewitt lakes are more compatible with the preliminary DIDSON estimates.

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TABLES AND FIGURES

Table 1.–Estimated sockeye salmon escapement recorded by side-looking sonar in the Kenai, Kasilof, Crescent, Yentna and Susitna rivers, 1978–2006.

	System					
Year	Kenai River[a]	Kasilof River[b]	Crescent River	Yentna River	Susitna River	Susitna/Yentna R.
1978	398,900	116,600	ND	ND	94,400	ND
1979	285,020	152,179	86,654	ND	156,980	ND
1980	464,038	184,260[c]	90,863	ND	190,866	ND
1981	407,639	256,625	41,213	139,401	340,232	ND
1982	619,831	180,239	58,957	113,847	189,772[d]	215,856[e] - 265,332[f]
1983	630,340	210,271	92,122	104,414	112,314	176,114[f]
1984	344,571	231,685	118,345	149,375	ND	194,480[g] - 279,446[f]
1985	502,820	505,049	128,628	107,124	ND	227,924[f]
1986	501,157	275,963	20,385[h]	92,076	ND	ND
1987	1,596,871	249,250	120,219	66,054	ND	ND
1988	1,021,469	204,000[i]	57,716	52,330	ND	ND
1989	1,599,959	158,206	71,064	96,269	ND	ND
1990	659,520	144,136	52,238	140,290	ND	ND
1991	647,597	238,269	44,578	109,632	ND	ND
1992	994,798	184,178	58,229	66,074	ND	ND
1993	813,617	149,939	37,556	141,694	ND	ND
1994	1,003,446	205,117	30,355	128,032	ND	ND
1995	630,447	204,935	52,311	121,220	ND	ND
1996	797,847	249,944	28,729	90,660	ND	ND
1997	1,064,818	266,025	70,768	157,822	ND	ND
1998	767,558	273,213	62,257	119,623	ND	ND
1999	803,379	312,587	66,519	99,029	ND	ND
2000	624,578	256,053	56,599	133,094	ND	ND
2001	650,036	307,570	78,081	83,532	ND	ND
2002	957,924	226,682	62,833	78,591	ND	ND
2003	1,181,309	359,633	122,457	180,813	ND	ND
2004	1,385,981	577,581	103,201	71,281	ND	ND
2005	1,376,452	348,012	125,623	36,921	ND	ND
2006	1,499,692	368,092	92,533	92,896	ND	ND

[a] Counts begin after 22 June (1978–87) and after 1 July (1988–02).

[b] Includes counts or estimates prior to 15 June (1983–88) and projected post enumeration estimates (1981–86).

[c] Escapement estimate revised 11/03. (Estimate was 187,154)

[d] Combines sonar counts from Yentna and Sunshine Stations.

[e] Sonar counts and mark/recapture estimates from Sunshine Station and west bank of the Susitna River.

[f] Counts from Yentna Station and mark–recapture estimate from Sunshine Station.

[g] Combined counts from Yentna Station and east bank, Susitna Station.

[h] Counts through 16 July only.

[i] Combined counts from weirs on Bear and Glacier Flat Creeks and surveys of remaining spawning streams. (Sonar count was 151,856.)

Table 2.–Salmon escapement into the Kenai River, 1 July–31 August, 2006.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	1,764	1,764	0	0	0	0	0	0
2-Jul	2,737	4,501	0	0	0	0	0	0
3-Jul	2,535	7,036	0	0	0	0	0	0
4-Jul	2,617	9,653	0	0	0	0	0	0
5-Jul	2,757	12,410	0	0	0	0	0	0
6-Jul	3,305	15,715	0	0	0	0	0	0
7-Jul	3,433	19,148	0	0	0	0	0	0
8-Jul	2,877	22,025	0	0	0	0	0	0
9-Jul	3,659	25,684	0	0	0	0	0	0
10-Jul	4,195	29,879	0	0	0	0	0	0
11-Jul	2,875	32,754	0	0	0	0	0	0
12-Jul	1,869	34,623	0	0	0	0	0	0
13-Jul	2,659	37,282	0	0	0	0	0	0
14-Jul	1,930	39,212	0	0	0	0	0	0
15-Jul	4,030	43,242	0	0	0	0	0	0
16-Jul	13,302	56,544	0	0	0	0	0	0
17-Jul	15,475	72,019	0	0	0	0	0	0
18-Jul	8,964	80,983	0	0	0	0	0	0
19-Jul	5,999	86,982	0	0	0	0	0	0
20-Jul	7,468	94,450	0	0	0	0	0	0
21-Jul	16,011	110,461	0	0	0	0	0	0
22-Jul	32,286	142,747	0	0	0	0	0	0
23-Jul	33,363	176,110	0	0	0	0	0	0
24-Jul	43,695	219,805	0	0	0	0	0	0
25-Jul	49,799	269,604	0	0	0	0	0	0
26-Jul	83,254	352,858	0	0	0	0	0	0
27-Jul	55,600	408,458	0	0	0	0	0	0
28-Jul	58,094	466,552	0	0	0	0	0	0
29-Jul	65,143	531,695	0	0	0	0	0	0
30-Jul	58,100	589,795	0	0	0	0	0	0
31-Jul	48,861	638,656	0	0	0	0	0	0
1-Aug	59,350	698,006	0	0	0	0	0	0
2-Aug	49,360	747,366	0	0	0	0	0	0
3-Aug	41,831	789,197	0	0	0	0	0	0
4-Aug	43,931	833,128	0	0	0	0	0	0
5-Aug	46,260	879,388	0	0	0	0	0	0
6-Aug	30,163	909,551	0	0	0	0	0	0
7-Aug	21,990	931,541	0	0	0	0	0	0
8-Aug	13,860	945,401	671	671	559	559	1,006	1,006
9-Aug	13,297	958,698	1,251	1,922	1,408	1,967	547	1,553
10-Aug	11,065	969,763	3,162	5,084	1,581	3,548	451	2,004
11-Aug	14,954	984,717	2,937	8,021	1,869	5,417	712	2,716
12-Aug	24,422	1,009,139	1,214	9,235	304	5,721	260	2,976
13-Aug	21,158	1,030,297	1,195	10,430	837	6,558	0	2,976
14-Aug	20,082	1,050,379	411	10,841	988	7,546	247	3,223
15-Aug	31,547	1,081,926	2,188	13,029	1,545	9,091	65	3,288
16-Aug	35,756	1,117,682	3,103	16,132	1,224	10,315	82	3,370
17-Aug	32,335	1,150,017	1,510	17,642	524	10,839	131	3,501
18-Aug	32,216	1,182,233	1,855	19,497	1,012	11,851	506	4,007
19-Aug	38,424	1,220,657	2,658	22,155	1,450	13,301	121	4,128
20-Aug	36,909	1,257,566	6,614	28,769	2,695	15,996	163	4,291
21-Aug	25,138	1,282,704	4,335	33,104	2,793	18,789	289	4,580
22-Aug	34,320	1,317,024	7,210	40,314	2,884	21,673	865	5,445
23-Aug	29,901	1,346,925	16,344	56,658	9,843	31,516	0	5,445
24-Aug	20,883	1,367,808	18,707	75,365	4,786	36,302	435	5,880
25-Aug	21,907	1,389,715	15,382	90,747	17,246	53,548	0	5,880
26-Aug	23,130	1,412,845	49,914	140,661	15,826	69,374	1,217	7,097
27-Aug	28,185	1,441,030	20,102	160,763	5,596	74,970	414	7,511
28-Aug	25,374	1,466,404	22,130	182,893	3,434	78,404	572	8,083
29-Aug	16,005	1,482,409	41,910	224,803	2,106	80,510	0	8,083
30-Aug	10,620	1,493,029	61,062	285,865	5,310	85,820	0	8,083
31-Aug	6,663	1,499,692	66,088	351,953	3,782	89,602	0	8,083

Table 3.–Cumulative proportion by date of sockeye salmon counts recorded in the Kenai River, 1990–2006.

	Cumulative Proportion[a]															
Date[b]	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
01-Jul	0.001	0.003	0.004		0.000	0.001	0.003	0.002	0.001	0.003	0.002	0.005	0.005	0.002	0.004	0.001
02-Jul	0.003	0.005	0.010	0.000	0.001	0.002	0.008	0.007	0.003	0.005	0.010	0.013	0.007	0.005	0.010	0.003
03-Jul	0.004	0.008	0.013	0.001	0.001	0.003	0.014	0.010	0.004	0.011	0.017	0.018	0.011	0.007	0.015	0.005
04-Jul	0.005	0.010	0.019	0.001	0.002	0.005	0.021	0.013	0.005	0.016	0.023	0.027	0.017	0.009	0.023	0.006
05-Jul	0.012	0.011	0.037	0.002	0.003	0.007	0.029	0.017	0.006	0.019	0.028	0.056	0.021	0.010	0.033	0.008
06-Jul	0.018	0.014	0.058	0.003	0.007	0.010	0.034	0.025	0.008	0.023	0.033	0.083	0.024	0.012	0.042	0.010
07-Jul	0.019	0.015	0.061	0.007	0.011	0.012	0.037	0.033	0.012	0.029	0.038	0.139	0.027	0.015	0.049	0.013
08-Jul	0.020	0.016	0.067	0.011	0.013	0.017	0.044	0.041	0.016	0.035	0.046	0.177	0.031	0.019	0.058	0.015
09-Jul	0.022	0.018	0.081	0.013	0.016	0.019	0.047	0.052	0.022	0.047	0.056	0.201	0.037	0.021	0.078	0.017
10-Jul	0.024	0.020	0.085	0.016	0.019	0.021	0.068	0.065	0.026	0.060	0.063	0.221	0.045	0.023	0.094	0.020
11-Jul	0.028	0.022	0.087	0.019	0.021	0.025	0.117	0.071	0.029	0.068	0.070	0.234	0.066	0.024	0.122	0.022
12-Jul	0.034	0.043	0.092	0.021	0.023	0.029	0.171	0.075	0.032	0.075	0.075	0.241	0.117	0.027	0.157	0.023
13-Jul	0.037	0.111	0.101	0.023	0.025	0.032	0.233	0.078	0.034	0.115	0.080	0.249	0.151	0.031	0.176	0.025
14-Jul	0.038	0.175	0.210	0.025	0.032	0.065	0.292	0.083	0.039	0.260	0.096	0.260	0.176	0.113	0.188	0.026
15-Jul	0.041	0.202	0.301	0.032	0.062	0.213	0.309	0.088	0.049	0.386	0.141	0.285	0.194	0.213	0.198	0.029
16-Jul	0.046	0.218	0.400	0.062	0.073	0.347	0.346	0.102	0.054	0.459	0.187	0.323	0.270	0.282	0.231	0.038
17-Jul	0.058	0.229	0.485	0.073	0.122	0.402	0.416	0.150	0.067	0.496	0.251	0.352	0.362	0.317	0.276	0.048
18-Jul	0.086	0.246	0.517	0.122	0.164	0.435	0.495	0.183	0.097	0.545	0.295	0.398	0.441	0.340	0.313	0.054
19-Jul	0.136	0.255	0.533	0.164	0.190	0.468	0.501	0.209	0.138	0.584	0.348	0.497	0.501	0.355	0.367	0.058
20-Jul	0.194	0.284	0.557	0.190	0.232	0.498	0.522	0.231	0.164	0.604	0.389	0.562	0.528	0.362	0.393	0.063
21-Jul	0.225	0.334	0.582	0.232	0.269	0.531	0.542	0.246	0.200	0.624	0.411	0.596	0.555	0.384	0.409	0.074
22-Jul	0.261	0.370	0.599	0.269	0.298	0.555	0.552	0.272	0.249	0.643	0.434	0.621	0.612	0.453	0.427	0.095
23-Jul	0.308	0.402	0.612	0.298	0.343	0.592	0.583	0.333	0.308	0.673	0.466	0.648	0.668	0.474	0.465	0.117
24-Jul	0.376	0.451	0.624	0.343	0.399	0.640	0.648	0.392	0.360	0.714	0.523	0.676	0.714	0.497	0.506	0.147
25-Jul	0.424	0.535	0.635	0.399	0.420	0.713	0.659	0.434	0.447	0.752	0.597	0.702	0.740	0.522	0.527	0.180
26-Jul	0.477	0.612	0.670	0.420	0.428	0.755	0.666	0.460	0.515	0.787	0.676	0.735	0.766	0.552	0.541	0.235
27-Jul	0.546	0.678	0.720	0.428	0.432	0.774	0.670	0.490	0.589	0.816	0.730	0.747	0.787	0.578	0.549	0.272
28-Jul	0.637	0.740	0.748	0.432	0.440	0.786	0.674	0.544	0.647	0.842	0.759	0.758	0.820	0.608	0.556	0.311
29-Jul	0.711	0.798	0.773	0.440	0.450	0.794	0.681	0.602	0.685	0.868	0.782	0.771	0.844	0.633	0.565	0.355
30-Jul	0.772	0.830	0.795	0.450	0.469	0.801	0.688	0.644	0.713	0.882	0.809	0.783	0.860	0.651	0.588	0.393
31-Jul	0.838	0.843	0.814	0.469	0.525	0.825	0.694	0.694	0.731	0.893	0.832	0.797	0.875	0.666	0.614	0.426

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Table 3.–Page 2 of 2.

	Cumulative Proportion[a]															
Date[b]	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
01-Aug	0.885	0.854	0.827	0.525	0.620	0.854	0.698	0.766	0.755	0.905	0.854	0.810	0.891	0.675	0.632	0.465
02-Aug	0.912	0.864	0.845	0.620	0.673	0.877	0.701	0.855	0.779	0.913	0.877	0.825	0.911	0.688	0.643	0.498
03-Aug	0.927	0.871	0.858	0.673	0.696	0.898	0.705	0.871	0.796	0.927	0.894	0.841	0.928	0.716	0.659	0.526
04-Aug	0.934	0.877	0.866	0.696	0.713	0.916	0.708	0.882	0.814	0.943	0.914	0.858	0.941	0.748	0.671	0.556
05-Aug	0.939	0.888	0.879	0.713	0.728	0.928	0.712	0.894	0.829	0.955	0.928	0.876	0.950	0.769	0.683	0.586
06-Aug	0.946	0.903	0.908	0.728	0.740	0.938	0.724	0.914	0.845	0.967	0.942	0.891	0.965	0.789	0.710	0.606
07-Aug	0.953	0.915	0.927	0.740	0.748	0.953	0.737	0.929	0.869	0.976	0.957	0.907	0.976	0.804	0.734	0.621
08-Aug	0.967	0.930	0.938	0.748	0.757	0.967	0.758	0.943	0.893	0.984	0.971	0.927	0.984	0.813	0.745	0.630
09-Aug	0.979	0.942	0.959	0.757	0.771	0.982	0.774	0.953	0.912	0.991	0.978	0.952	0.992	0.835	0.753	0.639
10-Aug	0.988	0.955	0.970	0.771	0.791	0.991	0.784	0.962	0.921	1.000	0.986	0.971	1.000	0.868	0.760	0.647
11-Aug	0.995	0.969	0.979	0.791	0.814	1.000	0.805	0.974	0.930		0.989	0.984		0.900	0.771	0.657
12-Aug	1.000	0.981	0.989	0.814	0.835		0.821	0.986	0.944		0.998	0.990		0.934	0.809	0.673
13-Aug		1.000	1.000	0.835	0.857		0.841	1.000	0.951		1.000	0.996		0.955	0.854	0.687
14-Aug				0.857	0.874		0.856		0.962			1.000		0.969	0.881	0.700
15-Aug				0.874	0.896		0.868		0.976					0.981	0.912	0.721
16-Aug				0.896	0.914		0.877		0.984					0.988	0.941	0.745
17-Aug				0.914	0.926		0.893		0.992					0.995	0.961	0.767
18-Aug				0.926	0.942		0.906		1.000					1.000	0.973	0.788
19-Aug				0.942	0.963		0.919								0.980	0.814
20-Aug				0.963	0.977		0.932								0.991	0.839
21-Aug				0.977	0.985		0.944								1.000	0.855
22-Aug				0.985	0.992		0.956									0.878
23-Aug				0.992	1.000		0.970									0.898
24-Aug				1.000			0.985									0.912
25-Aug							1.000									0.927
31-Aug																1.000
Midpoint	27-Jul	25-Jul	18-Jul	01-Aug	31-Jul	21-Jul	19-Jul	28-Jul	26-Jul	18-Jul	24-Jul	20-Jul	19-Jul	25-Jul	24-Jul	3-Aug
Average midpoint (1979-2005)	24 July															
No. days for 80%	15	25	25	31	31	21	39	22	22	20	21	32	22	29	36	33
Average (1979–2005)	26															

[a] Inclusive dates: date proportion of escapement reached 10% through date proportion of escapement reached 90%.

[b] Data available for the years 1979 to present.

Table 4.–Distribution of sockeye salmon escapement by bank (% of total count) recorded by side-scanning sonar in the Kenai, Kasilof, Crescent, and Yentna rivers, 1979–2006.

	Kenai R.		Kasilof R.		Crescent R.		Yentna R.	
Year	North Bank	South Bank	North Bank	South Bank	North Bank	South Bank	North Bank	South Bank
1979	72	28	53	47	ND	ND	ND	ND
1980	61	39	52	48	49	51	ND	ND
1981	72	28	69	31	57	43	ND	ND
1982	39	61	73	27	54	46	ND	ND
1983	42	58	51	49	39	61	ND	ND
1984	65	35	56	44	71	28	ND	ND
1985	54	46	70	30	70	30	9	91
1986	62	38	57	43	84	16	32	68
1987	48	52	55	45	64	36	10	90
1988	47	53	32	68	53	47	8	92
1989	57	43	39	61	52	48	12	88
1990	62	38	29	71	44	56	2	98
1991	73	27	39	61	33	67	8	92
1992	60	40	45	55	56	44	5	95
1993	49	51	28	72	41	56	14	86
1994	52	48	47	53	65	35	8	92
1995	52	48	38	62	68	32	11	89
1996	54	46	61	39	68	32	21	79
1997	56	44	41	59	79	21	11	89
1998	55	45	36	64	70	30	49	51
1999	55	45	51	49	53	47	26	74
2000	64	36	51	49	63	37	22	78
2001	50	50	63	37	79	21	38	63
2002	49	51	48	52	74	26	25	75
2003	49	51	50	50	65	35	29	71
2004	49	51	43	57	64	36	6	94
2005	45	55	59	41	65	35	17	83
2006	41	59	67	33	54	46	11	89
Mean 1979–2005	53	47	49	51	68	32	23	77

Note: ND = No data.

Table 5.–Fish distribution by sector (%) and average counting ranges for both banks of the Kenai, Kasilof, Crescent, and Yentna rivers, 2006.

	Sector											
	1	2	3	4	5	6	7	8	9	10	11	12
Kenai River						North bank						
Daily (%)	7.5	30.6	15.7	5.0	2.5	2.3	3.6	6.8	7.8	6.5	5.8	5.4
Cum. (%)	7.5	38.1	53.8	58.8	61.3	63.6	67.2	74.1	81.9	88.4	94.2	100.0
Average (m):	1.9	3.7	5.6	7.4	9.3	11.1	13.0	14.8	16.7	18.5	20.4	22.2
Min. & max. counting ranges:			15.2 - 24.4 m						Std dev		1.5	
						South bank						
Daily (%)	3.1	14.6	25.6	13.4	11.1	9.5	6.4	4.9	3.5	3.2	2.9	1.8
Cum. (%)	3.1	17.7	43.3	56.7	67.8	77.3	83.7	88.6	92.1	95.3	98.2	100.0
Average (m):	0.5	1.0	1.4	1.9	2.4	2.9	3.4	3.8	4.3	4.8	5.3	5.7
Min. & max. counting ranges:			4.1 - 6.4 m						Std dev		0.4	
Kasilof River						North bank						
Daily (%)	6.0	11.1	35.9	16.2	10.9	4.5	4.5	3.7	1.6	2.0	2.0	1.6
Cum. (%)	6.0	17.1	53.0	69.2	80.1	84.6	89.1	92.8	94.4	96.4	98.4	100.0
Average (m):	0.9	1.8	2.7	3.6	4.4	5.3	6.2	7.1	8.0	8.9	9.8	10.7
Min. & max. counting ranges:			4.4 - 15.8 m						Std dev		4.4	
						South bank						
Daily (%)	16.4	12.2	14.3	11.1	11.2	6.7	9.0	4.9	3.7	3.6	3.9	3.0
Cum. (%)	16.4	28.6	42.9	54.0	65.1	71.9	80.9	85.8	89.5	93.1	97.0	100.0
Average (m):	0.8	1.7	2.5	3.3	4.2	5.0	5.9	6.7	7.5	8.4	9.2	10.0
Min. & max. counting ranges:			5.2 - 16.8 m						Std dev		3.4	
Crescent River						North bank						
Daily (%)	18.9	17.5	19.8	18.2	14.6	6.4	3.2	0.9	0.1	0.1	0.0	0.1
Cum. (%)	18.9	36.5	56.2	74.4	89.0	95.4	98.6	99.6	99.7	99.8	99.9	100.0
Average (m):	0.8	1.7	2.5	3.3	4.1	5.0	5.8	6.6	7.4	8.3	9.1	9.9
Min. & max. counting ranges:			6.1 - 11.0 m						Std dev		1.4	
						South bank						
Daily (%)	22.4	30.4	25.8	13.0	3.7	1.2	1.5	1.3	0.5	0.1	0.0	0.1
Cum. (%)	22.4	52.8	78.6	91.6	95.3	96.5	98.0	99.3	99.8	99.8	99.9	100.0
Average (m):	0.4	0.9	1.3	1.7	2.1	2.6	3.0	3.4	3.8	4.3	4.7	5.1
Min. & max. counting ranges:			3.7 - 6.7 m						Std dev		0.7	
Yentna River						North bank						
Daily (%)	3.8	28.5	29.6	11.7	3.8	3.5	3.2	4.1	4.4	3.5	2.1	1.9
Cum. (%)	3.8	32.3	61.9	73.6	77.4	80.8	84.1	88.1	92.5	96.1	98.1	100.0
Average (m):	0.7	1.4	2.0	2.7	3.4	4.1	4.7	5.4	6.1	6.8	7.4	8.1
Min. & max. counting ranges:			6.9 - 10.8 m						Std dev		0.8	
						South bank						
Daily (%)	2.6	5.9	18.3	24.1	20.0	14.3	6.6	3.6	2.0	1.3	0.7	0.6
Cum. (%)	2.6	8.5	26.8	50.9	70.9	85.2	91.8	95.4	97.4	98.6	99.4	100.0
Average (m):	0.6	1.2	1.8	2.4	3.0	3.7	4.3	4.9	5.5	6.1	6.7	7.3
Min. & max. counting ranges:			5.2 - 8.8 m						Std dev		0.9	

Table 6.–Daily fish wheel catch by species for the north bank of the Kenai River, 1 July–31 August, 2006.

Date	Hours Open	Sockeye		Pink		Coho		Chinook		Other[a]	
		Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	12.1	0	0	0	0	0	0	0	0	0	0
2-Jul	14.3	1	1	0	0	0	0	0	0	0	0
3-Jul	9.1	1	2	0	0	0	0	0	0	0	0
4-Jul	9.3	0	2	0	0	0	0	0	0	0	0
5-Jul	10.4	0	2	0	0	0	0	0	0	0	0
6-Jul	15.3	2	4	0	0	0	0	0	0	2	2
7-Jul	13.9	0	4	0	0	0	0	0	0	0	2
8-Jul	15.8	6	10	0	0	0	0	0	0	0	2
9-Jul	17.4	4	14	0	0	0	0	0	0	0	2
10-Jul	16.6	2	16	0	0	0	0	0	0	0	2
11-Jul	17.5	9	25	0	0	0	0	1	1	0	2
12-Jul	23.8	2	27	0	0	0	0	0	1	5	7
13-Jul	23.9	9	36	1	0	0	0	0	1	4	11
14-Jul	24.0	12	48	1	1	0	0	2	3	4	15
15-Jul	24.0	41	89	1	2	1	1	3	6	0	15
16-Jul	22.7	283	372	0	3	1	2	0	6	4	19
17-Jul	15.0	362	734	1	3	0	2	1	7	1	20
18-Jul	17.6	261	995	0	4	0	2	1	8	2	22
19-Jul	16.9	61	1,056	0	4	1	3	1	9	2	24
20-Jul	16.3	82	1,138	0	4	1	4	3	12	0	24
21-Jul	15.7	206	1,344	0	4	0	4	1	13	11	35
22-Jul	9.5	372	1,716	0	4	0	4	0	13	1	36
23-Jul	3.2	239	1,955	0	4	1	5	1	14	1	37
24-Jul	2.1	190	2,145	0	4	0	5	1	15	1	38
25-Jul	1.4	472	2,617	1	4	0	5	0	15	0	38
26-Jul	0.8	373	2,990	0	5	0	5	1	16	0	38
27-Jul	1.5	320	3,310	0	5	0	5	0	16	0	38
28-Jul	1.8	366	3,676	0	5	2	7	1	17	0	38
29-Jul	2.4	471	4,147	1	5	1	8	2	19	1	39
30-Jul	1.7	236	4,383	0	6	2	10	0	19	0	39
31-Jul	4.8	108	4,491	0	6	0	10	0	19	0	39
1-Aug	15.0	732	5,223	2	6	0	10	1	20	1	40
2-Aug	13.5	319	5,542	6	8	4	14	2	22	4	44
3-Aug	15.2	268	5,810	2	14	4	18	0	22	2	46
4-Aug	8.6	499	6,309	5	16	3	21	7	29	5	51
5-Aug	7.6	437	6,746	2	21	1	22	4	33	3	54
6-Aug	13.0	276	7,022	3	23	3	25	2	35	3	57
7-Aug	13.0	185	7,207	5	26	1	26	4	39	12	69
8-Aug	12.5	124	7,331	6	31	5	31	9	48	13	82
9-Aug	16.8	170	7,501	16	37	18	49	7	55	10	92
10-Aug	15.8	98	7,599	28	53	14	63	4	59	15	107
11-Aug	12.8	168	7,767	33	81	21	84	8	67	2	109
12-Aug	11.8	563	8,330	28	114	7	91	6	73	3	112
13-Aug	4.0	177	8,507	10	142	7	98	0	73	3	115
14-Aug	8.7	244	8,751	5	152	12	110	3	76	3	118
15-Aug	8.8	490	9,241	34	157	24	134	1	77	5	123
16-Aug	4.1	438	9,679	38	191	15	149	1	78	3	126
17-Aug	4.3	493	10,172	23	229	8	157	2	80	6	132
18-Aug	5.3	191	10,363	11	252	6	163	3	83	0	132
19-Aug	4.3	318	10,681	22	263	12	175	1	84	3	135
20-Aug	3.3	452	11,133	81	285	33	208	2	86	1	136
21-Aug	6.3	261	11,394	45	366	29	237	3	89	1	137

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Table 6.–Page 2 of 2.

Date	Hours Open	Sockeye Daily	Sockeye Cum	Pink Daily	Pink Cum	Coho Daily	Coho Cum	Chinook Daily	Chinook Cum	Other [a] Daily	Other [a] Cum
22-Aug	4.1	119	11,513	25	411	10	247	3	92	1	138
23-Aug	6.0	161	11,674	88	436	53	300	0	92	2	140
24-Aug	5.4	96	11,770	86	524	22	322	2	94	0	140
25-Aug	5.3	47	11,817	33	610	37	359	0	94	0	140
26-Aug	4.1	38	11,855	82	643	26	385	2	96	1	141
27-Aug	7.0	136	11,991	97	725	27	412	2	98	1	142
28-Aug	5.9	133	12,124	116	822	18	430	3	101	2	144
29-Aug	4.2	76	12,200	199	938	10	440	0	101	3	147
30-Aug	4.7	48	12,248	276	1,137	24	464	0	101	0	147
31-Aug	2.8	37	12,285	367	1,413	21	485	0	101	2	149
Proportion:			85.1%		9.8%		3.4%		0.7%		1.0%
Total:	Catch: 14,433 fish				Time Operated: 635.0 hrs				CPUE: 22.7 fish/hr.		
Efficiency:	2.2% of the (north bank) sonar estimate										

[a] Other catch includes Dolly Varden char, rainbow trout, and whitefish. No chum salmon were caught.

Table 7.–Daily fish wheel catch for the south bank of the Kenai River, 1 July–31 August, 2006.

Date	Hours Open	Sockeye		Pink		Coho		Chinook		Other [a]	
		Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
5-Jul	9.7	0	0	0	0	0	0	0	0	0	0
6-Jul	10.9	0	0	0	0	0	0	0	0	0	0
7-Jul	0.0	0	0	0	0	0	0	0	0	0	0
8-Jul	17.1	0	0	0	0	0	0	0	0	0	0
9-Jul	12.8	0	0	0	0	0	0	0	0	0	0
10-Jul	15.3	3	3	0	0	0	0	0	0	0	0
11-Jul	17.7	4	7	0	0	1	1	0	0	0	0
12-Jul	21.7	5	12	0	0	0	1	0	0	2	2
13-Jul	23.3	5	17	0	0	0	1	0	0	3	5
14-Jul	24.0	2	19	0	0	0	1	0	0	0	5
15-Jul	24.0	5	24	0	0	0	1	0	0	1	6
16-Jul	22.2	8	32	0	0	0	1	1	1	4	10
17-Jul	17.8	17	49	0	0	0	1	1	2	2	12
18-Jul	16.9	2	51	0	0	0	1	0	2	2	14
19-Jul	16.3	28	79	0	0	0	1	0	2	3	17
20-Jul	15.2	46	125	0	0	0	1	0	2	4	21
21-Jul	17.0	41	166	0	0	0	1	2	4	10	31
22-Jul	12.3	76	242	0	0	0	1	1	5	8	39
23-Jul	16.0	76	318	0	0	1	2	0	5	2	41
24-Jul	13.5	292	610	1	1	1	3	5	10	0	41
25-Jul	5.7	201	811	0	1	0	3	1	11	0	41
26-Jul	1.9	141	952	0	1	0	3	0	11	1	42
27-Jul	2.1	308	1,260	1	2	0	3	1	12	0	42
28-Jul	3.5	311	1,571	0	2	1	4	1	13	0	42
29-Jul	4.3	139	1,710	0	2	0	4	0	13	1	43
30-Jul	3.2	60	1,770	0	2	0	4	0	13	0	43
31-Jul	7.4	132	1,902	0	2	0	4	0	13	5	48
1-Aug	15.8	49	1,951	2	4	1	5	0	13	1	49
2-Aug	12.9	45	1,996	0	4	0	5	0	13	2	51
3-Aug	11.9	152	2,148	4	8	3	8	3	16	6	57
4-Aug	12.5	145	2,293	2	10	1	9	2	18	1	58
5-Aug	12.8	109	2,402	5	15	0	9	2	20	6	64
6-Aug	13.3	143	2,545	5	20	0	9	1	21	6	70
7-Aug	12.0	145	2,690	8	28	2	11	3	24	13	83
8-Aug	12.7	98	2,788	25	53	7	18	4	28	5	88
9-Aug	16.3	86	2,874	36	89	8	26	0	28	7	95
10-Aug	15.7	138	3,012	35	124	8	34	7	35	5	100
11-Aug	13.8	164	3,176	14	138	6	40	5	40	1	101
12-Aug	10.2	229	3,405	21	159	11	51	1	41	2	103
13-Aug	10.3	189	3,594	22	181	9	60	4	45	3	106
14-Aug	8.7	579	4,173	45	226	24	84	1	46	3	109
15-Aug	10.0	307	4,480	39	265	16	100	1	47	1	110
16-Aug	5.6	220	4,700	31	296	16	116	3	50	0	110
17-Aug	4.0	221	4,921	32	328	10	126	0	50	1	111
18-Aug	3.6	256	5,177	36	364	16	142	1	51	0	111
19-Aug	5.3	294	5,471	92	456	31	173	2	53	3	114
20-Aug	8.1	223	5,694	60	516	26	199	2	55	0	114
21-Aug	8.0	121	5,815	107	623	30	229	2	57	1	115
22-Aug	4.8	11	5,826	11	634	3	232	0	57	0	115
23-Aug	7.6	76	5,902	114	748	37	269	2	59	0	115
24-Aug	5.2	65	5,967	41	789	11	280	0	59	1	116
Proportion:			82.7%		10.9%		3.9%		0.8%		1.6%

Total: 7,211 fish Time Operated: 597.2 hrs CPUE: 12.2 fish/hr

Efficiency: 0.6% of the (south bank) sonar estimate

[a] Other catch includes Dolly Varden char, rainbow trout, and whitefish. No chum salmon were caught.

Table 8.–Summary of actual catches and Catch per unit effort (CPUE) of the north bank fish wheel, Kenai River, 1978–2006.

	Actual North Bank fish wheel catch (salmon only)														
	Total									Total	CPUE by species				Total
	Hours	Sockeye	%	Pink	%	Coho	%	Chinook	%	Catch	Sockeye	Pink	Coho	Chinook	CPUE
1978	853.9	1445	87.3%	207	12.5%	4	0.2%	0	0.0%	1,656	1.7	0.2	0.0	0.0	1.9
1979	301.0	151	84.8%	10	5.6%	13	7.3%	4	2.2%	178	0.5	0.0	0.0	0.0	0.6
1980	967.3	464	29.4%	1,103	69.8%	12	0.8%	1	0.1%	1,580	0.5	1.1	0.0	0.0	1.6
1981	1210.8	496	95.0%	21	4.0%	3	0.6%	2	0.4%	522	0.4	0.0	0.0	0.0	0.4
1982	433.5	1,200	99.5%	2	0.2%	2	0.2%	2	0.2%	1,206	2.8	0.0	0.0	0.0	2.8
1983	448.0	1,678	99.8%	0	0.0%	3	0.2%	0	0.0%	1,681	3.7	0.0	0.0	0.0	3.8
1984	962.4	5,854	98.3%	64	1.1%	36	0.6%	3	0.1%	5,957	6.1	0.1	0.0	0.0	6.2
1985	394.8	3,294	98.2%	37	1.1%	17	0.5%	7	0.2%	3,355	8.3	0.1	0.0	0.0	8.5
1986	408.5	797	97.8%	6	0.7%	9	1.1%	3	0.4%	815	2.0	0.0	0.0	0.0	2.0
1987	493.1	4,795	98.1%	18	0.4%	59	1.2%	17	0.3%	4,889	9.7	0.0	0.1	0.0	9.9
1988	528.4	4,393	97.5%	73	1.6%	18	0.4%	21	0.5%	4,505	8.3	0.1	0.0	0.0	8.5
1989	357.0	6,341	98.2%	69	1.1%	28	0.4%	16	0.2%	6,454	17.8	0.2	0.1	0.0	18.1
1990	363.6	4,270	97.8%	46	1.1%	24	0.5%	26	0.6%	4,366	11.7	0.1	0.1	0.1	12.0
1991	393.0	6,732	98.6%	49	0.7%	25	0.4%	19	0.3%	6,825	17.1	0.1	0.1	0.0	17.4
1992	392.5	5,526	94.0%	224	3.8%	96	1.6%	33	0.6%	5,879	14.1	0.6	0.2	0.1	15.0
1993	515.2	4,631	99.2%	16	0.3%	10	0.2%	10	0.2%	4,667	9.0	0.0	0.0	0.0	9.1
1994	673.9	5,600	93.6%	290	4.8%	65	1.1%	29	0.5%	5,984	8.3	0.4	0.1	0.0	8.9
1995	799.4	3,022	98.5%	14	0.5%	10	0.3%	22	0.7%	3,068	3.8	0.0	0.0	0.0	3.8
1996	376.5	3,835	91.2%	264	6.3%	82	2.0%	22	0.5%	4,203	10.2	0.7	0.2	0.1	11.2
1997	553.8	8,886	96.6%	21	0.2%	266	2.9%	30	0.3%	9,203	16.0	0.0	0.5	0.1	16.6
1998	350.5	7,755	96.2%	173	2.1%	99	1.2%	34	0.4%	8,061	22.1	0.5	0.3	0.1	23.0
1999	400.8	4,600	95.9%	108	2.3%	56	1.2%	33	0.7%	4,797	11.5	0.3	0.1	0.1	12.0
2000	499.0	3,020	88.5%	205	6.0%	146	4.3%	40	1.2%	3,411	6.1	0.4	0.3	0.1	6.8
2001	446.7	3,309	96.8%	36	1.1%	30	0.9%	45	1.3%	3,420	7.4	0.1	0.1	0.1	7.7
2002	610.5	4,073	88.4%	461	10.0%	54	1.2%	18	0.4%	4,606	6.7	0.8	0.1	0.0	7.5
2003	317.1	2,749	98.0%	20	0.7%	12	0.4%	25	0.9%	2,806	8.7	0.1	0.0	0.1	8.8
2004	461.7	3,299	75.0%	843	19.2%	225	0.7%	31	0.7%	4,398	7.1	1.8	0.5	0.1	9.5
2005	184.9	3,140	97.8%	27	0.8%	28	0.9%	16	0.5%	3,211	17.0	0.1	0.2	0.1	17.4
2006	635.0	12,285	86.0%	1,413	9.9%	485	3.4%	101	0.7%	14,284	19.3	2.2	0.8	0.2	22.5
Mean:			92.3%		5.8%		1.3%		0.5%		8.9	0.4	0.1	0.0	9.4
Minimum:			29.4%		0.0%		0.2%		0.0%		0.4	0.0	0.0	0.0	0.4
Maximum:			99.8%		69.8%		7.3%		2.2%		22.1	2.2	0.8	0.2	23.0
Std. Dev.:			13.4%		13.1%		1.5%		0.5%		6.0	0.5	0.2	0.0	6.3

Note: Trout are not apportioned from the sonar count and are excluded from the table.

Table 9.–Summary of actual catches and catch per unit effort (CPUE) of the south bank fish wheel, Kenai River, 1978–2006.

	Actual South Bank fish wheel catch (salmon only)										CPUE by species				
	Total Hours	Sockeye	%	Pink	%	Coho	%	Chinook	%	Total Catch	Sockeye	Pink	Coho	Chinook	Total CPUE
1978	927.9	1021	58.0%	717	40.8%	15	0.9%	6	0.3%	1,759	1.1	0.8	0.0	0.0	1.9
1979	ND	312	96.9%	4	1.2%	5	1.6%	1	0.3%	322	ND	ND	ND	ND	ND
1980	610.0	212	7.5%	2521	89.4%	79	2.8%	7	0.2%	2,819	0.3	4.1	0.1	0.0	4.6
1981	1085.3	288	98.0%	6	2.0%	0	0.0%	0	0.0%	294	0.3	0.0	0.0	0.0	0.3
1982	219.5	953	98.6%	12	1.2%	2	0.2%	0	0.0%	967	4.3	0.1	0.0	0.0	4.4
1983	230.3	228	85.7%	0	0.0%	36	13.5%	2	0.8%	266	1.0	0.0	0.2	0.0	1.2
1984	1127.6	1386	81.1%	255	14.9%	37	2.2%	31	1.8%	1,709	1.2	0.2	0.0	0.0	1.5
1985	360.8	619	95.7%	15	2.3%	3	0.5%	10	1.5%	647	1.7	0.0	0.0	0.0	1.8
1986	409.3	789	98.0%	5	0.6%	8	1.0%	3	0.4%	805	1.9	0.0	0.0	0.0	2.0
1987	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1988	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1989	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1990	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1991	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1992	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1993	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1994	133.3	416	81.3%	79	15.4%	16	3.1%	1	0.2%	512	3.1	0.6	0.1	0.0	3.8
1995	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1996	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1997	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1998	98.2	266	81.6%	52	16.0%	8	2.5%	0	0.0%	326	2.7	0.5	0.1	0.0	3.3
1999	185.3	971	94.6%	30	2.9%	21	2.0%	4	0.4%	1,026	5.2	0.2	0.1	0.0	5.5
2000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2001	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2004	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2005	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2006	594.2	5,967	84.1%	789	11.1%	280	3.9%	59	0.8%	7,095	10.0	1.3	0.5	0.1	11.9
Mean:			80.2%		16.4%		2.8%		0.6%		2.8	0.8	0.1	0.0	3.7
Minimum:			7.5%		0.0%		0.0%		0.0%		0.3	0.0	0.0	0.0	0.3
Maximum:			98.0%		89.4%		13.5%		1.8%		10.0	4.1	0.5	0.1	11.9
St. Dev.:			25.6%		25.7%		3.6%		0.6%		2.9	1.3	0.1	0.0	3.3

Note: South bank fish wheel used intermittently since 1986 at the sonar site except in 2006, when it operated fulltime.

Table 10.–Age composition of Kenai River sockeye salmon sampled from the Kenai River fish wheel, 1970–2006.

	Percentage Composition by Age Class [a]								
Year	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	Sample Size
1970	0.0	10.0	17.0	0.0	26.0	25.0	15.0	6.0	225
1971	0.0	8.0	39.0	1.0	3.0	38.0	11.0	0.0	168
1972	0.0	21.0	34.0	0.0	0.0	23.0	20.0	0.0	403
1973	0.0	5.0	68.0	1.0	1.0	8.0	16.0	0.0	632
1974	2.0	18.0	46.0	0.0	3.0	18.0	12.0	0.0	295
1975	2.0	10.0	36.0	2.0	4.0	31.0	14.0	1.0	162
1976	1.0	46.0	20.0	0.0	2.0	22.0	8.0	1.0	948
1977	0.0	6.0	76.0	1.0	0.0	7.0	10.0	0.0	1,265
1978	0.0	2.5	86.7	0.0	0.0	4.9	5.4	0.0	811
1979	0.2	19.6	63.0	0.0	0.0	10.6	6.6	0.0	601
1980	6.1	35.4	36.7	0.0	0.9	14.4	6.5	0.0	557
1981	0.0	19.7	66.4	0.0	0.5	7.9	5.3	0.2	624
1982	0.1	5.8	87.5	0.0	0.0	2.9	3.7	0.0	1,787
1983	0.3	8.4	79.0	0.3	0.5	2.2	8.9	0.4	1,765
1984	0.0	23.1	37.8	3.6	0.5	13.2	19.5	2.3	2,067
1985	0.1	15.9	56.4	0.3	0.1	14.7	11.4	1.1	2,201
1986	0.0	31.8	39.5	0.7	0.3	8.2	18.0	1.5	789
1987	0.0	12.8	78.4	0.1	0.0	3.2	5.2	0.3	745
1988	0.3	11.6	74.2	0.4	0.2	3.1	10.2	0.0	1,420
1989	0.2	5.6	26.7	0.9	0.8	7.6	57.4	0.8	1,587
1990	0.6	21.6	41.4	0.6	0.3	13.7	21.1	0.7	1,513
1991	0.1	48.2	31.6	0.2	0.4	5.7	11.4	2.4	2,502
1992	0.0	2.7	79.9	0.2	0.3	5.9	11.0	0.0	1,338
1993	0.3	12.2	30.5	2.6	6.3	6.4	41.2	0.5	2,088
1994	0.3	6.6	61.1	0.8	0.8	17.8	12.1	0.5	1,341
1995	0.3	31.9	26.4	0.4	2.4	6.6	31.3	0.7	712
1996	0.0	10.8	75.4	0.3	0.7	6.1	5.4	1.3	684
1997	0.1	7.6	75.2	0.4	0.4	2.8	13.0	0.5	963
1998	0.3	27.1	40.7	1.3	6.6	9.6	13.9	0.5	700
1999	0.0	15.1	55.4	0.4	1.2	16.8	9.6	1.5	733
2000	0.0	14.5	57.3	1.1	1.6	9.1	14.3	2.1	560
2001	0.3	10.8	68.9	0.8	1.5	8.3	9.2	0.2	601
2002	0.0	23.0	58.4	0.7	0.7	10.6	6.1	0.5	2,441
2003	0.0	14.4	57.9	0.4	0.1	8.0	18.7	0.5	1,555
2004	0.0	10.1	69.1	0.2	0.2	8.2	11.1	1.0	1,275
2005	0.0	2.8	81.3	0.3	0.2	2.8	11.8	0.8	1,893
2006	0.0	9.9	38.7	2.4	0.4	3.7	44.0	0.9	1,315
Mean (1970-2005)	0.4	16.0	55.0	0.6	1.8	11.2	14.0	0.8	1,110

[a] Percentages weighted by total numbers in the escapement: (Bethe et al. 1980), 1979–82, 1984–2002.

Table 11.–Average lengths of the major age classes of sockeye salmon sampled from the Kenai River fish wheel, 1980–2006.

		Male		Female		
Year	Age Class	Average Length (mm)	Sample Size	Average Length (mm)	Sample Size	Ratio Male-Female
1980	1.2	482	168	494	100	1.7:1
1981		493	85	513	73	1.2:1
1982		483	70	505	32	2.2:1
1983		524	25	520	30	0.8:1
1984		474	280	473	196	1.4:1
1985		492	184	490	186	1.0:1
1986		488	155	492	96	1.6:1
1987		514	39	503	56	0.7:1
1988		522	79	511	84	0.9:1
1989		493	114	494	92	1.2:1
1990		474	168	478	127	1.3:1
1991		488	613	497	577	1.1:1
1993		474	123	481	132	0.9:1
1994		452	46	462	42	1.1:1
1995		492	116	487	111	1.0:1
1996		507	47	519	27	1.7:1
1998		483	95	494	95	1.0:1
1999		490	72	488	39	1.9:1
2000		513	47	513	43	1.1:1
2001		522	35	507	30	1.2:1
2002		503	306	502	256	1.2:1
2003		483	116	466	117	1:1
2004		497	64	482	65	1:1
2005		483	27	495	30	0.9:1
2006		498	72	497	58	1.2:1
Average (1980-2005)		493	128	494	110	1.2:1
1980	1.3	580	180	561	192	0.9:1
1981		590	290	569	430	0.7:1
1982		596	723	572	841	0.9:1
1983		598	215	577	269	0.8:1
1984		582	385	559	395	1.0:1
1985		575	496	552	824	0.6:1
1986		584	112	564	200	0.6:1
1987		605	183	586	401	0.5:1
1988		598	428	572	624	0.7:1
1989		600	831	575	881	0.9:1
1990		586	358	559	318	1.1:1
1991		561	357	539	441	0.8:1
1992		572	370	547	714	0.5:1
1993		583	247	556	390	0.6:1
1994		579	367	552	452	0.8:1
1995		584	81	564	107	0.8:1
1996		607	243	589	273	0.9:1
1997		593	327	582	352	0.9:1
1998		577	146	547	139	1.1:1
1999		600	202	576	204	1.0:1
2000		605	159	584	165	1.0:1
2001		596	196	577	218	0.9:1
2002		606	665	580	760	0.9:1
2003		593	387	574	504	0.8:1
2004		585	396	569	485	0.8:1
2005		588	649	564	883	0.7:1
2006		572	239	553	270	0.9:1
Average (1980-2005)		590	355	567	452	0.8:1

-continued-

Table 11.–Page 2 of 2.

Year	Age Class	Male Average Length (mm)	Male Sample Size	Female Average Length (mm)	Female Sample Size	Ratio Male-Female
1984	2.2	505	116	508	159	0.7:1
1985		513	132	513	196	0.7:1
1994		481	67	488	171	0.4:1
1998		501	28	507	39	0.7:1
1999		517	38	512	85	0.5:1
2002		515	117	513	142	0.8:1
2003		514	45	515	73	0.6:1
2004		513	34	512	71	0.5:1
2005		499	20	508	39	0.5:1
2006		521	17	523	31	0.5:1
Average (1984-2005)		506	66	508	108	0.6:1
1980	2.3	589	67	579	80	0.8:1
1982		598	46	580	21	2.2:1
1983		595	25	582	36	0.7:1
1984		570	210	557	192	1.1:1
1985		570	106	555	129	0.8:1
1986		585	52	568	89	0.6:1
1988		596	53	577	92	0.6:1
1989		600	112	579	108	1.0:1
1990		589	177	568	132	1.3:1
1991		572	153	543	139	1.1:1
1992		569	46	546	88	0.5:1
1993		583	357	560	503	0.7:1
1994		578	73	551	89	0.8:1
1995		588	114	569	109	1.1:1
1997		600	52	576	73	0.7:1
1998		574	48	559	49	1.0:1
2000		603	44	583	41	1.1:1
2002		604	75	579	74	1:1
2003		594	135	574	163	0.8:1
2004		596	71	566	71	1:1
2005		582	110	561	111	1:1
2006		582	250	557	329	0.8:1
Average (1980-2005)		587	101	567	114	0.9:1
2006 summary (all ages)		564	601	549	714	0.8:1

Source: 1980–1997 source D. Waltemyer, Commercial Fisheries Biologist, ADF&G, Soldotna; personal communication. 1998–2006 source T. Tobias, Commercial Fisheries Technician, ADF&G, Soldotna; personal communication.

Table 12.–Late-run sockeye salmon escapement counts in 8 index streams, Kenai River drainage, 1969–2006.

									Russian River[a]		Total
	Railroad Creek[b]	Johnson Creek[b]	Moose Creek[b]	Carter-Ptarmigan Creek[b,c]	Tern (Mud) Lake[b,d]	Quartz Creek[e]		Hidden Lake[f]	Above Weir	Below Weir	Index Area
Year	ground	ground	ground	ground	ground	weir	ground	weir	weir	ground	
1969	100	75	598	-	437	-	487	500	28,872	1,100	32,169
1970	99	118	348	-	561	-	200	323	26,200	222	28,071
1971	194	160	3,201	45	1,370	-	808	1,958	54,421	11,442	73,599
1972	700	150	3,400	-	1,200	-	ND	4,956	79,115	7,113	96,634
1973	521	1,714	660	1,041	1,731	-	3,173	690	25,068	6,680	41,278
1974	-	46	942	558	1,216	-	288	1,150	24,904	2,210	31,314
1975	572	105	1,278	186	1,214	-	1,068	1,375	31,961	690	38,449
1976	1,162	-	5,558	505	1,548	-	3,372	4,860	31,939	3,470	52,414
1977	1,262	350	6,515	1,513	2,230	-	3,037	1,055	21,362	17,090	54,414
1978	1,749	780	1,933	3,529	1,216	-	10,627	4,647	34,334	18,330	77,145
1979	-	588	3,986	532	1,693	-	277	5,762	87,852	3,920	104,610
1980	1,259	253	4,879	5,752	2,575	-	7,982	27,448	83,984	3,220	137,352
1981	1,286	142	4,363	1,421	3,402	-	5,998	15,939	44,523	4,160	81,234
1982	2,518	498	4,752	7,525	4,337	70,540	-	9,790	30,790	45,000	175,750
1983	1,289	338	1,819	9,709	-	73,345	-	11,297	33,734	44,000	175,531
1984	2,090	939	5,927	18,000	2,728	37,659	-	27,792	92,659	3,000	190,794
1985	2,884	151	5,928	26,879	-	-	-	24,784	136,969	8,650	206,245
1986	600	245	1,659	-	-	-	-	17,530	40,281	15,230	75,545
1987	736	74	628	14,187	-	-	45,400	43,487	53,932	76,530	234,974
1988	1,990	1,243	1,607	31,696	-	-	-	50,907	42,476	30,360	160,279
1989	4,959	2,276	5,958	3,484	-	-	-	7,770	138,377	28,480	191,304
1990	-	-	2,306	2,230	-	-	-	77,959	83,434	11,760	177,689
1991	-	-	750	4,628	1,750	-	-	112,792	78,175	22,267	220,362
1992	-	-	1,106	3,147	970	-	-	32,912	62,584	4,980	105,699
1993	-	-	-	-	-	-	-	11,582	99,259	12,258	123,099
1994	-	705	-	1,077	-	-	-	6,086	122,277	15,211	145,356
1995	-	-	-	-	-	-	1,372	7,542	61,982	12,479	83,375
1996	-	-	-	-	-	-	4,181	55,256	34,691	31,601	125,729
1997	-	-	-	-	-	-	27,660	56,053	65,905	11,337	160,955
1998	-	-	-	-	-	-	11,130	67,727	113,480	19,593	211,930
1999	-	-	-	-	-	-	3,951	49,406	139,863	19,514	212,734
2000	-	-	-	-	-	-	1,389	45,685	56,580	13,930	117,584
2001	-	-	-	-	-	-	4,792	42,462	74,964	17,044	139,262
2002	-	-	-	-	-	-	66,294	72,871	62,115	6,858	141,844
2003	-	-	-	-	-	-	19,106	12,094	157,469	27,474	216,143
2004	-	-	2,132	4,428	-	-	13,225	19,130	110,244	30,458	179,617
2005	-	-	-	3,036	-	-	6,580	6,963[g]	59,473	29,048	95,101
2006	-	-	971	3,461	-	-	28,335	38,542	89,160	18,452	178,921

Note: Type of survey method is provided in the heading; dashed line indicates no counts were conducted.

[a] Data provided by ADF&G, Division of Sport Fish, Soldotna (Berkhahn) 2005.

[b] United States Department of Agriculture, Forest Service, Seward, Alaska (1984–1992, 1994).

[c] ADF&G, CF Division ground survey 2004–2006.

[d] Survey conducted on an unnamed stream at eastern end of Tern (Mud) Lake.

[e] ADF&G, FRED Division weir count (1982–1984), CFD ground survey, 1995–2006.

[f] Weir count: 1971, 1973, 1976–1989 (FRED Division); 1990–2006 (Cook Inlet Aquaculture Association).

[g] Count is incomplete, hole discovered in weir on 8/11.

Table 13.–Estimated sockeye salmon escapement into the Kasilof River, 2006.

Date	Daily	Cum	Date	Daily	Cum
15-Jun	3,214	3,214	18-Jul	3,056	167,767
16-Jun	1,673	4,887	19-Jul	5,049	172,816
17-Jun	1,822	6,709	20-Jul	2,346	175,162
18-Jun	1,611	8,320	21-Jul	2,987	178,149
19-Jun	2,563	10,883	22-Jul	2,457	180,606
20-Jun	3,421	14,304	23-Jul	2,653	183,259
21-Jun	5,420	19,724	24-Jul	2,265	185,524
22-Jun	4,234	23,958	25-Jul	4,968	190,492
23-Jun	3,850	27,808	26-Jul	3,437	193,929
24-Jun	4,117	31,925	27-Jul	3,712	197,641
25-Jun	6,457	38,382	28-Jul	19,693	217,334
26-Jun	7,444	45,826	29-Jul	31,333	248,667
27-Jun	7,310	53,136	30-Jul	10,841	259,508
28-Jun	7,120	60,256	31-Jul	12,618	272,126
29-Jun	7,633	67,889	1-Aug	11,565	283,691
30-Jun	2,558	70,447	2-Aug	12,925	296,616
1-Jul	1,938	72,385	3-Aug	8,389	305,005
2-Jul	5,158	77,543	4-Aug	9,775	314,780
3-Jul	5,373	82,916	5-Aug	5,303	320,083
4-Jul	6,844	89,760	6-Aug	3,673	323,756
5-Jul	6,293	96,053	7-Aug	2,403	326,159
6-Jul	5,221	101,274	8-Aug	2,149	328,308
7-Jul	4,601	105,875	9-Aug	3,267	331,575
8-Jul	2,840	108,715	10-Aug	3,189	334,764
9-Jul	5,419	114,134	11-Aug	5,082	339,846
10-Jul	7,423	121,557	12-Aug	6,087	345,933
11-Jul	2,527	124,084	13-Aug	6,093	352,026
12-Jul	1,850	125,934	14-Aug	3,630	355,656
13-Jul	2,062	127,996	15-Aug	4,349	360,005
14-Jul	3,924	131,920	16-Aug	3,223	363,228
15-Jul	15,196	147,116	17-Aug	2,615	365,843
16-Jul	13,662	160,778	18-Aug	2,249	368,092
17-Jul	3,933	164,711			

Note: Sonar counts were apportioned by species beginning August 14, when 5% or more of the fish wheel catch consisted of species other than sockeye salmon. Species apportioned from the sonar counts were pink salmon (1233), coho salmon (980) and Chinook salmon (1201).

Table 14.–Cumulative proportion by date of salmon counts recorded in the Kasilof River, 1990–2006.

	Cumulative Proportion																
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
15-Jun	0.002	0.002	0.004	0.052	0.007	0.001	0.003	0.007	0.001	0.002	0.001	0.006	0.027	0.004	0.007	0.022	0.009
16-Jun	0.004	0.009	0.014	0.064	0.010	0.002	0.007	0.013	0.003	0.004	0.002	0.020	0.039	0.007	0.010	0.043	0.013
17-Jun	0.006	0.015	0.020	0.074	0.014	0.004	0.016	0.026	0.006	0.007	0.004	0.043	0.051	0.009	0.013	0.073	0.018
18-Jun	0.008	0.019	0.031	0.090	0.017	0.006	0.023	0.039	0.016	0.009	0.010	0.064	0.067	0.011	0.017	0.115	0.023
19-Jun	0.009	0.026	0.038	0.103	0.020	0.010	0.033	0.061	0.029	0.012	0.015	0.085	0.095	0.017	0.022	0.164	0.030
20-Jun	0.010	0.033	0.050	0.118	0.025	0.016	0.047	0.098	0.036	0.016	0.022	0.097	0.119	0.032	0.034	0.211	0.039
21-Jun	0.012	0.044	0.064	0.132	0.029	0.024	0.055	0.125	0.048	0.025	0.027	0.110	0.138	0.053	0.053	0.238	0.054
22-Jun	0.014	0.056	0.082	0.143	0.034	0.032	0.079	0.141	0.065	0.038	0.040	0.124	0.157	0.065	0.092	0.246	0.065
23-Jun	0.015	0.070	0.101	0.154	0.039	0.040	0.111	0.157	0.082	0.055	0.055	0.146	0.174	0.092	0.138	0.251	0.076
24-Jun	0.017	0.085	0.125	0.179	0.047	0.047	0.145	0.184	0.094	0.072	0.075	0.174	0.185	0.113	0.187	0.261	0.087
25-Jun	0.019	0.096	0.146	0.217	0.058	0.059	0.162	0.227	0.107	0.099	0.096	0.210	0.194	0.128	0.222	0.283	0.104
26-Jun	0.022	0.110	0.174	0.257	0.071	0.071	0.181	0.276	0.124	0.120	0.122	0.229	0.212	0.152	0.224	0.303	0.124
27-Jun	0.025	0.135	0.215	0.293	0.094	0.088	0.227	0.321	0.152	0.147	0.147	0.258	0.230	0.155	0.226	0.316	0.144
28-Jun	0.030	0.171	0.250	0.317	0.129	0.120	0.295	0.337	0.181	0.181	0.169	0.294	0.233	0.156	0.232	0.329	0.164
29-Jun	0.037	0.204	0.290	0.330	0.172	0.166	0.318	0.360	0.212	0.216	0.202	0.307	0.235	0.165	0.239	0.355	0.184
30-Jun	0.051	0.238	0.323	0.357	0.220	0.196	0.346	0.392	0.224	0.244	0.233	0.330	0.239	0.188	0.247	0.361	0.191
01-Jul	0.065	0.259	0.338	0.386	0.250	0.216	0.381	0.412	0.252	0.277	0.264	0.344	0.266	0.197	0.250	0.385	0.197
02-Jul	0.076	0.275	0.349	0.419	0.256	0.229	0.386	0.454	0.276	0.291	0.301	0.375	0.280	0.214	0.253	0.421	0.211
03-Jul	0.091	0.293	0.372	0.429	0.282	0.241	0.389	0.468	0.290	0.307	0.328	0.389	0.313	0.248	0.257	0.438	0.225
04-Jul	0.120	0.338	0.377	0.441	0.322	0.248	0.399	0.513	0.297	0.315	0.337	0.409	0.346	0.264	0.265	0.459	0.244
05-Jul	0.158	0.385	0.394	0.459	0.333	0.265	0.438	0.521	0.321	0.332	0.361	0.414	0.354	0.268	0.268	0.483	0.261
06-Jul	0.193	0.400	0.414	0.467	0.375	0.293	0.452	0.526	0.353	0.347	0.383	0.424	0.379	0.284	0.274	0.501	0.275
07-Jul	0.209	0.406	0.419	0.496	0.437	0.315	0.475	0.544	0.365	0.377	0.394	0.449	0.427	0.314	0.289	0.510	0.288
08-Jul	0.235	0.417	0.428	0.537	0.483	0.322	0.496	0.548	0.385	0.412	0.416	0.476	0.469	0.329	0.299	0.527	0.295
09-Jul	0.254	0.431	0.439	0.548	0.501	0.335	0.499	0.556	0.411	0.419	0.441	0.482	0.487	0.351	0.302	0.537	0.310
10-Jul	0.258	0.450	0.453	0.558	0.535	0.355	0.507	0.566	0.438	0.427	0.472	0.493	0.514	0.379	0.305	0.549	0.330
11-Jul	0.267	0.477	0.462	0.571	0.545	0.359	0.524	0.582	0.446	0.439	0.481	0.498	0.525	0.410	0.307	0.582	0.337
12-Jul	0.281	0.488	0.522	0.590	0.552	0.365	0.528	0.598	0.452	0.445	0.502	0.505	0.533	0.463	0.314	0.613	0.342
13-Jul	0.294	0.490	0.586	0.680	0.565	0.373	0.538	0.617	0.465	0.453	0.534	0.513	0.546	0.480	0.377	0.640	0.348
14-Jul	0.303	0.492	0.598	0.707	0.584	0.387	0.650	0.624	0.474	0.467	0.594	0.530	0.553	0.504	0.538	0.654	0.358
15-Jul	0.317	0.508	0.608	0.748	0.623	0.395	0.710	0.630	0.496	0.473	0.664	0.562	0.570	0.523	0.603	0.665	0.400
16-Jul	0.350	0.523	0.616	0.792	0.636	0.487	0.721	0.643	0.522	0.481	0.673	0.596	0.582	0.603	0.634	0.684	0.437
17-Jul	0.498	0.546	0.629	0.804	0.679	0.618	0.728	0.673	0.573	0.501	0.691	0.640	0.597	0.675	0.653	0.696	0.447
18-Jul	0.602	0.615	0.645	0.816	0.711	0.641	0.737	0.682	0.603	0.516	0.702	0.688	0.621	0.706	0.666	0.716	0.456

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Table 14.–Page 2 of 2.

	Cumulative Proportion																
Date	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
19-Jul	0.623	0.649	0.665	0.828	0.732	0.667	0.758	0.689	0.642	0.534	0.730	0.706	0.642	0.722	0.676	0.731	0.469
20-Jul	0.664	0.661	0.705	0.839	0.750	0.688	0.777	0.696	0.671	0.563	0.763	0.717	0.678	0.734	0.684	0.744	0.476
21-Jul	0.676	0.679	0.725	0.849	0.763	0.704	0.790	0.700	0.687	0.619	0.777	0.729	0.687	0.757	0.711	0.755	0.484
22-Jul	0.687	0.710	0.740	0.857	0.771	0.753	0.806	0.707	0.713	0.679	0.807	0.733	0.708	0.787	0.724	0.766	0.491
23-Jul	0.706	0.751	0.770	0.877	0.778	0.807	0.823	0.727	0.740	0.721	0.843	0.746	0.723	0.820	0.741	0.785	0.498
24-Jul	0.723	0.781	0.844	0.892	0.789	0.868	0.850	0.741	0.773	0.757	0.876	0.800	0.752	0.834	0.755	0.802	0.504
25-Jul	0.754	0.813	0.890	0.909	0.799	0.883	0.875	0.750	0.799	0.792	0.895	0.901	0.791	0.852	0.769	0.817	0.518
26-Jul	0.776	0.849	0.933	0.921	0.806	0.898	0.883	0.756	0.820	0.829	0.912	0.911	0.812	0.864	0.780	0.830	0.527
27-Jul	0.790	0.881	0.962	0.930	0.813	0.919	0.890	0.763	0.839	0.865	0.931	0.927	0.823	0.882	0.788	0.837	0.537
28-Jul	0.808	0.914	0.971	0.946	0.826	0.927	0.896	0.773	0.870	0.881	0.947	0.936	0.835	0.901	0.799	0.846	0.590
29-Jul	0.836	0.935	0.977	0.958	0.846	0.934	0.900	0.781	0.893	0.900	0.965	0.950	0.852	0.917	0.807	0.861	0.676
30-Jul	0.856	0.947	0.983	0.969	0.868	0.939	0.904	0.793	0.913	0.913	0.974	0.967	0.862	0.929	0.815	0.880	0.705
31-Jul	0.872	0.956	0.989	0.974	0.892	0.945	0.907	0.802	0.938	0.925	0.983	0.980	0.873	0.939	0.822	0.889	0.739
01-Aug	0.885	0.960	0.994	0.979	0.928	0.950	0.923	0.810	0.960	0.935	0.990	0.988	0.887	0.947	0.827	0.896	0.771
02-Aug	0.901	0.966	1.000	0.987	0.943	0.956	0.938	0.820	0.968	0.948	1.000	0.993	0.908	0.956	0.833	0.902	0.806
03-Aug	0.916	0.973		0.992	0.952	0.969	0.952	0.829	0.974	0.961		1.000	0.925	0.963	0.843	0.911	0.829
04-Aug	0.924	0.978		0.996	0.959	0.984	0.969	0.836	0.980	0.972			0.940	0.967	0.864	0.915	0.855
05-Aug	0.933	0.981		1.000	0.966	0.988	0.979	0.850	0.988	0.979			0.949	0.973	0.877	0.923	0.870
06-Aug	0.941	0.987			0.972	0.993	0.984	0.872	0.992	0.986			0.958	0.979	0.887	0.933	0.880
07-Aug	0.946	0.994			0.977	1.000	0.992	0.896	0.997	0.993			0.969	0.985	0.897	0.936	0.886
08-Aug	0.953	1.000			0.981		1.000	0.925	1.000	1.000			0.978	0.990	0.906	0.940	0.892
09-Aug	0.963				0.987			0.945					0.987	0.994	0.923	0.943	0.901
10-Aug	0.972				0.994			0.962					0.994	1.000	0.935	0.947	0.909
11-Aug	0.977				1.000			0.984					1.000		0.946	0.954	0.923
12-Aug	0.984							1.000							0.957	0.968	0.940
13-Aug	0.989														0.970	0.980	0.956
14-Aug	0.995														0.982	0.991	0.966
15-Aug	1.000														0.992	1.000	0.978
16-Aug															1.000		0.987
17-Aug																	0.994
18-Aug																	1.000
Midpoint	18-Jul	15-Jul	12-Jul	8-Jul	9-Jul	17-Jul	10-Jul	4-Jul	16-Jul	17-Jul	12-Jul	12-Jul	10-Jul	14-Jul	14-Jul	6-Jul	24-Jul
No. days for 80%	29	33	34	37	35	30	30	49	36	34	31	35	44	34	46	46	46

Average 1979-2005: 38 d Average midpoint (1979-2005): 14 July

Note: Data is available dating back to 1979.

Table 15.–Daily fish wheel catch by species for the Kasilof River, 2006.

	Hours	Sockeye		Pink		Coho		Chinook		Trout	
Date	Open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
29-Jun	17.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
30-Jun	2.2	88	88	0	0	0	0	0	0	0	0
1-Jul	15.2	7	95	0	0	0	0	0	0	0	0
2-Jul	23.8	26	121	0	0	0	0	0	0	0	0
3-Jul	11.7	110	231	0	0	0	0	0	0	0	0
4-Jul	12.5	12	243	0	0	0	0	0	0	1	1
5-Jul	3.7	9	252	0	0	0	0	1	1	0	1
6-Jul	8.0	55	307	0	0	0	0	0	1	0	1
7-Jul	1.5	59	366	0	0	0	0	1	2	0	1
8-Jul	16.5	39	405	0	0	0	0	0	2	0	1
9-Jul	10.0	148	553	1	1	0	0	0	2	0	1
10-Jul	14.8	16	569	0	1	0	0	0	2	0	1
11-Jul	17.6	25	594	1	2	0	0	0	2	0	1
12-Jul	21.8	6	600	1	3	0	0	0	2	0	1
13-Jul	18.8	22	622	0	3	0	0	0	2	1	2
14-Jul	24.8	8	630	3	6	0	0	0	2	0	2
15-Jul	24.8	123	753	0	6	0	0	1	3	1	3
16-Jul	6.6	94	847	0	6	0	0	0	3	0	3
17-Jul	5.3	21	868	0	6	0	0	0	3	2	5
18-Jul	5.4	42	910	0	6	0	0	0	3	0	5
19-Jul	0.0	0	910	0	6	0	0	1	4	0	5
20-Jul	4.1	49	959	0	6	0	0	0	4	0	5
21-Jul	3.5	18	977	0	6	0	0	0	4	0	5
22-Jul	1.7	18	995	0	6	0	0	0	4	0	5
23-Jul	5.8	12	1,007	0	6	0	0	0	4	0	5
24-Jul	14.0	8	1,015	0	6	0	0	1	5	0	5
25-Jul	16.3	10	1,025	0	6	0	0	0	5	0	5
26-Jul	24.3	0	1,025	0	6	0	0	0	5	0	5
27-Jul	7.7	9	1,034	1	7	0	0	0	5	0	5
28-Jul	15.8	0	1,034	0	7	0	0	0	5	0	5
29-Jul	22.4	89	1,123	0	7	0	0	2	7	0	5
30-Jul	15.0	42	1,165	0	7	0	0	1	8	0	5
31-Jul	7.5	82	1,247	1	8	1	1	0	8	0	5
1-Aug	8.3	24	1,271	0	8	0	1	0	8	0	5
2-Aug	6.5	29	1,300	0	8	0	1	2	10	0	5
3-Aug	9.8	13	1,313	0	8	1	2	3	13	0	5
4-Aug	22.7	22	1,335	5	13	0	2	1	14	0	5
5-Aug	22.8	15	1,350	2	15	0	2	2	16	0	5
6-Aug	0.0	0	1,350	0	15	0	2	0	16	0	5
7-Aug	42.8	11	1,361	1	16	0	2	3	19	0	5
8-Aug	23.5	0	1,361	0	16	0	2	0	19	0	5
9-Aug	25.8	20	1,381	2	18	0	2	0	19	0	5
10-Aug	24.7	7	1,388	0	18	1	3	1	20	0	5
11-Aug	23.9	0	1,388	0	18	1	4	0	20	0	5
12-Aug	23.5	11	1,399	1	19	0	4	0	20	0	5
13-Aug	22.0	11	1,410	1	20	3	7	0	20	0	5
14-Aug	19.5	55	1,465	14	34	6	13	4	24	0	5
15-Aug	17.7	91	1,556	3	37	4	17	4	28	0	5
16-Aug	19.0	43	1,599	0	37	3	20	1	29	0	5
17-Aug	17.3	29	1,628	1	38	1	21	4	33	0	5
18-Aug	9.2	2	1,630	1	39	3	24	1	34	0	5
Proportion:			94.1%		2.3%		1.4%		2.0%		0.3%

Catch Total: 1,732 fish Time Operated: 739.5 hrs. CPUE: 2.3 fish/hr

Efficiency: 1.0% (based on north bank sonar counts between 29 June and 18 August.)

