TABLES

Table 6.1. Relations used in calculating natural mean monthly flows at eight representative locations.

Location Number[a]	River	Relation[b]
1	Chakachatna	Q_{m1} = U.S.G.S. data for Chakachatna River near Tyonek (Gauging Station No.15294500)
2	Chakachatna	$Q_{m2} = Q_{m1} + A_{1-2} \times (B+C)/2$
3	Chakachatna	$Q_{m3} = Q_{m2} + 0.913A_{2-3} \times (B+C)/2 + 0.087 A_{2-3} \times C$
4	Chakachatna	$Q_{m4} = 0.084 Q_{m3} + (O B4 A_{3-D} + A_{D-4}) \times C$
5	Middle Upper	$Q_{m5} = 0.016 Q_{m3} + (0.16 A_{3-D} + A_{D-5}) \times C$
6	McArthur	$Q_{m6} = A_6 \times B$
7	McArthur	$Q_{m7} = Q_{m6} + A_{6-7} \times B$
8	McArthur	$Q_{m8} = Q_{m7} + A_{7-8} \times C + 0.90 Q_{m3}$

[a] See Figure 6.2 for locations

[b] Qml = mean monthly flow for any month at location 1.

A_{i-j} = contributing drainage area between locations i and j; a D subscript r@presents the location of the divergence of Chakachatna and Middle Rivers

B = mean monthly flow per square mile based on calculated Chakachamna Lake inflows

C = mean monthly flow per square mile based on the 4 year average of mean monthly flow of the Chuitna River (Station 15294450)

Table 6.2. Locations, date, and results of field discharge measurements during September 1981

Study Area[a]	Loc.[b]	Description	Date	Discharge
D	2	Chakachatna R. U/S of Straight Ck.	21 Sept.	5,813
D	-	Straight Ck. U/S of Chakachatna R.	21 Sept.	471
E	-	Chakachatna R. D/S of Noaukta Sl. Div.	22 Sept.	681
E	-	Noaukta Sl. D/S of Chakachatna R. Div	22 Sept.	1,285[c]
F	-	Chakachatna R. D/S of Middle R. Div.	26 Sept.	428
F	-	Middle R. D/S of Chakachatna R. Div	26 Sept.	80
G	4	Chakachatna R. U/S of McArthur R.	26 Sept.	475
H	5	Middle R. U/S of Mouth	26 Sept.	132
I	-	Upper McArthur R. U/S of Powerhouse	26 Sept.	155
J	-	Upper McArthur R. nr. Powerhouse	24 Sept.	93[c]
K	-	Upper McArthur R. D/S of Powerhouse	26 Sept.	297
L	6	Upper McArthur R.	24 Sept.	417
L	-	Upper Blockade Glacier Channel	24 Sept.	312
M	-	McArthur R. U/S of Lower Bl. Gl. Chan.	25 Sept.	696
M	-	Lower Blockade Glacier Channel	25 Sept.	514
N	-	Upper Clearwater Tributary	25 Sept.	87

[a]Study areas are illustrated on Figure 6.2

[b]Loc. is the corresponding representative location at which flow regimes have been calculated

[c]Partial measurement

Table 6.3. Estimated natural mean monthly and mean annual flows at eight representative locations.[a]

MONTH	B[b] (cfs/mi^2)	C[c] (cfs/mi^2)	Qm1[d] (cfs)	Qm2 (cfs)	Qm3 (cfs)	Qm4 (cfs)	Qm5 (cfs)	Qm6 (cfs)	Qm7 (cfs)	Qm8 (cfs)
JAN	0.45	0.78	613	670	720	69	34	24	170	830
FEB	0.39	0.63	505	550	590	57	28	21	150	690
MAR	0.37	0.53	445	490	520	50	24	20	140	620
APR	0.53	1.1	441	520	580	61	43	29	200	740
MAY	2.0	8.2	1,042	1,530	1,930	250	270	110	750	2,580
JUNE	7.0	8.8	5,875	6,630	7,220	700	370	380	2,620	9,250
JULY	11.0	2.6	11,950	12,600	13,070	1,130	290	590	4,100	15,970
AUG	9.6	1.7	12,000	12,540	12,930	1,100	260	520	3,600	15,330
SEP	4.5	4.3	6,042	6,460	6,790	620	230	240	1,690	7,870
OCT	1.5	2.8	2,468	2,670	2,830	270	130	83	570	3,160
NOV	0.77	1.6	1,206	1,320	1,410	140	69	42	290	1,580
DEC	0.52	1.2	813	890	960	93	49	28	190	1,070
MEAN ANNUAL	--	--	3,645	3,935	4,160	382	150	175	1,215	5,011

