Appendix II. Distributions of the sample catch (N) for chinook salmon from Emmonak, Alaska, by year, month, GSI period, and commercial opening. GSI period reflects the pattern of sample pooling that was used in data analyses.

Year	N	Month	N	GSI Period	N	Commercial Opening	N
1987	768	JUN	561	1	186		
				2	225	1	150
		JUL	207	3	225	2	120
						3	180
				4	132	4	122
						5	10
		Totals	768		768		582
1988	891	JUN	603	1	215	1	118
				2	140	2	66
						4	74
				3	232	5	76
						6	75
						7	61
		JUL	288	4	205	8	89
						9	54
						10	32
				5	99	11	52
						12	42
		Totals	891		891		739
1989	995	JUN	814	1	245	1	193
				2	409	2	409
				3	160	3	160
		JUL	181	4	181	4	155
						5	26
		Totals	995		995		943
1990	939	JUN	730	1	250	1	156
				2	250	2	100
						3	150
				3	230	4	150
		JUL	209	4	209	5	150
		Totals	939		939		706

Appendix III. Chum salmon sample collection summary for the mixed-stock fishery sample-catch from the Yukon River at Emmonak. Big Eddy and Middle Mouth catches were from test fisheries operated by Alaska Department of Fish and Game.

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
1987	1	1	16-Jun	Commercial	Commercial	8.5	75
	1	1	19-Jun	Commercial	Commercial	8.5	85
	2	2	23-Jun	Commercial	Commercial	8.5	65
	2	2	26-Jun	Commercial	Commercial	8.5	75
	3	3	30-Jun	Commercial	Commercial	5.5	75
	3	3	03-Jul	Commercial	Commercial	5.5	75
	4	4	06-Jul	Big Eddy	Set Net	5.5	32
	4	4	07-Jul	Big Eddy	Set Net	5.5	38
	4	4	08-Jul	Big Eddy	Set Net	5.5	31
	4	4	09-Jul	Big Eddy	Set Net	5.5	10
	4	4	10-Jul	Big Eddy	Set Net	5.5	25
	4	4	11-Jul	Big Eddy	Set Net	5.5	17
	5	5	13-Jul	Big Eddy	Set Net	5.5	25
	5	5	14-Jul	Big Eddy	Set Net	5.5	16
	5	5	15-Jul	Big Eddy	Set Net	5.5	13
	5	5	16-Jul	Big Eddy	Set Net	6.0	3
	5	5	17-Jul	Big Eddy	Set Net	6.0	10
	5	5	18-Jul	Big Eddy	Set Net	6.0	5
	5	5	19-Jul	Big Eddy	Set Net	6.0	11
	5	.	20-Jul	Big Eddy	Set Net	6.0	4
	6	6	21-Jul	Big Eddy	Set Net	6.0	8
	6	6	22-Jul	Big Eddy	Set Net	6.0	3
	6	6	22-Jul	Middle Mouth	Set Net	6.0	20
	6	6	23-Jul	Big Eddy	Set Net	6.0	20
	6	6	23-Jul	Middle Mouth	Set Net	6.0	30
	6	6	24-Jul	Big Eddy	Set Net	6.0	21
	6	6	24-Jul	Middle Mouth	Set Net	6.0	30
	6	6	25-Jul	Big Eddy	Set Net	6.0	9

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
	6	6	26-Jul	Big Eddy	Set Net	6.0	9
	6	6	26-Jul	Middle Mouth	Set Net	6.0	10
	7	7	06-Aug	Middle Mouth	Set Net	6.0	1
	7	7	07-Aug	Big Eddy	Set Net	6.0	3
	7	7	08-Aug	Big Eddy	Set Net	6.0	23
	7	7	08-Aug	Middle Mouth	Set Net	6.0	73
	7	7	09-Aug	Big Eddy	Set Net	6.0	23
	7	7	10-Aug	Big Eddy	Set Net	6.0	3
	8	8	12-Aug	Big Eddy	Set Net	6.0	7
	8	8	12-Aug	Middle Mouth	Set Net	6.0	6
	8	8	13-Aug	Big Eddy	Set Net	6.0	46
	8	8	14-Aug	Big Eddy	Set Net	6.0	9
	8	8	15-Aug	Big Eddy	Set Net	6.0	18
	8	8	16-Aug	Big Eddy	Set Net	6.0	57
	8	8	16-Aug	Middle Mouth	Set Net	6.0	8
	8	8	17-Aug	Big Eddy	Set Net	6.0	19
	9	9	20-Aug	Big Eddy	Set Net	6.0	12
	9	9	22-Aug	Big Eddy	Set Net	6.0	19
	9	9	23-Aug	Big Eddy	Set Net	6.0	77
	9	9	24-Aug	Big Eddy	Set Net	6.0	12
	9	9	25-Aug	Big Eddy	Set Net	6.0	1
	9	9	26-Aug	Big Eddy	Set Net	6.0	21
	9	9	26-Aug	Middle Mouth	Set Net	6.0	7
1988	1	.	05-Jun	Big Eddy	Set Net	5.5	25
	1	.	06-Jun	Big Eddy	Set Net	5.5	19
	1	.	07-Jun	Test Fishery	Drift Net	.	13
	1	.	07-Jun	Big Eddy	Set Net	5.5	47
	1	.	08-Jun	Big Eddy	Set Net	5.5	28
	1	1	09-Jun	Big Eddy	Set Net	5.5	17
	1	1	10-Jun	Commercial	Commercial	6.0	75
	2	2	14-Jun	Commercial	Commercial	8.5	67

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
	2	3	15-Jun	Commercial	Commercial	6.0	75
	2	4	17-Jun	Commercial	Commercial	8.5	75
	3	5	21-Jun	Commercial	Commercial	8.5	73
	3	6	24-Jun	Commercial	Commercial	6.0	75
	3	7	28-Jun	Commercial	Commercial	6.0	75
	4	8	01-Jul	Commercial	Commercial	6.0	75
	4	9	05-Jul	Commercial	Commercial	6.0	75
	4	10	08-Jul	Commercial	Commercial	6.0	74
	5	.	10-Jul	Test Fishery	Set Net	.	4
	5	.	10-Jul	Big Eddy	Set Net	5.5	10
	5	11	11-Jul	Big Eddy	Set Net	5.5	10
	5	11	12-Jul	Commercial	Commercial	6.0	51
	5	.	13-Jul	Big Eddy	Set Net	5.5	17
	5	12	14-Jul	Big Eddy	Set Net	5.5	12
	5	12	15-Jul	Commercial	Commercial	6.0	62
	6	.	17-Jul	Big Eddy	Set Net	6.0	23
	6	.	18-Jul	Big Eddy	Set Net	6.0	16
	6	.	19-Jul	Big Eddy	Set Net	6.0	13
	6	.	20-Jul	Big Eddy	Set Net	6.0	13
	6	.	21-Jul	Big Eddy	Set Net	6.0	8
	6	.	22-Jul	Big Eddy	Set Net	6.0	8
	6	.	23-Jul	Big Eddy	Set Net	6.0	9
	6	.	24-Jul	Big Eddy	Set Net	6.0	13
	6	.	25-Jul	Big Eddy	Set Net	6.0	30
	6	.	26-Jul	Big Eddy	Set Net	6.0	30
	7	.	27-Jul	Big Eddy	Set Net	6.0	23
	7	.	28-Jul	Big Eddy	Set Net	6.0	6
	7	.	29-Jul	Big Eddy	Set Net	6.0	1
	7	.	30-Jul	Big Eddy	Set Net	6.0	9
	7	.	31-Jul	Big Eddy	Set Net	6.0	22
	7	.	01-Aug	Big Eddy	Set Net	6.0	12

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
	7	.	02-Aug	Big Eddy	Set Net	6.0	2
	7	.	03-Aug	Big Eddy	.	6.0	1
	7	.	04-Aug	Middle Mouth	Set Net	6.0	19
	7	.	05-Aug	Big Eddy	.	6.0	25
	7	.	05-Aug	Middle Mouth	Set Net	6.0	8
	7	.	06-Aug	Big Eddy	.	6.0	12
	8	13	08-Aug	Big Eddy	Set Net	6.0	30
	8	13	09-Aug	Commercial	Commercial	6.0	149
	8	.	10-Aug	Big Eddy	Set Net	6.0	3
	8	.	11-Aug	Big Eddy	Set Net	6.0	15
	8	.	13-Aug	Big Eddy	Set Net	6.0	13
	8	.	15-Aug	Test Fishery	Set Net	.	12
	8	.	15-Aug	Big Eddy	Set Net	6.0	13
	8	.	16-Aug	Test Fishery	Set Net	.	4
	9	15	23-Aug	Commercial	Commercial	6.0	128
	9	16	26-Aug	Commercial	Commercial	6.0	171
	9	17	30-Aug	Commercial	Commercial	6.0	121
1989	1	.	12-Jun	Big Eddy	Set Net	5.5	49
	1	1	13-Jun	Big Eddy	Set Net	5.5	26
	1	1	14-Jun	Commercial	Commercial	5.5	75
	1	1	16-Jun	Commercial	Commercial	8.5	75
	2	2	20-Jun	Commercial	Commercial	8.5	80
	2	2	23-Jun	Commercial	Commercial	8.5	75
	2	2	25-Jun	Commercial	Commercial	5.5	80
	3	3	27-Jun	Commercial	Commercial	5.5	80
	3	3	30-Jun	Commercial	Commercial	5.5	80
	4	4	04-Jul	Commercial	Commercial	5.5	80
	4	4	07-Jul	Commercial	Commercial	5.5	78
	5	5	11-Jul	Commercial	Commercial	5.5	80
	5	5	14-Jul	Commercial	Commercial	5.5	79

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
	5	5	16-Jul	Big Eddy	Set Net	6.0	79
	6	6	19-Jul	Middle Mouth	Set Net	6.0	40
	6	6	20-Jul	Middle Mouth	Set Net	6.0	40
	6	6	23-Jul	Big Eddy	Set Net	6.0	11
	6	6	24-Jul	Big Eddy	Set Net	6.0	2
	6	6	28-Jul	Big Eddy	.	6.0	37
	6	6	28-Jul	Commercial	Commercial	6.0	40
	7	7	01-Aug	Commercial	Commercial	6.0	35
	7	7	04-Aug	Commercial	Commercial	6.0	80
	8	8	08-Aug	Commercial	Commercial	6.0	75
	8	8	11-Aug	Commercial	Commercial	6.0	80
	9	9	15-Aug	Commercial	Commercial	6.0	79
	9	9	19-Aug	Middle Mouth	Set Net	6.0	75
	9	9	22-Aug	Commercial	Commercial	6.0	73
1990	1	.	06-Jun	Big Eddy	Set Net	5.5	8
	1	.	07-Jun	Big Eddy	Set Net	5.5	13
	1	.	08-Jun	Big Eddy	Set Net	5.5	11
	1	.	09-Jun	Big Eddy	Set Net	5.5	17
	1	.	10-Jun	Big Eddy	Set Net	5.5	30
	1	.	11-Jun	Big Eddy	Set Net	5.5	21
	1	.	12-Jun	Big Eddy	Set Net	5.5	23
	1	.	13-Jun	Big Eddy	Set Net	5.5	27
	2	1	15-Jun	Commercial	Commercial	8.5	150
	2	2	19-Jun	Commercial	Commercial	5.5	80
	3	3	22-Jun	Commercial	Commercial	8.5	70
	3	.	25-Jun	Big Eddy	Set Net	5.5	20
	3	.	26-Jun	Big Eddy	Set Net	5.5	47
	3	.	27-Jun	Big Eddy	Set Net	5.5	12
	3	4	29-Jun	Commercial	Commercial	8.5	77
	4	5	03-Jul	Commercial	Commercial	8.5	38

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
	4	.	06-Jul	Middle Mouth	Set Net	5.5	15
	4	.	08-Jul	Big Eddy	Set Net	5.5	27
	4	.	09-Jul	Big Eddy	Drift Net	5.5	20
	4	.	09-Jul	Middle Mouth	Set Net	5.5	22
	4	.	10-Jul	Big Eddy	Set Net	5.5	43
	4	.	11-Jul	Big Eddy	Set Net	5.5	20
	5	.	14-Jul	Big Eddy	Set Net	5.5	20
	5	.	15-Jul	Big Eddy	Set Net	5.5	30
	5	.	16-Jul	Big Eddy	Set Net	6.0	15
	5	.	16-Jul	Middle Mouth	Set Net	6.0	20
	5	.	17-Jul	Big Eddy	Set Net	6.0	30
	5	.	19-Jul	Big Eddy	Set Net	6.0	30
	5	.	20-Jul	Big Eddy	Set Net	6.0	30
	5	.	20-Jul	Middle Mouth	Set Net	6.0	30
	6	6	24-Jul	Commercial	Commercial	6.0	30
	6	7	27-Jul	Commercial	Commercial	6.0	40
	6	.	29-Jul	Middle Mouth	Set Net	6.0	14
	6	8	31-Jul	Commercial	Commercial	6.0	55
	7	9	03-Aug	Commercial	Commercial	6.0	80
	7	10	07-Aug	Commercial	Commercial	6.0	40
	7	.	08-Aug	Commercial	Commercial	6.0	72
	8	.	11-Aug	Middle Mouth	Set Net	6.0	15
	8	.	12-Aug	Middle Mouth	Set Net	6.0	1
	8	.	13-Aug	Big Eddy	Set Net	6.0	44
	8	.	14-Aug	Big Eddy	Set Net	6.0	20
	8	.	15-Aug	Big Eddy	Set Net	6.0	20
	8	.	18-Aug	Big Eddy	Set Net	6.0	30
	9	11	20-Aug	Commercial	Commercial	6.0	80
	9	.	21-Aug	Big Eddy	Set Net	6.0	8
	9	.	23-Aug	Big Eddy	Set Net	6.0	10
	9	.	23-Aug	Middle Mouth	Set Net	6.0	40

Appendix IV. Chinook salmon collection summary for the mixed-stock fishery sample-catch from the Yukon River at Emmonak. Big Eddy and Middle Mouth catches were from test fisheries operated by Alaska Department of Fish and Game.

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
1987	1	.	05-Jun	Big Eddy	Drift	5.5	2
	1	.	05-Jun	Subsistence	Set	8.5	5
	1	.	06-Jun	Big Eddy	Set	8.5	6
	1	.	06-Jun	Subsistence	Set	8.5	11
	1	.	07-Jun	Big Eddy	Set	8.5	14
	1	.	07-Jun	Subsistence	Set	8.5	40
	1	.	08-Jun	Big Eddy	Set	8.5	1
	1	.	08-Jun	Subsistence	Set	8.5	7
	1	.	09-Jun	Big Eddy	Set	8.5	9
	1	.	09-Jun	Subsistence	Set	8.5	36
	1	.	10-Jun	Big Eddy	Set	8.5	10
	1	.	10-Jun	Subsistence	Set	8.5	10
	1	.	11-Jun	Big Eddy	Set	8.5	3
	1	.	11-Jun	Subsistence	Set	8.5	17
	1	.	12-Jun	Big Eddy	Drift	8.5	10
	1	.	13-Jun	Big Eddy	Drift	8.5	5
	2	1	16-Jun	Commercial	Commercial	8.5	75
	2	1	19-Jun	Commercial	Commercial	8.5	75
	2	2	23-Jun	Commercial	Commercial	8.5	75
	3	2	26-Jun	Commercial	Commercial	8.5	45
	3	3	30-Jun	Commercial	Commercial	5.5	105
	3	3	03-Jul	Commercial	Commercial	5.5	75
	4	4	06-Jul	Big Eddy	Set	8.5	48
	4	4	07-Jul	Big Eddy	Set	8.5	18
	4	4	08-Jul	Big Eddy	Set	8.5	30
	4	4	09-Jul	Big Eddy	Set	8.5	8
	4	4	10-Jul	Big Eddy	Set	8.5	8
	4	4	11-Jul	Big Eddy	Set	8.5	10
	4	5	13-Jul	Big Eddy	Set	8.5	4
	4	5	14-Jul	Big Eddy	Set	8.5	1
	4	5	15-Jul	Big Eddy	Set	8.5	5
1988	1	.	05-Jun	.	.	.	4
	1	.	05-Jun	Big Eddy	Set	5.5	6

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
	1	.	06-Jun	Big Eddy	Set	8.5	8
	1	.	07-Jun	Big Eddy	Set	8.5	40
	1	.	08-Jun	Big Eddy	Set	8.5	39
	1	1	09-Jun	Big Eddy	Set	8.5	43
	1	1	10-Jun	Commercial	Commercial	6.0	75
	2	2	14-Jun	.	.	.	1
	2	2	14-Jun	Big Eddy	Set	8.5	10
	2	2	14-Jun	Commercial	Commercial	8.5	55
	2	4	17-Jun	Commercial	Commercial	8.5	74
	3	5	21-Jun	Commercial	Commercial	8.5	76
	3	6	24-Jun	Commercial	Commercial	6.0	75
	3	7	28-Jun	Commercial	Commercial	6.0	61
	3	.	29-Jun	Big Eddy	Set	8.5	20
	4	8	30-Jun	Big Eddy	Set	8.5	16
	4	8	01-Jul	Commercial	Commercial	6.0	73
	4	.	03-Jul	Big Eddy	Set	8.5	24
	4	9	04-Jul	Big Eddy	Set	8.5	3
	4	9	05-Jul	Commercial	Commercial	6.0	51
	4	.	06-Jul	Big Eddy	Set	8.5	4
	4	.	07-Jul	Big Eddy	Set	8.5	2
	4	10	08-Jul	Commercial	Commercial	6.0	32
	5	11	11-Jul	Big Eddy	Set	8.5	2
	5	11	12-Jul	.	.	.	10
	5	11	12-Jul	Commercial	Commercial	6.0	40
	5	.	13-Jul	Big Eddy	Set	8.5	5
	5	12	14-Jul	Big Eddy	Set	8.5	6
	5	12	15-Jul	Commercial	Commercial	6.0	36
1989	1	.	10-Jun	Big Eddy	Set	8.5	26
	1	.	11-Jun	Big Eddy	Set	8.5	14
	1	.	12-Jun	Big Eddy	Set	8.5	12
	1	1	13-Jun	Big Eddy	Set	8.5	12
	1	1	14-Jun	Commercial	Commercial	6.0	6
	1	1	16-Jun	Commercial	Commercial	8.5	175
	2	2	20-Jun	Commercial	Commercial	8.5	170
	2	2	23-Jun	Commercial	Commercial	8.5	149
	2	2	25-Jun	Commercial	Commercial	5.5	90

Year	GSI Period	Commercial Opening	Date	Location	Gear	Mesh (inches)	N
	3	3	27-Jun	Commercial	Commercial	5.5	80
	3	3	30-Jun	Commercial	Commercial	5.5	80
	4	4	04-Jul	Commercial	Commercial	5.5	55
	4	4	05-Jul	Big Eddy	Set	8.5	20
	4	4	07-Jul	Commercial	Commercial	5.5	80
	4	5	11-Jul	Commercial	Commercial	5.5	10
	4	5	12-Jul	Middle Mouth	Set	5.5	6
	4	5	14-Jul	Commercial	Commercial	5.5	10
1990	1	.	07-Jun	Big Eddy	Set	8.5	6
	1	.	08-Jun	Big Eddy	Set	8.5	12
	1	.	09-Jun	Big Eddy	Set	8.5	21
	1	.	10-Jun	Big Eddy	Set	8.5	8
	1	.	11-Jun	Big Eddy	Set	8.5	17
	1	.	12-Jun	Big Eddy	Set	8.5	5
	1	.	13-Jun	Big Eddy	Set	8.5	25
	1	1	14-Jun	Big Eddy	Set	8.5	6
	1	1	15-Jun	Commercial	Commercial	8.5	150
	2	2	19-Jun	Commercial	Commercial	5.5	100
	2	3	22-Jun	Commercial	Commercial	8.5	150
	3	.	25-Jun	Big Eddy	Set	5.5	2
	3	.	26-Jun	Big Eddy	Set	8.5	40
	3	.	27-Jun	Big Eddy	Set	8.5	38
	3	4	29-Jun	Commercial	Commercial	8.5	150
	4	5	02-Jul	.	.	.	6
	4	5	02-Jul	Commercial	Commercial	8.5	144
	4	.	08-Jul	Big Eddy	Set	8.5	9
	4	.	09-Jul	Big Eddy	Set	8.5	6
	4	.	09-Jul	Middle Mouth	Set	8.5	4
	4	.	10-Jul	Big Eddy	Set	8.5	8
	4	.	11-Jul	Big Eddy	Set	8.5	4
	4	.	12-Jul	Big Eddy	Set	8.5	3
	4	.	13-Jul	Big Eddy	Set	8.5	13
	4	.	14-Jul	Big Eddy	Set	8.5	10
	4	.	15-Jul	Big Eddy	Set	8.5	2

Appendix V. Enzymes assayed for chum salmon loci showing buffer and tissue combinations used (H=heart; M=muscle; L=liver; E=eye). Nomenclature generally follows recommendations of IUBNC (1984) and Shaklee et al. (1990a). See Appendix XXV for buffer definitions.