Note: Fish wheel did not operate 15-28 June because of low water; trout includes dolly Varden and Rainbow trout..

Table 16.–Summary of actual fish wheel catches and CPUE for the Kasilof River, 1983–2006.

		Actual North Bank fish wheel catch (salmon only)													
											CPUE by species				
Year	Total Hours	Sockeye	%	Pink	%	Coho	%	Chinook	%	Total Catch	Sockeye	Pink	Coho	Chinook	Total CPUE
1983	582.5	2,094	96.8%	26	1.2%	2	0.1%	41	1.9%	2,163	3.6	0.0	0.0	0.1	3.7
1984	809.5	3,907	97.7%	44	1.1%	8	0.2%	41	1.0%	4,000	4.8	0.1	0.0	0.1	4.9
1985	747.0	4,996	98.3%	49	1.0%	4	0.1%	32	0.6%	5,081	6.7	0.1	0.0	0.0	6.8
1986	613.0	7,186	97.4%	77	1.0%	6	0.1%	108	1.5%	7,377	11.7	0.1	0.0	0.2	12.0
1987	768.4	3,910	96.2%	20	0.5%	0	0.0%	136	3.3%	4,066	5.1	0.0	0.0	0.2	5.3
1988	720.0	4,662	96.7%	37	0.8%	3	0.1%	119	2.5%	4,821	6.5	0.1	0.0	0.2	6.7
1989	959.1	4,017	94.0%	154	3.6%	5	0.1%	99	2.3%	4,275	4.2	0.2	0.0	0.1	4.5
1990	1073.8	1,750	93.4%	26	1.4%	0	0.0%	98	5.2%	1,874	1.6	0.0	0.0	0.1	1.7
1991	557.7	1,889	95.9%	65	3.3%	1	0.1%	14	0.7%	1,969	3.4	0.1	0.0	0.0	3.5
1992	778.8	2,380	95.0%	40	1.6%	2	0.1%	82	3.3%	2,504	3.1	0.1	0.0	0.1	3.2
1993	840.0	2,100	93.9%	52	2.3%	0	0.0%	85	3.8%	2,237	2.5	0.1	0.0	0.1	2.7
1994	609.3	3,514	97.3%	37	1.0%	3	0.1%	59	1.6%	3,613	5.8	0.1	0.0	0.1	5.9
1995	678.2	2,023	96.4%	28	1.3%	1	0.0%	46	2.2%	2,098	3.0	0.0	0.0	0.1	3.1
1996	505.8	3,009	98.9%	5	0.2%	2	0.1%	28	0.9%	3,044	5.9	0.0	0.0	0.1	6.0
1997	505.0	2,076	97.0%	16	0.7%	3	0.1%	46	2.1%	2,141	4.1	0.0	0.0	0.1	4.2
1998	462.9	1,937	96.6%	18	0.9%	4	0.2%	47	2.3%	2,006	4.2	0.0	0.0	0.1	4.3
1999	503.0	1,952	92.1%	108	5.1%	2	0.1%	58	2.7%	2,120	3.9	0.2	0.0	0.1	4.2
2000	670.5	1,792	94.2%	37	1.9%	16	0.8%	57	3.0%	1,902	2.7	0.1	0.0	0.1	2.8
2001	391.4	1,765	96.4%	23	1.3%	1	0.1%	42	2.3%	1,831	4.5	0.1	0.0	0.1	4.7
2002	843.4	2,449	96.9%	29	1.1%	13	0.5%	37	1.5%	2,528	2.9	0.0	0.0	0.0	3.0
2003	822.2	1,704	98.3%	15	0.9%	0	0.0%	14	0.8%	1,733	2.1	0.0	0.0	0.0	2.1
2004	953.6	1,991	95.7%	48	2.3%	2	1.9%	39	1.9%	2,080	2.1	0.1	0.0	0.0	2.2
2005	785.1	1,812	95.5%	66	3.5%	0	0.0%	19	1.0%	1,897	2.3	0.1	0.0	0.0	2.4
2006	739.5	1,630	94.1%	39	2.3%	24	1.4%	34	2.0%	1,727	2.2	0.1	0.0	0.0	2.3
Mean: (1983-2005)			96.1%		1.7%		0.2%		2.1%		4.2	0.1	0.0	0.1	4.4
Minimum: (1983-2005)			92.1%		0.2%		0.0%		0.6%		1.6	0.0	0.0	0.0	1.7
Maximum: (1983-2005)			98.9%		5.1%		1.9%		5.2%		11.7	0.2	0.0	0.2	12.0
Std. Dev.: (1983-2005)			1.7%		1.2%		0.4%		1.1%		2.2	0.0	0.0	0.0	2.2

		Actual South Bank fish wheel catch (salmon only)													
											CPUE by species				
Year	Total Hours	Sockeye	%	Pink	%	Coho	%	Chinook	%	Total Catch	Sockeye	Pink	Coho	Chinook	Total CPUE
1978	697.8	1808	98.3%	27	1.5%	0	0.0%	4	0.2%	1,839	2.6	0.0	0.0	0.0	2.6
1979	ND	759	93.9%	36	4.5%	9	1.1%	4	0.5%	808	ND	ND	ND	ND	ND
1980	1513.3	1664	93.6%	57	3.2%	14	0.8%	43	2.4%	1,778	1.1	0.0	0.0	0.0	1.2
1981[a]	2125.5	2341	98.8%	15	0.6%	0	0.0%	13	0.5%	2,369	1.1	0.0	0.0	0.0	1.1
1982[a]	1855.5	2318	98.3%	33	1.4%	2	0.1%	5	0.2%	2,358	1.2	0.0	0.0	0.0	1.3
1983	748.2	829	96.2%	6	0.7%	0	0.0%	27	3.1%	862	1.1	0.0	0.0	0.0	1.2
1984	936.5	842	91.7%	42	4.6%	1	0.1%	33	3.6%	918	0.9	0.0	0.0	0.0	1.0
1985	633.3	2,026	95.4%	56	2.6%	1	0.0%	40	1.9%	2,123	3.2	0.1	0.0	0.1	3.4
1986	126.5	405	95.5%	3	0.7%	0	0.0%	16	3.8%	424	3.2	0.0	0.0	0.1	3.4
1987-1991	ND	ND		ND		ND		ND		ND	ND	ND	ND	ND	ND
1992	454.2	580	96.7%	14	2.3%	0	0.0%	6	1.0%	600	1.3	0.0	0.0	0.0	1.3
1993-present		ND		ND		ND		ND		ND	ND	ND	ND	ND	ND
Mean:			95.8%		2.2%		0.2%		1.7%		1.7	0.0	0.0	0.0	1.8
Minimum:			91.7%		0.6%		0.0%		0.2%		0.9	0.0	0.0	0.0	1.0
Maximum:			98.8%		4.6%		1.1%		3.8%		3.2	0.1	0.0	0.1	3.4
Std. Dev.:			2.3%		1.5%		0.4%		1.4%		1.0	0.0	0.0	0.0	1.0

Note: Trout are not apportioned from the sonar count and are excluded from table.

[a] Two fish wheels operated on south bank, 30 June–22 July, 1981 and 23 June–19 July, 1982. (Fish wheels did not always run on the same dates.)

Table 17.–Age composition of sockeye salmon sampled from the Kasilof River fish wheel catch, 1980–2006.

	Percentage Composition by Age Class [a]								
Year	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	Sample Size
1969	0.0	14.0	39.0	1.0	0.0	30.0	16.0	0.0	399
1970	tr	2.0	37.0	2.0	0.0	16.0	11.0	2.0	297
1971	0.0	6.0	69.0	0.0	0.0	8.0	16.0	1.0	153
1972	tr	42.0	36.0	1.0	tr	3.0	18.0	0.0	668
1973	0.0	20.0	57.0	0.0	0.0	19.0	4.0	0.0	374
1974	0.0	35.0	59.0	0.0	tr	4.0	2.0	0.0	254
1975	1.0	29.0	7.0	0.0	0.0	58.0	4.0	1.0	931
1976	0.2	35.9	24.1	0.0	tr	28.2	11.4	0.2	755
1977	0.3	29.4	30.0	0.0	0.8	27.8	11.7	0.0	1,209
1978	0.0	41.3	40.1	0.0	0.0	10.4	8.2	0.0	967
1979	0.7	58.9	28.2	0.0	0.0	10.5	1.6	0.1	590
1980	2.1	67.0	23.1	0.1	0.0	5.0	2.7	0.0	899
1981	0.0	28.9	63.6	0.0	0.0	5.9	1.6	0.0	1,479
1982	0.8	30.6	54.4	0.0	0.2	9.3	4.7	0.0	1,518
1983	0.0	49.5	33.1	0.0	0.0	12.9	4.5	0.0	1,997
1984	0.0	50.5	24.8	0.0	0.2	17.9	6.6	0.0	2,269
1985	0.2	57.3	21.8	0.1	0.1	17.8	2.6	0.1	3,063
1986	0.0	40.9	42.0	0.3	0.1	11.9	4.6	0.2	1,660
1987	0.2	43.4	27.4	0.0	0.1	22.4	6.4	0.1	1,248
1988	0.1	33.7	36.4	0.2	0.1	17.5	12.0	0.1	2,282
1989	0.0	14.9	35.3	0.1	0.1	36.6	13.0	0.0	1,301
1990	0.4	32.9	20.7	0.3	0.0	33.2	12.4	0.3	762
1991	0.0	31.5	33.4	0.1	0.1	29.0	5.8	0.1	2,106
1992	0.0	21.1	27.5	0.0	0.2	35.3	16.0	0.0	1,717
1993	0.4	16.3	29.8	0.0	0.4	28.0	25.2	0.0	571
1994	0.0	26.4	28.4	0.0	0.0	28.2	17.0	0.0	723
1995	0.2	44.0	15.5	0.0	0.0	25.0	15.3	0.0	587
1996	0.0	24.8	48.3	0.0	0.0	21.4	5.6	0.0	721
1997	0.0	21.1	54.8	0.0	0.0	13.5	10.7	0.0	758
1998	0.1	39.7	28.1	0.4	0.6	22.2	8.9	0.0	857
1999	0.0	29.7	33.8	0.2	0.1	26.7	9.4	0.1	964
2000	0.1	41.9	33.9	0.0	0.4	11.4	12.3	0.0	747
2001	0.4	29.3	48.6	0.2	0.2	16.5	4.8	0.2	564
2002	0.3	33.9	38.1	0.3	1.5	19.3	6.6	0.1	746
2003	0.7	37.3	26.1	0.0	0.2	29.3	6.5	0.0	1,298
2004	0.1	43.7	18.9	0.1	0.2	32.6	4.3	0.0	908
2005	0.7	38.8	32.7	0.0	0.3	18.7	8.8	0.1	1,278
2006	0.5	35.3	30.5	0.0	0.4	27.4	5.8	0.0	720
Mean (1969–2005)	0.3	33.6	35.3	0.2	0.2	20.6	9.0	0.2	1,071

Source: 1978–1997 source: D. Waltemyer, Commercial Fisheries Biologist, ADF&G, Soldotna; personal communication. 1998–2006 source: T. Tobias, Commercial Fisheries Technician, ADF&G, Soldotna; personal communication.

[a] Percentages weighted by total numbers in the escapement: 1979–2002. Percentages corrected in historical table in 2002.

Table 18.–Length composition of the major age classes sampled from the Kasilof River fish wheel, 1980–2006.

		Male		Female		
Year	Age Class	Average Length (mm)	Sample Size	Average Length (mm)	Sample Size	Ratio Male-Female
1980	1.2	474	189	464	376	0.5:1
1981		503	241	492	146	1.7:1
1982		481	285	466	235	1.2:1
1983		493	113	491	78	1.4:1
1984		480	544	478	428	2.6:1
1985		474	723	472	897	0.8:1
1986		482	266	482	368	0.7:1
1987		472	282	470	257	1.1:1
1988		480	353	477	480	0.7:1
1989		481	245	480	290	0.8:1
1990		462	139	458	91	1.5:1
1991		467	326	461	305	1.1:1
1992		467	184	466	212	0.9:1
1993		479	40	479	53	0.8:1
1994		465	90	465	91	1.0:1
1995		491	117	483	141	0.8:1
1996		476	94	475	85	1.1:1
1997		456	80	452	80	1.0:1
1998		475	178	468	162	1.1:1
1999		479	140	474	146	1.0:1
2000		481	162	474	162	1.0:1
2001		479	77	477	88	0.9:1
2002		486	114	476	139	0.8:1
2003		481	230	480	247	0.9:1
2004		482	181	475	216	0.8:1
2005		470	260	468	350	0.7:1
2006		464	112	458	148	0.8:1
Average (1980–2005)		478	148	473	165	0.9:1
1980	1.3	531	35	516	115	0.3:1
1981		566	422	558	369	1.1:1
1982		549	377	542	428	0.9:1
1983		558	170	547	187	0.9:1
1984		539	304	533	383	0.8:1
1985		531	341	527	433	0.8:1
1986		550	342	543	405	0.8:1
1987		553	191	552	154	1.2:1
1988		550	311	543	382	0.8:1
1989		550	266	542	296	0.9:1
1990		518	81	523	106	0.8:1
1991		531	418	518	335	1.3:1
1992		536	195	527	197	1.0:1
1993		550	101	542	69	1.5:1
1994		538	98	530	99	1.1:1
1995		542	42	534	49	0.9:1
1996		566	213	556	135	1.6:1
1997		555	223	541	192	1.2:1
1998		527	110	525	131	0.8:1
1999		543	167	542	159	1.1:1
2000		555	140	547	122	1.2:1
2001		549	149	545	125	1.2:1
2002		555	144	544	140	1.1:1
2003		546	167	546	207	0.8:1
2004		549	82	539	90	0.9:1
2005		544	142	543	149	1:1
2006		519	111	513	114	1.0:1
Average (1980–2005)		545	201	539	210	1.0:1

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Table 18.–Page 2 of 2.

Year	Age Class	Male Average Length (mm)	Male Sample Size	Female Average Length (mm)	Female Sample Size	Ratio Male-Female
1982	2.2	479	65	472	81	0.8:1
1984		484	202	482	223	0.9:1
1985		482	248	476	319	0.8:1
1986		492	78	489	115	0.7:1
1987		478	137	475	141	1.0:1
1988		486	173	479	220	0.8:1
1990		453	104	457	111	0.9:1
1991		471	289	480	301	1.0:1
1992		464	264	464	427	0.6:1
1993		486	58	480	102	0.7:1
1994		469	97	468	102	1.0:1
1995		492	61	485	86	0.7:1
1996		482	69	472	85	0.8:1
1997		459	47	450	55	0.9:1
1998		473	95	469	95	1.0:1
1999		480	125	475	132	1.0:1
2000		486	36	482	52	0.7:1
2001		482	41	473	52	0.8:1
2002		480	50	470	94	0.5:1
2003		481	162	479	186	0.9:1
2004		482	126	475	170	0.7:1
2005		478	109	467	165	0.7:1
2006		464	82	466	120	0.7:1
Average (1982–2005)		478	120	474	151	0.8:1
1982	2.3	548	41	543	40	1.0:1
1984		533	102	526	80	1.3:1
1988		544	104	543	115	0.9:1
1990		514	63	529	61	1.0:1
1991		516	61	514	64	1.0:1
1992		534	112	532	122	0.9:1
1993		542	66	533	78	0.8:1
1994		545	49	529	71	0.7:1
1995		546	42	536	48	0.9:1
1997		546	39	526	42	0.9:1
2000		551	47	551	48	1.0:1
2002		550	25	546	24	1.0:1
2003		546	39	537	53	0.7:1
2004		536	25	523	14	1.8:1
2005		544	40	533	48	0.8:1
2006		527	21	521	22	1.0:1
Average (1982–2005)		541	55	534	57	1:1
2006 summary (all ages)		485	323	479	397	0.8:1

Table 19.–Peak salmon ground and aerial surveys and weir counts in 7 index streams of the Kasilof River drainage, 1975–2006.

	Nikolai Creek [a]			Crystal Creek [b]	Clear Creek [b]	Glacier Flat Creek[c, d]		Seepage Creek [b]	Moose Creek [b]	Bear Creek [d, e]		
Year	weir	ground	aerial	ground	ground	weir	ground	ground	ground	weir	ground	Total Index
1975			5,700	441	328		14,355	3,657	3,261	27,700		55,442
1976		11,924		806	306		7,122	790	13,834	51,800		86,582
1977			29,100	589	1,797		5,835	840	16,594	58,000		112,755
1978			34,200	200	181		6,144	1,055	15,899	43,400		101,079
1979			19,100	499	360		3,593	804	8,108	35,900		68,364
1980			10,000	1,010	2,253	15,500		1,813	15,645	125,384		171,605
1981			36,000	860	2,978	41,571		3,376	12,968	75,117		172,870
1982			16,800	1,785	4,183	17,348		1,638	13,402	51,350		106,506
1983			17,100	1,657	860	38,829		3,305	19,245	61,957		142,953
1984			8,400	141	2,619	76,217		6,250	13,999	54,328		161,954
1985			17,500	817	3,509	121,400		5,728	9,222	120,400		278,576
1986			11,900	1,395	2,710	60,615		2,016	21,241	102,948		202,825
1987			9,002	1,385	7,704	61,000		791	17,601	71,250		168,733
1988			10,841	593	5,809	40,015		1,387	17,727	127,532		203,904
1989			4,818	1,068	559	20,156		940	17,058	62,941		107,540
1990			7,474	879	220	14,355		1,217	18,800	46,300		89,245
1991			21,582	391	1,223		12,068	1,661	18,105	68,880		123,910
1992			10,145	1,930	1,979		9,144	349	15,235	44,100		82,882
1993										45,123		45,123
1994	63,723					10,347				52,720		126,790
1995										41,863		41,863
1996										58,692		58,692
1997										81,954		81,954
1998										113,510		113,510
1999										78,265		78,265
2000										84,993		84,993
2001				128						110,164		110,292
2002				240			19,568		14,432	97,694		131,934
2003		800					9,580	457	14,514	72,109		97,460
2004		1,342		1,297	202		28,073	535	28,934		29,431	89,814
2005				94	167		3,876		11,188		31,084	46,409
2006							4,814		11,471		23,413	39,698

Note: Counts include mortalities (natural and man-made) and estimates of fish below weirs, where applicable (revised 12/04).

[a] All aerial surveys ground proofed- ADF&G Comm. Fish and FRED; 1994 weir count - U.S. Biological Service; Ground surveys (1976 survey, 8.8 miles in length, 2003–2004 surveys, 1 mile in length) ADF&G Comm. Fish.

[b] All surveys - ADF&G, CF Division or FRED.

[c] Weir counts - ADF&G, FRED - except 1994, (U.S. Biological Service).

[d] Data for 1985 Glacier Flats and Bear Creek weirs is interpolated; final weir counts were 96,286 for Glacier Flats Creek and 115,366 for Bear Creek.

[e] ADF&G (FRED) 1975-92; CIAA 1993-2003; ADF&G, Commercial Fisheries 2004–2006.

Table 20.–Estimated apportioned salmon escapement into the Crescent River, 24 June–10 August, 2006.

	Sockeye		Pink		Chum		Coho		Chinook		Dolly Varden	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
24-Jun	81	81	0	0	0	0	0	0	0	0	0	0
25-Jun	26	107	0	0	0	0	0	0	0	0	0	0
26-Jun	59	166	0	0	0	0	0	0	0	0	0	0
27-Jun	2,234	2,400	0	0	0	0	0	0	0	0	0	0
28-Jun	2,028	4,428	0	0	0	0	0	0	0	0	0	0
29-Jun	2,575	7,003	0	0	0	0	0	0	0	0	0	0
30-Jun	2,001	9,004	0	0	0	0	0	0	0	0	0	0
1-Jul	2,142	11,146	0	0	0	0	0	0	0	0	0	0
2-Jul	1,155	12,301	45	45	0	0	0	0	0	0	0	0
3-Jul	739	13,040	28	73	0	0	0	0	0	0	0	0
4-Jul	1,022	14,062	35	108	0	0	0	0	0	0	0	0
5-Jul	1,428	15,490	0	108	0	0	0	0	35	35	69	69
6-Jul	1,128	16,618	41	149	0	0	0	0	0	35	42	111
7-Jul	1,423	18,041	41	190	0	0	0	0	0	35	0	111
8-Jul	1,744	19,785	103	293	0	0	0	0	0	35	102	213
9-Jul	1,377	21,162	138	431	0	0	0	0	0	35	138	351
10-Jul	1,807	22,969	0	431	0	0	0	0	0	35	194	545
11-Jul	2,459	25,428	90	521	0	0	0	0	134	169	0	545
12-Jul	1,989	27,417	36	557	0	0	0	0	0	169	139	684
13-Jul	1,920	29,337	113	670	0	0	0	0	0	169	113	797
14-Jul	2,677	32,014	201	871	0	0	0	0	0	169	334	1,131
15-Jul	4,961	36,975	0	871	0	0	0	0	89	257	177	1,308
16-Jul	1,999	38,974	94	965	0	0	0	0	0	257	381	1,689
17-Jul	1,545	40,519	0	965	0	0	0	0	0	257	163	1,852
18-Jul	1,039	41,558	0	965	0	0	0	0	0	257	0	1,852
19-Jul	1,084	42,642	113	1,078	0	0	0	0	0	257	37	1,889
20-Jul	3,700	46,342	218	1,296	108	108	0	0	0	257	218	2,107
21-Jul	3,256	49,598	0	1,296	0	108	0	0	0	257	0	2,107
22-Jul	2,112	51,710	111	1,407	0	108	0	0	0	257	111	2,218
23-Jul	2,735	54,445	76	1,483	0	108	0	0	0	257	76	2,294
24-Jul	1,074	55,519	20	1,503	21	129	0	0	20	277	40	2,334
25-Jul	3,770	59,289	0	1,503	0	129	0	0	38	315	38	2,372
26-Jul	2,886	62,175	153	1,656	121	250	0	0	0	315	61	2,433
27-Jul	2,426	64,601	0	1,656	104	354	0	0	0	315	52	2,485
28-Jul	2,308	66,909	22	1,678	23	377	0	0	0	315	22	2,507
29-Jul	1,200	68,109	86	1,764	0	377	0	0	0	315	43	2,550
30-Jul	1,672	69,781	105	1,869	0	377	0	0	0	315	26	2,576
31-Jul	3,057	72,838	0	1,869	0	377	0	0	0	315	0	2,576
1-Aug	3,445	76,283	42	1,911	42	419	0	0	0	315	0	2,576
2-Aug	2,920	79,203	0	1,911	28	447	0	0	0	315	0	2,576
3-Aug	4,956	84,159	91	2,002	45	492	0	0	0	315	0	2,576
4-Aug	1,611	85,770	0	2,002	0	492	0	0	0	315	0	2,576
5-Aug	1,732	87,502	68	2,070	90	582	22	22	0	315	0	2,576
6-Aug	988	88,490	35	2,105	34	616	136	158	0	315	0	2,576
7-Aug	1,542	90,032	0	2,105	46	662	47	205	0	315	0	2,576
8-Aug	849	90,881	114	2,219	113	775	19	224	0	315	19	2,595
9-Aug	773	91,654	0	2,219	455	1,230	0	224	0	315	0	2,595
10-Aug	879	92,533	63	2,282	150	1,380	38	262	0	315	12	2,607
Proportion:		93.1%		2.3%		1.4%		0.3%		0.3%		2.6%
Total count:		99,349										

Table 21.–Cumulative proportion by date of sockeye salmon counts recorded in the Crescent River, 1990–2006.

	Cumulative Proportion																
Date	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
22-Jun							0.001										
23-Jun							0.006										
24-Jun							0.008	0.004							0.023	0.012	0.001
25-Jun				0.010			0.011	0.014							0.036	0.034	0.001
26-Jun	0.003	0.002		0.019			0.012	0.020							0.045	0.050	0.002
27-Jun	0.007	0.004		0.022			0.013	0.029	0.009	0.001			0.016	0.037	0.062	0.065	0.024
28-Jun	0.013	0.006		0.031	0.001	0.000	0.015	0.037	0.016	0.002		0.006	0.072	0.071	0.088	0.079	0.045
29-Jun	0.021	0.010		0.034	0.002	0.000	0.018	0.049	0.022	0.007	0.001	0.008	0.112	0.108	0.127	0.092	0.070
30-Jun	0.025	0.013		0.038	0.008	0.002	0.036	0.058	0.031	0.038	0.002	0.016	0.149	0.139	0.139	0.110	0.091
01-Jul	0.034	0.017	0.045	0.056	0.012	0.002	0.060	0.067	0.034	0.086	0.006	0.036	0.186	0.159	0.153	0.134	0.112
02-Jul	0.055	0.031	0.072	0.061	0.015	0.003	0.074	0.091	0.038	0.115	0.008	0.074	0.225	0.172	0.182	0.151	0.124
03-Jul	0.065	0.033	0.096	0.077	0.017	0.006	0.087	0.153	0.040	0.137	0.011	0.136	0.271	0.182	0.215	0.169	0.132
04-Jul	0.077	0.040	0.115	0.183	0.028	0.010	0.105	0.188	0.043	0.161	0.028	0.199	0.310	0.205	0.240	0.199	0.143
05-Jul	0.098	0.061	0.138	0.239	0.035	0.012	0.129	0.214	0.044	0.184	0.093	0.253	0.351	0.225	0.266	0.224	0.158
06-Jul	0.128	0.063	0.153	0.246	0.044	0.022	0.148	0.239	0.045	0.204	0.178	0.307	0.398	0.246	0.289	0.238	0.170
07-Jul	0.141	0.064	0.159	0.258	0.061	0.029	0.161	0.267	0.056	0.215	0.292	0.338	0.440	0.307	0.306	0.253	0.185
08-Jul	0.155	0.079	0.173	0.273	0.086	0.052	0.174	0.300	0.084	0.247	0.365	0.356	0.465	0.323	0.325	0.272	0.205
09-Jul	0.184	0.090	0.192	0.297	0.092	0.082	0.181	0.348	0.142	0.267	0.399	0.383	0.480	0.337	0.342	0.295	0.221
10-Jul	0.207	0.092	0.212	0.314	0.103	0.106	0.189	0.429	0.196	0.278	0.410	0.399	0.489	0.351	0.358	0.321	0.241
11-Jul	0.264	0.100	0.243	0.353	0.132	0.132	0.197	0.500	0.237	0.284	0.418	0.449	0.497	0.356	0.391	0.344	0.268
12-Jul	0.286	0.131	0.292	0.386	0.170	0.169	0.202	0.550	0.272	0.328	0.422	0.471	0.521	0.376	0.438	0.362	0.290
13-Jul	0.299	0.143	0.335	0.423	0.214	0.204	0.262	0.581	0.294	0.375	0.426	0.505	0.562	0.492	0.506	0.393	0.312
14-Jul	0.321	0.188	0.379	0.501	0.251	0.250	0.391	0.606	0.320	0.403	0.433	0.557	0.614	0.526	0.578	0.422	0.344
15-Jul	0.345	0.245	0.424	0.580	0.276	0.281	0.471	0.625	0.348	0.410	0.444	0.595	0.628	0.554	0.622	0.436	0.397
16-Jul	0.393	0.292	0.463	0.642	0.295	0.317	0.513	0.654	0.389	0.458	0.494	0.638	0.648	0.587	0.648	0.448	0.421
17-Jul	0.472	0.355	0.512	0.685	0.368	0.364	0.551	0.691	0.434	0.548	0.658	0.677	0.673	0.624	0.672	0.473	0.439
18-Jul	0.540	0.425	0.539	0.723	0.395	0.400	0.595	0.719	0.487	0.600	0.795	0.697	0.682	0.687	0.696	0.506	0.449
19-Jul	0.574	0.461	0.573	0.752	0.425	0.417	0.653	0.734	0.546	0.645	0.863	0.706	0.707	0.729	0.718	0.532	0.462
20-Jul	0.610	0.497	0.610	0.772	0.453	0.440	0.692	0.747	0.590	0.703	0.882	0.727	0.732	0.754	0.741	0.549	0.504
21-Jul	0.653	0.524	0.653	0.797	0.460	0.494	0.729	0.759	0.606	0.729	0.924	0.765	0.784	0.785	0.759	0.589	0.537
22-Jul	0.705	0.582	0.701	0.821	0.487	0.598	0.746	0.774	0.622	0.780	0.940	0.803	0.809	0.806	0.775	0.616	0.560

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Table 21.–Page 2 of 2.

	Cumulative Proportion																
Date	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
23-Jul	0.742	0.649	0.772	0.845	0.542	0.660	0.757	0.793	0.680	0.815	0.942	0.845	0.829	0.826	0.803	0.656	0.590
24-Jul	0.762	0.688	0.831	0.865	0.581	0.692	0.775	0.814	0.714	0.841	0.948	0.871	0.835	0.842	0.814	0.685	0.601
25-Jul	0.801	0.718	0.877	0.883	0.602	0.725	0.812	0.833	0.726	0.860	0.954	0.898	0.888	0.864	0.824	0.694	0.640
26-Jul	0.839	0.753	0.898	0.908	0.624	0.756	0.864	0.847	0.742	0.881	0.960	0.930	0.929	0.888	0.833	0.738	0.672
27-Jul	0.864	0.801	0.912	0.925	0.665	0.778	0.893	0.865	0.769	0.904	0.968	0.950	0.965	0.906	0.836	0.757	0.698
28-Jul	0.880	0.836	0.928	0.942	0.696	0.803	0.910	0.885	0.785	0.933	0.969	0.958	0.987	0.917	0.843	0.781	0.722
29-Jul	0.896	0.866	0.948	0.953	0.727	0.834	0.924	0.901	0.819	0.960	0.982	0.972	1.000	0.932	0.889	0.803	0.736
30-Jul	0.933	0.885	0.960	0.969	0.766	0.883	0.948	0.926	0.853	0.969	0.985	0.983		0.947	0.914	0.845	0.754
31-Jul	0.956	0.916	0.974	0.981	0.827	0.897	0.965	0.944	0.890	0.974	0.993	0.992		0.969	0.930	0.873	0.785
01-Aug	0.973	0.966	0.987	0.990	0.875	0.907	0.985	0.959	0.919	0.979	1.000	1.000		0.978	0.949	0.891	0.820
02-Aug	0.986	0.978	1.000	1.000	0.914	0.915	1.000	0.972	0.934	0.988				0.987	0.965	0.903	0.850
03-Aug	0.993	0.984			0.928	0.939		0.983	0.949	0.992				1.000	0.979	0.923	0.901
04-Aug	1.000	0.987			0.949	0.964		0.991	0.962	1.000					0.992	0.946	0.917
05-Aug		0.992			0.975	0.980		1.000	0.977						1.000	0.956	0.936
06-Aug		0.996			0.983	0.987			0.990							0.972	0.948
07-Aug		1.000			0.989	0.993			1.000							1.000	0.965
08-Aug					1.000	1.000											0.976
09-Aug																	0.989
10-Aug																	1.000
Midpoint:	18-Jul	21-Jul	17-Jul	14-Jul	23-Jul	22-Jul	16-Jun	11-Jul	19-Jul	27-Jul	17-Jul	13-Jul	12-Jul	14-Jul	13-Jul	18-Jul	20-Jul
No. days for 80%	25	21	23	23	24	23	22	27	24	26	16	24	28	28	31	33	34

Average 1984–2005: 25 d Average midpoint (19842005): 17-Jul

Note: Data is available dating back to 1979.

Table 22.–Daily fish wheel catch by species for the Crescent River, 2006.

Date	Hours open	Sockeye Daily	Sockeye Cum	Pink Daily	Pink Cum	Chum Daily	Chum Cum	Coho Daily	Coho Cum	Chinook Daily	Chinook Cum	Dolly Varden Daily	Dolly Varden Cum
24-Jun	10.0	0	0	0	0	0	0	0	0	0	0	0	0
25-Jun	24.0	0	0	0	0	0	0	0	0	0	0	0	0
26-Jun	24.0	0	0	0	0	0	0	0	0	0	0	0	0
27-Jun	24.0	0	0	0	0	0	0	0	0	0	0	0	0
28-Jun	24.0	4	4	0	0	0	0	0	0	0	0	0	0
29-Jun	21.0	14	18	0	0	0	0	0	0	0	0	0	0
30-Jun	24.0	14	32	0	0	0	0	0	0	0	0	0	0
1-Jul	24.0	15	47	0	0	0	0	0	0	0	0	0	0
2-Jul	24.0	26	73	1	1	0	0	0	0	0	0	0	0
3-Jul	21.0	27	100	1	2	0	0	0	0	0	0	0	0
4-Jul	21.0	29	129	1	3	0	0	0	0	0	0	0	0
5-Jul	21.0	41	170	0	3	0	0	0	0	1	1	2	2
6-Jul	21.0	27	197	1	4	0	0	0	0	0	1	1	3
7-Jul	20.0	35	232	1	5	0	0	0	0	0	1	0	3
8-Jul	20.0	17	249	1	6	0	0	0	0	0	1	1	4
9-Jul	20.0	30	279	3	9	0	0	0	0	0	1	3	7
10-Jul	22.0	56	335	0	9	0	0	0	0	0	1	6	13
11-Jul	22.0	55	390	2	11	0	0	0	0	3	4	0	13
12-Jul	22.0	57	447	1	12	0	0	0	0	0	4	4	17
13-Jul	20.0	85	532	5	17	0	0	0	0	0	4	5	22
14-Jul	17.0	40	572	3	20	0	0	0	0	0	4	5	27
15-Jul	20.0	56	628	0	20	0	0	0	0	1	5	2	29
16-Jul	20.0	21	649	1	21	0	0	0	0	0	5	4	33
17-Jul	20.0	19	668	0	21	0	0	0	0	0	5	2	35
18-Jul	20.0	4	672	0	21	0	0	0	0	0	5	0	35
19-Jul	25.0	29	701	3	24	0	0	0	0	0	5	1	36
20-Jul	20.0	34	735	2	26	1	1	0	0	0	5	2	38
21-Jul	20.0	38	773	0	26	0	1	0	0	0	5	0	38
22-Jul	24.0	19	792	1	27	0	1	0	0	0	5	1	39
23-Jul	16.0	36	828	1	28	0	1	0	0	0	5	1	40
24-Jul	13.0	53	881	1	29	1	2	0	0	1	6	2	42
25-Jul	7.0	198	1,079	0	29	0	2	0	0	2	8	2	44
26-Jul	12.0	95	1,174	5	34	4	6	0	0	0	8	2	46
27-Jul	5.0	93	1,267	0	34	4	10	0	0	0	8	2	48
28-Jul	13.0	102	1,369	1	35	1	11	0	0	0	8	1	49
29-Jul	12.0	56	1,425	4	39	0	11	0	0	0	8	2	51
30-Jul	9.0	64	1,489	4	43	0	11	0	0	0	8	1	52
31-Jul	4.0	60	1,549	0	43	0	11	0	0	0	8	0	52
1-Aug	10.0	82	1,631	1	44	1	12	0	0	0	8	0	52
2-Aug	13.0	106	1,737	0	44	1	13	0	0	0	8	0	52
3-Aug	10.0	109	1,846	2	46	1	14	0	0	0	8	0	52
4-Aug	8.0	93	1,939	0	46	0	14	0	0	0	8	0	52
5-Aug	6.0	77	2,016	3	49	4	18	1	1	0	8	0	52
6-Aug	14.0	29	2,045	1	50	1	19	4	5	0	8	0	52
7-Aug	13.0	33	2,078	0	50	1	20	1	6	0	8	0	52
8-Aug	22.0	45	2,123	6	56	6	26	1	7	0	8	1	53
9-Aug	13.0	17	2,140	0	56	10	36	0	7	0	8	0	53
10-Aug	26.0	70	2,210	5	61	12	48	3	10	0	8	1	54
Proportion:			94.0%		2.3%		0.9%		0.3%		0.4%		2.4%
Totals:		Catch:	2,391 fish		Time Operated:		841.0 hrs			CPUE	2.8 fish/hr		
Efficiency:		3.5%	of the total sonar estimate										

Table 23.–Summary of actual fish wheel catches and CPUE, Crescent River, 1993–2006.

		Actual fish wheel catch														CPUE by species				
	Total Hours	Sockeye	%	Pink	%	Chum	%	Coho	%	Chinook	%	DV	%	Total Catch		Sockeye	Pink	Coho	Chinook	Total CPUE
1993	359.0	2,336	78.9%	211	7.1%	269	9.1%	0	0.0%	0	0.0%	146	4.9%	2,962		6.5	0.6	0.0	0.0	8.3
1994	918.5	1,269	59.8%	34	1.6%	256	12.1%	6	0.3%	8	0.4%	548	25.8%	2,121		1.4	0.0	0.0	0.0	2.3
1995	775.0	1,539	81.7%	55	2.9%	126	6.7%	14	0.7%	17	0.9%	132	7.0%	1,883		2.0	0.1	0.0	0.0	2.4
1996	1005.0	1,028	79.2%	7	0.5%	109	8.4%	2	0.2%	6	0.5%	146	11.2%	1,298		1.0	0.0	0.0	0.0	1.3
1997	1031.0	1,575	79.1%	290	14.6%	51	2.6%	0	0.0%	5	0.3%	69	3.5%	1,990		1.5	0.3	0.0	0.0	1.9
1998	1007.0	2,059	93.8%	32	1.5%	65	3.0%	6	0.3%	16	0.7%	18	0.8%	2,196		2.0	0.0	0.0	0.0	2.2
1999	936.0	1,307	53.9%	588	24.3%	58	2.4%	0	0.0%	48	2.0%	423	17.5%	2,424		1.4	0.6	0.0	0.1	2.6
2000	786.0	646	91.9%	9	1.3%	7	1.0%	2	0.3%	4	6.8%	35	5.0%	703		0.8	0.0	0.0	0.0	0.9
2001	860.0	527	83.1%	30	4.7%	23	3.6%	0	0.0%	2	0.6%	52	8.2%	634		0.6	0.0	0.0	0.0	0.7
2002	611.0	1,017	82.1%	10	0.8%	18	1.5%	0	0.0%	8	0.6%	186	15.0%	1,239		1.7	0.0	0.0	0.0	2.0
2003	450.0	2,278	84.1%	62	2.3%	214	7.9%	4	0.1%	25	0.9%	125	4.6%	2,708		5.1	0.1	0.0	0.1	6.0
2004	176.5	1,582	92.6%	30	1.8%	28	1.6%	1	0.6%	11	0.6%	57	3.3%	1,709		9.0	0.2	0.1	0.0	9.7
2005	403.0	2,844	90.2%	157	5.0%	24	0.8%	1	0.0%	27	0.9%	99	3.1%	3,152		7.1	0.4	0.0	0.1	7.8
2006	841.0	2,210	92.4%	61	2.6%	48	2.0%	10	0.4%	8	0.3%	54	2.3%	2,391		2.6	0.1	0.0	0.0	2.8
Mean: (1993–2005)			81%		5%		5%		0%		1%		8%			3.1	0.2	0.0	0.0	3.7
Min: (1993–2005)			54%		1%		1%		0%		0%		1%			0.6	0.0	0.0	0.0	0.7
Max: (1993–2005)			94%		24%		12%		1%		7%		26%			9.0	0.6	0.1	0.1	9.7
Sd.Dev.: (1993–2005)			12%		7%		4%		0%		2%		7%			2.8	0.2	0.0	0.0	3.1

Source: UCI Salmon Escapement Studies (RIRs), 1993–2006.

Note: River channel changed in fall 2003, fish wheel relocated downstream ~100 ft.

Table 24.–Age composition of sockeye salmon sampled from the Crescent River, 1979–2006.

	Percentage Composition by Age Class								
Year	1.1	1.2	1.3	1.4	2.1	2.2	2.3	Other	Size
1979	0.8	30.9	67.4	0.1	0.1	0.7	0.0	0.0	643
1980	0.0	6.6	87.4	1.8	0.0	2.6	1.6	0.0	511
1981	0.0	8.0	34.0	0.1	0.1	10.6	47.2	0.0	1,117
1982	0.0	12.9	79.2	0.1	0.0	0.8	7.0	0.0	711
1983	0.0	10.9	42.3	0.2	0.6	27.4	18.6	0.0	731
1984	0.0	3.5	16.9	0.0	0.0	20.0	59.4	0.2	780
1985	0.2	4.7	31.3	0.0	0.3	20.5	43.0	0.0	594
1986	0.0	6.5	15.8	0.0	0.0	13.0	64.0	0.7	139
1987	0.0	2.6	47.7	0.0	0.0	4.2	45.0	0.5	191
1988	0.0	10.4	44.9	0.5	0.1	17.8	26.1	0.1	741
1989	0.0	0.7	45.4	0.1	0.0	2.0	51.2	0.6	711
1990	0.0	4.1	51.4	0.3	0.2	3.4	40.1	0.5	591
1991	0.0	14.9	50.4	0.3	0.0	16.8	16.5	1.1	357
1992	0.0	2.6	21.7	0.0	0.0	12.4	61.9	1.5	194
1993	0.2	8.8	37.2	0.0	0.9	5.8	46.9	0.2	465
1994	0.2	6.6	49.6	0.4	0.4	12.3	30.5	0.2	547
1995	0.4	9.2	18.4	0.6	0.2	9.4	61.7	0.2	543
1996	0.0	15.3	25.4	0.0	0.0	23.9	34.9	0.5	393
1997	0.0	10.6	56.0	0.0	0.2	6.6	26.6	0.0	640
1998	0.0	9.9	44.5	0.4	0.0	10.1	35.2	0.0	577
1999	0.0	21.4	39.4	0.4	0.1	9.2	29.3	0.2	912
2000	0.0	2.5	72.8	0.0	0.0	2.2	22.4	0.0	357
2001	0.0	15.7	21.0	0.9	0.5	22.7	38.8	0.4	572
2002	0.0	19.1	33.7	0.3	0.1	11.2	35.5	0.1	750
2003	0.4	14.4	51.1	0.0	0.3	13.4	20.3	0.1	1,080
2004	0.0	14.1	31.3	0.2	0.0	16.0	38.0	0.4	489
2005	0.4	13.3	51.6	0.0	0.0	8.7	25.8	0.2	562
2006	0.0	14.3	42.6	0.0	0.0	7.0	36.2	0.0	484
Mean (1979–2005)	0.1	10.4	43.3	0.2	0.2	11.2	34.3	0.3	589

Source: T. Tobias, Commercial Fisheries Technician, ADF&G, Soldotna; personal communication.
Note: Corrections made to table by Tobias, 10/02.

Table 25.–Mean length by age class of sockeye salmon sampled from the Crescent River fish wheel, 1979–2006.

		Male		Female		
Year	Age Class	Average Length[a] (mm)	Sample Size	Average Length (mm)	Sample Size	Ratio Male-Female
1980	1.2	472	47	471	31	1.5:1
1981		522	59	491	33	1.8:1
1982		467	47	487	25	1.9:1
1991		517	36	490	17	2.1:1
1996		477	41	510	19	2.2:1
1997		511	81	495	82	1.0:1
1999		468	136	478	59	2.3:1
2001		462	61	486	29	2.1:1
2002		471	104	481	39	2.7:1
2003		474	90	477	65	1.4:1
2004		460	48	484	21	2.3:1
2005		457	48	475	27	1.8:1
2006		475	35	465	34	1.0:1
Average (1980–2005)		480	67	485	37	1.8:1
1980	1.3	568	167	549	223	0.7:1
1981		576	121	555	172	0.7:1
1982		586	303	556	259	1.2:1
1983		570	111	542	169	0.7:1
1984		574	60	552	72	0.8:1
1985		565	75	551	111	0.7:1
1987		601	54	573	37	1.5:1
1988		581	195	550	138	1.4:1
1989		593	320	561	271	1.2:1
1990		592	184	571	120	1.5:1
1991		560	105	543	75	1.4:1
1992		555	24	535	18	1.3:1
1993		578	81	559	92	0.9:1
1994		563	124	547	147	0.8:1
1995		581	40	555	60	0.7:1
1996		607	50	586	50	1.0:1
1997		574	142	547	119	1.2:1
1998		583	114	556	143	0.8:1
1999		575	164	545	195	0.8:1
2000		598	99	565	161	1.1:1
2001		580	45	561	75	0.6:1
2002		582	103	563	150	0.7:1
2003		577	235	558	317	0.7:1
2004		565	72	544	81	0.9:1
2005		561	109	541	181	0.6:1
2006		555	85	533	121	0.7:1
Average (1980–2005)		578	124	555	137	0.9:1

-continued-

Table 25.–Page 2 of 2.

Year	Age Class	Male Average Length (mm)	Male Sample Size	Female Average Length (mm)	Female Sample Size	Ratio Male-Female
1981	2.2	487	40	519	57	0.7:1
1983		494	93	488	89	1.0:1
1984		499	81	507	75	1.1:1
1985		496	75	490	47	1.6:1
1988		487	72	496	60	1.2:1
1991		515	42	498	18	2.3:1
1992		486	10	492	14	0.7:1
1994		466	54	481	13	4.2:1
1996		497	65	525	29	2.2:1
1998		497	27	515	31	0.9:1
2001		481	87	494	43	2.0:1
2002		492	48	506	36	1.3:1
2003		498	81	496	64	1.3:1
2004		480	47	482	31	1.5:1
2005		491	28	489	21	1.3:1
2006		472	21	472	13	1.6:1
Average (1981–2005)		491	57	499	42	1.4:1
1980	2.3	584	158	554	237	0.7:1
1983		569	43	550	80	0.5:1
1984		581	261	553	202	1.3:1
1985		568	94	551	161	0.6:1
1986		573	44	556	45	1.0:1
1987		595	49	573	37	1.3:1
1988		585	110	556	83	1.3:1
1989		594	72	568	37	1.9:1
1990		601	165	571	72	2.3:1
1991		558	36	537	23	1.6:1
1992		572	58	547	62	0.9:1
1993		585	104	558	114	0.9:1
1994		570	86	549	81	1.1:1
1995		581	154	553	181	0.9:1
1996		604	222	577	72	3.1:1
1997		590	84	569	86	1.0:1
1998		584	85	563	118	0.7:1
1999		575	138	545	129	1.1:1
2000		599	132	564	225	1.1:1
2001		578	91	559	131	0.7:1
2002		589	108	563	158	0.7:1
2003		579	96	559	123	0.8:1
2004		569	84	545	102	0.8:1
2005		557	61	541	84	0.7:1
2006		559	81	555	94	0.9:1
Average (1980–2005)		581	106	557	110	1.0:1
2006 summary (all ages)		531	247	531	315	0.8:1

Source: 1980–1997 source D. Waltemyer, Commercial Fisheries Biologist, ADF&G, Soldotna; personal communication. 1998–2006 source T. Tobias, Commercial Fisheries Technician, ADF&G, Soldotna; personal communication.

Table 26.–Estimated salmon escapement into the Yentna River, 7 July–12 August, 2006.

	Sockeye		Pink		Chum		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7-Jul	388	388	50	50	341	341	865	865	31	31
8-Jul	212	600	99	149	48	389	465	1,330	95	126
9-Jul	197	797	85	234	33	422	474	1,804	31	157
10-Jul	382	1,179	94	328	6	428	494	2,298	30	187
11-Jul	497	1,676	123	451	40	468	926	3,224	6	193
12-Jul	359	2,035	82	533	36	504	602	3,826	22	215
13-Jul	172	2,207	206	739	24	528	494	4,320	18	233
14-Jul	246	2,453	279	1,018	52	580	294	4,614	28	261
15-Jul	76	2,529	480	1,498	158	738	753	5,367	28	289
16-Jul	383	2,912	1,151	2,649	377	1,115	1,692	7,059	23	312
17-Jul	951	3,863	3,789	6,438	359	1,474	2,858	9,917	18	330
18-Jul	4,256	8,119	8,068	14,506	463	1,937	7,517	17,434	6	336
19-Jul	6,740	14,859	10,315	24,821	244	2,181	12,187	29,621	64	400
20-Jul	5,253	20,112	6,926	31,747	756	2,937	7,788	37,409	43	443
21-Jul	2,125	22,237	5,808	37,555	475	3,412	3,247	40,656	27	470
22-Jul	1,645	23,882	9,150	46,705	424	3,836	3,905	44,561	10	480
23-Jul	2,573	26,455	12,949	59,654	566	4,402	6,908	51,469	0	480
24-Jul	2,073	28,528	25,635	85,289	480	4,882	7,045	58,514	10	490
25-Jul	1,653	30,181	17,631	102,920	210	5,092	4,920	63,434	0	490
26-Jul	2,593	32,774	17,051	119,971	220	5,312	5,464	68,898	4	494
27-Jul	3,409	36,183	21,408	141,379	316	5,628	6,909	75,807	12	506
28-Jul	6,424	42,607	26,334	167,713	424	6,052	7,166	82,973	0	506
29-Jul	9,809	52,416	21,656	189,369	368	6,420	10,043	93,016	12	518
30-Jul	6,082	58,498	23,176	212,545	292	6,712	8,678	101,694	0	518
31-Jul	6,374	64,872	19,889	232,434	292	7,004	6,498	108,192	13	531
1-Aug	3,205	68,077	12,296	244,730	292	7,296	5,300	113,492	0	531
2-Aug	3,393	71,470	11,185	255,915	471	7,767	3,081	116,573	0	531
3-Aug	5,215	76,685	10,327	266,242	737	8,504	3,036	119,609	8	539
4-Aug	3,860	80,545	5,071	271,313	683	9,187	2,273	121,882	0	539
5-Aug	2,826	83,371	3,737	275,050	555	9,742	2,109	123,991	0	539
6-Aug	2,015	85,386	2,408	277,458	504	10,246	1,486	125,477	0	539
7-Aug	2,636	88,022	2,375	279,833	529	10,775	1,517	126,994	10	549
8-Aug	2,062	90,084	1,609	281,442	516	11,291	1,200	128,194	8	557
9-Aug	1,179	91,263	700	282,142	255	11,546	1,321	129,515	0	557
10-Aug	635	91,898	413	282,555	103	11,649	852	130,367	0	557
11-Aug	472	92,370	182	282,737	63	11,712	359	130,726	0	557
12-Aug	526	92,896	183	282,920	33	11,745	226	130,952	0	557
Proportion:		17.9%		54.5%		2.3%		25.2%		0.1%
North bank	10,022	1.9%	127,951	24.7%	4,836	0.9%	28,397	5.5%	281	0.1%
South bank	82,874	16.0%	154,969	29.9%	6,909	1.3%	102,555	19.8%	276	0.1%
Total count:	519,070									

Table 27.–Cumulative proportion by date of sockeye salmon counts recorded in the Yentna River, 1990–2006.

	Cumulative Proportion[a]																
Date	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
06-Jul								0.002									
07-Jul	0.002	0.000	0.002	0.001	0.002	0.001	0.001	0.004	0.003	0.000	0.007	0.005	0.029	0.004	0.002	0.007	0.004
08-Jul	0.005	0.001	0.003	0.002	0.004	0.001	0.003	0.006	0.006	0.001	0.013	0.010	0.101	0.007	0.004	0.017	0.006
09-Jul	0.008	0.001	0.005	0.004	0.008	0.002	0.005	0.009	0.010	0.002	0.020	0.015	0.155	0.010	0.006	0.021	0.009
10-Jul	0.010	0.002	0.007	0.005	0.010	0.003	0.007	0.011	0.017	0.005	0.024	0.023	0.187	0.014	0.007	0.028	0.013
11-Jul	0.013	0.002	0.008	0.006	0.013	0.004	0.007	0.013	0.030	0.010	0.033	0.029	0.207	0.018	0.008	0.035	0.018
12-Jul	0.014	0.002	0.010	0.007	0.016	0.005	0.009	0.016	0.043	0.017	0.046	0.041	0.226	0.023	0.010	0.041	0.022
13-Jul	0.016	0.003	0.012	0.008	0.020	0.006	0.011	0.030	0.051	0.024	0.075	0.050	0.236	0.051	0.011	0.057	0.024
14-Jul	0.017	0.003	0.016	0.009	0.022	0.006	0.013	0.087	0.056	0.031	0.124	0.058	0.251	0.126	0.014	0.081	0.026
15-Jul	0.019	0.004	0.022	0.014	0.024	0.007	0.022	0.149	0.059	0.044	0.263	0.068	0.271	0.192	0.092	0.109	0.027
16-Jul	0.020	0.005	0.035	0.134	0.026	0.007	0.131	0.197	0.064	0.057	0.407	0.098	0.328	0.239	0.263	0.131	0.031
17-Jul	0.022	0.005	0.062	0.284	0.029	0.012	0.348	0.229	0.072	0.068	0.490	0.184	0.446	0.261	0.377	0.147	0.042
18-Jul	0.025	0.009	0.086	0.360	0.056	0.022	0.519	0.254	0.094	0.081	0.600	0.270	0.535	0.316	0.457	0.165	0.087
19-Jul	0.105	0.028	0.120	0.382	0.115	0.068	0.614	0.280	0.159	0.108	0.730	0.359	0.570	0.372	0.519	0.205	0.160
20-Jul	0.217	0.100	0.148	0.420	0.167	0.160	0.671	0.316	0.239	0.160	0.849	0.414	0.628	0.489	0.555	0.242	0.217
21-Jul	0.284	0.193	0.184	0.464	0.250	0.251	0.702	0.367	0.304	0.222	0.910	0.423	0.684	0.611	0.573	0.273	0.239
22-Jul	0.327	0.302	0.229	0.513	0.297	0.335	0.745	0.434	0.327	0.319	0.950	0.429	0.734	0.678	0.593	0.303	0.257
23-Jul	0.383	0.378	0.296	0.574	0.333	0.378	0.784	0.492	0.338	0.433	0.969	0.480	0.754	0.706	0.619	0.326	0.285
24-Jul	0.452	0.425	0.373	0.647	0.397	0.426	0.822	0.544	0.357	0.510	0.978	0.563	0.783	0.747	0.657	0.365	0.307
25-Jul	0.505	0.451	0.447	0.709	0.426	0.496	0.856	0.606	0.378	0.567	0.984	0.630	0.807	0.783	0.681	0.430	0.325
26-Jul	0.573	0.505	0.519	0.763	0.517	0.580	0.880	0.668	0.403	0.605	0.989	0.704	0.820	0.813	0.711	0.485	0.353
27-Jul	0.667	0.575	0.606	0.810	0.557	0.678	0.899	0.697	0.426	0.653	0.994	0.803	0.835	0.844	0.722	0.516	0.390
28-Jul	0.734	0.637	0.674	0.831	0.599	0.743	0.913	0.722	0.454	0.702	0.996	0.880	0.855	0.865	0.729	0.532	0.459
29-Jul	0.769	0.674	0.734	0.857	0.662	0.796	0.928	0.743	0.493	0.767	0.996	0.921	0.871	0.881	0.739	0.555	0.564
30-Jul	0.796	0.720	0.794	0.893	0.712	0.832	0.941	0.767	0.560	0.804	0.997	0.944	0.891	0.892	0.756	0.581	0.630
31-Jul	0.825	0.754	0.825	0.927	0.750	0.852	0.943	0.795	0.622	0.848	0.999	0.954	0.906	0.909	0.781	0.628	0.698
01-Aug	0.859	0.779	0.858	0.938	0.788	0.875	0.948	0.826	0.684	0.878	1.000	0.970	0.918	0.941	0.792	0.677	0.733
02-Aug	0.907	0.806	0.881	0.950	0.830	0.897	0.954	0.852	0.762	0.895		0.985	0.931	0.963	0.809	0.718	0.769
03-Aug	0.947	0.850	0.896	0.967	0.862	0.915	0.965	0.870	0.830	0.914		0.991	0.947	0.977	0.826	0.766	0.825
04-Aug	0.962	0.891	0.910	0.985	0.889	0.928	0.981	0.893	0.876	0.934		0.994	0.964	0.983	0.851	0.792	0.867

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Table 27.–Page 2 of 2.

	Cumulative Proportion[a]																
Date	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
05-Aug	0.971	0.930	0.915	0.992	0.919	0.944	0.991	0.911	0.907	0.947		1.000	0.979	0.990	0.882	0.810	0.897
06-Aug	0.978	0.942	0.922	0.996	0.942	0.975	0.996	0.923	0.927	0.955			0.990	1.000	0.910	0.844	0.919
07-Aug	0.985	0.959	0.929	1.000	0.962	0.990	1.000	0.931	0.938	0.963			0.996		0.934	0.895	0.948
08-Aug	0.990	0.975	0.941		0.974	0.992		0.945	0.947	0.971			1.000		0.953	0.917	0.970
09-Aug	0.994	0.986	0.966		0.984	0.996		0.961	0.953	0.978					0.968	0.948	0.982
10-Aug	0.995	0.994	0.984		0.992	1.000		0.982	0.959	0.988					0.981	0.968	0.989
11-Aug	0.998	0.999	1.000		0.996			0.992	0.966	0.994					0.993	0.979	0.994
12-Aug	1.000	1.000			1.000			1.000	0.973	0.997					1.000	0.992	1.000
13-Aug									0.979	0.999						1.000	
14-Aug									0.984	1.000							
15-Aug									0.986								
16-Aug									0.988								
17-Aug									0.991								
18-Aug									0.993								
19-Aug									0.996								
20-Aug									0.998								
21-Aug									1.000								
Midpoint:	25-Jul	26-Jul	26-Jul	22-Jul	26-Jul	26-Jul	18-Jul	24-Jul	30-Jul	24-Jul	18-Jul	24-Jul	18-Jul	21-Jul	19-Jul	27-Jul	29-Jul
Average midpoint (1981–2005): 23 July																	
No. days for 80%[b]	15	17	17	16	19	15	13	22	18	16	8	13	24	17	22	25	19
Average 1981-2005: 17 d																	

Note: Data is available dating back to 1981.

[a] Proportion accrued on last day (1986) represents that portion of the escapement estimated after enumeration operations.

[b] Inclusive dates: date proportion of escapement reached 10% through date proportion of escapement reached 90%.

Table 28.–Summary of apportioned sonar counts by bank for the Yentna River, 1985–2006.

	Escapement count - North bank						Escapement count - South bank						
	Sockeye	Pink	Chum	Coho	Chinook	All salmon	Sockeye	Pink	Chum	Coho	Chinook	All salmon	Both Banks
1985	9,805	31,610	4,053	1,258	110	46,836	97,319	89,380	8,039	7,923	294	202,955	249,791
1986	9,825	235,458	13,681	6,061	535	265,560	76,691	438,444	42,975	17,396	579	576,085	841,645
1987	6,444	12,550	4,422	778	206	24,400	59,608	71,549	13,436	5,499	201	150,293	174,693
1988	3,290	27,161	11,222	1,126	148	42,947	49,057	109,873	37,835	11,044	297	208,106	251,053
1989	11,649	41,420	30,160	6,193	142	89,564	84,620	132,278	33,219	19,502	251	269,870	359,434
1990	3,226	22,569	4,655	1,381	120	31,951	137,064	222,000	28,911	19,965	487	408,427	440,378
1991	8,298	19,191	8,276	8,999	96	44,860	101,334	56,186	13,379	48,276	108	219,283	264,143
1992	3,518	33,455	6,625	2,556	37	46,191	62,556	205,907	23,436	26,516	70	318,485	364,676
1993	5,666	45,620	6,352	4,878	92	62,608	136,028	181,551	21,669	32,874	271	372,393	435,001
1994	9,804	16,631	4,021	2,604	66	33,126	118,228	62,547	14,950	22,569	160	218,454	251,580
1995	7,563	21,742	7,665	5,447	176	42,593	114,557	85,763	24,953	69,849	167	295,289	337,882
1996	18,994	39,206	7,575	10,656	199	76,630	71,666	59,030	13,481	24,764	146	169,087	245,717
1997	17,835	12,002	4,076	2,334	126	36,373	139,987	16,958	8,595	11,336	171	177,047	213,420
1998	61,416	77,094	4,673	8,322	258	151,763	58,207	78,099	5,539	16,447	247	158,539	310,302
1999	25,366	23,518	4,560	9,889	286	63,619	73,663	38,876	3,353	28,044	767	144,703	208,322
2000	29,458	103,834	4,065	9,391	205	146,953	103,636	139,282	2,958	31,396	462	277,734	424,687
2001	31,360	129,961	14,390	12,353	346	188,410	52,172	87,162	9,178	34,724	403	183,639	372,049
2002	19,511	190,644	13,654	16,713	891	241,413	59,080	224,014	11,663	58,377	367	353,501	594,914
2003	52,811	63,118	11,504	8,380	218	136,031	128,002	104,266	18,845	36,842	249	288,204	424,235
2004	4,540	39,550	3,403	14,644	431	62,568	66,741	180,796	13,012	77,699	1,327	339,575	402,143
2005	6,395	22,157	3,065	16,777	123	48,517	30,526	24,276	6,688	60,112	105	121,707	170,224
2006	10,022	127,951	4,836	28,397	281	171,487	82,874	154,969	6,909	102,555	276	347,583	519,070
Mean (1985-2005)	16,513	57,547	8,195	7,178	229	89,663	86,702	124,202	16,958	31,484	339	259,685	349,347
% by Species (2006)	5.8%	74.6%	2.8%	16.6%	0.2%	100.0%	23.8%	44.6%	2.0%	29.5%	0.1%	100.0%	
Proportion (1985-2005)	18.4%	64.2%	9.1%	8.0%	0.3%	100.0%	33.4%	47.8%	6.5%	12.1%	0.1%	100.0%	
Minimum (all)	3,226	12,002	3,065	778	37	24,400	30,526	16,958	2,958	5,499	70	121,707	170,224
Maximum (all)	61,416	235,458	30,160	28,397	891	265,560	139,987	438,444	42,975	102,555	1,327	576,085	841,645
Std. Dev. (all)	15,658	60,670	6,127	6,720	190	71,435	31,973	93,514	11,255	25,082	278	108,661	155,907

Table 29.–Daily fish wheel catch for the north bank of the Yentna River, 2006.

		Sockeye		Pink		Chum		Coho		Chinook		Other[a]	
Date	Hours Open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7-Jul	9.0	9	9	1	1	5	5	16	16	1	1	2	2
8-Jul	11.0	5	14	6	7	1	6	26	42	4	5	0	2
9-Jul	15.9	3	17	8	15	3	9	37	79	2	7	3	5
10-Jul	15.3	17	34	4	19	0	9	32	111	2	9	2	7
11-Jul	17.7	11	45	11	30	2	11	55	166	0	9	1	8
12-Jul	18.0	8	53	7	37	4	15	36	202	3	12	6	14
13-Jul	17.7	5	58	22	59	1	16	31	233	1	13	4	18
14-Jul	15.8	6	64	21	80	0	16	15	248	3	16	3	21
15-Jul	12.8	2	66	18	98	1	17	24	272	0	16	1	22
16-Jul	14.7	1	67	96	194	13	30	90	362	0	16	5	27
17-Jul	17.0	2	69	424	618	23	53	126	488	0	16	6	33
18-Jul	16.2	15	84	516	1,134	31	84	126	614	1	17	3	36
19-Jul	14.6	31	115	504	1,638	11	95	134	748	2	19	18	54
20-Jul	13.9	49	164	163	1,801	20	115	93	841	2	21	10	64
21-Jul	14.6	42	206	300	2,101	22	137	84	925	1	22	11	75
22-Jul	14.9	22	228	638	2,739	31	168	91	1,016	0	22	8	83
23-Jul	16.8	23	251	1,009	3,748	37	205	175	1,191	0	22	5	88
24-Jul	16.6	29	280	2,096	5,844	33	238	235	1,426	0	22	6	94
25-Jul	16.4	32	312	2,137	7,981	17	255	349	1,775	0	22	0	94
26-Jul	13.4	29	341	1,605	9,586	11	266	202	1,977	1	23	2	96
27-Jul	15.9	29	370	992	10,578	16	282	96	2,073	0	23	3	99
28-Jul	14.0	88	458	1,206	11,784	19	301	176	2,249	0	23	5	104
29-Jul	16.6	162	620	1,370	13,154	15	316	347	2,596	0	23	4	108
30-Jul	14.5	71	691	1,669	14,823	11	327	290	2,886	0	23	8	116
31-Jul	15.8	30	721	943	15,766	11	338	115	3,001	0	23	3	119
1-Aug	12.7	40	761	527	16,293	2	340	94	3,095	0	23	5	124
2-Aug	15.0	60	821	838	17,131	33	373	124	3,219	0	23	8	132
3-Aug	14.1	51	872	613	17,744	44	417	89	3,308	1	24	4	136
4-Aug	16.7	52	924	437	18,181	26	443	104	3,412	0	24	1	137
5-Aug	16.8	74	998	457	18,638	56	499	113	3,525	0	24	5	142
6-Aug	15.8	37	1,035	193	18,831	27	526	82	3,607	0	24	6	148
7-Aug	14.9	41	1,076	163	18,994	36	562	65	3,672	1	25	7	155
8-Aug	14.4	78	1,154	138	19,132	42	604	80	3,752	1	26	4	159
9-Aug	15.6	29	1,183	59	19,191	19	623	97	3,849	0	26	6	165
10-Aug	19.5	25	1,208	49	19,240	7	630	84	3,933	0	26	4	169
11-Aug	18.1	15	1,223	17	19,257	7	637	30	3,963	0	26	2	171
12-Aug	15.3	42	1,265	32	19,289	5	642	46	4,009	0	26	3	174
13-Aug	15.9	62	1,327	60	19,349	24	666	104	4,113	1	27	2	176
14-Aug	15.7	32	1,359	49	19,398	5	671	62	4,175	0	27	0	176
15-Aug	12.5	29	1,388	33	19,431	3	674	15	4,190	0	27	0	176
16-Aug	0.0	ND	1,388	ND	19,431	ND	674	ND	4,190	ND	27	ND	176
17-Aug	14.8	41	1,429	29	19,460	26	700	65	4,255	0	27	6	182
18-Aug	13.9	43	1,472	20	19,480	5	705	40	4,295	0	27	4	186
		Proportion:	5.7%		75.0%		2.7%		16.5%		0.1%		
		Catch (salmon):	25,979		Time Operated:		640.8 Hours			CPUE:	40.5 fish/hr		
		Efficiency:	15.1% of north bank sonar count										

[a] Other fish wheel catch; round whitefish, and long-nosed sucker.

Table 30.–Daily fish wheel catch for the south bank of the Yentna River, 2006.