[a] See Figure 6.2 for locations

[b] B = mean monthly flow per square mile based on calculated Chakachamna Lake inflows

[c] C = mean monthly flow per square mile based on a 4 year(1976-1979) average of mean monthly flows of the Chuitna River (Station 15294450); mean annual flow not used

[d] Qmi = Estimated natural mean monthly flow at location i

Table 6.4. Natural flood flows at eight representative locations based on a regional flood frequency analysis developed by Lamke (1979).

Location[a]	A[b] (mi^2)	P[c] (in)	St[d] (%+1)	F[e] (%+1)	T[f] (F^o)	M[g]	D[g]	$Q_{1.25}$[h] (cfs)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)
1[i]	1120	-	-	-	-	-	-	13,527	15,848	19,051	21,202	23,962	26,055	28,183
1	1120	75	4	17	0	20,540.2	1.46	14,570	19,289	25,725	30,556	35,391	40,845	47,198
2	1216	75	3.7	17	+1	22,542.4	1.44	16,156	21,150	27,889	32,924	37,914	43,509	50,012
3	1289	75	3.5	18.4	+1	23,799.9	1.44	17,042	22,302	29,426	34,759	40,083	45,996	52,871
4	119	72	2.8	21.5	+2	2,453.2	1.7	1,580	2,387	3,563	4,475	5,370	6,606	8,091
5	50	55	1.4	16.5	+2	1,042	1.81	645	1,029	1,609	2,067	2,518	3,180	3,988
6	54	80	1	8.4	+2	1,758.8	1.8	1,084	1,716	2,686	3,461	4,260	5,364	6,715
7	375	77	1	11.8	+3	10,219.4	1.56	6,926	9,696	13,615	16,609	19,651	23,312	27,628
8	1551	75	2.9	16.6	+2	29,862	1.41	21,650	27,882	36,269	42,533	48,791	55,554	63,401

[a] See Figure 6.2 for location

[b] A=drainage area; values for locations 4,5, and 8 are weighted average

[c] P=mean annual precipitation; values for locations 4,5, and 8 are weighted averages

[d] St=percentage of basin containing lakes; values for locations 4,5, and 8 are weighted averages

[e] F=percentage of basin covered by forest; values for locations 4,5, and 8 are weighted averages

[f] T=mean minimum January temperature; values for locations 4,5, and 8 are weighted averages

[g] M and D are parameters calculated from the basin parameters; they are used in the flood frequency equations developed by Lamke (1979)

[h] Qi=flood discharge with recurrence interval i

[i] These data are from a flood frequency analysis of gage data (Station 15294500)

Table 6.5 Results of low flow investigations for three locations along Chakachatna River for each of two 6 month periods.

Low Flow Parameter	November-April				May-October			
	Gage[a] Data (cfs/mi^2)	Location[b] 1 (cfs)	2 (cfs)	3 (cfs)	Gage[a] Data (cfs/mi^2)	Location[b] 1 (cfs)	2 (cfs)	3 (cfs)
$7Q_{1.25}$	0.43	480	520	550	0.62	689	750	790
$7Q_2$	0.36	403	440	460	0.43	486	530	560
$7Q_5$	0.29	329	360	380	0.33	365	400	420
$7Q_{10}$	0.26	292	320	340	0.29	321	350	370
$7Q_{20}$	0.23	263	290	300	0.26	293	320	340
$7Q_{50}$	0.21	231	250	270	0.24	267	290	310
$7Q_{100}$	0.19	212	230	240	0.23	252	270	290
$30Q_{1.25}$	0.43	482	520	550	1.08	1,207	1,310	1,390
$30Q_2$	0.37	411	450	470	0.77	863	940	990
$30Q_5$	0.30	340	370	390	0.55	613	670	710
$30Q_{10}$	0.27	303	330	350	0.46	512	560	590
$30Q_{20}$	0.24	273	300	310	0.39	440	480	510
$30Q_{50}$	0.22	242	263	280	0.33	371	400	430
$30Q_{100}$	0.20	221	240	250	0.29	330	360	380

[a]Low flow frequency analyses of data from Chakachatna River gage (station 15294500)