Enzyme Name	Enzyme Number	Locus	Buffer	Tissue
Polymorphic Loci Used In Analyses				
Aspartate aminotransferase	2.6.1.1	*mAAT-1*	CAM 6.05	H
			CAME 7.0	H
			CAME 7.0	M
		sAAT-1,2	CAME 7.0	H
			CAME 7.0	M
			KG	M
Alanine aminotransferase	2.6.1.2	*ALAT*	EBT	H
			EBT	M
			CAME 7.0	M
Esterase-D	3.1.*.*	*ESTD*	KG	H
			EBT	M
N-Acetyl-beta-glucosaminidase	3.2.1.30	*bGLUA*	CAME7.0	L
Glycerol-3-phosphate dehydrogenase	1.1.1.8	*G3PDH-2*	CAM 6.05	H
(NAD+)			KG	H
			CAME 7.0	M
Isocitrate dehydrogenase (NADP+)	1.1.1.42	*mIDHP-1*	CAME 7.0	H
			CAME 7.0	M
		sIDHP-2	CAME 7.0	L
Lactate dehydrogenase	1.1.1.27	*LDH-A1*	KG	M
Malate dehydrogenase	1.1.1.37	*sMDH-A1*	CAM 6.3	E
			CAM 6.05	H
			CAM 6.05	L
		sMDH-A2	CAM 6.3	E
			CAM 6.05	H
			CAM 6.05	L
		sMDH-B1,2	CAM 6.3	E
			KG	H
			CAM 6.05	H

Enzyme Name	Enzyme Number	Locus	Buffer	Tissue
			KG	M
Malate dehydrogenase (oxaloacetate-decarboxylating)(NADP+)	1.1.1.40	*mMEP-2*	CAME7.0	H
			CAME7.0	M
			KG	M
Mannose-6-phosphate isomerase	5.3.1.8	*MPI*	EBT	E
			KG	E
			EBT	H
			CAME 7.0	H
			CAME 6.8	L
Tripeptide aminopeptidase	3.4.*.*	*PEPB-1*	EBT	H
			CAM 6.05	H
			KG	H
			CAM 6.05	L
			EBT	M
		PEPB-2	EBT	H
			KG	H
			EBT	M
Leucyl-tyrocine peptidase	3.4.*.*	*PEP-LT*	CAM 6.8	L
			CAM 6.05	L
			KG	M
			CAME 7.0	M
Phosphogluconate dehydrogenase (decarboxylating)	1.1.1.44	*PGDH*	CAME 7.0	H
			CAME 7.0	L
			CAME 7.0	M
Triose-phosphate isomerase	5.3.1.1	*TPI-1*	KG	E
			EBT	H
			KG	M
Polymorphic Loci Not Used In Analyses				
Aspartate aminotransferase	2.6.1.1	*sAAT-3*	KG	E
Aconitate hydratase	4.2.1.3	*mAH-3*	CAME 7.0	H
Creatine kinase	2.7.3.2	*CK-A1*	EBT	M
		CK-C2	EBT	E

Enzyme Name	Enzyme Number	Locus	Buffer	Tissue
Formaldehyde dehydrogenase	1.2.1.1	*FGDH*	CAME 7.0	L
(glutathione)			CAM 6.8	L
beta-Galactosidase	3.2.1.23	*bGALA*	CAM 6.05	L
Guanine deaminase	3.5.4.3	*GDA*	CAM 6.8	L
Glucose-6-phosphate isomerase	5.3.1.9	*GPI-B1,2*	EBT	H
			EBT	M
Dipeptidase	3.4.*.*	*PEPA*	CAM 6.3	E
			CAM 6.05	H
			CAM 6.8	L
			CAM 6.05	L
Phosphoglucomutase	5.4.2.2	*PGM-1*	EBT	H
			CAM 6.8	L
		PGM-2	EBT	H
			CAM 6.8	L
			KG	M
		PGM-3,4	CAM 6.8	L
Triose-phosphate isomerase	5.3.1.1	*TPI-3*	KG	E
			EBT	H
			KG	M
		TPI-4	KG	E
			EBT	H
			KG	M
Monomorphic Loci Not Used In Analyses				
Aspartate aminotransferase	2.6.1.1	*sAAT-4*	CAM 6.05	L
Acid phosphatase	3.1.3.2	*ACP*	CAME 7.0	L
Adenosine deaminase	3.5.4.4	*ADA-1*	CAM 6.3	E
			CAME 7.0	H
			CAM 6.05	H
			CAM 6.05	L
		ADA-2	CAM 6.3	E
			CAM 6.05	H
			CAME 7.0	H

Enzyme Name	Enzyme Number	Locus	Buffer	Tissue
			CAM 6.05	L
Aconitate hydratase	4.2.1.3	*mAH-1,2*	CAME 7.0	H
		mAH-4	CAME 7.0	H
		sAH	CAM 6.8	L
Creatine kinase	2.7.3.2	*CK-A2*	EBT	M
		CK-B	EBT	E
		CK-C1	EBT	E
Diaphorase	1.6.*.*	*DIA*	KG	H
Fumarate hydratase	4.2.1.2	*FH*	CAME 7.0	L
Glyceraldehyde-3-phosphate	1.2.1.12	*GAPDH-4*	CAM 6.3	E
dehydrogenase		*GAPDH-5*	CAM 6.3	E
Glycerol-3-phosphate dehydrogenase	1.1.1.8	*G3PDH-1*	CAM 6.05	H
			KG	H
			CAME 7.0	M
		G3PDH-3	CAM 6.05	H
			KG	H
			CAME 7.0	M
		G3PDH-4	CAM 6.05	H
			KG	H
			CAME 7.0	M
Glucose-6-phosphate isomerase	5.3.1.9	*GPI-A*	EBT	E
			CAM 6.3	E
			EBT	H
			EBT	M
Glutathione reductase (NAD(P)H)	1.6.4.2	*GR*	KG	E
			KG	H
Hydroxyacylglutathione hydrolase	3.1.2.6	*HAGH*	KG	M
Isocitrate dehydrogenase (NADP+)	1.1.1.42	*mIDHP-2*	CAME 7.0	H
			CAME 7.0	M
		sIDHP-1	CAME 7.0	L
Lactate dehydrogenase	1.1.1.27	*LDH-A2*	KG	M
		LDH-B1	KG	E

Enzyme Name	Enzyme Number	Locus	Buffer	Tissue
			EBT	H
		LDH-B2	KG	E
			EBT	H
			CAME 7.0	L
		LDH-C	KG	E
alpha-Mannosidase	3.2.1.24	*aMAN*	CAM 6.05	L
Malate dehydrogenase	1.1.1.37	*mMDH-1*	CAM 6.3	E
			CAM 6.05	H
			CAM 6.05	L
Malate dehydrogenase(oxaloacetate decarboxylating(NADP+)	1.1.1.40	*sMEP-1*	CAME7.0	H
			CAME7.0	M
			KG	M
alpha-Naphthyl propionate esterase	3.1.*.*	*EST*	CAM 6.05	L
Proline dipeptidase	3.4.13.9	*PEPD*	CAM 6.05	H
Phosphoglycerate kinase	2.7.2.3	*PGK-1*	CAM 6.05	H
			CAME 7.0	L
		PGK-2	CAM 6.05	H
			CAME 7.0	L
Purine-nucleoside phosphorylase	2.4.2.1	*PNP*	CAM 6.3	E
Superoxide dismutase	1.15.1.1	*sSOD*	KG	M
Triose-phosphate isomerase	5.3.1.1	*TPI-2*	KG	E
			EBT	H
			KG	M
Xanthine dehydrogenase	1.2.3.2	*XDH*	KG	E

Appendix VI. Enzymes assayed for chinook salmon loci showing buffer and tissue combinations used (H=heart; M=muscle; L=liver; E=eye). Nomenclature generally follows recommendations of IUBNC (1984) and Shaklee et al. (1990a). See Appendix XXV for buffer definitions.

Enzyme name	Enzyme number	Locus	Buffer	Tissue
Polymorphic Loci Used In Analyses				
Aspartate aminotransferase	2.6.1.1	*sAAT-3*	KG	E
			CAME 7.0	E
		sAAT-4	EBT	L
			TC-4	L
Adenosine deaminase	3.5.4.4	*ADA-1*	KG	H
			KG	M
Aconitate hydratase	4.2.1.3	*sAH*	CAME 7.0	E
			TC-4	L
			CAME 7.0	M
Alanine aminotransferase	2.6.1.2	*ALAT*	KG	H
			KG	M
Dipeptidase	3.4.*.*	*PEPA*	CAME 7.0	E
			CAME 7.0	H
			CAME 7.0	M
Glucose-6-phosphate isomerase	5.3.1.9	*GPI-B1*	KG	M
L-Iditol dehydrogenase	1.1.1.14	*IDDH-1*	TC-4	H
			KG	H
			EBT	L
Isocitrate dehydrogenase (NADP+)	1.1.1.42	*sIDHP-3*	CAME 7.0	H
			TC-4	H
			CAME 7.0	M
		sIDHP-4	CAME 7.0	E
			TC-4	L
Lactate dehydrogenase	1.1.1.27	*LDH-4*	KG	E
			EBT	L
Malate dehydrogenase	1.1.1.40	*sMEP-1*	TC-4	H
(oxaloacetate-			TC-4	L

Enzyme name	Enzyme number	Locus	Buffer	Tissue
decarboxylating)(NADP+)			CAME 7.0	M
		sMEP-2	TC-4	H
			TC-4	L
			CAME 7.0	M
Malate dehydrogenase	1.1.1.37	*sMDH-B1,2*	CAME 7.0	H
			CAME 7.0	M
Mannose-6-phosphate isomerase	5.3.1.8	*MPI*	KG	H
			KG	M
Phosphoglucomutase	5.4.2.2	*PGM-1*	KG	E
			TC-4	H
			KG	M
Superoxide dismutase	1.15.1.1	*mSOD-1*	KG	H
			TC-4	H
			TC-4	L
			KG	M
		sSOD-1	KG	H
			TC-4	H
			TC-4	L
			KG	M
Tripeptide aminopeptidase	3.4.*.*	*PEPB-1*	CAME 7.0	E
			KG	E
			KG	H
			TC-4	H
			TC-4	L
			KG	M
Triose-phosphate isomerase	5.3.1.1	*TPI-1*	KG	H
			KG	M
		TPI-2	KG	H
			KG	M
		TPI-4	KG	H
			KG	M

Enzyme name	Enzyme number	Locus	Buffer	Tissue
Polymorphic Loci Not Used In Analyses				
Aspartate aminotransferase	2.6.1.1	*sAAT-1,2*	CAME 7.0	H
			CAME 7.0	M
Adenosine deaminase	3.5.4.4	*ADA-2*	KG	H
			KG	M
Creatine kinase	2.7.3.2	*CK-A2*	KG	M
Glucose-6-phosphate isomerase	5.3.1.9	*GPI-B2*	KG	M
		GPI	KG	M
L-Iditol dehydrogenase	1.1.1.14	*IDDH-2*	TC-4	H
			KG	H
			EBT	L
Isocitrate dehydrogenase (NADP+)	1.1.1.42	*sIDHP-2*	CAME 7.0	E
			CAME 7.0	H
			TC-4	H
Lactate dehydrogenase	1.1.1.27	*LDH-B1*	KG	E
			KG	H
		LDH-C	KG	E
			KG	E
Malate dehydrogenase	1.1.1.37	*sMDH-A1,2*	CAME 7.0	H
			TC-4	L
			CAME 7.0	M
Leucyl-tyrocine peptidase	3.4.*.*	*PEP-LT*	TC-4	H
			KG	M
			CAME 7.0	M
Phosphoglucomutase	5.4.2.2	*PGM-2*	KG	E
			TC-4	H
			TC-4	L
			KG	M
			KG	M
Phosphoglucomutase	5.4.2.2	*PGM-3,4*	TC-4	H
			TC-4	L

Enzyme name	Enzyme number	Locus	Buffer	Tissue
Monomorphic Loci Not Used in Analysis				
Aspartate aminotransferase	2.6.1.1	*mAAT-1*	CAME 7.0	H
			CAME 7.0	H
			CAME 7.0	M
Acid phosphatase	3.1.3.2	*ACP*	CAME 7.0	H
			TC-4	L
Alcohol dehydrogenase	1.1.1.1	*ADH*	EBT	L
			TC-4	L
Aconitate hydratase	4.2.1.3	*mAH-3*	CAME 7.0	H
			CAME 7.0	M
		mAH-4	CAME 7.0	H
			CAME 7.0	M
Creatine kinase	2.7.3.2	*CK-A1*	KG	M
		CK-C1	KG	E
		CK-C2	KG	E
		CK-B	KG	E
alpha-Naphthyl propionate esterase	3.1.*.*	*EST*	TC-4	L
Esterase-D	3.1.*.*	*ESTD*	KG	E
			CAME 7.0	M
Fumarate hydratase	4.2.1.2	*FH*	CAME 7.0	H
Glycerol-3-phosphate	1.1.1.8	*G3PDH-1*	TC-4	H
dehydrogenase (NAD+)		*G3PDH-2*	TC-4	H
		G3PDH-3	TC-4	H
		G3PDH-4	TC-4	H
beta-Galactosidase	3.2.1.23	*b-GALA*	TC-4	L
Glucose-6-phosphate isomerase	5.3.1.9	*GPI-A*	KG	H
			KG	M
Glutathione reductase(NAD(P)H)	1.6.4.2	*GR*	TC-4	H
			KG	H
			EBT	L
Hydroxyacylglutathione hydrolase	3.1.2.6	*HAGH*	EBT	L

Enzyme name	Enzyme number	Locus	Buffer	Tissue
			KG	M
N-Acetyl-beta-glucosaminidase	3.2.1.30	*bGLUA*	TC-4	L
Isocitrate dehydrogenase (NADP+)	1.1.1.42	*sIDHP-1*	CAME 7.0	E
			TC-4	H
			CAME 7.0	H
			CAME 7.0	M
Lactate dehydrogenase	1.1.1.27	*LDH-A1*	KG	M
		LDH-A2	KG	M
alpha-Mannosidase	3.2.1.24	*aMAN*	EBT	L
Malate dehydrogenase	1.1.1.37	*mMDH-1*	CAME 7.0	H
			CAME 7.0	M
Phosphogluconate dehydrogenase	1.1.1.44	*PGDH*	CAME 7.0	E
(decarboxylating)			CAME 7.0	M
Proline dipeptidase	3.4.13.9	*PEPD-2*	TC-4	H
			TC-4	L
			CAME 7.0	M
Phosphoglycerate kinase	2.7.2.3	*PGK-1*	CAME 7.0	H
			CAME 7.0	M
		PGK-2	CAME 7.0	H
			CAME 7.0	M
Tripeptide aminopeptidase	3.4.*.*	*PEPB-2*	CAME 7.0	E
			KG	E
Triose-phosphate isomerase	5.3.1.1	*TPI-3*	KG	H
			KG	M

Appendix VII. Allelic frequencies at 19 polymorphic loci for chum salmon sampled from the Yukon River drainage during 1987-1990. The most common allele is designated as 100, and other alleles assigned numbers according to their mobility relative to the 100 allele. N is the sample size. Allele designatiors separated by a slash indicates that the data for those alleles were pooled. An asterisk indicates significant deviation from Hardy-Weinberg Equilibrium (* = p < 0.05, ** = p < 0.01, and *** = p < 0.001).