		Sockeye		Pink		Chum		Coho		Chinook		Other[a]	
Date	Hours Open	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7-Jul	7.2	6	6	1	1	10	10	20	20	0	0	0	0
8-Jul	11.2	25	31	3	4	6	16	20	40	7	7	0	0
9-Jul	15.7	39	70	7	11	3	19	50	90	4	11	0	0
10-Jul	15.0	39	109	10	21	1	20	33	123	2	13	0	0
11-Jul	17.7	66	175	5	26	4	24	76	199	1	14	0	0
12-Jul	15.4	39	214	4	30	1	25	44	243	0	14	1	1
13-Jul	17.8	25	239	10	40	3	28	51	294	2	16	1	2
14-Jul	15.7	31	270	19	59	8	36	28	322	1	17	1	3
15-Jul	13.9	6	276	32	91	16	52	55	377	3	20	5	8
16-Jul	14.6	50	326	71	162	39	91	148	525	3	23	0	8
17-Jul	16.7	104	430	277	439	32	123	273	798	2	25	0	8
18-Jul	14.9	237	667	270	709	15	138	382	1,180	0	25	6	14
19-Jul	15.3	299	966	237	946	6	144	503	1,683	2	27	1	15
20-Jul	14.1	166	1,132	136	1,082	13	157	229	1,912	0	27	1	16
21-Jul	13.6	113	1,245	144	1,226	14	171	155	2,067	1	28	0	16
22-Jul	13.8	150	1,395	475	1,701	21	192	329	2,396	1	29	2	18
23-Jul	16.1	216	1,611	567	2,268	29	221	514	2,910	0	29	0	18
24-Jul	16.0	198	1,809	1,265	3,533	28	249	580	3,490	1	30	2	20
25-Jul	16.0	268	2,077	1,736	5,269	26	275	639	4,129	0	30	0	20
26-Jul	13.7	358	2,435	1,457	6,726	25	300	665	4,794	0	30	0	20
27-Jul	15.6	254	2,689	1,014	7,740	14	314	488	5,282	1	31	0	20
28-Jul	15.3	450	3,139	1,031	8,771	17	331	427	5,709	0	31	0	20
29-Jul	15.5	735	3,874	999	9,770	22	353	641	6,350	1	32	0	20
30-Jul	14.6	699	4,573	1,838	11,608	29	382	886	7,236	0	32	0	20
31-Jul	14.5	468	5,041	1,067	12,675	17	399	438	7,674	1	33	1	21
1-Aug	14.2	177	5,218	481	13,156	17	416	278	7,952	0	33	0	21
2-Aug	14.3	228	5,446	475	13,631	21	437	177	8,129	0	33	0	21
3-Aug	15.2	366	5,812	422	14,053	30	467	178	8,307	0	33	0	21
4-Aug	16.1	406	6,218	317	14,370	62	529	196	8,503	0	33	0	21
5-Aug	16.0	374	6,592	214	14,584	41	570	234	8,737	0	33	0	21
6-Aug	16.0	219	6,811	138	14,722	40	610	116	8,853	0	33	0	21
7-Aug	13.4	283	7,094	97	14,819	22	632	111	8,964	0	33	0	21
8-Aug	14.2	228	7,322	85	14,904	30	662	91	9,055	0	33	2	23
9-Aug	13.6	151	7,473	45	14,949	19	681	100	9,155	0	33	2	25
10-Aug	19.2	141	7,614	38	14,987	18	699	106	9,261	0	33	0	25
11-Aug	16.8	123	7,737	35	15,022	11	710	73	9,334	0	33	0	25
12-Aug	13.9	217	7,954	42	15,064	9	719	40	9,374	0	33	0	25
13-Aug	23.7	228	8,182	66	15,130	32	751	143	9,517	0	33	1	26
14-Aug	15.6	380	8,562	52	15,182	24	775	70	9,587	1	34	0	26
15-Aug	16.3	292	8,854	39	15,221	15	790	31	9,618	0	34	1	27
16-Aug	0.0	ND	8,854	ND	15,221	ND	790	ND	9,618	ND	34	ND	27
17-Aug	14.7	255	9,109	31	15,252	29	819	67	9,685	0	34	0	27
18-Aug	13.3	168	9,277	9	15,261	43	862	62	9,747	0	34	0	27
	Proportion:		26%		43%		2%		28%		0%		

Catch (salmon): 35,181 Time operated: 636.4 Hours CPUE: 55.3 fish/hr

Efficiency: 9.9% of the south bank sonar estimate

[a] Other fish wheel catch; round whitefish, and long-nosed sucker.

Table 31.–Summary of actual fish wheel catches and CPUE for the north bank of the Yentna River, 1985–2006.

	Total	Actual fish wheel catch - North bank										Total	CPUE by species					Total
	Hours	Sockeye	%	Pink	%	Chum	%	Coho	%	Chinook	%	Catch	Sockeye	Pink	Chum	Coho	Chinook	CPUE
1985	702.5	1099	17.5%	4415	70.4%	502	8.0%	241	3.8%	14	0.2%	6,271	1.6	6.3	0.6	0.3	0.0	8.9
1986	573.2	219	4.9%	3,571	80.6%	362	8.2%	194	4.4%	83	1.9%	4,429	0.4	6.2	0.9	0.3	0.1	7.7
1987	936.4	1,393	25.5%	2,983	54.5%	876	16.0%	172	3.1%	47	0.9%	5,471	1.5	3.2	2.8	0.2	0.1	5.8
1988	517.2	981	16.6%	3,320	56.2%	1,433	24.2%	137	2.3%	39	0.7%	5,910	1.9	6.4	4.6	0.3	0.1	11.4
1989	790.2	2,016	13.8%	8,099	55.3%	3,669	25.1%	803	5.5%	46	0.3%	14,633	2.6	10.2	2.3	1.0	0.1	18.5
1990	517.6	867	11.5%	5,246	69.5%	1,165	15.4%	248	3.3%	27	0.4%	7,553	1.7	10.1	1.8	0.5	0.1	14.6
1991	530.1	768	16.2%	2,071	43.8%	946	20.0%	932	19.7%	15	0.3%	4,732	1.4	3.9	2.3	1.8	0.0	8.9
1992	582.6	693	8.2%	5,867	69.7%	1,345	16.0%	499	5.9%	13	0.2%	8,417	1.2	10.1	1.4	0.9	0.0	14.4
1993	399.1	931	13.9%	4,789	71.3%	549	8.2%	432	6.4%	17	0.3%	6,718	2.3	12.0	1.5	1.1	0.0	16.8
1994	492.1	1,374	28.6%	2,309	48.0%	734	15.3%	379	7.9%	10	0.2%	4,806	2.8	4.7	1.6	0.8	0.0	9.8
1995	511.8	815	17.8%	2,343	51.0%	826	18.0%	587	12.8%	19	0.4%	4,590	1.6	4.6	0.9	1.1	0.0	9.0
1996	472.4	708	16.0%	2,815	63.6%	409	9.2%	481	10.9%	13	0.3%	4,426	1.5	6.0	0.6	1.0	0.0	9.4
1997	849.5	2,294	48.1%	1,610	33.8%	551	11.6%	301	6.3%	14	0.3%	4,770	2.7	1.9	1.0	0.4	0.0	5.6
1998	1094.1	12,067	37.7%	17,057	53.3%	1,102	3.4%	1,712	5.4%	54	0.2%	31,992	11.0	15.6	1.0	1.6	0.0	29.2
1999	206.0	1,004	33.5%	1,301	43.4%	211	7.0%	464	15.5%	16	0.5%	2,996	4.9	6.3	1.2	2.3	0.1	14.5
2000	133.9	904	14.8%	4,710	76.9%	155	2.5%	345	5.6%	9	0.1%	6,123	6.8	35.2	3.5	2.6	0.1	45.7
2001	145.1	898	13.6%	4,705	71.4%	501	7.6%	477	7.2%	13	0.2%	6,594	6.2	32.4	3.2	3.3	0.1	45.4
2002	161.7	564	6.3%	7,286	80.9%	516	5.7%	618	6.9%	17	0.2%	9,001	3.5	45.1	3.4	3.8	0.1	55.7
2003	179.5	2,331	34.5%	3,367	49.9%	602	8.9%	442	6.5%	12	0.2%	6,754	13.0	18.8	1.4	2.5	0.1	37.6
2004	243.3	394	5.8%	4,613	68.1%	338	5.0%	1,406	20.8%	22	0.3%	6,773	1.6	19.0	0.8	5.8	0.1	27.8
2005	314.3	582	13.2%	2,131	48.5%	250	5.7%	1,420	32.3%	13	0.3%	4,396	1.9	6.8	0.8	4.5	0.0	14.0
2006	640.8	1,472	5.7%	19,480	75.0%	705	2.7%	4,295	16.5%	27	0.1%	25,979	2.3	30.4	1.1	6.7	0.0	40.5
Mean: (1985–2005)			19.0%		60.0%		11.5%		9.2%		0.4%		3.4	12.6	1.8	1.7	0.1	19.6
Minimum: (1985–2005)			4.9%		33.8%		2.5%		2.3%		0.1%		0.4	1.9	0.6	0.2	0.0	5.6
Maximum (1985–2005)			48.1%		80.9%		25.1%		32.3%		1.9%		13.0	45.1	4.6	5.8	0.1	55.7
Std.dev.: (1985–2005)			11.5%		13.4%		6.6%		7.4%		0.4%		3.3	11.6	1.1	1.5	0.0	14.8

Source: UCI Salmon Escapement Studies (Regional Information Reports) 1985–2004; Westerman and Willette 2007.

Note: Weir modification made in 1997.

Table 32.–Summary of actual fish wheel catches and CPUE for the south bank of the Yentna River, 1985–2006.

	Total	Actual fish wheel catch - South bank										Total	CPUE by species					Total
	Hours	Sockeye	%	Pink	%	Chum	%	Coho	%	Chinook	%	Catch	Sockeye	Pink	Chum	Coho	Chinook	CPUE
1985	883.1	5,616	35.7%	8,855	56.2%	521	3.3%	724	4.6%	35	0.2%	15,751	6.4	10.0	0.6	0.8	0.0	17.8
1986	608.8	973	13.3%	5,422	73.9%	589	8.0%	327	4.5%	28	0.4%	7,339	1.6	8.9	1.0	0.5	0.0	12.1
1987	824.2	2,216	32.5%	3,333	48.8%	966	14.1%	293	4.3%	20	0.3%	6,828	2.7	4.0	1.2	0.4	0.0	8.3
1988	529.4	2,457	26.9%	4,536	49.6%	1,635	17.9%	494	5.4%	20	0.2%	9,142	4.6	8.6	3.1	0.9	0.0	17.3
1989	818.1	3,856	27.7%	7,169	51.5%	1,804	12.9%	1,081	7.8%	23	0.2%	13,932	4.7	8.8	2.2	1.3	0.0	17.0
1990	542.2	4,201	32.2%	7,058	54.1%	1,129	8.6%	657	5.0%	11	0.1%	13,056	7.7	13.0	2.1	1.2	0.0	24.1
1991	445.0	5,368	42.7%	3,368	26.8%	877	7.0%	2,936	23.4%	10	0.1%	12,559	12.1	7.6	2.0	6.6	0.0	28.2
1992	612.9	3,887	22.2%	9,966	56.8%	1,940	11.1%	1,737	9.9%	9	0.1%	17,539	6.3	16.3	3.2	2.8	0.0	28.6
1993	446.5	8,561	34.7%	12,416	50.3%	1,508	6.1%	2,178	8.8%	25	0.1%	24,688	19.2	27.8	3.4	4.9	0.1	55.3
1994	651.3	8,251	55.6%	3,763	25.4%	1,260	8.5%	1,553	10.5%	12	0.1%	14,839	12.7	5.8	1.9	2.4	0.0	22.8
1995	456.3	2,737	36.3%	2,335	31.0%	691	9.2%	1,766	23.4%	11	0.1%	7,540	6.0	5.1	1.5	3.9	0.0	16.5
1996	306.5	2,498	28.7%	4,335	49.7%	752	8.6%	1,119	12.8%	15	0.2%	8,719	8.1	14.1	2.5	3.7	0.0	28.4
1997	318.2	5,431	79.5%	672	9.8%	317	4.6%	397	5.8%	18	0.3%	6,835	17.1	2.1	1.0	1.2	0.1	21.5
1998	1114.4	14,394	34.5%	21,258	51.0%	1,667	4.0%	4,326	10.4%	50	0.1%	41,695	12.9	19.1	1.5	3.9	0.0	37.4
1999	206.3	3,790	42.4%	3,213	35.9%	223	2.5%	1,689	18.9%	34	0.4%	8,949	18.4	15.6	1.1	8.2	0.2	43.4
2000	125.4	2,611	19.6%	9,494	71.4%	123	0.9%	1,051	7.9%	15	0.1%	13,294	20.8	75.7	1.0	8.4	0.1	106.0
2001	157.7	2,527	27.7%	4,369	47.8%	460	5.0%	1,755	19.2%	20	0.2%	9,131	16.0	27.7	2.9	11.1	0.1	57.9
2002	140.7	2,716	14.8%	11,590	63.3%	712	3.9%	3,274	17.9%	16	0.1%	18,308	19.3	82.4	5.1	23.3	0.1	130.2
2003	146.7	6,095	44.9%	4,927	36.3%	869	6.4%	1,659	12.2%	15	0.1%	13,565	41.5	33.6	5.9	11.3	0.1	92.5
2004	203.0	2,712	17.4%	8,147	52.3%	835	5.4%	3,832	24.6%	43	0.3%	15,569	13.4	40.1	4.1	18.9	0.2	76.7
2005	277.6	2,588	26.2%	2,280	23.1%	571	5.8%	4,433	44.9%	12	0.1%	9,884	9.3	8.2	2.1	16.0	0.0	35.6
2006	636.4	9,277	26.4%	15,261	43.4%	862	2.5%	9,747	27.7%	34	0.1%	35,181	14.6	24.0	1.4	15.3	0.1	55.3
Mean:			33.1%		46.0%		7.3%		13.4%		0.2%		12.4	20.7	2.3	6.3	0.1	41.8
Minimum:			13.3%		9.8%		0.9%		4.3%		0.1%		1.6	2.1	0.6	0.4	0.0	8.3
Maximum:			79.5%		73.9%		17.9%		44.9%		0.4%		41.5	82.4	5.9	23.3	0.2	130.2
Std.dev.:			14.9%		16.1%		4.1%		9.9%		0.1%		8.9	21.9	1.4	6.5	0.1	33.4

Source: UCI Salmon Escapement Studies (Regional Information Reports) 1985–2004; Westerman and Willette 2007.

Note: Weir modification made in 1997; fish wheel moved in present location in 1996.

Table 33.–Proportion of fish wheel catch compared to daily sonar counts, by bank, on the Yentna River, 2006.

	North Bank			South Bank		
Date	Adjusted Fish Wheel Catch	Sonar Count	Proportion Fish wheel Catch to Daily Sonar Count	Adjusted Fish Wheel Catch	Sonar Count	Proportion Fish wheel Catch to Daily Sonar Count
7-Jul	32	979	3%	37	696	5%
8-Jul	42	564	7%	61	355	17%
9-Jul	53	353	15%	102	467	22%
10-Jul	55	530	10%	87	476	18%
11-Jul	79	659	12%	152	933	16%
12-Jul	58	422	14%	88	679	13%
13-Jul	60	412	15%	91	502	18%
14-Jul	45	335	13%	87	564	15%
15-Jul	45	464	10%	112	1,031	11%
16-Jul	200	1,284	16%	311	2,342	13%
17-Jul	575	1,726	33%	748	6,249	12%
18-Jul	689	4,448	15%	1,075	15,862	7%
19-Jul	682	7,073	10%	935	22,477	4%
20-Jul	327	6,984	5%	544	13,782	4%
21-Jul	449	5,647	8%	427	6,035	7%
22-Jul	782	5,418	14%	975	9,716	10%
23-Jul	1,244	8,124	15%	1,326	14,872	9%
24-Jul	2,731	15,519	18%	2,072	19,724	11%
25-Jul	2,535	9,095	28%	2,669	15,319	17%
26-Jul	1,848	8,077	23%	2,500	17,255	14%
27-Jul	1,133	10,083	11%	1,755	21,971	8%
28-Jul	1,489	17,223	9%	1,925	23,125	8%
29-Jul	1,582	13,713	12%	2,504	28,175	9%
30-Jul	1,866	9,891	19%	3,176	28,337	11%
31-Jul	1,099	6,734	16%	1,996	26,332	8%
1-Aug	663	5,686	12%	854	15,407	6%
2-Aug	1,055	6,089	17%	901	12,041	7%
3-Aug	798	6,212	13%	998	13,111	8%
4-Aug	619	3,212	19%	989	8,675	11%
5-Aug	700	3,581	20%	863	5,646	15%
6-Aug	339	2,274	15%	513	4,139	12%
7-Aug	306	3,022	10%	513	4,045	13%
8-Aug	339	2,615	13%	434	2,780	16%
9-Aug	204	1,415	14%	252	2,040	12%
10-Aug	129	948	14%	303	1,055	29%
11-Aug	69	255	27%	242	821	29%
12-Aug	117	421	28%	312	547	57%
13-Aug	251	ND	ND	469	ND	ND
14-Aug	148	ND	ND	527	ND	ND
15-Aug	80	ND	ND	377	ND	ND
16-Aug	0	ND	ND	0	ND	ND
17-Aug	161	ND	ND	382	ND	ND
18-Aug	108	ND	ND	282	ND	ND
		Mean:	15%			14%
		Minimum:	3%			4%
		Maximum:	33%			57%
		Std. Dev.	6%			9%

Table 34.–Age composition of sockeye salmon sampled from fish wheels on the Yentna River, 1986–2006.

	Percentage Composition by Age Class [a, b]											
Year	0.2	0.3	1.1	1.2	1.3	1.4	2.1	2.2	2.3	2.4	Other	Sample Size
1986	1.0	1.1	0.0	21.2	65.3	0.2	0.3	4.7	6.2	0.0	0.0	688
1987	1.3	2.4	0.9	23.3	50.6	1.0	0.0	8.6	11.7	0.0	0.0	1,089
1988	2.7	2.4	0.4	33.5	41.9	0.2	1.7	6.5	10.4	0.1	0.0	1,727
1989	4.1	6.2	0.7	20.3	53.7	0.3	0.5	5.5	8.6	0.0	0.0	1,602
1990	0.8	2.4	0.3	29.9	47.6	0.7	0.1	9.8	8.2	0.1	0.2	1,916
1991	2.1	10.6	0.1	25.2	43.6	0.1	0.1	7.1	11.0	0.1	0.1	1,509
1992	1.6	0.7	1.0	31.4	29.2	0.1	0.4	17.1	18.2	0.1	0.4	1,451
1993	1.0	4.6	0.1	32.1	35.5	0.0	0.4	11.7	14.5	0.1	0.0	1,390
1994	1.3	3.9	0.6	23.2	43.2	0.2	0.0	9.7	17.6	0.0	0.3	637
1995	2.2	5.1	0.8	19.7	51.3	0.4	0.2	8.5	11.6	0.0	0.2	507
1996	3.2	3.2	0.4	25.5	43.8	0.0	0.4	9.4	14.0	0.0	0.0	466
1997	1.1	10.5	0.1	32.4	43.7	0.1	0.1	4.7	7.2	0.0	0.1	751
1998	0.7	5.7	0.3	15.7	62.7	0.3	0.0	4.0	10.5	0.0	0.0	1,500
1999	3.6	3.4	0.0	23.4	52.0	0.9	0.0	8.6	8.1	0.0	0.0	444
2000	0.0	5.9	0.0	8.6	61.5	0.2	0.0	3.3	20.2	0.2	0.0	546
2001	0.0	3.4	0.8	21.3	47.8	0.0	0.4	8.4	17.7	0.0	0.2	475
2002	1.7	2.0	0.7	28.8	51.0	0.0	0.0	5.5	10.2	0.0	0.2	459
2003	0.5	2.5	0.1	16.1	63.6	0.4	0.5	6.0	10.3	0.0	0.0	812
2004	0.6	1.1	0.7	17.0	50.0	0.6	0.0	8.3	21.7	0.0	0.0	460
2005	0.5	4.0	1.7	22.7	54.4	0.1	0.1	6.2	10.1	0.0	0.2	823
2006	2.2	3.1	0.5	44.0	39.3	0.2	0.0	5.0	5.8	0.0	0.0	605
Mean (1986-05)	1.6	4.1	0.4	23.6	49.4	0.3	0.3	7.8	12.5	0.0	0.1	970

Source: T. Tobias, Commercial Fisheries Technician, ADF&G, Soldotna; personal communication.

[a] Percentages weighted by total numbers in the escapement: 1979–1981, 1986–2002.

[b] Corrections to table made by Tobias, 10/02.

Table 35.–Length composition of the major age classes of sockeye salmon sampled from the Yentna River fish wheels, 1986–2006.

		Male		Female		
Year	Age Class	Average Length (mm)	Sample Size	Average Length (mm)	Sample Size	Ratio Male-Female
1986	1.2	455	104	472	52	2.0:1
1987		484	158	477	156	1.0:1
1988		461	408	486	170	2.4:1
1989		463	246	485	122	2.0:1
1990		446	305	446	238	1.3:1
1991		460	253	484	130	2.0:1
1992		443	360	469	115	3.1:1
1993		465	279	494	167	1.7:1
1994		468	107	484	41	2.6:1
1995		460	58	472	42	1.4:1
1996		463	78	469	41	1.9:0
1997		479	110	479	133	0.8:1
1998		485	104	486	132	0.8:1
1999		469	56	484	48	1.2:1
2001		477	53	490	48	1.1:1
2002		486	76	495	56	1.4:1
2003		473	77	486	54	1.4:1
2004		466	53	490	25	2.1:1
2005		456	125	466	62	2.0:2
2006		485	134	487	132	1.0:1
Average (1986–2005)		470	79	481	58	1.4:1
1986	1.3	579	172	563	216	0.8:1
1987		591	246	565	222	1.1:1
1988		580	365	552	359	1.0:1
1989		575	390	553	474	0.8:1
1990		573	400	552	526	0.7:1
1991		562	301	542	356	0.9:1
1992		546	188	543	242	0.8:1
1993		561	288	549	266	0.9:1
1994		596	133	561	142	0.9:1
1995		568	124	545	136	0.9:1
1996		589	107	568	97	1.1:1
1997		585	155	555	173	0.9:1
1998		562	453	538	487	0.9:1
1999		581	135	553	96	1.4:1
2000		600	180	568	156	1.2:1
2001		586	111	555	116	1.0:1
2002		596	113	561	121	0.9:1
2003		576	270	548	246	1.1:1
2004		574	93	553	137	0.7:1
2005		568	222	546	226	1.0:1
2006		567	99	554	139	0.7:1
Average (1986–2005)		579	178	552	184	1.0:1

-continued-

Table 35.–Page 2 of 2.

Year	Age Class	Male Average Length (mm)	Male Sample Size	Female Average Length (mm)	Female Sample Size	Ratio Male-Female
1992	2.2	451	181	471	53	3.4:1
1993		476	93	487	69	1.3:1
2003		472	23	486	26	0.9:1
2004		474	24	486	14	1.7:1
2005		462	29	488	22	1.3:1
2006		500	17	490	13	1.3:1
Average (1992–2005)		467	70	484	37	2.0:1
1986	2.3	588	25	555	44	0.6:1
1987		583	62	566	52	1.2:1
1988		585	92	554	87	1.1:1
1990		574	73	542	96	0.8:1
1991		561	78	536	86	0.9:1
1992		564	123	538	126	1.0:1
1993		562	74	544	128	0.6:1
1994		600	56	561	56	1.0:1
1995		578	25	544	34	0.7:1
1996		585	31	558	34	0.9:1
1998		558	82	534	76	1.1:1
2000		597	55	563	55	1.0:1
2001		575	34	552	50	0.7:1
2002		589	21	551	26	0.8:1
2003		562	50	543	34	1.5:1
2004		579	41	551	59	0.7:1
2005		557	32	537	51	0.6:1
2006		562	13	553	22	0.6:1
Average (1986–2005)		575	40	549	46	0.9:1
2006 summary (all ages)		521 mm	443	527 mm	380	1.2:1

Source: 1980–1997 source D. Waltemyer, Commercial Fisheries Biologist, ADF&G, Soldotna; personal communication. 1998–2006 source T. Tobias, Commercial Fisheries Technician, ADF&G, Soldotna; personal communication.

Table 36.–Index counts of various northern district streams/rivers for 2006.

	Number of Fish Observed or Estimated				
	Sockeye	Pink	Chum	Coho	Chinook
Alexander Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	885
Answer Creek (foot survey, ADF&G-SF)	ND	ND	ND	270	ND
Birch Creek (foot survey, ADF&G-SF)	ND	ND	ND	883	ND
Bodenburg Creek (foot survey, ADF&G-SF)	367	ND	6	ND	ND
Byers Lake (weir, CIAA)	3,074	ND	ND	ND	ND
Cache Creek (aerial survey, ADF&G-CF)	ND	ND	ND	ND	1,230
Chelatna Lake (weir, CIAA)	13,266	ND	ND	ND	ND
Chuitna River (aerial survey, ADF&G-CF)	ND	ND	ND	ND	1,911
Chulitna River (aerial survey, ADF&G-SF)	ND	ND	ND	ND	2,862
Clear Creek (aerial survey, ADF&G-CF)	ND	ND	ND	ND	1,520
Coal Creek (aerial survey, ADF&G-CF)	ND	ND	ND	ND	996
Cottonwood Creek (foot survey, ADF&G-SF)	ND	ND	ND	912	ND
Deception Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	940
Deshka River (weir, ADF&G-SF)	ND	ND	ND	59,419	31,150
Deshka River (aerial survey, ADF&G-SF)	ND	ND	ND	ND	6,499
Fish Creek (weir, ADF&G-SF)	32,562	ND	ND	4,967	ND
Goose Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	306
Hewitt Lake (weir, CIAA)	2,507	ND	ND	ND	ND
Indian River (aerial survey, ADF&G-SF)	ND	ND	ND	ND	718
Jim Creek (foot survey, ADF&G-SF)	ND	ND	ND	4,139	ND
Judd Lake (weir, CIAA)	40,630	ND	ND	ND	ND
Kashwitna River (aerial survey, ADF&G-CF)	ND	ND	ND	ND	613
Lake Creek (aerial survey, ADF&G-CF)	ND	ND	ND	ND	5,300
Larson L (weir CIAA)	56,305	ND	ND	ND	ND
Lewis River (aerial survey, ADF&G-CF)	ND	ND	ND	ND	341
Little Susitna (aerial survey, ADF&G-SF)	ND	ND	ND	8,786 (weir)	1,855 (aerial)
Little Willow Crk (aerial survey, ADF&G-SF)	ND	ND	ND	ND	816
Marten Creek/Lake (aerial-CIAA)	ND	ND	ND	ND	ND
McRoberts Creek (foot survey, ADF&G-SF)	ND	ND	ND	2,389	ND
Meadow Creek (weir CIAA)	7,691	ND	ND	ND	ND
Montana Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	1,850
Moose Creek (foot survey, ADF&G-SF)	ND	ND	ND	ND	216
Packers Creek (weir, CIAA)	NA	NA	NA	NA	NA
Peter's Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	1,114
Portage Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	942
Prairie Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	3,570
Question Creek (foot survey, ADF&G-SF)	ND	ND	ND	299	ND
Rabideux Creek (foot survey, ADF&G-SF)	ND	ND	ND	3,063	ND
Sheep Creek (aerial, ADF&G-CF)	ND	ND	ND	ND	580
Shell Lake (weir, CIAA)	69,747	ND	ND	ND	ND
Spring Crk, Upper (foot survey, ADF&G-SF)	ND	ND	ND	171	ND
Spring Creek, flats (foot survey, ADF&G-SF)	ND	ND	ND	272	ND
Talachulitna River (aerial, ADF&G-CF)	ND	ND	ND	ND	6,152
Theodore River (aerial, ADF&G-CF)	ND	ND	ND	ND	958
Yellow Creek (foot survey, ADF&G-SF)	ND	ND	ND	47	ND
Wasilla Creek (foot survey, ADF&G-SF)	ND	ND	ND	294	ND
Willow Creek (aerial survey, ADF&G-SF)	ND	ND	ND	ND	2,217

Sources: ADF&G-SF indicates data from ADF&G, Division of Sport Fish, Palmer (D. R Rutz, personal communication or Sport Fish web site). ADF&G-CF indicates data from ADF&G, Division of Commercial Fisheries (J. Fox, personal communication). CIAA indicates data from the Cook Inlet Aquaculture Association (G. Fandrei, personal communication).

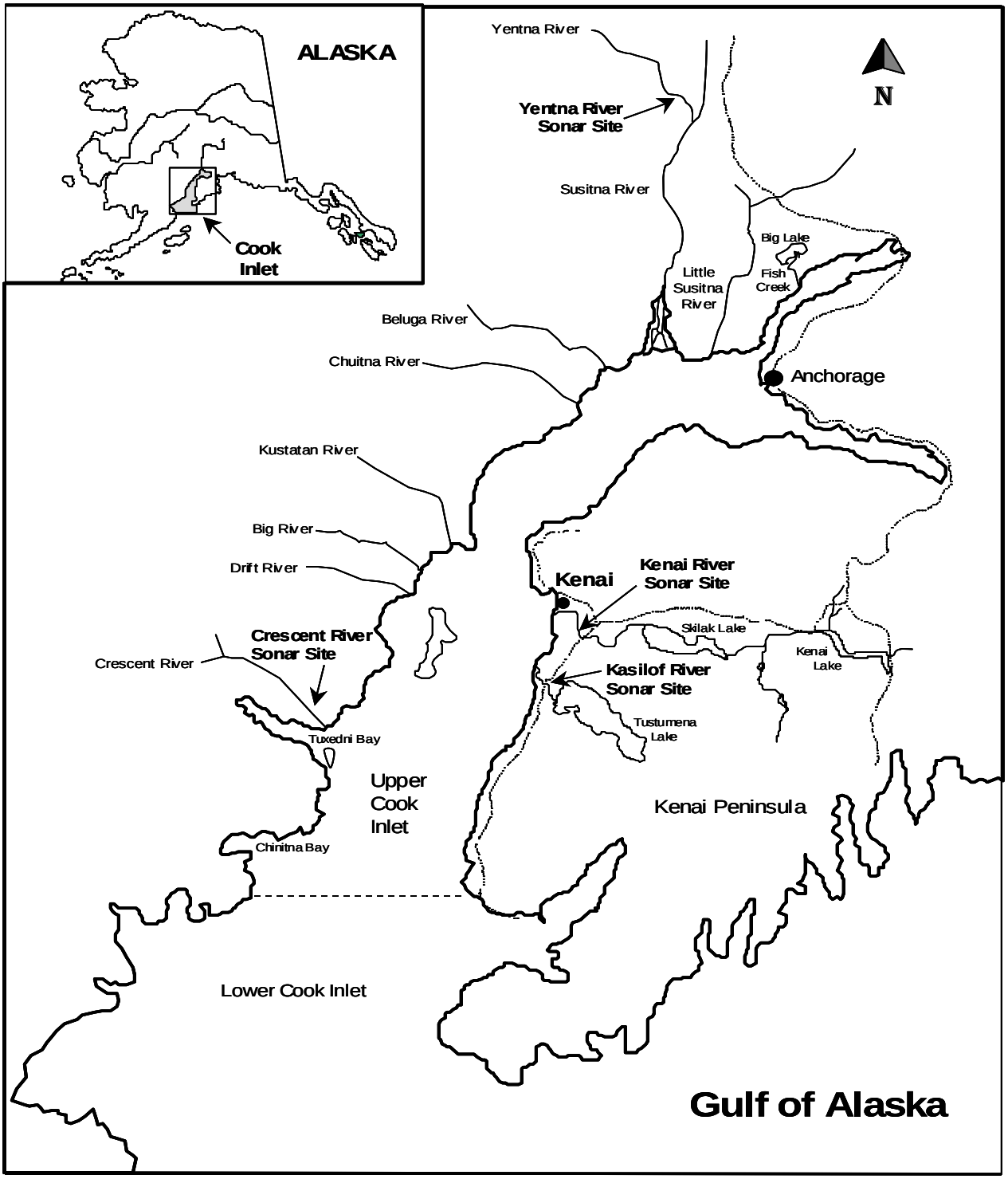


Figure 1.–Upper Cook Inlet, Alaska, and sites where salmon escapements were monitored with side-looking sonar.

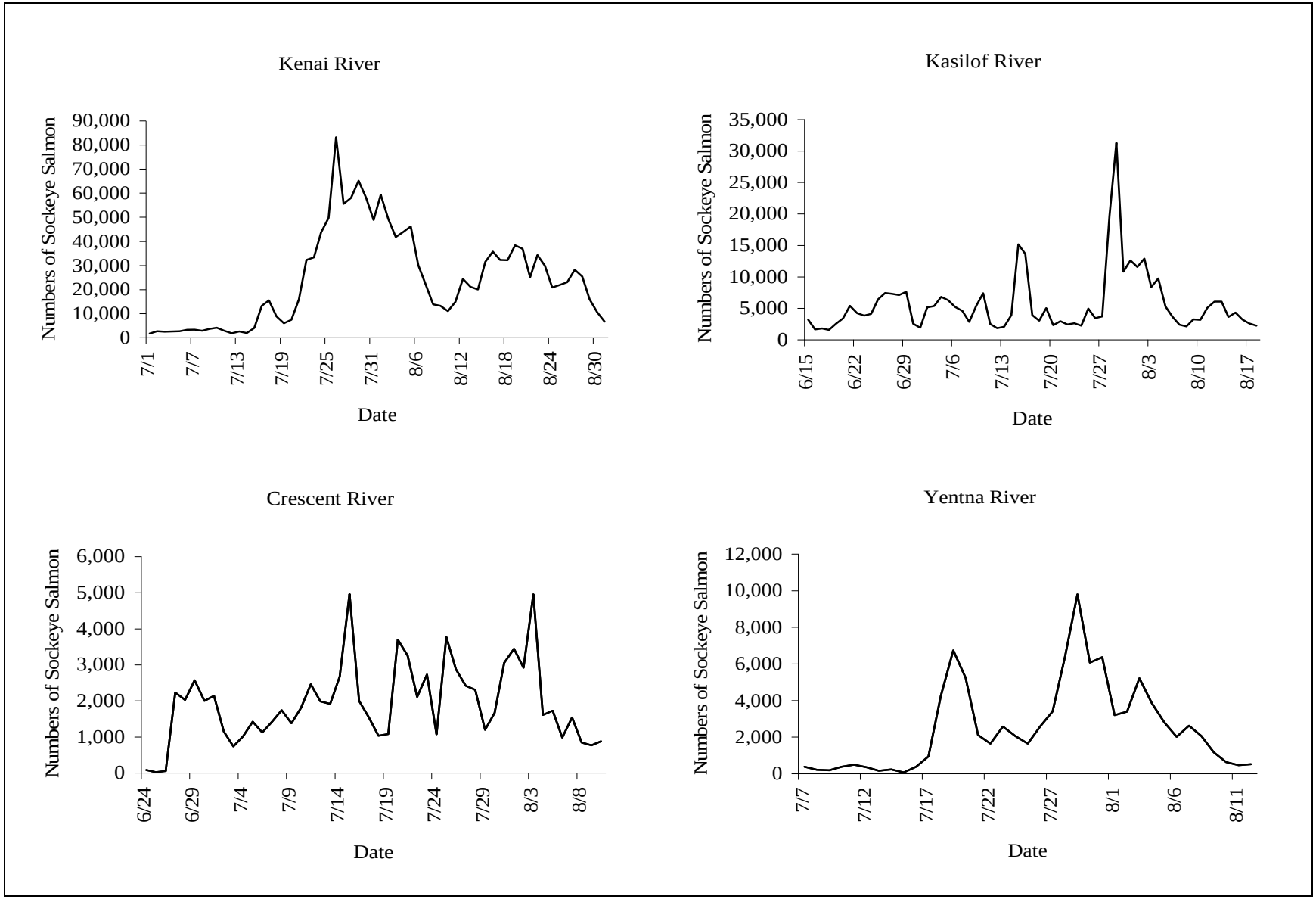


Figure 2.–Daily escapements of sockeye salmon into the Kenai, Kasilof, Crescent and Yentna rivers, 2006**.**

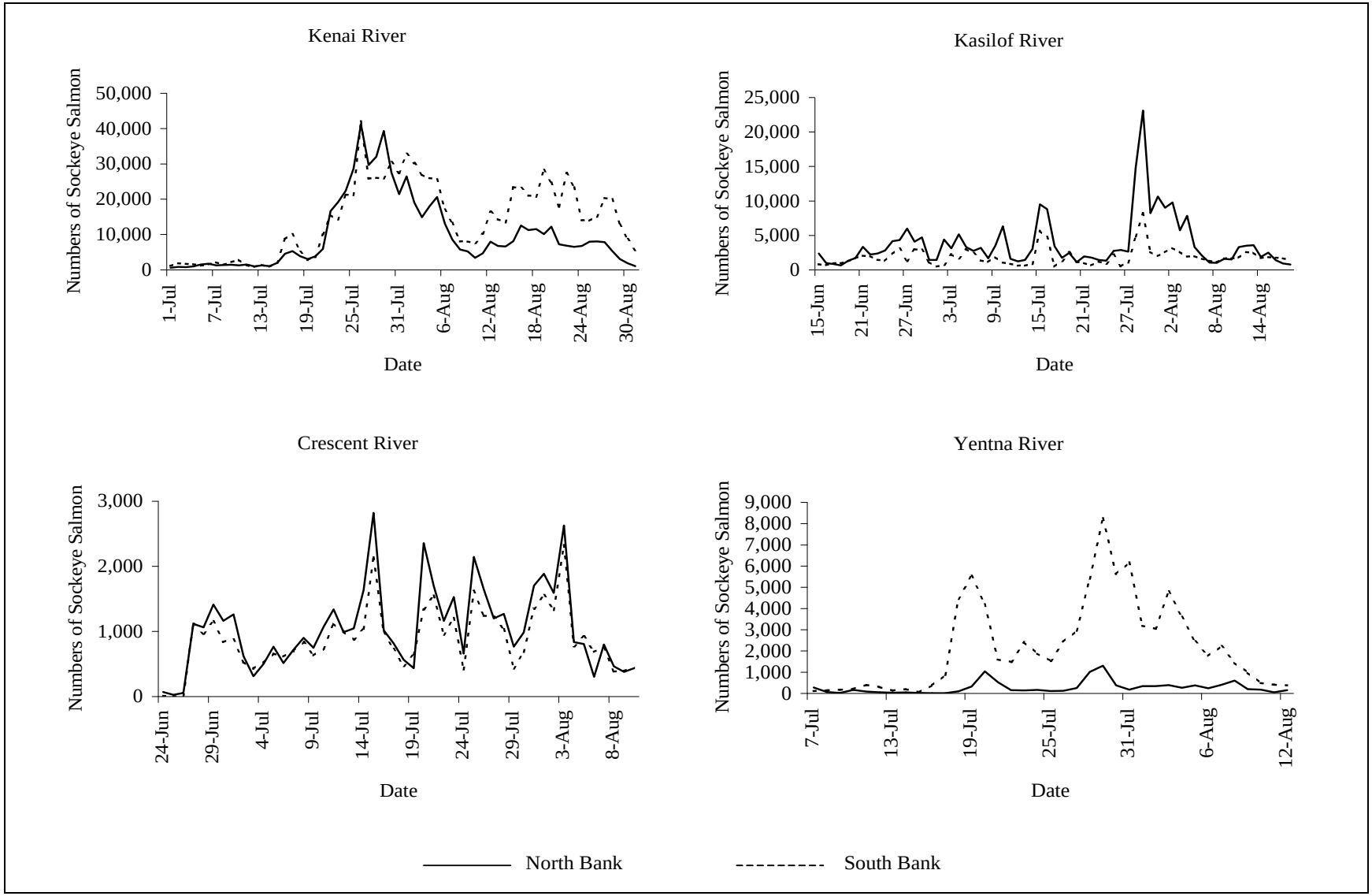


Figure 3.–Daily passage rates of sockeye salmon by bank into the Kenai, Kasilof, Crescent and Yentna rivers, 2006.

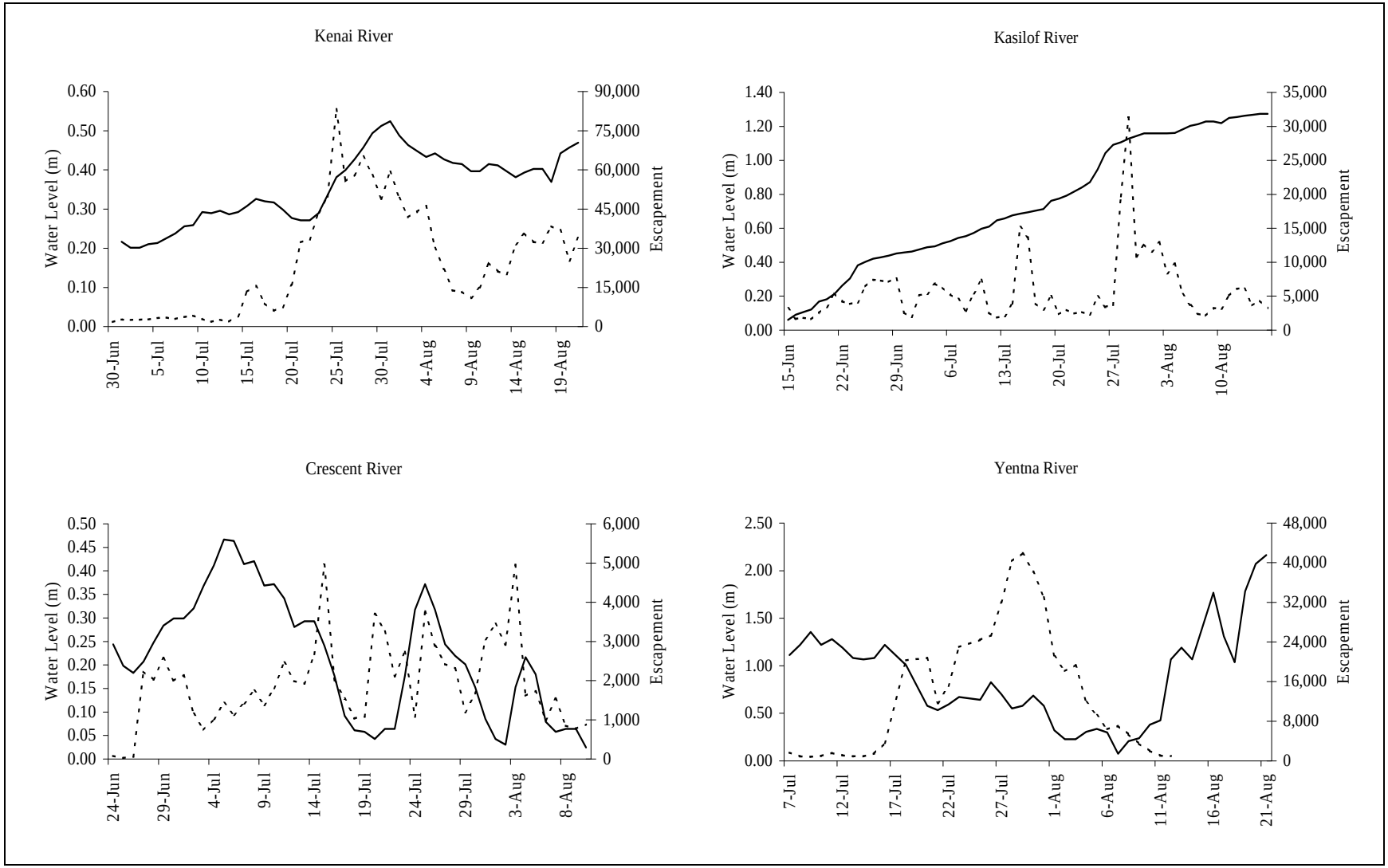
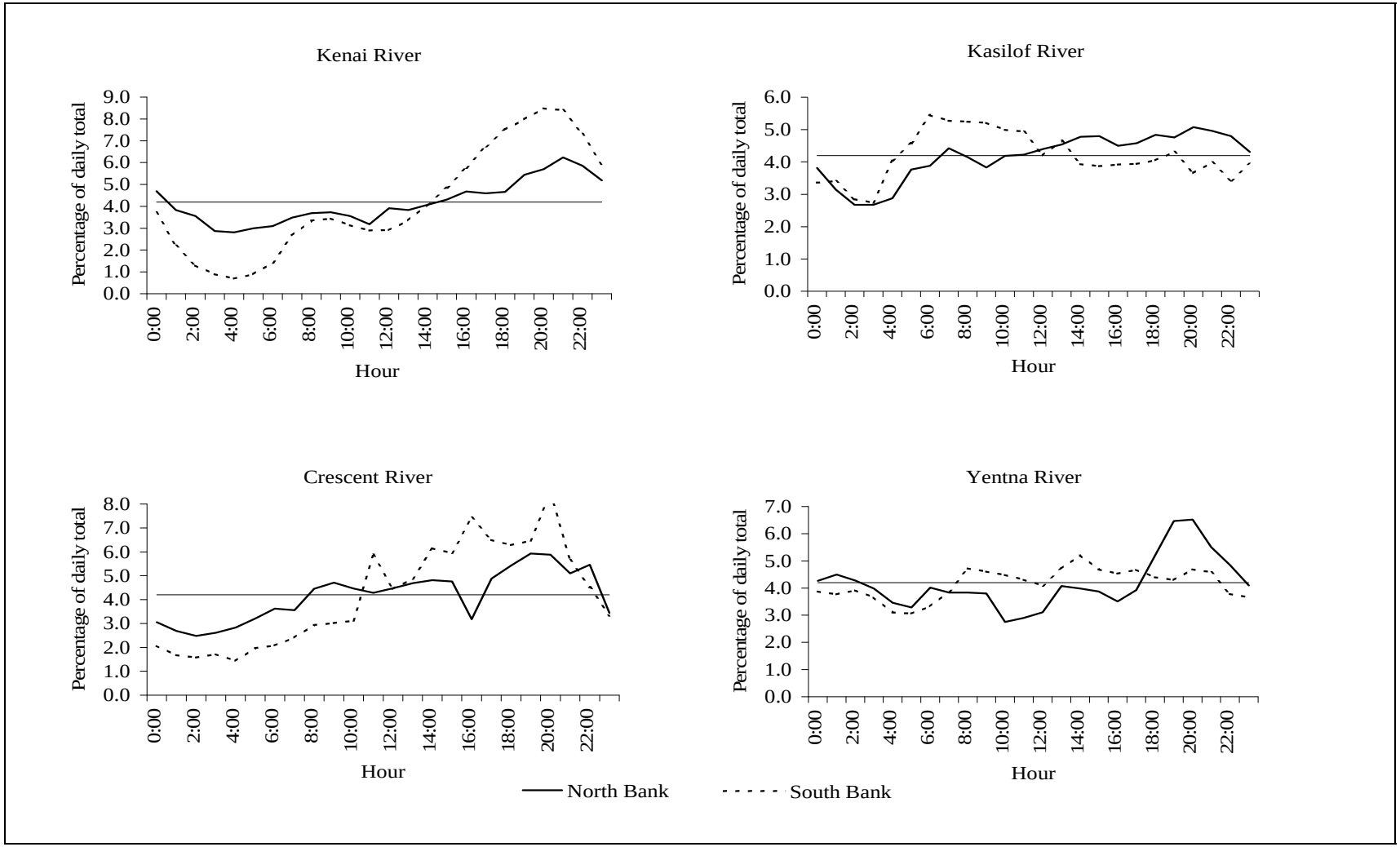


Figure 4.–Daily water level (solid lines) fluctuations and daily run timing for all species (dashed line) for the Kenai, Kasilof, Crescent and Yentna rivers, 2006.



Note: The straight line represents a (hypothetical) constant passage rate.

Figure 5.–Mean hourly passages rates of salmon migrating past the Kenai, Kasilof, Crescent and Yentna rivers, 2006.

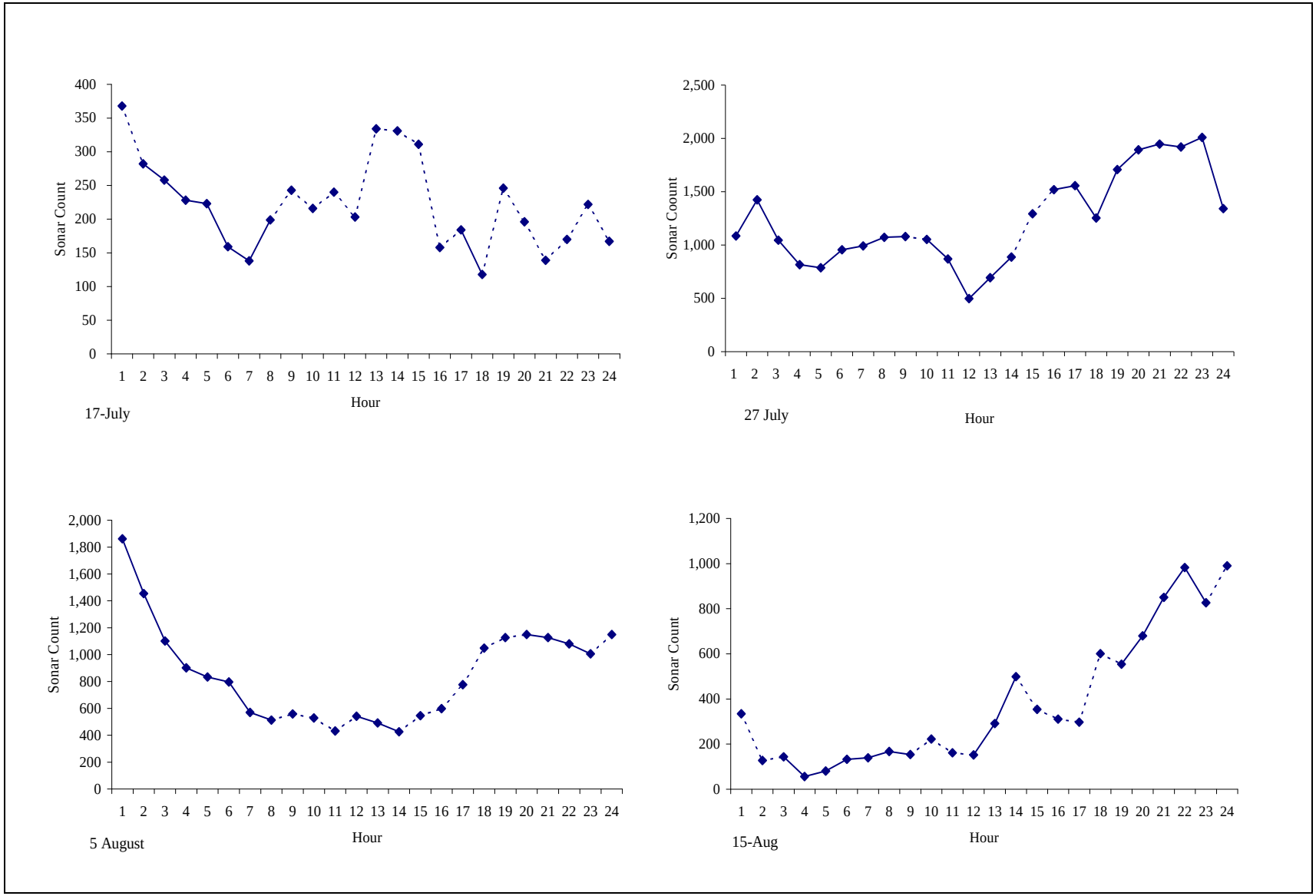
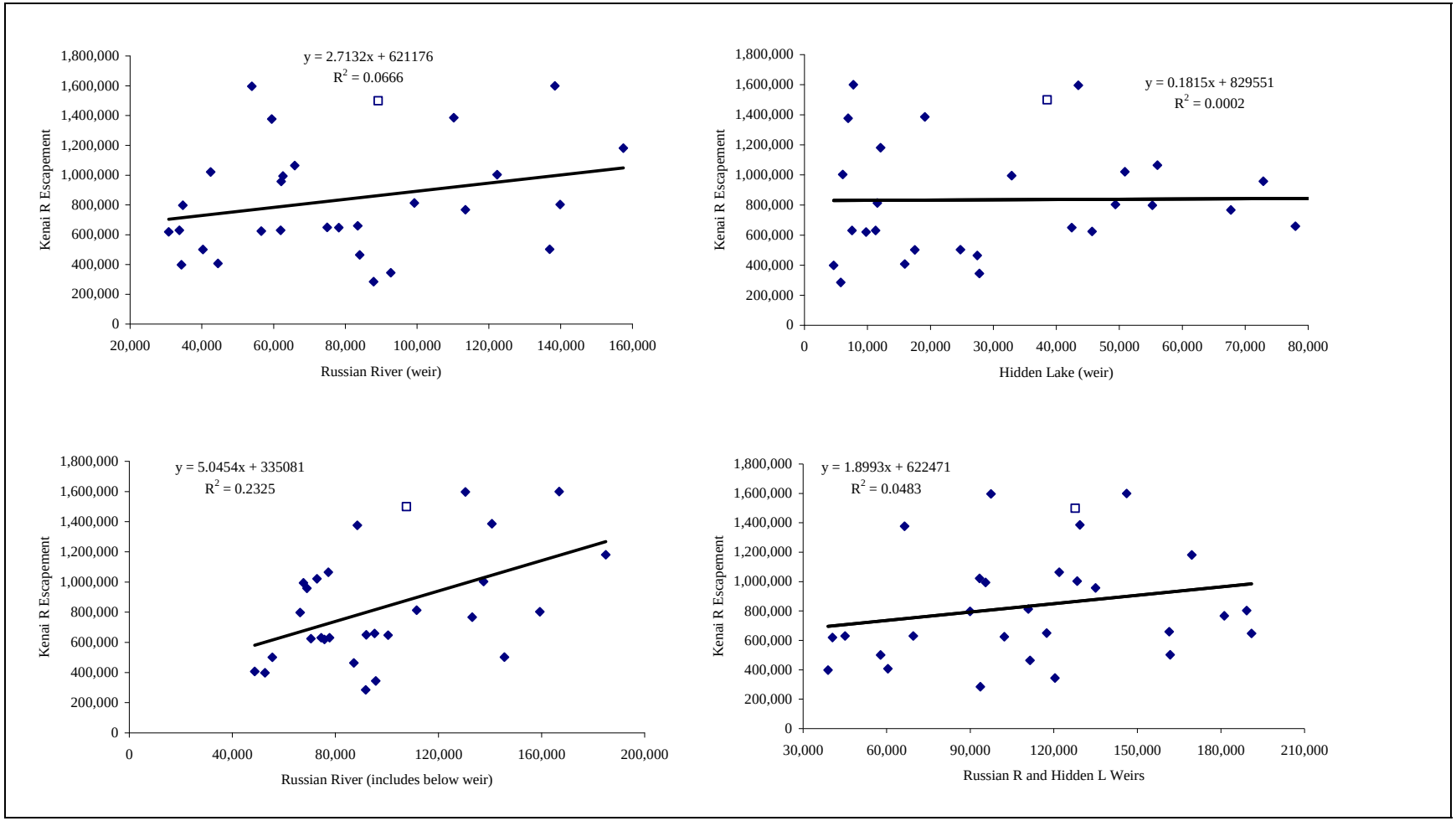


Figure 6.–Four days of hourly sonar counts for the Kenai River showing times when the fish wheel operated (dashed lines) and did not operate (solid lines), 2006.



Note: Hollow square represents 2006.

Figure 7.–Linear relationships between Kenai River escapement and Russian Lake and Hidden Lake escapements, 1978–2006.

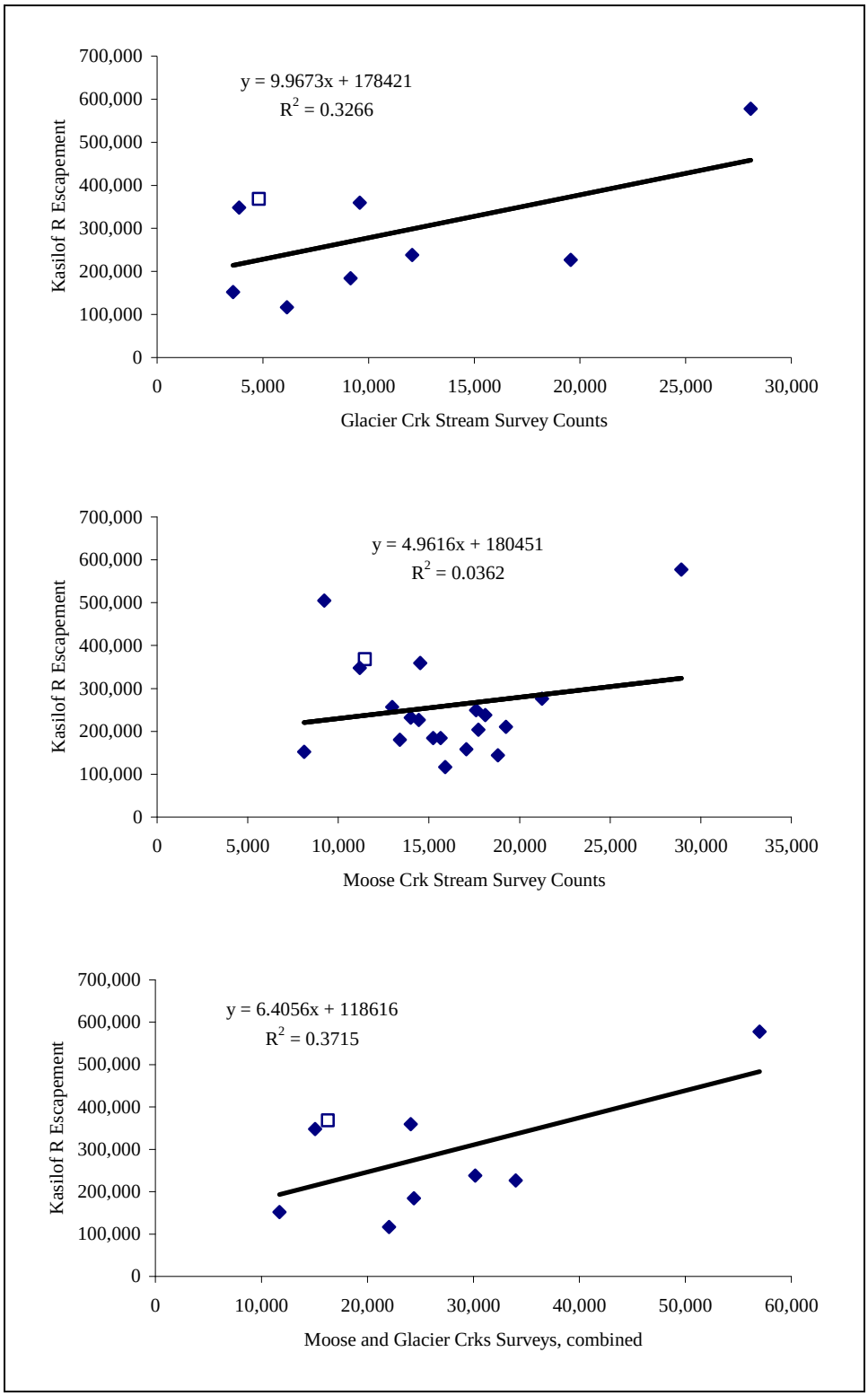


Figure 8.–Linear regression analyses between 2 index streams and the Kasilof River sonar counts.

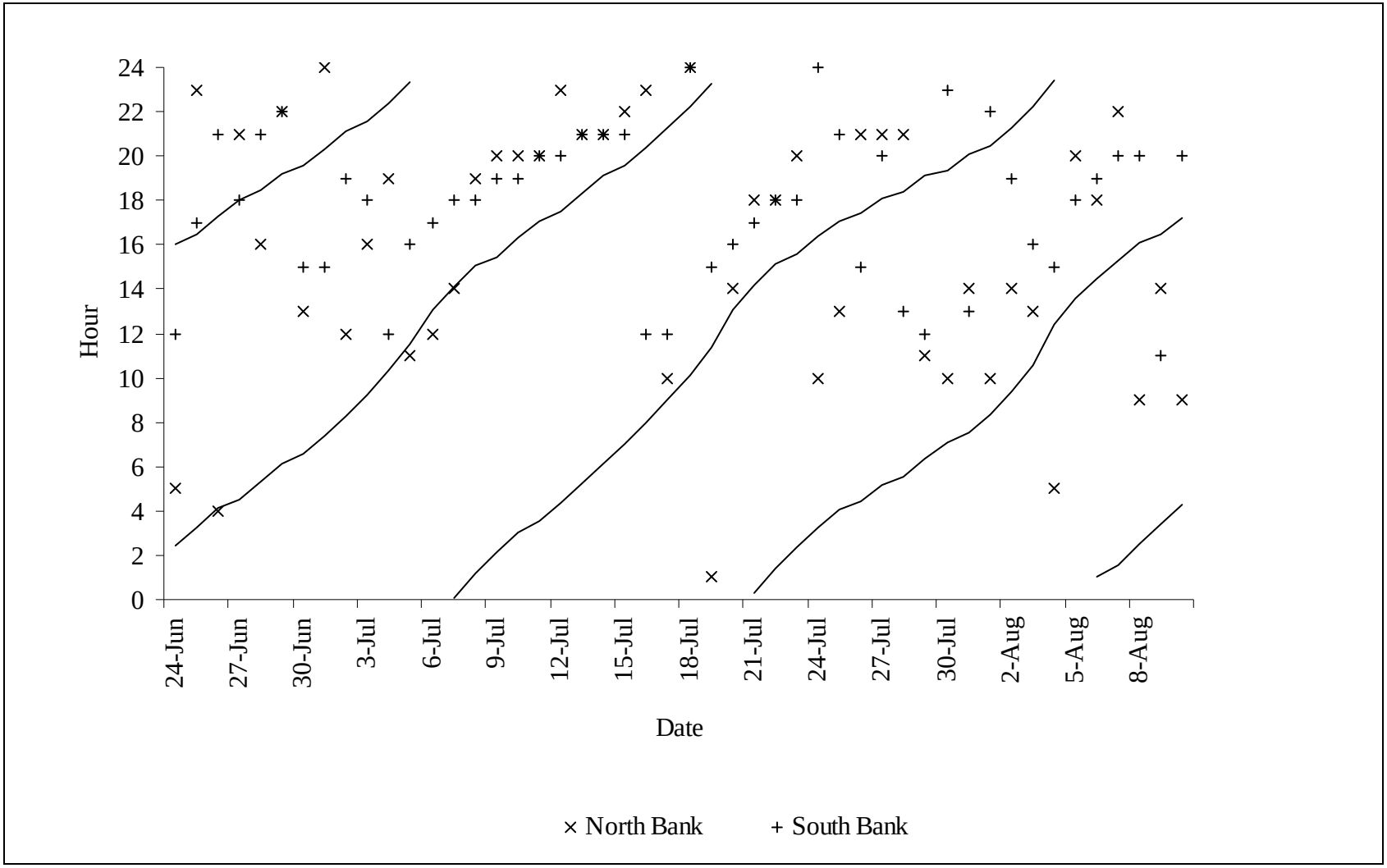


Figure 9.–Time of peak daily sonar counts (x's and +'s) and daily high tides (solid lines) at Crescent River, 2006.

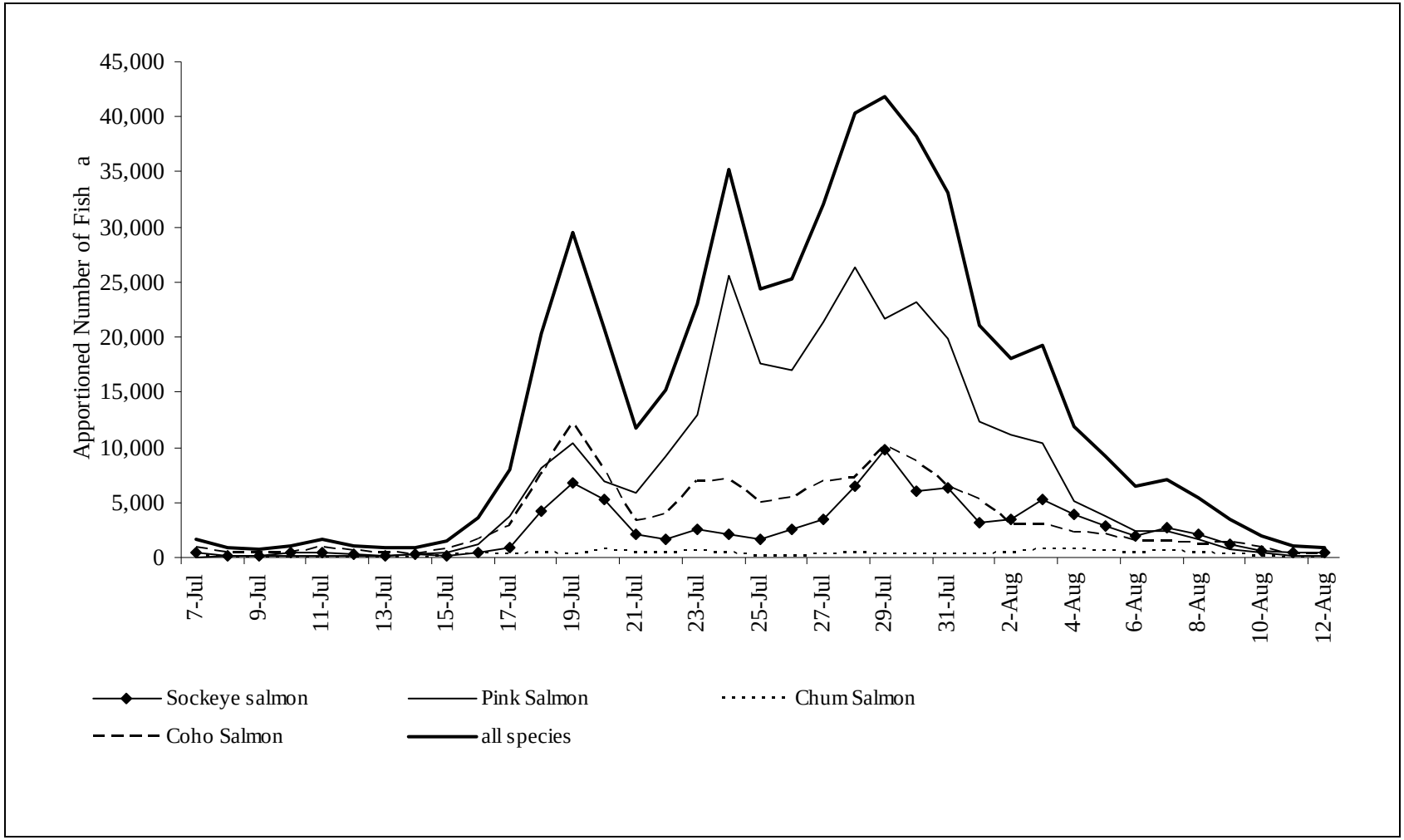


Figure 10.–Migratory timing of sockeye, pink, chum, and coho salmon in the Yentna River, 2006.