[b]Locations are identified in Figure 6.2; location 1 corresponds to Chakachatna River gage site

Table 6.6 Surveys conducted by and for Alaska Department of Fish and Game. (By date, location, method and species found)

Location and Date	Method[a]	Salmon Species					Other Species				
		Sockeye	Chinook	Coho	Chum	Pink	Dolly Varden	Rainbow Trout	Lake Trout	Round Whitefish	Slimy Sculpin
Chakachamna Lake											
9/52	Vis										
9/53	Vis *										
9/54	ES, Vis										
9/56	ES	+									
1979	GN, ES	+					+		+	+	+
Chilligan River											
9/52	ES, Vis	+									
9/53	Vis *										
8/54	ES, Vis	+									
8/55	ES, Vis	+									
Igitna River											
8/52	Vis	+									
9/52	Vis										
9/53	Vis *										
Another River											
8/52	Vis *										
Kenibuna Lake											
8/52	Vis	+									
9/53	Vis *										
Chakachatna River											
7/52	Vis *, **										
6/58											
1961	Vis, GN	+	+								

Table 6.6. Concluded.

Location and Date	Method[a]	Salmon Species					Other Species				
		Sockeye	Chinook	Coho	Chum	Pink	Dolly Varden	Rainbow Trout	Lake Trout	Round Whitefish	Slimy Sculpin
Straight Creek											
1958	Vis										
1973 ***	Vis		+								
1976 ***	Vis		+								
1977 ***	Vis		+								
1978 ***	Vis		+								
1981 ***	Vis		+								
McArthur River (including Swank Slough and Flat Lake)											
1959	Vis										
7/61		+		+			+				
8/61				+	+						
9/61				+						+	
West Creek											
7/61	GN, Vis	+		+		+	+	+		+	
9/61	GN, Vis						+	+			
#8 Creek											
7/61	GN, Vis	+					+	+		+	
North Fork											
7/61	Vis, GN	+					+				

[a]GN-Gill net; Vis-Visual; ES-Electroshocking
* Too muddy to observe fish
** Two beluga whales at mouth
*** Chinook salmon survey only

Table 6.7. Collection methodologies utilized by waterbody, September 1981 reconnaissance study

Water Body	Visual Observations	Electro-shocking	Hand Seine	Beach Seine	Gill Nets	Fyke Nets	Stationary Drift Nets (Trawl)	Hoop Nets	Minnow Traps
Igitna River	X								
Kenibuna Lake	X								
Another River	X								
Chilligan River	X								
Neacola River	X								
Chakachamna Lake	X	X	X	X	X			X	X
Shamrock Lake	X								
Nagishlamina River	X	X	X	X[a]				X	X
Chakachatna River	X	X	X			X			
Straight Creek	X	X	X				X		
Straight Creek Tributary	X	X	X						
Middle River	X	X	X			X			
Noaukta Sough	X	X	X			X			
McArthur River	X	X	X			X			
McArthur River Tributary	X	X	X						
Chuitkilnachna Creek	x								

[a]At mouth of river in Lake Chakachamna

Table 6.8. Collection gear specifications September 1981 reconnaissance study.

Electroshockers
Coeffelt Model BP-2 - used at 600 v
Smith-Root Model VII - 700 v at 6 millisecond pulse duration at 60 pulses/second
Hand Seine
10 ft x 6 ft - ¼" ace mesh
Beach Seine
100 ft x 6 ft - ¼" ace mesh
Gill Nets
75 ft long, each panel 15' long x 6 ft deep Panels of nylon monofilament 3/4", 1", 1.5", 2", 2.5" bar mesh
Fyke Nets
6' x 4' double funnel ½" square mesh Long wings and leads 300 ft - 1" square mesh Short wings 50 ft - 1" square mesh
Hoop Nets
No leads - Small 34" diameter 1" stretch mesh Large 48" diameter 1-½" stretch mesh

Table 6.9. Species list and drainage of occurrence August-September 1981.