		sAAT-1			mAAT-1				ALAT			ESTD		
Stock	Year	N	100	120	N	-100	-120	-70	N	100	93	N	100	91
United States Summer Run														
Andreafsky	1987	150	0.923	0.077	37	0.946	0.000	0.054	149	0.866	0.134	150	0.547	0.453
Chulinak	1989	99	0.919	0.081	99	0.944	0.005	0.051	99	0.859	0.141	99	0.470	0.530
Anvik	1987	150	0.927	0.073	89	0.905	0.000	0.096	150	0.897	0.103	150	0.427	0.573
	1988	100	0.960	0.040	100	0.920	0.000	0.080	100	0.875	0.125	100	0.545	0.455
Rodo	1989	77	0.890	0.110	76	0.901	0.007	0.092	74	0.885	0.115	77	0.526	0.474
Nulato														
Mainstem	1987	61	0.918	0.082	60	0.933	0.000	0.067	61	0.885	0.115	61	0.500	0.500
South Fork	1987	71	0.887	0.113	65	0.939	0.000	0.062	71	0.887	0.113	71	0.472	0.528
North Fork	1988	50	0.880	0.120	50	0.900	0.000	0.100	50	0.850	0.150	50	0.490	0.510
	Pooled	182	0.896	0.104	175	0.926	0.000	0.074	182	0.876	0.124	182	0.486	0.514
Koyukuk														
Henshaw	1987	43	0.942	0.058	43	0.849	0.000	0.151	43	0.930	0.070	43	0.477	0.523
Jim	1987	101	0.871	0.129	101	0.866	0.000	0.134	90	0.900	0.100	100	0.440	0.560
Gisasa	1989	97	0.912	0.088	97	0.923	0.000	0.077	96	0.932	0.068	94	0.521	0.479
Mainstem-Early	1990	74	0.878	0.122	74	0.899	0.041	0.061	74	0.953	0.047	74	0.453	0.547
Mainstem-Late	1990	75	0.927	0.073	75	0.893	0.000	0.107	75	0.947	0.053	75	0.420	0.580
	Pooled	390	0.901	0.099	390	0.890	0.008	0.103	378	0.931	0.069	386	0.462	0.538
Tozitna	1989	85	0.900	0.100	85	0.865	0.000	0.135	84	0.935	0.066	85	0.512	0.488
Salcha	1988	48	0.958	0.042	48	0.896	0.000	0.104	50	0.950	0.050	48	0.510	0.490
	1989	50	0.880	0.120	50	0.920	0.010	0.070	50	0.950	0.050	50	0.460	0.540
	Pooled	98	0.918	0.082	98	0.908	0.005	0.087	100	0.950	0.050	98	0.485	0.515
United States Fall Run														
Toklat	1987	133	0.850	0.150	69	0.928	0.000	0.073	132	0.845	0.155*	135	0.270	0.730
	1990	74	0.858	0.142	74	0.892	0.000	0.108	74	0.912	0.088	74	0.284	0.716
	Pooled	207	0.853	0.147	143	0.909	0.000	0.091	206	0.869	0.131	209	0.275	0.725
Delta-Clearwater	1987	135	0.878	0.122	129	0.919	0.004	0.078	134	0.937	0.063	135	0.196	0.804
	1990	75	0.887	0.114	75	0.960	0.000	0.040	75	0.927	0.073	75	0.167	0.833
	Pooled	210	0.881	0.119	204	0.934	0.003	0.064	209	0.933	0.067	210	0.186	0.814
Bluff Cabin Slough	1987	135	0.878	0.122	71	0.937	0.000	0.063	133	0.921	0.079	134	0.198	0.802
Chandalar	1987	149	0.913	0.087	148	0.878	0.000	0.122	28	0.911	0.089	145	0.341	0.659
	1988	73	0.897	0.103	73	0.877	0.000	0.123	73	0.918	0.082	73	0.308	0.692
	1989	75	0.867	0.133	75	0.907	0.000	0.093	75	0.947	0.053	75	0.327	0.673
	Pooled	297	0.897	0.103	296	0.885	0.000	0.115	176	0.929	0.071	293	0.329	0.671
Sheenjek	1987	135	0.904	0.096	79	0.911	0.000	0.089	135	0.941	0.059	135	0.344	0.656
	1988	79	0.905	0.095	78	0.917	0.000	0.083	80	0.938	0.063	79	0.335	0.665
	1989	80	0.888	0.113	80	0.863	0.000	0.138	80	0.913	0.088	80	0.400	0.600
	Pooled	294	0.900	0.100	237	0.897	0.000	0.103	295	0.932	0.068	294	0.357	0.643
Canadian Fall Run														
Fishing Branch	1987	128	0.938	0.063	73	0.863	0.007	0.130	128	0.941	0.059	129	0.252	0.748
	1989	49	0.918	0.082	49	0.878	0.000	0.122	49	0.949	0.051	49	0.388	0.612
	Pooled	177	0.932	0.068	122	0.869	0.004	0.127	177	0.944	0.057	178	0.289	0.711
Big Creek	1987	69	0.877	0.123	37	0.960	0.000	0.041	69	0.935	0.065	69	0.283	0.717
Tatchun	1987	75	0.893	0.107	59	0.898	0.000	0.102	75	0.927	0.073	75	0.320	0.680
Minto	1989	100	0.930	0.070	100	0.920	0.000	0.080	100	0.955	0.045	100	0.345	0.655
Kluane	1987	133	0.895	0.105	66	0.909	0.000	0.091	145	0.969	0.031	143	0.255	0.745
Teslin	1989	95	0.905	0.095	95	0.868	0.005	0.126	95	0.963	0.037	95	0.568	0.432

Appendix VII. Continued.

Stock	Year	G3PDH-2 N	G3PDH-2 100	G3PDH-2 90	bGLUA N	bGLUA 100	bGLUA 64	mIDHP-1 N	mIDHP-1 100	mIDHP-1 60	sIDHP-2 N	sIDHP-2 100	sIDHP-2 35	sIDHP-2 85	sIDHP-2 25
United States Summer Run															
Andreafsky	1987	150	0.880	0.120	83	0.922	0.078	149	0.983	0.017	150	0.450	0.487	0.063	0.000
Chulinak	1989	97	0.871	0.129	99	0.924	0.076	99	0.965	0.035	97	0.428	0.521	0.041	0.010
Anvik	1987	149	0.829	0.171	124	0.919	0.081	150	0.990	0.010	149	0.453	0.483	0.064	0.000
	1988	100	0.860	0.140	99	0.909	0.091	99	0.970	0.030	100	0.500	0.460	0.035	0.005
Rodo	1989	77	0.948	0.052	77	0.890	0.110	77	0.987	0.013	77	0.435	0.487	0.078	0.000
Nulato															
Mainstem	1987	61	0.869	0.131	58	0.922	0.078	61	0.975	0.025	61	0.500	0.459	0.041	0.000
South Fork	1987	71	0.859	0.141	69	0.906	0.094	71	0.979	0.021	71	0.486	0.430	0.085	0.000
North Fork	1988	50	0.870	0.130	50	0.900	0.100	50	0.980	0.020	50	0.460	0.480	0.060	0.000
	Pooled	182	0.865	0.135	177	0.910	0.090	182	0.978	0.022	182	0.484	0.453	0.063	0.000
Koyukuk															
Henshaw	1987	43	0.872	0.128	38	0.921	0.079	43	0.965	0.035	43	0.500	0.430	0.070	0.000
Jim	1987	101	0.891	0.109	84	0.935	0.066	101	0.960	0.040	101	0.500	0.470	0.030	0.000
Gisasa	1989	91	0.929	0.071	97	0.928	0.072	97	0.990	0.010	97	0.485	0.454	0.062	0.000
Mainstem-Early	1990	73	0.932	0.069	73	0.932	0.069	74	0.953	0.047	74	0.554	0.378	0.068	0.000
Mainstem-Late	1990	75	0.893	0.107	75	0.927	0.073	75	0.980	0.020	75	0.533	0.400	0.067	0.000
	Pooled	383	0.906	0.094	367	0.929	0.071	390	0.971	0.030	390	0.513	0.431	0.056	0.000
Tozitna	1989	85	0.882	0.118	77	0.935	0.065	85	0.977	0.024	85	0.524	0.400	0.071	0.006
Salcha	1988	48	0.813	0.188	49	0.959	0.041	48	0.927	0.073	48	0.521	0.448	0.031	0.000
	1989	50	0.940	0.060	50	0.930	0.070	50	0.960	0.040	50	0.530	0.400	0.070	0.000
	Pooled	98	0.878	0.122	99	0.944	0.056	98	0.944	0.056	98	0.526	0.424	0.051	0.000
United States Fall Run															
Toklat	1987	134	0.787	0.213	75	0.920	0.080	135	0.956	0.044	135	0.633	0.304	0.063	0.000*
	1990	73	0.836	0.164	73	0.945	0.055	74	0.953	0.047	74	0.615	0.338	0.047	0.000
	Pooled	207	0.804	0.196	148	0.932	0.068	209	0.955	0.046	209	0.627	0.316	0.057	0.000
Delta-Clearwater	1987	135	0.863	0.137	117	0.966	0.034	135	0.982	0.019	135	0.533	0.407	0.059	0.000
	1990	75	0.840	0.160	74	0.932	0.068	75	0.987	0.013	75	0.540	0.440	0.020	0.000
	Pooled	210	0.855	0.145	191	0.953	0.047	210	0.983	0.017	210	0.536	0.419	0.045	0.000
Bluff Cabin Slough	1987	134	0.843	0.157	82	0.933	0.067	135	0.985	0.015	135	0.556	0.385	0.059	0.000*
Chandalar	1987	148	0.865	0.135	52	0.962	0.039	149	0.990	0.010	149	0.416	0.544	0.040	0.000
	1988	73	0.849	0.151	71	0.916	0.085	73	0.993	0.007	73	0.390	0.569	0.041	0.000
	1989	75	0.900	0.100	75	0.907	0.093	75	0.993	0.007	75	0.440	0.513	0.047	0.000
	Pooled	296	0.870	0.130	198	0.924	0.076	297	0.992	0.008	297	0.416	0.542	0.042	0.000
Sheenjek	1987	134	0.881	0.119	32	0.969	0.031	135	0.982	0.019	135	0.400	0.563	0.037	0.000
	1988	78	0.891	0.109	80	0.881	0.119	79	1.000	0.000	78	0.314	0.628	0.058	0.000
	1989	80	0.863	0.138	80	0.913	0.088	80	0.981	0.019	80	0.381	0.550	0.069	0.000
	Pooled	292	0.878	0.122	192	0.909	0.091	294	0.986	0.014	293	0.372	0.577	0.051	0.000
Canadian Fall Run															
Fishing Branch	1987	128	0.848	0.152	30	0.983	0.017	129	0.996	0.004	122	0.414	0.557	0.029	0.000***
	1989	49	0.847	0.153	48	0.938	0.063	49	1.000	0.000	49	0.357	0.602	0.041	0.000
	Pooled	177	0.848	0.153	78	0.955	0.045	178	0.997	0.003	171	0.398	0.570	0.032	0.000
Big Creek	1987	69	0.891	0.109	31	0.968	0.032	69	1.000	0.000	69	0.406	0.573	0.022	0.000*
Tatchun	1987	74	0.892	0.108	24	0.979	0.021	75	1.000	0.000	73	0.452	0.507	0.041	0.000
Minto	1989	100	0.875	0.125	100	0.965	0.035	100	1.000	0.000	100	0.475	0.485	0.040	0.000
Kluane	1987	134	0.828	0.172	31	0.774	0.226	135	1.000	0.000	135	0.344	0.596	0.059	0.000
Teslin	1989	94	0.973	0.027	93	0.957	0.043	95	1.000	0.000	95	0.626	0.337	0.037	0.000

Appendix VII. Continued.

Stock	Year	LDH-A1 N	LDH-A1 -100	LDH-A1 50	sMDH-A1 N	sMDH-A1 100	sMDH-A1 200	sMDH-A2 N	sMDH-A2 100	sMDH-A2 40	sMDH-B1,2 N	sMDH-B1,2 100	sMDH-B1,2 72	sMDH-B1,2 130/50
United States Summer Run														
Andreafsky	1987	150	0.827	0.173	150	0.947	0.053	149	0.963	0.037	150	0.993	0.007	0.000
Chulinak	1989	99	0.793	0.207	98	0.954	0.046	99	0.985	0.015	99	0.975	0.025	0.000
Anvik	1987	150	0.840	0.160	150	0.960	0.040	150	0.990	0.010	150	0.987	0.010	0.003
	1988	100	0.750	0.250	99	0.894	0.106	50	0.980	0.020	100	0.980	0.010	0.010
Rodo	1989	77	0.825	0.175	77	0.935	0.065	77	0.987	0.013	77	0.981	0.020	0.000
Nulato														
Mainstem	1987	61	0.795	0.205	61	0.934	0.066	61	1.000	0.000	61	0.992	0.008	0.000
South Fork	1987	71	0.711	0.289	71	0.951	0.035	71	0.951	0.049	71	0.979	0.021	0.000
North Fork	1988	50	0.690	0.310	50	0.940	0.060	50	0.970	0.030	50	0.990	0.000	0.010
	Pooled	182	0.734	0.267	182	0.948	0.052	182	0.973	0.028	182	0.986	0.011	0.003
Koyukuk														
Henshaw	1987	43	0.802	0.198	43	0.919	0.081	43	0.977	0.023	43	0.977	0.023	0.000
Jim	1987	101	0.753	0.248	101	0.886	0.114	101	0.946	0.055	101	0.946	0.045	0.010
Gisasa	1989	97	0.768	0.232	97	0.902	0.098	97	0.969	0.031	97	0.990	0.010	0.000
Mainstem-Early	1990	74	0.737	0.264	74	0.939	0.061	74	1.000	0.000	74	0.987	0.014	0.000
Mainstem-Late	1990	75	0.807	0.193	75	0.933	0.067	75	0.993	0.007	75	0.987	0.013	0.000
	Pooled	390	0.769	0.231	390	0.913	0.087	390	0.974	0.026	390	0.976	0.022	0.003
Tozitna	1989	85	0.771	0.229	85	0.959	0.041	85	0.965	0.035	85	0.959	0.041	0.000
Salcha	1988	48	0.719	0.281	48	0.969	0.031	48	1.000	0.000	48	0.958	0.042	0.000
	1989	50	0.790	0.210	50	0.950	0.050	48	0.990	0.010	50	0.950	0.040	0.010
	Pooled	98	0.755	0.245	98	0.959	0.041	96	0.995	0.005	98	0.954	0.041	0.005
United States Fall Run														
Toklat	1987	135	0.756	0.244	135	0.930	0.070	135	0.978	0.022	135	0.985	0.015	0.000
	1990	72	0.757	0.243	74	0.939	0.061	74	0.987	0.014	74	1.000	0.000	0.000
	Pooled	207	0.756	0.244	209	0.933	0.067	209	0.981	0.019	209	0.990	0.010	0.000
Delta-Clearwater	1987	135	0.704	0.296	130	0.939	0.062	135	0.993	0.007	135	1.000	0.000	0.000
	1990	74	0.669	0.331	75	0.933	0.067	75	0.973	0.027	75	1.000	0.000	0.000
	Pooled	209	0.691	0.309	205	0.937	0.063	210	0.986	0.014	210	1.000	0.000	0.000
Bluff Cabin Slough	1987	135	0.656	0.344**	135	0.944	0.056	135	0.989	0.011	135	1.000	0.000	0.000
Chandalar	1987	149	0.711	0.289	149	0.826	0.175	149	0.983	0.017	149	0.990	0.010	0.000
	1988	72	0.792	0.208	73	0.918	0.082	73	0.980	0.021	73	0.993	0.007	0.000
	1989	75	0.673	0.327	75	0.907	0.093	75	0.967	0.033	75	1.000	0.000	0.000
	Pooled	296	0.721	0.279	297	0.869	0.131	297	0.978	0.022	297	0.993	0.007	0.000
Sheenjek	1987	135	0.696	0.304	135	0.870	0.130	135	0.970	0.030	135	1.000	0.000	0.000
	1988	77	0.760	0.240*	79	0.854	0.146	79	0.956	0.044	79	1.000	0.000	0.000
	1989	80	0.650	0.350	80	0.900	0.100	80	0.981	0.019	80	0.994	0.006	0.000
	Pooled	292	0.700	0.300	294	0.874	0.126	294	0.969	0.031	294	0.998	0.002	0.000
Canadian Fall Run														
Fishing Branch	1987	129	0.632	0.368	129	0.930	0.070	126	0.968	0.032	129	1.000	0.000	0.000
	1989	49	0.643	0.357	49	0.929	0.071	49	0.990	0.010	49	1.000	0.000	0.000
	Pooled	178	0.635	0.365	178	0.930	0.070	175	0.974	0.026	178	1.000	0.000	0.000
Big Creek	1987	69	0.696	0.304	69	0.891	0.109	69	0.957	0.044	69	1.000	0.000	0.000
Tatchun	1987	75	0.713	0.287	71	0.866	0.134	75	0.933	0.067	75	1.000	0.000	0.000
Minto	1989	100	0.710	0.290	100	0.915	0.085	100	0.990	0.010	100	1.000	0.000	0.000
Kluane	1987	135	0.533	0.467	135	0.948	0.052	134	0.985	0.015	135	0.996	0.004	0.000
Teslin	1989	95	0.700	0.300	95	0.842	0.158	94	0.957	0.043	95	1.000	0.000	0.000

Appendix VII. Continued.

Stock	Year	mMEP-2 N	mMEP-2 100	mMEP-2 122	MPI N	MPI 100	MPI 94	PEP-LT N	PEP-LT 100	PEP-LT 85	PGDH N	PGDH 100	PGDH 92
United States Summer Run													
Andreafsky	1987	150	0.807	0.193	150	0.837	0.163	46	0.957	0.044	146	0.956	0.045
Chulinak	1989	99	0.823	0.177	99	0.879	0.121	99	0.960	0.040	99	0.950	0.051
Anvik	1987	150	0.827	0.173	150	0.883	0.117	149	0.987	0.013	150	0.980	0.020
	1988	100	0.740	0.260	100	0.870	0.130	98	0.985	0.015	92	0.935	0.065
Rodo	1989	77	0.792	0.208	77	0.883	0.117	77	0.981	0.020	77	0.955	0.046
Nulato													
Mainstem	1987	61	0.787	0.213	61	0.853	0.148	61	0.951	0.049	61	0.918	0.082
South Fork	1987	71	0.754	0.247	71	0.901	0.099	50	0.990	0.010	71	0.951	0.049
North Fork	1988	50	0.830	0.170	50	0.820	0.180	50	0.980	0.020	50	0.980	0.020
	Pooled	182	0.786	0.214	182	0.863	0.137	161	0.972	0.028	182	0.948	0.052
Koyukuk													
Henshaw	1987	43	0.919	0.081	43	0.895	0.105	43	0.977	0.023	43	0.942	0.058
Jim	1987	101	0.921	0.079	101	0.916	0.084	101	0.965	0.035	101	0.951	0.050
Gisasa	1989	97	0.809	0.191	97	0.918	0.083	97	0.985	0.016	97	0.974	0.026
Mainstem-Early	1990	74	0.919	0.081	74	0.885	0.115	74	1.000	0.000	74	0.973	0.027
Mainstem-Late	1990	75	0.907	0.093	75	0.947	0.053	75	0.973	0.027	75	0.953	0.047
	Pooled	390	0.890	0.110	390	0.914	0.086	390	0.980	0.021	390	0.960	0.040
Tozitna	1989	85	0.871	0.129	85	0.900	0.100	85	0.982	0.018	85	0.941	0.059
Salcha	1988	48	0.927	0.073	48	0.896	0.104	50	0.990	0.010	48	0.958	0.042
	1989	50	0.850	0.150	50	0.930	0.070	50	0.980	0.020	50	0.940	0.060
	Pooled	98	0.888	0.112	98	0.913	0.087	100	0.985	0.015	98	0.949	0.051
United States Fall Run													
Toklat	1987	135	0.878	0.122	135	0.937	0.063	126	0.992	0.008	135	0.959	0.041
	1990	73	0.932	0.069	75	0.939	0.061	74	0.987	0.014	74	0.987	0.014
	Pooled	208	0.897	0.103	209	0.938	0.062	200	0.990	0.010	209	0.969	0.031
Delta-Clearwater	1987	135	0.907	0.093	132	0.943	0.057	134	0.963	0.037	135	0.978	0.014
	1990	75	0.873	0.127	75	0.933	0.067	75	0.973	0.027	75	0.960	0.040
	Pooled	210	0.895	0.105	207	0.940	0.060	209	0.967	0.034	210	0.971	0.029
Bluff Cabin Slough	1987	135	0.915	0.085	135	0.933	0.067	123	0.947	0.053	135	0.956	0.044
Chandalar	1987	149	0.909	0.091	149	0.930	0.071	146	0.969	0.031	136	0.974	0.026
	1988	73	0.925	0.075	73	0.938	0.062	73	0.993	0.007	73	0.980	0.021
	1989	75	0.893	0.107	75	0.887	0.113	75	1.000	0.000	75	0.973	0.027
	Pooled	297	0.909	0.091	297	0.921	0.079	294	0.983	0.017	284	0.975	0.025
Sheenjek	1987	135	0.911	0.089	135	0.896	0.104	124	0.980	0.020	135	0.974	0.026
	1988	79	0.956	0.044	79	0.892	0.108	80	0.969	0.031	79	0.968	0.032
	1989	80	0.956	0.044	80	0.856	0.144	80	0.994	0.006	80	0.969	0.031
	Pooled	294	0.935	0.065	294	0.884	0.116	284	0.981	0.019	294	0.971	0.029
Canadian Fall Run													
Fishing Branch	1987	128	0.934	0.066	126	0.913	0.087	23	0.935	0.065	129	0.973	0.027
	1989	49	0.939	0.061	49	0.898	0.102	49	0.980	0.020	49	0.980	0.020
	Pooled	177	0.935	0.065	175	0.909	0.091	72	0.965	0.035	178	0.975	0.025
Big Creek	1987	69	0.877	0.123	69	0.949	0.051	69	0.957	0.044	69	0.949	0.051
Tatchun	1987	75	0.900	0.100	75	0.913	0.087	75	0.967	0.033	75	0.967	0.033
Minto	1989	100	0.930	0.070	100	0.950	0.050	100	0.970	0.030	100	0.965	0.035
Kluane	1987	135	0.985	0.015	142	0.947	0.053	125	0.992	0.008	135	1.000	0.000
Teslin	1989	95	0.916	0.084	95	0.968	0.032	95	0.816	0.184	95	1.000	0.000

Appendix VII. Continued.