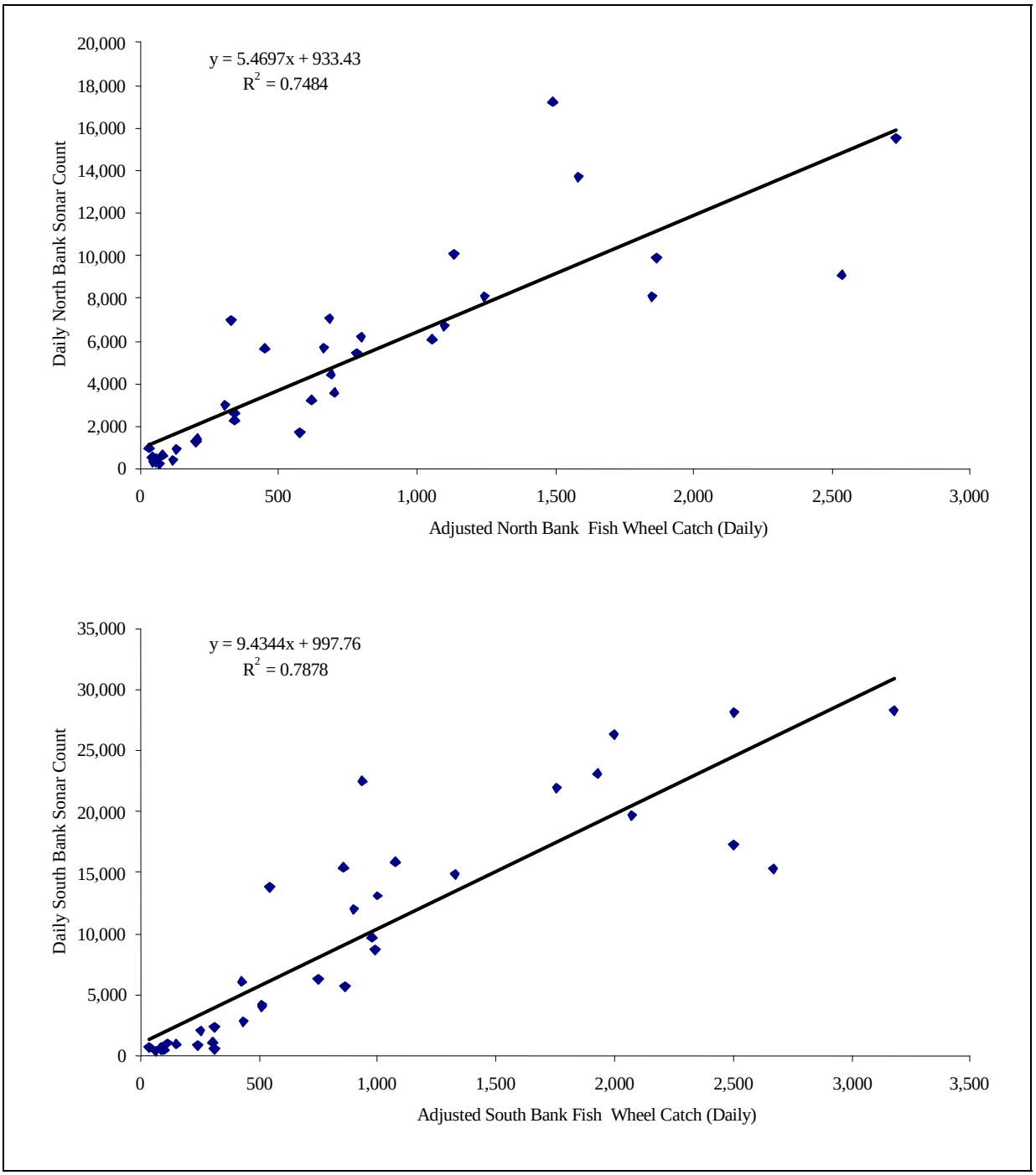
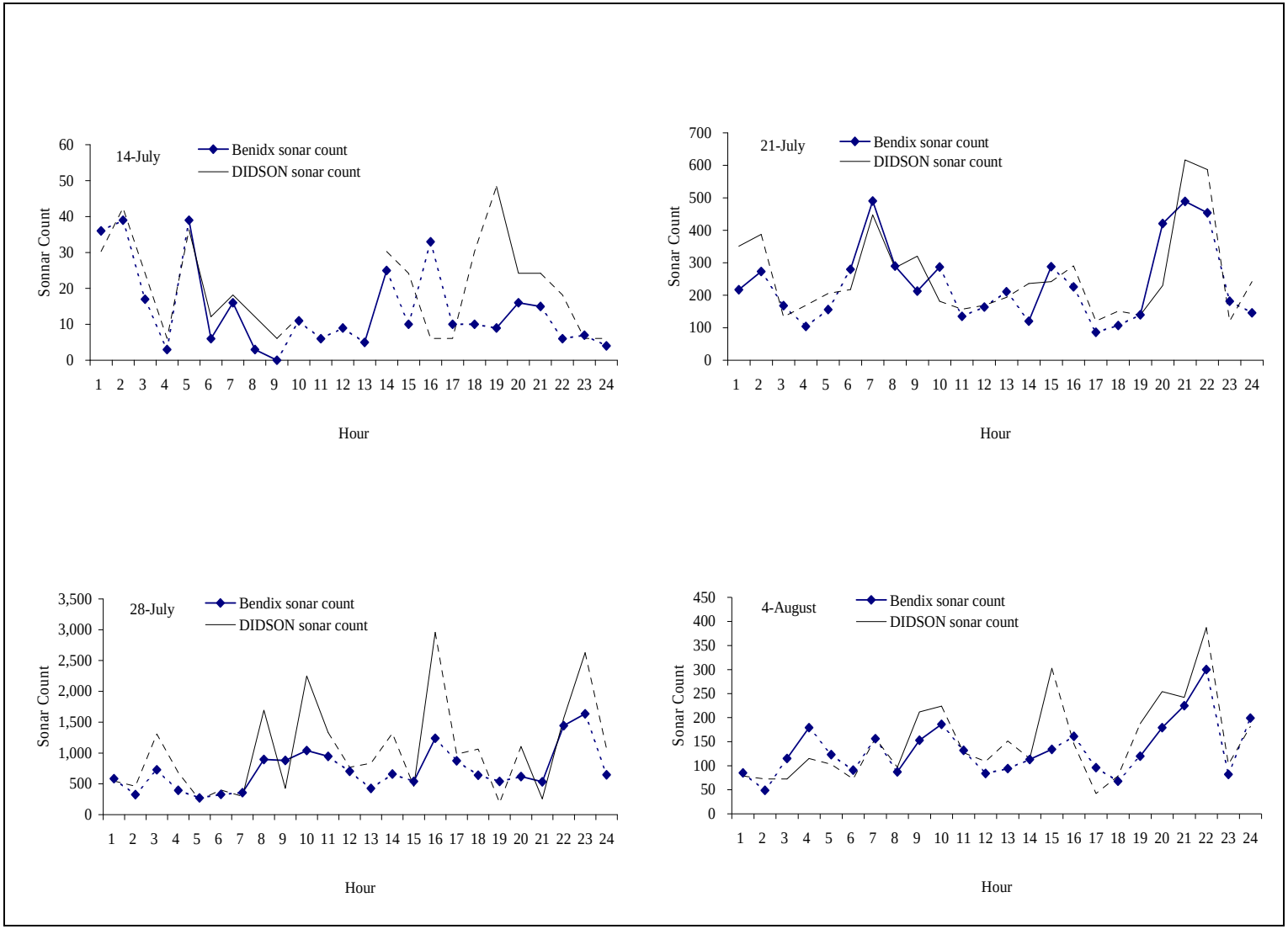
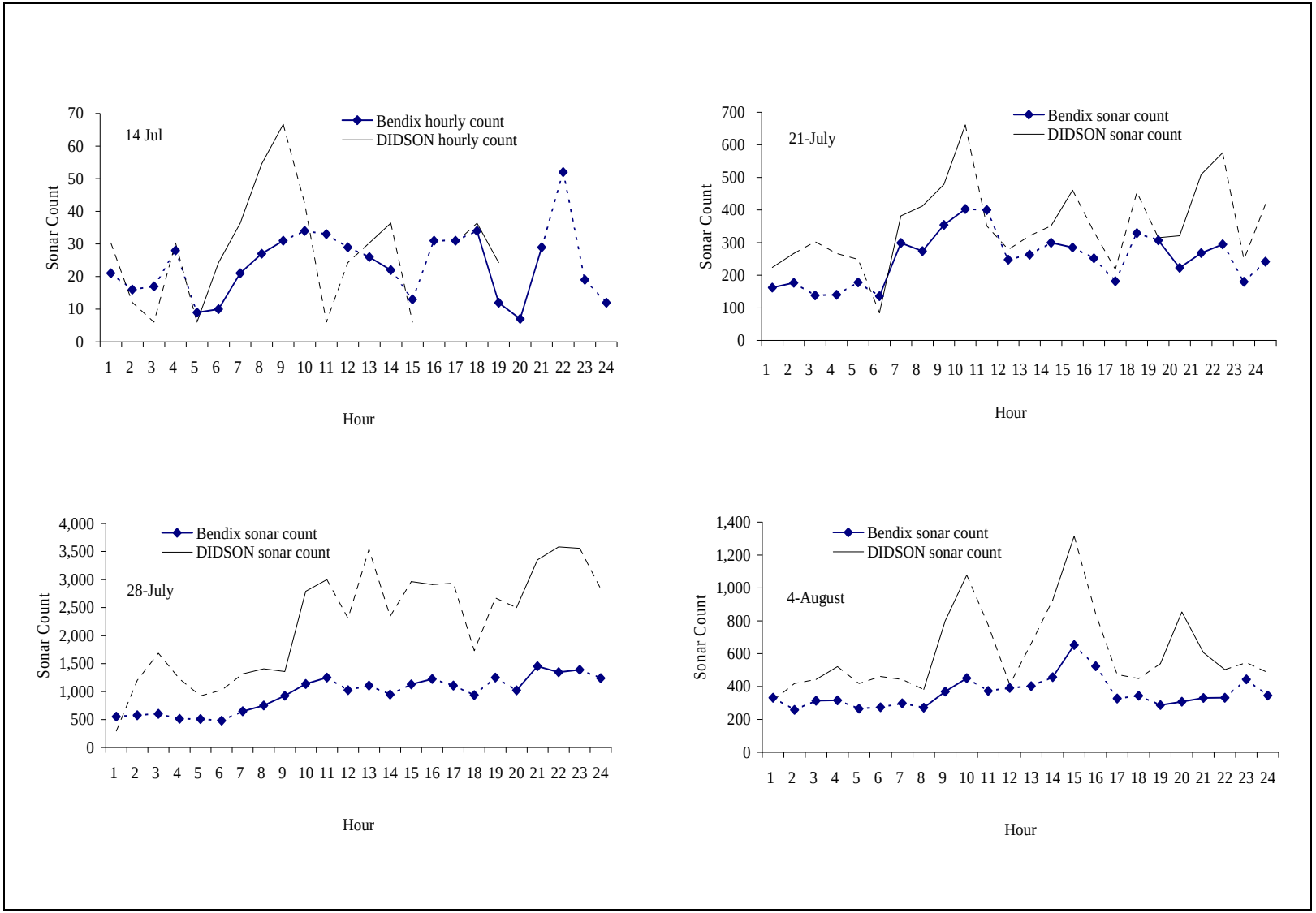


Figure 11.–The linear relationships between adjusted fish wheel catches and daily sonar counts on the north bank (top) and south bank (bottom) of the Yentna River, 2006.



Note: Dashed lines represent sonar counts when fish wheel was running; solid lines represent sonar counts when fish wheel was shut down.

Figure 12.–Examples of the influence of fish wheel operation on the sonar counts from the North bank of the Yentna River, 2006.



Note: Dashed lines represent sonar counts when fish wheel was running; solid lines represent sonar counts when fish wheel was shut down.

Figure 13.–Examples of the influence of fish wheel operation on the sonar counts from the South bank of the Yentna River, 2006.

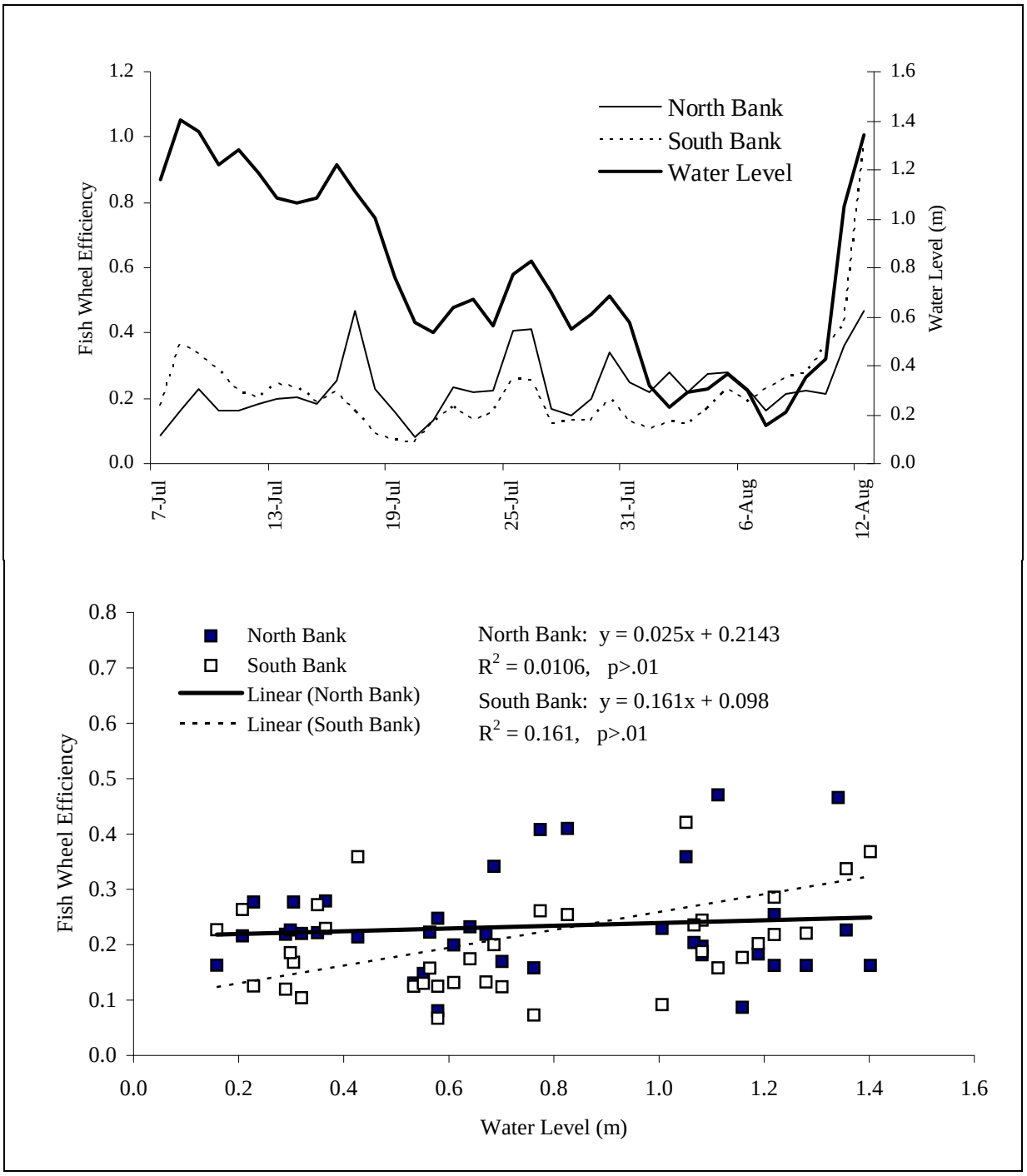


Figure 14.–Effect of water level on fish wheel efficiency for both banks of the Yentna River, 2006, showing (top) fish wheel efficiency (adjusted fish wheel catch/sonar count) and water level and (bottom) the linear relationship between fish wheel efficiency and water level.

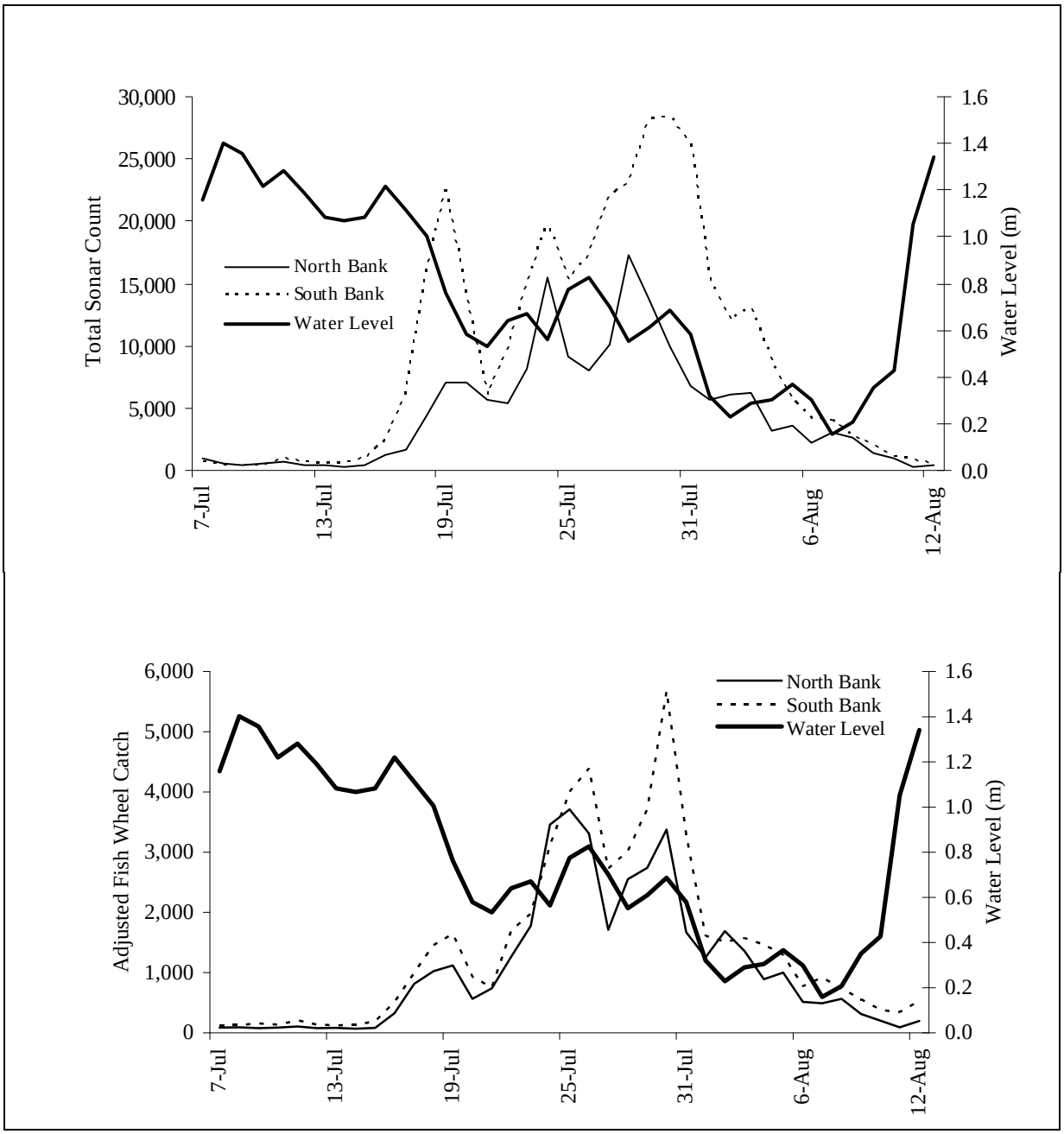


Figure 15.–Water level plotted with fish wheel catches (expanded to 24 hours) by date (top) and total sonar counts (bottom) for the Yentna River, 2006.

APPENDIX A. KENAI RIVER

Appendix A1.–Estimated salmon escapement adjacent to the north bank of the Kenai River, 2006.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	590	590	0	0	0	0	0	0
2-Jul	865	1,455	0	0	0	0	0	0
3-Jul	792	2,247	0	0	0	0	0	0
4-Jul	982	3,229	0	0	0	0	0	0
5-Jul	1,523	4,752	0	0	0	0	0	0
6-Jul	1,769	6,521	0	0	0	0	0	0
7-Jul	1,298	7,819	0	0	0	0	0	0
8-Jul	1,408	9,227	0	0	0	0	0	0
9-Jul	1,454	10,681	0	0	0	0	0	0
10-Jul	1,285	11,966	0	0	0	0	0	0
11-Jul	1,558	13,524	0	0	0	0	0	0
12-Jul	1,003	14,527	0	0	0	0	0	0
13-Jul	1,276	15,803	0	0	0	0	0	0
14-Jul	1,087	16,890	0	0	0	0	0	0
15-Jul	2,015	18,905	0	0	0	0	0	0
16-Jul	4,588	23,493	0	0	0	0	0	0
17-Jul	5,333	28,826	0	0	0	0	0	0
18-Jul	3,889	32,715	0	0	0	0	0	0
19-Jul	3,093	35,808	0	0	0	0	0	0
20-Jul	3,857	39,665	0	0	0	0	0	0
21-Jul	5,911	45,576	0	0	0	0	0	0
22-Jul	16,699	62,275	0	0	0	0	0	0
23-Jul	19,148	81,423	0	0	0	0	0	0
24-Jul	22,394	103,817	0	0	0	0	0	0
25-Jul	28,656	132,473	0	0	0	0	0	0
26-Jul	41,208	173,681	0	0	0	0	0	0
27-Jul	29,693	203,374	0	0	0	0	0	0
28-Jul	32,038	235,412	0	0	0	0	0	0
29-Jul	39,292	274,704	0	0	0	0	0	0
30-Jul	27,559	302,263	0	0	0	0	0	0
31-Jul	21,432	323,695	0	0	0	0	0	0
1-Aug	26,496	350,191	0	0	0	0	0	0
2-Aug	19,111	369,302	0	0	0	0	0	0
3-Aug	14,901	384,203	0	0	0	0	0	0
4-Aug	17,938	402,141	0	0	0	0	0	0
5-Aug	20,619	422,760	0	0	0	0	0	0
6-Aug	13,122	435,882	0	0	0	0	0	0
7-Aug	8,628	444,510	0	0	0	0	0	0
8-Aug	5,789	450,299	280	280	233	233	420	420
9-Aug	5,251	455,550	494	774	556	789	216	636
10-Aug	3,414	458,964	975	1,750	488	1,277	139	776
11-Aug	4,734	463,698	930	2,679	592	1,869	225	1,001
12-Aug	7,971	471,668	396	3,076	99	1,968	85	1,086
13-Aug	6,775	478,444	383	3,459	268	2,236	0	1,086
14-Aug	6,634	485,078	136	3,595	326	2,562	82	1,168
15-Aug	8,127	493,204	564	4,158	398	2,960	17	1,184
16-Aug	12,560	505,764	1,090	5,248	430	3,390	29	1,213
17-Aug	11,262	517,026	525	5,774	183	3,573	46	1,259
18-Aug	11,549	528,575	665	6,439	363	3,936	181	1,440
19-Aug	10,147	538,722	702	7,141	383	4,319	32	1,472
20-Aug	12,198	550,920	2,186	9,327	891	5,209	54	1,526

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Appendix A1.–Page 2 of 2.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
21-Aug	7,252	558,172	1,250	10,577	806	6,015	83	1,609
22-Aug	6,830	565,002	1,435	12,012	574	6,589	172	1,781
23-Aug	6,501	571,503	3,554	15,565	2,140	8,729	0	1,781
24-Aug	6,758	578,261	6,054	21,620	1,549	10,278	141	1,922
25-Aug	7,996	586,257	5,614	27,234	6,295	16,573	0	1,922
26-Aug	8,044	594,301	17,359	44,592	5,504	22,077	423	2,345
27-Aug	7,848	602,149	5,597	50,189	1,558	23,635	115	2,460
28-Aug	5,314	607,463	4,634	54,824	719	24,354	120	2,580
29-Aug	3,094	610,557	8,102	62,926	407	24,761	0	2,580
30-Aug	1,864	612,421	10,716	73,642	932	25,693	0	2,580
31-Aug	1,050	613,471	10,418	84,060	596	26,289	0	2,580

Appendix A2.–Estimated salmon escapement adjacent to the south bank Kenai River, 2006.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Jul	1,174	1,174	0	0	0	0	0	0
2-Jul	1,872	3,046	0	0	0	0	0	0
3-Jul	1,743	4,789	0	0	0	0	0	0
4-Jul	1,635	6,424	0	0	0	0	0	0
5-Jul	1,234	7,658	0	0	0	0	0	0
6-Jul	1,536	9,194	0	0	0	0	0	0
7-Jul	2,135	11,329	0	0	0	0	0	0
8-Jul	1,469	12,798	0	0	0	0	0	0
9-Jul	2,205	15,003	0	0	0	0	0	0
10-Jul	2,910	17,913	0	0	0	0	0	0
11-Jul	1,317	19,230	0	0	0	0	0	0
12-Jul	866	20,096	0	0	0	0	0	0
13-Jul	1,383	21,479	0	0	0	0	0	0
14-Jul	843	22,322	0	0	0	0	0	0
15-Jul	2,015	24,337	0	0	0	0	0	0
16-Jul	8,714	33,051	0	0	0	0	0	0
17-Jul	10,142	43,193	0	0	0	0	0	0
18-Jul	5,075	48,268	0	0	0	0	0	0
19-Jul	2,906	51,174	0	0	0	0	0	0
20-Jul	3,611	54,785	0	0	0	0	0	0
21-Jul	10,100	64,885	0	0	0	0	0	0
22-Jul	15,587	80,472	0	0	0	0	0	0
23-Jul	14,215	94,687	0	0	0	0	0	0
24-Jul	21,301	115,988	0	0	0	0	0	0
25-Jul	21,143	137,131	0	0	0	0	0	0
26-Jul	42,046	179,177	0	0	0	0	0	0
27-Jul	25,907	205,084	0	0	0	0	0	0
28-Jul	26,056	231,140	0	0	0	0	0	0
29-Jul	25,851	256,991	0	0	0	0	0	0
30-Jul	30,541	287,532	0	0	0	0	0	0
31-Jul	27,429	314,961	0	0	0	0	0	0
1-Aug	32,854	347,815	0	0	0	0	0	0
2-Aug	30,249	378,064	0	0	0	0	0	0
3-Aug	26,930	404,994	0	0	0	0	0	0
4-Aug	25,993	430,987	0	0	0	0	0	0
5-Aug	25,641	456,628	0	0	0	0	0	0
6-Aug	17,041	473,669	0	0	0	0	0	0
7-Aug	13,362	487,031	0	0	0	0	0	0
8-Aug	8,071	495,102	391	391	325	325	586	586
9-Aug	8,046	503,148	757	1,148	852	1,177	331	917
10-Aug	7,651	510,800	2,186	3,334	1,093	2,270	312	1,229
11-Aug	10,220	521,020	2,007	5,341	1,277	3,548	487	1,716
12-Aug	16,451	537,471	818	6,159	205	3,752	175	1,891
13-Aug	14,383	551,854	813	6,972	569	4,321	0	1,891
14-Aug	13,448	565,302	276	7,248	661	4,983	165	2,057
15-Aug	23,420	588,722	1,625	8,873	1,147	6,130	48	2,105
16-Aug	23,196	611,918	2,012	10,885	794	6,924	53	2,157
17-Aug	21,073	632,991	983	11,868	342	7,266	85	2,242
18-Aug	20,667	653,658	1,190	13,059	649	7,915	325	2,567
19-Aug	28,277	681,934	1,956	15,015	1,067	8,982	89	2,656
20-Aug	24,711	706,646	4,428	19,443	1,804	10,786	109	2,765

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Appendix A2.–Page 2 of 2.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
21-Aug	17,886	724,532	3,084	22,527	1,987	12,774	206	2,971
22-Aug	27,490	752,022	5,775	28,302	2,310	15,084	693	3,664
23-Aug	23,400	775,421	12,790	41,092	7,703	22,787	0	3,664
24-Aug	14,125	789,546	12,653	53,745	3,237	26,024	294	3,958
25-Aug	13,911	803,457	9,767	63,513	10,951	36,975	0	3,958
26-Aug	15,086	818,544	32,555	96,067	10,322	47,297	794	4,752
27-Aug	20,337	838,881	14,505	110,573	4,038	51,335	299	5,051
28-Aug	20,060	858,941	17,496	128,068	2,715	54,050	452	5,503
29-Aug	12,911	871,852	33,808	161,876	1,699	55,749	0	5,503
30-Aug	8,756	880,608	50,346	212,222	4,378	60,127	0	5,503
31-Aug	5,613	886,221	55,671	267,893	3,186	63,313	0	5,503

Appendix A3.–Kenai River north bank sonar counts (all species) by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
1-Jul	26	25	32	8	12	30	18	19	27	37	35	25
2-Jul	55	21	72	36	30	23	32	61	105	47	21	13
3-Jul	47	23	21	53	23	36	50	71	63	69	55	17
4-Jul	32	58	35	23	46	29	33	28	54	84	72	16
5-Jul	64	75	41	33	40	48	18	35	46	59	52	72
6-Jul	77	69	28	79	74	73	98	86	80	66	70	103
7-Jul	103	34	18	17	50	45	52	14	27	58	41	51
8-Jul	56	9	18	15	41	88	66	16	20	21	60	47
9-Jul	66	21	20	15	48	17	31	25	54	101	75	76
10-Jul	34	55	28	16	33	32	25	70	50	70	37	48
11-Jul	10	18	16	6	11	74	107	52	87	90	83	104
12-Jul	38	23	22	27	12	23	16	20	66	38	70	27
13-Jul	44	42	34	18	31	57	69	70	45	12	27	53
14-Jul	39	26	28	30	30	51	29	18	27	29	65	42
15-Jul	71	36	42	41	74	39	61	51	84	40	72	35
16-Jul	104	108	135	57	113	67	93	252	104	81	183	146
17-Jul	368	282	258	228	223	159	138	199	243	216	240	203
18-Jul	248	166	225	185	131	165	154	128	102	140	196	165
19-Jul	54	17	21	6	8	43	51	101	155	260	124	198
20-Jul	53	169	216	115	52	68	84	112	94	101	126	118
21-Jul	240	361	224	205	215	196	180	145	130	120	184	212
22-Jul	356	630	424	346	291	298	299	487	329	408	855	877
23-Jul	485	845	642	608	330	351	516	840	832	748	568	519
24-Jul	379	782	1,038	960	429	489	647	885	997	565	834	1,038
25-Jul	378	619	683	742	794	653	322	722	608	676	662	749
26-Jul	1,649	2,423	2,036	1,213	678	1,453	2,219	2,727	1,781	1,710	1,707	1,621
27-Jul	1,085	1,424	1,046	815	786	956	992	1,072	1,079	1,052	869	497
28-Jul	1,315	1,225	1,265	1,519	807	1,300	1,899	2,421	1,234	996	937	792
29-Jul	1,119	1,476	720	636	1,344	1,844	1,129	1,440	1,511	1726	1,679	1,184
30-Jul	1,078	888	1,080	417	422	640	899	1,086	1,214	949	928	1,059
31-Jul	791	580	605	622	256	848	735	710	1,185	959	876	1,121

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Appendix A3.–Page 2 of 4.

	Counts by Hour													
Date	13	14	15	16	17	18	19	20	21	22	23	24	Total	Cum
1-Jul	28	15	9	8	3	2	8	93	44	51	13	22	590	590
2-Jul	1	43	32	12	14	16	21	19	44	63	45	39	865	1,455
3-Jul	24	6	5	2	2	2	6	20	8	10	53	126	792	2,247
4-Jul	76	52	11	17	14	36	42	21	29	48	93	33	982	3,229
5-Jul	84	67	59	69	38	54	109	103	69	160	77	51	1,523	4,752
6-Jul	42	71	69	108	86	107	50	80	59	85	70	39	1,769	6,521
7-Jul	61	53	46	89	91	98	41	70	69	62	74	34	1,298	7,819
8-Jul	30	28	85	71	101	58	73	86	64	171	134	50	1,408	9,227
9-Jul	64	67	55	50	101	75	51	65	117	107	101	52	1,454	10,681
10-Jul	46	38	94	97	88	113	89	79	48	47	28	20	1,285	11,966
11-Jul	94	78	145	170	96	86	63	20	22	62	45	19	1,558	13,524
12-Jul	60	51	82	63	74	92	40	39	20	35	40	25	1,003	14,527
13-Jul	106	58	124	18	148	34	49	55	81	43	35	23	1,276	15,803
14-Jul	49	25	26	95	100	132	50	40	61	17	39	39	1,087	16,890
15-Jul	62	46	130	82	135	84	123	133	125	193	138	118	2,015	18,905
16-Jul	253	232	305	224	189	291	226	285	390	344	254	152	4,588	23,493
17-Jul	334	331	311	158	184	118	246	196	139	170	222	167	5,333	28,826
18-Jul	331	233	162	184	195	277	113	119	92	108	44	26	3,889	32,715
19-Jul	235	207	146	213	177	138	108	152	169	254	178	78	3,093	35,808
20-Jul	193	139	126	254	255	195	308	370	169	150	189	201	3,857	39,665
21-Jul	194	356	300	307	284	318	287	329	299	295	233	297	5,911	45,576
22-Jul	1,193	936	1,017	1,354	928	772	836	827	945	874	873	544	16,699	62,275
23-Jul	848	1,190	1,253	1,115	1,162	1,087	1,218	767	988	761	738	737	19,148	81,423
24-Jul	1,068	1,288	1,010	1,590	1,100	831	1,048	897	1,736	1,121	962	700	22,394	103,817
25-Jul	810	1,404	2,227	2,122	1,267	1,272	1,473	1,846	2,128	2,308	2,320	1,871	28,656	132,473
26-Jul	1,568	2,264	2,355	1,829	1,593	1,509	1,503	1,755	1,695	1,646	1,219	1,055	41,208	173,681
27-Jul	693	887	1,293	1,519	1,557	1,253	1,708	1,893	1,946	1,920	2,010	1,341	29,693	203,374
28-Jul	865	918	831	1,187	1,559	1,480	1,249	1,512	1,774	1,855	1,776	1,322	32,038	235,412
29-Jul	1,300	1,365	1,184	1,768	1,675	2,484	3,136	2,578	2,504	2,237	1,917	1,336	39,292	274,704
30-Jul	1,246	1,081	1,212	1,465	1,451	1,438	1,128	1,752	1,458	1,734	1,719	1,215	27,559	302,263
31-Jul	962	839	462	823	888	797	1,251	1,822	1,855	1,056	724	665	21,432	323,695

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Appendix A3.–Page 3 of 4.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
1-Aug	992	1,038	775	1,064	1,206	485	458	660	805	578	735	688
2-Aug	1,131	1,050	953	705	345	325	428	593	361	402	485	699
3-Aug	1,139	1,185	890	520	505	443	449	341	409	294	470	438
4-Aug	1,220	830	644	369	801	482	347	370	428	362	399	189
5-Aug	1,862	1,454	1,101	902	834	797	570	513	559	529	432	542
6-Aug	1,102	818	929	705	569	524	380	467	456	410	371	346
7-Aug	1,089	889	779	487	272	224	303	179	380	269	313	233
8-Aug	709	344	589	398	326	264	189	210	177	125	151	114
9-Aug	346	389	501	331	280	195	225	226	248	185	179	122
10-Aug	205	191	183	117	150	116	91	111	82	126	147	115
11-Aug	228	196	144	186	154	180	129	181	146	139	153	130
12-Aug	267	140	133	115	81	159	231	200	267	343	325	421
13-Aug	417	331	309	252	195	205	218	211	176	291	242	286
14-Aug	346	208	242	167	117	137	154	223	174	249	195	184
15-Aug	334	127	143	56	81	132	139	167	154	222	161	152
16-Aug	896	640	444	275	184	354	370	497	593	579	418	409
17-Aug	1,337	597	547	381	531	453	288	293	365	441	256	263
18-Aug	1,035	679	554	479	421	288	323	375	288	457	328	355
19-Aug	432	223	271	258	232	217	236	274	444	400	330	399
20-Aug	1,723	711	688	535	515	468	743	635	881	628	491	377
21-Aug	499	449	349	287	362	362	440	445	485	434	226	153
22-Aug	331	136	199	204	121	209	242	249	324	329	491	413
23-Aug	505	247	263	239	236	292	375	435	524	776	508	323
24-Aug	564	288	173	153	183	199	300	262	304	395	111	84
25-Aug	750	434	668	411	361	359	555	731	705	793	560	565
26-Aug	660	1,984	1,020	1,479	613	1,032	1,021	1,443	1,568	1,412	1,469	1,662
27-Aug	289	614	376	969	1,284	1,344	1,158	301	518	1,266	527	232
28-Aug	492	377	324	152	126	178	390	793	512	404	306	313
29-Aug	331	172	195	324	884	280	439	569	425	270	303	297
30-Aug	367	682	723	388	233	60	15	15	14	97	535	381
31-Aug	653	478	330	167	331	637	370	936	557	504	356	233
Total	32,715	30,431	26,512	22,166	19,967	21,595	22,638	26,868	25,762	25,237	23,776	22,346

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Appendix A3.–Page 3 of 4.

	Counts by Hour													
Date	13	14	15	16	17	18	19	20	21	22	23	24	Total	Cum
1-Aug	941	994	787	1,525	1,831	1,732	1,684	1,378	1,516	2,105	1,628	891	26,496	350,191
2-Aug	670	546	789	799	1,158	907	659	999	1,680	1,419	840	1,168	19,111	369,302
3-Aug	583	854	724	751	686	627	415	483	751	678	713	553	14,901	384,203
4-Aug	421	385	575	636	646	1,132	1,088	1,186	1,354	1,702	654	1,718	17,938	402,141
5-Aug	492	426	545	599	777	1,048	1,127	1,149	1,127	1,080	1,005	1,149	20,619	422,760
6-Aug	287	318	384	223	311	313	322	401	366	632	1,195	1,293	13,122	435,882
7-Aug	230	199	215	219	248	234	222	232	264	313	407	428	8,628	444,510
8-Aug	175	104	107	139	194	201	214	252	299	392	603	447	6,723	451,233
9-Aug	163	137	220	203	233	286	387	316	330	328	321	366	6,517	457,750
10-Aug	163	227	220	257	331	131	214	372	455	397	338	277	5,016	462,766
11-Aug	237	205	277	152	243	382	402	425	504	456	631	601	6,481	469,247
12-Aug	296	331	364	395	476	481	381	504	618	655	813	555	8,551	477,798
13-Aug	307	428	304	300	283	312	315	343	429	538	398	336	7,426	485,224
14-Aug	189	277	285	316	406	523	345	431	436	494	652	428	7,178	492,402
15-Aug	291	499	354	311	297	601	554	680	850	983	827	990	9,105	501,507
16-Aug	414	495	380	564	318	453	727	746	905	919	1,086	1,443	14,109	515,616
17-Aug	252	380	308	479	469	392	308	629	793	611	763	880	12,016	527,632
18-Aug	409	332	518	467	588	834	919	928	473	622	534	552	12,758	540,390
19-Aug	304	287	369	575	618	666	780	706	640	992	954	657	11,264	551,654
20-Aug	311	199	273	508	361	413	489	542	576	634	1,367	1,260	15,328	566,982
21-Aug	227	209	156	253	209	169	429	646	553	743	833	474	9,392	576,374
22-Aug	222	330	293	270	489	356	498	651	656	785	679	534	9,011	585,385
23-Aug	426	416	303	378	564	423	766	750	787	1,050	854	755	12,195	597,580
24-Aug	100	112	489	359	576	487	824	2,042	2,022	1,697	1,531	1,247	14,502	612,082
25-Aug	543	607	658	717	885	849	916	813	1,188	1,859	2,015	1,963	19,905	631,987
26-Aug	1,729	1,495	1,872	1,449	1,211	960	1,305	1,063	1,208	1,705	1,332	638	31,330	663,317
27-Aug	436	429	478	493	341	353	384	601	567	709	744	705	15,118	678,435
28-Aug	308	326	90	327	366	285	414	493	959	1,041	1,010	801	10,787	689,222
29-Aug	409	429	267	142	715	759	739	831	1,054	834	221	714	11,603	700,825
30-Aug	1,305	1,070	722	449	695	393	1,010	1,043	1,082	665	582	986	13,512	714,337
31-Aug	578	515	582	673	780	718	358	175	351	530	507	745	12,064	726,401
Total	26,338	27,929	29,074	31,991	32,860	32,669	35,848	39,833	43,940	45,555	42,400	37,951	726,401	

Appendix A4.–Kenai River south bank sonar counts (all species) by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
1-Jul	57	53	54	25	23	34	31	17	32	52	33	72
2-Jul	72	77	98	26	39	75	33	52	90	115	46	80
3-Jul	85	73	58	47	67	50	77	50	48	123	54	85
4-Jul	77	89	63	56	206	57	45	42	30	48	87	99
5-Jul	75	73	57	36	13	23	32	70	16	39	62	71
6-Jul	74	57	39	50	29	24	19	17	31	43	83	72
7-Jul	61	35	48	33	16	50	39	63	54	46	30	101
8-Jul	115	86	72	41	39	39	20	17	28	34	72	95
9-Jul	146	103	75	55	31	48	20	51	66	57	82	95
10-Jul	65	84	88	26	84	42	112	99	75	110	123	112
11-Jul	57	83	53	43	23	36	39	37	56	83	74	58
12-Jul	21	14	36	21	24	25	28	9	17	33	21	28
13-Jul	66	88	109	22	73	67	42	17	47	27	44	33
14-Jul	53	45	35	36	71	37	64	21	24	14	16	31
15-Jul	44	47	33	26	46	70	51	83	32	35	68	30
16-Jul	120	59	93	54	52	81	69	55	137	137	122	459
17-Jul	215	292	225	66	95	98	82	449	510	293	413	538
18-Jul	291	271	174	103	77	126	90	78	42	172	168	264
19-Jul	151	233	110	38	31	44	29	37	81	69	67	111
20-Jul	274	168	92	44	53	52	56	56	76	120	103	251
21-Jul	301	348	249	151	113	176	129	87	52	160	211	450
22-Jul	1,015	430	476	311	288	252	194	563	916	854	962	1,001
23-Jul	292	334	179	116	207	170	278	370	691	328	396	743
24-Jul	544	525	391	276	151	170	230	520	1,113	1,059	478	1,135
25-Jul	639	292	263	216	241	365	416	246	272	281	493	617
26-Jul	415	378	375	357	201	693	2,269	2,689	2,067	1,619	3,233	2,887
27-Jul	248	173	142	199	178	472	687	858	934	570	1,008	1,075
28-Jul	189	224	179	154	225	401	1,000	1,201	1,063	903	774	973
29-Jul	306	342	141	133	274	619	684	984	895	932	1,131	1,063
30-Jul	369	178	127	92	230	699	799	1,676	1,898	1,092	970	1,821
31-Jul	214	149	50	37	39	271	404	906	421	515	1,240	1,606

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Appendix A4.–Page 2 of 4.

	Counts by Hour													
Date	13	14	15	16	17	18	19	20	21	22	23	24	Total	Cum
1-Jul	47	53	41	36	56	38	109	105	80	49	66	11	1,174	1,174
2-Jul	64	71	77	147	101	58	74	100	108	90	81	98	1,872	3,046
3-Jul	52	59	37	68	80	122	96	71	86	117	58	80	1,743	4,789
4-Jul	84	70	42	45	40	55	54	53	61	98	61	73	1,635	6,424
5-Jul	78	56	42	41	38	75	76	87	39	50	41	44	1,234	7,658
6-Jul	78	87	81	110	97	72	66	67	91	105	99	45	1,536	9,194
7-Jul	152	170	164	147	93	121	101	181	73	130	104	123	2,135	11,329
8-Jul	106	83	93	37	15	64	98	57	42	50	71	95	1,469	12,798
9-Jul	0	120	122	120	138	185	154	190	81	82	80	104	2,205	15,003
10-Jul	124	169	226	155	226	162	207	116	119	136	130	120	2,910	17,913
11-Jul	50	43	86	129	73	39	53	64	22	43	39	34	1,317	19,230
12-Jul	26	50	54	59	67	44	51	37	50	41	32	78	866	20,096
13-Jul	35	77	60	50	79	79	65	71	60	54	64	54	1,383	21,479
14-Jul	26	20	15	17	51	36	36	58	46	32	24	35	843	22,322
15-Jul	45	120	80	108	122	181	185	130	175	131	91	82	2,015	24,337
16-Jul	392	486	476	478	542	590	1058	1,156	751	574	533	240	8,714	33,051
17-Jul	546	294	426	782	711	671	584	470	650	539	503	690	10,142	43,193
18-Jul	356	473	311	213	282	255	385	167	164	227	210	176	5,075	48,268
19-Jul	116	137	97	140	115	108	141	232	105	163	177	374	2,906	51,174
20-Jul	198	216	163	184	110	118	241	197	162	155	210	312	3,611	54,785
21-Jul	793	478	322	451	483	577	881	606	784	691	840	767	10,100	64,885
22-Jul	795	757	1,243	819	817	848	811	548	445	492	426	324	15,587	80,472
23-Jul	1,022	784	834	908	811	985	853	718	821	866	865	644	14,215	94,687
24-Jul	814	1,961	1,682	1,800	1,709	1,701	1,211	1,063	789	1,013	477	489	21,301	115,988
25-Jul	1,261	1,702	1,994	1,655	1,390	1,614	2,002	1,835	1,442	1,050	383	474	21,143	137,131
26-Jul	2,924	2,265	2,744	2,903	2,587	2,601	1,942	1,903	1,973	1,667	890	464	42,046	179,177
27-Jul	1,395	1,367	1,535	2,091	2,461	2,187	2,036	1,973	1,621	1,168	968	561	25,907	205,084
28-Jul	1,829	1,301	1,915	2,092	2,376	2,107	2,261	1,942	1,222	744	533	448	26,056	231,140
29-Jul	1,065	1,269	1,406	1,901	1,280	1,686	2,006	2,148	2,045	1,644	1,309	588	25,851	256,991
30-Jul	1,617	1,488	1,379	2,464	1,853	1,957	2,468	2,070	1,483	1,642	1,585	584	30,541	287,532
31-Jul	2,363	2,663	2,149	1,275	1,758	1,388	2,367	2,498	1,017	1,946	1,262	891	27,429	314,961

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Appendix A4.–Page 3 of 4.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
1-Aug	473	74	139	235	157	198	840	1,482	1,369	819	482	757
2-Aug	365	183	74	74	41	265	743	1,651	1,525	827	834	684
3-Aug	350	170	100	100	110	161	426	675	1,824	764	565	515
4-Aug	1,310	541	347	122	63	355	649	986	940	722	796	926
5-Aug	586	532	287	196	238	183	650	1,576	1,966	878	890	903
6-Aug	871	770	559	336	236	362	404	933	741	783	625	407
7-Aug	1,174	883	539	338	342	313	339	535	657	609	475	283
8-Aug	492	400	253	101	153	173	194	267	286	327	241	242
9-Aug	733	510	348	124	109	139	201	233	294	335	266	176
10-Aug	459	293	91	112	97	84	122	191	239	239	302	304
11-Aug	357	184	217	221	157	104	187	268	409	784	495	499
12-Aug	531	227	126	72	85	127	280	367	545	668	736	586
13-Aug	630	335	219	158	119	69	244	399	643	837	655	617
14-Aug	641	307	228	164	58	89	190	535	468	679	490	582
15-Aug	536	480	422	306	203	320	311	669	878	1,045	872	954
16-Aug	674	553	219	143	114	231	395	704	944	1,070	899	749
17-Aug	937	519	402	181	198	110	393	508	765	1,060	746	606
18-Aug	763	483	382	536	305	157	245	439	576	876	789	651
19-Aug	673	395	251	474	399	286	327	705	706	784	771	682
20-Aug	1,616	1,197	594	366	236	207	367	1,044	1,551	1,354	912	791
21-Aug	998	425	269	156	144	119	287	528	744	769	817	676
22-Aug	719	250	191	140	96	70	154	399	590	927	1,021	975
23-Aug	3,285	1,038	300	188	120	74	260	644	710	881	895	753
24-Aug	988	195	91	139	60	494	124	360	685	1,073	1,430	1,623
25-Aug	713	177	60	50	70	66	85	406	624	755	739	571
26-Aug	1,768	1,310	474	152	74	684	528	1,143	1,806	2,927	3,330	3,620
27-Aug	2,175	1,144	628	270	148	252	258	772	896	984	1,093	960
28-Aug	1,212	710	308	132	45	71	350	929	1,127	1,005	990	691
29-Aug	1,151	583	219	330	102	152	426	972	1,134	1,214	1,080	918
30-Aug	2,039	2,062	394	326	128	408	253	1,073	1,626	1,572	1,809	1,916
31-Aug	2,689	1,095	849	752	571	1,382	1,562	1,098	1,421	1,822	2,488	2,311
Total	38,559	23,428	13,764	9,884	8,217	13,071	19,862	33,911	40,503	39,352	41,197	42,984

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Appendix A4.–Page 4 of 4.

Date	Counts by Hour												Daily
	13	14	15	16	17	18	19	20	21	22	23	24	Total
1-Aug	1,224	1,340	3,122	2,850	2,720	2,792	2,639	2,374	2,001	2,528	1,249	990	32,854
2-Aug	1,183	1,229	1,356	1,554	1,944	2,631	2,953	2,920	2,127	2,274	1,911	901	30,249
3-Aug	601	1,176	897	1,407	1,364	1,738	2,696	2,591	2,444	2,164	2,031	2,061	26,930
4-Aug	996	970	1,036	1,810	1,481	1,119	1,336	2,095	1,572	2,059	2,145	1,617	25,993
5-Aug	629	757	881	1,005	1,235	1,578	2,018	2,042	2,078	1,654	1,457	1,422	25,641
6-Aug	466	561	487	636	654	699	939	1,133	1,516	1,311	692	920	17,041
7-Aug	437	392	523	554	531	563	477	630	835	739	535	659	13,362
8-Aug	240	308	352	475	403	564	603	598	745	461	671	824	9,373
9-Aug	195	179	209	370	425	739	639	653	668	878	810	753	9,986
10-Aug	568	324	402	613	581	685	680	633	1,428	1,194	929	673	11,243
11-Aug	415	420	469	510	633	995	857	1,214	1,377	1,353	976	890	13,991
12-Aug	483	763	628	784	1,191	1,425	1,507	1,368	1,764	1,100	972	1,314	17,649
13-Aug	615	656	906	640	879	819	853	1,029	1,548	1,190	919	785	15,764
14-Aug	514	642	975	1,143	1,283	912	778	881	756	885	706	644	14,550
15-Aug	768	1,174	2,203	2,149	2,383	2,076	1,825	1,336	1,383	1,581	1,463	903	26,240
16-Aug	732	1,121	1,458	1,444	2,156	2,104	2,054	1,993	1,356	1,680	1,786	1,477	26,056
17-Aug	666	743	974	927	1,092	1,091	1,532	1,528	1,265	2,381	2,354	1,506	22,484
18-Aug	523	819	949	1,187	1,358	1,362	1,290	1,964	2,286	2,313	1,841	737	22,831
19-Aug	548	792	1,044	1,322	2,224	2,369	2,639	2,816	3,493	2,698	2,626	2,365	31,389
20-Aug	687	718	917	1,066	1,527	2,037	2,392	2,521	2,743	2,798	1,973	1,439	31,053
21-Aug	611	798	885	1,010	1,074	1,274	1,583	2,269	2,336	2,359	1,678	1,354	23,163
22-Aug	808	957	1,217	1,850	2,231	2,592	3,265	3,113	3,139	3,679	4,253	3,632	36,268
23-Aug	832	832	1,248	2,029	2,762	4,319	4,176	3,895	4,571	3,694	3,610	2,777	43,893
24-Aug	1,295	1,358	1,090	1,168	1,775	2,120	2,359	2,195	2,380	3,134	2,510	1,663	30,309
25-Aug	573	738	963	1,739	1,864	2,873	3,643	3,894	3,647	4,013	3,624	2,743	34,630
26-Aug	2,903	2,968	3,652	2,944	2,730	3,074	3,611	4,045	4,394	4,031	3,781	2,808	58,757
27-Aug	875	1,166	1,053	1,302	1,795	2,585	3,713	4,042	3,764	3,671	3,326	2,307	39,179
28-Aug	897	906	1,045	1,555	2,161	3,359	4,230	4,332	4,149	4,166	3,687	2,666	40,723
29-Aug	1,126	1,261	1,231	1,720	2,788	3,708	4,470	4,807	5,204	5,201	4,789	3,832	48,418
30-Aug	1,732	2,076	2,202	3,226	4,205	4,897	5,589	5,850	5,870	5,709	4,852	3,666	63,480
31-Aug	2,238	2,380	2,527	2,729	3,744	4,187	4,891	5,347	5,496	5,214	4,636	3,040	64,469
Total	44,833	49,413	56,797	65,143	73,754	84,010	94,909	97,021	94,942	93,901	81,004	62,470	1,222,929

Appendix A5.–Proportion of Kenai River north bank sonar counts by hour, 2006.

	Proportion of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
1-Jul	4.4	4.2	5.4	1.4	2.0	5.1	3.1	3.2	4.6	6.3	5.9	4.2	4.7	2.5	1.5	1.4	0.5	0.3	1.4	15.8	7.5	8.6	2.2	3.7	100
2-Jul	6.4	2.4	8.3	4.2	3.5	2.7	3.7	7.1	12.1	5.4	2.4	1.5	0.1	5.0	3.7	1.4	1.6	1.8	2.4	2.2	5.1	7.3	5.2	4.5	100
3-Jul	5.9	2.9	2.7	6.7	2.9	4.5	6.3	9.0	8.0	8.7	6.9	2.1	3.0	0.8	0.6	0.3	0.3	0.3	0.8	2.5	1.0	1.3	6.7	15.9	100
4-Jul	3.3	5.9	3.6	2.3	4.7	3.0	3.4	2.9	5.5	8.6	7.3	1.6	7.7	5.3	1.1	1.7	1.4	3.7	4.3	2.1	3.0	4.9	9.5	3.4	100
5-Jul	4.2	4.9	2.7	2.2	2.6	3.2	1.2	2.3	3.0	3.9	3.4	4.7	5.5	4.4	3.9	4.5	2.5	3.5	7.2	6.8	4.5	10.5	5.1	3.3	100
6-Jul	4.4	3.9	1.6	4.5	4.2	4.1	5.5	4.9	4.5	3.7	4.0	5.8	2.4	4.0	3.9	6.1	4.9	6.0	2.8	4.5	3.3	4.8	4.0	2.2	100
7-Jul	7.9	2.6	1.4	1.3	3.9	3.5	4.0	1.1	2.1	4.5	3.2	3.9	4.7	4.1	3.5	6.9	7.0	7.6	3.2	5.4	5.3	4.8	5.7	2.6	100
8-Jul	4.0	0.6	1.3	1.1	2.9	6.3	4.7	1.1	1.4	1.5	4.3	3.3	2.1	2.0	6.0	5.0	7.2	4.1	5.2	6.1	4.5	12.1	9.5	3.6	100
9-Jul	4.5	1.4	1.4	1.0	3.3	1.2	2.1	1.7	3.7	6.9	5.2	5.2	4.4	4.6	3.8	3.4	6.9	5.2	3.5	4.5	8.0	7.4	6.9	3.6	100
10-Jul	2.6	4.3	2.2	1.2	2.6	2.5	1.9	5.4	3.9	5.4	2.9	3.7	3.6	3.0	7.3	7.5	6.8	8.8	6.9	6.1	3.7	3.7	2.2	1.6	100
11-Jul	0.6	1.2	1.0	0.4	0.7	4.7	6.9	3.3	5.6	5.8	5.3	6.7	6.0	5.0	9.3	10.9	6.2	5.5	4.0	1.3	1.4	4.0	2.9	1.2	100
12-Jul	3.8	2.3	2.2	2.7	1.2	2.3	1.6	2.0	6.6	3.8	7.0	2.7	6.0	5.1	8.2	6.3	7.4	9.2	4.0	3.9	2.0	3.5	4.0	2.5	100
13-Jul	3.4	3.3	2.7	1.4	2.4	4.5	5.4	5.5	3.5	0.9	2.1	4.2	8.3	4.5	9.7	1.4	11.6	2.7	3.8	4.3	6.3	3.4	2.7	1.8	100
14-Jul	3.6	2.4	2.6	2.8	2.8	4.7	2.7	1.7	2.5	2.7	6.0	3.9	4.5	2.3	2.4	8.7	9.2	12.1	4.6	3.7	5.6	1.6	3.6	3.6	100
15-Jul	3.5	1.8	2.1	2.0	3.7	1.9	3.0	2.5	4.2	2.0	3.6	1.7	3.1	2.3	6.5	4.1	6.7	4.2	6.1	6.6	6.2	9.6	6.8	5.9	100
16-Jul	2.3	2.4	2.9	1.2	2.5	1.5	2.0	5.5	2.3	1.8	4.0	3.2	5.5	5.1	6.6	4.9	4.1	6.3	4.9	6.2	8.5	7.5	5.5	3.3	100
17-Jul	6.9	5.3	4.8	4.3	4.2	3.0	2.6	3.7	4.6	4.1	4.5	3.8	6.3	6.2	5.8	3.0	3.5	2.2	4.6	3.7	2.6	3.2	4.2	3.1	100
18-Jul	6.4	4.3	5.8	4.8	3.4	4.2	4.0	3.3	2.6	3.6	5.0	4.2	8.5	6.0	4.2	4.7	5.0	7.1	2.9	3.1	2.4	2.8	1.1	0.7	100
19-Jul	1.7	0.5	0.7	0.2	0.3	1.4	1.6	3.3	5.0	8.4	4.0	6.4	7.6	6.7	4.7	6.9	5.7	4.5	3.5	4.9	5.5	8.2	5.8	2.5	100
20-Jul	1.4	4.4	5.6	3.0	1.3	1.8	2.2	2.9	2.4	2.6	3.3	3.1	5.0	3.6	3.3	6.6	6.6	5.1	8.0	9.6	4.4	3.9	4.9	5.2	100
21-Jul	4.1	6.1	3.8	3.5	3.6	3.3	3.0	2.5	2.2	2.0	3.1	3.6	3.3	6.0	5.1	5.2	4.8	5.4	4.9	5.6	5.1	5.0	3.9	5.0	100
22-Jul	2.1	3.8	2.5	2.1	1.7	1.8	1.8	2.9	2.0	2.4	5.1	5.3	7.1	5.6	6.1	8.1	5.6	4.6	5.0	5.0	5.7	5.2	5.2	3.3	100
23-Jul	2.5	4.4	3.4	3.2	1.7	1.8	2.7	4.4	4.3	3.9	3.0	2.7	4.4	6.2	6.5	5.8	6.1	5.7	6.4	4.0	5.2	4.0	3.9	3.8	100
24-Jul	1.7	3.5	4.6	4.3	1.9	2.2	2.9	4.0	4.5	2.5	3.7	4.6	4.8	5.8	4.5	7.1	4.9	3.7	4.7	4.0	7.8	5.0	4.3	3.1	100
25-Jul	1.3	2.2	2.4	2.6	2.8	2.3	1.1	2.5	2.1	2.4	2.3	2.6	2.8	4.9	7.8	7.4	4.4	4.4	5.1	6.4	7.4	8.1	8.1	6.5	100
26-Jul	4.0	5.9	4.9	2.9	1.6	3.5	5.4	6.6	4.3	4.1	4.1	3.9	3.8	5.5	5.7	4.4	3.9	3.7	3.6	4.3	4.1	4.0	3.0	2.6	100
27-Jul	3.7	4.8	3.5	2.7	2.6	3.2	3.3	3.6	3.6	3.5	2.9	1.7	2.3	3.0	4.4	5.1	5.2	4.2	5.8	6.4	6.6	6.5	6.8	4.5	100
28-Jul	4.1	3.8	3.9	4.7	2.5	4.1	5.9	7.6	3.9	3.1	2.9	2.5	2.7	2.9	2.6	3.7	4.9	4.6	3.9	4.7	5.5	5.8	5.5	4.1	100
29-Jul	2.8	3.8	1.8	1.6	3.4	4.7	2.9	3.7	3.8	4.4	4.3	3.0	3.3	3.5	3.0	4.5	4.3	6.3	8.0	6.6	6.4	5.7	4.9	3.4	100
30-Jul	3.9	3.2	3.9	1.5	1.5	2.3	3.3	3.9	4.4	3.4	3.4	3.8	4.5	3.9	4.4	5.3	5.3	5.2	4.1	6.4	5.3	6.3	6.2	4.4	100
31-Jul	3.7	2.7	2.8	2.9	1.2	4.0	3.4	3.3	5.5	4.5	4.1	5.2	4.5	3.9	2.2	3.8	4.1	3.7	5.8	8.5	8.7	4.9	3.4	3.1	100

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Appendix A5.–Page 2 of 2.

	Proportion of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
1-Aug	3.7	3.9	2.9	4.0	4.6	1.8	1.7	2.5	3.0	2.2	2.8	2.6	3.6	3.8	3.0	5.8	6.9	6.5	6.4	5.2	5.7	7.9	6.1	3.4	100
2-Aug	5.9	5.5	5.0	3.7	1.8	1.7	2.2	3.1	1.9	2.1	2.5	3.7	3.5	2.9	4.1	4.2	6.1	4.7	3.4	5.2	8.8	7.4	4.4	6.1	100
3-Aug	7.6	8.0	6.0	3.5	3.4	3.0	3.0	2.3	2.7	2.0	3.2	2.9	3.9	5.7	4.9	5.0	4.6	4.2	2.8	3.2	5.0	4.6	4.8	3.7	100
4-Aug	6.8	4.6	3.6	2.1	4.5	2.7	1.9	2.1	2.4	2.0	2.2	1.1	2.3	2.1	3.2	3.5	3.6	6.3	6.1	6.6	7.5	9.5	3.6	9.6	100
5-Aug	9.0	7.1	5.3	4.4	4.0	3.9	2.8	2.5	2.7	2.6	2.1	2.6	2.4	2.1	2.6	2.9	3.8	5.1	5.5	5.6	5.5	5.2	4.9	5.6	100
6-Aug	8.4	6.2	7.1	5.4	4.3	4.0	2.9	3.6	3.5	3.1	2.8	2.6	2.2	2.4	2.9	1.7	2.4	2.4	2.5	3.1	2.8	4.8	9.1	9.9	100
7-Aug	12.6	10.3	9.0	5.6	3.2	2.6	3.5	2.1	4.4	3.1	3.6	2.7	2.7	2.3	2.5	2.5	2.9	2.7	2.6	2.7	3.1	3.6	4.7	5.0	100
8-Aug	10.5	5.1	8.8	5.9	4.8	3.9	2.8	3.1	2.6	1.9	2.2	1.7	2.6	1.5	1.6	2.1	2.9	3.0	3.2	3.7	4.4	5.8	9.0	6.6	100
9-Aug	5.3	6.0	7.7	5.1	4.3	3.0	3.5	3.5	3.8	2.8	2.7	1.9	2.5	2.1	3.4	3.1	3.6	4.4	5.9	4.8	5.1	5.0	4.9	5.6	100
10-Aug	4.1	3.8	3.6	2.3	3.0	2.3	1.8	2.2	1.6	2.5	2.9	2.3	3.2	4.5	4.4	5.1	6.6	2.6	4.3	7.4	9.1	7.9	6.7	5.5	100
11-Aug	3.5	3.0	2.2	2.9	2.4	2.8	2.0	2.8	2.3	2.1	2.4	2.0	3.7	3.2	4.3	2.3	3.7	5.9	6.2	6.6	7.8	7.0	9.7	9.3	100
12-Aug	3.1	1.6	1.6	1.3	0.9	1.9	2.7	2.3	3.1	4.0	3.8	4.9	3.5	3.9	4.3	4.6	5.6	5.6	4.5	5.9	7.2	7.7	9.5	6.5	100
13-Aug	5.6	4.5	4.2	3.4	2.6	2.8	2.9	2.8	2.4	3.9	3.3	3.9	4.1	5.8	4.1	4.0	3.8	4.2	4.2	4.6	5.8	7.2	5.4	4.5	100
14-Aug	4.8	2.9	3.4	2.3	1.6	1.9	2.1	3.1	2.4	3.5	2.7	2.6	2.6	3.9	4.0	4.4	5.7	7.3	4.8	6.0	6.1	6.9	9.1	6.0	100
15-Aug	3.7	1.4	1.6	0.6	0.9	1.4	1.5	1.8	1.7	2.4	1.8	1.7	3.2	5.5	3.9	3.4	3.3	6.6	6.1	7.5	9.3	10.8	9.1	10.9	100
16-Aug	6.4	4.5	3.1	1.9	1.3	2.5	2.6	3.5	4.2	4.1	3.0	2.9	2.9	3.5	2.7	4.0	2.3	3.2	5.2	5.3	6.4	6.5	7.7	10.2	100
17-Aug	11.1	5.0	4.6	3.2	4.4	3.8	2.4	2.4	3.0	3.7	2.1	2.2	2.1	3.2	2.6	4.0	3.9	3.3	2.6	5.2	6.6	5.1	6.3	7.3	100
18-Aug	8.1	5.3	4.3	3.8	3.3	2.3	2.5	2.9	2.3	3.6	2.6	2.8	3.2	2.6	4.1	3.7	4.6	6.5	7.2	7.3	3.7	4.9	4.2	4.3	100
19-Aug	3.8	2.0	2.4	2.3	2.1	1.9	2.1	2.4	3.9	3.6	2.9	3.5	2.7	2.5	3.3	5.1	5.5	5.9	6.9	6.3	5.7	8.8	8.5	5.8	100
20-Aug	11.2	4.6	4.5	3.5	3.4	3.1	4.8	4.1	5.7	4.1	3.2	2.5	2.0	1.3	1.8	3.3	2.4	2.7	3.2	3.5	3.8	4.1	8.9	8.2	100
21-Aug	5.3	4.8	3.7	3.1	3.9	3.9	4.7	4.7	5.2	4.6	2.4	1.6	2.4	2.2	1.7	2.7	2.2	1.8	4.6	6.9	5.9	7.9	8.9	5.0	100
22-Aug	3.7	1.5	2.2	2.3	1.3	2.3	2.7	2.8	3.6	3.7	5.4	4.6	2.5	3.7	3.3	3.0	5.4	4.0	5.5	7.2	7.3	8.7	7.5	5.9	100
23-Aug	4.1	2.0	2.2	2.0	1.9	2.4	3.1	3.6	4.3	6.4	4.2	2.6	3.5	3.4	2.5	3.1	4.6	3.5	6.3	6.2	6.5	8.6	7.0	6.2	100
24-Aug	3.9	2.0	1.2	1.1	1.3	1.4	2.1	1.8	2.1	2.7	0.8	0.6	0.7	0.8	3.4	2.5	4.0	3.4	5.7	14.1	13.9	11.7	10.6	8.6	100
25-Aug	3.8	2.2	3.4	2.1	1.8	1.8	2.8	3.7	3.5	4.0	2.8	2.8	2.7	3.0	3.3	3.6	4.4	4.3	4.6	4.1	6.0	9.3	10.1	9.9	100
26-Aug	2.1	6.3	3.3	4.7	2.0	3.3	3.3	4.6	5.0	4.5	4.7	5.3	5.5	4.8	6.0	4.6	3.9	3.1	4.2	3.4	3.9	5.4	4.3	2.0	100
27-Aug	1.9	4.1	2.5	6.4	8.5	8.9	7.7	2.0	3.4	8.4	3.5	1.5	2.9	2.8	3.2	3.3	2.3	2.3	2.5	4.0	3.8	4.7	4.9	4.7	100
28-Aug	4.6	3.5	3.0	1.4	1.2	1.7	3.6	7.4	4.7	3.7	2.8	2.9	2.9	3.0	0.8	3.0	3.4	2.6	3.8	4.6	8.9	9.7	9.4	7.4	100
29-Aug	2.9	1.5	1.7	2.8	7.6	2.4	3.8	4.9	3.7	2.3	2.6	2.6	3.5	3.7	2.3	1.2	6.2	6.5	6.4	7.2	9.1	7.2	1.9	6.2	100
30-Aug	2.7	5.0	5.4	2.9	1.7	0.4	0.1	0.1	0.1	0.7	4.0	2.8	9.7	7.9	5.3	3.3	5.1	2.9	7.5	7.7	8.0	4.9	4.3	7.3	100
31-Aug	5.4	4.0	2.7	1.4	2.7	5.3	3.1	7.8	4.6	4.2	3.0	1.9	4.8	4.3	4.8	5.6	6.5	6.0	3.0	1.5	2.9	4.4	4.2	6.2	100
Mean	4.7	3.8	3.6	2.9	2.8	3.0	3.1	3.5	3.7	3.7	3.6	3.2	3.9	3.8	4.1	4.3	4.7	4.6	4.7	5.4	5.7	6.2	5.9	5.2	100

Appendix A6.–Proportion of Kenai River south bank sonar counts by hour, 2006.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
1-Jul	4.9	4.5	4.6	2.1	2.0	2.9	2.6	1.4	2.7	4.4	2.8	6.1	4.0	4.5	3.5	3.1	4.8	3.2	9.3	8.9	6.8	4.2	5.6	0.9	100
2-Jul	3.8	4.1	5.2	1.4	2.1	4.0	1.8	2.8	4.8	6.1	2.5	4.3	3.4	3.8	4.1	7.9	5.4	3.1	4.0	5.3	5.8	4.8	4.3	5.2	100
3-Jul	4.9	4.2	3.3	2.7	3.8	2.9	4.4	2.9	2.8	7.1	3.1	4.9	3.0	3.4	2.1	3.9	4.6	7.0	5.5	4.1	4.9	6.7	3.3	4.6	100
4-Jul	4.7	5.4	3.9	3.4	12.6	3.5	2.8	2.6	1.8	2.9	5.3	6.1	5.1	4.3	2.6	2.8	2.4	3.4	3.3	3.2	3.7	6.0	3.7	4.5	100
5-Jul	6.1	5.9	4.6	2.9	1.1	1.9	2.6	5.7	1.3	3.2	5.0	5.8	6.3	4.5	3.4	3.3	3.1	6.1	6.2	7.1	3.2	4.1	3.3	3.6	100
6-Jul	4.8	3.7	2.5	3.3	1.9	1.6	1.2	1.1	2.0	2.8	5.4	4.7	5.1	5.7	5.3	7.2	6.3	4.7	4.3	4.4	5.9	6.8	6.4	2.9	100
7-Jul	2.9	1.6	2.2	1.5	0.7	2.3	1.8	3.0	2.5	2.2	1.4	4.7	7.1	8.0	7.7	6.9	4.4	5.7	4.7	8.5	3.4	6.1	4.9	5.8	100
8-Jul	7.8	5.9	4.9	2.8	2.7	2.7	1.4	1.2	1.9	2.3	4.9	6.5	7.2	5.7	6.3	2.5	1.0	4.4	6.7	3.9	2.9	3.4	4.8	6.5	100
9-Jul	6.6	4.7	3.4	2.5	1.4	2.2	0.9	2.3	3.0	2.6	3.7	4.3	0.0	5.4	5.5	5.4	6.3	8.4	7.0	8.6	3.7	3.7	3.6	4.7	100
10-Jul	2.2	2.9	3.0	0.9	2.9	1.4	3.8	3.4	2.6	3.8	4.2	3.8	4.3	5.8	7.8	5.3	7.8	5.6	7.1	4.0	4.1	4.7	4.5	4.1	100
11-Jul	4.3	6.3	4.0	3.3	1.7	2.7	3.0	2.8	4.3	6.3	5.6	4.4	3.8	3.3	6.5	9.8	5.5	3.0	4.0	4.9	1.7	3.3	3.0	2.6	100
12-Jul	2.4	1.6	4.2	2.4	2.8	2.9	3.2	1.0	2.0	3.8	2.4	3.2	3.0	5.8	6.2	6.8	7.7	5.1	5.9	4.3	5.8	4.7	3.7	9.0	100
13-Jul	4.8	6.4	7.9	1.6	5.3	4.8	3.0	1.2	3.4	2.0	3.2	2.4	2.5	5.6	4.3	3.6	5.7	5.7	4.7	5.1	4.3	3.9	4.6	3.9	100
14-Jul	6.3	5.3	4.2	4.3	8.4	4.4	7.6	2.5	2.8	1.7	1.9	3.7	3.1	2.4	1.8	2.0	6.0	4.3	4.3	6.9	5.5	3.8	2.8	4.2	100
15-Jul	2.2	2.3	1.6	1.3	2.3	3.5	2.5	4.1	1.6	1.7	3.4	1.5	2.2	6.0	4.0	5.4	6.1	9.0	9.2	6.5	8.7	6.5	4.5	4.1	100
16-Jul	1.4	0.7	1.1	0.6	0.6	0.9	0.8	0.6	1.6	1.6	1.4	5.3	4.5	5.6	5.5	5.5	6.2	6.8	12.1	13.3	8.6	6.6	6.1	2.8	100
17-Jul	2.1	2.9	2.2	0.7	0.9	1.0	0.8	4.4	5.0	2.9	4.1	5.3	5.4	2.9	4.2	7.7	7.0	6.6	5.8	4.6	6.4	5.3	5.0	6.8	100
18-Jul	5.7	5.3	3.4	2.0	1.5	2.5	1.8	1.5	0.8	3.4	3.3	5.2	7.0	9.3	6.1	4.2	5.6	5.0	7.6	3.3	3.2	4.5	4.1	3.5	100
19-Jul	5.2	8.0	3.8	1.3	1.1	1.5	1.0	1.3	2.8	2.4	2.3	3.8	4.0	4.7	3.3	4.8	4.0	3.7	4.9	8.0	3.6	5.6	6.1	12.9	100
20-Jul	7.6	4.7	2.5	1.2	1.5	1.4	1.6	1.6	2.1	3.3	2.9	7.0	5.5	6.0	4.5	5.1	3.0	3.3	6.7	5.5	4.5	4.3	5.8	8.6	100
21-Jul	3.0	3.4	2.5	1.5	1.1	1.7	1.3	0.9	0.5	1.6	2.1	4.5	7.9	4.7	3.2	4.5	4.8	5.7	8.7	6.0	7.8	6.8	8.3	7.6	100
22-Jul	6.5	2.8	3.1	2.0	1.8	1.6	1.2	3.6	5.9	5.5	6.2	6.4	5.1	4.9	8.0	5.3	5.2	5.4	5.2	3.5	2.9	3.2	2.7	2.1	100
23-Jul	2.1	2.3	1.3	0.8	1.5	1.2	2.0	2.6	4.9	2.3	2.8	5.2	7.2	5.5	5.9	6.4	5.7	6.9	6.0	5.1	5.8	6.1	6.1	4.5	100
24-Jul	2.6	2.5	1.8	1.3	0.7	0.8	1.1	2.4	5.2	5.0	2.2	5.3	3.8	9.2	7.9	8.5	8.0	8.0	5.7	5.0	3.7	4.8	2.2	2.3	100
25-Jul	3.0	1.4	1.2	1.0	1.1	1.7	2.0	1.2	1.3	1.3	2.3	2.9	6.0	8.0	9.4	7.8	6.6	7.6	9.5	8.7	6.8	5.0	1.8	2.2	100
27-Jul	1.0	0.9	0.9	0.8	0.5	1.6	5.4	6.4	4.9	3.9	7.7	6.9	7.0	5.4	6.5	6.9	6.2	6.2	4.6	4.5	4.7	4.0	2.1	1.1	100
28-Jul	1.0	0.7	0.5	0.8	0.7	1.8	2.7	3.3	3.6	2.2	3.9	4.1	5.4	5.3	5.9	8.1	9.5	8.4	7.9	7.6	6.3	4.5	3.7	2.2	100
29-Jul	0.7	0.9	0.7	0.6	0.9	1.5	3.8	4.6	4.1	3.5	3.0	3.7	7.0	5.0	7.3	8.0	9.1	8.1	8.7	7.5	4.7	2.9	2.0	1.7	100
30-Jul	1.2	1.3	0.5	0.5	1.1	2.4	2.6	3.8	3.5	3.6	4.4	4.1	4.1	4.9	5.4	7.4	5.0	6.5	7.8	8.3	7.9	6.4	5.1	2.3	100
31-Jul	1.2	0.6	0.4	0.3	0.8	2.3	2.6	5.5	6.2	3.6	3.2	6.0	5.3	4.9	4.5	8.1	6.1	6.4	8.1	6.8	4.9	5.4	5.2	1.9	100

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Appendix A6.–Page 2 of 2.

	Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
1-Aug	1.4	0.2	0.4	0.7	0.5	0.6	2.6	4.5	4.2	2.5	1.5	2.3	3.7	4.1	9.5	8.7	8.3	8.5	8.0	7.2	6.1	7.7	3.8	3.0	100
2-Aug	1.2	0.6	0.2	0.2	0.1	0.9	2.5	5.5	5.0	2.7	2.8	2.3	3.9	4.1	4.5	5.1	6.4	8.7	9.8	9.7	7.0	7.5	6.3	3.0	100
3-Aug	1.3	0.6	0.4	0.4	0.4	0.6	1.6	2.5	6.8	2.8	2.1	1.9	2.2	4.4	3.3	5.2	5.1	6.5	10.0	9.6	9.1	8.0	7.5	7.7	100
4-Aug	5.0	2.1	1.3	0.5	0.2	1.4	2.5	3.8	3.6	2.8	3.1	3.6	3.8	3.7	4.0	7.0	5.7	4.3	5.1	8.1	6.0	7.9	8.3	6.2	100
5-Aug	2.3	2.1	1.1	0.8	0.9	0.7	2.5	6.1	7.7	3.4	3.5	3.5	2.5	3.0	3.4	3.9	4.8	6.2	7.9	8.0	8.1	6.5	5.7	5.5	100
6-Aug	5.1	4.5	3.3	2.0	1.4	2.1	2.4	5.5	4.3	4.6	3.7	2.4	2.7	3.3	2.9	3.7	3.8	4.1	5.5	6.6	8.9	7.7	4.1	5.4	100
7-Aug	8.8	6.6	4.0	2.5	2.6	2.3	2.5	4.0	4.9	4.6	3.6	2.1	3.3	2.9	3.9	4.1	4.0	4.2	3.6	4.7	6.2	5.5	4.0	4.9	100
8-Aug	5.2	4.3	2.7	1.1	1.6	1.8	2.1	2.8	3.1	3.5	2.6	2.6	2.6	3.3	3.8	5.1	4.3	6.0	6.4	6.4	7.9	4.9	7.2	8.8	100
9-Aug	7.3	5.1	3.5	1.2	1.1	1.4	2.0	2.3	2.9	3.4	2.7	1.8	2.0	1.8	2.1	3.7	4.3	7.4	6.4	6.5	6.7	8.8	8.1	7.5	100
10-Aug	4.1	2.6	0.8	1.0	0.9	0.7	1.1	1.7	2.1	2.1	2.7	2.7	5.1	2.9	3.6	5.5	5.2	6.1	6.0	5.6	12.7	10.6	8.3	6.0	100
11-Aug	2.6	1.3	1.6	1.6	1.1	0.7	1.3	1.9	2.9	5.6	3.5	3.6	3.0	3.0	3.4	3.6	4.5	7.1	6.1	8.7	9.8	9.7	7.0	6.4	100
12-Aug	3.0	1.3	0.7	0.4	0.5	0.7	1.6	2.1	3.1	3.8	4.2	3.3	2.7	4.3	3.6	4.4	6.7	8.1	8.5	7.8	10.0	6.2	5.5	7.4	100
13-Aug	4.0	2.1	1.4	1.0	0.8	0.4	1.5	2.5	4.1	5.3	4.2	3.9	3.9	4.2	5.7	4.1	5.6	5.2	5.4	6.5	9.8	7.5	5.8	5.0	100
14-Aug	4.4	2.1	1.6	1.1	0.4	0.6	1.3	3.7	3.2	4.7	3.4	4.0	3.5	4.4	6.7	7.9	8.8	6.3	5.3	6.1	5.2	6.1	4.9	4.4	100
15-Aug	2.0	1.8	1.6	1.2	0.8	1.2	1.2	2.5	3.3	4.0	3.3	3.6	2.9	4.5	8.4	8.2	9.1	7.9	7.0	5.1	5.3	6.0	5.6	3.4	100
16-Aug	2.6	2.1	0.8	0.5	0.4	0.9	1.5	2.7	3.6	4.1	3.5	2.9	2.8	4.3	5.6	5.5	8.3	8.1	7.9	7.6	5.2	6.4	6.9	5.7	100
17-Aug	4.2	2.3	1.8	0.8	0.9	0.5	1.7	2.3	3.4	4.7	3.3	2.7	3.0	3.3	4.3	4.1	4.9	4.9	6.8	6.8	5.6	10.6	10.5	6.7	100
18-Aug	3.3	2.1	1.7	2.3	1.3	0.7	1.1	1.9	2.5	3.8	3.5	2.9	2.3	3.6	4.2	5.2	5.9	6.0	5.7	8.6	10.0	10.1	8.1	3.2	100
19-Aug	2.1	1.3	0.8	1.5	1.3	0.9	1.0	2.2	2.2	2.5	2.5	2.2	1.7	2.5	3.3	4.2	7.1	7.5	8.4	9.0	11.1	8.6	8.4	7.5	100
20-Aug	5.2	3.9	1.9	1.2	0.8	0.7	1.2	3.4	5.0	4.4	2.9	2.5	2.2	2.3	3.0	3.4	4.9	6.6	7.7	8.1	8.8	9.0	6.4	4.6	100
21-Aug	4.3	1.8	1.2	0.7	0.6	0.5	1.2	2.3	3.2	3.3	3.5	2.9	2.6	3.4	3.8	4.4	4.6	5.5	6.8	9.8	10.1	10.2	7.2	5.8	100
22-Aug	2.0	0.7	0.5	0.4	0.3	0.2	0.4	1.1	1.6	2.6	2.8	2.7	2.2	2.6	3.4	5.1	6.2	7.1	9.0	8.6	8.7	10.1	11.7	10.0	100
23-Aug	7.5	2.4	0.7	0.4	0.3	0.2	0.6	1.5	1.6	2.0	2.0	1.7	1.9	1.9	2.8	4.6	6.3	9.8	9.5	8.9	10.4	8.4	8.2	6.3	100
24-Aug	3.3	0.6	0.3	0.5	0.2	1.6	0.4	1.2	2.3	3.5	4.7	5.4	4.3	4.5	3.6	3.9	5.9	7.0	7.8	7.2	7.9	10.3	8.3	5.5	100
25-Aug	2.1	0.5	0.2	0.1	0.2	0.2	0.2	1.2	1.8	2.2	2.1	1.6	1.7	2.1	2.8	5.0	5.4	8.3	10.5	11.2	10.5	11.6	10.5	7.9	100
26-Aug	3.0	2.2	0.8	0.3	0.1	1.2	0.9	1.9	3.1	5.0	5.7	6.2	4.9	5.1	6.2	5.0	4.6	5.2	6.1	6.9	7.5	6.9	6.4	4.8	100
27-Aug	5.6	2.9	1.6	0.7	0.4	0.6	0.7	2.0	2.3	2.5	2.8	2.5	2.2	3.0	2.7	3.3	4.6	6.6	9.5	10.3	9.6	9.4	8.5	5.9	100
28-Aug	3.0	1.7	0.8	0.3	0.1	0.2	0.9	2.3	2.8	2.5	2.4	1.7	2.2	2.2	2.6	3.8	5.3	8.2	10.4	10.6	10.2	10.2	9.1	6.5	100
29-Aug	2.4	1.2	0.5	0.7	0.2	0.3	0.9	2.0	2.3	2.5	2.2	1.9	2.3	2.6	2.5	3.6	5.8	7.7	9.2	9.9	10.7	10.7	9.9	7.9	100
30-Aug	3.2	3.2	0.6	0.5	0.2	0.6	0.4	1.7	2.6	2.5	2.8	3.0	2.7	3.3	3.5	5.1	6.6	7.7	8.8	9.2	9.2	9.0	7.6	5.8	100
31-Aug	4.2	1.7	1.3	1.2	0.9	2.1	2.4	1.7	2.2	2.8	3.9	3.6	3.5	3.7	3.9	4.2	5.8	6.5	7.6	8.3	8.5	8.1	7.2	4.7	100
Mean	3.7	2.2	1.3	0.9	0.7	0.9	1.4	2.7	3.4	3.4	3.1	2.9	2.9	3.4	4.1	4.9	5.8	6.7	7.5	8.0	8.5	8.4	7.3	5.9	100

Appendix A7.–Kenai River north bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
1-Jul	0	0	19	14	7	3	25	86	119	62	176	79
2-Jul	1	0	3	5	4	7	27	292	143	119	181	83
3-Jul	3	0	4	6	4	3	48	348	96	70	170	40
4-Jul	1	0	1	2	4	9	64	187	196	143	151	224
5-Jul	4	1	6	25	16	16	150	303	342	317	141	202
6-Jul	3	11	36	27	17	11	153	480	352	298	216	165
7-Jul	4	1	13	21	5	3	114	259	319	299	103	157
8-Jul	4	0	17	32	19	9	324	299	195	221	144	144
9-Jul	1	0	23	24	15	6	42	163	304	391	267	218
10-Jul	2	4	44	32	9	3	118	111	313	331	192	126
11-Jul	28	4	14	34	16	15	63	193	388	292	275	236
12-Jul	7	3	14	38	13	7	140	212	175	91	99	204
13-Jul	4	33	60	60	7	39	82	119	205	166	207	294
14-Jul	22	23	50	44	21	23	33	96	147	246	207	175
15-Jul	31	62	156	156	44	46	153	307	323	284	208	245
16-Jul	182	513	803	310	113	129	530	394	794	354	200	266
17-Jul	461	601	918	531	211	149	523	486	598	337	225	293
18-Jul	94	295	369	184	72	94	329	469	735	554	353	341
19-Jul	21	6	17	30	35	50	231	368	674	606	417	638
20-Jul	20	199	245	453	213	149	502	564	621	355	223	313
21-Jul	844	123	602	1,236	776	82	440	501	636	246	157	268
22-Jul	62	2,017	4,498	3,289	2,904	1,717	613	580	427	285	150	157
23-Jul	484	5,942	6,120	2,260	1,598	1,276	355	375	270	146	94	228
24-Jul	157	10,847	5,850	1,761	1,188	1,053	316	319	286	233	157	227
25-Jul	3,759	22,357	1,894	155	64	55	26	85	98	79	52	32
26-Jul	5,947	29,799	4,434	183	99	104	21	330	121	101	35	34
27-Jul	2,457	23,255	2,780	284	121	113	26	202	171	181	46	57
28-Jul	9,183	20,686	1,168	220	202	75	18	167	131	55	71	62
29-Jul	5,959	26,997	5,581	167	46	63	4	78	87	20	158	132
30-Jul	1,560	13,386	9,495	1,300	89	58	21	187	227	47	653	536
31-Jul	1,667	11,462	6,275	906	176	247	66	113	60	113	216	131
1-Aug	3,440	12,201	9,322	740	100	165	102	29	58	130	146	63
2-Aug	519	8,258	8,299	914	282	221	43	40	108	183	154	90
3-Aug	1,485	4,994	5,954	791	303	428	184	116	167	204	158	117
4-Aug	1,513	9,347	5,087	788	232	322	87	83	129	176	88	86
5-Aug	806	7,661	4,973	2,443	1,015	1,671	511	190	301	603	265	180
6-Aug	390	3,978	3,233	1,415	654	1,075	454	264	553	508	389	209
7-Aug	57	2,955	2,229	908	435	608	293	128	313	245	270	187
8-Aug	45	2,066	1,443	488	332	411	76	266	466	339	453	338
9-Aug	110	1,571	1,618	558	304	332	70	233	443	270	513	495
10-Aug	333	1,181	1,191	324	237	264	64	206	342	304	305	265
11-Aug	539	2,325	1,117	242	207	241	147	296	440	337	304	286
12-Aug	247	1,779	2,486	638	508	517	273	316	564	414	495	314
13-Aug	163	2,668	2,160	372	328	298	172	275	380	260	162	188
14-Aug	147	3,910	1,069	304	252	291	121	127	309	250	207	191
15-Aug	327	5,481	1,469	258	182	212	144	185	240	262	185	160

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Appendix A7.–Page 2 of 2.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
16-Aug	271	10,138	1,626	287	224	256	126	217	290	271	204	199
17-Aug	627	6,782	1,508	612	423	372	259	276	346	349	256	206
18-Aug	190	6,034	3,229	525	332	328	185	292	522	455	338	328
19-Aug	481	4,365	2,483	764	430	342	188	437	567	524	344	339
20-Aug	1,853	7,968	2,300	457	286	265	141	305	482	516	396	359
21-Aug	1,685	4,355	1,088	234	162	125	97	219	378	341	418	290
22-Aug	1,545	2,261	1,756	427	267	271	185	485	487	496	431	400
23-Aug	1,975	5,335	1,858	408	237	199	207	342	448	481	440	265
24-Aug	3,980	7,475	1,451	272	216	60	43	248	235	258	144	120
25-Aug	2,445	12,284	2,652	1,246	108	50	19	463	305	161	88	84
26-Aug	4,242	14,360	6,304	5,515	133	46	13	255	238	110	69	45
27-Aug	2,173	4,796	7,221	573	27	21	11	59	133	44	25	35
28-Aug	1,709	5,308	2,796	770	8	6	7	25	78	17	17	46
29-Aug	2,360	6,069	2,765	269	12	15	0	6	10	6	9	82
30-Aug	5,138	5,787	2,519	53	3	0	0	0	1	1	0	10
31-Aug	5,845	5,035	1,158	21	2	0	0	0	0	0	0	3
Total	79,613	347,356	145,876	37,409	16,354	15,032	9,786	15,064	18,895	15,567	13,228	12,299

Appendix A8.–Kenai River south bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
1-Jul	80	80	35	24	101	147	174	147	136	132	64	54
2-Jul	55	56	64	70	131	179	344	218	260	263	114	118
3-Jul	78	80	40	48	218	213	301	211	199	164	112	79
4-Jul	120	109	73	39	265	248	197	131	145	149	89	70
5-Jul	77	90	50	39	174	170	206	117	87	119	60	45
6-Jul	61	89	72	37	241	227	310	132	136	114	75	42
7-Jul	54	111	84	55	285	496	313	259	174	143	106	55
8-Jul	101	118	98	68	134	213	146	119	91	101	147	133
9-Jul	47	103	98	53	160	321	287	397	244	212	213	70
10-Jul	169	223	113	77	229	456	482	419	248	181	213	100
11-Jul	132	171	118	42	123	203	113	96	62	73	94	90
12-Jul	71	92	60	33	56	95	77	114	75	67	95	31
13-Jul	174	171	89	51	111	151	128	150	96	78	102	82
14-Jul	112	82	68	38	64	104	56	81	39	46	72	81
15-Jul	165	162	137	96	228	345	248	202	111	100	150	71
16-Jul	44	181	283	273	1,166	2,041	1,435	1,249	681	519	597	245
17-Jul	65	346	466	430	1,231	1,964	1,535	1,506	901	615	659	424
18-Jul	162	361	383	234	720	957	588	565	346	291	260	208
19-Jul	160	164	127	82	286	419	357	459	280	229	236	107
20-Jul	100	130	158	146	454	661	459	483	350	248	326	96
21-Jul	175	294	596	542	1,487	2,113	1,338	1,327	791	576	618	243
22-Jul	258	893	1,611	1,261	2,837	3,737	1,657	1,311	743	521	502	256
23-Jul	303	953	2,120	1,237	2,447	3,303	1,336	982	524	349	376	285
24-Jul	414	1,893	4,082	2,493	3,487	4,826	1,804	1,097	522	247	270	166
25-Jul	1,285	6,668	9,109	2,383	668	533	140	80	67	67	80	63
26-Jul	986	10,535	20,109	6,776	2,013	982	282	118	60	55	53	77
27-Jul	621	6,679	11,737	3,971	1,450	835	279	114	80	67	52	22
28-Jul	715	8,634	11,817	3,305	679	360	129	67	78	61	58	153
29-Jul	696	10,106	11,432	2,494	461	305	66	35	71	75	67	43
30-Jul	1,059	13,654	13,007	2,100	366	206	56	34	29	12	10	8
31-Jul	895	6,865	9,672	3,983	3,496	1,422	531	196	103	129	73	64
1-Aug	577	3,408	10,018	6,262	7,790	2,442	1,006	295	241	375	372	68
2-Aug	498	5,468	10,736	6,974	3,734	1,323	392	187	304	360	193	80
3-Aug	379	4,073	8,347	6,304	4,218	1,855	572	289	357	434	74	28
4-Aug	490	5,382	9,114	5,471	2,985	1,156	331	183	258	470	108	45
5-Aug	504	4,342	8,857	5,726	3,002	1,798	453	255	229	305	123	47
6-Aug	232	2,131	4,906	3,778	2,395	1,809	602	304	269	341	203	71
7-Aug	246	1,696	3,673	2,536	1,944	1,466	613	288	317	247	227	109
8-Aug	268	884	2,429	1,564	1,449	1,271	489	303	203	213	191	109
9-Aug	161	1,128	2,476	1,682	1,519	1,305	540	350	233	249	216	127
10-Aug	346	1,325	2,364	2,172	1,804	1,307	546	387	325	302	259	106
11-Aug	211	1,921	4,369	2,599	1,791	1,200	539	322	251	319	306	163
12-Aug	161	1,790	6,153	3,731	2,603	1,516	654	306	211	188	209	127
13-Aug	191	1,450	5,817	3,277	2,418	1,185	554	233	191	145	155	148
14-Aug	165	1,488	5,940	3,182	2,058	846	317	124	105	120	117	88
15-Aug	298	2,893	10,635	6,114	3,652	1,298	567	233	169	146	127	108

-continued-

Appendix A8.–Page 2 of 2.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
16-Aug	211	4,409	11,524	5,172	2,651	976	417	183	175	157	116	65
17-Aug	257	3,926	9,894	4,538	1,758	990	428	224	134	146	110	79
18-Aug	274	3,323	9,500	5,085	2,076	1,233	522	228	195	182	122	91
19-Aug	309	5,720	13,718	6,462	2,613	1,208	511	262	189	193	150	54
20-Aug	343	7,116	13,577	5,680	2,141	931	410	180	227	221	146	81
21-Aug	238	6,024	10,216	3,562	1,735	512	265	130	109	168	127	77
22-Aug	569	9,281	15,238	6,307	3,629	481	263	121	104	139	93	43
23-Aug	1,110	11,808	18,198	7,471	3,685	561	329	189	201	183	93	65
24-Aug	643	7,496	12,620	5,811	2,387	491	320	136	134	95	103	73
25-Aug	581	8,311	14,668	6,547	3,049	589	298	115	94	76	135	167
26-Aug	1,869	17,208	24,523	8,788	4,707	781	315	174	170	84	95	43
27-Aug	512	4,724	13,222	10,799	5,557	1,563	1,978	258	207	190	108	61
28-Aug	496	8,021	16,438	9,456	3,386	1,675	775	168	171	55	51	31
29-Aug	688	11,139	20,016	9,891	3,944	1,883	412	129	95	62	89	70
30-Aug	795	8,316	21,614	18,615	8,615	2,648	2,433	230	102	34	44	34
31-Aug	1,406	6,927	19,801	19,627	9,706	2,472	3,819	434	180	58	19	20
Total	24,462	233,221	438,509	227,663	130,769	69,003	37,044	19,636	13,879	12,260	10,424	6,059

Appendix A9.–Proportion of Kenai River north bank sonar counts by sector, 2006.

	Proportion of Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
1-Jul	0.0	0.0	3.2	2.4	1.2	0.5	4.2	14.6	20.2	10.5	29.8	13.4	100
2-Jul	0.1	0.0	0.3	0.6	0.5	0.8	3.1	33.8	16.5	13.8	20.9	9.6	100
3-Jul	0.4	0.0	0.5	0.8	0.5	0.4	6.1	43.9	12.1	8.8	21.5	5.1	100
4-Jul	0.1	0.0	0.1	0.2	0.4	0.9	6.5	19.0	20.0	14.6	15.4	22.8	100
5-Jul	0.3	0.1	0.4	1.6	1.1	1.1	9.8	19.9	22.5	20.8	9.3	13.3	100
6-Jul	0.2	0.6	2.0	1.5	1.0	0.6	8.6	27.1	19.9	16.8	12.2	9.3	100
7-Jul	0.3	0.1	1.0	1.6	0.4	0.2	8.8	20.0	24.6	23.0	7.9	12.1	100
8-Jul	0.3	0.0	1.2	2.3	1.3	0.6	23.0	21.2	13.8	15.7	10.2	10.2	100
9-Jul	0.1	0.0	1.6	1.7	1.0	0.4	2.9	11.2	20.9	26.9	18.4	15.0	100
10-Jul	0.2	0.3	3.4	2.5	0.7	0.2	9.2	8.6	24.4	25.8	14.9	9.8	100
11-Jul	1.8	0.3	0.9	2.2	1.0	1.0	4.0	12.4	24.9	18.7	17.7	15.1	100
12-Jul	0.7	0.3	1.4	3.8	1.3	0.7	14.0	21.1	17.4	9.1	9.9	20.3	100
13-Jul	0.3	2.6	4.7	4.7	0.5	3.1	6.4	9.3	16.1	13.0	16.2	23.0	100
14-Jul	2.0	2.1	4.6	4.0	1.9	2.1	3.0	8.8	13.5	22.6	19.0	16.1	100
15-Jul	1.5	3.1	7.7	7.7	2.2	2.3	7.6	15.2	16.0	14.1	10.3	12.2	100
16-Jul	4.0	11.2	17.5	6.8	2.5	2.8	11.6	8.6	17.3	7.7	4.4	5.8	100
17-Jul	8.6	11.3	17.2	10.0	4.0	2.8	9.8	9.1	11.2	6.3	4.2	5.5	100
18-Jul	2.4	7.6	9.5	4.7	1.9	2.4	8.5	12.1	18.9	14.2	9.1	8.8	100
19-Jul	0.7	0.2	0.5	1.0	1.1	1.6	7.5	11.9	21.8	19.6	13.5	20.6	100
20-Jul	0.5	5.2	6.4	11.7	5.5	3.9	13.0	14.6	16.1	9.2	5.8	8.1	100
21-Jul	14.3	2.1	10.2	20.9	13.1	1.4	7.4	8.5	10.8	4.2	2.7	4.5	100
22-Jul	0.4	12.1	26.9	19.7	17.4	10.3	3.7	3.5	2.6	1.7	0.9	0.9	100
23-Jul	2.5	31.0	32.0	11.8	8.3	6.7	1.9	2.0	1.4	0.8	0.5	1.2	100
24-Jul	0.7	48.4	26.1	7.9	5.3	4.7	1.4	1.4	1.3	1.0	0.7	1.0	100
25-Jul	13.1	78.0	6.6	0.5	0.2	0.2	0.1	0.3	0.3	0.3	0.2	0.1	100
26-Jul	14.4	72.3	10.8	0.4	0.2	0.3	0.1	0.8	0.3	0.2	0.1	0.1	100
27-Jul	8.3	78.3	9.4	1.0	0.4	0.4	0.1	0.7	0.6	0.6	0.2	0.2	100
28-Jul	28.7	64.6	3.6	0.7	0.6	0.2	0.1	0.5	0.4	0.2	0.2	0.2	100
29-Jul	15.2	68.7	14.2	0.4	0.1	0.2	0.0	0.2	0.2	0.1	0.4	0.3	100
30-Jul	5.7	48.6	34.5	4.7	0.3	0.2	0.1	0.7	0.8	0.2	2.4	1.9	100
31-Jul	7.8	53.5	29.3	4.2	0.8	1.2	0.3	0.5	0.3	0.5	1.0	0.6	100
1-Aug	13.0	46.0	35.2	2.8	0.4	0.6	0.4	0.1	0.2	0.5	0.6	0.2	100
2-Aug	2.7	43.2	43.4	4.8	1.5	1.2	0.2	0.2	0.6	1.0	0.8	0.5	100
3-Aug	10.0	33.5	40.0	5.3	2.0	2.9	1.2	0.8	1.1	1.4	1.1	0.8	100
4-Aug	8.4	52.1	28.4	4.4	1.3	1.8	0.5	0.5	0.7	1.0	0.5	0.5	100
5-Aug	3.9	37.2	24.1	11.8	4.9	8.1	2.5	0.9	1.5	2.9	1.3	0.9	100
6-Aug	3.0	30.3	24.6	10.8	5.0	8.2	3.5	2.0	4.2	3.9	3.0	1.6	100
7-Aug	0.7	34.2	25.8	10.5	5.0	7.0	3.4	1.5	3.6	2.8	3.1	2.2	100
8-Aug	0.7	30.7	21.5	7.3	4.9	6.1	1.1	4.0	6.9	5.0	6.7	5.0	100
9-Aug	1.7	24.1	24.8	8.6	4.7	5.1	1.1	3.6	6.8	4.1	7.9	7.6	100
10-Aug	6.6	23.5	23.7	6.5	4.7	5.3	1.3	4.1	6.8	6.1	6.1	5.3	100
11-Aug	8.3	35.9	17.2	3.7	3.2	3.7	2.3	4.6	6.8	5.2	4.7	4.4	100
12-Aug	2.9	20.8	29.1	7.5	5.9	6.0	3.2	3.7	6.6	4.8	5.8	3.7	100
13-Aug	2.2	35.9	29.1	5.0	4.4	4.0	2.3	3.7	5.1	3.5	2.2	2.5	100
14-Aug	2.0	54.5	14.9	4.2	3.5	4.1	1.7	1.8	4.3	3.5	2.9	2.7	100

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Appendix A9.–Page 2 of 2.

	Proportion of Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
15-Aug	3.6	60.2	16.1	2.8	2.0	2.3	1.6	2.0	2.6	2.9	2.0	1.8	100
16-Aug	1.9	71.9	11.5	2.0	1.6	1.8	0.9	1.5	2.1	1.9	1.4	1.4	100
17-Aug	5.2	56.4	12.5	5.1	3.5	3.1	2.2	2.3	2.9	2.9	2.1	1.7	100
18-Aug	1.5	47.3	25.3	4.1	2.6	2.6	1.5	2.3	4.1	3.6	2.6	2.6	100
19-Aug	4.3	38.8	22.0	6.8	3.8	3.0	1.7	3.9	5.0	4.7	3.1	3.0	100
20-Aug	12.1	52.0	15.0	3.0	1.9	1.7	0.9	2.0	3.1	3.4	2.6	2.3	100
21-Aug	17.9	46.4	11.6	2.5	1.7	1.3	1.0	2.3	4.0	3.6	4.5	3.1	100
22-Aug	17.1	25.1	19.5	4.7	3.0	3.0	2.1	5.4	5.4	5.5	4.8	4.4	100
23-Aug	16.2	43.7	15.2	3.3	1.9	1.6	1.7	2.8	3.7	3.9	3.6	2.2	100
24-Aug	27.4	51.5	10.0	1.9	1.5	0.4	0.3	1.7	1.6	1.8	1.0	0.8	100
25-Aug	12.3	61.7	13.3	6.3	0.5	0.3	0.1	2.3	1.5	0.8	0.4	0.4	100
26-Aug	13.5	45.8	20.1	17.6	0.4	0.1	0.0	0.8	0.8	0.4	0.2	0.1	100
27-Aug	14.4	31.7	47.8	3.8	0.2	0.1	0.1	0.4	0.9	0.3	0.2	0.2	100
28-Aug	15.8	49.2	25.9	7.1	0.1	0.1	0.1	0.2	0.7	0.2	0.2	0.4	100
29-Aug	20.3	52.3	23.8	2.3	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.7	100
30-Aug	38.0	42.8	18.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	100
31-Aug	48.4	41.7	9.6	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Mean	7.5	30.6	15.7	5.0	2.5	2.3	3.6	6.8	7.8	6.5	5.8	5.4	100

Appendix A10.–Proportion of Kenai River south bank sonar counts by sector, 2006.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
1-Jul	6.8	6.8	3.0	2.0	8.6	12.5	14.8	12.5	11.6	11.2	5.5	4.6	100
2-Jul	2.9	3.0	3.4	3.7	7.0	9.6	18.4	11.6	13.9	14.0	6.1	6.3	100
3-Jul	4.5	4.6	2.3	2.8	12.5	12.2	17.3	12.1	11.4	9.4	6.4	4.5	100
4-Jul	7.3	6.7	4.5	2.4	16.2	15.2	12.0	8.0	8.9	9.1	5.4	4.3	100
5-Jul	6.2	7.3	4.1	3.2	14.1	13.8	16.7	9.5	7.1	9.6	4.9	3.6	100
6-Jul	4.0	5.8	4.7	2.4	15.7	14.8	20.2	8.6	8.9	7.4	4.9	2.7	100
7-Jul	2.5	5.2	3.9	2.6	13.3	23.2	14.7	12.1	8.1	6.7	5.0	2.6	100
8-Jul	6.9	8.0	6.7	4.6	9.1	14.5	9.9	8.1	6.2	6.9	10.0	9.1	100
9-Jul	2.1	4.7	4.4	2.4	7.3	14.6	13.0	18.0	11.1	9.6	9.7	3.2	100
10-Jul	5.8	7.7	3.9	2.6	7.9	15.7	16.6	14.4	8.5	6.2	7.3	3.4	100
11-Jul	10.0	13.0	9.0	3.2	9.3	15.4	8.6	7.3	4.7	5.5	7.1	6.8	100
12-Jul	8.2	10.6	6.9	3.8	6.5	11.0	8.9	13.2	8.7	7.7	11.0	3.6	100
13-Jul	12.6	12.4	6.4	3.7	8.0	10.9	9.3	10.8	6.9	5.6	7.4	5.9	100
14-Jul	13.3	9.7	8.1	4.5	7.6	12.3	6.6	9.6	4.6	5.5	8.5	9.6	100
15-Jul	8.2	8.0	6.8	4.8	11.3	17.1	12.3	10.0	5.5	5.0	7.4	3.5	100
16-Jul	0.5	2.1	3.2	3.1	13.4	23.4	16.5	14.3	7.8	6.0	6.9	2.8	100
17-Jul	0.6	3.4	4.6	4.2	12.1	19.4	15.1	14.8	8.9	6.1	6.5	4.2	100
18-Jul	3.2	7.1	7.5	4.6	14.2	18.9	11.6	11.1	6.8	5.7	5.1	4.1	100
19-Jul	5.5	5.6	4.4	2.8	9.8	14.4	12.3	15.8	9.6	7.9	8.1	3.7	100
20-Jul	2.8	3.6	4.4	4.0	12.6	18.3	12.7	13.4	9.7	6.9	9.0	2.7	100
21-Jul	1.7	2.9	5.9	5.4	14.7	20.9	13.2	13.1	7.8	5.7	6.1	2.4	100
22-Jul	1.7	5.7	10.3	8.1	18.2	24.0	10.6	8.4	4.8	3.3	3.2	1.6	100
23-Jul	2.1	6.7	14.9	8.7	17.2	23.2	9.4	6.9	3.7	2.5	2.6	2.0	100
24-Jul	1.9	8.9	19.2	11.7	16.4	22.7	8.5	5.1	2.5	1.2	1.3	0.8	100
25-Jul	6.1	31.5	43.1	11.3	3.2	2.5	0.7	0.4	0.3	0.3	0.4	0.3	100
26-Jul	2.3	25.1	47.8	16.1	4.8	2.3	0.7	0.3	0.1	0.1	0.1	0.2	100
27-Jul	2.4	25.8	45.3	15.3	5.6	3.2	1.1	0.4	0.3	0.3	0.2	0.1	100
28-Jul	2.7	33.1	45.4	12.7	2.6	1.4	0.5	0.3	0.3	0.2	0.2	0.6	100
29-Jul	2.7	39.1	44.2	9.6	1.8	1.2	0.3	0.1	0.3	0.3	0.3	0.2	100
30-Jul	3.5	44.7	42.6	6.9	1.2	0.7	0.2	0.1	0.1	0.0	0.0	0.0	100
31-Jul	3.3	25.0	35.3	14.5	12.7	5.2	1.9	0.7	0.4	0.5	0.3	0.2	100
1-Aug	1.8	10.4	30.5	19.1	23.7	7.4	3.1	0.9	0.7	1.1	1.1	0.2	100
2-Aug	1.6	18.1	35.5	23.1	12.3	4.4	1.3	0.6	1.0	1.2	0.6	0.3	100
3-Aug	1.4	15.1	31.0	23.4	15.7	6.9	2.1	1.1	1.3	1.6	0.3	0.1	100
4-Aug	1.9	20.7	35.1	21.0	11.5	4.4	1.3	0.7	1.0	1.8	0.4	0.2	100
5-Aug	2.0	16.9	34.5	22.3	11.7	7.0	1.8	1.0	0.9	1.2	0.5	0.2	100
6-Aug	1.4	12.5	28.8	22.2	14.1	10.6	3.5	1.8	1.6	2.0	1.2	0.4	100
7-Aug	1.8	12.7	27.5	19.0	14.5	11.0	4.6	2.2	2.4	1.8	1.7	0.8	100
8-Aug	2.9	9.4	25.9	16.7	15.5	13.6	5.2	3.2	2.2	2.3	2.0	1.2	100
9-Aug	1.6	11.3	24.8	16.8	15.2	13.1	5.4	3.5	2.3	2.5	2.2	1.3	100
10-Aug	3.1	11.8	21.0	19.3	16.0	11.6	4.9	3.4	2.9	2.7	2.3	0.9	100
11-Aug	1.5	13.7	31.2	18.6	12.8	8.6	3.9	2.3	1.8	2.3	2.2	1.2	100
12-Aug	0.9	10.1	34.9	21.1	14.7	8.6	3.7	1.7	1.2	1.1	1.2	0.7	100
13-Aug	1.2	9.2	36.9	20.8	15.3	7.5	3.5	1.5	1.2	0.9	1.0	0.9	100
14-Aug	1.1	10.2	40.8	21.9	14.1	5.8	2.2	0.9	0.7	0.8	0.8	0.6	100

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Appendix A10.–Page 2 of 2.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
15-Aug	1.1	11.0	40.5	23.3	13.9	4.9	2.2	0.9	0.6	0.6	0.5	0.4	100
16-Aug	0.8	16.9	44.2	19.8	10.2	3.7	1.6	0.7	0.7	0.6	0.4	0.2	100
17-Aug	1.1	17.5	44.0	20.2	7.8	4.4	1.9	1.0	0.6	0.6	0.5	0.4	100
18-Aug	1.2	14.6	41.6	22.3	9.1	5.4	2.3	1.0	0.9	0.8	0.5	0.4	100
19-Aug	1.0	18.2	43.7	20.6	8.3	3.8	1.6	0.8	0.6	0.6	0.5	0.2	100
20-Aug	1.1	22.9	43.7	18.3	6.9	3.0	1.3	0.6	0.7	0.7	0.5	0.3	100
21-Aug	1.0	26.0	44.1	15.4	7.5	2.2	1.1	0.6	0.5	0.7	0.5	0.3	100
22-Aug	1.6	25.6	42.0	17.4	10.0	1.3	0.7	0.3	0.3	0.4	0.3	0.1	100
23-Aug	2.5	26.9	41.5	17.0	8.4	1.3	0.7	0.4	0.5	0.4	0.2	0.1	100
24-Aug	2.1	24.7	41.6	19.2	7.9	1.6	1.1	0.4	0.4	0.3	0.3	0.2	100
25-Aug	1.7	24.0	42.4	18.9	8.8	1.7	0.9	0.3	0.3	0.2	0.4	0.5	100
26-Aug	3.2	29.3	41.7	15.0	8.0	1.3	0.5	0.3	0.3	0.1	0.2	0.1	100
27-Aug	1.3	12.1	33.7	27.6	14.2	4.0	5.0	0.7	0.5	0.5	0.3	0.2	100
28-Aug	1.2	19.7	40.4	23.2	8.3	4.1	1.9	0.4	0.4	0.1	0.1	0.1	100
29-Aug	1.4	23.0	41.3	20.4	8.1	3.9	0.9	0.3	0.2	0.1	0.2	0.1	100
30-Aug	1.3	13.1	34.0	29.3	13.6	4.2	3.8	0.4	0.2	0.1	0.1	0.1	100
31-Aug	2.2	10.7	30.7	30.4	15.1	3.8	5.9	0.7	0.3	0.1	0.0	0.0	100
Mean	3.1	14.6	25.6	13.4	11.1	9.5	6.4	4.9	3.5	3.2	2.9	1.8	100

Appendix A11.–Minimum and maximum daily counting ranges for both banks of the Kenai River, 2006.

	North Bank				South Bank			
Date	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of sonar counts recorded (m)	Sectors where >80% of sonar counts recorded	Counting Range (Sectors 1-12 (ft)	(m)	Range where > 80% of sonar counts recorded (m)	Sectors where >80% of sonar counts recorded
15-Jun	45	13.7	9.1	1-8	50	15.2	11.4	1-9
16-Jun	45	13.7	9.1	1-8	50	15.2	11.4	1-9
16-Jun					52	15.8	11.9	1-9
17-Jun	45	13.7	9.1	1-8	52	15.8	11.9	1-9
18-Jun	45	13.7	9.1	1-8	52	15.8	11.9	1-9
19-Jun	45	13.7	9.1	1-8	52	15.8	10.6	1-8
20-Jun	45	13.7	6.9	1-6	52	15.8	10.6	1-8
20-Jun					50	15.2	10.2	1-8
21-Jun	45	13.7	5.7	1-5	50	15.2	10.2	1-8
22-Jun	45	13.7	5.7	1-5	50	15.2	8.9	1-7
23-Jun					45	13.7	9.1	1-8
23-Jun	45	13.7	5.7	1-5	52	15.8	10.6	1-8
24-Jun	43	13.1	5.5	1-5	36	11.0	8.2	1-9
24-Jun	45	13.7	5.7	1-5	45	13.7	10.3	1-9
25-Jun	45	13.7	5.7	1-5	36	11.0	4.6	1-5
25-Jun					37	11.3	4.7	1-5
26-Jun	45	13.7	5.7	1-5	37	11.3	4.7	1-5
27-Jun	45	13.7	5.7	1-5	37	11.3	6.6	1-7
27-Jun	45	13.7	5.7	1-5	37	11.3	6.6	1-7
28-Jun	45	13.7	6.9	1-6	55	16.8	9.8	1-7
29-Jun	45	13.7	6.9	1-6	37	11.3	7.5	1-8
30-Jun	45	13.7	8.0	1-7	37	11.3	8.5	1-9
30-Jun	52	15.8	9.2	1-7				
1-Jul	52	15.8	6.6	1-5	37	11.3	9.4	1-10
2-Jul	47	14.3	6.0	1-5	37	11.3	9.4	1-10
2-Jul	52	15.8	6.6	1-5				
3-Jul	48	14.6	6.1	1-5	36	11.0	8.2	1-9
4-Jul	48	14.6	4.9	1-4	36	11.0	8.2	1-9
5-Jul	48	14.6	6.1	1-5	36	11.0	10.1	1-11
5-Jul	50	15.2	6.4	1-5				
6-Jul	47	14.3	6.0	1-5	36	11.0	8.2	1-9
6-Jul	50	15.2	6.4	1-5				
7-Jul	47	14.3	6.0	1-5	36	11.0	8.2	1-9
8-Jul	47	14.3	6.0	1-5	36	11.0	10.1	1-11
9-Jul	47	14.3	4.8	1-4	36	11.0	8.2	1-9
10-Jul	47	14.3	10.7	1-9	36	11.0	9.1	1-10
10-Jul	50	15.2	11.4	1-9	36	11.0	9.1	1-10
11-Jul	45	13.7	10.3	1-9	36	11.0	8.2	1-9
12-Jul	45	13.7	9.1	1-8	36	11.0	10.1	1-11
13-Jul	45	13.7	8.0	1-7	36	11.0	9.1	1-10
14-Jul					37	11.3	6.6	1-7
14-Jul	45	13.7	8.0	1-7				
15-Jul					37	11.3	9.4	1-10
15-Jul	45	13.7	9.1	1-8	38	11.6	9.7	1-10
16-Jul	45	13.7	9.1	1-8	38	11.6	5.8	1-6
17-Jul	35	10.7	7.1	1-8	38	11.6	8.7	1-9
17-Jul	45	13.7	9.1	1-8				
18-Jul	40	12.2	7.1	1-7	24	7.3	4.9	1-8
18-Jul					38	11.6	7.7	1-8

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Appendix A11.–Page 2 of 2.

	North Bank				South Bank			
Date	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of migration occurred (m)	Sectors where >80% of migration occurred	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of migration occurred (m)	Sectors where > 80% of migration occurred
19-Jul	21	6.4	4.3	1-8	32	9.6	4.8	1-6
19-Jul	45	13.7	9.1	1-8	33	10.1	5.0	1-6
20-Jul	45	13.7	10.3	1-9	30	9.1	4.6	1-6
21-Jul	45	13.7	10.3	1-9	30	9.1	5.3	1-7
21-Jul					33	10.1	5.9	1-7
22-Jul	45	13.7	11.4	1-10	33	10.1	5.9	1-7
23-Jul	45	13.7	11.4	1-10	33	10.1	3.4	1-4
24-Jul	45	13.7	10.3	1-9	33	10.1	6.7	1-8
25-Jul	35	10.7	4.4	1-5	30	9.1	4.6	1-6
25-Jul	45	13.7	5.7	1-5				
26-Jul	21	6.4	2.1	1-4	30	9.1	1.5	1-2
26-Jul	35	10.7	3.6	1-4				
27-Jul					17	5.2	2.2	1-5
27-Jul	21	6.4	1.6	1-3	30	9.1	3.8	1-5
28-Jul	17	5.2	1.3	1-3	17	5.2	2.6	1-6
29-Jul					17	5.2	2.2	1-5
29-Jul	17	5.2	1.3	1-3	30	9.1	3.8	1-5
30-Jul	17	5.2	1.3	1-3	30	9.1	2.3	1-3
31-Jul	17	5.2	1.3	1-3	30	9.1	2.3	1-3
1-Aug	14.5	4.4	1.1	1-3	18	5.5	1.8	1-4
1-Aug	17	5.2	1.3	1-3	30	9.1	3.0	1-4
2-Aug	14.5	4.4	1.1	1-3	30	9.1	2.3	1-3
3-Aug	14.5	4.4	1.5	1-4	30	9.1	3.0	1-4
4-Aug	14.5	4.4	1.1	1-3	17	5.2	2.2	1-5
4-Aug					30	9.1	3.8	1-5
5-Aug	14.5	4.4	1.5	1-4				
6-Aug	14.5	4.4	1.5	1-4	17	5.2	2.6	1-6
7-Aug	14.5	4.4	1.1	1-3	17	5.2	2.6	1-6
8-Aug	14.5	4.4	1.1	1-3	17	5.2	2.6	1-6
9-Aug	14.5	4.4	1.1	1-3	17	5.2	2.6	1-6
9-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
10-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
11-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
12-Aug	15	4.6	1.1	1-3	17	5.2	2.2	1-5
13-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
14-Aug	15	4.6	1.1	1-3	17	5.2	2.2	1-5
15-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
15-Aug	20	6.1	1.5	1-3				
16-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
17-Aug	15	4.6	1.1	1-3	17	5.2	3.0	1-7
18-Aug	15	4.6	1.1	1-3	17	5.2	3.0	1-7
	Average	10.7	5.3		Average	10.0	6.2	
	Min	4.4	1.1		Min	5.2	1.5	
	Max	15.8	11.4		Max	16.8	11.9	
	Std. Dev.	4.4	3.5		Std. Dev.	3.4	3.3	

APPENDIX B. KASILOF RIVER

Appendix B1.–Estimated salmon escapement adjacent to the north bank of the Kasilof River, 2006.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	2,378	2,378	0	0	0	0	0	0
16-Jun	988	3,366	0	0	0	0	0	0
17-Jun	851	4,217	0	0	0	0	0	0
18-Jun	640	4,857	0	0	0	0	0	0
19-Jun	1,332	6,189	0	0	0	0	0	0
20-Jun	1,736	7,925	0	0	0	0	0	0
21-Jun	3,356	11,281	0	0	0	0	0	0
22-Jun	2,226	13,507	0	0	0	0	0	0
23-Jun	2,371	15,878	0	0	0	0	0	0
24-Jun	2,811	18,689	0	0	0	0	0	0
25-Jun	4,160	22,849	0	0	0	0	0	0
26-Jun	4,351	27,200	0	0	0	0	0	0
27-Jun	5,998	33,198	0	0	0	0	0	0
28-Jun	4,110	37,308	0	0	0	0	0	0
29-Jun	4,720	42,028	0	0	0	0	0	0
30-Jun	1,437	43,465	0	0	0	0	0	0
1-Jul	1,451	44,916	0	0	0	0	0	0
2-Jul	4,400	49,316	0	0	0	0	0	0
3-Jul	3,145	52,461	0	0	0	0	0	0
4-Jul	5,164	57,625	0	0	0	0	0	0
5-Jul	3,313	60,938	0	0	0	0	0	0
6-Jul	2,767	63,705	0	0	0	0	0	0
7-Jul	3,209	66,914	0	0	0	0	0	0
8-Jul	1,675	68,589	0	0	0	0	0	0
9-Jul	3,551	72,140	0	0	0	0	0	0
10-Jul	6,353	78,493	0	0	0	0	0	0
11-Jul	1,620	80,113	0	0	0	0	0	0
12-Jul	1,240	81,353	0	0	0	0	0	0
13-Jul	1,453	82,806	0	0	0	0	0	0
14-Jul	3,065	85,871	0	0	0	0	0	0
15-Jul	9,502	95,373	0	0	0	0	0	0
16-Jul	8,825	104,198	0	0	0	0	0	0
17-Jul	3,440	107,638	0	0	0	0	0	0
18-Jul	1,748	109,386	0	0	0	0	0	0
19-Jul	2,495	111,881	0	0	0	0	0	0
20-Jul	1,148	113,029	0	0	0	0	0	0
21-Jul	1,978	115,007	0	0	0	0	0	0
22-Jul	1,793	116,800	0	0	0	0	0	0
23-Jul	1,456	118,256	0	0	0	0	0	0
24-Jul	1,326	119,582	0	0	0	0	0	0
25-Jul	2,760	122,342	0	0	0	0	0	0
26-Jul	2,882	125,224	0	0	0	0	0	0
27-Jul	2,644	127,868	0	0	0	0	0	0
28-Jul	14,835	142,703	0	0	0	0	0	0
29-Jul	23,095	165,798	0	0	0	0	0	0
30-Jul	8,240	174,038	0	0	0	0	0	0
31-Jul	10,625	184,663	0	0	0	0	0	0

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Appendix B1.–Page 2 of 2.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Aug	9,030	193,693	0	0	0	0	0	0
2-Aug	9,772	203,465	0	0	0	0	0	0
3-Aug	5,745	209,210	0	0	0	0	0	0
4-Aug	7,838	217,048	0	0	0	0	0	0
5-Aug	3,310	220,358	0	0	0	0	0	0
6-Aug	2,059	222,417	0	0	0	0	0	0
7-Aug	1,070	223,487	0	0	0	0	0	0
8-Aug	1,050	224,537	0	0	0	0	0	0
9-Aug	1,628	226,165	0	0	0	0	0	0
10-Aug	1,521	227,686	0	0	0	0	0	0
11-Aug	3,307	230,993	0	0	0	0	0	0
12-Aug	3,511	234,504	0	0	0	0	0	0
13-Aug	3,581	238,085	0	0	0	0	0	0
14-Aug	1,894	239,979	482	482	207	207	138	138
15-Aug	2,497	242,476	82	564	110	316	110	248
16-Aug	1,424	243,900	0	564	99	416	33	281
17-Aug	933	244,833	32	596	32	448	129	410
18-Aug	800	245,633	27	623	28	476	110	520

Appendix B2.–Estimated salmon escapement adjacent to the south bank of the Kasilof River, 2006.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
15-Jun	836	836	0	0	0	0	0	0
16-Jun	685	1,521	0	0	0	0	0	0
17-Jun	971	2,492	0	0	0	0	0	0
18-Jun	971	3,463	0	0	0	0	0	0
19-Jun	1,231	4,694	0	0	0	0	0	0
20-Jun	1,685	6,379	0	0	0	0	0	0
21-Jun	2,064	8,443	0	0	0	0	0	0
22-Jun	2,008	10,451	0	0	0	0	0	0
23-Jun	1,479	11,930	0	0	0	0	0	0
24-Jun	1,306	13,236	0	0	0	0	0	0
25-Jun	2,297	15,533	0	0	0	0	0	0
26-Jun	3,093	18,626	0	0	0	0	0	0
27-Jun	1,312	19,938	0	0	0	0	0	0
28-Jun	3,010	22,948	0	0	0	0	0	0
29-Jun	2,913	25,861	0	0	0	0	0	0
30-Jun	1,121	26,982	0	0	0	0	0	0
1-Jul	487	27,469	0	0	0	0	0	0
2-Jul	758	28,227	0	0	0	0	0	0
3-Jul	2,228	30,455	0	0	0	0	0	0
4-Jul	1,680	32,135	0	0	0	0	0	0
5-Jul	2,980	35,115	0	0	0	0	0	0
6-Jul	2,454	37,569	0	0	0	0	0	0
7-Jul	1,392	38,961	0	0	0	0	0	0
8-Jul	1,165	40,126	0	0	0	0	0	0
9-Jul	1,868	41,994	0	0	0	0	0	0
10-Jul	1,070	43,064	0	0	0	0	0	0
11-Jul	907	43,971	0	0	0	0	0	0
12-Jul	610	44,581	0	0	0	0	0	0
13-Jul	609	45,190	0	0	0	0	0	0
14-Jul	859	46,049	0	0	0	0	0	0
15-Jul	5,694	51,743	0	0	0	0	0	0
16-Jul	4,837	56,580	0	0	0	0	0	0
17-Jul	493	57,073	0	0	0	0	0	0
18-Jul	1,308	58,381	0	0	0	0	0	0
19-Jul	2,554	60,935	0	0	0	0	0	0
20-Jul	1,198	62,133	0	0	0	0	0	0
21-Jul	1,009	63,142	0	0	0	0	0	0
22-Jul	664	63,806	0	0	0	0	0	0
23-Jul	1,197	65,003	0	0	0	0	0	0
24-Jul	939	65,942	0	0	0	0	0	0
25-Jul	2,208	68,150	0	0	0	0	0	0
26-Jul	555	68,705	0	0	0	0	0	0
27-Jul	1,068	69,773	0	0	0	0	0	0
28-Jul	4,858	74,631	0	0	0	0	0	0
29-Jul	8,238	82,869	0	0	0	0	0	0
30-Jul	2,601	85,470	0	0	0	0	0	0
31-Jul	1,993	87,463	0	0	0	0	0	0

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Appendix B2.–Page 2 of 2.

	Sockeye		Pink		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
1-Aug	2,535	89,998	0	0	0	0	0	0
2-Aug	3,153	93,151	0	0	0	0	0	0
3-Aug	2,644	95,795	0	0	0	0	0	0
4-Aug	1,937	97,732	0	0	0	0	0	0
5-Aug	1,993	99,725	0	0	0	0	0	0
6-Aug	1,614	101,339	0	0	0	0	0	0
7-Aug	1,333	102,672	0	0	0	0	0	0
8-Aug	1,099	103,771	0	0	0	0	0	0
9-Aug	1,639	105,410	0	0	0	0	0	0
10-Aug	1,668	107,078	0	0	0	0	0	0
11-Aug	1,775	108,853	0	0	0	0	0	0
12-Aug	2,576	111,429	0	0	0	0	0	0
13-Aug	2,512	113,941	0	0	0	0	0	0
14-Aug	1,736	115,677	441	441	189	189	126	126
15-Aug	1,852	117,529	61	502	81	271	81	207
16-Aug	1,799	119,328	0	502	125	396	42	249
17-Aug	1,682	121,010	58	560	58	454	232	481
18-Aug	1,449	122,459	50	610	50	504	200	681

Appendix B3.–Kasilof River north bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
15-Jun	251	191	65	42	64	106	48	81	170	120	45	51
16-Jun	216	124	59	49	47	37	33	12	11	4	9	3
17-Jun	69	97	60	32	45	21	11	5	3	5	29	39
18-Jun	31	24	35	53	32	38	17	17	13	14	18	63
19-Jun	48	77	93	100	79	83	46	15	11	11	22	16
20-Jun	193	91	52	44	64	48	22	18	10	17	8	25
21-Jun	143	296	176	141	45	75	64	75	33	7	9	18
22-Jun	55	101	180	176	98	63	44	35	55	17	22	22
23-Jun	39	34	68	209	136	39	73	138	107	70	130	52
24-Jun	36	19	52	105	125	50	48	83	69	38	42	32
25-Jun	72	73	91	83	511	617	194	140	153	82	59	62
26-Jun	106	77	69	107	136	723	279	139	111	117	84	54
27-Jun	59	42	57	48	42	381	825	284	114	172	233	115
28-Jun	238	143	128	92	204	264	310	550	325	148	91	195
29-Jun	87	42	41	32	36	50	70	45	75	161	72	369
30-Jun	99	37	49	30	31	47	30	66	65	145	124	91
1-Jul	77	61	87	84	49	63	34	41	20	7	22	50
2-Jul	77	86	123	91	88	103	121	175	140	106	202	269
3-Jul	200	236	178	403	347	301	379	177	164	105	86	33
4-Jul	20	107	64	54	43	75	51	46	37	85	119	155
5-Jul	432	352	184	58	175	313	192	196	97	125	161	133
6-Jul	88	75	88	54	32	22	38	41	50	38	102	103
7-Jul	26	49	60	60	74	46	57	99	140	116	161	268
8-Jul	17	40	30	28	37	25	25	43	47	31	117	26
9-Jul	49	54	60	184	258	267	171	277	268	77	227	59
10-Jul	266	266	266	266	266	266	266	266	266	266	266	266
11-Jul	151	57	52	44	48	163	65	56	74	108	52	36
12-Jul	71	91	66	15	13	22	49	33	21	13	17	14
13-Jul	135	106	45	48	19	51	77	161	45	48	50	86
14-Jul	43	48	20	30	18	14	3	128	100	60	73	144
15-Jul	509	261	67	200	225	165	98	192	521	428	254	362

-continued-

Appendix B3.–Page 2 of 4.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
15-Jun	59	62	83	88	49	37	37	40	40	126	188	335
16-Jun	10	24	14	34	20	13	25	29	20	29	90	76
17-Jun	52	60	75	55	20	21	29	14	37	10	11	51
18-Jun	46	28	27	26	26	14	13	19	10	28	18	30
19-Jun	64	155	74	56	64	89	75	49	37	23	23	22
20-Jun	48	106	297	96	58	45	119	90	85	74	71	55
21-Jun	30	19	20	237	407	241	299	408	279	118	131	85
22-Jun	20	28	101	125	208	120	63	189	253	129	69	53
23-Jun	67	65	61	59	190	264	164	63	140	129	43	31
24-Jun	44	36	42	59	107	457	319	145	173	368	233	129
25-Jun	51	43	52	54	77	101	429	184	226	403	284	119
26-Jun	77	70	64	87	72	85	289	570	179	337	291	228
27-Jun	92	84	108	99	130	119	271	563	480	323	564	793
28-Jun	162	150	105	67	52	58	64	32	162	248	169	153
29-Jun	592	337	476	402	223	254	148	166	296	450	166	130
30-Jun	63	53	24	56	50	61	61	58	20	31	38	108
1-Jul	52	56	155	118	79	103	72	56	47	40	28	50
2-Jul	205	268	112	206	199	172	200	143	110	190	411	603
3-Jul	51	79	60	65	20	33	36	45	37	48	45	17
4-Jul	150	363	278	124	330	422	522	333	253	309	534	690
5-Jul	37	73	112	176	96	46	54	58	33	72	37	101
6-Jul	129	167	228	249	268	390	138	182	96	83	56	50
7-Jul	265	199	128	204	441	237	144	137	164	44	55	35
8-Jul	106	79	181	104	152	80	168	158	92	29	31	29
9-Jul	59	138	242	149	112	90	190	145	121	142	63	149
10-Jul	38	168	242	278	481	519	542	260	178	146	182	127
11-Jul	27	31	14	30	33	39	138	108	88	71	81	54
12-Jul	5	23	15	43	25	12	15	39	127	83	246	182
13-Jul	66	54	55	30	35	79	74	17	41	56	35	40
14-Jul	69	93	41	41	27	34	43	123	573	333	397	610
15-Jul	441	293	217	304	166	185	528	697	870	1213	764	542

-continued-

Appendix B3.–Page 3 of 4.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
16-Jul	641	683	461	368	548	722	412	488	343	439	848	167
17-Jul	99	82	96	78	78	62	86	62	75	102	351	464
18-Jul	93	64	75	30	41	70	68	78	69	70	36	70
19-Jul	84	117	77	79	128	99	90	103	206	194	118	72
20-Jul	31	57	29	34	25	20	44	55	37	28	32	24
21-Jul	137	41	107	66	71	80	40	71	59	89	102	94
22-Jul	131	37	54	84	81	116	79	29	73	37	67	86
23-Jul	52	30	39	38	55	101	71	149	113	89	46	50
24-Jul	44	78	9	25	18	95	78	122	52	65	52	37
25-Jul	90	89	70	43	135	79	177	111	164	345	284	142
26-Jul	43	20	125	125	125	125	125	125	125	125	270	273
27-Jul	10	25	15	3	9	17	18	178	167	117	133	277
28-Jul	67	22	10	13	37	44	78	209	690	923	701	870
29-Jul	629	330	342	463	927	1,678	2,951	2,088	1,810	1,977	1,504	1,839
30-Jul	124	49	38	43	54	190	257	232	245	165	504	594
31-Jul	250	371	281	205	323	189	334	885	673	500	617	756
1-Aug	315	96	16	118	77	264	714	530	472	280	386	527
2-Aug	94	22	16	36	59	167	368	231	292	258	240	193
3-Aug	71	49	118	66	107	284	391	490	278	336	470	410
4-Aug	104	22	37	36	41	63	141	120	152	162	104	116
5-Aug	44	11	8	19	43	50	160	135	152	177	191	110
6-Aug	15	12	5	6	3	12	28	33	55	49	49	31
7-Aug	34	6	13	9	8	37	68	68	38	21	18	35
8-Aug	19	9	11	16	15	25	117	158	133	122	156	89
9-Aug	20	13	16	12	12	14	29	88	61	62	54	97
10-Aug	45	43	31	25	36	50	112	219	376	271	148	127
11-Aug	90	111	91	43	36	69	79	90	243	316	150	123
12-Aug	45	36	40	39	49	110	84	78	141	151	190	229
13-Aug	41	22	34	27	34	28	113	186	110	64	104	122
14-Aug	85	88	43	56	43	62	80	124	151	71	83	80
15-Aug	36	52	57	44	38	34	61	71	53	71	94	68
16-Aug	16	20	15	24	20	21	11	41	32	41	24	51
17-Aug	24	22	34	44	25	24	50	67	81	44	65	22
Total	7,527	6,088	5,081	5,283	6,693	9,545	11,261	11,356	11,045	10,512	11,108	11,468

-continued-

Appendix B3.–Page 4 of 4.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
16-Jul	218	282	412	208	208	272	204	221	103	124	306	147
17-Jul	226	189	97	158	108	99	90	104	109	104	179	342
18-Jul	91	117	103	83	74	87	77	68	92	68	43	81
19-Jul	145	212	273	185	62	54	37	23	39	13	29	56
20-Jul	46	43	74	166	54	39	45	46	34	53	85	47
21-Jul	145	105	104	83	111	60	34	44	63	123	72	77
22-Jul	98	39	64	76	62	85	148	30	94	89	113	21
23-Jul	76	51	48	66	68	32	47	77	21	33	65	39
24-Jul	47	19	26	64	21	23	51	38	34	99	103	126
25-Jul	76	107	70	81	61	71	62	199	73	111	65	55
26-Jul	125	119	54	132	100	116	101	144	191	114	41	39
27-Jul	428	201	121	183	123	65	42	60	148	172	68	64
28-Jul	1,149	920	705	763	428	562	481	547	1,287	1,704	1,360	1,265
29-Jul	1,416	669	828	566	521	322	296	304	339	485	512	299
30-Jul	513	592	620	749	507	383	350	331	486	427	503	284
31-Jul	955	579	637	695	597	389	322	271	245	186	203	162
2-Aug	758	798	770	820	656	522	424	387	281	177	202	182
3-Aug	305	284	462	510	404	476	301	321	206	210	194	96
4-Aug	314	352	480	441	554	483	465	417	269	339	327	327
5-Aug	48	100	82	96	106	410	423	320	282	134	149	62
6-Aug	117	89	117	77	97	66	62	118	67	71	60	18
7-Aug	47	55	30	51	64	44	49	84	94	128	76	50
8-Aug	29	25	45	31	42	36	72	90	115	90	100	20
9-Aug	60	67	61	43	40	82	63	83	114	88	43	14
10-Aug	82	89	48	55	59	80	104	88	182	107	94	55
11-Aug	145	202	195	160	126	139	128	160	273	188	48	60
12-Aug	157	245	185	185	191	170	187	72	197	268	160	53
13-Aug	211	284	271	273	186	242	246	200	134	137	143	62
14-Aug	128	217	177	167	181	150	113	140	181	158	144	79
15-Aug	128	251	300	202	132	171	137	112	151	86	98	65
16-Aug	53	38	67	57	95	78	123	101	61	90	80	34
17-Aug	46	66	37	53	87	71	84	108	86	45	92	35
18-Aug	46	51	22	39	25	44	35	61	45	48	28	19
Total	11,618	10,875	11,303	11,255	10,384	10,361	10,691	10,509	11,384	11,976	11,162	10,036

Appendix B4.–Kasilof River south bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
15-Jun	35	35	35	35	35	35	35	14	53	24	19	34
16-Jun	53	31	21	30	32	20	38	11	16	45	34	27
17-Jun	43	89	62	58	57	52	24	16	26	12	53	73
18-Jun	90	81	74	60	50	49	23	23	17	13	17	78
19-Jun	95	31	47	37	132	57	43	17	32	21	11	20
20-Jun	143	157	135	130	200	120	93	88	28	42	43	48
21-Jun	67	182	173	173	169	205	156	142	105	41	24	19
22-Jun	137	93	146	134	126	190	163	107	103	96	54	34
23-Jun	26	35	50	94	120	73	160	107	34	50	28	46
24-Jun	32	22	28	35	89	33	16	49	65	57	50	57
25-Jun	87	93	46	63	277	220	95	182	233	198	137	45
26-Jun	22	23	28	49	106	306	315	84	383	444	340	183
27-Jun	56	31	22	50	78	74	148	78	46	114	126	66
28-Jun	48	88	114	188	348	341	343	442	190	190	77	121
29-Jun	28	25	29	32	99	21	38	40	233	144	59	199
30-Jun	48	74	60	25	16	59	77	132	68	42	38	37
1-Jul	18	22	59	23	73	25	18	11	4	6	5	34
2-Jul	9	20	15	28	25	11	23	40	26	55	56	45
3-Jul	47	122	79	50	232	90	266	268	107	202	92	187
4-Jul	2	15	29	26	50	64	56	56	64	73	84	37
5-Jul	239	73	11	4	82	52	288	177	375	249	57	187
6-Jul	72	58	25	35	57	37	80	8	43	23	84	118
7-Jul	23	6	5	12	12	62	48	36	81	42	108	47
8-Jul	5	177	73	19	15	20	10	45	50	15	70	75
9-Jul	23	13	16	50	88	152	136	120	44	101	128	111
10-Jul	11	5	22	31	48	58	42	21	49	58	55	74
11-Jul	12	20	9	11	30	68	41	32	30	95	25	31
12-Jul	34	32	12	10	7	31	32	51	27	38	29	19
13-Jul	47	22	26	23	13	31	55	52	69	51	24	17
14-Jul	7	44	18	16	13	91	11	50	43	56	54	66
15-Jul	98	69	61	311	135	167	36	107	207	155	154	434

-continued-

Appendix B4-Page 2 of 4.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
15-Jun	86	43	38	20	13	46	34	19	11	18	42	77
16-Jun	28	28	29	33	27	29	41	10	14	6	32	50
17-Jun	41	27	38	46	29	17	19	31	26	23	24	85
18-Jun	62	31	30	54	26	35	28	21	23	17	16	53
19-Jun	27	122	81	54	56	59	61	47	35	57	37	52
20-Jun	41	70	90	25	11	13	32	36	22	37	34	47
21-Jun	20	17	25	101	104	48	46	44	42	51	72	38
22-Jun	38	54	51	112	109	58	40	32	27	40	38	26
23-Jun	83	46	77	41	22	60	49	90	50	54	60	24
24-Jun	42	10	25	14	57	22	98	104	76	104	85	136
25-Jun	42	54	66	51	56	57	36	42	19	88	56	54
26-Jun	99	75	65	57	40	73	47	48	64	68	110	64
27-Jun	40	24	33	20	11	12	52	68	85	19	32	27
28-Jun	132	85	59	30	18	18	37	5	30	31	38	37
29-Jun	288	164	50	145	158	170	212	153	102	351	134	39
30-Jun	62	35	56	61	31	74	12	18	48	7	16	25
1-Jul	35	13	17	15	19	41	7	9	11	5	4	13
2-Jul	36	21	32	26	14	21	27	23	40	36	65	64
3-Jul	54	14	14	40	22	19	33	129	119	15	15	12
4-Jul	49	127	81	154	121	76	69	68	55	91	54	179
5-Jul	194	198	106	233	69	75	82	93	22	52	30	32
6-Jul	88	126	195	268	308	143	249	316	74	4	28	15
7-Jul	25	72	71	84	144	175	109	99	52	37	32	10
8-Jul	39	53	62	39	60	211	12	40	28	27	12	8
9-Jul	82	130	27	45	192	98	95	64	80	28	27	18
10-Jul	57	95	56	36	21	48	62	109	43	18	29	22
11-Jul	19	35	65	34	45	30	77	71	42	32	25	28
12-Jul	20	13	22	55	15	6	34	13	23	42	10	35
13-Jul	11	22	14	5	21	26	11	21	15	7	8	18
14-Jul	17	108	23	18	26	32	40	10	15	16	18	67
15-Jul	229	113	186	240	240	240	219	229	327	1,353	266	118

-continued-

Appendix B4-Page 3 of 4.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
16-Jul	200	184	97	56	101	534	623	275	275	541	680	245
17-Jul	12	12	9	8	7	11	11	11	14	25	51	97
18-Jul	26	54	16	54	54	54	54	54	54	9	10	54
19-Jul	52	100	47	73	157	148	103	236	123	75	66	136
20-Jul	60	45	66	70	154	53	39	91	56	53	18	40
21-Jul	53	48	49	59	97	61	41	54	23	34	37	22
22-Jul	4	7	11	44	8	15	17	20	7	19	49	23
23-Jul	22	15	58	23	26	128	114	37	182	102	93	67
24-Jul	15	22	24	12	16	31	30	108	81	73	36	33
25-Jul	27	54	48	38	74	102	220	129	201	316	401	180
26-Jul	14	7	9	15	19	18	21	60	47	17	42	26
27-Jul	8	15	5	1	62	30	39	40	54	42	93	40
28-Jul	47	37	19	11	8	78	212	47	53	153	77	146
29-Jul	268	174	160	163	313	410	514	447	653	931	712	841
30-Jul	20	16	19	16	26	46	98	74	256	137	283	269
31-Jul	116	69	40	38	98	49	81	181	81	104	145	190
1-Aug	40	35	35	25	31	45	54	28	103	17	20	74
2-Aug	134	140	32	42	68	168	110	167	110	256	93	75
3-Aug	304	442	84	43	59	174	156	116	96	84	73	77
4-Aug	149	53	49	31	34	120	166	127	50	80	97	69
5-Aug	25	34	22	27	28	32	367	128	42	56	53	49
6-Aug	134	26	18	10	18	43	138	103	90	70	99	77
7-Aug	15	16	29	10	9	35	71	83	67	77	88	106
8-Aug	23	16	13	20	20	47	67	62	67	69	41	66
9-Aug	54	27	34	18	29	45	52	119	53	78	74	75
10-Aug	25	17	10	10	19	68	62	164	121	89	102	52
11-Aug	30	33	22	15	18	65	74	72	94	86	78	92
12-Aug	75	55	96	112	74	90	110	101	150	173	103	62
13-Aug	79	36	43	42	39	72	167	142	195	151	150	100
14-Aug	40	36	36	55	35	69	154	116	140	105	128	64
15-Aug	85	54	111	29	29	54	79	100	99	93	76	85
16-Aug	110	97	79	22	80	41	75	115	186	77	78	76
17-Aug	50	71	33	36	36	46	50	80	86	80	83	106
18-Aug	48	84	74	59	35	32	138	116	119	143	107	72
Total	4,021	3,919	3,027	3,129	4,695	5,828	7,216	6,409	6,879	7,167	6,471	6,355

-continued-

Appendix B4.–Page 4 of 4.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
16-Jul	113	306	434	54	15	11	10	12	12	17	16	26
17-Jul	95	21	7	5	7	0	5	8	5	11	12	49
18-Jul	43	48	44	71	111	141	80	117	64	25	42	29
19-Jul	157	264	253	126	97	51	49	72	47	39	31	52
20-Jul	26	56	42	18	89	15	15	53	8	50	73	8
21-Jul	19	43	29	11	27	41	14	27	29	117	57	17
22-Jul	16	125	39	7	19	46	86	14	23	25	19	21
23-Jul	54	25	32	20	46	11	22	15	21	23	38	23
24-Jul	23	15	32	65	23	29	57	43	24	28	35	84
25-Jul	54	71	39	20	52	28	8	39	25	24	4	54
26-Jul	18	16	21	50	24	11	14	19	24	34	17	12
27-Jul	91	95	52	44	43	45	69	24	32	17	62	65
28-Jul	381	116	189	130	231	130	314	330	673	618	294	564
29-Jul	550	912	406	347	48	47	51	20	40	51	95	85
30-Jul	88	76	131	100	100	79	37	134	83	63	195	255
31-Jul	110	116	70	73	64	56	56	34	40	49	35	98
1-Aug	75	142	107	130	201	152	193	147	256	158	231	236
2-Aug	150	231	189	211	228	160	125	141	132	85	60	46
3-Aug	43	149	95	65	86	49	65	45	95	103	67	74
4-Aug	70	45	54	54	65	121	73	154	118	59	70	29
5-Aug	73	42	49	55	82	64	127	225	147	130	101	35
6-Aug	74	84	27	40	28	60	68	61	53	63	67	163
7-Aug	62	64	61	42	76	44	36	57	54	85	92	54
8-Aug	29	29	35	33	22	29	110	80	59	51	66	45
9-Aug	60	88	60	58	57	65	64	193	115	112	78	31
10-Aug	61	69	59	80	48	86	78	88	91	65	97	107
11-Aug	128	126	132	104	82	96	50	89	82	98	58	51
12-Aug	63	75	130	126	115	134	114	66	149	136	192	75
13-Aug	98	62	75	78	104	107	173	210	107	93	101	88
14-Aug	111	155	165	138	119	134	113	180	115	153	66	66
15-Aug	83	57	71	74	77	122	135	88	145	85	85	160
16-Aug	32	159	53	80	91	48	62	126	49	88	75	67
17-Aug	101	58	69	115	114	98	126	139	111	195	97	50
18-Aug	42	38	49	55	70	60	85	68	68	76	48	63
Total	5,279	6,003	5,084	4,835	4,746	4,402	4,654	5,180	4,716	5,760	4,125	4,355

Appendix B5.–Proportion of Kasilof River north bank sonar counts by hour, 2006.