Species		Drainage of Occurrence	
		Chakachatna River[1]	McArthur River
pygmy whitefish	Prosopium coulteri	+	+
round whitefish	Prosopium cylindraceum	+	+
Dolly Varden	Salvelinus malma	+	+
lake trout	Salvelinus namaycush	+	
rainbow trout	Salmo gairdneri	+	+
pink salmon	Oncorhynchus gorbuscha	+	+
chum salmon	Oncorhynchus keta	+	+
coho salmon	Oncorhynchus kisutch	+	+
sockeye salmon	Oncorhynchus nerka	+	+
chinook salmon	Oncorhynchus tshawytscha	+	+
arctic grayling	Thymallus arcticus	+	
slimy sculpin	Cottus cognatus	+	+
threespine stickleback	Gasterosteus aculeatus	+	+
ninespine stickleback	Pungitius pungitius	+	+

[1]Includes Lake Chakachamna and Middle River

Table 6.10. Concluded

Species		Habitat[a]							
		UAT	HAR	BCR	CMR	BST	RBB	WTR	BSR
saskatoon serviceberry	Amelanchier alnifolia					4	4		3
Pacific serviceberry	Amelanchier florida							5	
Labrador-tea	Ledum groenlandicum					4	3		4
narrow-leaf Labrador-tea	Ledum decumbens					5	2		
prickly rose	Rosa acicularis			4		4			
sweetgale	Myrica gale			5		4	3		3
rusty menziesia	Menziesia ferruginea					3	5		
bog rosemary	Andromeda polifolia					4	3		
bush cinqfoil	Potentilla fruticosa					4	2		
leatherleaf	Chamaedaphne calyculata					5	4		
devilsclub	Oplopanax horridus	5		5	5				
fireweed	Epilobium sp.	3	3	4	5			4	
sedge	Carex sp.			5	2	5	3		3
grass	Gramminaea	3	3	3	1	3	2	3	2
Fern	Polystichum sp.		5	5		4			
-	Eriophyllum lanatum					5	4		5
Horsetail	Equisetum sp.		4	4	3	5	4	5	4
-	Angelica genuflexa				4				
-	Artemesia tilesii	5	5	5					
lupine	Lupinus sp.							5	

[a]Upland Alder Thicket (UAT);
High Altitude Riparian (HAR);
Black Cottonwood Riparian (BCR);
Coastal Marsh Riparian (CMR);
Black Spruce Transitional (BST);
Resin Birch Bog (RBB);
Willow Thicket Riparian (WTR); and
Black Spruce Riparian (BSR).

Table 6.11 The species composition and relative abundance of mammals identified within the study area for each of the habitat types. (1=Abundant 3=Common 5=Occasional)

Species		Habitat[a]							
		UAT	HAR	BCR	CMR	BST	RBB	WTR	BSR
grizzly bear	Ursus horribilis	3	1	3	3	5	5	3	3
black bear	Ursus americanus	1	1	3	3	5	3	3	3
gray wolf	Canis lupus	5	3	5	5	5		5	
coyote	Canis latrans	3	3	3	1	3	3	3	3
moose	Alces alces	5	1	1	3	3	3	3	3
barren ground caribou	Rangifer arcticus		5						
wolverine	Gulo luscus	5	5	5				5	5
mink	Mustela vison	5	5	3				5	3
river otter	Lutra canadensis			5				5	5
beaver	Castor canadensis			3				3	3
muskrat	Ondatra zibethica		5	3				3	3
red squirrel	Tamiasciurus hudsonicus	5	5	5	5	5			5
tundra redback vole	Clethrionomys rutilus	1	3	3	3	3	3		
tundra vole	Microtis oeconomus			3					
porcupine	Erethizon dorsatum		3	3	5				
dusky shrew	Sorex obscurus	3	3	3					
harbor seal[b]	Phoca vitulina				5				
beluga whale[b]	Delphinapterus leucas				5				

[a] Upland Alder Thicket (UAT);
High Altitude Riparian (HAR);
Black Cottonwood Riparian (BCR);
Coastal Marsh Riparian (CMR);
Black Spruce Transitional (BST);
Resin Birch Bog (RBB);
Willow Thicket Riparian (STR); and
Black Spruce Riparian (BSR).

[b] sighted offshore near the mouth of the McArthur River.