Stock	Year	PEPB-1 N	PEPB-1 -100	PEPB-1 -156	PEPB-1 -128	PEPB-1 -127	PEPB-2 N	PEPB-2 100	PEPB-2 132	TPI-1 N	TPI-1 -100	TPI-1 -50
United States Summer Run												
Andreafsky	1987	150	0.943	0.043	0.013	0.000	69	0.862	0.138	51	1.000	0.000
Chulinak	1989	99	0.960	0.035	0.005	0.000	99	0.939	0.061	99	1.000	0.000
Anvik	1987	150	0.927	0.067	0.007	0.000	115	0.913	0.087	106	1.000	0.000
	1988	100	0.935	0.045	0.020	0.000	99	0.773	0.227	100	0.995	0.005
Rodo	1989	77	0.909	0.058	0.026	0.007	77	0.903	0.097	77	1.000	0.000
Nulato												
Mainstem	1987	61	0.902	0.090	0.008	0.000	58	0.922	0.078	61	1.000	0.000
South Fork	1987	71	0.930	0.056	0.014	0.000	69	0.862	0.138	71	1.000	0.000
North Fork	1988	50	0.880	0.090	0.030	0.000	50	0.930	0.070	50	0.990	0.010
	Pooled	182	0.907	0.077	0.017	0.000	177	0.901	0.099	182	0.997	0.003
Koyukuk												
Henshaw	1987	43	0.919	0.070	0.012	0.000	43	0.907	0.093	43	1.000	0.000
Jim	1987	101	0.876	0.124	0.000	0.000	100	0.915	0.085	91	1.000	0.000
Gisasa	1989	97	0.912	0.083	0.005	0.000	97	0.897	0.103	97	1.000	0.000
Mainstem-Early	1990	74	0.885	0.108	0.007	0.000	74	0.858	0.142	74	1.000	0.000
Mainstem-Late	1990	75	0.847	0.133	0.020	0.000	75	0.900	0.100	75	1.000	0.000
	Pooled	390	0.886	0.106	0.008	0.000	389	0.896	0.104	380	1.000	0.000
Tozitna	1989	85	0.847	0.141	0.012	0.000	85	0.859	0.141	85	1.000	0.000
Salcha	1988	48	0.896	0.094	0.010	0.000	48	0.885	0.115	50	1.000	0.000
	1989	50	0.910	0.060	0.030	0.000	50	0.840	0.160	50	1.000	0.000
	Pooled	98	0.903	0.077	0.020	0.000	98	0.862	0.138	100	1.000	0.000
United States Fall Run												
Toklat	1987	135	0.789	0.182	0.030	0.000	86	0.919	0.081	85	1.000	0.000
	1990	74	0.757	0.216	0.027	0.000	73	0.904	0.096	74	1.000	0.000
	Pooled	209	0.778	0.194	0.029	0.000	159	0.912	0.088	159	1.000	0.000
Delta-Clearwater	1987	135	0.796	0.182	0.022	0.000	65	0.915	0.085	135	1.000	0.000
	1990	75	0.820	0.167	0.013	0.000	75	0.913	0.087	75	1.000	0.000
	Pooled	210	0.805	0.176	0.019	0.000	140	0.914	0.086	210	1.000	0.000
Bluff Cabin Slough	1987	135	0.852	0.130	0.019	0.000	75	0.920	0.080	135	1.000	0.000
Chandalar	1987	149	0.785	0.191	0.024	0.000	33	0.879	0.121	150	1.000	0.000
	1988	73	0.781	0.212	0.007	0.000	73	0.829	0.171	72	1.000	0.000
	1989	75	0.820	0.173	0.007	0.000	75	0.893	0.107	75	1.000	0.000
	Pooled	297	0.793	0.192	0.015	0.000	181	0.865	0.135	297	1.000	0.000
Sheenjek	1987	135	0.830	0.163	0.007	0.000	87	0.793	0.207	87	1.000	0.000
	1988	79	0.810	0.177	0.013	0.000	78	0.859	0.141	80	1.000	0.000
	1989	80	0.756	0.231	0.013	0.000	80	0.863	0.138	80	1.000	0.000
	Pooled	294	0.804	0.185	0.010	0.000	245	0.837	0.163	247	1.000	0.000
Canadian Fall Run												
Fishing Branch	1987	129	0.845	0.151	0.004	0.000	71	0.937	0.063	127	1.000	0.000
	1989	49	0.827	0.174	0.000	0.000	49	0.867	0.133	49	1.000	0.000
	Pooled	178	0.840	0.157	0.003	0.000	120	0.908	0.092	176	1.000	0.000
Big Creek	1987	69	0.797	0.203	0.000	0.000	45	0.967	0.033	63	1.000	0.000
Tatchun	1987	74	0.811	0.182	0.007	0.000	66	0.886	0.114	66	1.000	0.000
Minto	1989	100	0.860	0.135	0.005	0.000	100	0.870	0.130	100	1.000	0.000
Kluane	1987	143	0.888	0.112	0.000	0.000	91	0.868	0.132	144	1.000	0.000
Teslin	1989	95	0.853	0.147	0.000	0.000	95	0.790	0.211	95	1.000	0.000

Appendix VIII. Allelic frequencies at 22 polymorphic loci for chinook salmon sampled from the Yukon River drainage during 1987-1990. The most common allele is designated as 100, and other alleles assigned numbers according to their mobility relative to the 100 allele. N is the sample size. Allele designatiors separated by a slash indicates that the data for those alleles were pooled. An asterisk indicates significant deviation from Hardy-Weinberg Equilibrium (* = p < 0.05, ** = p < 0.01, and *** = p < 0.001).

		sAAT-3			sAAT-4				ADA-1			sAH			
Stock	Year	N	100	90	N	100	130	63	N	100	83	N	100	86	108
Andreafsky	1988	92	0.832	0.169	90	0.961	0.000	0.039	98	0.867	0.133	100	0.950	0.050	0.000
Anvik	1987	37	0.824	0.176	27	0.963	0.000	0.037	40	0.838	0.163	39	0.974	0.026	0.000
	1988	48	0.792	0.208	53	0.915	0.047	0.038	59	0.881	0.119	57	0.956	0.044	0.000
	Pooled	85	0.806	0.194	80	0.931	0.031	0.038	99	0.864	0.136	96	0.964	0.037	0.000
Nulato															
South Fork	1988	46	0.794	0.207	46	0.913	0.022	0.065	49	0.888	0.112	50	0.970	0.030	0.000
North Fork	1988	49	0.806	0.194	44	0.989	0.000	0.011	49	0.837	0.163	50	0.950	0.050	0.000
	Pooled	95	0.800	0.200	90	0.950	0.011	0.039	98	0.862	0.138	100	0.960	0.040	0.000
Gisasa	1987	47	0.681	0.319	43	0.977	0.000	0.023	47	0.830	0.170	47	0.968	0.032	0.000
	1988	89	0.770	0.230	90	0.922	0.072	0.006	90	0.817	0.183	91	0.962	0.039	0.000
	Pooled	136	0.739	0.261	133	0.940	0.049	0.011	137	0.821	0.179	138	0.964	0.036	0.000
Henshaw	1987	87	0.684	0.316	79	0.994	0.000	0.006	82	0.994	0.006	86	1.000	0.000	0.000
Jim	1987	79	0.715	0.285	78	0.974	0.013	0.013	75	0.967	0.033	78	0.987	0.013	0.000
	Pooled	166	0.699	0.301	157	0.984	0.006	0.010	157	0.981	0.019	164	0.994	0.006	0.000
South Fork Koyukuk	1987	84	0.649	0.351	82	0.994	0.000	0.006	81	0.969	0.031	88	0.994	0.006	0.000
Salcha	1988	95	0.690	0.311	99	0.995	0.000	0.005	97	1.000	0.000	100	1.000	0.000	0.000
Chena	1987	136	0.610	0.390	131	1.000	0.000	0.000	140	1.000	0.000	138	1.000	0.000	0.000
	1988	98	0.592	0.408	96	0.969	0.000	0.031	98	1.000	0.000	98	1.000	0.000	0.000
	Pooled	234	0.603	0.397	227	0.987	0.000	0.013	238	1.000	0.000	236	1.000	0.000	0.000
North Klondike	1989	39	0.923	0.077	44	0.966	0.000	0.034	40	0.988	0.013	44	0.943	0.057	0.000
	1990	150	0.880	0.120	150	0.973	0.000	0.027	150	0.990	0.010	150	0.963	0.023	0.000
	Pooled	189	0.889	0.111	194	0.972	0.000	0.028	190	0.990	0.011	194	0.959	0.031	0.000
McQuesten	1989	38	0.776	0.224	38	0.895	0.000	0.105	38	0.934	0.066	38	0.934	0.053	0.013
	1990	199	0.837	0.163	200	0.873	0.000	0.128	200	0.883	0.118	200	0.943	0.058	0.000
	Pooled	237	0.827	0.173	238	0.876	0.000	0.124	238	0.891	0.109	238	0.941	0.057	0.002
Pelly															
Ross	1988	14	0.679	0.321	13	0.923	0.000	0.077	13	1.000	0.000	14	0.964	0.036	0.000
	1989	30	0.667	0.333	29	0.862	0.000	0.138	30	0.983	0.017	29	0.862	0.121	0.017
Blind	1989	138	0.652	0.348	149	0.913	0.000	0.087	150	0.987	0.013	150	0.917	0.047	0.037
	Pooled	182	0.657	0.343	191	0.906	0.000	0.094	193	0.987	0.013	193	0.912	0.057	0.031
Tatchun	1988	44	0.659	0.341	43	0.930	0.000	0.070	47	0.979	0.021	44	0.909	0.080	0.011
	1989	29	0.741	0.259	18	0.889	0.000	0.111	29	0.983	0.017	29	0.931	0.069	0.000
	Pooled	73	0.692	0.308	61	0.918	0.000	0.082	76	0.980	0.020	73	0.918	0.075	0.007
Big Salmon	1988	49	0.704	0.296	46	0.859	0.000	0.141	49	0.959	0.041	49	0.827	0.174	0.000
	1989	77	0.864	0.136	77	0.909	0.000	0.091	77	0.948	0.052	78	0.821	0.160	0.019
	Pooled	126	0.802	0.198	123	0.890	0.000	0.110	126	0.952	0.048	127	0.823	0.165	0.012
Little Salmon	1988	32	0.922	0.078	28	0.893	0.000	0.107	29	0.931	0.069	28	0.821	0.179	0.000
	1989	27	0.741	0.259	25	0.840	0.100	0.060	27	0.963	0.037	27	0.833	0.167	0.000
Bear Feed	1989	87	0.828	0.172	85	0.777	0.012	0.212	87	0.937	0.063	87	0.868	0.132	0.000
	Pooled	146	0.832	0.168	138	0.812	0.025	0.163	143	0.941	0.059	142	0.852	0.148	0.000
Takhini	1988	24	0.854	0.146	24	0.792	0.000	0.208	25	0.960	0.040	24	0.521	0.479	0.000
	1990	25	0.780	0.220	25	0.900	0.000	0.100	25	0.920	0.080	25	0.600	0.400	0.000
Stony	1990	119	0.861	0.139	121	0.930	0.000	0.070	121	0.967	0.033	121	0.624	0.376	0.000
	Pooled	168	0.848	0.152	170	0.906	0.000	0.094	171	0.959	0.041	170	0.606	0.394	0.000
Nisutlin	1989	70	0.714	0.286	70	0.950	0.021	0.029	70	1.000	0.000	70	0.779	0.221	0.000

Appendix VIII. Continued.

Stock	Year	ALAT			GPI-B1			IDDH-1			sIDHP-1			
		N	100	94	N	100	24	N	100	0	N	100	74	136
Andreafsky	1988	100	0.890	0.110	100	1.000	0.000	99	0.955	0.046	100	1.000	0.000	0.000
Anvik	1987	40	0.888	0.113	40	1.000	0.000	39	0.962	0.039	38	0.987	0.013	0.000
	1988	60	0.917	0.083	55	1.000	0.000	60	1.000	0.000	58	0.991	0.009	0.000
	Pooled	100	0.905	0.095	95	1.000	0.000	99	0.985	0.015	96	0.990	0.010	0.000
Nulato														
South Fork	1988	50	0.890	0.110	50	1.000	0.000	44	0.989	0.011	50	0.990	0.000	0.010
North Fork	1988	50	0.940	0.060	50	1.000	0.000	50	0.970	0.030	50	1.000	0.000	0.000
	Pooled	100	0.915	0.085	100	1.000	0.000	94	0.979	0.021	100	0.995	0.000	0.005
Gisasa	1987	47	0.894	0.106	47	1.000	0.000	47	0.979	0.021	47	1.000	0.000	0.000
	1988	88	0.869	0.131	91	1.000	0.000	88	0.977	0.023	91	1.000	0.000	0.000
	Pooled	135	0.878	0.122	138	1.000	0.000	135	0.978	0.022	138	1.000	0.000	0.000
Henshaw	1987	86	0.895	0.105	87	1.000	0.000	39	0.962	0.039	87	1.000	0.000	0.000
Jim	1987	78	0.962	0.039	77	1.000	0.000	29	0.983	0.017	78	1.000	0.000	0.000
	Pooled	164	0.927	0.073	164	1.000	0.000	68	0.971	0.029	165	1.000	0.000	0.000
South Fork Koyukuk	1987	83	0.898	0.102	87	1.000	0.000	50	1.000	0.000	87	1.000	0.000	0.000
Salcha	1988	100	0.925	0.075	100	1.000	0.000	95	0.942	0.058	100	1.000	0.000	0.000
Chena	1987	134	0.944	0.056	140	1.000	0.000	121	0.946	0.054	145	1.000	0.000	0.000
	1988	98	0.944	0.056	98	1.000	0.000	94	0.968	0.032	98	1.000	0.000	0.000
	Pooled	232	0.944	0.026	238	1.000	0.000	215	0.956	0.044	243	1.000	0.000	0.000
North Klondike	1989	40	0.750	0.250	40	1.000	0.000	44	0.932	0.068	40	1.000	0.000	0.000
	1990	150	0.913	0.087	150	1.000	0.000	150	0.963	0.037	150	1.000	0.000	0.000
	Pooled	190	0.879	0.121	190	1.000	0.000	194	0.956	0.044	190	1.000	0.000	0.000
McQuesten	1989	38	0.921	0.079	38	1.000	0.000	38	0.947	0.053	38	1.000	0.000	0.000
	1990	199	0.950	0.050	199	0.990	0.010	200	0.960	0.040	200	1.000	0.000	0.000
	Pooled	237	0.945	0.055	237	0.992	0.008	238	0.958	0.042	238	1.000	0.000	0.000
Pelly														
Ross	1988	14	1.000	0.000	13	1.000	0.000	14	0.929	0.071	14	1.000	0.000	0.000
	1989	30	1.000	0.000	30	0.900	0.100	29	0.879	0.121	30	1.000	0.000	0.000
Blind	1989	150	0.997	0.003	150	0.980	0.020	150	0.970	0.030	150	1.000	0.000	0.000
	Pooled	194	0.997	0.003	193	0.969	0.031	193	0.953	0.047	194	1.000	0.000	0.000
Tatchun	1988	46	1.000	0.000	49	1.000	0.000	14	0.990	0.010	49	1.000	0.000	0.000
	1989	29	1.000	0.000	29	1.000	0.000	19	0.974	0.026	10	1.000	0.000	0.000
	Pooled	75	1.000	0.000	78	1.000	0.000	67	0.985	0.015	59	1.000	0.000	0.000
Big Salmon	1988	47	0.989	0.011	49	1.000	0.000	49	0.969	0.031	49	1.000	0.000	0.000
	1989	75	0.973	0.027	78	1.000	0.000	77	0.974	0.026	75	1.000	0.000	0.000
	Pooled	122	0.980	0.021	127	1.000	0.000	126	0.972	0.028	124	1.000	0.000	0.000
Little Salmon	1988	33	0.970	0.030	29	1.000	0.000	34	0.941	0.059	32	1.000	0.000	0.000
	1989	27	0.963	0.037	27	1.000	0.000	27	0.982	0.019	27	1.000	0.000	0.000
Bear Feed	1989	87	0.989	0.012	87	0.994	0.06	87	0.960	0.040	87	1.000	0.000	0.000
	Pooled	147	0.980	0.020	143	0.997	0.004	148	0.960	0.041	146	1.000	0.000	0.000
Takhini	1988	25	1.000	0.000	25	1.000	0.000	25	0.960	0.040	25	1.000	0.000	0.000
	1990	25	0.980	0.020	25	1.000	0.000	25	0.960	0.040	25	1.000	0.000	0.000
Stony	1990	120	1.000	0.000	121	1.000	0.000	121	0.992	0.008	121	1.000	0.000	0.000
	Pooled	170	0.997	0.003	171	1.000	0.000	171	0.983	0.018	171	1.000	0.000	0.000
Nisutlin	1989	71	1.000	0.000	70	1.000	0.000	71	1.000	0.000	71	1.000	0.000	0.000

Appendix VIII. Continued.