	Proportion of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
15-Jun	10.6	8.0	2.7	1.8	2.7	4.5	2.0	3.4	7.1	5.0	1.9	2.1	2.5	2.6	3.5	3.7	2.1	1.6	1.6	1.7	1.7	5.3	7.9	14.1	100
16-Jun	21.9	12.6	6.0	5.0	4.8	3.7	3.3	1.2	1.1	0.4	0.9	0.3	1.0	2.4	1.4	3.4	2.0	1.3	2.5	2.9	2.0	2.9	9.1	7.7	100
17-Jun	8.1	11.4	7.1	3.8	5.3	2.5	1.3	0.6	0.4	0.6	3.4	4.6	6.1	7.1	8.8	6.5	2.4	2.5	3.4	1.6	4.3	1.2	1.3	6.0	100
18-Jun	4.8	3.8	5.5	8.3	5.0	5.9	2.7	2.7	2.0	2.2	2.8	9.8	7.2	4.4	4.2	4.1	4.1	2.2	2.0	3.0	1.6	4.4	2.8	4.7	100
19-Jun	3.6	5.8	7.0	7.5	5.9	6.2	3.5	1.1	0.8	0.8	1.7	1.2	4.8	11.6	5.6	4.2	4.8	6.7	5.6	3.7	2.8	1.7	1.7	1.7	100
20-Jun	11.1	5.2	3.0	2.5	3.7	2.8	1.3	1.0	0.6	1.0	0.5	1.4	2.8	6.1	17.1	5.5	3.3	2.6	6.9	5.2	4.9	4.3	4.1	3.2	100
21-Jun	4.3	8.8	5.2	4.2	1.3	2.2	1.9	2.2	1.0	0.2	0.3	0.5	0.9	0.6	0.6	7.1	12.1	7.2	8.9	12.2	8.3	3.5	3.9	2.5	100
22-Jun	2.5	4.5	8.1	7.9	4.4	2.8	2.0	1.6	2.5	0.8	1.0	1.0	0.9	1.3	4.5	5.6	9.3	5.4	2.8	8.5	11.4	5.8	3.1	2.4	100
23-Jun	1.6	1.4	2.9	8.8	5.7	1.6	3.1	5.8	4.5	3.0	5.5	2.2	2.8	2.7	2.6	2.5	8.0	11.1	6.9	2.7	5.9	5.4	1.8	1.3	100
24-Jun	1.3	0.7	1.8	3.7	4.4	1.8	1.7	3.0	2.5	1.4	1.5	1.1	1.6	1.3	1.5	2.1	3.8	16.3	11.3	5.2	6.2	13.1	8.3	4.6	100
25-Jun	1.7	1.8	2.2	2.0	12.3	14.8	4.7	3.4	3.7	2.0	1.4	1.5	1.2	1.0	1.3	1.3	1.9	2.4	10.3	4.4	5.4	9.7	6.8	2.9	100
26-Jun	2.4	1.8	1.6	2.5	3.1	16.6	6.4	3.2	2.6	2.7	1.9	1.2	1.8	1.6	1.5	2.0	1.7	2.0	6.6	13.1	4.1	7.7	6.7	5.2	100
27-Jun	1.0	0.7	1.0	0.8	0.7	6.4	13.8	4.7	1.9	2.9	3.9	1.9	1.5	1.4	1.8	1.7	2.2	2.0	4.5	9.4	8.0	5.4	9.4	13.2	100
28-Jun	5.8	3.5	3.1	2.2	5.0	6.4	7.5	13.4	7.9	3.6	2.2	4.7	3.9	3.6	2.6	1.6	1.3	1.4	1.6	0.8	3.9	6.0	4.1	3.7	100
29-Jun	1.8	0.9	0.9	0.7	0.8	1.1	1.5	1.0	1.6	3.4	1.5	7.8	12.5	7.1	10.1	8.5	4.7	5.4	3.1	3.5	6.3	9.5	3.5	2.8	100
30-Jun	6.9	2.6	3.4	2.1	2.2	3.3	2.1	4.6	4.5	10.1	8.6	6.3	4.4	3.7	1.7	3.9	3.5	4.2	4.2	4.0	1.4	2.2	2.6	7.5	100
1-Jul	5.3	4.2	6.0	5.8	3.4	4.3	2.3	2.8	1.4	0.5	1.5	3.4	3.6	3.9	10.7	8.1	5.4	7.1	5.0	3.9	3.2	2.8	1.9	3.4	100
2-Jul	1.8	2.0	2.8	2.1	2.0	2.3	2.8	4.0	3.2	2.4	4.6	6.1	4.7	6.1	2.5	4.7	4.5	3.9	4.5	3.3	2.5	4.3	9.3	13.7	100
3-Jul	6.4	7.5	5.7	12.8	11.0	9.6	12.1	5.6	5.2	3.3	2.7	1.0	1.6	2.5	1.9	2.1	0.6	1.0	1.1	1.4	1.2	1.5	1.4	0.5	100
4-Jul	0.4	2.1	1.2	1.0	0.8	1.5	1.0	0.9	0.7	1.6	2.3	3.0	2.9	7.0	5.4	2.4	6.4	8.2	10.1	6.4	4.9	6.0	10.3	13.4	100
5-Jul	13.0	10.6	5.6	1.8	5.3	9.4	5.8	5.9	2.9	3.8	4.9	4.0	1.1	2.2	3.4	5.3	2.9	1.4	1.6	1.8	1.0	2.2	1.1	3.0	100
6-Jul	3.2	2.7	3.2	2.0	1.2	0.8	1.4	1.5	1.8	1.4	3.7	3.7	4.7	6.0	8.2	9.0	9.7	14.1	5.0	6.6	3.5	3.0	2.0	1.8	100
7-Jul	0.8	1.5	1.9	1.9	2.3	1.4	1.8	3.1	4.4	3.6	5.0	8.4	8.3	6.2	4.0	6.4	13.7	7.4	4.5	4.3	5.1	1.4	1.7	1.1	100
8-Jul	1.0	2.4	1.8	1.7	2.2	1.5	1.5	2.6	2.8	1.9	7.0	1.6	6.3	4.7	10.8	6.2	9.1	4.8	10.0	9.4	5.5	1.7	1.9	1.7	100
9-Jul	1.4	1.5	1.7	5.2	7.3	7.5	4.8	7.8	7.5	2.2	6.4	1.7	1.7	3.9	6.8	4.2	3.2	2.5	5.4	4.1	3.4	4.0	1.8	4.2	100
10-Jul	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	0.6	2.6	3.8	4.4	7.6	8.2	8.5	4.1	2.8	2.3	2.9	2.0	100
11-Jul	9.3	3.5	3.2	2.7	3.0	10.1	4.0	3.5	4.6	6.7	3.2	2.2	1.7	1.9	0.9	1.9	2.0	2.4	8.5	6.7	5.4	4.4	5.0	3.3	100
12-Jul	5.7	7.3	5.3	1.2	1.0	1.8	4.0	2.7	1.7	1.0	1.4	1.1	0.4	1.9	1.2	3.5	2.0	1.0	1.2	3.1	10.2	6.7	19.8	14.7	100
13-Jul	9.3	7.3	3.1	3.3	1.3	3.5	5.3	11.1	3.1	3.3	3.4	5.9	4.5	3.7	3.8	2.1	2.4	5.4	5.1	1.2	2.8	3.9	2.4	2.8	100
14-Jul	1.4	1.6	0.7	1.0	0.6	0.5	0.1	4.2	3.3	2.0	2.4	4.7	2.3	3.0	1.3	1.3	0.9	1.1	1.4	4.0	18.7	10.9	13.0	19.9	100
15-Jul	5.4	2.7	0.7	2.1	2.4	1.7	1.0	2.0	5.5	4.5	2.7	3.8	4.6	3.1	2.3	3.2	1.7	1.9	5.6	7.3	9.2	12.8	8.0	5.7	100

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Appendix B5.–Page 2 of 2.

	Proportion of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
16-Jul	7.3	7.7	5.2	4.2	6.2	8.2	4.7	5.5	3.9	5.0	9.6	1.9	2.5	3.2	4.7	2.4	2.4	3.1	2.3	2.5	1.2	1.4	3.5	1.7	100
17-Jul	2.9	2.4	2.8	2.3	2.3	1.8	2.5	1.8	2.2	3.0	10.2	13.5	6.6	5.5	2.8	4.6	3.1	2.9	2.6	3.0	3.2	3.0	5.2	9.9	100
18-Jul	5.3	3.7	4.3	1.7	2.3	4.0	3.9	4.5	3.9	4.0	2.1	4.0	5.2	6.7	5.9	4.7	4.2	5.0	4.4	3.9	5.3	3.9	2.5	4.6	100
19-Jul	3.4	4.7	3.1	3.2	5.1	4.0	3.6	4.1	8.3	7.8	4.7	2.9	5.8	8.5	10.9	7.4	2.5	2.2	1.5	0.9	1.6	0.5	1.2	2.2	100
20-Jul	2.7	5.0	2.5	3.0	2.2	1.7	3.8	4.8	3.2	2.4	2.8	2.1	4.0	3.7	6.4	14.5	4.7	3.4	3.9	4.0	3.0	4.6	7.4	4.1	100
21-Jul	6.9	2.1	5.4	3.3	3.6	4.0	2.0	3.6	3.0	4.5	5.2	4.8	7.3	5.3	5.3	4.2	5.6	3.0	1.7	2.2	3.2	6.2	3.6	3.9	100
22-Jul	7.3	2.1	3.0	4.7	4.5	6.5	4.4	1.6	4.1	2.1	3.7	4.8	5.5	2.2	3.6	4.2	3.5	4.7	8.3	1.7	5.2	5.0	6.3	1.2	100
23-Jul	3.6	2.1	2.7	2.6	3.8	6.9	4.9	10.2	7.8	6.1	3.2	3.4	5.2	3.5	3.3	4.5	4.7	2.2	3.2	5.3	1.4	2.3	4.5	2.7	100
24-Jul	3.3	5.9	0.7	1.9	1.4	7.2	5.9	9.2	3.9	4.9	3.9	2.8	3.5	1.4	2.0	4.8	1.6	1.7	3.8	2.9	2.6	7.5	7.8	9.5	100
25-Jul	3.3	3.2	2.5	1.6	4.9	2.9	6.4	4.0	5.9	12.5	10.3	5.1	2.8	3.9	2.5	2.9	2.2	2.6	2.2	7.2	2.6	4.0	2.4	2.0	100
26-Jul	1.5	0.7	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	9.4	9.5	4.3	4.1	1.9	4.6	3.5	4.0	3.5	5.0	6.6	4.0	1.4	1.4	100
27-Jul	0.4	0.9	0.6	0.1	0.3	0.6	0.7	6.7	6.3	4.4	5.0	10.5	16.2	7.6	4.6	6.9	4.7	2.5	1.6	2.3	5.6	6.5	2.6	2.4	100
28-Jul	0.5	0.1	0.1	0.1	0.2	0.3	0.5	1.4	4.7	6.2	4.7	5.9	7.7	6.2	4.8	5.1	2.9	3.8	3.2	3.7	8.7	11.5	9.2	8.5	100
29-Jul	2.7	1.4	1.5	2.0	4.0	7.3	12.8	9.0	7.8	8.6	6.5	8.0	6.1	2.9	3.6	2.5	2.3	1.4	1.3	1.3	1.5	2.1	2.2	1.3	100
30-Jul	1.5	0.6	0.5	0.5	0.7	2.3	3.1	2.8	3.0	2.0	6.1	7.2	6.2	7.2	7.5	9.1	6.2	4.6	4.2	4.0	5.9	5.2	6.1	3.4	100
31-Jul	2.4	3.5	2.6	1.9	3.0	1.8	3.1	8.3	6.3	4.7	5.8	7.1	9.0	5.4	6.0	6.5	5.6	3.7	3.0	2.6	2.3	1.8	1.9	1.5	100
1-Aug	1.2	0.7	0.8	0.8	0.6	1.0	1.3	2.2	1.7	1.9	3.3	5.3	6.4	6.2	9.1	7.5	6.3	5.8	6.2	5.8	6.5	6.3	7.0	6.1	100
2-Aug	3.2	1.0	0.2	1.2	0.8	2.7	7.3	5.4	4.8	2.9	4.0	5.4	7.8	8.2	7.9	8.4	6.7	5.3	4.3	4.0	2.9	1.8	2.1	1.9	100
3-Aug	1.6	0.4	0.3	0.6	1.0	2.9	6.4	4.0	5.1	4.5	4.2	3.4	5.3	4.9	8.0	8.9	7.0	8.3	5.2	5.6	3.6	3.7	3.4	1.7	100
4-Aug	0.9	0.6	1.5	0.8	1.4	3.6	5.0	6.3	3.5	4.3	6.0	5.2	4.0	4.5	6.1	5.6	7.1	6.2	5.9	5.3	3.4	4.3	4.2	4.2	100
5-Aug	3.1	0.7	1.1	1.1	1.2	1.9	4.3	3.6	4.6	4.9	3.1	3.5	1.5	3.0	2.5	2.9	3.2	12.4	12.8	9.7	8.5	4.0	4.5	1.9	100
6-Aug	2.1	0.5	0.4	0.9	2.1	2.4	7.8	6.6	7.4	8.6	9.3	5.3	5.7	4.3	5.7	3.7	4.7	3.2	3.0	5.7	3.3	3.4	2.9	0.9	100
7-Aug	1.4	1.1	0.5	0.6	0.3	1.1	2.6	3.1	5.1	4.6	4.6	2.9	4.4	5.1	2.8	4.8	6.0	4.1	4.6	7.9	8.8	12.0	7.1	4.7	100
8-Aug	3.2	0.6	1.2	0.9	0.8	3.5	6.5	6.5	3.6	2.0	1.7	3.3	2.8	2.4	4.3	3.0	4.0	3.4	6.9	8.6	11.0	8.6	9.5	1.9	100
9-Aug	1.2	0.6	0.7	1.0	0.9	1.5	7.2	9.7	8.2	7.5	9.6	5.5	3.7	4.1	3.7	2.6	2.5	5.0	3.9	5.1	7.0	5.4	2.6	0.9	100
10-Aug	1.3	0.9	1.1	0.8	0.8	0.9	1.9	5.8	4.0	4.1	3.6	6.4	5.4	5.9	3.2	3.6	3.9	5.3	6.8	5.8	12.0	7.0	6.2	3.6	100
11-Aug	1.4	1.3	0.9	0.8	1.1	1.5	3.4	6.6	11.4	8.2	4.5	3.8	4.4	6.1	5.9	4.8	3.8	4.2	3.9	4.8	8.3	5.7	1.5	1.8	100
12-Aug	2.6	3.2	2.6	1.2	1.0	2.0	2.3	2.6	6.9	9.0	4.3	3.5	4.5	7.0	5.3	5.3	5.4	4.8	5.3	2.1	5.6	7.6	4.6	1.5	100
13-Aug	1.3	1.0	1.1	1.1	1.4	3.1	2.3	2.2	3.9	4.2	5.3	6.4	5.9	7.9	7.6	7.6	5.2	6.8	6.9	5.6	3.7	3.8	4.0	1.7	100
14-Aug	1.5	0.8	1.3	1.0	1.3	1.0	4.2	6.8	4.0	2.4	3.8	4.5	4.7	8.0	6.5	6.1	6.7	5.5	4.2	5.1	6.7	5.8	5.3	2.9	100
15-Aug	3.0	3.1	1.5	2.0	1.5	2.2	2.9	4.4	5.4	2.5	3.0	2.9	4.6	9.0	10.7	7.2	4.7	6.1	4.9	4.0	5.4	3.1	3.5	2.3	100
16-Aug	2.3	3.3	3.7	2.8	2.4	2.2	3.9	4.6	3.4	4.6	6.0	4.4	3.4	2.4	4.3	3.7	6.1	5.0	7.9	6.5	3.9	5.8	5.1	2.2	100
17-Aug	1.4	1.8	1.3	2.1	1.8	1.9	1.0	3.6	2.8	3.6	2.1	4.5	4.1	5.9	3.3	4.7	7.7	6.3	7.5	9.6	7.6	4.0	8.2	3.1	100
18-Aug	2.5	2.3	3.5	4.6	2.6	2.5	5.2	6.9	8.4	4.6	6.7	2.3	4.8	5.3	2.3	4.0	2.6	4.6	3.6	6.3	4.7	5.0	2.9	2.0	100
Mean	3.8	3.1	2.7	2.7	2.9	3.8	3.9	4.4	4.2	3.8	4.2	4.2	4.4	4.5	4.8	4.8	4.5	4.6	4.8	4.8	5.1	5.0	4.8	4.3	100

Appendix B6.–Proportion of Kasilof River south bank sonar counts by hour, 2006.

	Proportion of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
15-Jun	4.2	4.2	4.2	4.2	4.2	4.2	4.2	1.7	6.3	2.9	2.3	4.1	10.3	5.1	4.5	2.4	1.6	5.5	4.1	2.3	1.3	2.2	5.0	9.2	100
16-Jun	7.7	4.5	3.1	4.4	4.7	2.9	5.5	1.6	2.3	6.6	5.0	3.9	4.1	4.1	4.2	4.8	3.9	4.2	6.0	1.5	2.0	0.9	4.7	7.3	100
17-Jun	4.4	9.2	6.4	6.0	5.9	5.4	2.5	1.6	2.7	1.2	5.5	7.5	4.2	2.8	3.9	4.7	3.0	1.8	2.0	3.2	2.7	2.4	2.5	8.8	100
18-Jun	9.3	8.3	7.6	6.2	5.1	5.0	2.4	2.4	1.8	1.3	1.8	8.0	6.4	3.2	3.1	5.6	2.7	3.6	2.9	2.2	2.4	1.8	1.6	5.5	100
19-Jun	7.7	2.5	3.8	3.0	10.7	4.6	3.5	1.4	2.6	1.7	0.9	1.6	2.2	9.9	6.6	4.4	4.5	4.8	5.0	3.8	2.8	4.6	3.0	4.2	100
20-Jun	8.5	9.3	8.0	7.7	11.9	7.1	5.5	5.2	1.7	2.5	2.6	2.8	2.4	4.2	5.3	1.5	0.7	0.8	1.9	2.1	1.3	2.2	2.0	2.8	100
21-Jun	3.2	8.8	8.4	8.4	8.2	9.9	7.6	6.9	5.1	2.0	1.2	0.9	1.0	0.8	1.2	4.9	5.0	2.3	2.2	2.1	2.0	2.5	3.5	1.8	100
22-Jun	6.8	4.6	7.3	6.7	6.3	9.5	8.1	5.3	5.1	4.8	2.7	1.7	1.9	2.7	2.5	5.6	5.4	2.9	2.0	1.6	1.3	2.0	1.9	1.3	100
23-Jun	1.8	2.4	3.4	6.4	8.1	4.9	10.8	7.2	2.3	3.4	1.9	3.1	5.6	3.1	5.2	2.8	1.5	4.1	3.3	6.1	3.4	3.7	4.1	1.6	100
24-Jun	2.5	1.7	2.1	2.7	6.8	2.5	1.2	3.8	5.0	4.4	3.8	4.4	3.2	0.8	1.9	1.1	4.4	1.7	7.5	8.0	5.8	8.0	6.5	10.4	100
25-Jun	3.8	4.0	2.0	2.7	12.1	9.6	4.1	7.9	10.1	8.6	6.0	2.0	1.8	2.4	2.9	2.2	2.4	2.5	1.6	1.8	0.8	3.8	2.4	2.4	100
26-Jun	0.7	0.7	0.9	1.6	3.4	9.9	10.2	2.7	12.4	14.4	11.0	5.9	3.2	2.4	2.1	1.8	1.3	2.4	1.5	1.6	2.1	2.2	3.6	2.1	100
27-Jun	4.3	2.4	1.7	3.8	5.9	5.6	11.3	5.9	3.5	8.7	9.6	5.0	3.0	1.8	2.5	1.5	0.8	0.9	4.0	5.2	6.5	1.4	2.4	2.1	100
28-Jun	1.6	2.9	3.8	6.2	11.6	11.3	11.4	14.7	6.3	6.3	2.6	4.0	4.4	2.8	2.0	1.0	0.6	0.6	1.2	0.2	1.0	1.0	1.3	1.2	100
29-Jun	1.0	0.9	1.0	1.1	3.4	0.7	1.3	1.4	8.0	4.9	2.0	6.8	9.9	5.6	1.7	5.0	5.4	5.8	7.3	5.3	3.5	12.0	4.6	1.3	100
30-Jun	4.3	6.6	5.4	2.2	1.4	5.3	6.9	11.8	6.1	3.7	3.4	3.3	5.5	3.1	5.0	5.4	2.8	6.6	1.1	1.6	4.3	0.6	1.4	2.2	100
1-Jul	3.7	4.5	12.1	4.7	15.0	5.1	3.7	2.3	0.8	1.2	1.0	7.0	7.2	2.7	3.5	3.1	3.9	8.4	1.4	1.8	2.3	1.0	0.8	2.7	100
2-Jul	1.2	2.6	2.0	3.7	3.3	1.5	3.0	5.3	3.4	7.3	7.4	5.9	4.7	2.8	4.2	3.4	1.8	2.8	3.6	3.0	5.3	4.7	8.6	8.4	100
3-Jul	2.1	5.5	3.5	2.2	10.4	4.0	11.9	12.0	4.8	9.1	4.1	8.4	2.4	0.6	0.6	1.8	1.0	0.9	1.5	5.8	5.3	0.7	0.7	0.5	100
4-Jul	0.1	0.9	1.7	1.5	3.0	3.8	3.3	3.3	3.8	4.3	5.0	2.2	2.9	7.6	4.8	9.2	7.2	4.5	4.1	4.0	3.3	5.4	3.2	10.7	100
5-Jul	8.0	2.4	0.4	0.1	2.8	1.7	9.7	5.9	12.6	8.4	1.9	6.3	6.5	6.6	3.6	7.8	2.3	2.5	2.8	3.1	0.7	1.7	1.0	1.1	100
6-Jul	2.9	2.4	1.0	1.4	2.3	1.5	3.3	0.3	1.8	0.9	3.4	4.8	3.6	5.1	7.9	10.9	12.6	5.8	10.1	12.9	3.0	0.2	1.1	0.6	100
7-Jul	1.7	0.4	0.4	0.9	0.9	4.5	3.4	2.6	5.8	3.0	7.8	3.4	1.8	5.2	5.1	6.0	10.3	12.6	7.8	7.1	3.7	2.7	2.3	0.7	100
8-Jul	0.4	15.2	6.3	1.6	1.3	1.7	0.9	3.9	4.3	1.3	6.0	6.4	3.3	4.5	5.3	3.3	5.2	18.1	1.0	3.4	2.4	2.3	1.0	0.7	100
9-Jul	1.2	0.7	0.9	2.7	4.7	8.1	7.3	6.4	2.4	5.4	6.9	5.9	4.4	7.0	1.4	2.4	10.3	5.2	5.1	3.4	4.3	1.5	1.4	1.0	100
10-Jul	1.0	0.5	2.1	2.9	4.5	5.4	3.9	2.0	4.6	5.4	5.1	6.9	5.3	8.9	5.2	3.4	2.0	4.5	5.8	10.2	4.0	1.7	2.7	2.1	100
11-Jul	1.3	2.2	1.0	1.2	3.3	7.5	4.5	3.5	3.3	10.5	2.8	3.4	2.1	3.9	7.2	3.7	5.0	3.3	8.5	7.8	4.6	3.5	2.8	3.1	100
12-Jul	5.6	5.2	2.0	1.6	1.1	5.1	5.2	8.4	4.4	6.2	4.8	3.1	3.3	2.1	3.6	9.0	2.5	1.0	5.6	2.1	3.8	6.9	1.6	5.7	100
13-Jul	7.7	3.6	4.3	3.8	2.1	5.1	9.0	8.5	11.3	8.4	3.9	2.8	1.8	3.6	2.3	0.8	3.4	4.3	1.8	3.4	2.5	1.1	1.3	3.0	100
14-Jul	0.8	5.1	2.1	1.9	1.5	10.6	1.3	5.8	5.0	6.5	6.3	7.7	2.0	12.6	2.7	2.1	3.0	3.7	4.7	1.2	1.7	1.9	2.1	7.8	100
15-Jul	1.7	1.2	1.1	5.5	2.4	2.9	0.6	1.9	3.6	2.7	2.7	7.6	4.0	2.0	3.3	4.2	4.2	4.2	3.8	4.0	5.7	23.8	4.7	2.1	100

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Appendix B6.–Page 2 of 2.

	Proportion of Counts by Hour																								
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Total
16-Jul	4.1	3.8	2.0	1.2	2.1	11.0	12.9	5.7	5.7	11.2	14.1	5.1	2.3	6.3	9.0	1.1	0.3	0.2	0.2	0.2	0.2	0.4	0.3	0.5	100
17-Jul	2.4	2.4	1.8	1.6	1.4	2.2	2.2	2.2	2.8	5.1	10.3	19.7	19.3	4.3	1.4	1.0	1.4	0.0	1.0	1.6	1.0	2.2	2.4	9.9	100
18-Jul	2.0	4.1	1.2	4.1	4.1	4.1	4.1	4.1	4.1	0.7	0.8	4.1	3.3	3.7	3.4	5.4	8.5	10.8	6.1	8.9	4.9	1.9	3.2	2.2	100
19-Jul	2.0	3.9	1.8	2.9	6.1	5.8	4.0	9.2	4.8	2.9	2.6	5.3	6.1	10.3	9.9	4.9	3.8	2.0	1.9	2.8	1.8	1.5	1.2	2.0	100
20-Jul	5.0	3.8	5.5	5.8	12.9	4.4	3.3	7.6	4.7	4.4	1.5	3.3	2.2	4.7	3.5	1.5	7.4	1.3	1.3	4.4	0.7	4.2	6.1	0.7	100
21-Jul	5.3	4.8	4.9	5.8	9.6	6.0	4.1	5.4	2.3	3.4	3.7	2.2	1.9	4.3	2.9	1.1	2.7	4.1	1.4	2.7	2.9	11.6	5.6	1.7	100
22-Jul	0.6	1.1	1.7	6.6	1.2	2.3	2.6	3.0	1.1	2.9	7.4	3.5	2.4	18.8	5.9	1.1	2.9	6.9	13.0	2.1	3.5	3.8	2.9	3.2	100
23-Jul	1.8	1.3	4.8	1.9	2.2	10.7	9.5	3.1	15.2	8.5	7.8	5.6	4.5	2.1	2.7	1.7	3.8	0.9	1.8	1.3	1.8	1.9	3.2	1.9	100
24-Jul	1.6	2.3	2.6	1.3	1.7	3.3	3.2	11.5	8.6	7.8	3.8	3.5	2.4	1.6	3.4	6.9	2.4	3.1	6.1	4.6	2.6	3.0	3.7	8.9	100
25-Jul	1.2	2.4	2.2	1.7	3.4	4.6	10.0	5.8	9.1	14.3	18.2	8.2	2.4	3.2	1.8	0.9	2.4	1.3	0.4	1.8	1.1	1.1	0.2	2.4	100
26-Jul	2.5	1.3	1.6	2.7	3.4	3.2	3.8	10.8	8.5	3.1	7.6	4.7	3.2	2.9	3.8	9.0	4.3	2.0	2.5	3.4	4.3	6.1	3.1	2.2	100
27-Jul	0.7	1.4	0.5	0.1	5.8	2.8	3.7	3.7	5.1	3.9	8.7	3.7	8.5	8.9	4.9	4.1	4.0	4.2	6.5	2.2	3.0	1.6	5.8	6.1	100
28-Jul	1.0	0.8	0.4	0.2	0.2	1.6	4.4	1.0	1.1	3.1	1.6	3.0	7.8	2.4	3.9	2.7	4.8	2.7	6.5	6.8	13.9	12.7	6.1	11.6	100
29-Jul	3.3	2.1	1.9	2.0	3.8	5.0	6.2	5.4	7.9	11.3	8.6	10.2	6.7	11.1	4.9	4.2	0.6	0.6	0.6	0.2	0.5	0.6	1.2	1.0	100
30-Jul	0.8	0.6	0.7	0.6	1.0	1.8	3.8	2.8	9.8	5.3	10.9	10.3	3.4	2.9	5.0	3.8	3.8	3.0	1.4	5.2	3.2	2.4	7.5	9.8	100
31-Jul	5.8	3.5	2.0	1.9	4.9	2.5	4.1	9.1	4.1	5.2	7.3	9.5	5.5	5.8	3.5	3.7	3.2	2.8	2.8	1.7	2.0	2.5	1.8	4.9	100
1-Aug	1.6	1.4	1.4	1.0	1.2	1.8	2.1	1.1	4.1	0.7	0.8	2.9	3.0	5.6	4.2	5.1	7.9	6.0	7.6	5.8	10.1	6.2	9.1	9.3	100
2-Aug	4.2	4.4	1.0	1.3	2.2	5.3	3.5	5.3	3.5	8.1	2.9	2.4	4.8	7.3	6.0	6.7	7.2	5.1	4.0	4.5	4.2	2.7	1.9	1.5	100
3-Aug	11.5	16.7	3.2	1.6	2.2	6.6	5.9	4.4	3.6	3.2	2.8	2.9	1.6	5.6	3.6	2.5	3.3	1.9	2.5	1.7	3.6	3.9	2.5	2.8	100
4-Aug	7.7	2.7	2.5	1.6	1.8	6.2	8.6	6.6	2.6	4.1	5.0	3.6	3.6	2.3	2.8	2.8	3.4	6.2	3.8	8.0	6.1	3.0	3.6	1.5	100
5-Aug	1.3	1.7	1.1	1.4	1.4	1.6	18.4	6.4	2.1	2.8	2.7	2.5	3.7	2.1	2.5	2.8	4.1	3.2	6.4	11.3	7.4	6.5	5.1	1.8	100
6-Aug	8.3	1.6	1.1	0.6	1.1	2.7	8.6	6.4	5.6	4.3	6.1	4.8	4.6	5.2	1.7	2.5	1.7	3.7	4.2	3.8	3.3	3.9	4.2	10.1	100
7-Aug	1.1	1.2	2.2	0.8	0.7	2.6	5.3	6.2	5.0	5.8	6.6	8.0	4.7	4.8	4.6	3.2	5.7	3.3	2.7	4.3	4.1	6.4	6.9	4.1	100
8-Aug	2.1	1.5	1.2	1.8	1.8	4.3	6.1	5.6	6.1	6.3	3.7	6.0	2.6	2.6	3.2	3.0	2.0	2.6	10.0	7.3	5.4	4.6	6.0	4.1	100
9-Aug	3.3	1.6	2.1	1.1	1.8	2.7	3.2	7.3	3.2	4.8	4.5	4.6	3.7	5.4	3.7	3.5	3.5	4.0	3.9	11.8	7.0	6.8	4.8	1.9	100
10-Aug	1.5	1.0	0.6	0.6	1.1	4.1	3.7	9.8	7.3	5.3	6.1	3.1	3.7	4.1	3.5	4.8	2.9	5.2	4.7	5.3	5.5	3.9	5.8	6.4	100
11-Aug	1.7	1.9	1.2	0.8	1.0	3.7	4.2	4.1	5.3	4.8	4.4	5.2	7.2	7.1	7.4	5.9	4.6	5.4	2.8	5.0	4.6	5.5	3.3	2.9	100
12-Aug	2.9	2.1	3.7	4.3	2.9	3.5	4.3	3.9	5.8	6.7	4.0	2.4	2.4	2.9	5.0	4.9	4.5	5.2	4.4	2.6	5.8	5.3	7.5	2.9	100
13-Aug	3.1	1.4	1.7	1.7	1.6	2.9	6.6	5.7	7.8	6.0	6.0	4.0	3.9	2.5	3.0	3.1	4.1	4.3	6.9	8.4	4.3	3.7	4.0	3.5	100
14-Aug	1.6	1.4	1.4	2.2	1.4	2.8	6.2	4.7	5.6	4.2	5.1	2.6	4.5	6.2	6.6	5.5	4.8	5.4	4.5	7.2	4.6	6.1	2.6	2.6	100
15-Aug	4.1	2.6	5.3	1.4	1.4	2.6	3.8	4.8	4.8	4.5	3.7	4.1	4.0	2.7	3.4	3.6	3.7	5.9	6.5	4.2	7.0	4.1	4.1	7.7	100
16-Aug	5.6	4.9	4.0	1.1	4.1	2.1	3.8	5.8	9.5	3.9	4.0	3.9	1.6	8.1	2.7	4.1	4.6	2.4	3.2	6.4	2.5	4.5	3.8	3.4	100
17-Aug	2.5	3.5	1.6	1.8	1.8	2.3	2.5	3.9	4.2	3.9	4.1	5.2	5.0	2.9	3.4	5.7	5.6	4.8	6.2	6.8	5.5	9.6	4.8	2.5	100
18-Aug	2.7	4.8	4.2	3.4	2.0	1.8	7.9	6.6	6.8	8.2	6.1	4.1	2.4	2.2	2.8	3.1	4.0	3.4	4.9	3.9	3.9	4.3	2.7	3.6	100
Mean	3.4	3.4	2.8	2.7	4.1	4.6	5.4	5.3	5.2	5.2	5.0	4.9	4.2	4.7	3.9	3.9	3.9	3.9	4.1	4.3	3.7	4.0	3.4	3.9	100

Appendix B7.–Kasilof River north bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
15-Jun	49	28	91	528	426	332	154	432	72	59	34	173
16-Jun	23	29	84	192	138	88	66	178	37	49	44	60
17-Jun	30	27	31	161	120	115	59	183	34	44	14	33
18-Jun	11	19	26	110	96	109	57	93	24	35	15	45
19-Jun	25	48	136	387	236	151	51	140	36	58	19	45
20-Jun	13	146	286	529	293	147	71	141	24	42	18	26
21-Jun	26	616	975	1,016	311	122	67	74	23	33	33	60
22-Jun	6	228	560	627	392	148	94	98	15	32	6	20
23-Jun	340	280	784	409	268	106	55	63	11	12	5	38
24-Jun	200	587	979	355	289	71	103	94	24	20	12	77
25-Jun	245	923	1,339	502	438	154	163	226	52	60	20	38
26-Jun	120	1,029	1,398	482	457	203	200	310	62	42	21	27
27-Jun	343	1,351	1,914	741	794	287	157	213	70	67	21	40
28-Jun	173	387	1,073	684	679	357	196	351	54	73	36	47
29-Jun	40	222	1,228	765	1,212	543	195	295	76	56	26	62
30-Jun	64	80	293	139	318	187	117	128	47	35	14	15
1-Jul	159	104	366	244	462	18	50	8	15	9	7	9
2-Jul	576	496	1,316	603	1,211	124	4	6	5	19	7	33
3-Jul	266	336	677	489	1,201	59	10	4	10	52	4	37
4-Jul	944	1,341	1,356	543	714	39	52	27	36	58	13	41
5-Jul	172	415	974	785	800	53	24	6	6	37	4	37
6-Jul	151	457	1,017	411	617	49	1	0	2	10	7	45
7-Jul	134	489	1,157	682	448	285	0	0	2	3	1	8
8-Jul	349	147	453	300	246	168	0	0	0	3	2	7
9-Jul	237	478	1,334	847	355	264	4	0	1	17	4	10
10-Jul	211	145	459	1,113	953	661	456	596	492	601	397	269
11-Jul	48	13	48	302	355	223	226	26	130	62	171	16
12-Jul	40	24	18	242	199	134	185	219	57	42	45	35
13-Jul	45	15	44	289	324	123	366	45	31	33	47	91
14-Jul	22	149	890	736	488	85	463	59	22	45	45	61
15-Jul	47	159	1,432	2,143	1,652	723	1,187	412	428	265	947	107

-continued-

Appendix B7.–Page 2 of 2.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
16-Jul	524	212	854	2,030	1,613	562	965	418	386	127	1,033	101
17-Jul	25	14	361	676	834	237	486	312	108	82	203	102
18-Jul	21	14	151	372	519	114	255	85	23	43	16	135
19-Jul	50	69	344	508	502	96	394	140	71	150	65	106
20-Jul	84	226	134	216	84	33	56	44	41	98	113	19
21-Jul	104	637	196	273	117	57	140	48	61	160	136	49
22-Jul	26	72	194	461	260	81	207	32	79	203	113	65
23-Jul	8	70	117	357	191	89	153	49	38	154	160	70
24-Jul	48	292	142	264	102	88	73	36	53	66	110	52
25-Jul	231	1,208	369	273	169	192	88	56	53	17	62	42
26-Jul	385	1,007	783	243	89	61	128	103	28	16	20	19
27-Jul	257	1,273	762	104	70	57	87	20	9	3	2	0
28-Jul	42	3,099	10,421	621	42	167	189	195	19	15	22	3
29-Jul	78	4,527	16,832	1,181	16	147	122	144	30	15	3	0
30-Jul	20	2,261	5,603	208	3	46	39	35	9	12	4	0
31-Jul	46	2,677	7,496	307	1	22	18	32	14	9	3	0
1-Aug	37	1,000	7,110	820	16	9	14	15	2	2	5	0
2-Aug	27	151	8,031	1,473	49	4	17	7	11	2	0	0
3-Aug	49	44	4,387	1,143	51	3	38	4	18	8	0	0
4-Aug	101	283	6,125	1,103	45	9	160	11	1	0	0	0
5-Aug	34	22	1,714	1,377	24	6	104	9	8	4	3	5
6-Aug	40	161	1,200	595	12	2	11	6	8	13	4	7
7-Aug	34	20	829	138	4	2	8	6	11	9	5	4
8-Aug	41	34	769	145	4	0	13	17	10	5	9	3
9-Aug	108	60	1,242	139	3	9	11	19	13	10	9	5
10-Aug	196	39	990	212	20	3	9	8	16	18	9	1
11-Aug	531	62	2,122	498	29	2	11	7	10	12	12	11
12-Aug	383	223	2,556	288	6	6	9	10	12	7	8	3
13-Aug	475	210	2,593	259	8	5	8	5	8	4	4	2
14-Aug	347	146	1,936	253	10	4	4	4	9	2	4	1
15-Aug	402	613	1,535	185	11	6	17	11	8	6	4	1
16-Aug	275	264	865	76	0	8	17	14	17	9	7	4
17-Aug	208	74	707	88	6	2	5	10	5	5	8	8
18-Aug	255	55	496	92	3	8	9	15	13	12	6	1
Total	8,410	30,200	105,321	29,838	17,823	7,195	6,490	5,301	2,419	2,737	2,742	1,953

Appendix B8.–Kasilof River south bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
15-Jun	3	1	11	18	59	68	212	253	99	48	44	20
16-Jun	2	8	5	8	91	49	140	176	68	59	38	41
17-Jun	1	5	20	14	196	125	215	183	51	81	54	26
18-Jun	6	12	34	45	161	141	204	156	49	77	62	24
19-Jun	22	11	50	48	248	207	236	186	60	96	42	25
20-Jun	4	58	97	74	321	223	312	303	73	96	64	60
21-Jun	11	244	213	197	409	213	285	256	45	83	71	37
22-Jun	10	206	313	271	430	191	209	214	31	52	56	25
23-Jun	34	190	219	148	256	174	131	137	54	42	34	60
24-Jun	78	258	234	139	89	47	78	78	46	81	95	83
25-Jun	152	263	788	465	181	75	126	42	50	62	46	47
26-Jun	189	261	1,367	588	175	58	128	34	101	65	102	25
27-Jun	18	59	373	350	102	41	113	29	69	87	50	21
28-Jun	81	230	979	598	183	132	243	130	147	125	74	88
29-Jun	75	186	951	520	249	72	264	76	179	121	176	44
30-Jun	95	66	230	189	107	31	120	27	74	64	63	55
1-Jul	53	5	69	47	60	6	43	9	63	52	61	19
2-Jul	33	42	108	105	63	16	102	34	76	59	87	33
3-Jul	84	63	329	645	318	73	219	34	128	90	128	117
4-Jul	40	41	475	240	240	57	182	53	125	69	84	74
5-Jul	85	184	248	300	410	185	287	125	204	206	333	413
6-Jul	72	70	778	475	285	54	117	58	96	96	188	165
7-Jul	110	91	300	165	167	24	115	59	85	56	104	116
8-Jul	110	128	140	155	121	20	56	28	59	62	184	102
9-Jul	152	139	431	206	218	51	154	63	108	92	146	108
10-Jul	122	105	120	112	113	34	121	34	72	61	74	102
11-Jul	37	32	186	171	98	49	93	24	59	29	77	52
12-Jul	12	5	40	68	71	29	87	33	45	88	99	33
13-Jul	9	5	44	67	197	18	62	28	22	41	60	56
14-Jul	79	97	116	102	217	36	53	8	29	36	57	29
15-Jul	299	122	322	659	1,615	454	333	167	423	373	753	174

-continued-

Appendix B8.–Page 2 of 2.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
16-Jul	1,451	206	188	533	1,354	242	158	90	341	102	107	65
17-Jul	30	5	23	62	153	26	31	29	80	25	15	14
18-Jul	88	107	111	197	120	127	219	99	76	53	34	77
19-Jul	859	390	168	410	107	173	217	52	23	19	19	117
20-Jul	488	182	85	99	95	86	57	11	5	7	8	75
21-Jul	249	247	108	91	52	53	147	29	2	5	4	22
22-Jul	86	107	31	121	38	74	173	6	1	7	8	12
23-Jul	541	286	103	110	47	25	29	2	3	37	7	7
24-Jul	260	210	81	59	31	19	81	40	7	8	66	77
25-Jul	877	510	166	77	94	48	285	103	9	9	24	6
26-Jul	257	189	60	13	5	4	14	9	2	1	0	1
27-Jul	535	189	91	29	73	74	38	17	2	7	2	11
28-Jul	865	709	775	529	762	481	405	220	54	28	15	15
29-Jul	1,581	1,514	1,727	906	924	663	454	234	73	72	53	37
30-Jul	1,273	545	368	261	77	20	26	6	8	6	5	6
31-Jul	800	533	303	178	42	41	27	12	3	11	4	39
1-Aug	954	628	414	211	100	104	29	61	18	6	4	6
2-Aug	1,359	813	521	279	68	30	36	34	12	1	0	0
3-Aug	503	1,023	387	369	103	76	46	53	62	21	1	0
4-Aug	314	490	393	275	175	133	90	29	19	6	2	11
5-Aug	505	324	335	218	195	177	140	51	21	9	11	7
6-Aug	331	313	238	140	154	179	126	35	17	31	41	9
7-Aug	289	181	179	160	166	186	79	38	24	22	7	2
8-Aug	194	146	146	99	136	190	80	51	13	12	18	14
9-Aug	362	286	267	150	135	201	91	50	24	42	18	13
10-Aug	472	314	268	99	126	162	88	43	33	28	25	10
11-Aug	452	272	293	150	117	139	89	57	37	92	39	38
12-Aug	779	447	380	211	251	214	146	54	34	15	15	30
13-Aug	654	302	357	259	261	244	181	68	41	95	32	18
14-Aug	860	349	382	221	222	177	110	71	22	41	28	10
15-Aug	567	315	243	188	147	195	153	84	71	58	39	16
16-Aug	345	277	310	212	179	278	170	63	30	46	23	33
17-Aug	425	276	223	184	164	319	237	72	35	45	31	19
18-Aug	236	209	249	184	161	240	222	127	40	42	30	9
Total	21,919	16,081	19,563	14,473	14,284	8,353	9,514	5,037	4,032	3,658	4,241	3,100

Appendix B9.–Proportion of Kasilof River north bank sonar counts by sector, 2006.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
15-Jun	2.1	1.2	3.8	22.2	17.9	14.0	6.5	18.2	3.0	2.5	1.4	7.3	100
16-Jun	2.3	2.9	8.5	19.4	14.0	8.9	6.7	18.0	3.7	5.0	4.5	6.1	100
17-Jun	3.5	3.2	3.6	18.9	14.1	13.5	6.9	21.5	4.0	5.2	1.6	3.9	100
18-Jun	1.7	3.0	4.1	17.2	15.0	17.0	8.9	14.5	3.8	5.5	2.3	7.0	100
19-Jun	1.9	3.6	10.2	29.1	17.7	11.3	3.8	10.5	2.7	4.4	1.4	3.4	100
20-Jun	0.7	8.4	16.5	30.5	16.9	8.5	4.1	8.1	1.4	2.4	1.0	1.5	100
21-Jun	0.8	18.4	29.1	30.3	9.3	3.6	2.0	2.2	0.7	1.0	1.0	1.8	100
22-Jun	0.3	10.2	25.2	28.2	17.6	6.6	4.2	4.4	0.7	1.4	0.3	0.9	100
23-Jun	14.3	11.8	33.1	17.3	11.3	4.5	2.3	2.7	0.5	0.5	0.2	1.6	100
24-Jun	7.1	20.9	34.8	12.6	10.3	2.5	3.7	3.3	0.9	0.7	0.4	2.7	100
25-Jun	5.9	22.2	32.2	12.1	10.5	3.7	3.9	5.4	1.3	1.4	0.5	0.9	100
26-Jun	2.8	23.6	32.1	11.1	10.5	4.7	4.6	7.1	1.4	1.0	0.5	0.6	100
27-Jun	5.7	22.5	31.9	12.4	13.2	4.8	2.6	3.6	1.2	1.1	0.4	0.7	100
28-Jun	4.2	9.4	26.1	16.6	16.5	8.7	4.8	8.5	1.3	1.8	0.9	1.1	100
29-Jun	0.8	4.7	26.0	16.2	25.7	11.5	4.1	6.3	1.6	1.2	0.6	1.3	100
30-Jun	4.5	5.6	20.4	9.7	22.1	13.0	8.1	8.9	3.3	2.4	1.0	1.0	100
1-Jul	11.0	7.2	25.2	16.8	31.8	1.2	3.4	0.6	1.0	0.6	0.5	0.6	100
2-Jul	13.1	11.3	29.9	13.7	27.5	2.8	0.1	0.1	0.1	0.4	0.2	0.8	100
3-Jul	8.5	10.7	21.5	15.5	38.2	1.9	0.3	0.1	0.3	1.7	0.1	1.2	100
4-Jul	18.3	26.0	26.3	10.5	13.8	0.8	1.0	0.5	0.7	1.1	0.3	0.8	100
5-Jul	5.2	12.5	29.4	23.7	24.1	1.6	0.7	0.2	0.2	1.1	0.1	1.1	100
6-Jul	5.5	16.5	36.8	14.9	22.3	1.8	0.0	0.0	0.1	0.4	0.3	1.6	100
7-Jul	4.2	15.2	36.1	21.3	14.0	8.9	0.0	0.0	0.1	0.1	0.0	0.2	100
8-Jul	20.8	8.8	27.0	17.9	14.7	10.0	0.0	0.0	0.0	0.2	0.1	0.4	100
9-Jul	6.7	13.5	37.6	23.9	10.0	7.4	0.1	0.0	0.0	0.5	0.1	0.3	100
10-Jul	3.3	2.3	7.2	17.5	15.0	10.4	7.2	9.4	7.7	9.5	6.2	4.2	100
11-Jul	3.0	0.8	3.0	18.6	21.9	13.8	14.0	1.6	8.0	3.8	10.6	1.0	100
12-Jul	3.2	1.9	1.5	19.5	16.0	10.8	14.9	17.7	4.6	3.4	3.6	2.8	100
13-Jul	3.1	1.0	3.0	19.9	22.3	8.5	25.2	3.1	2.1	2.3	3.2	6.3	100
14-Jul	0.7	4.9	29.0	24.0	15.9	2.8	15.1	1.9	0.7	1.5	1.5	2.0	100
15-Jul	0.5	1.7	15.1	22.6	17.4	7.6	12.5	4.3	4.5	2.8	10.0	1.1	100

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Appendix B9.–Page 2 of 2.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
16-Jul	5.9	2.4	9.7	23.0	18.3	6.4	10.9	4.7	4.4	1.4	11.7	1.1	100
17-Jul	0.7	0.4	10.5	19.7	24.2	6.9	14.1	9.1	3.1	2.4	5.9	3.0	100
18-Jul	1.2	0.8	8.6	21.3	29.7	6.5	14.6	4.9	1.3	2.5	0.9	7.7	100
19-Jul	2.0	2.8	13.8	20.4	20.1	3.8	15.8	5.6	2.8	6.0	2.6	4.2	100
20-Jul	7.3	19.7	11.7	18.8	7.3	2.9	4.9	3.8	3.6	8.5	9.8	1.7	100
21-Jul	5.3	32.2	9.9	13.8	5.9	2.9	7.1	2.4	3.1	8.1	6.9	2.5	100
22-Jul	1.5	4.0	10.8	25.7	14.5	4.5	11.5	1.8	4.4	11.3	6.3	3.6	100
23-Jul	0.5	4.8	8.0	24.5	13.1	6.1	10.5	3.4	2.6	10.6	11.0	4.8	100
24-Jul	3.6	22.0	10.7	19.9	7.7	6.6	5.5	2.7	4.0	5.0	8.3	3.9	100
25-Jul	8.4	43.8	13.4	9.9	6.1	7.0	3.2	2.0	1.9	0.6	2.2	1.5	100
26-Jul	13.4	34.9	27.2	8.4	3.1	2.1	4.4	3.6	1.0	0.6	0.7	0.7	100
27-Jul	9.7	48.1	28.8	3.9	2.6	2.2	3.3	0.8	0.3	0.1	0.1	0.0	100
28-Jul	0.3	20.9	70.2	4.2	0.3	1.1	1.3	1.3	0.1	0.1	0.1	0.0	100
29-Jul	0.3	19.6	72.9	5.1	0.1	0.6	0.5	0.6	0.1	0.1	0.0	0.0	100
30-Jul	0.2	27.4	68.0	2.5	0.0	0.6	0.5	0.4	0.1	0.1	0.0	0.0	100
31-Jul	0.4	25.2	70.6	2.9	0.0	0.2	0.2	0.3	0.1	0.1	0.0	0.0	100
1-Aug	0.4	11.1	78.7	9.1	0.2	0.1	0.2	0.2	0.0	0.0	0.1	0.0	100
2-Aug	0.3	1.5	82.2	15.1	0.5	0.0	0.2	0.1	0.1	0.0	0.0	0.0	100
3-Aug	0.9	0.8	76.4	19.9	0.9	0.1	0.7	0.1	0.3	0.1	0.0	0.0	100
4-Aug	1.3	3.6	78.1	14.1	0.6	0.1	2.0	0.1	0.0	0.0	0.0	0.0	100
5-Aug	1.0	0.7	51.8	41.6	0.7	0.2	3.1	0.3	0.2	0.1	0.1	0.2	100
6-Aug	1.9	7.8	58.3	28.9	0.6	0.1	0.5	0.3	0.4	0.6	0.2	0.3	100
7-Aug	3.2	1.9	77.5	12.9	0.4	0.2	0.7	0.6	1.0	0.8	0.5	0.4	100
8-Aug	3.9	3.2	73.2	13.8	0.4	0.0	1.2	1.6	1.0	0.5	0.9	0.3	100
9-Aug	6.6	3.7	76.3	8.5	0.2	0.6	0.7	1.2	0.8	0.6	0.6	0.3	100
10-Aug	12.9	2.6	65.1	13.9	1.3	0.2	0.6	0.5	1.1	1.2	0.6	0.1	100
11-Aug	16.1	1.9	64.2	15.1	0.9	0.1	0.3	0.2	0.3	0.4	0.4	0.3	100
12-Aug	10.9	6.4	72.8	8.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.1	100
13-Aug	13.3	5.9	72.4	7.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	100
14-Aug	12.8	5.4	71.2	9.3	0.4	0.1	0.1	0.1	0.3	0.1	0.1	0.0	100
15-Aug	14.4	21.9	54.8	6.6	0.4	0.2	0.6	0.4	0.3	0.2	0.1	0.0	100
16-Aug	17.7	17.0	55.6	4.9	0.0	0.5	1.1	0.9	1.1	0.6	0.4	0.3	100
17-Aug	18.5	6.6	62.8	7.8	0.5	0.2	0.4	0.9	0.4	0.4	0.7	0.7	100
18-Aug	26.4	5.7	51.4	9.5	0.3	0.8	0.9	1.6	1.3	1.2	0.6	0.1	100
Mean	6.0	11.1	35.9	16.2	10.9	4.5	4.5	3.7	1.6	2.0	2.0	1.6	100

Appendix B10.–Proportion of Kasilof River south bank sonar counts by sector, 2006**.**

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
15-Jun	0.4	0.1	1.3	2.2	7.1	8.1	25.4	30.3	11.8	5.7	5.3	2.4	100
16-Jun	0.3	1.2	0.7	1.2	13.3	7.2	20.4	25.7	9.9	8.6	5.5	6.0	100
17-Jun	0.1	0.5	2.1	1.4	20.2	12.9	22.1	18.8	5.3	8.3	5.6	2.7	100
18-Jun	0.6	1.2	3.5	4.6	16.6	14.5	21.0	16.1	5.0	7.9	6.4	2.5	100
19-Jun	1.8	0.9	4.1	3.9	20.1	16.8	19.2	15.1	4.9	7.8	3.4	2.0	100
20-Jun	0.2	3.4	5.8	4.4	19.1	13.2	18.5	18.0	4.3	5.7	3.8	3.6	100
21-Jun	0.5	11.8	10.3	9.5	19.8	10.3	13.8	12.4	2.2	4.0	3.4	1.8	100
22-Jun	0.5	10.3	15.6	13.5	21.4	9.5	10.4	10.7	1.5	2.6	2.8	1.2	100
23-Jun	2.3	12.8	14.8	10.0	17.3	11.8	8.9	9.3	3.7	2.8	2.3	4.1	100
24-Jun	6.0	19.8	17.9	10.6	6.8	3.6	6.0	6.0	3.5	6.2	7.3	6.4	100
25-Jun	6.6	11.4	34.3	20.2	7.9	3.3	5.5	1.8	2.2	2.7	2.0	2.0	100
26-Jun	6.1	8.4	44.2	19.0	5.7	1.9	4.1	1.1	3.3	2.1	3.3	0.8	100
27-Jun	1.4	4.5	28.4	26.7	7.8	3.1	8.6	2.2	5.3	6.6	3.8	1.6	100
28-Jun	2.7	7.6	32.5	19.9	6.1	4.4	8.1	4.3	4.9	4.2	2.5	2.9	100
29-Jun	2.6	6.4	32.6	17.9	8.5	2.5	9.1	2.6	6.1	4.2	6.0	1.5	100
30-Jun	8.5	5.9	20.5	16.9	9.5	2.8	10.7	2.4	6.6	5.7	5.6	4.9	100
1-Jul	10.9	1.0	14.2	9.7	12.3	1.2	8.8	1.8	12.9	10.7	12.5	3.9	100
2-Jul	4.4	5.5	14.2	13.9	8.3	2.1	13.5	4.5	10.0	7.8	11.5	4.4	100
3-Jul	3.8	2.8	14.8	28.9	14.3	3.3	9.8	1.5	5.7	4.0	5.7	5.3	100
4-Jul	2.4	2.4	28.3	14.3	14.3	3.4	10.8	3.2	7.4	4.1	5.0	4.4	100
5-Jul	2.9	6.2	8.3	10.1	13.8	6.2	9.6	4.2	6.8	6.9	11.2	13.9	100
6-Jul	2.9	2.9	31.7	19.4	11.6	2.2	4.8	2.4	3.9	3.9	7.7	6.7	100
7-Jul	7.9	6.5	21.6	11.9	12.0	1.7	8.3	4.2	6.1	4.0	7.5	8.3	100
8-Jul	9.4	11.0	12.0	13.3	10.4	1.7	4.8	2.4	5.1	5.3	15.8	8.8	100
9-Jul	8.1	7.4	23.1	11.0	11.7	2.7	8.2	3.4	5.8	4.9	7.8	5.8	100
10-Jul	11.4	9.8	11.2	10.5	10.6	3.2	11.3	3.2	6.7	5.7	6.9	9.5	100
11-Jul	4.1	3.5	20.5	18.9	10.8	5.4	10.3	2.6	6.5	3.2	8.5	5.7	100
12-Jul	2.0	0.8	6.6	11.1	11.6	4.8	14.3	5.4	7.4	14.4	16.2	5.4	100
13-Jul	1.5	0.8	7.2	11.0	32.3	3.0	10.2	4.6	3.6	6.7	9.9	9.2	100
14-Jul	9.2	11.3	13.5	11.9	25.3	4.2	6.2	0.9	3.4	4.2	6.6	3.4	100
15-Jul	5.3	2.1	5.7	11.6	28.4	8.0	5.8	2.9	7.4	6.6	13.2	3.1	100

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Appendix B10.–Page 2 of 2.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
16-Jul	30.0	4.3	3.9	11.0	28.0	5.0	3.3	1.9	7.0	2.1	2.2	1.3	100
17-Jul	6.1	1.0	4.7	12.6	31.0	5.3	6.3	5.9	16.2	5.1	3.0	2.8	100
18-Jul	6.7	8.2	8.5	15.1	9.2	9.7	16.7	7.6	5.8	4.1	2.6	5.9	100
19-Jul	33.6	15.3	6.6	16.1	4.2	6.8	8.5	2.0	0.9	0.7	0.7	4.6	100
20-Jul	40.7	15.2	7.1	8.3	7.9	7.2	4.8	0.9	0.4	0.6	0.7	6.3	100
21-Jul	24.7	24.5	10.7	9.0	5.2	5.3	14.6	2.9	0.2	0.5	0.4	2.2	100
22-Jul	13.0	16.1	4.7	18.2	5.7	11.1	26.1	0.9	0.2	1.1	1.2	1.8	100
23-Jul	45.2	23.9	8.6	9.2	3.9	2.1	2.4	0.2	0.3	3.1	0.6	0.6	100
24-Jul	27.7	22.4	8.6	6.3	3.3	2.0	8.6	4.3	0.7	0.9	7.0	8.2	100
25-Jul	39.7	23.1	7.5	3.5	4.3	2.2	12.9	4.7	0.4	0.4	1.1	0.3	100
26-Jul	46.3	34.1	10.8	2.3	0.9	0.7	2.5	1.6	0.4	0.2	0.0	0.2	100
27-Jul	50.1	17.7	8.5	2.7	6.8	6.9	3.6	1.6	0.2	0.7	0.2	1.0	100
28-Jul	17.8	14.6	16.0	10.9	15.7	9.9	8.3	4.5	1.1	0.6	0.3	0.3	100
29-Jul	19.2	18.4	21.0	11.0	11.2	8.0	5.5	2.8	0.9	0.9	0.6	0.4	100
30-Jul	48.9	21.0	14.1	10.0	3.0	0.8	1.0	0.2	0.3	0.2	0.2	0.2	100
31-Jul	40.1	26.7	15.2	8.9	2.1	2.1	1.4	0.6	0.2	0.6	0.2	2.0	100
1-Aug	37.6	24.8	16.3	8.3	3.9	4.1	1.1	2.4	0.7	0.2	0.2	0.2	100
2-Aug	43.1	25.8	16.5	8.8	2.2	1.0	1.1	1.1	0.4	0.0	0.0	0.0	100
3-Aug	19.0	38.7	14.6	14.0	3.9	2.9	1.7	2.0	2.3	0.8	0.0	0.0	100
4-Aug	16.2	25.3	20.3	14.2	9.0	6.9	4.6	1.5	1.0	0.3	0.1	0.6	100
5-Aug	25.3	16.3	16.8	10.9	9.8	8.9	7.0	2.6	1.1	0.5	0.6	0.4	100
6-Aug	20.5	19.4	14.7	8.7	9.5	11.1	7.8	2.2	1.1	1.9	2.5	0.6	100
7-Aug	21.7	13.6	13.4	12.0	12.5	14.0	5.9	2.9	1.8	1.7	0.5	0.2	100
8-Aug	17.7	13.3	13.3	9.0	12.4	17.3	7.3	4.6	1.2	1.1	1.6	1.3	100
9-Aug	22.1	17.4	16.3	9.2	8.2	12.3	5.6	3.1	1.5	2.6	1.1	0.8	100
10-Aug	28.3	18.8	16.1	5.9	7.6	9.7	5.3	2.6	2.0	1.7	1.5	0.6	100
11-Aug	25.5	15.3	16.5	8.5	6.6	7.8	5.0	3.2	2.1	5.2	2.2	2.1	100
12-Aug	30.2	17.4	14.8	8.2	9.7	8.3	5.7	2.1	1.3	0.6	0.6	1.2	100
13-Aug	26.0	12.0	14.2	10.3	10.4	9.7	7.2	2.7	1.6	3.8	1.3	0.7	100
14-Aug	34.5	14.0	15.3	8.9	8.9	7.1	4.4	2.8	0.9	1.6	1.1	0.4	100
15-Aug	27.3	15.2	11.7	9.1	7.1	9.4	7.4	4.0	3.4	2.8	1.9	0.8	100
16-Aug	17.5	14.1	15.8	10.8	9.1	14.1	8.6	3.2	1.5	2.3	1.2	1.7	100
17-Aug	20.9	13.6	11.0	9.1	8.1	15.7	11.7	3.5	1.7	2.2	1.5	0.9	100
18-Aug	13.5	11.9	14.2	10.5	9.2	13.7	12.7	7.3	2.3	2.4	1.7	0.5	100
Mean	16.4	12.2	14.3	11.1	11.2	6.7	9.0	4.9	3.7	3.6	3.9	3.0	100

Appendix B11.–Minimum and maximum daily counting ranges for both banks of the Kasilof River, 2006.