Stock	Year	sIDHP-2 N	sIDHP-2 100	sIDHP-2 127	sIDHP-2 50/83	LDH-B2 N	LDH-B2 100	LDH-B2 71	sMDH-B1,2 N	sMDH-B1,2 100	sMDH-B1,2 121/126	sMDH-B1,2 70
Andreafsky	1988	97	0.959	0.000	0.041	100	1.000	0.000	100	0.995	0.005	0.000
Anvik	1987	38	1.000	0.000	0.000	40	1.000	0.000	40	0.975	0.025	0.000
	1988	58	0.966	0.000	0.035	60	1.000	0.000	60	0.983	0.017	0.000
	Pooled	96	0.979	0.000	0.021	100	1.000	0.000	100	0.980	0.020	0.000
Nulato												
South Fork	1988	50	0.980	0.000	0.020	50	1.000	0.000	50	0.960	0.040	0.000
North Fork	1988	50	0.950	0.000	0.050	50	1.000	0.000	50	0.990	0.010	0.000
	Pooled	100	0.965	0.000	0.035	100	1.000	0.000	100	0.975	0.025	0.000
Gisasa	1987	47	0.989	0.000	0.011	47	1.000	0.000	47	1.000	0.000	0.000
	1988	91	0.995	0.000	0.006	91	1.000	0.000	91	1.000	0.000	0.000
	Pooled	138	0.993	0.000	0.007	138	1.000	0.000	138	1.000	0.000	0.000
Henshaw	1987	86	0.997	0.000	0.023	87	1.000	0.000	87	0.937	0.058	0.006
Jim	1987	78	0.994	0.000	0.006	79	0.994	0.006	79	0.905	0.057	0.038
	Pooled	164	0.985	0.000	0.015	166	0.997	0.003	166	0.922	0.057	0.021
South Fork Koyukuk	1987	87	0.989	0.000	0.012	88	0.994	0.006	88	0.852	0.063	0.085
Salcha	1988	100	1.000	0.000	0.000	100	0.975	0.025	100	0.940	0.020	0.040
Chena	1987	145	0.997	0.003	0.000	151	0.987	0.013	149	0.896	0.050	0.054
	1988	98	1.000	0.000	0.000	98	0.990	0.010	98	0.908	0.041	0.051
	Pooled	243	0.998	0.002	0.000	249	0.988	0.012	247	0.901	0.047	0.053
North Klondike	1989	40	1.000	0.000	0.000	44	1.000	0.000	40	1.000	0.000	0.000
	1990	150	1.000	0.000	0.000	150	1.000	0.000	150	1.000	0.000	0.000
	Pooled	190	1.000	0.000	0.000	194	1.000	0.000	190	1.000	0.000	0.000
McQuesten	1989	38	1.000	0.000	0.000	38	1.000	0.000	38	0.987	0.013	0.000
	1990	200	1.000	0.000	0.000	200	1.000	0.000	200	1.000	0.000	0.000
	Pooled	238	1.000	0.000	0.000	238	1.000	0.000	238	0.998	0.002	0.000
Pelly												
Ross	1988	14	1.000	0.000	0.000	14	1.000	0.000	14	1.000	0.000	0.000
	1989	30	1.000	0.000	0.000	30	1.000	0.000	30	1.000	0.000	0.000
Blind	1989	150	0.997	0.003	0.000	150	1.000	0.000	150	1.000	0.000	0.000
	Pooled	194	0.997	0.003	0.000	194	1.000	0.000	194	1.000	0.000	0.000
Tatchun	1988	49	1.000	0.000	0.000	49	1.000	0.000	49	1.000	0.000	0.000
	1989	10	1.000	0.000	0.000	29	1.000	0.000	29	1.000	0.000	0.000
	Pooled	59	1.000	0.000	0.000	78	1.000	0.000	78	1.000	0.000	0.000
Big Salmon	1988	49	1.000	0.000	0.000	49	1.000	0.000	49	1.000	0.000	0.000
	1989	75	1.000	0.000	0.000	78	1.000	0.000	75	1.000	0.000	0.000
	Pooled	124	1.000	0.000	0.000	127	1.000	0.000	124	1.000	0.000	0.000
Little Salmon	1988	32	1.000	0.000	0.000	32	1.000	0.000	35	1.000	0.000	0.000
	1989	27	1.000	0.000	0.000	27	1.000	0.000	27	1.000	0.000	0.000
Bear Feed	1989	87	1.000	0.000	0.000	87	1.000	0.000	87	1.000	0.000	0.000
	Pooled	146	1.000	0.000	0.000	146	1.000	0.000	149	1.000	0.000	0.000
Takhini	1988	25	1.000	0.000	0.000	25	1.000	0.000	25	1.000	0.000	0.000
	1990	25	1.000	0.000	0.000	25	1.000	0.000	25	1.000	0.000	0.000
Stony	1990	121	0.992	0.004	0.004	121	1.000	0.000	121	1.000	0.000	0.000
	Pooled	171	0.994	0.003	0.003	171	1.000	0.000	171	1.000	0.000	0.000
Nisutlin	1989	64	1.000	0.000	0.000	71	1.000	0.000	71	1.000	0.000	0.000

Appendix VIII. Continued.

Stock	Year	sMEP-1[a] N	100	92	86	sMEP-2 N	100	78	MPI N	100	109	PEPA N	100	90
Andreafsky	1988	100	0.005	0.995	0.000	100	0.880	0.120	100	0.925	0.075	100	0.950	0.050***
Anvik	1987	40	0.000	1.000	0.000	40	0.850	0.150	40	0.913	0.088	40	0.975	0.034
	1988	60	0.008	0.992	0.000	60	0.917	0.083	60	0.917	0.083	59	0.966	0.034
	Pooled	100	0.005	0.995	0.000	100	0.890	0.110	100	0.915	0.085	99	0.970	0.030
Nulato														
South Fork	1988	50	0.010	0.990	0.000	50	0.980	0.020	50	0.860	0.140	50	0.970	0.030
North Fork	1988	50	0.010	0.990	0.000	50	0.920	0.080	50	0.880	0.120***	50	0.940	0.060
	Pooled	100	0.010	0.990	0.000	100	0.950	0.050	100	0.870	0.130	100	0.955	0.045
Gisasa	1987	47	0.000	0.989	0.011	47	0.872	0.128	47	0.915	0.085	47	0.968	0.032
	1988	87	0.017	0.983	0.000	91	0.923	0.077	90	0.850	0.150	91	0.967	0.033
	Pooled	134	0.011	0.985	0.004	138	0.906	0.094	137	0.872	0.128	138	0.967	0.033
Henshaw	1987	86	0.064	0.930	0.006*	81	0.852	0.148	85	0.988	0.012	87	0.931	0.069
Jim	1987	71	0.035	0.937	0.028***	58	0.845	0.155	78	0.987	0.013	78	0.955	0.045
	Pooled	157	0.051	0.933	0.016	139	0.849	0.151	163	0.988	0.012	165	0.942	0.058
South Fork Koyukuk	1987	82	0.012	0.982	0.006	80	0.638	0.363	87	0.977	0.023	88	0.955	0.046
Salcha	1988	100	0.000	0.995	0.005	100	0.710	0.290	100	0.990	0.010	100	0.945	0.055
Chena	1987	150	0.000	0.993	0.007	149	0.805	0.195	149	0.983	0.017	147	0.966	0.034
	1988	98	0.000	0.990	0.010	98	0.725	0.276	98	0.995	0.005	98	0.969	0.031
	Pooled	248	0.000	0.992	0.008	247	0.773	0.227	247	0.988	0.012	245	0.967	0.033
North Klondike	1989	44	0.000	0.977	0.023	44	0.591	0.409	44	0.966	0.034	40	0.900	0.100
	1990	150	0.000	0.983	0.017	150	0.687	0.313	150	0.943	0.057	150	0.870	0.130
	Pooled	194	0.000	0.982	0.018	194	0.665	0.335	194	0.949	0.052	190	0.876	0.124
McQuesten	1989	38	0.000	1.000	0.000	38	0.684	0.316	38	0.868	0.132	38	0.908	0.092
	1990	200	0.000	0.970	0.030	200	0.725	0.275	200	0.945	0.055	200	0.893	0.108
	Pooled	238	0.000	0.975	0.025	238	0.719	0.282	238	0.933	0.067	238	0.895	0.105
Pelly														
Ross	1988	14	0.000	1.000	0.000	14	0.786	0.214	14	0.679	0.321	14	1.000	0.000
	1989	30	0.000	1.000	0.000	30	0.867	0.133	30	0.750	0.250	30	1.000	0.000
Blind	1989	150	0.003	0.997	0.000	150	0.867	0.133	150	0.840	0.160	150	0.997	0.003
	Pooled	194	0.003	0.997	0.000	194	0.861	0.139	194	0.814	0.186	194	0.997	0.003
Tatchun	1988	48	0.000	1.000	0.000	48	0.542	0.458	48	0.885	0.115	49	1.000	0.000
	1989	29	0.000	1.000	0.000	29	0.655	0.345	29	0.948	0.052	29	1.000	0.000
	Pooled	77	0.000	1.000	0.000	77	0.584	0.416	77	0.909	0.091	78	1.000	0.000
Big Salmon	1988	48	0.010	0.990	0.000	48	0.729	0.271	49	0.867	0.133	49	0.980	0.020
	1989	78	0.000	0.987	0.013	78	0.603	0.397	78	0.885	0.115	77	0.987	0.013
	Pooled	126	0.004	0.988	0.008	126	0.651	0.349	127	0.878	0.122	126	0.984	0.016
Little Salmon	1988	35	0.000	1.000	0.000	35	0.686	0.314	35	0.886	0.114	34	1.000	0.000
Bear Feed	1989	27	0.000	1.000	0.000	27	0.667	0.333	27	0.852	0.148	27	0.982	0.019
	1989	87	0.006	0.994	0.000	85	0.600	0.400	87	0.925	0.075	87	0.994	0.006
	Pooled	149	0.003	0.997	0.000	147	0.633	0.367	149	0.903	0.097	148	0.993	0.007
Takhini	1988	25	0.000	1.000	0.000	25	0.680	0.320	25	0.820	0.180	25	1.000	0.000
	1990	25	0.000	1.000	0.000	25	0.840	0.160	25	0.980	0.020	25	1.000	0.000
Stony	1990	121	0.000	1.000	0.000	121	0.727	0.273	121	0.901	0.099	121	1.000	0.000
	Pooled	171	0.000	1.000	0.000	171	0.737	0.263	171	0.901	0.099	171	1.000	0.000
Nisutlin	1989	68	0.015	0.963	0.022	71	0.747	0.254	71	0.887	0.113	70	1.000	0.000

Appendix VIII. Continued.

Stock	Year	PEPB-1 N	PEPB-1 100	PEPB-1 130	PEPB-1 -350	PEPB-1 60	PGM-1 N	PGM-1 100	PGM-1 210	PGM-1 50	mSOD-1 N	mSOD-1 100	mSOD-1 90
Andreafsky	1988	98	0.862	0.138	0.000	0.000	100	1.000	0.000	0.000	100	0.885	0.115
Anvik	1987	40	0.900	0.100	0.000	0.000	40	1.000	0.000	0.000	40	0.950	0.050
	1988	58	0.853	0.147	0.000	0.000	60	1.000	0.000	0.000	57	0.974	0.026
	Pooled	98	0.872	0.128	0.000	0.000	100	1.000	0.000	0.000	97	0.964	0.036
Nulato													
South Fork	1988	50	0.750	0.250	0.000	0.000	50	1.000	0.000	0.000	50	0.940	0.060
North Fork	1988	50	0.880	0.120	0.000	0.000	50	1.000	0.000	0.000	50	0.920	0.080
	Pooled	100	0.815	0.185	0.000	0.000	100	1.000	0.000	0.000	100	0.930	0.070
Gisasa	1987	47	0.798	0.192	0.000	0.011	47	1.000	0.000	0.000	47	0.894	0.106
	1988	89	0.837	0.163	0.000	0.000	91	1.000	0.000	0.000	89	0.921	0.088
	Pooled	136	0.824	0.173	0.000	0.004	138	1.000	0.000	0.000	136	0.912	0.088
Henshaw	1987	85	0.771	0.224	0.000	0.006	86	1.000	0.000	0.000	0	0.000	0.000
Jim	1987	75	0.800	0.193	0.000	0.007	78	1.000	0.000	0.000	62	0.936	0.065
	Pooled	160	0.784	0.209	0.000	0.006	164	1.000	0.000	0.000	62	0.936	0.065
South Fork Koyukuk	1987	85	0.747	0.253	0.000	0.000	88	1.000	0.000	0.000	67	0.873	0.127
Salcha	1988	100	0.780	0.215	0.005	0.000	99	1.000	0.000	0.000	100	0.915	0.085
Chena	1987	139	0.737	0.263	0.000	0.000	150	1.000	0.000	0.000	143	0.895	0.105
	1988	98	0.765	0.235	0.000	0.000	98	1.000	0.000	0.000	97	0.876	0.124
	Pooled	237	0.749	0.251	0.000	0.000	248	1.000	0.000	0.000	240	0.888	0.113
North Klondike	1989	40	0.938	0.063	0.000	0.000	40	1.000	0.000	0.000	44	1.000	0.000
	1990	150	0.920	0.080	0.000	0.000	150	0.997	0.000	0.003	0	0.000	0.000
	Pooled	190	0.924	0.076	0.000	0.000	190	0.997	0.000	0.003	44	1.000	0.000
McQuesten	1989	37	0.932	0.068	0.000	0.000	38	0.868	0.000	0.132	38	1.000	0.000
	1990	200	0.958	0.043	0.000	0.000	200	0.953	0.000	0.048	0	0.000	0.000
	Pooled	237	0.954	0.046	0.000	0.000	238	0.939	0.000	0.061	38	1.000	0.000
Pelly													
Ross	1988	14	1.000	0.000	0.000	0.000	14	1.000	0.000	0.000	14	0.929	0.071
	1989	30	0.983	0.017	0.000	0.000	30	1.000	0.000	0.000	30	0.983	0.017
Blind	1989	150	0.970	0.030	0.000	0.000	150	1.000	0.000	0.000	100	1.000	0.000
	Pooled	194	0.974	0.026	0.000	0.000	194	1.000	0.000	0.000	144	0.990	0.010
Tatchun	1988	49	0.969	0.000	0.010	0.020	48	1.000	0.000	0.000	47	0.926	0.075
	1989	29	1.000	0.000	0.000	0.000	29	1.000	0.000	0.000	29	0.897	0.103
	Pooled	78	0.981	0.000	0.006	0.013	77	1.000	0.000	0.000	76	0.915	0.086
Big Salmon	1988	48	0.990	0.000	0.010	0.000	49	1.000	0.000	0.000	49	0.939	0.061
	1989	74	0.973	0.020	0.000	0.007	78	1.000	0.000	0.000	78	1.000	0.000
	Pooled	122	0.980	0.012	0.004	0.004	127	1.000	0.000	0.000	127	0.976	0.024
Little Salmon	1988	35	1.000	0.000	0.000	0.000	35	1.000	0.000	0.000	34	0.956	0.044
	1989	27	0.982	0.000	0.000	0.019	27	0.982	0.000	0.019	27	1.000	0.000
Bear Feed	1989	87	1.000	0.000	0.000	0.000	87	1.000	0.000	0.000	74	0.987	0.014
	Pooled	149	0.997	0.000	0.000	0.003	149	0.997	0.000	0.003	135	0.982	0.019
Takhini	1988	25	1.000	0.000	0.000	0.000	25	1.000	0.000	0.000	25	0.940	0.060
	1990	25	1.000	0.000	0.000	0.000	25	1.000	0.000	0.000	24	0.854	0.146
Stony	1990	121	1.000	0.000	0.000	0.000	121	1.000	0.000	0.000	109	0.913	0.087
	Pooled	171	1.000	0.000	0.000	0.000	171	1.000	0.000	0.000	158	0.908	0.092
Nisutlin	1989	68	0.956	0.000	0.000	0.044	71	1.000	0.000	0.000	68	0.985	0.015

Appendix VIII. Continued.

Stock	Year	sSOD-1			TPI-1			TPI-2				TPI-4		
		N	-100	-260	N	-100	-121	N	-100	63	-400	N	100	104
Andreafsky	1988	94	0.942	0.059	100	1.000	0.000	100	1.000	0.000	0.000	99	0.919	0.081
Anvik	1987	40	0.975	0.025	40	1.000	0.000	40	1.000	0.000	0.000	40	0.900	0.100
	1988	60	0.975	0.025	60	1.000	0.000	60	1.000	0.000	0.000	60	0.892	0.108
	Pooled	100	0.975	0.025	100	1.000	0.000	100	1.000	0.000	0.000	100	0.895	0.105
Nulato														
South Fork	1988	49	0.939	0.061	50	1.000	0.000	50	1.000	0.000	0.000	50	0.880	0.120
North Fork	1988	50	0.970	0.030	49	1.000	0.000	49	1.000	0.000	0.000	50	0.950	0.050
	Pooled	99	0.955	0.046	99	1.000	0.000	99	1.000	0.000	0.000	100	0.915	0.085
Gisasa	1987	47	1.000	0.000	47	1.000	0.000	47	0.968	0.000	0.032	47	0.915	0.085
	1988	91	0.940	0.060	91	1.000	0.000	91	0.995	0.000	0.006	91	0.912	0.088
	Pooled	138	0.960	0.040	138	1.000	0.000	138	0.986	0.000	0.015	138	0.913	0.087
Henshaw	1987	81	0.988	0.012	87	1.000	0.000	87	1.000	0.000	0.000	87	0.902	0.098
Jim	1987	78	0.974	0.026	78	1.000	0.000	78	1.000	0.000	0.000	78	0.833	0.167
	Pooled	159	0.981	0.019	165	1.000	0.000	165	1.000	0.000	0.000	165	0.870	0.130
South Fork Koyukuk	1987	88	0.989	0.011	88	1.000	0.000	88	1.000	0.000	0.000	88	0.903	0.097
Salcha	1988	100	0.990	0.010	100	1.000	0.000	100	1.000	0.000	0.000	100	0.860	0.140
Chena	1987	148	0.953	0.047	141	1.000	0.000	141	1.000	0.000	0.000	139	0.889	0.112
	1988	97	0.990	0.010	98	1.000	0.000	98	1.000	0.000	0.000	98	0.888	0.112
	Pooled	245	0.967	0.033	239	1.000	0.000	239	1.000	0.000	0.000	237	0.888	0.112
North Klondike	1989	40	1.000	0.000	40	1.000	0.000	40	1.000	0.000	0.000	40	0.825	0.175
	1990	150	0.997	0.003	150	1.000	0.000	150	0.997	0.003	0.000	150	0.843	0.157
	Pooled	190	0.997	0.003	190	1.000	0.000	190	0.997	0.003	0.000	190	0.840	0.161
McQuesten	1989	38	1.000	0.000	38	1.000	0.000	38	1.000	0.000	0.000	38	0.974	0.026
	1990	200	1.000	0.000	200	1.000	0.000	200	0.998	0.003	0.000	200	0.898	0.103
	Pooled	238	1.000	0.000	238	1.000	0.000	238	0.998	0.002	0.000	238	0.910	0.090
Pelly														
Ross	1988	14	1.000	0.000	14	1.000	0.000	14	0.964	0.036	0.000	14	1.000	0.000
	1989	30	1.000	0.000	30	1.000	0.000	30	0.867	0.133	0.000	30	0.967	0.033
Blind	1989	150	1.000	0.000	150	1.000	0.000	150	0.940	0.060	0.000	150	0.997	0.003
	Pooled	194	1.000	0.000	194	1.000	0.000	194	0.930	0.070	0.000	194	0.992	0.008
Tatchun	1988	49	1.000	0.000	49	1.000	0.000	49	1.000	0.000	0.000	49	0.980	0.020
	1989	29	1.000	0.000	29	1.000	0.000	29	1.000	0.000	0.000	29	1.000	0.000
	Pooled	78	1.000	0.000	78	1.000	0.000	78	1.000	0.000	0.000	78	1.000	0.000
Big Salmon	1988	49	1.000	0.000	49	1.000	0.000	49	1.000	0.000	0.000	49	0.980	0.020
	1989	78	1.000	0.000	78	1.000	0.000	78	0.981	0.019	0.000	78	0.994	0.006
	Pooled	127	1.000	0.000	127	1.000	0.000	127	0.988	0.012	0.000	127	0.988	0.012
Little Salmon	1988	35	1.000	0.000	35	1.000	0.000	35	1.000	0.000	0.000	35	1.000	0.000
	1989	27	1.000	0.000	27	1.000	0.000	27	0.982	0.019	0.000	27	1.000	0.000
Bear Feed	1989	87	1.000	0.000	87	1.000	0.000	87	1.000	0.000	0.000	87	0.994	0.006
	Pooled	149	1.000	0.000	149	1.000	0.000	149	0.997	0.003	0.000	149	0.997	0.003
Takhini	1988	25	1.000	0.000	25	1.000	0.000	25	1.000	0.000	0.000	25	1.000	0.000
	1990	25	1.000	0.000	25	1.000	0.000	25	1.000	0.000	0.000	25	1.000	0.000
Stony	1990	121	1.000	0.000	121	1.000	0.000	121	1.000	0.000	0.000	121	1.000	0.000
	Pooled	171	1.000	0.000	171	1.000	0.000	171	1.000	0.000	0.000	171	1.000	0.000
Nisutlin	1989	71	1.000	0.000	71	1.000	0.000	71	1.000	0.000	0.000	71	0.986	0.014

[a] The common allele for sMEP-1 in the Yukon River stocks is the alternative allele in California stocks of chinook salmon studied by Gall et al. (1989).

Appendix IX. Yukon River District 1 chum salmon harvest proportions by stock-grouping of origin in 1987. Estimates for 1987 were based on analysis of 12 loci.

	PERIOD # 1 JUNE 16 TO JUNE 19			PERIOD # 2 JUNE 23 TO JUNE 26		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.8812	0.7873	0.1143	0.7597	0.7228	0.1216
Mid-river Summer Run	0.0000	0.0423	0.0632	0.1841	0.1720	0.1318
Tanana River Fall Run	0.0000	0.0084	0.0247	0.0000	0.0173	0.0360
Chandalar/Sheenjek	0.0000	0.0039	0.0175	0.0555	0.0258	0.0487
Fishing Br./Canadian Mainstem	0.1188	0.1495	0.0915	0.0007	0.0556	0.0827
Upper Canadian Yukon	0.0000	0.0086	0.0204	0.0000	0.0064	0.0189
U.S. Summer Run	0.8812	0.8296	0.0903	0.9438	0.8949	0.0889
U.S. Fall Run	0.0000	0.0122	0.0293	0.0555	0.0431	0.0578
Canadian Fall Run	0.1188	0.1581	0.0886	0.0007	0.0620	0.0837
U.S.	0.8812	0.8418	0.0886	0.9993	0.9380	0.0837
Canada	0.1188	0.1581	0.0886	0.0007	0.0620	0.0837
Summer Run	0.8812	0.8296	0.0903	0.9438	0.8949	0.0889
Fall Run	0.1188	0.1703	0.0903	0.0562	0.1051	0.0889

	PERIOD # 3 JUNE 30 TO JULY 3			PERIOD # 4 JULY 6 TO JULY 11		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.6636	0.5512	0.1401	0.7745	0.7259	0.1360
Mid-river Summer Run	0.0926	0.2074	0.1445	0.2242	0.2119	0.1275
Tanana River Fall Run	0.0077	0.0106	0.0249	0.0000	0.0026	0.0112
Chandalar/Sheenjek	0.1756	0.1282	0.1033	0.0000	0.0136	0.0335
Fishing Br./Canadian Mainstem	0.0032	0.0551	0.0814	0.0013	0.0444	0.0590
Upper Canadian Yukon	0.0573	0.0474	0.0558	0.0000	0.0015	0.0086
U.S. Summer Run	0.7562	0.7587	0.1180	0.9987	0.9378	0.0643
U.S. Fall Run	0.1833	0.1388	0.1046	0.0000	0.0162	0.0345
Canadian Fall Run	0.0605	0.1025	0.1011	0.0013	0.0460	0.0600
U.S.	0.9395	0.8975	0.1014	0.9987	0.9540	0.0600
Canada	0.0605	0.1025	0.1014	0.0013	0.0460	0.0600
Summer Run	0.7562	0.7587	0.1180	0.9987	0.9378	0.0643
Fall Run	0.2438	0.2413	0.1180	0.0013	0.0622	0.0643

Appendix IX. (continued)

STOCK GROUPING	PERIOD # 5 JULY 13 TO JULY 19			PERIOD # 6 JULY 21 TO JULY 27		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.4369	0.4131	0.1521	0.0181	0.0942	0.0892
Mid-river Summer Run	0.3923	0.3258	0.1818	0.3553	0.3136	0.1334
Tanana River Fall Run	0.1376	0.1499	0.1145	0.1238	0.1616	0.1099
Chandalar/Sheenjek	0.0332	0.0447	0.0710	0.0001	0.0316	0.0754
Fishing Br./Canadian Mainstem	0.0000	0.0508	0.0804	0.3994	0.2840	0.1412
Upper Canadian Yukon	0.0000	0.0157	0.0312	0.1034	0.1150	0.0785
U.S. Summer Run	0.8292	0.7389	0.1308	0.3734	0.4078	0.1281
U.S. Fall Run	0.1708	0.1946	0.1244	0.1239	0.1932	0.1249
Canadian Fall Run	0.0000	0.0665	0.0858	0.5027	0.3990	0.1296
U.S.	1.0000	0.9334	0.0858	0.4973	0.6010	0.1296
Canada	0.0000	0.0665	0.0858	0.5027	0.3990	0.1296
Summer Run	0.8292	0.7389	0.1308	0.3734	0.4078	0.1281
Fall Run	0.1708	0.2611	0.1308	0.6266	0.5922	0.1281

STOCK GROUPING	PERIOD # 7 AUG 6 TO AUG 10			PERIOD # 8 AUG 12 TO AUG 17		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0222	0.0507	0.0568	0.0000	0.0192	0.0419
Mid-river Summer Run	0.0002	0.0324	0.0519	0.2051	0.1740	0.1046
Tanana River Fall Run	0.3692	0.3313	0.1317	0.4157	0.4078	0.1400
Chandalar/Sheenjek	0.3148	0.1846	0.1514	0.0000	0.0069	0.0280
Fishing Br./Canadian Mainstem	0.2937	0.3631	0.1767	0.3497	0.3214	0.1407
Upper Canadian Yukon	0.0000	0.0378	0.0592	0.0296	0.0707	0.0803
U.S. Summer Run	0.0224	0.0831	0.0680	0.2051	0.1932	0.1028
U.S. Fall Run	0.6840	0.5160	0.1739	0.4157	0.4147	0.1410
Canadian Fall Run	0.2937	0.4009	0.1724	0.3792	0.3921	0.1433
U.S.	0.7063	0.5991	0.1724	0.6208	0.6079	0.1433
Canada	0.2937	0.4009	0.1724	0.3792	0.3921	0.1433
Summer Run	0.0224	0.0831	0.0680	0.2051	0.1932	0.1028
Fall Run	0.9776	0.9169	0.0680	0.7949	0.8068	0.1028

Appendix IX. (continued)

	PERIOD # 9 AUG 20 TO AUG 26		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0000	0.0093	0.0202
Mid-river Summer Run	0.0483	0.0556	0.0618
Tanana River Fall Run	0.5462	0.4984	0.1601
Chandalar/Sheenjek	0.0000	0.0178	0.0466
Fishing Br./Canadian Mainstem	0.2864	0.3027	0.1735
Upper Canadian Yukon	0.1191	0.1161	0.0901
U.S. Summer Run	0.0483	0.0649	0.0632
U.S. Fall Run	0.5462	0.5162	0.1564
Canadian Fall Run	0.4055	0.4188	0.1659
U.S.	0.5945	0.5812	0.1659
Canada	0.4055	0.4188	0.1659
Summer Run	0.0483	0.0649	0.0632
Fall Run	0.9517	0.9350	0.0632

Appendix X. Yukon River District 1 chum salmon harvest numbers by stock-grouping of origin in 1987. Estimates for 1987 were based on analysis of 12 loci.

	PERIOD # 1 JUNE 16 TO JUNE 19			PERIOD # 2 JUNE 23 TO JUNE 26		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	27113	24223	3517	28164	26798	4508
Mid-river Summer Run	0	1303	1946	6826	6377	4887
Tanana River Fall Run	0	257	761	0	642	1333
Chandalar/Sheenjek	0	119	538	2056	956	1806
Fishing Br./Canadian Mainstem	3655	4601	2814	27	2061	3067
Upper Canadian Yukon	0	264	628	0	237	702
U.S. Summer Run	27113	25526	2779	34990	33176	3297
U.S. Fall Run	0	376	901	2056	1598	2144
Canadian Fall Run	3655	4865	2725	27	2298	3102
U.S.	27113	25902	2725	37047	34774	3101
Canada	3655	4865	2725	27	2298	3101
Summer Run	27113	25526	2779	34990	33176	3297
Fall Run	3655	5240	2779	2084	3896	3297
Total	30768	30766		37074	37072	

	PERIOD # 3 JUNE 30 TO JULY 3			PERIOD # 4 JULY 6 TO JULY 11		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	78322	65060	16532	28678	26878	5034
Mid-river Summer Run	10931	24483	17054	8301	7847	4722
Tanana River Fall Run	908	1251	2939	0	96	413
Chandalar/Sheenjek	20725	15131	12197	0	505	1240
Fishing Br./Canadian Mainstem	377	6507	9608	49	1645	2183
Upper Canadian Yukon	6766	5589	6585	0	57	317
U.S. Summer Run	89252	89544	13924	36979	34724	2382
U.S. Fall Run	21633	16382	12349	0	601	1276
Canadian Fall Run	7143	12096	11938	49	1702	2221
U.S.	110885	105925	11972	36979	35325	2220
Canada	7143	12096	11972	49	1702	2220
Summer Run	89252	89544	13924	36979	34724	2382
Fall Run	28776	28477	13924	49	2302	2382
Total	118028	118021		37028	37027	

Appendix X. (continued)

STOCK GROUPING	PERIOD # 5 JULY 13 TO JULY 19			PERIOD # 6 JULY 21 TO JULY 27		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	0	0	0	0	0
Mid-river Summer Run	0	0	0	0	0	0
Tanana River Fall Run	0	0	0	0	0	0
Chandalar/Sheenjek	0	0	0	0	0	0
Fishing Br./Canadian Mainstem	0	0	0	0	0	0
Upper Canadian Yukon	0	0	0	0	0	0
U.S. Summer Run	0	0	0	0	0	0
U.S. Fall Run	0	0	0	0	0	0
Canadian Fall Run	0	0	0	0	0	0
U.S.	0	0	0	0	0	0
Canada	0	0	0	0	0	0
Summer Run	0	0	0	0	0	0
Fall Run	0	0	0	0	0	0
Total	0	0		0	0	

STOCK GROUPING	PERIOD # 7 AUG 6 TO AUG 10			PERIOD # 8 AUG 12 TO AUG 17		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	0	0	0	0	0
Mid-river Summer Run	0	0	0	0	0	0
Tanana River Fall Run	0	0	0	0	0	0
Chandalar/Sheenjek	0	0	0	0	0	0
Fishing Br./Canadian Mainstem	0	0	0	0	0	0
Upper Canadian Yukon	0	0	0	0	0	0
U.S. Summer Run	0	0	0	0	0	0
U.S. Fall Run	0	0	0	0	0	0
Canadian Fall Run	0	0	0	0	0	0
U.S.	0	0	0	0	0	0
Canada	0	0	0	0	0	0
Summer Run	0	0	0	0	0	0
Fall Run	0	0	0	0	0	0
Total	0	0		0	0	

Appendix X. (continued)

STOCK GROUPING	PERIOD # 9 AUG 20 TO AUG 26		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	0	0
Mid-river Summer Run	0	0	0
Tanana River Fall Run	0	0	0
Chandalar/Sheenjek	0	0	0
Fishing Br./Canadian Mainstem	0	0	0
Upper Canadian Yukon	0	0	0
U.S. Summer Run	0	0	0
U.S. Fall Run	0	0	0
Canadian Fall Run	0	0	0
U.S.	0	0	0
Canada	0	0	0
Summer Run	0	0	0
Fall Run	0	0	0
Total	0	0	

Appendix XI. Yukon River District 1 chum salmon harvest proportions by stock-grouping of origin in 1988.

	PERIOD # 1 JUNE 5 TO JUNE 10			PERIOD # 2 JUNE 14 TO JUNE 17		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.8064	0.7753	0.0876	0.9575	0.8819	0.0705
Mid-river Summer Run	0.0267	0.0862	0.0808	0.0236	0.0794	0.0601
Tanana River Fall Run	0.0731	0.0281	0.0338	0.0000	0.0025	0.0086
Chandalar/Sheenjek	0.0426	0.0406	0.0540	0.0030	0.0218	0.0328
Fishing Br./Canadian Mainstem	0.0143	0.0358	0.0479	0.0000	0.0051	0.0140
Upper Canadian Yukon	0.0369	0.0340	0.0289	0.0158	0.0094	0.0185
U.S. Summer Run	0.8331	0.8615	0.0646	0.9812	0.9612	0.0364
U.S. Fall Run	0.1157	0.0687	0.0633	0.0030	0.0243	0.0333
Canadian Fall Run	0.0512	0.0697	0.0550	0.0158	0.0145	0.0224
U.S.	0.9488	0.9302	0.0551	0.9842	0.9855	0.0224
Canada	0.0512	0.0697	0.0551	0.0158	0.0145	0.0224
Summer Run	0.8331	0.8615	0.0646	0.9812	0.9612	0.0364
Fall Run	0.1669	0.1384	0.0646	0.0188	0.0387	0.0364

	PERIOD # 3 JUNE 21 TO JUNE 28			PERIOD # 4 JULY 1 TO JULY 8		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.8966	0.8235	0.0921	0.7829	0.7170	0.1122
Mid-river Summer Run	0.0922	0.1390	0.0945	0.2171	0.2403	0.1175
Tanana River Fall Run	0.0112	0.0257	0.0333	0.0000	0.0078	0.0221
Chandalar/Sheenjek	0.0000	0.0008	0.0044	0.0000	0.0106	0.0276
Fishing Br./Canadian Mainstem	0.0000	0.0105	0.0184	0.0000	0.0235	0.0336
Upper Canadian Yukon	0.0000	0.0004	0.0023	0.0000	0.0008	0.0034
U.S. Summer Run	0.9888	0.9625	0.0381	1.0000	0.9572	0.0483
U.S. Fall Run	0.0112	0.0265	0.0333	0.0000	0.0184	0.0367
Canadian Fall Run	0.0000	0.0109	0.0184	0.0000	0.0243	0.0337
U.S.	1.0000	0.9890	0.0184	1.0000	0.9756	0.0337
Canada	0.0000	0.0109	0.0184	0.0000	0.0243	0.0337
Summer Run	0.9888	0.9625	0.0381	1.0000	0.9572	0.0483
Fall Run	0.0112	0.0375	0.0381	0.0000	0.0427	0.0483

Appendix XI. (continued)

STOCK GROUPING	PERIOD # 5 JULY 10 TO JULY 15			PERIOD # 6 JULY 17 TO JULY 26		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.5701	0.5122	0.1068	0.1325	0.1249	0.0842
Mid-river Summer Run	0.2271	0.2779	0.1215	0.1415	0.1479	0.1009
Tanana River Fall Run	0.0000	0.0147	0.0287	0.1344	0.1119	0.0955
Chandalar/Sheenjek	0.1849	0.1561	0.0948	0.2489	0.2717	0.1374
Fishing Br./Canadian Mainstem	0.0000	0.0205	0.0427	0.2508	0.2460	0.1334
Upper Canadian Yukon	0.0178	0.0184	0.0217	0.0984	0.0976	0.0626
U.S. Summer Run	0.7972	0.7901	0.0845	0.2740	0.2727	0.0949
U.S. Fall Run	0.1849	0.1708	0.0926	0.3833	0.3836	0.1559
Canadian Fall Run	0.0178	0.0390	0.0470	0.3493	0.3436	0.1407
U.S.	0.9822	0.9610	0.0470	0.6573	0.6564	0.1407
Canada	0.0178	0.0390	0.0470	0.3493	0.3436	0.1407
Summer Run	0.7972	0.7901	0.0845	0.2740	0.2727	0.0949
Fall Run	0.2028	0.2098	0.0845	0.7326	0.7272	0.0949

STOCK GROUPING	PERIOD # 7 JULY 27 TO AUG 6			PERIOD # 8 AUG 8 TO AUG 16		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0938	0.0951	0.0861	0.0225	0.0281	0.0321
Mid-river Summer Run	0.0830	0.1532	0.1165	0.0352	0.1067	0.0833
Tanana River Fall Run	0.0505	0.1119	0.0846	0.4045	0.4074	0.0907
Chandalar/Sheenjek	0.4258	0.3386	0.1780	0.0530	0.1334	0.1099
Fishing Br./Canadian Mainstem	0.2710	0.2402	0.1707	0.4001	0.2371	0.1251
Upper Canadian Yukon	0.0759	0.0610	0.0617	0.0847	0.0873	0.0670
U.S. Summer Run	0.1767	0.2483	0.1249	0.0577	0.1348	0.0805
U.S. Fall Run	0.4763	0.4506	0.1801	0.4575	0.5408	0.1252
Canadian Fall Run	0.3470	0.3012	0.1674	0.4848	0.3244	0.1308
U.S.	0.6530	0.6988	0.1674	0.5152	0.6756	0.1308
Canada	0.3470	0.3012	0.1674	0.4848	0.3244	0.1308
Summer Run	0.1767	0.2483	0.1249	0.0577	0.1348	0.0804
Fall Run	0.8233	0.7517	0.1249	0.9423	0.8652	0.0804

Appendix XI. (continued)

STOCK GROUPING	PERIOD # 9 AUG 23 TO AUG 30		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0432	0.0752	0.0455
Mid-river Summer Run	0.0553	0.0648	0.0601
Tanana River Fall Run	0.7009	0.6281	0.0807
Chandalar/Sheenjek	0.1045	0.1061	0.0752
Fishing Br./Canadian Mainstem	0.0347	0.0639	0.0693
Upper Canadian Yukon	0.0613	0.0620	0.0345
U.S. Summer Run	0.0985	0.1399	0.0598
U.S. Fall Run	0.8055	0.7342	0.0850
Canadian Fall Run	0.0960	0.1259	0.0734
U.S.	0.9040	0.8741	0.0734
Canada	0.0960	0.1259	0.0734
Summer Run	0.0985	0.1399	0.0598
Fall Run	0.9015	0.8601	0.0598

Appendix XII. Yukon River District 1 chum salmon harvest numbers by stock-grouping of origin in 1988.