	North Bank				South Bank			
Date	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where >80% of Migration Occurred	Counting Range (All Sectors) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where > 80% of Migration Occurred
15-Jun	45	13.7	9.1	1-8	50	15.2	11.4	1-9
16-Jun	45	13.7	9.1	1-8	50	15.2	11.4	1-9
16-Jun					52	15.8	11.9	1-9
17-Jun	45	13.7	9.1	1-8	52	15.8	11.9	1-9
18-Jun	45	13.7	9.1	1-8	52	15.8	11.9	1-9
19-Jun	45	13.7	9.1	1-8	52	15.8	10.6	1-8
20-Jun	45	13.7	6.9	1-6	52	15.8	10.6	1-8
20-Jun					50	15.2	10.2	1-8
21-Jun	45	13.7	5.7	1-5	50	15.2	10.2	1-8
22-Jun	45	13.7	5.7	1-5	50	15.2	8.9	1-7
23-Jun					45	13.7	9.1	1-8
23-Jun	45	13.7	5.7	1-5	52	15.8	10.6	1-8
24-Jun	43	13.1	5.5	1-5	36	11.0	8.2	1-9
24-Jun	45	13.7	5.7	1-5	45	13.7	10.3	1-9
25-Jun	45	13.7	5.7	1-5	36	11.0	4.6	1-5
25-Jun					37	11.3	4.7	1-5
26-Jun	45	13.7	5.7	1-5	37	11.3	4.7	1-5
27-Jun	45	13.7	5.7	1-5	37	11.3	6.6	1-7
27-Jun	45	13.7	5.7	1-5	37	11.3	6.6	1-7
28-Jun	45	13.7	6.9	1-6	55	16.8	9.8	1-7
29-Jun	45	13.7	6.9	1-6	37	11.3	7.5	1-8
30-Jun	45	13.7	8.0	1-7	37	11.3	8.5	1-9
30-Jun	52	15.8	9.2	1-7				
1-Jul	52	15.8	6.6	1-5	37	11.3	9.4	1-10
2-Jul	47	14.3	6.0	1-5	37	11.3	9.4	1-10
2-Jul	52	15.8	6.6	1-5				
3-Jul	48	14.6	6.1	1-5	36	11.0	8.2	1-9
4-Jul	48	14.6	4.9	1-4	36	11.0	8.2	1-9
5-Jul	48	14.6	6.1	1-5	36	11.0	10.1	1-11
5-Jul	50	15.2	6.4	1-5				
6-Jul	47	14.3	6.0	1-5	36	11.0	8.2	1-9
6-Jul	50	15.2	6.4	1-5				
7-Jul	47	14.3	6.0	1-5	36	11.0	8.2	1-9
8-Jul	47	14.3	6.0	1-5	36	11.0	10.1	1-11
9-Jul	47	14.3	4.8	1-4	36	11.0	8.2	1-9
10-Jul	47	14.3	10.7	1-9	36	11.0	9.1	1-10
10-Jul	50	15.2	11.4	1-9	36	11.0	9.1	1-10
11-Jul	45	13.7	10.3	1-9	36	11.0	8.2	1-9
12-Jul	45	13.7	9.1	1-8	36	11.0	10.1	1-11
13-Jul	45	13.7	8.0	1-7	36	11.0	9.1	1-10
14-Jul					37	11.3	6.6	1-7
14-Jul	45	13.7	8.0	1-7				
15-Jul					37	11.3	9.4	1-10
15-Jul	45	13.7	9.1	1-8	38	11.6	9.7	1-10
16-Jul	45	13.7	9.1	1-8	38	11.6	5.8	1-6
17-Jul	35	10.7	7.1	1-8	38	11.6	8.7	1-9

-continued-

Appendix B11.–Page 2 of 2.

	North Bank				South Bank			
Date	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where >80% of Migration Occurred	Counting Range (All Sectors) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where > 80% of Migration Occurred
17-Jul	45	13.7	9.1	1-8				
18-Jul	40	12.2	7.1	1-7	24	7.3	4.9	1-8
18-Jul					38	11.6	7.7	1-8
19-Jul	21	6.4	4.3	1-8	31.5	9.6	4.8	1-6
19-Jul	45	13.7	9.1	1-8	33	10.1	5.0	1-6
20-Jul	45	13.7	10.3	1-9	30	9.1	4.6	1-6
21-Jul	45	13.7	10.3	1-9	30	9.1	5.3	1-7
21-Jul					33	10.1	5.9	1-7
22-Jul	45	13.7	11.4	1-10	33	10.1	5.9	1-7
23-Jul	45	13.7	11.4	1-10	33	10.1	3.4	1-4
24-Jul	45	13.7	10.3	1-9	33	10.1	6.7	1-8
25-Jul	35	10.7	4.4	1-5	30	9.1	4.6	1-6
25-Jul	45	13.7	5.7	1-5				
26-Jul	21	6.4	2.1	1-4	30	9.1	1.5	1-2
26-Jul	35	10.7	3.6	1-4				
27-Jul					17	5.2	2.2	1-5
27-Jul	21	6.4	1.6	1-3	30	9.1	3.8	1-5
28-Jul	17	5.2	1.3	1-3	17	5.2	2.6	1-6
29-Jul					17	5.2	2.2	1-5
29-Jul	17	5.2	1.3	1-3	30	9.1	3.8	1-5
30-Jul	17	5.2	1.3	1-3	30	9.1	2.3	1-3
31-Jul	17	5.2	1.3	1-3	30	9.1	2.3	1-3
1-Aug	14.5	4.4	1.1	1-3	18	5.5	1.8	1-4
1-Aug	17	5.2	1.3	1-3	30	9.1	3.0	1-4
2-Aug	14.5	4.4	1.1	1-3	30	9.1	2.3	1-3
3-Aug	14.5	4.4	1.5	1-4	30	9.1	3.0	1-4
4-Aug	14.5	4.4	1.1	1-3	17	5.2	2.2	1-5
4-Aug					30	9.1	3.8	1-5
5-Aug	14.5	4.4	1.5	1-4				
6-Aug	14.5	4.4	1.5	1-4	17	5.2	2.6	1-6
7-Aug	14.5	4.4	1.1	1-3	17	5.2	2.6	1-6
8-Aug	14.5	4.4	1.1	1-3	17	5.2	2.6	1-6
9-Aug	14.5	4.4	1.1	1-3	17	5.2	2.6	1-6
9-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
10-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
11-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
12-Aug	15	4.6	1.1	1-3	17	5.2	2.2	1-5
13-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
14-Aug	15	4.6	1.1	1-3	17	5.2	2.2	1-5
15-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
15-Aug	20	6.1	1.5	1-3				
16-Aug	15	4.6	1.1	1-3	17	5.2	2.6	1-6
17-Aug	15	4.6	1.1	1-3	17	5.2	3.0	1-7
18-Aug	15	4.6	1.1	1-3	17	5.2	3.0	1-7
	Average	10.7	5.3		Average	10.0	6.2	
	Min	4.4	1.1		Min	5.2	1.5	
	Max	15.8	11.4		Max	16.8	11.9	
	Std. Dev.	4.4	3.5		Std. Dev.	3.4	3.3	

APPENDIX C. CRESCENT RIVER

Appendix C1.–Estimated salmon escapement adjacent to the north bank of the Crescent River, 2006.

	Sockeye		Pink		Chum		Coho		Chinook		Dolly Varden	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
24-Jun	70	70	0	0	0	0	0	0	0	0	0	0
25-Jun	25	95	0	0	0	0	0	0	0	0	0	0
26-Jun	54	149	0	0	0	0	0	0	0	0	0	0
27-Jun	1,118	1,267	0	0	0	0	0	0	0	0	0	0
28-Jun	1,061	2,328	0	0	0	0	0	0	0	0	0	0
29-Jun	1,413	3,741	0	0	0	0	0	0	0	0	0	0
30-Jun	1,163	4,904	0	0	0	0	0	0	0	0	0	0
1-Jul	1,263	6,167	0	0	0	0	0	0	0	0	0	0
2-Jul	622	6,789	24	24	0	0	0	0	0	0	0	0
3-Jul	312	7,101	12	36	0	0	0	0	0	0	0	0
4-Jul	499	7,600	17	53	0	0	0	0	0	0	0	0
5-Jul	767	8,367	0	53	0	0	0	0	19	19	37	37
6-Jul	515	8,882	19	72	0	0	0	0	0	19	19	56
7-Jul	722	9,604	24	96	0	0	0	0	0	19	0	56
8-Jul	903	10,507	53	149	0	0	0	0	0	19	53	110
9-Jul	748	11,254	75	224	0	0	0	0	0	19	75	184
10-Jul	1,072	12,326	0	224	0	0	0	0	0	19	115	299
11-Jul	1,339	13,666	49	273	0	0	0	0	73	92	0	299
12-Jul	990	14,656	17	291	0	0	0	0	0	92	69	369
13-Jul	1,046	15,702	62	353	0	0	0	0	0	92	62	430
14-Jul	1,635	17,337	123	476	0	0	0	0	0	92	204	635
15-Jul	2,823	20,160	0	476	0	0	0	0	50	142	101	735
16-Jul	1,018	21,177	48	524	0	0	0	0	0	142	194	929
17-Jul	815	21,992	0	524	0	0	0	0	0	142	86	1,015
18-Jul	567	22,559	0	524	0	0	0	0	0	142	0	1,015
19-Jul	434	22,994	45	569	0	0	0	0	0	142	15	1,030
20-Jul	2,358	25,352	139	708	69	69	0	0	0	142	139	1,169
21-Jul	1,706	27,058	0	708	0	69	0	0	0	142	0	1,169
22-Jul	1,161	28,219	61	769	0	69	0	0	0	142	61	1,230
23-Jul	1,528	29,747	42	811	0	69	0	0	0	142	42	1,272
24-Jul	659	30,405	12	824	12	81	0	0	12	154	25	1,297
25-Jul	2,147	32,552	0	824	0	81	0	0	22	175	22	1,318
26-Jul	1,645	34,197	87	911	69	150	0	0	0	175	35	1,353
27-Jul	1,200	35,397	0	911	52	202	0	0	0	175	26	1,379
28-Jul	1,271	36,667	12	923	12	214	0	0	0	175	12	1,391
29-Jul	766	37,433	55	978	0	214	0	0	0	175	27	1,418
30-Jul	987	38,420	62	1,040	0	214	0	0	0	175	15	1,433
31-Jul	1,706	40,126	0	1,040	0	214	0	0	0	175	0	1,433
1-Aug	1,887	42,013	23	1,063	23	237	0	0	0	175	0	1,433
2-Aug	1,593	43,606	0	1,063	15	252	0	0	0	175	0	1,433
3-Aug	2,629	46,235	48	1,112	24	276	0	0	0	175	0	1,433
4-Aug	836	47,071	0	1,112	0	276	0	0	0	175	0	1,433
5-Aug	807	47,878	31	1,143	42	318	10	10	0	175	0	1,433
6-Aug	304	48,182	10	1,154	10	328	42	52	0	175	0	1,433
7-Aug	799	48,980	0	1,154	24	352	24	77	0	175	0	1,433
8-Aug	465	49,445	62	1,216	62	414	10	87	0	175	10	1,443
9-Aug	380	49,825	0	1,216	224	638	0	87	0	175	0	1,443
10-Aug	435	50,260	31	1,247	75	712	19	106	0	175	6	1,449

Appendix C2.–Estimated salmon escapement adjacent to the south bank of the Crescent River 2006.

	Sockeye		Pink		Chum		Coho		Chinook		Dolly Varden	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
24-Jun	11	11	0	0	0	0	0	0	0	0	0	0
25-Jun	1	12	0	0	0	0	0	0	0	0	0	0
26-Jun	5	17	0	0	0	0	0	0	0	0	0	0
27-Jun	1,116	1,133	0	0	0	0	0	0	0	0	0	0
28-Jun	967	2,100	0	0	0	0	0	0	0	0	0	0
29-Jun	1,162	3,262	0	0	0	0	0	0	0	0	0	0
30-Jun	838	4,100	0	0	0	0	0	0	0	0	0	0
1-Jul	879	4,979	0	0	0	0	0	0	0	0	0	0
2-Jul	533	5,512	21	21	0	0	0	0	0	0	0	0
3-Jul	427	5,940	16	36	0	0	0	0	0	0	0	0
4-Jul	523	6,463	18	54	0	0	0	0	0	0	0	0
5-Jul	661	7,123	0	54	0	0	0	0	16	16	32	32
6-Jul	613	7,736	23	77	0	0	0	0	0	16	23	55
7-Jul	701	8,437	20	97	0	0	0	0	0	16	0	55
8-Jul	841	9,278	49	147	0	0	0	0	0	16	49	104
9-Jul	630	9,908	63	210	0	0	0	0	0	16	63	167
10-Jul	735	10,643	0	210	0	0	0	0	0	16	79	246
11-Jul	1,120	11,763	41	250	0	0	0	0	61	77	0	246
12-Jul	999	12,763	18	268	0	0	0	0	0	77	70	316
13-Jul	874	13,637	51	319	0	0	0	0	0	77	51	368
14-Jul	1,042	14,678	78	397	0	0	0	0	0	77	130	498
15-Jul	2,138	16,817	0	397	0	0	0	0	38	115	76	574
16-Jul	981	17,797	47	444	0	0	0	0	0	115	187	761
17-Jul	730	18,528	0	444	0	0	0	0	0	115	77	838
18-Jul	472	19,000	0	444	0	0	0	0	0	115	0	838
19-Jul	650	19,650	67	511	0	0	0	0	0	115	22	860
20-Jul	1,342	20,992	79	590	39	39	0	0	0	115	79	939
21-Jul	1,550	22,542	0	590	0	39	0	0	0	115	0	939
22-Jul	951	23,493	50	640	0	39	0	0	0	115	50	989
23-Jul	1,207	24,699	34	674	0	39	0	0	0	115	34	1,023
24-Jul	415	25,114	8	682	8	47	0	0	8	123	16	1,038
25-Jul	1,623	26,738	0	682	0	47	0	0	16	140	16	1,055
26-Jul	1,241	27,979	65	747	52	100	0	0	0	140	26	1,081
27-Jul	1,226	29,205	0	747	53	152	0	0	0	140	26	1,107
28-Jul	1,037	30,241	10	757	10	162	0	0	0	140	10	1,118
29-Jul	434	30,676	31	788	0	162	0	0	0	140	16	1,133
30-Jul	685	31,361	43	831	0	162	0	0	0	140	11	1,144
31-Jul	1,351	32,712	0	831	0	162	0	0	0	140	0	1,144
1-Aug	1,558	34,270	19	850	19	181	0	0	0	140	0	1,144
2-Aug	1,327	35,598	0	850	13	194	0	0	0	140	0	1,144
3-Aug	2,327	37,925	43	893	21	215	0	0	0	140	0	1,144
4-Aug	775	38,700	0	893	0	215	0	0	0	140	0	1,144
5-Aug	925	39,624	36	929	48	263	12	12	0	140	0	1,144
6-Aug	684	40,309	24	952	24	287	94	106	0	140	0	1,144
7-Aug	743	41,052	0	952	23	309	23	129	0	140	0	1,144
8-Aug	384	41,436	51	1,004	51	361	9	137	0	140	9	1,152
9-Aug	393	41,829	0	1,004	231	592	0	137	0	140	0	1,152
10-Aug	444	42,273	32	1,035	76	668	19	156	0	140	6	1,159

Appendix C3.–Crescent River north bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
24-Jun	2	8	9	5	10	7	7	3	9	0	1	3
25-Jun	0	0	0	0	0	0	0	0	0	0	1	0
26-Jun	4	2	3	8	5	3	1	2	0	1	0	0
27-Jun	44	31	16	37	57	47	44	56	31	33	20	25
28-Jun	16	13	6	14	5	12	48	3	47	39	37	42
29-Jun	9	6	25	6	38	20	23	4	44	46	185	42
30-Jun	13	9	5	2	6	9	28	69	13	15	106	69
01-Jul	36	2	22	21	23	5	48	64	58	106	35	64
02-Jul	30	16	13	26	2	9	8	3	39	27	32	112
03-Jul	9	7	5	5	10	7	14	8	23	26	15	7
04-Jul	31	9	9	7	22	11	35	0	24	19	21	12
05-Jul	5	5	1	2	2	4	14	19	29	52	105	48
06-Jul	1	4	11	6	7	14	13	13	13	31	3	94
07-Jul	8	4	11	13	8	17	11	22	12	24	33	45
08-Jul	3	11	3	12	10	27	11	20	28	36	33	35
09-Jul	23	4	4	3	4	4	52	70	15	22	17	15
10-Jul	20	3	3	2	12	5	12	37	13	32	32	47
11-Jul	7	4	18	5	8	13	17	21	28	61	86	90
12-Jul	22	7	7	18	5	30	53	45	43	67	68	60
13-Jul	19	27	5	21	10	16	22	17	55	52	25	36
14-Jul	55	52	28	43	37	31	70	65	200	82	132	60
15-Jul	55	35	29	5	100	96	23	293	138	220	154	129
16-Jul	56	47	46	65	50	46	66	10	35	45	61	82
17-Jul	25	1	45	40	29	72	58	30	54	199	64	59
18-Jul	24	24	24	24	24	24	24	2	6	78	2	31
19-Jul	66	32	13	7	15	23	28	25	37	2	10	4
20-Jul	111	90	105	22	52	99	53	82	86	65	68	88
21-Jul	7	12	18	13	40	102	45	20	59	43	99	55
22-Jul	24	67	7	21	17	35	39	27	56	59	60	63
23-Jul	6	2	7	4	8	61	61	56	54	69	70	54
24-Jul	46	26	25	31	20	24	28	41	80	81	16	2
25-Jul	58	106	63	87	30	27	74	81	103	91	125	124
26-Jul	34	12	46	32	28	119	176	57	141	109	201	46
27-Jul	57	44	67	25	11	78	33	79	87	18	18	34
28-Jul	45	81	24	38	3	27	16	52	104	77	36	14
29-Jul	29	27	16	14	9	34	35	34	31	41	79	65
30-Jul	42	41	44	51	47	36	45	43	41	63	52	46
31-Jul	68	55	41	49	56	80	51	80	52	73	74	71
1-Aug	49	85	15	17	76	57	51	136	92	149	107	91
2-Aug	65	70	61	65	65	65	66	71	62	71	65	62
3-Aug	95	115	109	80	87	70	106	100	105	115	163	166
4-Aug	43	36	36	27	55	32	20	33	52	39	43	17
5-Aug	54	25	48	38	38	38	38	38	38	38	38	6
6-Aug	6	14	15	25	27	24	32	22	5	2	0	3
7-Aug	35	35	35	35	35	35	35	29	28	31	22	27
8-Aug	25	31	17	31	30	11	33	30	64	23	25	25
9-Aug	10	9	12	14	17	20	18	30	24	28	24	42
10-Aug	28	20	17	12	24	26	23	28	33	18	24	23
Total	1,520	1,366	1,189	1,128	1,274	1,652	1,808	2,070	2,391	2,618	2,687	2,335

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Appendix C3.–Page 2 of 2.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
24-Jun	1	0	1	0	0	2	1	1	0	0	0	0
25-Jun	0	1	0	4	0	3	1	0	0	1	13	1
26-Jun	1	2	0	2	4	3	4	8	1	0	0	0
27-Jun	4	11	37	85	26	19	98	93	133	92	71	8
28-Jun	50	83	110	148	49	42	46	64	114	59	12	2
29-Jun	101	136	71	47	41	16	8	6	60	204	186	89
30-Jun	209	69	114	59	39	40	37	19	16	121	85	11
01-Jul	60	50	79	68	50	54	30	27	16	27	138	180
02-Jul	70	45	53	33	19	14	16	9	6	0	11	53
03-Jul	16	26	18	29	9	15	25	7	13	8	4	18
04-Jul	45	10	23	22	36	31	53	48	32	7	6	3
05-Jul	56	56	76	51	40	96	98	48	3	10	3	0
06-Jul	11	37	31	33	35	60	72	22	10	14	12	6
07-Jul	51	81	75	43	49	58	57	40	30	25	17	9
08-Jul	40	88	52	34	41	138	191	95	46	27	16	12
09-Jul	24	29	33	37	12	42	130	156	89	71	24	17
10-Jul	63	86	77	23	34	48	171	196	78	135	46	12
11-Jul	74	78	46	31	33	71	149	199	157	149	87	29
12-Jul	26	38	41	27	32	2	9	89	49	56	255	28
13-Jul	16	0	5	4	7	16	22	197	266	128	132	71
14-Jul	33	35	20	16	13	31	20	89	408	215	132	95
15-Jul	146	97	21	31	82	14	19	41	281	459	367	139
16-Jul	57	39	58	93	33	45	22	43	19	85	122	35
17-Jul	121	50	37	1	2	0	3	1	1	1	3	5
18-Jul	10	26	45	39	29	13	15	15	8	10	5	65
19-Jul	0	0	65	22	6	4	4	24	50	5	13	39
20-Jul	132	432	401	248	139	154	68	112	84	11	2	1
21-Jul	127	74	164	64	156	227	138	127	63	17	2	34
22-Jul	77	31	26	117	83	144	121	63	69	30	25	22
23-Jul	83	31	60	53	42	211	252	257	73	70	16	13
24-Jul	18	42	18	40	13	26	16	18	29	28	11	42
25-Jul	146	109	99	110	83	53	78	103	145	71	138	86
26-Jul	25	21	42	114	11	15	116	103	245	98	43	2
27-Jul	16	26	13	3	8	6	9	138	228	97	97	85
28-Jul	20	22	4	12	1	13	7	123	291	194	47	57
29-Jul	40	51	69	73	35	42	30	13	27	27	13	14
30-Jul	43	47	35	44	42	44	48	42	38	43	45	42
31-Jul	76	127	68	54	73	101	51	73	89	98	82	64
1-Aug	107	58	62	129	97	88	84	59	44	94	102	84
2-Aug	85	90	50	69	69	61	67	72	45	80	67	65
3-Aug	170	109	150	111	91	109	114	89	76	118	158	95
4-Aug	37	31	47	30	21	35	24	27	48	23	37	43
5-Aug	3	8	28	35	8	81	79	95	38	33	38	8
6-Aug	7	19	27	25	11	40	0	1	5	27	15	15
7-Aug	23	27	13	11	5	17	58	72	46	82	49	62
8-Aug	28	15	13	7	11	21	38	34	29	20	21	28
9-Aug	32	60	34	34	22	33	26	26	27	24	24	14
10-Aug	17	30	22	29	18	25	32	24	24	22	23	23
Total	2,597	2,633	2,633	2,394	1,760	2,423	2,757	3,208	3,649	3,216	2,815	1,826

Appendix C4.–Crescent River south bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
24-Jun	0	0	0	0	0	0	0	0	0	0	0	9
25-Jun	0	0	0	0	0	0	0	0	0	0	0	0
26-Jun	0	0	0	0	0	0	0	0	0	0	0	0
27-Jun	26	19	8	9	0	0	1	4	0	3	1	0
28-Jun	0	0	3	0	0	0	7	0	30	0	1	5
29-Jun	16	7	1	32	8	15	17	8	8	17	35	64
30-Jun	1	6	3	4	0	0	2	4	10	5	12	12
01-Jul	4	5	2	2	10	9	0	7	0	44	5	49
02-Jul	22	1	0	3	9	2	4	4	8	21	23	18
03-Jul	9	12	0	2	3	2	1	0	8	12	24	25
04-Jul	9	6	1	5	5	0	15	9	44	24	30	74
05-Jul	30	15	0	0	1	5	3	3	20	16	29	29
06-Jul	1	1	3	2	24	4	8	15	15	27	9	26
07-Jul	0	0	1	11	2	3	19	9	18	28	36	37
08-Jul	13	12	0	2	8	9	11	13	14	22	26	25
09-Jul	1	0	0	4	1	7	8	13	4	25	28	34
10-Jul	1	1	3	1	1	11	15	23	6	21	15	36
11-Jul	0	3	0	0	12	9	6	35	51	47	18	30
12-Jul	43	0	0	2	1	35	15	33	10	22	17	48
13-Jul	3	3	3	6	6	12	8	43	66	62	51	49
14-Jul	50	2	11	11	14	26	36	66	70	60	42	39
15-Jul	10	16	50	3	14	15	38	37	247	145	22	58
16-Jul	32	43	8	11	49	7	12	11	22	48	44	188
17-Jul	3	6	20	52	13	12	5	1	5	15	16	169
18-Jul	28	15	22	15	7	6	14	8	10	7	8	12
19-Jul	67	64	41	9	27	25	20	14	7	6	7	11
20-Jul	45	98	96	54	43	91	61	102	25	8	14	25
21-Jul	14	45	65	39	42	64	36	29	23	45	44	61
22-Jul	10	9	65	28	30	34	24	23	22	21	4	18
23-Jul	29	13	9	3	3	70	62	58	35	47	43	25
24-Jul	8	0	3	35	8	1	1	1	2	1	5	5
25-Jul	25	3	14	0	15	8	8	29	74	109	152	133
26-Jul	27	13	8	30	5	106	67	78	105	85	42	37
27-Jul	27	13	13	13	15	13	14	138	124	68	42	68
28-Jul	10	10	1	4	4	12	56	46	77	51	45	95
29-Jul	10	0	18	30	8	28	9	26	31	37	39	45
30-Jul	10	2	4	4	9	7	28	21	30	27	38	31
31-Jul	41	44	31	36	31	47	28	16	24	21	148	90
1-Aug	47	65	19	7	55	93	46	31	26	22	30	63
2-Aug	47	79	51	107	23	34	24	56	48	46	29	27
3-Aug	41	80	84	85	78	37	133	45	71	101	73	61
4-Aug	11	28	31	16	14	9	34	13	6	9	10	5
5-Aug	28	19	12	15	7	5	6	0	4	1	4	31
6-Aug	28	10	11	36	42	47	35	49	25	34	29	30
7-Aug	32	32	32	32	32	32	32	32	25	16	27	23
8-Aug	24	14	7	1	6	14	29	20	36	22	44	26
9-Aug	26	26	26	26	26	26	26	26	24	36	48	11
10-Aug	23	17	23	11	6	23	25	26	25	29	31	10
Total	932	857	803	798	717	1,015	1,049	1,225	1,535	1,513	1,440	1,967

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Appendix C4.–Page 2 of 2.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
24-Jun	0	0	0	0	0	0	0	0	2	0	0	0
25-Jun	0	0	0	0	1	0	0	0	0	0	0	0
26-Jun	0	0	0	0	0	0	0	0	4	1	0	0
27-Jun	2	47	141	185	166	208	103	60	85	36	10	2
28-Jun	9	26	15	20	29	58	53	69	366	213	54	9
29-Jun	58	64	80	76	43	27	41	21	202	209	101	12
30-Jun	20	100	136	71	89	31	30	32	20	108	116	26
01-Jul	92	104	119	75	70	33	28	22	22	18	66	93
02-Jul	36	40	46	80	33	35	89	24	23	3	7	23
03-Jul	30	45	37	53	31	78	32	29	2	0	1	7
04-Jul	40	47	37	50	45	38	22	20	4	7	8	1
05-Jul	29	29	90	225	72	43	33	22	11	4	0	0
06-Jul	45	60	82	71	100	60	70	29	4	1	0	1
07-Jul	43	44	35	22	55	118	87	96	42	11	3	1
08-Jul	32	48	63	36	61	235	159	64	47	19	16	5
09-Jul	25	32	39	70	39	120	137	79	29	57	3	1
10-Jul	80	48	56	29	24	108	148	103	44	17	22	1
11-Jul	59	46	54	33	24	71	163	253	183	70	48	7
12-Jul	30	23	62	41	18	7	136	315	116	57	41	15
13-Jul	50	47	47	20	19	8	24	108	152	106	60	24
14-Jul	31	33	19	32	14	34	5	107	194	191	77	86
15-Jul	74	60	45	32	27	52	80	59	627	318	188	36
16-Jul	72	162	136	62	32	24	22	25	4	85	83	32
17-Jul	109	69	61	27	14	12	23	6	2	1	84	82
18-Jul	15	40	24	24	17	20	23	13	10	4	24	106
19-Jul	4	36	110	64	54	57	33	5	17	6	18	38
20-Jul	97	39	108	240	137	77	70	54	33	9	9	4
21-Jul	38	23	35	107	365	221	129	65	30	6	18	6
22-Jul	23	12	15	37	126	172	78	139	82	21	11	47
23-Jul	15	43	26	84	65	173	135	141	99	23	72	1
24-Jul	1	1	11	3	20	2	30	32	37	58	65	124
25-Jul	75	162	165	72	73	66	68	96	171	54	36	48
26-Jul	51	61	180	74	25	8	47	131	57	92	49	7
27-Jul	57	51	35	46	21	28	35	238	154	56	23	13
28-Jul	141	84	19	39	12	20	42	77	89	87	26	20
29-Jul	22	9	17	9	7	26	10	18	42	17	17	6
30-Jul	55	35	21	16	34	52	5	3	55	95	128	29
31-Jul	196	33	23	40	31	9	18	24	26	138	190	66
1-Aug	83	73	48	20	34	42	71	18	45	338	259	61
2-Aug	66	57	40	58	103	35	103	82	39	27	86	73
3-Aug	65	99	271	269	260	222	166	76	30	14	17	13
4-Aug	14	14	130	80	66	58	59	47	21	48	29	23
5-Aug	39	103	94	109	96	147	81	83	61	25	26	25
6-Aug	27	36	50	37	24	46	83	40	39	15	30	23
7-Aug	28	18	33	18	15	39	26	81	63	46	50	24
8-Aug	9	11	20	8	17	20	40	50	22	17	17	30
9-Aug	30	22	12	25	18	31	26	26	25	29	27	26
10-Aug	12	29	28	20	22	35	37	39	38	20	24	24
Total	2,129	2,265	2,915	2,809	2,648	3,006	2,900	3,121	3,470	2,777	2,239	1,301

Appendix C5.–Proportion of Crescent River north bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
24-Jun	2.9	11.4	12.9	7.1	14.3	10.0	10.0	4.3	12.9	0.0	1.4	4.3
25-Jun	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
26-Jun	7.4	3.7	5.6	14.8	9.3	5.6	1.9	3.7	0.0	1.9	0.0	0.0
27-Jun	3.9	2.8	1.4	3.3	5.1	4.2	3.9	5.0	2.8	3.0	1.8	2.2
28-Jun	1.5	1.2	0.6	1.3	0.5	1.1	4.5	0.3	4.4	3.7	3.5	4.0
29-Jun	0.6	0.4	1.8	0.4	2.7	1.4	1.6	0.3	3.1	3.3	13.1	3.0
30-Jun	1.1	0.8	0.4	0.2	0.5	0.8	2.4	5.9	1.1	1.3	9.1	5.9
01-Jul	2.9	0.2	1.7	1.7	1.8	0.4	3.8	5.1	4.6	8.4	2.8	5.1
02-Jul	4.6	2.5	2.0	4.0	0.3	1.4	1.2	0.5	6.0	4.2	5.0	17.3
03-Jul	2.8	2.2	1.5	1.5	3.1	2.2	4.3	2.5	7.1	8.0	4.6	2.2
04-Jul	6.0	1.7	1.7	1.4	4.3	2.1	6.8	0.0	4.7	3.7	4.1	2.3
05-Jul	0.6	0.6	0.1	0.2	0.2	0.5	1.7	2.3	3.5	6.3	12.8	5.8
06-Jul	0.2	0.7	2.0	1.1	1.3	2.5	2.4	2.4	2.4	5.6	0.5	17.0
07-Jul	1.1	0.5	1.5	1.7	1.1	2.3	1.5	3.0	1.6	3.2	4.4	6.1
08-Jul	0.3	1.1	0.3	1.2	1.0	2.7	1.1	2.0	2.8	3.6	3.3	3.5
09-Jul	2.6	0.4	0.4	0.3	0.4	0.4	5.8	7.8	1.7	2.5	1.9	1.7
10-Jul	1.7	0.3	0.3	0.2	1.0	0.4	1.0	3.1	1.1	2.7	2.7	4.0
11-Jul	0.5	0.3	1.2	0.3	0.5	0.9	1.2	1.4	1.9	4.2	5.9	6.2
12-Jul	2.0	0.6	0.6	1.7	0.5	2.8	4.9	4.2	4.0	6.2	6.3	5.6
13-Jul	1.6	2.3	0.4	1.8	0.9	1.4	1.9	1.5	4.7	4.4	2.1	3.1
14-Jul	2.8	2.7	1.4	2.2	1.9	1.6	3.6	3.3	10.2	4.2	6.7	3.1
15-Jul	1.8	1.2	1.0	0.2	3.4	3.2	0.8	9.9	4.6	7.4	5.2	4.3
16-Jul	4.4	3.7	3.7	5.2	4.0	3.7	5.2	0.8	2.8	3.6	4.8	6.5
17-Jul	2.8	0.1	5.0	4.4	3.2	8.0	6.4	3.3	6.0	22.1	7.1	6.5
18-Jul	4.2	4.2	4.2	4.2	4.2	4.2	4.2	0.4	1.1	13.8	0.4	5.5
19-Jul	13.4	6.5	2.6	1.4	3.0	4.7	5.7	5.1	7.5	0.4	2.0	0.8
20-Jul	4.1	3.3	3.9	0.8	1.9	3.7	2.0	3.0	3.2	2.4	2.5	3.3
21-Jul	0.4	0.7	1.1	0.8	2.3	6.0	2.6	1.2	3.5	2.5	5.8	3.2
22-Jul	1.9	5.2	0.5	1.6	1.3	2.7	3.0	2.1	4.4	4.6	4.7	4.9
23-Jul	0.4	0.1	0.4	0.2	0.5	3.8	3.8	3.5	3.3	4.3	4.3	3.3
24-Jul	6.4	3.6	3.5	4.3	2.8	3.3	3.9	5.7	11.1	11.2	2.2	0.3
25-Jul	2.6	4.8	2.9	4.0	1.4	1.2	3.4	3.7	4.7	4.2	5.7	5.7
26-Jul	1.9	0.7	2.5	1.7	1.5	6.5	9.6	3.1	7.7	5.9	10.9	2.5
27-Jul	4.5	3.4	5.2	2.0	0.9	6.1	2.6	6.2	6.8	1.4	1.4	2.7
28-Jul	3.4	6.2	1.8	2.9	0.2	2.1	1.2	4.0	8.0	5.9	2.8	1.1
29-Jul	3.4	3.2	1.9	1.7	1.1	4.0	4.1	4.0	3.7	4.8	9.3	7.7
30-Jul	3.9	3.9	4.1	4.8	4.4	3.4	4.2	4.0	3.9	5.9	4.9	4.3
31-Jul	4.0	3.2	2.4	2.9	3.3	4.7	3.0	4.7	3.0	4.3	4.3	4.2
1-Aug	2.5	4.4	0.8	0.9	3.9	2.9	2.6	7.0	4.8	7.7	5.5	4.7
2-Aug	4.0	4.4	3.8	4.0	4.0	4.0	4.1	4.4	3.9	4.4	4.0	3.9
3-Aug	3.5	4.3	4.0	3.0	3.2	2.6	3.9	3.7	3.9	4.3	6.0	6.1
4-Aug	5.1	4.3	4.3	3.2	6.6	3.8	2.4	3.9	6.2	4.7	5.1	2.0
5-Aug	6.1	2.8	5.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	0.7
6-Aug	1.6	3.8	4.1	6.8	7.4	6.5	8.7	6.0	1.4	0.5	0.0	0.8
7-Aug	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.4	3.3	3.7	2.6	3.2
8-Aug	4.1	5.1	2.8	5.1	4.9	1.8	5.4	4.9	10.5	3.8	4.1	4.1
9-Aug	1.7	1.5	2.0	2.3	2.8	3.3	3.0	5.0	4.0	4.6	4.0	7.0
10-Aug	3.1	3.5	3.0	2.1	4.2	4.6	4.1	5.0	5.8	3.2	4.2	4.1
Mean	3.1	2.7	2.5	2.6	2.8	3.2	3.6	3.6	4.4	4.7	4.5	4.3

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Appendix C5.–Page 2 of 2.

	Proportion of Counts by Hour												
Date	13	14	15	16	17	18	19	20	21	22	23	24	Total
24-Jun	1.4	0.0	1.4	0.0	0.0	2.9	1.4	1.4	0.0	0.0	0.0	0.0	100
25-Jun	0.0	4.0	0.0	16.0	0.0	12.0	4.0	0.0	0.0	4.0	52.0	4.0	100
26-Jun	1.9	3.7	0.0	3.7	7.4	5.6	7.4	14.8	1.9	0.0	0.0	0.0	100
27-Jun	0.4	1.0	3.3	7.6	2.3	1.7	8.8	8.3	11.9	8.2	6.4	0.7	100
28-Jun	4.7	7.8	10.4	13.9	4.6	4.0	4.3	6.0	10.7	5.6	1.1	0.2	100
29-Jun	7.1	9.6	5.0	3.3	2.9	1.1	0.6	0.4	4.2	14.4	13.2	6.3	100
30-Jun	18.0	5.9	9.8	5.1	3.4	3.4	3.2	1.6	1.4	10.4	7.3	0.9	100
01-Jul	4.8	4.0	6.3	5.4	4.0	4.3	2.4	2.1	1.3	2.1	10.9	14.3	100
02-Jul	10.8	7.0	8.2	5.1	2.9	2.2	2.5	1.4	0.9	0.0	1.7	8.2	100
03-Jul	4.9	8.0	5.6	9.0	2.8	4.6	7.7	2.2	4.0	2.5	1.2	5.6	100
04-Jul	8.7	1.9	4.5	4.3	7.0	6.0	10.3	9.3	6.2	1.4	1.2	0.6	100
05-Jul	6.8	6.8	9.2	6.2	4.9	11.7	11.9	5.8	0.4	1.2	0.4	0.0	100
06-Jul	2.0	6.7	5.6	6.0	6.3	10.8	13.0	4.0	1.8	2.5	2.2	1.1	100
07-Jul	6.9	10.9	10.1	5.8	6.6	7.8	7.7	5.4	4.0	3.4	2.3	1.2	100
08-Jul	4.0	8.7	5.2	3.4	4.1	13.7	18.9	9.4	4.6	2.7	1.6	1.2	100
09-Jul	2.7	3.2	3.7	4.1	1.3	4.7	14.5	17.4	9.9	7.9	2.7	1.9	100
10-Jul	5.3	7.2	6.5	1.9	2.9	4.0	14.4	16.5	6.6	11.4	3.9	1.0	100
11-Jul	5.1	5.3	3.1	2.1	2.3	4.9	10.2	13.6	10.7	10.2	6.0	2.0	100
12-Jul	2.4	3.5	3.8	2.5	3.0	0.2	0.8	8.3	4.5	5.2	23.7	2.6	100
13-Jul	1.4	0.0	0.4	0.3	0.6	1.4	1.9	16.9	22.8	10.9	11.3	6.1	100
14-Jul	1.7	1.8	1.0	0.8	0.7	1.6	1.0	4.5	20.8	11.0	6.7	4.8	100
15-Jul	4.9	3.3	0.7	1.0	2.8	0.5	0.6	1.4	9.4	15.4	12.3	4.7	100
16-Jul	4.5	3.1	4.6	7.4	2.6	3.6	1.7	3.4	1.5	6.7	9.7	2.8	100
17-Jul	13.4	5.5	4.1	0.1	0.2	0.0	0.3	0.1	0.1	0.1	0.3	0.6	100
18-Jul	1.8	4.6	7.9	6.9	5.1	2.3	2.6	2.6	1.4	1.8	0.9	11.5	100
19-Jul	0.0	0.0	13.2	4.5	1.2	0.8	0.8	4.9	10.1	1.0	2.6	7.9	100
20-Jul	4.9	16.0	14.8	9.2	5.1	5.7	2.5	4.1	3.1	0.4	0.1	0.0	100
21-Jul	7.4	4.3	9.6	3.8	9.1	13.3	8.1	7.4	3.7	1.0	0.1	2.0	100
22-Jul	6.0	2.4	2.0	9.1	6.5	11.2	9.4	4.9	5.4	2.3	1.9	1.7	100
23-Jul	5.1	1.9	3.7	3.3	2.6	13.1	15.6	15.9	4.5	4.3	1.0	0.8	100
24-Jul	2.5	5.8	2.5	5.5	1.8	3.6	2.2	2.5	4.0	3.9	1.5	5.8	100
25-Jul	6.7	5.0	4.5	5.0	3.8	2.4	3.6	4.7	6.6	3.2	6.3	3.9	100
26-Jul	1.4	1.1	2.3	6.2	0.6	0.8	6.3	5.6	13.3	5.3	2.3	0.1	100
27-Jul	1.3	2.0	1.0	0.2	0.6	0.5	0.7	10.8	17.9	7.6	7.6	6.7	100
28-Jul	1.5	1.7	0.3	0.9	0.1	1.0	0.5	9.4	22.2	14.8	3.6	4.4	100
29-Jul	4.7	6.0	8.1	8.6	4.1	5.0	3.5	1.5	3.2	3.2	1.5	1.7	100
30-Jul	4.0	4.4	3.3	4.1	3.9	4.1	4.5	3.9	3.6	4.0	4.2	3.9	100
31-Jul	4.5	7.4	4.0	3.2	4.3	5.9	3.0	4.3	5.2	5.7	4.8	3.8	100
1-Aug	5.5	3.0	3.2	6.7	5.0	4.6	4.3	3.1	2.3	4.9	5.3	4.3	100
2-Aug	5.3	5.6	3.1	4.3	4.3	3.8	4.2	4.5	2.8	5.0	4.2	4.0	100
3-Aug	6.3	4.0	5.6	4.1	3.4	4.0	4.2	3.3	2.8	4.4	5.8	3.5	100
4-Aug	4.4	3.7	5.6	3.6	2.5	4.2	2.9	3.2	5.7	2.8	4.4	5.1	100
5-Aug	0.3	0.9	3.1	3.9	0.9	9.1	8.9	10.7	4.3	3.7	4.3	0.9	100
6-Aug	1.9	5.2	7.4	6.8	3.0	10.9	0.0	0.3	1.4	7.4	4.1	4.1	100
7-Aug	2.7	3.2	1.5	1.3	0.6	2.0	6.8	8.5	5.4	9.7	5.8	7.3	100
8-Aug	4.6	2.5	2.1	1.1	1.8	3.4	6.2	5.6	4.8	3.3	3.4	4.6	100
9-Aug	5.3	9.9	5.6	5.6	3.6	5.5	4.3	4.3	4.5	4.0	4.0	2.3	100
10-Aug	3.0	5.3	3.9	5.1	3.2	4.4	5.7	4.2	4.2	3.9	4.1	4.1	100
Mean	4.5	4.7	4.8	4.8	3.2	4.9	5.4	5.9	5.9	5.1	5.5	3.4	100

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Appendix C6.–Proportion of Crescent River south bank sonar counts by hour, 2006.

	Proportion of Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
24-Jun	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	81.8
25-Jun	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
26-Jun	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
27-Jun	2.3	1.7	0.7	0.8	0.0	0.0	0.1	0.4	0.0	0.3	0.1	0.0
28-Jun	0.0	0.0	0.3	0.0	0.0	0.0	0.7	0.0	3.1	0.0	0.1	0.5
29-Jun	1.4	0.6	0.1	2.8	0.7	1.3	1.5	0.7	0.7	1.5	3.0	5.5
30-Jun	0.1	0.7	0.4	0.5	0.0	0.0	0.2	0.5	1.2	0.6	1.4	1.4
01-Jul	0.5	0.6	0.2	0.2	1.1	1.0	0.0	0.8	0.0	5.0	0.6	5.6
02-Jul	4.0	0.2	0.0	0.5	1.6	0.4	0.7	0.7	1.4	3.8	4.2	3.2
03-Jul	2.0	2.7	0.0	0.5	0.7	0.5	0.2	0.0	1.8	2.7	5.4	5.6
04-Jul	1.7	1.1	0.2	0.9	0.9	0.0	2.8	1.7	8.1	4.4	5.5	13.7
05-Jul	4.2	2.1	0.0	0.0	0.1	0.7	0.4	0.4	2.8	2.3	4.1	4.1
06-Jul	0.2	0.2	0.5	0.3	3.6	0.6	1.2	2.3	2.3	4.1	1.4	4.0
07-Jul	0.0	0.0	0.1	1.5	0.3	0.4	2.6	1.2	2.5	3.9	5.0	5.1
08-Jul	1.4	1.3	0.0	0.2	0.9	1.0	1.2	1.4	1.5	2.3	2.8	2.7
09-Jul	0.1	0.0	0.0	0.5	0.1	0.9	1.1	1.7	0.5	3.3	3.7	4.5
10-Jul	0.1	0.1	0.4	0.1	0.1	1.4	1.8	2.8	0.7	2.6	1.8	4.4
11-Jul	0.0	0.2	0.0	0.0	1.0	0.7	0.5	2.9	4.2	3.8	1.5	2.5
12-Jul	4.0	0.0	0.0	0.2	0.1	3.2	1.4	3.0	0.9	2.0	1.6	4.4
13-Jul	0.3	0.3	0.3	0.6	0.6	1.2	0.8	4.4	6.8	6.3	5.2	5.0
14-Jul	4.0	0.2	0.9	0.9	1.1	2.1	2.9	5.3	5.6	4.8	3.4	3.1
15-Jul	0.4	0.7	2.2	0.1	0.6	0.7	1.7	1.6	11.0	6.4	1.0	2.6
16-Jul	2.6	3.5	0.7	0.9	4.0	0.6	1.0	0.9	1.8	4.0	3.6	15.5
17-Jul	0.4	0.7	2.5	6.4	1.6	1.5	0.6	0.1	0.6	1.9	2.0	20.9
18-Jul	5.9	3.2	4.7	3.2	1.5	1.3	3.0	1.7	2.1	1.5	1.7	2.5
19-Jul	9.1	8.6	5.5	1.2	3.6	3.4	2.7	1.9	0.9	0.8	0.9	1.5
20-Jul	2.9	6.4	6.2	3.5	2.8	5.9	4.0	6.6	1.6	0.5	0.9	1.6
21-Jul	0.9	2.9	4.2	2.5	2.7	4.1	2.3	1.9	1.5	2.9	2.8	3.9
22-Jul	1.0	0.9	6.2	2.7	2.9	3.2	2.3	2.2	2.1	2.0	0.4	1.7
23-Jul	2.3	1.0	0.7	0.2	0.2	5.5	4.9	4.6	2.7	3.7	3.4	2.0
24-Jul	1.8	0.0	0.7	7.7	1.8	0.2	0.2	0.2	0.4	0.2	1.1	1.1
25-Jul	1.5	0.2	0.8	0.0	0.9	0.5	0.5	1.8	4.5	6.6	9.2	8.0
26-Jul	1.9	0.9	0.6	2.2	0.4	7.7	4.8	5.6	7.6	6.1	3.0	2.7
27-Jul	2.1	1.0	1.0	1.0	1.1	1.0	1.1	10.6	9.5	5.2	3.2	5.2
28-Jul	0.9	0.9	0.1	0.4	0.4	1.1	5.2	4.3	7.2	4.8	4.2	8.9
29-Jul	2.1	0.0	3.7	6.2	1.7	5.8	1.9	5.4	6.4	7.7	8.1	9.4
30-Jul	1.4	0.3	0.5	0.5	1.2	0.9	3.8	2.8	4.1	3.7	5.1	4.2
31-Jul	3.0	3.3	2.3	2.7	2.3	3.5	2.1	1.2	1.8	1.6	11.0	6.7
1-Aug	2.9	4.1	1.2	0.4	3.4	5.8	2.9	1.9	1.6	1.4	1.9	3.9
2-Aug	3.5	5.9	3.8	8.0	1.7	2.5	1.8	4.2	3.6	3.4	2.2	2.0
3-Aug	1.7	3.3	3.5	3.6	3.3	1.5	5.6	1.9	3.0	4.2	3.1	2.6
4-Aug	1.4	3.6	4.0	2.1	1.8	1.2	4.4	1.7	0.8	1.2	1.3	0.6
5-Aug	2.7	1.9	1.2	1.5	0.7	0.5	0.6	0.0	0.4	0.1	0.4	3.0
6-Aug	3.4	1.2	1.3	4.4	5.1	5.7	4.2	5.9	3.0	4.1	3.5	3.6
7-Aug	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	3.2	2.0	3.4	2.9
8-Aug	4.8	2.8	1.4	0.2	1.2	2.8	5.8	4.0	7.1	4.4	8.7	5.2
9-Aug	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	3.8	5.8	7.7	1.8
10-Aug	4.0	2.9	4.0	1.9	1.0	4.0	4.3	4.5	4.3	5.0	5.4	1.7
Mean	2.1	1.7	1.6	1.7	1.4	2.0	2.1	2.4	2.9	3.0	3.1	5.9

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Appendix C6.–Page 2 of 2.

	Proportion of Counts by Hour												
Date	13	14	15	16	17	18	19	20	21	22	23	24	
24-Jun	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.2	0.0	0.0	0.0	100
25-Jun	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
26-Jun	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	80.0	20.0	0.0	0.0	100
27-Jun	0.2	4.2	12.6	16.6	14.9	18.6	9.2	5.4	7.6	3.2	0.9	0.2	100
28-Jun	0.9	2.7	1.6	2.1	3.0	6.0	5.5	7.1	37.8	22.0	5.6	0.9	100
29-Jun	5.0	5.5	6.9	6.5	3.7	2.3	3.5	1.8	17.4	18.0	8.7	1.0	100
30-Jun	2.4	11.9	16.2	8.5	10.6	3.7	3.6	3.8	2.4	12.9	13.8	3.1	100
01-Jul	10.5	11.8	13.5	8.5	8.0	3.8	3.2	2.5	2.5	2.0	7.5	10.6	100
02-Jul	6.5	7.2	8.3	14.4	6.0	6.3	16.1	4.3	4.2	0.5	1.3	4.2	100
03-Jul	6.8	10.2	8.4	12.0	7.0	17.6	7.2	6.5	0.5	0.0	0.2	1.6	100
04-Jul	7.4	8.7	6.8	9.2	8.3	7.0	4.1	3.7	0.7	1.3	1.5	0.2	100
05-Jul	4.1	4.1	12.7	31.7	10.2	6.1	4.7	3.1	1.6	0.6	0.0	0.0	100
06-Jul	6.8	9.1	12.5	10.8	15.2	9.1	10.6	4.4	0.6	0.2	0.0	0.2	100
07-Jul	6.0	6.1	4.9	3.1	7.6	16.4	12.1	13.3	5.8	1.5	0.4	0.1	100
08-Jul	3.4	5.1	6.7	3.8	6.5	25.0	16.9	6.8	5.0	2.0	1.7	0.5	100
09-Jul	3.3	4.2	5.2	9.3	5.2	15.9	18.1	10.4	3.8	7.5	0.4	0.1	100
10-Jul	9.8	5.9	6.9	3.6	2.9	13.3	18.2	12.7	5.4	2.1	2.7	0.1	100
11-Jul	4.8	3.8	4.4	2.7	2.0	5.8	13.3	20.7	15.0	5.7	3.9	0.6	100
12-Jul	2.8	2.1	5.7	3.8	1.7	0.6	12.5	29.0	10.7	5.2	3.8	1.4	100
13-Jul	5.1	4.8	4.8	2.0	1.9	0.8	2.5	11.1	15.6	10.8	6.1	2.5	100
14-Jul	2.5	2.6	1.5	2.6	1.1	2.7	0.4	8.6	15.5	15.3	6.2	6.9	100
15-Jul	3.3	2.7	2.0	1.4	1.2	2.3	3.6	2.6	27.8	14.1	8.3	1.6	100
16-Jul	5.9	13.3	11.2	5.1	2.6	2.0	1.8	2.1	0.3	7.0	6.8	2.6	100
17-Jul	13.5	8.6	7.6	3.3	1.7	1.5	2.9	0.7	0.2	0.1	10.4	10.2	100
18-Jul	3.2	8.5	5.1	5.1	3.6	4.2	4.9	2.8	2.1	0.8	5.1	22.5	100
19-Jul	0.5	4.9	14.9	8.6	7.3	7.7	4.5	0.7	2.3	0.8	2.4	5.1	100
20-Jul	6.3	2.5	7.0	15.6	8.9	5.0	4.5	3.5	2.1	0.6	0.6	0.3	100
21-Jul	2.5	1.5	2.3	6.9	23.5	14.3	8.3	4.2	1.9	0.4	1.2	0.4	100
22-Jul	2.2	1.1	1.4	3.5	12.0	16.4	7.4	13.2	7.8	2.0	1.0	4.5	100
23-Jul	1.2	3.4	2.0	6.6	5.1	13.6	10.6	11.1	7.8	1.8	5.7	0.1	100
24-Jul	0.2	0.2	2.4	0.7	4.4	0.4	6.6	7.0	8.1	12.8	14.3	27.3	100
25-Jul	4.5	9.8	10.0	4.3	4.4	4.0	4.1	5.8	10.3	3.3	2.2	2.9	100
26-Jul	3.7	4.4	13.0	5.3	1.8	0.6	3.4	9.5	4.1	6.6	3.5	0.5	100
27-Jul	4.4	3.9	2.7	3.5	1.6	2.1	2.7	18.2	11.8	4.3	1.8	1.0	100
28-Jul	13.2	7.9	1.8	3.7	1.1	1.9	3.9	7.2	8.3	8.2	2.4	1.9	100
29-Jul	4.6	1.9	3.5	1.9	1.5	5.4	2.1	3.7	8.7	3.5	3.5	1.2	100
30-Jul	7.4	4.7	2.8	2.2	4.6	7.0	0.7	0.4	7.4	12.9	17.3	3.9	100
31-Jul	14.5	2.4	1.7	3.0	2.3	0.7	1.3	1.8	1.9	10.2	14.1	4.9	100
1-Aug	5.2	4.6	3.0	1.3	2.1	2.6	4.4	1.1	2.8	21.2	16.2	3.8	100
2-Aug	4.9	4.3	3.0	4.3	7.7	2.6	7.7	6.1	2.9	2.0	6.4	5.4	100
3-Aug	2.7	4.1	11.3	11.3	10.9	9.3	6.9	3.2	1.3	0.6	0.7	0.5	100
4-Aug	1.8	1.8	16.8	10.3	8.5	7.5	7.6	6.1	2.7	6.2	3.7	3.0	100
5-Aug	3.8	10.1	9.2	10.7	9.4	14.4	7.9	8.1	6.0	2.4	2.5	2.4	100
6-Aug	3.3	4.4	6.1	4.5	2.9	5.6	10.0	4.8	4.7	1.8	3.6	2.8	100
7-Aug	3.6	2.3	4.2	2.3	1.9	4.9	3.3	10.3	8.0	5.8	6.3	3.0	100
8-Aug	1.8	2.2	4.0	1.6	3.4	4.0	7.9	9.9	4.4	3.4	3.4	6.0	100
9-Aug	4.8	3.5	1.9	4.0	2.9	5.0	4.2	4.2	4.0	4.6	4.3	4.2	100
10-Aug	2.1	5.0	4.9	3.5	3.8	6.1	6.4	6.8	6.6	3.5	4.2	4.2	100
Mean	4.4	4.9	6.2	5.9	7.4	6.5	6.3	6.5	8.5	5.7	4.5	3.3	100

Appendix C7.–Crescent River north bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
24-Jun	63	4	1	0	0	0	2	0	0	0	0	0
25-Jun	9	0	0	0	5	7	4	0	0	0	0	0
26-Jun	24	3	1	0	7	5	9	4	0	0	0	1
27-Jun	14	64	225	243	352	139	55	5	1	1	1	18
28-Jun	23	46	193	678	102	13	2	2	0	0	0	2
29-Jun	418	307	225	431	30	1	1	0	0	0	0	0
30-Jun	98	153	168	680	54	8	2	0	0	0	0	0
1-Jul	480	243	184	300	47	6	3	0	0	0	0	0
2-Jul	121	153	122	179	53	14	4	0	0	0	0	0
3-Jul	99	61	55	62	43	2	1	1	0	0	0	0
4-Jul	140	103	103	90	62	12	4	2	0	0	0	0
5-Jul	334	299	116	59	12	1	2	0	0	0	0	0
6-Jul	121	23	162	119	49	72	6	1	0	0	0	0
7-Jul	127	12	270	141	63	81	34	13	1	1	0	0
8-Jul	98	6	128	245	145	235	105	45	2	0	0	0
9-Jul	55	7	147	257	131	181	97	20	2	0	0	0
10-Jul	53	2	199	289	220	208	131	81	3	1	0	0
11-Jul	45	37	409	170	341	220	149	78	11	0	0	1
12-Jul	58	168	150	73	236	179	162	38	12	1	0	0
13-Jul	208	294	161	142	209	114	31	10	0	0	0	0
14-Jul	219	343	321	163	499	217	173	27	0	0	0	0
15-Jul	71	315	639	360	1,007	269	288	25	0	0	0	0
16-Jul	47	102	306	295	357	100	39	2	0	0	11	1
17-Jul	49	42	143	219	415	33	0	0	0	0	0	0
18-Jul	170	306	88	2	0	0	0	0	0	0	0	1
19-Jul	139	216	94	39	5	1	0	0	0	0	0	0
20-Jul	141	293	966	1,007	177	90	27	4	0	0	0	0
21-Jul	154	263	757	430	81	18	2	1	0	0	0	0
22-Jul	96	192	565	321	81	23	4	1	0	0	0	0
23-Jul	383	424	499	226	57	17	1	0	0	0	0	6
24-Jul	308	164	159	43	20	24	3	0	0	0	0	0
25-Jul	676	510	712	187	53	39	7	6	0	0	0	0
26-Jul	102	207	298	248	312	274	129	117	54	78	7	10
27-Jul	109	384	283	159	264	71	6	1	0	0	0	0
28-Jul	59	169	320	217	362	152	23	6	0	0	0	0
29-Jul	26	27	93	163	314	197	23	5	0	0	0	0
30-Jul	312	336	0	168	172	41	14	5	4	4	4	4
31-Jul	94	213	168	697	463	40	27	4	0	0	0	0
1-Aug	99	168	524	190	845	66	41	0	0	0	0	0
2-Aug	188	360	192	96	717	39	16	0	0	0	0	0
3-Aug	404	698	576	359	584	32	30	14	4	0	0	0
4-Aug	0	385	0	214	211	23	3	0	0	0	0	0
5-Aug	364	258	212	40	17	0	0	0	0	0	0	0
6-Aug	220	88	57	2	0	0	0	0	0	0	0	0
7-Aug	192	220	198	209	7	18	1	0	0	0	1	1
8-Aug	91	173	193	98	24	21	1	0	1	5	2	1
9-Aug	25	170	215	160	15	18	1	0	0	0	0	0
10-Aug	146	139	167	99	3	2	0	0	0	2	1	6
Total	7,472	9,150	11,764	10,569	9,223	3,323	1,663	518	95	93	27	52

Appendix C8.–Crescent River south bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
24-Jun	11	0	0	0	0	0	0	0	0	0	0	0
25-Jun	1	0	0	0	0	0	0	0	0	0	0	0
26-Jun	0	1	2	2	0	0	0	0	0	0	0	0
27-Jun	21	129	211	279	367	92	14	1	0	0	1	1
28-Jun	186	488	192	73	27	1	0	0	0	0	0	0
29-Jun	231	594	253	65	16	1	0	0	0	0	0	2
30-Jun	101	326	246	121	39	4	1	0	0	0	0	0
1-Jul	181	351	239	82	22	2	0	0	1	1	0	0
2-Jul	129	201	143	64	12	4	1	0	0	0	0	0
3-Jul	106	169	110	46	11	0	0	1	0	0	0	0
4-Jul	136	230	127	37	8	1	0	0	0	0	1	1
5-Jul	337	286	78	7	0	1	0	0	0	0	0	0
6-Jul	287	271	91	6	3	0	0	0	0	0	0	0
7-Jul	303	317	81	9	1	0	0	0	0	0	0	10
8-Jul	292	431	183	28	6	0	0	0	0	0	0	0
9-Jul	217	353	155	27	4	0	0	0	0	0	0	0
10-Jul	218	380	161	39	14	2	0	0	0	0	0	0
11-Jul	196	631	304	73	15	2	1	0	0	0	0	0
12-Jul	230	488	288	64	9	5	2	0	0	0	1	0
13-Jul	204	395	270	83	18	4	0	1	0	0	1	1
14-Jul	311	533	288	78	32	4	0	0	0	2	0	2
15-Jul	322	1,069	688	151	17	2	1	1	0	0	0	2
16-Jul	61	400	547	178	28	0	0	0	0	0	0	0
17-Jul	24	103	327	269	78	6	0	0	0	0	0	0
18-Jul	16	80	197	149	26	3	0	0	0	1	0	0
19-Jul	34	168	268	205	49	13	1	0	0	0	0	2
20-Jul	117	249	550	519	86	11	0	2	0	1	2	2
21-Jul	117	314	661	369	75	5	1	1	0	2	2	3
22-Jul	89	249	401	231	62	13	1	0	1	0	2	2
23-Jul	172	487	427	150	30	5	0	0	1	0	0	2
24-Jul	273	118	48	11	1	0	1	1	1	0	0	0
25-Jul	577	744	273	46	15	1	0	0	0	0	0	0
26-Jul	250	525	436	134	39	0	0	0	0	0	1	0
27-Jul	318	486	392	101	8	0	0	0	0	0	0	0
28-Jul	219	329	374	133	10	0	0	1	0	0	0	1
29-Jul	107	193	134	44	2	1	0	0	0	0	0	0
30-Jul	73	271	295	90	9	0	0	0	0	0	0	1
31-Jul	128	247	523	381	67	3	1	0	0	1	0	0
1-Aug	132	186	486	616	168	8	0	0	0	0	0	0
2-Aug	67	339	586	294	54	0	0	0	0	0	0	0
3-Aug	216	771	878	433	89	3	1	0	0	0	0	0
4-Aug	578	155	41	1	0	0	0	0	0	0	0	0
5-Aug	176	201	226	127	8	76	106	73	22	3	1	2
6-Aug	89	133	118	87	31	79	137	108	38	5	1	0
7-Aug	77	167	161	80	28	45	116	78	30	2	2	2
8-Aug	47	64	114	65	52	24	56	43	27	4	3	5
9-Aug	48	70	141	118	75	28	51	68	21	2	1	1
10-Aug	45	78	90	102	72	44	52	65	20	2	1	6
Total	8,070	14,770	12,804	6,267	1,783	493	544	444	162	26	20	48

Appendix C9.–Proportion of Crescent River north bank sonar counts by sector, 2006.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
24-Jun	90.0	5.7	1.4	0.0	0.0	0.0	2.9	0.0	0.0	0.0	0.0	0.0	100
25-Jun	36.0	0.0	0.0	0.0	20.0	28.0	16.0	0.0	0.0	0.0	0.0	0.0	100
26-Jun	44.4	5.6	1.9	0.0	13.0	9.3	16.7	7.4	0.0	0.0	0.0	1.9	100
27-Jun	1.3	5.7	20.1	21.7	31.5	12.4	4.9	0.4	0.1	0.1	0.1	1.6	100
28-Jun	2.2	4.3	18.2	63.9	9.6	1.2	0.2	0.2	0.0	0.0	0.0	0.2	100
29-Jun	29.6	21.7	15.9	30.5	2.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	100
30-Jun	8.4	13.2	14.4	58.5	4.6	0.7	0.2	0.0	0.0	0.0	0.0	0.0	100
1-Jul	38.0	19.2	14.6	23.8	3.7	0.5	0.2	0.0	0.0	0.0	0.0	0.0	100
2-Jul	18.7	23.7	18.9	27.7	8.2	2.2	0.6	0.0	0.0	0.0	0.0	0.0	100
3-Jul	30.6	18.8	17.0	19.1	13.3	0.6	0.3	0.3	0.0	0.0	0.0	0.0	100
4-Jul	27.1	20.0	20.0	17.4	12.0	2.3	0.8	0.4	0.0	0.0	0.0	0.0	100
5-Jul	40.6	36.3	14.1	7.2	1.5	0.1	0.2	0.0	0.0	0.0	0.0	0.0	100
6-Jul	21.9	4.2	29.3	21.5	8.9	13.0	1.1	0.2	0.0	0.0	0.0	0.0	100
7-Jul	17.1	1.6	36.3	19.0	8.5	10.9	4.6	1.7	0.1	0.1	0.0	0.0	100
8-Jul	9.7	0.6	12.7	24.3	14.4	23.3	10.4	4.5	0.2	0.0	0.0	0.0	100
9-Jul	6.1	0.8	16.4	28.7	14.6	20.2	10.8	2.2	0.2	0.0	0.0	0.0	100
10-Jul	4.5	0.2	16.8	24.3	18.5	17.5	11.0	6.8	0.3	0.1	0.0	0.0	100
11-Jul	3.1	2.5	28.0	11.6	23.3	15.1	10.2	5.3	0.8	0.0	0.0	0.1	100
12-Jul	5.4	15.6	13.9	6.8	21.9	16.6	15.0	3.5	1.1	0.1	0.0	0.0	100
13-Jul	17.8	25.1	13.8	12.1	17.9	9.8	2.7	0.9	0.0	0.0	0.0	0.0	100
14-Jul	11.2	17.5	16.4	8.3	25.4	11.1	8.8	1.4	0.0	0.0	0.0	0.0	100
15-Jul	2.4	10.6	21.5	12.1	33.9	9.0	9.7	0.8	0.0	0.0	0.0	0.0	100
16-Jul	3.7	8.1	24.3	23.4	28.3	7.9	3.1	0.2	0.0	0.0	0.9	0.1	100
17-Jul	5.4	4.7	15.9	24.3	46.1	3.7	0.0	0.0	0.0	0.0	0.0	0.0	100
18-Jul	30.0	54.0	15.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	100
19-Jul	28.1	43.7	19.0	7.9	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	100
20-Jul	5.2	10.8	35.7	37.2	6.5	3.3	1.0	0.1	0.0	0.0	0.0	0.0	100
21-Jul	9.0	15.4	44.4	25.2	4.7	1.1	0.1	0.1	0.0	0.0	0.0	0.0	100
22-Jul	7.5	15.0	44.0	25.0	6.3	1.8	0.3	0.1	0.0	0.0	0.0	0.0	100
23-Jul	23.7	26.3	30.9	14.0	3.5	1.1	0.1	0.0	0.0	0.0	0.0	0.4	100
24-Jul	42.7	22.7	22.1	6.0	2.8	3.3	0.4	0.0	0.0	0.0	0.0	0.0	100
25-Jul	30.9	23.3	32.5	8.5	2.4	1.8	0.3	0.3	0.0	0.0	0.0	0.0	100
26-Jul	5.6	11.3	16.2	13.5	17.0	14.9	7.0	6.4	2.9	4.2	0.4	0.5	100
27-Jul	8.5	30.1	22.2	12.5	20.7	5.6	0.5	0.1	0.0	0.0	0.0	0.0	100
28-Jul	4.5	12.9	24.5	16.6	27.7	11.6	1.8	0.5	0.0	0.0	0.0	0.0	100
29-Jul	3.1	3.2	11.0	19.2	37.0	23.2	2.7	0.6	0.0	0.0	0.0	0.0	100
30-Jul	29.3	31.6	0.0	15.8	16.2	3.9	1.3	0.5	0.4	0.4	0.4	0.4	100
31-Jul	5.5	12.5	9.8	40.9	27.1	2.3	1.6	0.2	0.0	0.0	0.0	0.0	100
1-Aug	5.1	8.7	27.1	9.8	43.7	3.4	2.1	0.0	0.0	0.0	0.0	0.0	100
2-Aug	11.7	22.4	11.9	6.0	44.6	2.4	1.0	0.0	0.0	0.0	0.0	0.0	100
3-Aug	15.0	25.8	21.3	13.3	21.6	1.2	1.1	0.5	0.1	0.0	0.0	0.0	100
4-Aug	0.0	46.1	0.0	25.6	25.2	2.8	0.4	0.0	0.0	0.0	0.0	0.0	100
5-Aug	40.9	29.0	23.8	4.5	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
6-Aug	59.9	24.0	15.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
7-Aug	22.7	26.0	23.4	24.7	0.8	2.1	0.1	0.0	0.0	0.0	0.1	0.1	100
8-Aug	14.9	28.4	31.6	16.1	3.9	3.4	0.2	0.0	0.2	0.8	0.3	0.2	100
9-Aug	4.1	28.1	35.6	26.5	2.5	3.0	0.2	0.0	0.0	0.0	0.0	0.0	100
10-Aug	25.8	24.6	29.6	17.5	0.5	0.4	0.0	0.0	0.0	0.4	0.2	1.1	100
Mean	18.9	17.5	19.8	18.2	14.6	6.4	3.2	0.9	0.1	0.1	0.0	0.1	100

Appendix C10.–Proportion of Crescent River south bank sonar counts by sector, 2006.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
24-Jun	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
25-Jun	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
26-Jun	0.0	20.0	40.0	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
27-Jun	1.9	11.6	18.9	25.0	32.9	8.2	1.3	0.1	0.0	0.0	0.1	0.1	100
28-Jun	19.2	50.5	19.9	7.5	2.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	100
29-Jun	19.9	51.1	21.8	5.6	1.4	0.1	0.0	0.0	0.0	0.0	0.0	0.2	100
30-Jun	12.1	38.9	29.4	14.4	4.7	0.5	0.1	0.0	0.0	0.0	0.0	0.0	100
1-Jul	20.6	39.9	27.2	9.3	2.5	0.2	0.0	0.0	0.1	0.1	0.0	0.0	100
2-Jul	23.3	36.3	25.8	11.6	2.2	0.7	0.2	0.0	0.0	0.0	0.0	0.0	100
3-Jul	23.9	38.1	24.8	10.4	2.5	0.0	0.0	0.2	0.0	0.0	0.0	0.0	100
4-Jul	25.1	42.5	23.5	6.8	1.5	0.2	0.0	0.0	0.0	0.0	0.2	0.2	100
5-Jul	47.5	40.3	11.0	1.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	100
6-Jul	43.6	41.2	13.8	0.9	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
7-Jul	42.0	44.0	11.2	1.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	1.4	100
8-Jul	31.1	45.9	19.5	3.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
9-Jul	28.7	46.7	20.5	3.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
10-Jul	26.8	46.7	19.8	4.8	1.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0	100
11-Jul	16.0	51.6	24.9	6.0	1.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	100
12-Jul	21.2	44.9	26.5	5.9	0.8	0.5	0.2	0.0	0.0	0.0	0.1	0.0	100
13-Jul	20.9	40.4	27.6	8.5	1.8	0.4	0.0	0.1	0.0	0.0	0.1	0.1	100
14-Jul	24.9	42.6	23.0	6.2	2.6	0.3	0.0	0.0	0.0	0.2	0.0	0.2	100
15-Jul	14.3	47.4	30.5	6.7	0.8	0.1	0.0	0.0	0.0	0.0	0.0	0.1	100
16-Jul	5.0	32.9	45.1	14.7	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
17-Jul	3.0	12.8	40.5	33.3	9.7	0.7	0.0	0.0	0.0	0.0	0.0	0.0	100
18-Jul	3.4	16.9	41.7	31.6	5.5	0.6	0.0	0.0	0.0	0.2	0.0	0.0	100
19-Jul	4.6	22.7	36.2	27.7	6.6	1.8	0.1	0.0	0.0	0.0	0.0	0.3	100
20-Jul	7.6	16.2	35.7	33.7	5.6	0.7	0.0	0.1	0.0	0.1	0.1	0.1	100
21-Jul	7.5	20.3	42.6	23.8	4.8	0.3	0.1	0.1	0.0	0.1	0.1	0.2	100
22-Jul	8.5	23.7	38.2	22.0	5.9	1.2	0.1	0.0	0.1	0.0	0.2	0.2	100
23-Jul	13.5	38.2	33.5	11.8	2.4	0.4	0.0	0.0	0.1	0.0	0.0	0.2	100
24-Jul	60.1	26.0	10.6	2.4	0.2	0.0	0.2	0.2	0.2	0.0	0.0	0.0	100
25-Jul	34.8	44.9	16.5	2.8	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	100
26-Jul	18.1	37.9	31.5	9.7	2.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	100
27-Jul	24.4	37.2	30.0	7.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
28-Jul	20.5	30.8	35.1	12.5	0.9	0.0	0.0	0.1	0.0	0.0	0.0	0.1	100
29-Jul	22.2	40.1	27.9	9.1	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	100
30-Jul	9.9	36.7	39.9	12.2	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	100
31-Jul	9.5	18.3	38.7	28.2	5.0	0.2	0.1	0.0	0.0	0.1	0.0	0.0	100
1-Aug	8.3	11.7	30.5	38.6	10.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	100
2-Aug	5.0	25.3	43.7	21.9	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
3-Aug	9.0	32.2	36.7	18.1	3.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	100
4-Aug	74.6	20.0	5.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100
5-Aug	17.2	19.7	22.1	12.4	0.8	7.4	10.4	7.1	2.2	0.3	0.1	0.2	100
6-Aug	10.8	16.1	14.3	10.5	3.8	9.6	16.6	13.1	4.6	0.6	0.1	0.0	100
7-Aug	9.8	21.2	20.4	10.2	3.6	5.7	14.7	9.9	3.8	0.3	0.3	0.3	100
8-Aug	9.3	12.7	22.6	12.9	10.3	4.8	11.1	8.5	5.4	0.8	0.6	1.0	100
9-Aug	7.7	11.2	22.6	18.9	12.0	4.5	8.2	10.9	3.4	0.3	0.2	0.2	100
10-Aug	7.8	13.5	15.6	17.7	12.5	7.6	9.0	11.3	3.5	0.3	0.2	1.0	100
Mean	22.4	30.4	25.8	13.0	3.7	1.2	1.5	1.3	0.5	0.1	0.0	0.1	

Appendix C11.–Minimum and maximum daily counting ranges for both banks of the Crescent River, 2006.