	PERIOD # 1 JUNE 5 TO JUNE 10			PERIOD # 2 JUNE 14 TO JUNE 17		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	51618	49628	5606	173175	159486	12755
Mid-river Summer Run	1710	5519	5172	4274	14357	10878
Tanana River Fall Run	4677	1800	2166	0	453	1560
Chandalar/Sheenjek	2729	2596	3457	547	3937	5940
Fishing Br./Canadian Mainstem	917	2290	3064	0	923	2535
Upper Canadian Yukon	2359	2175	1853	2858	1692	3346
U.S. Summer Run	53328	55147	4132	177450	173843	6578
U.S. Fall Run	7406	4396	4050	547	4390	6019
Canadian Fall Run	3276	4465	3523	2858	2615	4055
U.S.	60734	59543	3524	177996	178233	4053
Canada	3276	4465	3524	2858	2615	4053
Summer Run	53328	55147	4132	177450	173843	6578
Fall Run	10682	8861	4132	3404	7005	6578
Total	64010	64008		180854	180847	

	PERIOD # 3 JUNE 21 TO JUNE 28			PERIOD # 4 JULY 1 TO JULY 8		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	186648	171425	19170	136122	124655	19513
Mid-river Summer Run	19201	28930	19666	37739	41777	20427
Tanana River Fall Run	2323	5360	6927	0	1355	3842
Chandalar/Sheenjek	0	166	916	1	1838	4804
Fishing Br./Canadian Mainstem	1	2185	3824	5	4083	5849
Upper Canadian Yukon	0	93	479	0	147	598
U.S. Summer Run	205848	200355	7935	173861	166433	8401
U.S. Fall Run	2323	5526	6940	1	3192	6385
Canadian Fall Run	1	2279	3832	5	4230	5861
U.S.	208171	205881	3833	173861	169625	5861
Canada	1	2279	3833	5	4230	5861
Summer Run	205848	200355	7935	173861	166433	8401
Fall Run	2324	7804	7935	5	7422	8401
Total	208172	208160		173866	173855	

Appendix XII. (continued)

STOCK GROUPING	PERIOD # 5 JULY 10 TO JULY 15			PERIOD # 6 JULY 17 TO JULY 26		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	12142	10908	2275	0	0	0
Mid-river Summer Run	4837	5919	2587	0	0	0
Tanana River Fall Run	0	313	612	0	0	0
Chandalar/Sheenjek	3939	3325	2019	0	0	0
Fishing Br./Canadian Mainstem	0	437	910	0	0	0
Upper Canadian Yukon	379	392	462	0	0	0
U.S. Summer Run	16978	16827	1799	0	0	0
U.S. Fall Run	3939	3638	1972	0	0	0
Canadian Fall Run	379	830	1001	0	0	0
U.S.	20917	20465	1001	0	0	0
Canada	379	830	1001	0	0	0
Summer Run	16978	16827	1799	0	0	0
Fall Run	4318	4468	1799	0	0	0
Total	21296	21295		0	0	

STOCK GROUPING	PERIOD # 7 JULY 27 TO AUG 6			PERIOD # 8 AUG 8 TO AUG 16		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	0	0	731	911	1041
Mid-river Summer Run	0	0	0	1144	3466	2704
Tanana River Fall Run	0	0	0	13137	13233	2945
Chandalar/Sheenjek	0	0	0	1722	4332	3569
Fishing Br./Canadian Mainstem	0	0	0	12995	7701	4063
Upper Canadian Yukon	0	0	0	2751	2835	2175
U.S. Summer Run	0	0	0	1875	4377	2613
U.S. Fall Run	0	0	0	14859	17565	4067
Canadian Fall Run	0	0	0	15746	10536	4248
U.S.	0	0	0	16734	21942	4248
Canada	0	0	0	15746	10536	4248
Summer Run	0	0	0	1875	4377	2613
Fall Run	0	0	0	30605	28101	2613
Total	0	0		32480	32478	

Appendix XII. (continued)

STOCK GROUPING	PERIOD # 9 AUG 23 TO AUG 30		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	541	941	570
Mid-river Summer Run	693	811	752
Tanana River Fall Run	8773	7861	1010
Chandalar/Sheenjek	1308	1328	942
Fishing Br./Canadian Mainstem	434	800	868
Upper Canadian Yukon	767	775	432
U.S. Summer Run	1233	1751	748
U.S. Fall Run	10081	9189	1063
Canadian Fall Run	1202	1576	919
U.S.	11314	10940	919
Canada	1202	1576	919
Summer Run	1233	1751	748
Fall Run	11283	10764	748
Total	12516	12516	

Appendix XIII. Yukon River District 1 chum salmon harvest proportions by stock-grouping of origin in 1989.

	PERIOD # 1 JUNE 13 TO JUNE 16			PERIOD # 2 JUNE 20 TO JUNE 25		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.9148	0.8342	0.0818	0.7869	0.7019	0.0947
Mid-river Summer Run	0.0818	0.1357	0.0762	0.1958	0.2208	0.0933
Tanana River Fall Run	0.0034	0.0234	0.0340	0.0078	0.0391	0.0420
Chandalar/Sheenjek	0.0000	0.0006	0.0028	0.0000	0.0059	0.0225
Fishing Br./Canadian Mainstem	0.0000	0.0060	0.0200	0.0001	0.0170	0.0290
Upper Canadian Yukon	0.0000	0.0000	0.0001	0.0093	0.0153	0.0203
U.S. Summer Run	0.9966	0.9699	0.0385	0.9827	0.9227	0.0497
U.S. Fall Run	0.0034	0.0240	0.0344	0.0078	0.0450	0.0437
Canadian Fall Run	0.0000	0.0060	0.0200	0.0094	0.0323	0.0339
U.S.	1.0000	0.9939	0.0200	0.9906	0.9676	0.0339
Canada	0.0000	0.0060	0.0200	0.0094	0.0323	0.0339
Summer Run	0.9966	0.9699	0.0385	0.9827	0.9227	0.0497
Fall Run	0.0034	0.0301	0.0385	0.0173	0.0773	0.0497

	PERIOD # 3 JUNE 27 TO JUNE 30			PERIOD # 4 JULY 4 TO JULY 7		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.6641	0.6562	0.1262	0.7121	0.6719	0.1229
Mid-river Summer Run	0.3271	0.3101	0.1270	0.2373	0.2411	0.1205
Tanana River Fall Run	0.0087	0.0244	0.0393	0.0505	0.0573	0.0594
Chandalar/Sheenjek	0.0000	0.0001	0.0003	0.0001	0.0107	0.0222
Fishing Br./Canadian Mainstem	0.0000	0.0063	0.0140	0.0000	0.0143	0.0265
Upper Canadian Yukon	0.0000	0.0029	0.0130	0.0000	0.0047	0.0115
U.S. Summer Run	0.9913	0.9663	0.0459	0.9494	0.9130	0.0631
U.S. Fall Run	0.0087	0.0245	0.0395	0.0506	0.0680	0.0616
Canadian Fall Run	0.0000	0.0092	0.0214	0.0000	0.0189	0.0278
U.S.	1.0000	0.9908	0.0214	1.0000	0.9810	0.0278
Canada	0.0000	0.0092	0.0214	0.0000	0.0189	0.0278
Summer Run	0.9913	0.9663	0.0459	0.9494	0.9130	0.0631
Fall Run	0.0087	0.0336	0.0459	0.0506	0.0869	0.0631

Appendix XIII. (continued)

STOCK GROUPING	PERIOD # 5 JULY 11 TO JULY 16			PERIOD # 6 JULY 19 TO JULY 28		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.3770	0.3227	0.0808	0.1800	0.1524	0.0717
Mid-river Summer Run	0.0010	0.0722	0.0738	0.0692	0.1053	0.0716
Tanana River Fall Run	0.0154	0.0551	0.0539	0.1666	0.1561	0.0941
Chandalar/Sheenjek	0.2560	0.2145	0.1399	0.4104	0.3468	0.1452
Fishing Br./Canadian Mainstem	0.3134	0.2850	0.1320	0.0809	0.1533	0.1262
Upper Canadian Yukon	0.0372	0.0503	0.0453	0.0929	0.0860	0.0580
U.S. Summer Run	0.3780	0.3949	0.0965	0.2492	0.2577	0.0904
U.S. Fall Run	0.2713	0.2697	0.1475	0.5770	0.5030	0.1605
Canadian Fall Run	0.3506	0.3354	0.1275	0.1738	0.2393	0.1347
U.S.	0.6494	0.6646	0.1275	0.8262	0.7607	0.1347
Canada	0.3506	0.3354	0.1275	0.1738	0.2393	0.1347
Summer Run	0.3780	0.3949	0.0965	0.2492	0.2577	0.0904
Fall Run	0.6220	0.6050	0.0965	0.7508	0.7422	0.0904

STOCK GROUPING	PERIOD # 7 AUG 1 TO AUG 4			PERIOD # 8 AUG 8 TO AUG 11		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0011	0.0478	0.0509	0.1221	0.1474	0.0784
Mid-river Summer Run	0.2358	0.1973	0.1138	0.1452	0.1634	0.1072
Tanana River Fall Run	0.1416	0.1683	0.1059	0.1842	0.1416	0.0894
Chandalar/Sheenjek	0.3129	0.2790	0.1504	0.4174	0.3294	0.1421
Fishing Br./Canadian Mainstem	0.1872	0.2087	0.1316	0.1249	0.1652	0.1163
Upper Canadian Yukon	0.1214	0.0988	0.0725	0.0062	0.0530	0.0633
U.S. Summer Run	0.2369	0.2451	0.1067	0.2673	0.3108	0.0873
U.S. Fall Run	0.4545	0.4473	0.1855	0.6016	0.4710	0.1560
Canadian Fall Run	0.3086	0.3075	0.1533	0.1311	0.2182	0.1193
U.S.	0.6914	0.6925	0.1533	0.8689	0.7818	0.1193
Canada	0.3086	0.3075	0.1533	0.1311	0.2182	0.1193
Summer Run	0.2369	0.2451	0.1067	0.2673	0.3108	0.0873
Fall Run	0.7631	0.7549	0.1067	0.7327	0.6892	0.0873

Appendix XIII. (continued)

STOCK GROUPING	PERIOD # 9 AUG 15 TO AUG 22		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0063	0.0334	0.0334
Mid-river Summer Run	0.1071	0.1322	0.0859
Tanana River Fall Run	0.4197	0.4534	0.0997
Chandalar/Sheenjek	0.0036	0.0531	0.0625
Fishing Br./Canadian Mainstem	0.4296	0.2955	0.1215
Upper Canadian Yukon	0.0337	0.0324	0.0349
U.S. Summer Run	0.1134	0.1656	0.0861
U.S. Fall Run	0.4233	0.5065	0.1187
Canadian Fall Run	0.4633	0.3279	0.1152
U.S.	0.5367	0.6721	0.1152
Canada	0.4633	0.3279	0.1152
Summer Run	0.1134	0.1656	0.0861
Fall Run	0.8866	0.8344	0.0861

Appendix XIV. Yukon River District 1 chum salmon harvest numbers by stock-grouping of origin in 1989.

	PERIOD # 1 JUNE 13 TO JUNE 16			PERIOD # 2 JUNE 20 TO JUNE 25		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	131805	120197	11785	113143	100912	13620
Mid-river Summer Run	11788	19554	10981	28156	31747	13413
Tanana River Fall Run	495	3378	4902	1127	5621	6037
Chandalar/Sheenjek	0	83	402	1	845	3232
Fishing Br./Canadian Mainstem	0	867	2886	12	2446	4162
Upper Canadian Yukon	0	3	17	1342	2199	2921
U.S. Summer Run	143592	139751	5548	141299	132659	7144
U.S. Fall Run	495	3461	4950	1127	6466	6278
Canadian Fall Run	0	870	2886	1354	4645	4870
U.S.	144087	143211	2886	142426	139125	4868
Canada	0	870	2886	1354	4645	4868
Summer Run	143592	139751	5546	141299	132659	7144
Fall Run	495	4330	5546	2481	11111	7144
Total	144087	144081		143780	143770	

	PERIOD # 3 JUNE 27 TO JUNE 30			PERIOD # 4 JULY 4 TO JULY 7		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	108615	107314	20642	40964	38653	7069
Mid-river Summer Run	53501	50719	20769	13649	13867	6934
Tanana River Fall Run	1427	3987	6433	2908	3299	3416
Chandalar/Sheenjek	0	12	47	4	613	1278
Fishing Br./Canadian Mainstem	0	1032	2294	0	821	1524
Upper Canadian Yukon	0	470	2132	0	268	659
U.S. Summer Run	162116	158032	7503	54612	52520	3627
U.S. Fall Run	1427	3999	6453	2911	3912	3543
Canadian Fall Run	0	1501	3499	0	1089	1599
U.S.	163543	162031	3499	57524	56432	1598
Canada	0	1501	3499	0	1089	1598
Summer Run	162116	158032	7499	54612	52520	3627
Fall Run	1427	5500	7499	2911	5000	3627
Total	163543	163532		57524	57521	

Appendix XIV. (contiued)

STOCK GROUPING	PERIOD # 5 JULY 11 TO JULY 16			PERIOD # 6 JULY 19 TO JULY 28		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	14589	12487	3128	788	668	314
Mid-river Summer Run	40	2796	2857	303	461	313
Tanana River Fall Run	595	2134	2087	730	684	412
Chandalar/Sheenjek	9906	8302	5413	1798	1520	636
Fishing Br./Canadian Mainstem	12128	11029	5108	354	671	553
Upper Canadian Yukon	1440	1948	1754	407	377	254
U.S. Summer Run	14629	15283	3734	1092	1129	396
U.S. Fall Run	10500	10436	5707	2528	2204	703
Canadian Fall Run	13568	12977	4934	762	1048	590
U.S.	25129	25719	4934	3619	3333	590
Canada	13568	12977	4934	762	1048	590
Summer Run	14629	15283	3734	1092	1129	396
Fall Run	24068	23413	3734	3289	3252	396
Total	38697	38696		4381	4381	

STOCK GROUPING	PERIOD # 7 AUG 1 TO AUG 4			PERIOD # 8 AUG 8 TO AUG 11		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	55	2344	2493	776	936	498
Mid-river Summer Run	11555	9668	5578	922	1038	681
Tanana River Fall Run	6938	8248	5189	1171	900	568
Chandalar/Sheenjek	15333	13672	7371	2652	2093	903
Fishing Br./Canadian Mainstem	9172	10228	6447	794	1050	739
Upper Canadian Yukon	5950	4841	3552	39	337	402
U.S. Summer Run	11610	12012	5231	1698	1975	555
U.S. Fall Run	22271	21920	9088	3823	2993	991
Canadian Fall Run	15122	15070	7514	833	1386	758
U.S.	33881	33932	7513	5521	4967	758
Canada	15122	15070	7513	833	1386	758
Summer Run	11610	12012	5231	1698	1975	555
Fall Run	37393	36990	5231	4656	4379	555
Total	49003	49002		6354	6354	

Appendix XIV. (continued)

STOCK GROUPING	PERIOD # 9 AUG 15 TO AUG 22		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	114	605	606
Mid-river Summer Run	1942	2398	1558
Tanana River Fall Run	7613	8223	1808
Chandalar/Sheenjek	65	963	1133
Fishing Br./Canadian Mainstem	7792	5360	2204
Upper Canadian Yukon	612	588	633
U.S. Summer Run	2056	3004	1561
U.S. Fall Run	7678	9186	2154
Canadian Fall Run	8404	5947	2089
U.S.	9734	12190	2089
Canada	8404	5947	2089
Summer Run	2056	3004	1561
Fall Run	16082	15134	1561
Total	18138	18137	

Appendix XV. Yukon River District 1 chum salmon harvest proportions by stock-grouping of origin in 1990.

	PERIOD # 1 JUNE 6 TO JUNE 13			PERIOD # 2 JUNE 15 TO JUNE 19		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.8593	0.8015	0.0979	0.8147	0.7188	0.0961
Mid-river Summer Run	0.0044	0.0689	0.0832	0.1294	0.1864	0.0995
Tanana River Fall Run	0.0636	0.0646	0.0524	0.0388	0.0549	0.0539
Chandalar/Sheenjek	0.0000	0.0051	0.0159	0.0016	0.0165	0.0319
Fishing Br/Canadian Mainstem	0.0728	0.0504	0.0646	0.0000	0.0087	0.0209
Upper Canadian Yukon	0.0000	0.0095	0.0165	0.0154	0.0147	0.0225
U.S. Summer Run	0.8637	0.8704	0.0693	0.9441	0.9052	0.0628
U.S. Fall Run	0.0636	0.0697	0.0553	0.0405	0.0713	0.0608
Canadian Fall Run	0.0728	0.0598	0.0658	0.0154	0.0234	0.0287
U.S.	0.9272	0.9401	0.0658	0.9846	0.9765	0.0287
Canada	0.0728	0.0598	0.0658	0.0154	0.0234	0.0287
Summer Run	0.8637	0.8704	0.0693	0.9441	0.9052	0.0628
Fall Run	0.1363	0.1295	0.0693	0.0559	0.0948	0.0628

	PERIOD # 3 JUNE 22 TO JUNE 29			PERIOD # 4 JULY 3 TO JULY 11		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.9133	0.8456	0.0757	0.7074	0.6893	0.1048
Mid-river Summer Run	0.0854	0.0996	0.0712	0.2722	0.2114	0.1113
Tanana River Fall Run	0.0001	0.0140	0.0258	0.0015	0.0309	0.0454
Chandalar/Sheenjek	0.0000	0.0046	0.0140	0.0000	0.0084	0.0244
Fishing Br/Canadian Mainstem	0.0011	0.0302	0.0326	0.0113	0.0407	0.0467
Upper Canadian Yukon	0.0000	0.0060	0.0109	0.0076	0.0192	0.0245
U.S. Summer Run	0.9987	0.9452	0.0449	0.9796	0.9008	0.0627
U.S. Fall Run	0.0001	0.0186	0.0292	0.0016	0.0393	0.0491
Canadian Fall Run	0.0011	0.0362	0.0349	0.0189	0.0599	0.0528
U.S.	0.9989	0.9637	0.0349	0.9811	0.9401	0.0528
Canada	0.0011	0.0362	0.0349	0.0189	0.0599	0.0528
Summer Run	0.9987	0.9452	0.0449	0.9796	0.9008	0.0627
Fall Run	0.0013	0.0548	0.0449	0.0204	0.0992	0.0627

Appendix XV. (continued)

STOCK GROUPING	PERIOD # 5 JULY 14 TO JULY 20			PERIOD # 6 JULY 24 TO JULY 31		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.2066	0.1919	0.0920	0.4143	0.3371	0.1121
Mid-river Summer Run	0.0172	0.1089	0.0996	0.0029	0.0747	0.0880
Tanana River Fall Run	0.0021	0.0541	0.0689	0.0441	0.0708	0.0787
Chandalar/Sheenjek	0.3827	0.3203	0.1520	0.1771	0.1704	0.1319
Fishing Br/Canadian Mainstem	0.1872	0.1404	0.1201	0.3164	0.2865	0.1463
Upper Canadian Yukon	0.2043	0.1844	0.0733	0.0452	0.0603	0.0541
U.S. Summer Run	0.2238	0.3008	0.1134	0.4173	0.4118	0.1100
U.S. Fall Run	0.3847	0.3743	0.1562	0.2212	0.2413	0.1431
Canadian Fall Run	0.3915	0.3248	0.1355	0.3616	0.3468	0.1452
U.S.	0.6085	0.6751	0.1355	0.6384	0.6531	0.1452
Canada	0.3915	0.3248	0.1355	0.3616	0.3468	0.1452
Summer Run	0.2238	0.3008	0.1134	0.4173	0.4118	0.1099
Fall Run	0.7762	0.6992	0.1134	0.5827	0.5881	0.1099

STOCK GROUPING	PERIOD # 7 AUG 3 TO AUG 8			PERIOD # 8 AUG 11 TO AUG 18		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0000	0.0118	0.0269	0.0000	0.0288	0.0320
Mid-river Summer Run	0.0000	0.0344	0.0492	0.0007	0.0513	0.0724
Tanana River Fall Run	0.2205	0.1986	0.0881	0.3006	0.2964	0.1302
Chandalar/Sheenjek	0.3130	0.3312	0.1449	0.0498	0.0830	0.0954
Fishing Br/Canadian Mainstem	0.3074	0.2782	0.1338	0.6119	0.4849	0.1684
Upper Canadian Yukon	0.1591	0.1458	0.0757	0.0369	0.0555	0.0618
U.S. Summer Run	0.0000	0.0462	0.0560	0.0007	0.0801	0.0785
U.S. Fall Run	0.5335	0.5298	0.1545	0.3505	0.3794	0.1554
Canadian Fall Run	0.4665	0.4240	0.1486	0.6488	0.5404	0.1637
U.S.	0.5335	0.5760	0.1486	0.3512	0.4595	0.1637
Canada	0.4665	0.4240	0.1486	0.6488	0.5404	0.1637
Summer Run	0.0000	0.0462	0.0560	0.0007	0.0801	0.0785
Fall Run	1.0000	0.9538	0.0560	0.9993	0.9199	0.0785

Appendix XV. (continued)

STOCK GROUPING	PERIOD # 9 AUG 20 TO AUG 23		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0.0001	0.0230	0.0364
Mid-river Summer Run	0.0006	0.0399	0.0576
Tanana River Fall Run	0.4424	0.4246	0.1222
Chandalar/Sheenjek	0.0011	0.0526	0.0738
Fishing Br/Canadian Mainstem	0.4748	0.3915	0.1393
Upper Canadian Yukon	0.0811	0.0683	0.0489
U.S. Summer Run	0.0007	0.0629	0.0625
U.S. Fall Run	0.4435	0.4773	0.1335
Canadian Fall Run	0.5558	0.4597	0.1380
U.S.	0.4442	0.5402	0.1380
Canada	0.5558	0.4597	0.1380
Summer Run	0.0007	0.0629	0.0625
Fall Run	0.9993	0.9370	0.0625

Appendix XVI. Yukon River District 1 chum salmon harvest numbers by stock-grouping of origin in 1990.