	North Bank				South Bank			
Date	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where >80% of Migration Occurred	Counting Range (All Sectors) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where > 80% of Migration Occurred
24-Jun	34	10.4	0.9	1-1	22	6.7	0.6	1-1
25-Jun	34	10.4	5.2	1-6	22	6.7	0.6	1-1
25-Jun	36	11.0	5.5	1-6				
26-Jun	35	10.7	6.2	1-7	22	6.7	2.2	1-4
27-Jun					22	6.7	2.8	1-5
27-Jun	35	10.7	4.4	1-5	17	5.2	2.2	1-5
28-Jun	35	10.7	3.6	1-4	17	5.2	1.3	1-3
29-Jun	35	10.7	3.6	1-4	17	5.2	1.3	1-3
30-Jun	35	10.7	3.6	1-4	17	5.2	1.3	1-3
1-Jul	35	10.7	3.6	1-4	17	5.2	1.3	1-3
2-Jul	35	10.7	3.6	1-4	17	5.2	1.3	1-3
3-Jul	35	10.7	3.6	1-4	17	5.2	1.3	1-3
4-Jul	35	10.7	3.6	1-4	17	5.2	1.3	1-3
5-Jul	35	10.7	2.7	1-3	17	5.2	1.3	1-3
6-Jul	35	10.7	4.4	1-5	17	5.2	1.3	1-3
7-Jul	35	10.7	4.4	1-5	17	5.2	1.3	1-3
8-Jul	35	10.7	5.3	1-6	17	5.2	1.3	1-3
9-Jul	35	10.7	5.3	1-6	17	5.2	1.3	1-3
10-Jul	35	10.7	5.3	1-6	16	4.9	1.2	1-3
11-Jul	35	10.7	5.3	1-6	16	4.9	1.2	1-3
12-Jul	36	11.0	5.5	1-6	17	5.2	1.3	1-3
13-Jul	36	11.0	4.6	1-5	17	5.2	1.3	1-3
14-Jul	36	11.0	5.5	1-6	17	5.2	1.3	1-3
15-Jul	36	11.0	4.6	1-5	17	5.2	1.3	1-3
16-Jul	36	11.0	4.6	1-5	17	5.2	1.3	1-3
17-Jul	36	11.0	4.6	1-5	17	5.2	1.7	1-4
18-Jul	36	11.0	1.8	1-2	17	5.2	1.7	1-4
19-Jul	33	10.1	2.5	1-3	17	5.2	1.7	1-4
20-Jul	33	10.1	3.4	1-4	17	5.2	1.7	1-4
21-Jul	33	10.1	3.4	1-4	16	4.9	1.6	1-4
22-Jul	33	10.1	3.4	1-4	16	4.9	1.6	1-4
23-Jul	20	6.1	1.5	1-3	16	4.9	1.2	1-3
24-Jul	34	10.4	2.6	1-3	16	4.9	0.8	1-2
25-Jul	34	10.4	2.6	1-3	16	4.9	0.8	1-2
26-Jul	34	10.4	6.0	1-7	16	4.9	1.2	1-3
27-Jul	36	11.0	4.6	1-5	16	4.9	1.2	1-3
28-Jul	36	11.0	4.6	1-5	16	4.9	1.2	1-3
29-Jul	25	7.6	3.8	1-6	16	4.9	1.2	1-3
30-Jul	25	7.6	3.2	1-5	16	4.9	1.2	1-3
31-Jul	25	7.6	3.2	1-5	18	5.5	1.8	1-4
1-Aug	25	7.6	3.2	1-5	18	5.5	1.8	1-4
2-Aug	25	7.6	3.2	1-5	18	5.5	1.8	1-4
3-Aug	25	7.6	3.2	1-5	18	5.5	1.8	1-4
3-Aug	30	9.1	3.8	1-5				
4-Aug	30	9.1	3.8	1-5	18	5.5	0.9	1-2
5-Aug	36	11.0	2.7	1-3	18	5.5	2.7	1-6
6-Aug	36	11.0	1.8	1-2	12	3.7	2.1	1-7
7-Aug	36	11.0	3.7	1-4	12	3.7	2.1	1-7
7-Aug	26	7.9	2.6	1-4				
8-Aug	24	7.3	2.4	1-4	12	3.7	2.1	1-7
9-Aug	24	7.3	2.4	1-4	12	3.7	2.1	1-7
10-Aug	24	7.3	2.4	1-4	12	3.7	2.1	1-7
	Average	9.9	3.7		Average	5.1	1.5	
	Min	6.1	0.9		Min	3.7	0.6	
	Max	11.0	6.2		Max	6.7	2.8	
	Std. Dev	1.4	1.2		Std. Dev	0.7	0.5	

APPENDIX D. YENTNA RIVER

Appendix D1.–Estimated salmon escapement adjacent to the north bank of the Yentna River, 2006.

	Sockeye		Pink		Chum		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7-Jul	275	275	31	31	153	153	490	490	31	31
8-Jul	67	342	81	111	13	166	349	839	54	85
9-Jul	20	362	53	164	20	186	246	1,085	13	98
10-Jul	164	526	39	203	0	186	308	1,393	19	117
11-Jul	92	618	92	295	17	203	459	1,852	0	117
12-Jul	58	676	51	346	29	232	262	2,114	22	139
13-Jul	34	711	151	497	7	239	213	2,327	7	146
14-Jul	45	755	156	653	0	239	112	2,439	22	168
15-Jul	21	776	186	838	10	249	247	2,686	0	168
16-Jul	6	782	616	1,455	83	332	578	3,264	0	168
17-Jul	6	788	1,273	2,727	69	401	378	3,642	0	168
18-Jul	97	885	3,331	6,059	200	602	813	4,456	6	174
19-Jul	322	1,207	5,227	11,286	114	716	1,390	5,845	21	195
20-Jul	1,047	2,253	3,481	14,767	427	1,143	1,986	7,832	43	238
21-Jul	528	2,781	3,773	18,540	277	1,419	1,056	8,888	13	251
22-Jul	152	2,934	4,420	22,960	215	1,634	630	9,519	0	251
23-Jul	150	3,084	6,589	29,549	242	1,876	1,143	10,661	0	251
24-Jul	188	3,272	13,593	43,142	214	2,090	1,524	12,185	0	251
25-Jul	115	3,387	7,667	50,809	61	2,151	1,252	13,438	0	251
26-Jul	127	3,514	7,015	57,824	48	2,199	883	14,320	4	255
27-Jul	258	3,772	8,828	66,652	142	2,341	854	15,175	0	255
28-Jul	1,018	4,790	13,950	80,602	220	2,561	2,036	17,211	0	255
29-Jul	1,173	5,963	9,919	90,521	109	2,670	2,512	19,723	0	255
30-Jul	344	6,307	8,088	98,609	53	2,723	1,405	21,128	0	255
31-Jul	184	6,491	5,778	104,387	67	2,790	705	21,833	0	255
1-Aug	343	6,834	4,520	108,907	17	2,807	806	22,639	0	255
2-Aug	346	7,180	4,837	113,744	190	2,997	716	23,355	0	255
3-Aug	397	7,577	4,772	118,515	343	3,340	693	24,048	8	263
4-Aug	270	7,846	2,268	120,783	135	3,475	540	24,588	0	263
5-Aug	379	8,225	2,338	123,121	286	3,761	578	25,166	0	263
6-Aug	248	8,474	1,295	124,416	181	3,942	550	25,716	0	263
7-Aug	405	8,879	1,610	126,025	356	4,297	642	26,358	10	273
8-Aug	602	9,481	1,065	127,090	324	4,621	617	26,975	8	281
9-Aug	201	9,682	409	127,499	132	4,753	673	27,648	0	281
10-Aug	144	9,825	282	127,781	40	4,793	483	28,131	0	281
11-Aug	55	9,880	63	127,843	26	4,819	111	28,242	0	281
12-Aug	141	10,022	108	127,951	17	4,836	155	28,397	0	281

Appendix D2.–Estimated salmon escapement adjacent to the south bank of the Yentna River, 2006.

	Sockeye		Pink		Chum		Coho		Chinook	
Date	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum	Daily	Cum
7-Jul	113	113	19	19	188	188	376	376	0	0
8-Jul	145	258	17	36	35	223	116	493	41	41
9-Jul	177	435	32	68	14	237	227	719	18	59
10-Jul	218	654	56	124	6	242	185	904	11	70
11-Jul	405	1,059	31	155	25	267	467	1,371	6	76
12-Jul	301	1,360	31	186	8	274	340	1,710	0	76
13-Jul	138	1,498	55	241	17	291	281	1,991	11	87
14-Jul	201	1,698	123	364	52	343	182	2,173	6	94
15-Jul	55	1,754	295	658	147	490	506	2,679	28	121
16-Jul	377	2,130	535	1,193	294	784	1,115	3,794	23	144
17-Jul	945	3,075	2,516	3,709	291	1,075	2,480	6,273	18	162
18-Jul	4,159	7,233	4,738	8,447	263	1,338	6,703	12,976	0	162
19-Jul	6,419	13,652	5,088	13,535	129	1,467	10,798	23,775	43	205
20-Jul	4,206	17,858	3,446	16,980	329	1,796	5,802	29,576	0	205
21-Jul	1,597	19,455	2,035	19,015	198	1,994	2,191	31,767	14	219
22-Jul	1,493	20,948	4,729	23,744	209	2,203	3,275	35,042	10	229
23-Jul	2,423	23,371	6,359	30,103	325	2,528	5,765	40,807	0	229
24-Jul	1,885	25,256	12,042	42,145	267	2,795	5,521	46,328	10	239
25-Jul	1,538	26,794	9,964	52,109	149	2,944	3,668	49,996	0	239
26-Jul	2,466	29,260	10,036	62,145	172	3,116	4,581	54,577	0	239
27-Jul	3,151	32,411	12,580	74,725	174	3,290	6,054	60,631	12	251
28-Jul	5,406	37,817	12,385	87,110	204	3,494	5,130	65,760	0	251
29-Jul	8,636	46,453	11,738	98,848	258	3,752	7,531	73,292	12	263
30-Jul	5,738	52,191	15,088	113,936	238	3,990	7,273	80,565	0	263
31-Jul	6,190	58,381	14,112	128,047	225	4,215	5,793	86,358	13	276
1-Aug	2,862	61,242	7,776	135,824	275	4,490	4,494	90,852	0	276
2-Aug	3,047	64,289	6,348	142,172	281	4,771	2,365	93,218	0	276
3-Aug	4,818	69,107	5,555	147,727	395	5,166	2,343	95,561	0	276
4-Aug	3,590	72,697	2,803	150,530	548	5,714	1,733	97,294	0	276
5-Aug	2,447	75,144	1,400	151,930	268	5,982	1,531	98,825	0	276
6-Aug	1,767	76,911	1,113	153,043	323	6,305	936	99,761	0	276
7-Aug	2,231	79,142	765	153,808	173	6,478	875	100,636	0	276
8-Aug	1,460	80,603	544	154,352	192	6,670	583	101,219	0	276
9-Aug	978	81,581	291	154,643	123	6,793	648	101,867	0	276
10-Aug	491	82,072	132	154,775	63	6,856	369	102,236	0	276
11-Aug	417	82,489	119	154,894	37	6,893	248	102,484	0	276
12-Aug	385	82,874	75	154,969	16	6,909	71	102,555	0	276

Appendix D3.–Yentna River north bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
7-Jul	59	48	53	49	74	41	28	38	26	33	34	31
8-Jul	55	60	28	11	19	17	20	17	24	3	17	21
9-Jul	7	16	5	11	3	19	14	8	10	13	6	2
10-Jul	26	27	26	37	30	28	13	27	24	15	11	11
11-Jul	14	38	23	67	33	55	23	7	26	55	9	14
12-Jul	41	13	38	16	11	13	16	8	7	8	7	4
13-Jul	31	12	8	9	15	10	42	19	9	2	5	7
14-Jul	36	39	17	3	39	6	16	3	0	11	6	9
15-Jul	6	17	19	27	9	9	33	16	19	14	4	5
16-Jul	7	25	32	40	46	27	22	61	37	57	36	21
17-Jul	75	40	20	48	53	46	22	26	71	85	40	62
18-Jul	113	75	202	68	59	108	61	222	214	87	125	106
19-Jul	214	463	255	139	118	172	276	322	129	310	79	199
20-Jul	544	325	359	192	291	516	406	307	227	160	133	150
21-Jul	217	273	168	104	156	280	490	290	213	287	135	164
22-Jul	131	274	382	197	142	125	123	219	293	303	150	89
23-Jul	204	188	251	508	253	182	108	178	364	357	245	158
24-Jul	500	416	1,194	585	456	473	486	1,420	815	382	271	321
25-Jul	225	528	374	246	169	254	528	301	213	213	266	201
26-Jul	426	261	181	161	165	379	356	247	356	129	111	338
27-Jul	240	423	248	172	203	178	163	339	439	439	629	506
28-Jul	582	324	727	393	271	327	355	896	879	1,039	944	703
29-Jul	506	636	493	1,288	524	260	473	370	916	987	561	308
30-Jul	304	514	975	349	267	250	302	622	391	207	158	242
31-Jul	216	440	187	193	188	163	432	410	294	147	211	229
1-Aug	226	192	191	158	173	222	320	232	220	248	93	154
2-Aug	201	377	211	180	141	181	261	213	207	296	192	129
3-Aug	278	388	530	381	334	161	226	270	250	406	418	279
4-Aug	85	49	115	179	123	92	156	87	153	186	132	84
5-Aug	120	142	119	94	114	115	96	211	114	118	78	88
6-Aug	76	192	92	150	88	65	150	102	63	33	48	50
7-Aug	279	117	123	140	127	170	179	140	216	127	78	130
8-Aug	74	183	131	118	104	101	132	166	196	153	54	72
9-Aug	58	87	120	95	44	79	42	44	60	66	93	51
10-Aug	34	23	26	34	26	30	17	14	35	41	21	11
11-Aug	18	1	9	20	17	5	17	9	0	4	10	23
12-Aug	9	4	3	6	6	0	0	4	17	20	7	30
Total	6,237	7,230	7,935	6,468	4,891	5,159	6,404	7,865	7,527	7,041	5,417	5,002

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Appendix D3.–Page 2 of 2.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
7-Jul	28	24	19	13	22	10	55	52	42	64	68	33
8-Jul	5	26	11	11	11	18	18	12	22	18	21	13
9-Jul	17	19	21	13	45	45	24	21	30	18	10	17
10-Jul	11	11	16	33	12	20	14	15	23	26	19	20
11-Jul	25	42	64	55	73	69	37	40	48	77	47	36
12-Jul	26	24	55	15	29	15	29	27	46	39	14	17
13-Jul	20	22	38	37	7	30	24	15	24	15	10	23
14-Jul	26	22	13	31	31	34	12	7	29	52	19	12
15-Jul	42	55	62	52	45	79	39	46	95	71	42	70
16-Jul	63	82	165	157	218	88	143	121	117	165	107	166
17-Jul	247	259	330	325	294	293	254	523	430	255	373	343
18-Jul	603	819	914	796	804	904	809	739	1,033	918	791	729
19-Jul	1,427	1,337	1,139	1,146	1,013	1,424	1,089	1,114	926	693	650	554
20-Jul	814	586	935	514	498	532	487	379	388	302	209	249
21-Jul	263	300	285	252	182	329	307	223	268	295	180	242
22-Jul	408	595	515	640	514	414	346	387	587	488	456	368
23-Jul	839	691	989	856	645	679	712	913	833	729	704	510
24-Jul	818	1,207	761	675	1,045	989	1,147	900	608	608	594	563
25-Jul	657	751	786	757	834	639	684	599	473	400	495	365
26-Jul	978	1,553	1,119	945	1,048	1,117	1,235	1,130	997	737	590	624
27-Jul	1,008	1,192	1,195	944	951	1,162	1,004	1,306	1,183	934	783	616
28-Jul	1,109	947	1,129	1,225	1,106	937	1,250	1,022	1,454	1,348	1,389	1,240
29-Jul	1,407	1,160	1,529	1,400	997	1,295	1,334	1,385	1,313	958	769	720
30-Jul	1,178	1,385	1,310	1,174	1,430	1,400	1,594	1,284	1,281	1,101	989	1,177
31-Jul	1,161	1,056	844	961	1,216	1,401	1,283	1,250	1,207	958	838	659
1-Aug	421	745	856	441	481	499	580	586	398	582	384	207
2-Aug	477	416	794	556	486	534	598	433	453	623	627	640
3-Aug	326	762	613	718	625	426	285	387	417	394	443	375
4-Aug	403	457	653	524	327	345	287	308	331	332	444	346
5-Aug	240	280	376	278	214	287	281	233	214	194	149	170
6-Aug	197	238	180	160	167	184	185	208	215	203	155	182
7-Aug	125	114	121	127	118	155	99	159	131	113	83	102
8-Aug	152	141	188	122	121	92	82	82	79	97	53	49
9-Aug	79	67	76	85	75	55	78	60	55	60	82	78
10-Aug	38	55	45	32	32	27	31	43	26	46	40	34
11-Aug	28	26	43	48	45	35	28	43	34	26	23	21
12-Aug	25	25	24	33	21	20	21	11	14	22	19	30
Total	15,691	17,491	18,213	16,151	15,782	16,582	16,485	16,063	15,824	13,961	12,669	11,600

Appendix D4.–Yentna River south bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
7-Jul	3	7	5	9	5	3	3	5	5	3	8	11
8-Jul	5	18	9	13	5	10	6	2	7	3	6	6
9-Jul	20	13	7	12	7	1	4	3	0	1	7	3
10-Jul	8	7	3	9	10	12	14	7	14	7	10	22
11-Jul	15	14	19	17	13	6	7	13	4	10	4	28
12-Jul	28	20	23	33	37	32	21	27	19	13	7	46
13-Jul	61	58	74	71	70	68	21	30	54	42	31	37
14-Jul	68	49	71	64	63	53	69	17	41	40	51	120
15-Jul	56	103	130	97	114	97	70	55	95	99	34	121
16-Jul	93	84	116	96	118	123	95	38	32	44	48	91
17-Jul	71	39	86	51	32	17	47	76	29	32	47	96
18-Jul	40	50	63	77	79	63	90	46	55	53	74	111
19-Jul	91	76	82	126	139	143	192	123	152	144	122	248
20-Jul	120	109	99	119	97	111	95	66	61	55	53	133
21-Jul	101	115	128	51	72	97	102	74	120	119	96	129
22-Jul	112	107	67	90	103	95	92	55	100	63	73	149
23-Jul	101	86	79	105	105	156	150	93	89	90	99	162
24-Jul	137	164	124	139	162	129	108	81	113	88	84	246
25-Jul	189	275	204	242	188	179	181	109	195	244	164	292
26-Jul	314	308	253	246	231	317	210	225	178	427	178	385
27-Jul	149	145	94	62	86	119	170	84	195	236	175	304
28-Jul	102	67	92	92	82	88	61	52	78	120	87	134
29-Jul	135	90	173	160	160	159	240	195	238	198	141	288
30-Jul	231	217	270	219	211	217	163	152	212	291	155	195
31-Jul	283	295	251	285	198	224	236	242	262	370	390	402
1-Aug	364	385	327	343	385	399	288	312	347	396	515	349
2-Aug	512	465	317	342	326	444	397	374	488	451	409	379
3-Aug	254	298	313	502	556	404	289	233	339	382	367	294
4-Aug	154	212	180	184	190	189	240	132	123	127	174	238
5-Aug	67	114	125	83	72	137	104	125	62	66	52	86
6-Aug	136	169	232	222	256	216	239	181	158	151	195	140
7-Aug	325	265	289	267	195	205	230	183	111	189	224	306
8-Aug	214	208	166	130	106	139	108	90	108	168	205	208
9-Aug	157	150	158	219	132	138	166	90	153	73	131	189
10-Aug	75	125	91	118	77	76	92	62	65	129	95	134
11-Aug	54	52	39	54	54	69	82	50	46	38	39	62
12-Aug	28	30	31	33	45	48	41	53	45	77	56	77
13-Aug	112	111	92	60	89	71	49	63	78	71	122	129
Total	4,985	5,100	4,882	5,042	4,870	5,054	4,772	3,818	4,471	5,110	4,728	6,350

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Appendix D4.–Page 2 of 2.

	Counts by Hour											
Date	13	14	15	16	17	18	19	20	21	22	23	24
7-Jul	6	11	2	7	9	13	5	5	6	5	11	11
8-Jul	2	8	0	1	2	10	3	6	8	1	9	10
9-Jul	5	5	11	0	2	1	16	1	0	0	2	6
10-Jul	9	22	11	13	6	12	15	4	2	1	4	9
11-Jul	7	24	15	5	6	21	20	29	15	4	12	23
12-Jul	13	35	16	29	31	28	12	38	36	4	20	90
13-Jul	46	101	131	75	42	151	56	170	95	25	34	82
14-Jul	95	97	64	51	37	138	168	138	45	57	36	83
15-Jul	184	106	133	115	72	74	172	122	117	57	42	74
16-Jul	63	112	114	129	46	46	66	62	34	44	52	67
17-Jul	119	80	128	99	28	75	98	70	66	32	49	91
18-Jul	126	143	136	88	124	168	122	55	70	68	86	59
19-Jul	187	200	163	213	160	120	213	182	51	57	87	128
20-Jul	191	254	259	166	128	143	170	194	120	63	60	142
21-Jul	145	144	96	125	178	170	120	106	77	59	79	72
22-Jul	150	125	81	67	73	96	73	93	96	41	57	67
23-Jul	125	99	122	84	39	88	137	74	55	70	57	122
24-Jul	168	293	267	219	301	351	322	261	196	149	225	252
25-Jul	274	316	279	303	366	316	340	302	263	142	221	379
26-Jul	359	246	396	227	308	335	277	229	130	151	124	175
27-Jul	157	289	180	136	150	211	118	133	101	94	91	102
28-Jul	122	147	102	140	152	188	147	163	130	92	97	171
29-Jul	377	405	295	218	225	206	314	266	251	306	209	275
30-Jul	141	149	258	196	298	304	309	274	175	161	149	228
31-Jul	402	441	344	286	316	390	493	425	389	346	376	402
1-Aug	361	226	407	337	299	375	473	452	407	396	356	447
2-Aug	311	317	404	408	345	435	410	299	146	231	229	282
3-Aug	337	279	231	238	321	290	268	187	123	102	107	210
4-Aug	84	45	116	138	125	103	114	130	87	62	84	102
5-Aug	41	35	43	73	62	88	69	79	54	57	72	124
6-Aug	166	199	180	135	183	211	238	239	174	171	191	254
7-Aug	184	194	268	210	222	300	190	181	124	153	175	184
8-Aug	132	43	74	112	132	129	136	105	135	90	94	143
9-Aug	139	219	78	187	113	100	223	156	78	100	81	131
10-Aug	92	143	101	117	83	92	132	86	68	39	63	64
11-Aug	94	77	51	64	108	130	92	62	31	20	54	49
12-Aug	157	76	65	129	152	116	105	86	63	107	120	91
13-Aug	114	71	51	112	72	101	90	74	59	75	54	57
Total	5,685	5,776	5,672	5,252	5,316	6,125	6,326	5,538	4,077	3,632	3,869	5,258

Appendix D5.–Proportion of Yentna River north bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
7-Jul	6.0	4.9	5.4	5.0	7.6	4.2	2.9	3.9	2.7	3.4	3.5	3.2
8-Jul	9.8	10.6	5.0	2.0	3.4	3.0	3.5	3.0	4.3	0.5	3.0	3.7
9-Jul	2.0	4.5	1.4	3.1	0.8	5.4	4.0	2.3	2.8	3.7	1.7	0.6
10-Jul	4.9	5.1	4.9	7.0	5.7	5.3	2.5	5.1	4.5	2.8	2.1	2.1
11-Jul	2.1	5.8	3.5	10.2	5.0	8.3	3.5	1.1	3.9	8.3	1.4	2.1
12-Jul	9.7	3.1	9.0	3.8	2.6	3.1	3.8	1.9	1.7	1.9	1.7	0.9
13-Jul	7.5	2.9	1.9	2.2	3.6	2.4	10.2	4.6	2.2	0.5	1.2	1.7
14-Jul	10.7	11.6	5.1	0.9	11.6	1.8	4.8	0.9	0.0	3.3	1.8	2.7
15-Jul	1.3	3.7	4.1	5.8	1.9	1.9	7.1	3.4	4.1	3.0	0.9	1.1
16-Jul	0.5	1.9	2.5	3.1	3.6	2.1	1.7	4.8	2.9	4.4	2.8	1.6
17-Jul	4.3	2.3	1.2	2.8	3.1	2.7	1.3	1.5	4.1	4.9	2.3	3.6
18-Jul	2.5	1.7	4.5	1.5	1.3	2.4	1.4	5.0	4.8	2.0	2.8	2.4
19-Jul	3.0	6.5	3.6	2.0	1.7	2.4	3.9	4.6	1.8	4.4	1.1	2.8
20-Jul	7.8	4.7	5.1	2.7	4.2	7.4	5.8	4.4	3.3	2.3	1.9	2.1
21-Jul	3.8	4.8	3.0	1.8	2.8	5.0	8.7	5.1	3.8	5.1	2.4	2.9
22-Jul	2.4	5.1	7.1	3.6	2.6	2.3	2.3	4.0	5.4	5.6	2.8	1.6
23-Jul	2.5	2.3	3.1	6.3	3.1	2.2	1.3	2.2	4.5	4.4	3.0	1.9
24-Jul	3.2	2.7	7.7	3.8	2.9	3.0	3.1	9.2	5.3	2.5	1.7	2.1
25-Jul	2.5	5.8	4.1	2.7	1.9	2.8	5.8	3.3	2.3	2.3	2.9	2.2
26-Jul	5.3	3.2	2.2	2.0	2.0	4.7	4.4	3.1	4.4	1.6	1.4	4.2
27-Jul	2.4	4.2	2.5	1.7	2.0	1.8	1.6	3.4	4.4	4.4	6.2	5.0
28-Jul	3.4	1.9	4.2	2.3	1.6	1.9	2.1	5.2	5.1	6.0	5.5	4.1
29-Jul	3.7	4.6	3.6	9.4	3.8	1.9	3.4	2.7	6.7	7.2	4.1	2.2
30-Jul	3.1	5.2	9.9	3.5	2.7	2.5	3.1	6.3	4.0	2.1	1.6	2.4
31-Jul	3.2	6.5	2.8	2.9	2.8	2.4	6.4	6.1	4.4	2.2	3.1	3.4
1-Aug	4.0	3.4	3.4	2.8	3.0	3.9	5.6	4.1	3.9	4.4	1.6	2.7
2-Aug	3.3	6.2	3.5	3.0	2.3	3.0	4.3	3.5	3.4	4.9	3.2	2.1
3-Aug	4.5	6.2	8.5	6.1	5.4	2.6	3.6	4.3	4.0	6.5	6.7	4.5
4-Aug	2.6	1.5	3.6	5.6	3.8	2.9	4.9	2.7	4.8	5.8	4.1	2.6
5-Aug	3.4	4.0	3.3	2.6	3.2	3.2	2.7	5.9	3.2	3.3	2.2	2.5
6-Aug	3.3	8.4	4.0	6.6	3.9	2.9	6.6	4.5	2.8	1.5	2.1	2.2
7-Aug	9.2	3.9	4.1	4.6	4.2	5.6	5.9	4.6	7.1	4.2	2.6	4.3
8-Aug	2.8	7.0	5.0	4.5	4.0	3.9	5.0	6.3	7.5	5.9	2.1	2.8
9-Aug	4.1	6.1	8.5	6.7	3.1	5.6	3.0	3.1	4.2	4.7	6.6	3.6
10-Aug	3.6	2.4	2.7	3.6	2.7	3.2	1.8	1.5	3.7	4.3	2.2	1.2
11-Aug	7.1	0.4	3.5	7.8	6.7	2.0	6.7	3.5	0.0	1.6	3.9	9.0
12-Aug	2.1	1.0	0.7	1.4	1.4	0.0	0.0	1.0	4.0	4.8	1.7	7.1
Mean	4.3	4.5	4.3	4.0	3.5	3.3	4.0	3.8	3.8	3.8	2.8	2.9

Appendix D5.–Page 2 of 2.

	Counts by Hour												
Date	13	14	15	16	17	18	19	20	21	22	23	24	Total
7-Jul	4.4	2.7	2.8	3.3	2.3	3.4	4.6	3.6	3.0	4.9	4.6	8.1	100
8-Jul	2.0	3.0	3.2	4.3	3.0	3.5	3.9	2.7	2.3	5.1	11.7	3.5	100
9-Jul	2.3	8.2	5.1	1.4	6.5	8.2	7.1	8.5	7.1	6.8	4.0	2.5	100
10-Jul	2.3	3.6	3.8	4.7	1.7	4.5	3.6	9.6	4.5	3.2	2.6	4.0	100
11-Jul	3.3	1.1	1.4	1.5	1.1	2.7	4.7	6.4	8.2	7.0	3.2	4.2	100
12-Jul	0.5	1.4	1.4	1.2	4.5	4.3	9.2	14.5	10.7	3.3	5.0	0.9	100
13-Jul	3.4	5.8	3.2	2.7	8.7	5.1	5.6	7.0	6.3	2.2	4.6	4.4	100
14-Jul	1.5	7.5	3.0	9.9	3.0	3.0	2.7	4.8	4.5	1.8	2.1	1.2	100
15-Jul	1.1	3.9	1.9	5.8	4.5	6.5	5.4	7.3	8.6	9.3	2.8	4.5	100
16-Jul	6.0	3.6	3.9	5.2	9.0	7.0	4.6	4.0	7.9	7.6	6.5	2.8	100
17-Jul	2.8	2.8	5.0	4.3	2.1	5.8	5.9	6.2	11.2	7.1	5.1	7.5	100
18-Jul	2.2	6.9	8.5	2.9	2.7	5.9	6.0	9.2	8.2	4.7	4.9	5.4	100
19-Jul	4.5	5.8	4.5	4.8	2.6	4.0	6.8	10.5	4.6	4.4	5.1	4.5	100
20-Jul	1.7	2.9	7.2	3.9	3.3	1.8	7.7	5.2	6.4	3.7	2.0	2.4	100
21-Jul	3.7	2.1	5.1	4.0	1.5	1.9	2.5	7.5	8.7	8.0	3.2	2.6	100
22-Jul	1.8	1.8	2.2	4.8	3.2	4.1	3.5	2.6	8.5	9.5	8.5	4.7	100
23-Jul	3.0	2.7	4.5	5.4	2.3	3.9	4.0	5.4	9.7	10.1	6.7	5.3	100
24-Jul	2.4	4.6	3.6	1.8	1.9	3.8	5.4	10.9	9.6	4.1	2.8	1.9	100
25-Jul	6.1	4.4	3.0	4.5	4.9	8.5	8.5	8.2	5.5	2.8	2.9	2.1	100
26-Jul	2.4	9.4	4.9	2.0	2.8	2.4	10.2	10.9	7.5	4.3	2.4	2.4	100
27-Jul	4.2	2.5	4.7	3.8	4.5	4.9	6.2	2.8	7.1	10.4	5.9	3.5	100
28-Jul	2.5	3.8	3.1	7.2	5.1	3.7	3.1	3.6	3.1	8.4	9.5	3.8	100
29-Jul	2.2	2.5	4.8	4.6	2.9	2.9	3.0	6.6	6.1	6.9	1.9	2.3	100
30-Jul	4.8	8.0	5.1	3.3	3.2	3.1	4.1	6.2	7.0	3.6	2.6	2.8	100
31-Jul	4.8	5.7	3.9	4.1	3.4	3.3	5.2	7.5	4.3	3.7	4.0	4.0	100
1-Aug	3.7	4.3	4.8	2.3	2.6	2.7	6.3	8.4	8.7	7.0	3.0	3.4	100
2-Aug	3.3	2.1	5.6	3.9	2.4	2.6	4.8	5.3	9.7	9.3	4.8	3.7	100
3-Aug	2.4	2.3	2.6	5.5	2.8	1.4	5.2	1.5	4.9	4.3	2.4	1.5	100
4-Aug	2.9	3.5	4.2	5.0	3.0	2.1	3.7	5.6	7.0	9.3	2.6	6.2	100
5-Aug	2.9	3.9	2.9	2.8	3.9	4.9	6.4	13.3	7.3	5.2	4.2	3.0	100
6-Aug	5.2	4.2	2.2	1.8	1.4	5.6	6.2	9.1	2.8	2.6	4.0	6.2	100
7-Aug	2.2	4.8	2.5	1.8	3.3	1.8	4.7	5.8	5.8	2.2	2.0	2.9	100
8-Aug	2.3	1.9	7.5	4.7	3.5	2.3	2.9	1.8	5.7	5.4	3.0	2.4	100
9-Aug	2.7	2.5	2.6	3.8	4.2	4.3	3.2	3.3	3.1	3.3	3.5	4.0	100
10-Aug	0.7	2.6	2.4	1.5	1.3	2.0	2.7	0.7	2.5	1.4	27.5	21.6	100
11-Aug	5.1	4.7	5.1	4.7	4.7	5.1	4.7	2.7	1.2	3.9	2.7	3.1	100
12-Aug	5.9	7.1	5.2	4.0	5.7	2.4	7.8	10.5	12.4	6.7	5.0	2.1	100
Mean	3.1	4.1	4.0	3.9	3.5	3.9	5.2	6.5	6.5	5.5	4.8	4.1	

Appendix D6.–Proportion of Yentna River south bank sonar counts by hour, 2006.

	Counts by Hour											
Date	1	2	3	4	5	6	7	8	9	10	11	12
7-Jul	3.3	4.2	6.9	3.3	1.6	2.6	2.3	1.3	5.3	3.6	1.6	2.3
8-Jul	8.7	5.9	7.0	6.5	3.7	1.7	2.0	2.3	2.3	3.7	1.1	2.8
9-Jul	2.6	3.2	5.1	2.8	3.0	3.6	2.1	3.9	2.6	3.6	2.8	4.7
10-Jul	4.2	3.8	4.0	3.8	1.7	4.6	3.8	2.1	6.1	4.6	7.4	7.8
11-Jul	2.4	2.6	3.2	2.4	3.8	1.9	1.7	2.5	3.5	4.0	3.9	2.6
12-Jul	9.1	5.2	4.6	7.1	3.1	0.9	2.7	4.0	2.9	3.7	2.4	5.0
13-Jul	2.8	2.4	4.4	3.2	1.0	3.0	2.4	4.4	7.0	3.2	10.0	3.6
14-Jul	3.7	2.8	3.0	5.0	1.6	1.8	3.7	4.8	5.5	6.0	5.9	5.1
15-Jul	1.3	2.2	1.7	1.3	4.0	1.3	0.8	1.2	4.9	4.6	5.4	3.7
16-Jul	2.3	1.9	3.8	3.2	2.5	2.1	2.9	1.5	2.7	2.5	3.8	2.8
17-Jul	2.8	2.3	2.0	2.6	2.0	2.7	2.4	2.7	3.5	5.2	5.2	4.0
18-Jul	3.5	2.5	3.4	2.4	2.5	2.5	2.5	3.1	3.4	4.3	3.8	4.1
19-Jul	3.9	3.8	3.1	2.5	2.6	3.6	4.3	4.5	4.1	4.1	3.6	4.3
20-Jul	3.6	4.2	3.9	4.8	3.5	4.7	3.9	4.2	5.8	6.3	6.5	5.8
21-Jul	2.7	2.9	2.3	2.3	2.9	2.3	5.0	4.5	5.9	6.7	6.6	4.1
22-Jul	2.3	3.0	3.5	2.0	2.1	2.3	2.0	3.2	4.1	4.9	5.8	5.9
23-Jul	2.2	3.7	2.4	3.0	2.4	2.9	2.7	3.3	3.2	5.5	3.8	3.8
24-Jul	3.8	3.6	4.6	3.9	3.7	4.1	3.7	4.5	4.6	4.5	4.0	4.6
25-Jul	5.0	4.2	3.7	2.8	4.4	4.0	4.9	4.8	5.0	4.1	4.9	3.7
26-Jul	2.3	1.8	1.7	1.5	1.4	1.9	2.2	1.8	3.0	4.3	3.4	4.7
27-Jul	3.0	3.2	2.8	2.8	2.5	2.6	4.2	3.7	4.7	4.9	5.0	4.7
28-Jul	2.4	2.5	2.6	2.2	2.2	2.1	2.8	3.2	4.0	4.9	5.4	4.4
29-Jul	3.8	4.4	4.2	4.9	3.4	3.2	3.4	3.7	4.7	4.7	4.4	4.6
30-Jul	3.9	3.6	4.4	3.8	4.0	3.4	3.5	4.1	4.2	3.3	3.6	4.1
31-Jul	4.0	4.9	4.4	3.9	3.7	4.7	4.5	4.4	4.3	3.5	4.2	4.7
1-Aug	5.8	5.5	5.4	4.0	4.0	5.7	5.7	6.4	5.6	4.2	3.8	3.8
2-Aug	3.2	4.4	3.6	3.5	3.3	2.9	4.1	3.9	3.8	4.6	4.3	3.2
3-Aug	3.8	4.1	5.9	5.2	3.8	4.3	4.0	5.4	5.4	5.7	4.3	4.1
4-Aug	3.8	3.0	3.6	3.7	3.1	3.2	3.4	3.1	4.3	5.2	4.3	4.5
5-Aug	4.7	3.7	4.8	4.6	3.0	2.7	2.3	4.3	5.5	4.3	5.3	3.1
6-Aug	5.6	5.1	4.3	3.2	1.4	3.1	3.2	4.6	3.6	4.1	3.5	3.4
7-Aug	5.4	6.4	4.3	3.7	4.7	4.9	6.3	5.8	8.9	5.3	4.5	4.2
8-Aug	2.3	2.9	4.8	3.6	3.5	3.5	4.3	7.1	6.7	7.2	4.6	4.4
9-Aug	3.7	4.1	5.2	4.6	3.1	3.4	3.6	5.6	6.4	7.5	5.6	5.6
10-Aug	6.5	6.4	2.6	8.0	4.0	2.6	4.5	4.5	4.8	4.4	3.9	5.4
11-Aug	4.0	4.6	3.3	4.3	4.9	2.6	2.7	5.0	7.1	4.3	4.0	4.6
12-Aug	4.9	4.0	4.2	3.3	6.8	4.0	2.6	4.0	5.5	3.1	3.8	5.3
Mean	3.9	3.8	3.9	3.7	3.1	3.1	3.3	3.9	4.7	4.6	4.5	4.3

Appendix D6.–Page 2 of 2.

	Counts by Hour												
Date	13	14	15	16	17	18	19	20	21	22	23	24	Total
7-Jul	4.0	3.4	2.7	1.9	3.2	1.4	7.9	7.5	6.0	9.2	9.8	4.7	100
8-Jul	1.4	7.3	3.1	3.1	3.1	5.1	5.1	3.4	6.2	5.1	5.9	3.7	100
9-Jul	3.6	4.1	4.5	2.8	9.6	9.6	5.1	4.5	6.4	3.9	2.1	3.6	100
10-Jul	2.3	2.3	3.4	6.9	2.5	4.2	2.9	3.2	4.8	5.5	4.0	4.2	100
11-Jul	2.7	4.5	6.9	5.9	7.8	7.4	4.0	4.3	5.1	8.3	5.0	3.9	100
12-Jul	3.8	3.5	8.1	2.2	4.3	2.2	4.3	4.0	6.8	5.7	2.1	2.5	100
13-Jul	4.0	4.4	7.6	7.4	1.4	6.0	4.8	3.0	4.8	3.0	2.0	4.6	100
14-Jul	4.6	3.9	2.3	5.5	5.5	6.0	2.1	1.2	5.1	9.2	3.4	2.1	100
15-Jul	4.1	5.3	6.0	5.0	4.4	7.7	3.8	4.5	9.2	6.9	4.1	6.8	100
16-Jul	2.7	3.5	7.0	6.7	9.3	3.8	6.1	5.2	5.0	7.0	4.6	7.1	100
17-Jul	4.0	4.1	5.3	5.2	4.7	4.7	4.1	8.4	6.9	4.1	6.0	5.5	100
18-Jul	3.8	5.2	5.8	5.0	5.1	5.7	5.1	4.7	6.5	5.8	5.0	4.6	100
19-Jul	6.3	5.9	5.1	5.1	4.5	6.3	4.8	5.0	4.1	3.1	2.9	2.5	100
20-Jul	5.9	4.3	6.8	3.7	3.6	3.9	3.5	2.7	2.8	2.2	1.5	1.8	100
21-Jul	4.4	5.0	4.7	4.2	3.0	5.5	5.1	3.7	4.4	4.9	3.0	4.0	100
22-Jul	4.2	6.1	5.3	6.6	5.3	4.3	3.6	4.0	6.0	5.0	4.7	3.8	100
23-Jul	5.6	4.6	6.7	5.8	4.3	4.6	4.8	6.1	5.6	4.9	4.7	3.4	100
24-Jul	4.1	6.1	3.9	3.4	5.3	5.0	5.8	4.6	3.1	3.1	3.0	2.9	100
25-Jul	4.3	4.9	5.1	4.9	5.4	4.2	4.5	3.9	3.1	2.6	3.2	2.4	100
26-Jul	5.7	9.0	6.5	5.5	6.1	6.5	7.2	6.5	5.8	4.3	3.4	3.6	100
27-Jul	4.6	5.4	5.4	4.3	4.3	5.3	4.6	5.9	5.4	4.3	3.6	2.8	100
28-Jul	4.8	4.1	4.9	5.3	4.8	4.1	5.4	4.4	6.3	5.8	6.0	5.4	100
29-Jul	5.0	4.1	5.4	5.0	3.5	4.6	4.7	4.9	4.7	3.4	2.7	2.6	100
30-Jul	4.2	4.9	4.6	4.1	5.0	4.9	5.6	4.5	4.5	3.9	3.5	4.2	100
31-Jul	4.4	4.0	3.2	3.6	4.6	5.3	4.9	4.7	4.6	3.6	3.2	2.5	100
1-Aug	2.7	4.8	5.6	2.9	3.1	3.2	3.8	3.8	2.6	3.8	2.5	1.3	100
2-Aug	4.0	3.5	6.6	4.6	4.0	4.4	5.0	3.6	3.8	5.2	5.2	5.3	100
3-Aug	2.5	5.8	4.7	5.5	4.8	3.2	2.2	3.0	3.2	3.0	3.4	2.9	100
4-Aug	4.6	5.3	7.5	6.0	3.8	4.0	3.3	3.6	3.8	3.8	5.1	4.0	100
5-Aug	4.3	5.0	6.7	4.9	3.8	5.1	5.0	4.1	3.8	3.4	2.6	3.0	100
6-Aug	4.8	5.8	4.3	3.9	4.0	4.4	4.5	5.0	5.2	4.9	3.7	4.4	100
7-Aug	3.1	2.8	3.0	3.1	2.9	3.8	2.4	3.9	3.2	2.8	2.1	2.5	100
8-Aug	5.5	5.1	6.8	4.4	4.4	3.3	2.9	2.9	2.8	3.5	1.9	1.8	100
9-Aug	3.9	3.3	3.7	4.2	3.7	2.7	3.8	2.9	2.7	2.9	4.0	3.8	100
10-Aug	3.6	5.2	4.3	3.0	3.0	2.6	2.9	4.1	2.5	4.4	3.8	3.2	100
11-Aug	3.4	3.2	5.2	5.8	5.5	4.3	3.4	5.2	4.1	3.2	2.8	2.6	100
12-Aug	4.6	4.6	4.4	6.0	3.8	3.7	3.8	2.0	2.6	4.0	3.5	5.5	100
Mean	4.1	4.7	5.2	4.7	4.5	4.7	4.4	4.3	4.7	4.6	3.8	3.7	

Appendix D7.–Yentna River north bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
7-Jul	76	119	317	220	63	52	49	24	27	29	2	1
8-Jul	40	193	194	71	13	7	6	21	13	3	0	3
9-Jul	9	139	96	25	5	8	13	13	9	13	12	11
10-Jul	63	186	138	44	8	8	15	8	18	22	10	10
11-Jul	30	295	212	33	12	12	11	5	17	14	12	6
12-Jul	14	116	143	48	19	9	12	14	6	12	8	21
13-Jul	6	91	146	46	16	3	12	22	29	14	11	16
14-Jul	4	55	126	42	19	9	8	16	16	24	15	1
15-Jul	4	87	194	64	11	8	16	16	30	19	9	6
16-Jul	6	168	551	228	58	50	57	23	71	45	12	15
17-Jul	5	339	772	248	84	47	63	41	76	31	13	7
18-Jul	57	1,502	1,450	397	155	78	109	103	279	178	75	65
19-Jul	267	2,325	1,996	693	216	116	191	280	362	303	178	146
20-Jul	124	2,386	1,442	652	212	148	216	550	503	351	221	179
21-Jul	117	2,117	1,126	468	143	81	220	441	384	278	153	119
22-Jul	69	1,610	1,528	647	178	106	199	340	355	193	96	97
23-Jul	164	2,394	1,991	936	278	138	332	572	608	391	180	140
24-Jul	704	5,882	3,006	1,570	438	327	574	622	856	725	417	398
25-Jul	211	3,050	2,731	1,387	359	157	206	177	297	243	149	128
26-Jul	490	3,179	2,439	785	213	82	106	112	190	225	130	126
27-Jul	405	3,085	2,695	1,133	343	205	225	354	515	484	331	308
28-Jul	422	5,010	5,183	2,342	835	478	359	377	656	615	552	394
29-Jul	482	4,237	4,355	1,968	536	333	238	222	396	434	290	222
30-Jul	347	3,215	3,676	1,255	357	138	121	102	177	198	187	118
31-Jul	373	2,529	1,785	580	192	109	118	121	271	241	279	136
1-Aug	299	1,714	1,550	678	328	122	134	176	183	214	155	133
2-Aug	187	1,659	1,991	786	277	131	217	266	204	216	86	69
3-Aug	171	1,775	2,002	716	236	105	222	321	287	203	95	79
4-Aug	68	733	1,045	416	160	63	134	157	148	150	79	59
5-Aug	54	606	1,203	661	169	70	147	205	164	137	84	81
6-Aug	175	745	622	192	62	49	97	88	77	75	43	49
7-Aug	120	904	851	298	128	116	145	131	96	108	46	79
8-Aug	60	477	663	419	145	157	193	167	96	109	62	67
9-Aug	37	179	382	240	100	91	99	80	89	61	42	15
10-Aug	25	127	124	73	26	450	35	27	19	21	10	11
11-Aug	17	66	47	17	4	1	10	47	23	9	2	12
12-Aug	56	191	100	26	26	1	0	1	12	4	1	3
Total	5,758	53,485	48,872	20,404	6,424	4,065	4,909	6,242	7,559	6,392	4,047	3,330

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Appendix D8.–Yentna River south bank sonar counts by sector, 2006.

	Counts by Sector											
Date	1	2	3	4	5	6	7	8	9	10	11	12
7-Jul	86	78	133	97	79	86	51	41	20	19	6	0
8-Jul	24	30	73	55	29	40	37	28	14	5	13	7
9-Jul	59	7	74	111	62	58	39	26	11	6	10	4
10-Jul	31	4	73	131	43	57	57	26	29	17	5	3
11-Jul	43	4	141	226	105	140	114	71	37	30	6	16
12-Jul	12	8	78	145	79	104	96	56	44	22	12	23
13-Jul	22	44	97	78	75	87	56	22	6	10	4	1
14-Jul	29	42	137	65	78	82	51	34	29	12	5	0
15-Jul	25	78	187	139	178	191	85	79	32	28	8	1
16-Jul	23	242	586	315	383	383	202	94	62	38	13	1
17-Jul	54	786	1,621	960	900	1,013	426	245	125	76	37	6
18-Jul	171	1,542	4,141	2,610	2,683	2,635	1,061	511	270	151	52	35
19-Jul	1,042	4,297	4,924	4,367	3,776	2,541	826	340	173	79	42	70
20-Jul	721	2,568	2,295	2,872	2,820	1,445	498	204	106	91	40	122
21-Jul	12	35	859	1,879	1,826	928	259	89	34	52	42	20
22-Jul	9	53	1,450	3,296	2,831	1,297	411	168	77	57	39	28
23-Jul	4	27	1,778	4,818	4,716	2,015	819	326	125	93	55	96
24-Jul	13	71	2,627	6,817	5,775	2,511	874	386	175	118	125	232
25-Jul	81	268	2,558	4,845	4,318	1,903	688	310	115	73	76	84
26-Jul	121	2,577	4,820	3,105	3,234	2,085	662	333	150	65	39	64
27-Jul	60	1,924	5,400	5,237	4,948	2,736	978	412	152	67	28	29
28-Jul	65	2,165	6,134	5,664	4,756	2,537	990	451	195	68	44	56
29-Jul	58	3,232	8,393	6,652	5,310	2,706	1,034	442	156	94	58	40
30-Jul	99	2,235	7,576	7,266	6,052	3,311	1,006	403	206	99	52	32
31-Jul	34	2,085	5,795	6,633	6,001	3,371	1,302	574	243	124	84	86
1-Aug	123	904	2,805	4,360	3,424	2,146	780	388	186	113	67	111
2-Aug	35	92	1,945	4,347	2,605	1,782	539	285	151	82	48	130
3-Aug	37	86	1,915	4,852	2,891	2,001	642	292	186	105	52	52
4-Aug	33	52	998	3,094	1,998	1,519	448	198	171	81	34	49
5-Aug	27	36	588	1,879	1,328	1,024	331	199	114	58	23	39
6-Aug	23	26	498	1,365	987	700	251	112	66	53	25	33
7-Aug	66	99	681	1,355	861	601	175	89	41	35	21	21
8-Aug	22	60	438	719	665	464	184	86	51	48	20	23
9-Aug	16	21	260	479	493	404	173	67	33	49	30	15
10-Aug	15	4	52	199	299	244	100	58	31	24	18	11
11-Aug	37	21	96	128	236	137	75	48	26	8	7	2
12-Aug	63	103	161	74	50	29	25	21	8	2	3	8
Total	3,395	25,906	72,387	91,234	76,894	45,313	16,345	7,514	3,650	2,152	1,243	1,550

Appendix D9.–Proportion of Yentna River north bank sonar counts by sector, 2006**.**

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
7-Jul	7.8	12.2	32.4	22.5	6.4	5.3	5.0	2.5	2.8	3.0	0.2	0.1	100
8-Jul	7.1	34.2	34.4	12.6	2.3	1.2	1.1	3.7	2.3	0.5	0.0	0.5	100
9-Jul	2.5	39.4	27.2	7.1	1.4	2.3	3.7	3.7	2.5	3.7	3.4	3.1	100
10-Jul	11.9	35.1	26.0	8.3	1.5	1.5	2.8	1.5	3.4	4.2	1.9	1.9	100
11-Jul	4.6	44.8	32.2	5.0	1.8	1.8	1.7	0.8	2.6	2.1	1.8	0.9	100
12-Jul	3.3	27.5	33.9	11.4	4.5	2.1	2.8	3.3	1.4	2.8	1.9	5.0	100
13-Jul	1.5	22.1	35.4	11.2	3.9	0.7	2.9	5.3	7.0	3.4	2.7	3.9	100
14-Jul	1.2	16.4	37.6	12.5	5.7	2.7	2.4	4.8	4.8	7.2	4.5	0.3	100
15-Jul	0.9	18.8	41.8	13.8	2.4	1.7	3.4	3.4	6.5	4.1	1.9	1.3	100
16-Jul	0.5	13.1	42.9	17.8	4.5	3.9	4.4	1.8	5.5	3.5	0.9	1.2	100
17-Jul	0.3	19.6	44.7	14.4	4.9	2.7	3.7	2.4	4.4	1.8	0.8	0.4	100
18-Jul	1.3	33.8	32.6	8.9	3.5	1.8	2.5	2.3	6.3	4.0	1.7	1.5	100
19-Jul	3.8	32.9	28.2	9.8	3.1	1.6	2.7	4.0	5.1	4.3	2.5	2.1	100
20-Jul	1.8	34.2	20.6	9.3	3.0	2.1	3.1	7.9	7.2	5.0	3.2	2.6	100
21-Jul	2.1	37.5	19.9	8.3	2.5	1.4	3.9	7.8	6.8	4.9	2.7	2.1	100
22-Jul	1.3	29.7	28.2	11.9	3.3	2.0	3.7	6.3	6.6	3.6	1.8	1.8	100
23-Jul	2.0	29.5	24.5	11.5	3.4	1.7	4.1	7.0	7.5	4.8	2.2	1.7	100
24-Jul	4.5	37.9	19.4	10.1	2.8	2.1	3.7	4.0	5.5	4.7	2.7	2.6	100
25-Jul	2.3	33.5	30.0	15.3	3.9	1.7	2.3	1.9	3.3	2.7	1.6	1.4	100
26-Jul	6.1	39.4	30.2	9.7	2.6	1.0	1.3	1.4	2.4	2.8	1.6	1.6	100
27-Jul	4.0	30.6	26.7	11.2	3.4	2.0	2.2	3.5	5.1	4.8	3.3	3.1	100
28-Jul	2.5	29.1	30.1	13.6	4.8	2.8	2.1	2.2	3.8	3.6	3.2	2.3	100
29-Jul	3.5	30.9	31.8	14.4	3.9	2.4	1.7	1.6	2.9	3.2	2.1	1.6	100
30-Jul	3.5	32.5	37.2	12.7	3.6	1.4	1.2	1.0	1.8	2.0	1.9	1.2	100
31-Jul	5.5	37.6	26.5	8.6	2.9	1.6	1.8	1.8	4.0	3.6	4.1	2.0	100
1-Aug	5.3	30.1	27.3	11.9	5.8	2.1	2.4	3.1	3.2	3.8	2.7	2.3	100
2-Aug	3.1	27.2	32.7	12.9	4.5	2.2	3.6	4.4	3.4	3.5	1.4	1.1	100
3-Aug	2.8	28.6	32.2	11.5	3.8	1.7	3.6	5.2	4.6	3.3	1.5	1.3	100
4-Aug	2.1	22.8	32.5	13.0	5.0	2.0	4.2	4.9	4.6	4.7	2.5	1.8	100
5-Aug	1.5	16.9	33.6	18.5	4.7	2.0	4.1	5.7	4.6	3.8	2.3	2.3	100
6-Aug	7.7	32.8	27.4	8.4	2.7	2.2	4.3	3.9	3.4	3.3	1.9	2.2	100
7-Aug	4.0	29.9	28.2	9.9	4.2	3.8	4.8	4.3	3.2	3.6	1.5	2.6	100
8-Aug	2.3	18.2	25.4	16.0	5.5	6.0	7.4	6.4	3.7	4.2	2.4	2.6	100
9-Aug	2.6	12.7	27.0	17.0	7.1	6.4	7.0	5.7	6.3	4.3	3.0	1.1	100
10-Aug	2.6	13.4	13.1	7.7	2.7	47.5	3.7	2.8	2.0	2.2	1.1	1.2	100
11-Aug	6.7	25.9	18.4	6.7	1.6	0.4	3.9	18.4	9.0	3.5	0.8	4.7	100
12-Aug	13.3	45.4	23.8	6.2	6.2	0.2	0.0	0.2	2.9	1.0	0.2	0.7	100
Mean	3.8	28.5	29.6	11.7	3.8	3.5	3.2	4.1	4.4	3.5	2.1	1.9	

Appendix D10.–Proportion of Yentna River south bank sonar counts by sector, 2006.

	Counts by Sector												
Date	1	2	3	4	5	6	7	8	9	10	11	12	Total
7-Jul	12.4	11.2	19.1	13.9	11.4	12.4	7.3	5.9	2.9	2.7	0.9	0.0	100
8-Jul	6.8	8.5	20.6	15.5	8.2	11.3	10.4	7.9	3.9	1.4	3.7	2.0	100
9-Jul	12.6	1.5	15.8	23.8	13.3	12.4	8.4	5.6	2.4	1.3	2.1	0.9	100
10-Jul	6.5	0.8	15.3	27.5	9.0	12.0	12.0	5.5	6.1	3.6	1.1	0.6	100
11-Jul	4.6	0.4	15.1	24.2	11.3	15.0	12.2	7.6	4.0	3.2	0.6	1.7	100
12-Jul	1.8	1.2	11.5	21.4	11.6	15.3	14.1	8.2	6.5	3.2	1.8	3.4	100
13-Jul	4.4	8.8	19.3	15.5	14.9	17.3	11.2	4.4	1.2	2.0	0.8	0.2	100
14-Jul	5.1	7.4	24.3	11.5	13.8	14.5	9.0	6.0	5.1	2.1	0.9	0.0	100
15-Jul	2.4	7.6	18.1	13.5	17.3	18.5	8.2	7.7	3.1	2.7	0.8	0.1	100
16-Jul	1.0	10.3	25.0	13.5	16.4	16.4	8.6	4.0	2.6	1.6	0.6	0.0	100
17-Jul	0.9	12.6	25.9	15.4	14.4	16.2	6.8	3.9	2.0	1.2	0.6	0.1	100
18-Jul	1.1	9.7	26.1	16.5	16.9	16.6	6.7	3.2	1.7	1.0	0.3	0.2	100
19-Jul	4.6	19.1	21.9	19.4	16.8	11.3	3.7	1.5	0.8	0.4	0.2	0.3	100
20-Jul	5.2	18.6	16.7	20.8	20.5	10.5	3.6	1.5	0.8	0.7	0.3	0.9	100
21-Jul	0.2	0.6	14.2	31.1	30.3	15.4	4.3	1.5	0.6	0.9	0.7	0.3	100
22-Jul	0.1	0.5	14.9	33.9	29.1	13.3	4.2	1.7	0.8	0.6	0.4	0.3	100
23-Jul	0.0	0.2	12.0	32.4	31.7	13.5	5.5	2.2	0.8	0.6	0.4	0.6	100
24-Jul	0.1	0.4	13.3	34.6	29.3	12.7	4.4	2.0	0.9	0.6	0.6	1.2	100
25-Jul	0.5	1.7	16.7	31.6	28.2	12.4	4.5	2.0	0.8	0.5	0.5	0.5	100
26-Jul	0.7	14.9	27.9	18.0	18.7	12.1	3.8	1.9	0.9	0.4	0.2	0.4	100
27-Jul	0.3	8.8	24.6	23.8	22.5	12.5	4.5	1.9	0.7	0.3	0.1	0.1	100
28-Jul	0.3	9.4	26.5	24.5	20.6	11.0	4.3	2.0	0.8	0.3	0.2	0.2	100
29-Jul	0.2	11.5	29.8	23.6	18.8	9.6	3.7	1.6	0.6	0.3	0.2	0.1	100
30-Jul	0.3	7.9	26.7	25.6	21.4	11.7	3.6	1.4	0.7	0.3	0.2	0.1	100
31-Jul	0.1	7.9	22.0	25.2	22.8	12.8	4.9	2.2	0.9	0.5	0.3	0.3	100
1-Aug	0.8	5.9	18.2	28.3	22.2	13.9	5.1	2.5	1.2	0.7	0.4	0.7	100
2-Aug	0.3	0.8	16.2	36.1	21.6	14.8	4.5	2.4	1.3	0.7	0.4	1.1	100
3-Aug	0.3	0.7	14.6	37.0	22.1	15.3	4.9	2.2	1.4	0.8	0.4	0.4	100
4-Aug	0.4	0.6	11.5	35.7	23.0	17.5	5.2	2.3	2.0	0.9	0.4	0.6	100
5-Aug	0.5	0.6	10.4	33.3	23.5	18.1	5.9	3.5	2.0	1.0	0.4	0.7	100
6-Aug	0.6	0.6	12.0	33.0	23.8	16.9	6.1	2.7	1.6	1.3	0.6	0.8	100
7-Aug	1.6	2.4	16.8	33.5	21.3	14.9	4.3	2.2	1.0	0.9	0.5	0.5	100
8-Aug	0.8	2.2	15.8	25.9	23.9	16.7	6.6	3.1	1.8	1.7	0.7	0.8	100
9-Aug	0.8	1.0	12.7	23.5	24.2	19.8	8.5	3.3	1.6	2.4	1.5	0.7	100
10-Aug	1.4	0.4	4.9	18.9	28.3	23.1	9.5	5.5	2.9	2.3	1.7	1.0	100
11-Aug	4.5	2.6	11.7	15.6	28.7	16.7	9.1	5.8	3.2	1.0	0.9	0.2	100
12-Aug	11.5	18.8	29.4	13.5	9.1	5.3	4.6	3.8	1.5	0.4	0.5	1.5	100
Mean	2.6	5.9	18.3	24.1	20.0	14.3	6.6	3.6	2.0	1.3	0.7	0.6	

Appendix D11.–Minimum and maximum daily counting ranges for both banks of the Yentna River, 2006.

	North Bank				South Bank			
Date	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where >80% of Migration Occurred	Counting Range (All Sectors) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where > 80% of Migration Occurred
7-Jul	29	8.8	3.7	1-5	25	7.6	3.8	1-6
8-Jul	29	8.8	2.9	1-4	29	8.8	5.2	1-7
8-Jul	35.5	10.8	3.6	1-4				
9-Jul	32	9.8	4.9	1-6	29	8.8	5.2	1-7
10-Jul	29	8.8	2.9	1-4	29	8.8	5.2	1-7
11-Jul	29	8.8	2.2	1-3	29	8.8	5.2	1-7
11-Jul	30	9.1	2.3	1-3				
12-Jul	29	8.8	3.7	1-5	29	8.8	5.9	1-8
12-Jul					26	7.9	5.3	1-8
13-Jul	29	8.8	5.9	1-8	26	7.9	4.0	1-6
14-Jul	28	8.5	5.7	1-8	26	7.9	4.6	1-7
14-Jul	29.5	9.0	6.0	1-8				
15-Jul	29.5	9.0	5.2	1-7	26	7.9	4.6	1-7
16-Jul	29.5	9.0	4.5	1-6	26	7.9	4.0	1-6
16-Jul	29	8.8	4.4	1-6				
17-Jul	29	8.8	3.7	1-5	26	7.9	4.0	1-6
18-Jul	29	8.8	3.7	1-5	26	7.9	4.0	1-6
19-Jul	29	8.8	5.2	1-7	26	7.9	3.3	1-5
19-Jul	26	7.9	4.6	1-7	25	7.6	3.2	1-5
20-Jul	26	7.9	5.3	1-8	25	7.6	3.2	1-5
20-Jul					23	7.0	2.9	1-5
21-Jul	26	7.9	5.3	1-8	23	7.0	3.5	1-6
22-Jul	26	7.9	4.6	1-7	23	7.0	3.5	1-6
23-Jul	26	7.9	5.3	1-8	23	7.0	3.5	1-6
23-Jul	29	8.8	5.9	1-8				
24-Jul	29	8.8	5.2	1-7	23	7.0	3.5	1-6
24-Jul	25.5	7.8	4.5	1-7				
25-Jul	26	7.9	2.6	1-4	23	7.0	3.5	1-6
25-Jul					25	7.6	3.8	1-6
26-Jul	26	7.9	2.6	1-4	25	7.6	3.2	1-5
26-Jul	28	8.5	2.8	1-4				
27-Jul	28	8.5	5.0	1-7	25	7.6	3.2	1-5
27-Jul	25	7.6	4.4	1-7	23.5	7.2	3.0	1-5
28-Jul	25	7.6	3.2	1-5	23.5	7.2	3.0	1-5
28-Jul	24.5	7.5	3.1	1-5				
29-Jul	24.5	7.5	2.5	1-4	23.5	7.2	3.0	1-5
29-Jul	25	7.6	2.5	1-4				
30-Jul	25	7.6	2.5	1-4	23.5	7.2	3.0	1-5
31-Jul	25	7.6	3.2	1-5	23.5	7.2	3.6	1-6
1-Aug	23.5	7.2	3.0	1-5	23.5	7.2	3.6	1-6
1-Aug	22.5	6.9	2.9	1-5	22	6.7	3.4	1-6
2-Aug	22.5	6.9	2.9	1-5	22	6.7	3.4	1-6

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Appendix D11.–Page 2 of 2.

	North Bank				South Bank			
Date	Counting Range (Sectors 1-12) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where >80% of Migration Occurred	Counting Range (All Sectors) (ft)	(m)	Range where > 80% of Migration Occurred (m)	Sectors where > 80% of Migration Occurred
3-Aug	22.5	6.9	3.4	1-6	22.5	6.9	3.4	1-6
3-Aug	24	7.3	3.7	1-6	22	6.7	3.4	1-6
4-Aug	24	7.3	4.3	1-7	22	6.7	3.4	1-6
5-Aug	24	7.3	4.3	1-7	22	6.7	3.4	1-6
6-Aug	24	7.3	3.7	1-6	22	6.7	3.4	1-6
7-Aug	24	7.3	3.7	1-6	22	6.7	3.4	1-6
7-Aug	25	7.6	3.8	1-6	17	5.2	2.6	1-6
8-Aug	25	7.6	4.4	1-7	18.5	5.6	2.8	1-6
8-Aug	24.5	7.5	4.4	1-7				
9-Aug	24.5	7.5	5.0	1-8	18	5.5	2.7	1-6
10-Aug	24.5	7.5	3.7	1-6	18	5.5	3.2	1-7
10-Aug	27	8.2	4.1	1-6				
11-Aug	23	7.0	4.7	1-8	18	5.5	3.2	1-7
11-Aug	28	8.5	5.7	1-8				
12-Aug	28	8.5	2.1	1-3	28	8.5	4.3	1-6
12-Aug	25	7.6	1.9	1-3	28	8.5	4.3	1-6
	Average	8.1	3.9		Average	7.3	3.7	
	Min	6.9	1.9		Min	5.2	2.6	
	Max	10.8	6.0		Max	8.8	5.9	
	Std. Dev.	0.8	1.1		Std.Dev.	0.9	0.8	