	PERIOD # 1 JUNE 6 TO JUNE 13			PERIOD # 2 JUNE 15 TO JUNE 19		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	0	0	88005	77647	10382
Mid-river Summer Run	0	0	0	13981	20130	10752
Tanana River Fall Run	0	0	0	4194	5929	5825
Chandalar/Sheenjek	0	0	0	178	1777	3441
Fishing Br./Canadian Mainstem	0	0	0	3	942	2257
Upper Canadian Yukon	0	0	0	1659	1589	2428
U.S. Summer Run	0	0	0	101986	97777	6784
U.S. Fall Run	0	0	0	4372	7706	6567
Canadian Fall Run	0	0	0	1662	2531	3098
U.S.	0	0	0	106358	105483	3096
Canada	0	0	0	1662	2531	3096
Summer Run	0	0	0	101986	97777	6784
Fall Run	0	0	0	6034	10237	6784
Total	0	0		108020	108014	

	PERIOD # 3 JUNE 22 TO JUNE 29			PERIOD # 4 JULY 3 TO JULY 11		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	32558	30143	2697	3709	3614	549
Mid-river Summer Run	3045	3551	2538	1427	1109	583
Tanana River Fall Run	4	500	920	8	162	238
Chandalar/Sheenjek	1	163	498	0	44	128
Fishing Br./Canadian Mainstem	40	1077	1162	59	213	245
Upper Canadian Yukon	0	214	388	40	101	129
U.S. Summer Run	35603	33693	1602	5136	4723	329
U.S. Fall Run	5	662	1042	8	206	257
Canadian Fall Run	40	1291	1243	99	314	277
U.S.	35608	34356	1243	5144	4929	277
Canada	40	1291	1243	99	314	277
Summer Run	35603	33693	1601	5136	4723	329
Fall Run	45	1953	1601	107	520	329
Total	35648	35646		5243	5243	

Appendix XVI. (continued)

STOCK GROUPING	PERIOD # 5 JULY 14 TO JULY 20			PERIOD # 6 JULY 24 TO JULY 31		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	0	0	1865	1517	505
Mid-river Summer Run	0	0	0	13	336	396
Tanana River Fall Run	0	0	0	198	319	354
Chandalar/Sheenjek	0	0	0	797	767	594
Fishing Br./Canadian Mainstem	0	0	0	1424	1290	658
Upper Canadian Yukon	0	0	0	203	271	244
U.S. Summer Run	0	0	0	1878	1854	495
U.S. Fall Run	0	0	0	995	1086	644
Canadian Fall Run	0	0	0	1627	1561	653
U.S.	0	0	0	2874	2940	653
Canada	0	0	0	1627	1561	653
Summer Run	0	0	0	1878	1854	495
Fall Run	0	0	0	2623	2647	495
Total	0	0		4501	4501	

STOCK GROUPING	PERIOD # 7 AUG 3 TO AUG 8			PERIOD # 8 AUG 11 TO AUG 18		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	221	503	0	0	0
Mid-river Summer Run	0	643	921	0	0	0
Tanana River Fall Run	4129	3720	1651	0	0	0
Chandalar/Sheenjek	5863	6202	2714	0	0	0
Fishing Br./Canadian Mainstem	5756	5211	2505	0	0	0
Upper Canadian Yukon	2980	2730	1417	0	0	0
U.S. Summer Run	0	865	1049	0	0	0
U.S. Fall Run	9992	9922	2894	0	0	0
Canadian Fall Run	8736	7941	2783	0	0	0
U.S.	9992	10786	2782	0	0	0
Canada	8736	7941	2782	0	0	0
Summer Run	0	865	1049	0	0	0
Fall Run	18728	17863	1049	0	0	0
Total	18728	18727		0	0	

Appendix XVI. (continued)

STOCK GROUPING	PERIOD # 9 AUG 20 TO AUG 23		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River Summer Run	0	95	149
Mid-river Summer Run	3	164	237
Tanana River Fall Run	1817	1744	502
Chandalar/Sheenjek	4	216	303
Fishing Br./Canadian Mainstem	1950	1608	572
Upper Canadian Yukon	333	280	201
U.S. Summer Run	3	259	257
U.S. Fall Run	1822	1961	549
Canadian Fall Run	2283	1889	567
U.S.	1825	2219	567
Canada	2283	1889	567
Summer Run	3	259	257
Fall Run	4105	3849	257
Total	4108	4108	

Appendix XVII. Yukon River District 1 chinook salmon harvest proportions by stock-grouping of origin in 1987.

	PERIOD # 1 JUNE 5 TO JUNE 13			PERIOD # 2 JUNE 16 TO JUNE 23		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.0645	0.0837	0.0417	0.1943	0.1962	0.0475
Mid-river-USA	0.2259	0.2377	0.0538	0.1123	0.1194	0.0382
Lower Canadian Yukon	0.2148	0.1879	0.0555	0.0865	0.0927	0.0410
Pelly	0.3154	0.3075	0.0581	0.2667	0.2718	0.0499
Mid-river Canadian Yukon	0.1468	0.1604	0.0628	0.3393	0.3040	0.0647
Takhini	0.0327	0.0262	0.0231	0.0010	0.0159	0.0228
United States	0.2903	0.3180	0.0574	0.3066	0.3156	0.0493
Canada	0.7097	0.6820	0.0574	0.6934	0.6844	0.0493

	PERIOD # 3 JUNE 26 TO JULY 3			PERIOD # 4 JULY 6 TO JULY 15		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.3855	0.3797	0.0583	0.7720	0.7862	0.0615
Mid-river-USA	0.1342	0.1361	0.0399	0.0510	0.0451	0.0346
Lower Canadian Yukon	0.0433	0.0465	0.0348	0.0000	0.0003	0.0017
Pelly	0.0812	0.0868	0.0436	0.0315	0.0353	0.0302
Mid-river Canadian Yukon	0.2895	0.2938	0.0638	0.0939	0.0741	0.0516
Takhini	0.0662	0.0572	0.0400	0.0517	0.0589	0.0424
United States	0.5197	0.5158	0.0501	0.8229	0.8313	0.0523
Canada	0.4803	0.4842	0.0501	0.1771	0.1687	0.0523

Appendix XVIII. Yukon River District 1 chinook salmon harvest numbers by stock-grouping of origin in 1987.

STOCK GROUPING	PERIOD # 1 JUNE 5 TO JUNE 13			PERIOD # 2 JUNE 16 TO JUNE 23		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.0000	0.0000	0.0000	9816	9915	2400
Mid-river-USA	0.0000	0.0000	0.0000	5674	6030	1932
Lower Canadian Yukon	0.0000	0.0000	0.0000	4368	4682	2072
Pelly	0.0000	0.0000	0.0000	13474	13731	2521
Mid-river Canadian Yukon	0.0000	0.0000	0.0000	17142	15360	3268
Takhini	0.0000	0.0000	0.0000	49	805	1151
United States	0.0000	0.0000	0.0000	15490	15945	2493
Canada	0.0000	0.0000	0.0000	35034	34578	2493
Total	0.0000	0.0000		50524	50523	

STOCK GROUPING	PERIOD # 3 JUNE 26 TO JULY 3			PERIOD # 4 JULY 6 TO JULY 15		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	9327	9187	1411	1486	1513	118
Mid-river-USA	3247	3292	964	98	87	67
Lower Canadian Yukon	1048	1125	842	0	1	3
Pelly	1965	2099	1055	61	68	58
Mid-river Canadian Yukon	7003	7106	1544	181	143	99
Takhini	1603	1383	967	100	113	82
United States	12574	12478	1211	1584	1600	101
Canada	11618	11713	1211	341	325	101
Total	24192	24192		1925	1925	

Appendix XIX. Yukon River District 1 chinook salmon harvest proportions by stock-grouping of origin in 1988.

	PERIOD # 1 JUNE 5 TO JUNE 10			PERIOD # 2 JUNE 14 TO JUNE 17		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.1591	0.1665	0.0589	0.1808	0.1751	0.0530
Mid-river-USA	0.2746	0.2677	0.0517	0.2240	0.2347	0.0585
Lower Canadian Yukon	0.0868	0.0919	0.0458	0.0509	0.0427	0.0313
Pelly	0.2837	0.2794	0.0571	0.2269	0.2075	0.0592
Mid-river Canadian Yukon	0.1958	0.1907	0.0581	0.3141	0.3324	0.0640
Takhini	0.0000	0.0038	0.0130	0.0032	0.0076	0.0131
United States	0.4337	0.4342	0.0570	0.4048	0.4098	0.0584
Canada	0.5663	0.5658	0.0570	0.5952	0.5902	0.0584

	PERIOD # 3 JUNE 21 TO JUNE 29			PERIOD # 4 JUNE 30 TO JULY 8		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.4356	0.4391	0.0543	0.4883	0.4944	0.0607
Mid-river-USA	0.0897	0.1018	0.0457	0.0670	0.0703	0.0307
Lower Canadian Yukon	0.0394	0.0256	0.0280	0.0847	0.0740	0.0435
Pelly	0.1322	0.1158	0.0336	0.0486	0.0527	0.0412
Mid-river Canadian Yukon	0.2964	0.3057	0.0588	0.1689	0.1741	0.0711
Takhini	0.0068	0.0122	0.0194	0.1424	0.1345	0.0609
United States	0.5253	0.5408	0.0490	0.5553	0.5647	0.0578
Canada	0.4747	0.4592	0.0490	0.4447	0.4353	0.0578

Appendix XIX. (continued)

STOCK GROUPING	PERIOD # 5 JULY 11 TO JULY 15		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.5718	0.5490	0.0949
Mid-river-USA	0.1451	0.1523	0.0645
Lower Canadian Yukon	0.0851	0.0923	0.0610
Pelly	0.0001	0.0127	0.0293
Mid-river Canadian Yukon	0.1813	0.1596	0.0815
Takhini	0.0166	0.0340	0.0456
United States	0.7169	0.7013	0.0735
Canada	0.2831	0.2987	0.0735

Appendix XX. Yukon River District 1 chinook salmon harvest numbers by stock-grouping of origin in 1988.

STOCK GROUPING	PERIOD # 1 JUNE 5 TO JUNE 10			PERIOD # 2 JUNE 14 TO JUNE 17		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	530	554	196	4245	4112	1245
Mid-river-USA	914	892	172	5261	5511	1374
Lower Canadian Yukon	289	306	153	1195	1004	734
Pelly	945	930	190	5329	4872	1391
Mid-river Canadian Yukon	652	635	194	7377	7805	1504
Takhini	0	13	43	75	179	308
United States	1444	1446	190	9507	9623	1370
Canada	1886	1884	190	13976	13860	1370
Total	3330	3330		23483	23483	

STOCK GROUPING	PERIOD # 3 JUNE 21 TO JUNE 29			PERIOD # 4 JUNE 30 TO JULY 8		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	10025	10103	1249	3320	3361	413
Mid-river-USA	2063	2342	1051	456	478	209
Lower Canadian Yukon	906	588	644	576	503	296
Pelly	3042	2665	772	331	359	280
Mid-river Canadian Yukon	6820	7034	1353	1149	1183	483
Takhini	156	280	445	968	914	414
United States	12088	12445	1128	3775	3840	393
Canada	10924	10567	1128	3024	2959	393
Total	23012	23012		6799	6799	

Appendix XX. (continued)

STOCK GROUPING	PERIOD # 5 JULY 11 TO JULY 15		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	266	255	44
Mid-river-USA	67	71	30
Lower Canadian Yukon	40	43	28
Pelly	0	6	14
Mid-river Canadian Yukon	84	74	38
Takhini	8	16	21
United States	333	326	34
Canada	132	139	34
Total	465	465	

Appendix XXI. Yukon River District 1 chinook salmon harvest proportions by stock-grouping of origin in 1989.

STOCK GROUPING	PERIOD # 1 JUNE 10 TO JUNE 16			PERIOD # 2 JUNE 20 TO JUNE 25		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.1328	0.1430	0.0540	0.2849	0.2752	0.0431
Mid-river-USA	0.2631	0.2597	0.0538	0.2108	0.2242	0.0392
Lower Canadian Yukon	0.0544	0.0704	0.0348	0.0121	0.0214	0.0183
Pelly	0.2012	0.2055	0.0514	0.1394	0.1405	0.0328
Mid-river Canadian Yukon	0.3228	0.2968	0.0581	0.2956	0.2817	0.0485
Takhini	0.0257	0.0247	0.0240	0.0572	0.0569	0.0329
United States	0.3959	0.4027	0.0465	0.4958	0.4995	0.0377
Canada	0.6041	0.5973	0.0465	0.5042	0.5005	0.0377

STOCK GROUPING	PERIOD # 3 JUNE 27 TO JUNE 30			PERIOD # 4 JULY 4 TO JULY 14		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.6158	0.6098	0.0642	0.6268	0.6126	0.0559
Mid-river-USA	0.1815	0.1789	0.0681	0.0802	0.0936	0.0347
Lower Canadian Yukon	0.0007	0.0189	0.0340	0.0782	0.0737	0.0398
Pelly	0.0315	0.0324	0.0224	0.0000	0.0002	0.0010
Mid-river Canadian Yukon	0.1704	0.1532	0.0463	0.1532	0.1753	0.0547
Takhini	0.0000	0.0068	0.0135	0.0616	0.0447	0.0368
United States	0.7974	0.7887	0.0541	0.7070	0.7062	0.0512
Canada	0.2026	0.2113	0.0541	0.2930	0.2938	0.0512

Appendix XXII. Yukon River District 1 chinook salmon harvest numbers by stock-grouping of origin in 1989.

STOCK GROUPING	PERIOD # 1 JUNE 10 TO JUNE 16			PERIOD # 2 JUNE 20 TO JUNE 25		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	914	984	371	9170	8857	1388
Mid-river-USA	1811	1787	370	6784	7216	1260
Lower Canadian Yukon	375	484	240	388	689	589
Pelly	1384	1414	354	4485	4523	1057
Mid-river Canadian Yukon	2221	2043	400	9512	9064	1561
Takhini	177	170	165	1841	1831	1059
United States	2725	2771	320	15954	16073	1213
Canada	4157	4111	320	16226	16107	1213
Total	6882	6882		32180	32180	

STOCK GROUPING	PERIOD # 3 JUNE 27 TO JUNE 30			PERIOD # 4 JULY 4 TO JULY 14		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	6428	6365	670	1171	1144	104
Mid-river-USA	1895	1868	711	150	175	65
Lower Canadian Yukon	7	197	354	146	138	74
Pelly	329	338	233	0	0	2
Mid-river Canadian Yukon	1779	1599	484	286	328	102
Takhini	0	71	141	115	83	69
United States	8323	8232	565	1321	1319	96
Canada	2115	2206	565	547	549	96
Total	10438	10438		1868	1868	

Appendix XXIII. Yukon River District 1 chinook salmon harvest proportions by stock-grouping of origin in 1990.

	PERIOD # 1 JUNE 7 TO JUNE 15			PERIOD # 2 JUNE 19 TO JUNE 22		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.1004	0.1062	0.0400	0.3776	0.3717	0.0604
Mid-river-USA	0.2966	0.2871	0.0626	0.1479	0.1503	0.0543
Lower Canadian Yukon	0.1142	0.1209	0.0545	0.0186	0.0299	0.0269
Pelly	0.2069	0.2105	0.0508	0.1237	0.1264	0.0560
Mid-river Canadian Yukon	0.2810	0.2634	0.0616	0.2673	0.2592	0.0659
Takhini	0.0009	0.0119	0.0169	0.0649	0.0626	0.0417
United States	0.3970	0.3933	0.0605	0.5256	0.5220	0.0565
Canada	0.6030	0.6067	0.0605	0.4744	0.4780	0.0565

	PERIOD # 3 JUNE 25 TO JUNE 29			PERIOD # 4 JULY 2 TO JULY 15		
STOCK GROUPING	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	0.5552	0.5443	0.0574	0.5762	0.5647	0.0645
Mid-river-USA	0.0806	0.1037	0.0381	0.1005	0.1070	0.0453
Lower Canadian Yukon	0.0309	0.0232	0.0252	0.0544	0.0454	0.0350
Pelly	0.0808	0.0729	0.0361	0.0631	0.0717	0.0349
Mid-river Canadian Yukon	0.1832	0.1940	0.0644	0.1314	0.1438	0.0575
Takhini	0.0694	0.0620	0.0364	0.0743	0.0674	0.0416
United States	0.6359	0.6480	0.0528	0.6768	0.6717	0.0538
Canada	0.3641	0.3520	0.0528	0.3232	0.3283	0.0538

Appendix XXIV. Yukon River District 1 chinook salmon harvest numbers by stock-grouping of origin in 1990.

STOCK GROUPING	PERIOD # 1 JUNE 7 TO JUNE 15			PERIOD # 2 JUNE 19 TO JUNE 22		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	1900	2010	756	9062	8919	1449
Mid-river-USA	5611	5431	1184	3550	3607	1303
Lower Canadian Yukon	2161	2287	1031	446	718	646
Pelly	3914	3983	962	2968	3032	1343
Mid-river Canadian Yukon	5316	4983	1165	6414	6219	1581
Takhini	17	225	320	1557	1501	1002
United States	7511	7441	1145	12611	12526	1355
Canada	11409	11478	1145	11385	11470	1355
Total	18920	18920		23996	23996	

STOCK GROUPING	PERIOD # 3 JUNE 25 TO JUNE 29			PERIOD # 4 JULY 2 TO JULY 15		
	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV	GIRLSEM ESTIMATE	BOOTSTRAP ESTIMATE	BOOTSTRAP STAND DEV
Lower River-USA	3602	3531	372	959	940	107
Mid-river-USA	523	673	247	167	178	75
Lower Canadian Yukon	200	150	163	91	76	58
Pelly	524	473	234	105	119	58
Mid-river Canadian Yukon	1188	1258	418	219	239	96
Takhini	450	402	236	124	112	69
United States	4125	4204	342	1127	1118	90
Canada	2362	2283	342	538	547	90
Total	6487	6487		1665	1665	

Appendix XXV. Buffer protocol used in electrophoresis of Yukon River salmon samples.

Buffer Name	Chemical	Concentration (M)		pH	
		Gel	Electrode	Gel	Electrode
CAM 6.05 CAM 6.3 CAM 6.8	Citric acid (monohydrate)	0.002	0.040	pH with N-(3-aminopropyl) morpholine	
CAME 7.0	Citric acid (monohydrate)	0.002	0.040	pH with N-(3-aminopropyl) morpholine	
	EDTA (tetrasodium salt)	2.5×10^{-5}	0.0		
EBT	Tris	0.045	0.18	Do not adjust pH	
	EDTA	9.75×10^{-4}	3.9×10^{-3}		
	Boric Acid	0.025	0.10		
KG	Tris	0.0248	0.074	8.5	8.9
	Glycine	0.192	0.192		
TC-4	Tris	0.008	0.223	5.95	5.80
	Citric acid (monohydrate)	0.003	0.086		