Table 6.12. The species composition and relative abundance of birds identified within the study area for each of the habitat types. (1=Abundant 3=Common 5=Occasional)

Species		Habitat[a]							
		UAT	HAR	BCR	CMR	BST	RBB	WTR	BSR
trumpeter swan	Olor buccinator		5	3	3				3
Canada goose	Branta canadensis			5	3				
white-fronted goose	Anser albifrons	5	5						
mallard	Anas platyrhynchos				1				
pintail	Anas acuta	5	5	5	1				5
American wigeon	Mareca americana				1				5
green-winged teal	Anas carolinensis				1				
greater scaup	Aythya marila								5
common goldeneye	Bucephala clangula				5				
oldsquaw	Clangula hyemalis				5				
common merganser	Mergus merganser			5					3
red-breasted merganser	Mergus serrator				5				
sharp-shinned hawk	Accipiter striatus				3				
marsh hawk	Circus cyaneus	5	3	3	3		3	5	3
red-tailed hawk	Buteo jamaicensis			5	5	5	5		
Swainson's hawk	Buteo swainsoni				5				
bald eagle	Haliaeetus leucocephalus	3	3	3	3	5	5	5	3
spruce grouse	Canachites canadensis			3		5	5		
willow ptarmigan	Lagopus lagopus				5	5			
sanhill crane	Grus canadensis				3		5		
black-bellied plover	Squatarola squatarola				5				
spotted sandpiper	Actitis macularia			5	5				
greater yellowlegs	Totanus melanoleucus				5				
short-billed dowitcher	Limnodromus griseus				3				
pectoral sandpiper	Erolia melanotos				1				3
least sandpiper	Erolia minutilla				5				
northern phalarope	Lobipes lobatus				5			5	5
common snipe	Capella gallinago				5			5	3
glaucous-winged gull	Larus glaucescens	5	3	3	3				
herring gull	Larus argentatus			5					
mew gull	Larus canus	5	3	3	3	5			

Table 6.13. Industrial Sites.

Site Number	Township Location and Size	Description	Date Classified
C 170	T.11N., R.12W., S.M. Sec. 28, 255 B7 ac.	Tidelands	12-13-61
C 1313	T.11N., R.12W., S.M. Sec. 27, 248.64 ac.	O & G Support Facilities	9-30-65
C 1336	T.11N., R.12W., S.M. Sec. 28, 351.45 ac.	O & G Support Facilities	12-27-65
C 1369	T.11N., R.12W., S.M. Sec. 28, 126 ac.	O & G Support Facilities (tidelands)	4-13-66
C 1483	T.11N., R.12W., S.M. Sec. 29. 397 ac., & Sec. 30, 6 ac.	O & G Support Facilities	2-21-68
C 1487	T.11N., R.12W., S.M. Sec. 28 & 33, 36.82 ac	Ship Docking Facility O & G Support Facilities (tidelands)	2-6-68
C 1906	T.11N., R.11W., S.M. ATS 931, 44.86 ac.	Ship Docking Facility Kodiak Lumber Company	5-28-74

Source: State of Alaska, Department of Natural Resources Status Plats. For complete legal descriptions, including aliquot part descriptions, contact Alaska Division of Lands.

Table 6.14. Native allotments in shoreline townships.

Application No.	Location and Size	Certificate No. and Date	Date Occupied
AA 6459	T.12N., R.11W., S.M.	Apln 8-23-71	
1949	M & B, 160 ac.		
AA 7268	T.12N., R.11W., S.M.	Apln 3-20-72	
7/1946	160 ac.		
AA 7324	T.12N., R.11W., S.M.	Apln 3-23-72	
5/1953	160 ac.		
AA 7788	T.12N., R.11W., S.M.	Apln 4-20-72	
6/1957	160 ac.		
A 055082	T.12N., R.11W., S.M.	50-75-0138/3-14-75	11-16-40
	U.S.S. 4547, 119.39 ac.		
A 055680	T.12N , R.11W., S.M.	50-66-0608/6-20-66	
9-15-41	U.S.S. 4546, 160 ac.		

Source: BLM Status Plats, June 1978. For complete descriptions, including aliquot part descriptions, contact Alaska Division of Lands.

Table 6.15. Oil and Gas Fields in the Project Area.

Field	Type	Location	Date of Discovery Well
1. West Foreland	Gas	Onshore	April 1962
2. Middle Ground Shoal (MGS)	Oil	Offshore	June 1962
3. North Cook Inlet	Gas	Offshore	September 1962
4. Beluga River	Gas	Onshore	December 1962
5. North MGS	Gas	Offshore	November 1964
6. Trading Bay	Oil	Offshore	June 1965
7. Granite Point	Oil	Offshore	June 1965
8. McArthur River	Oil & Gas	Offshore	October 1965
9. Moquawkie	Gas	Onshore	November 1965
10. Nicolai Creek	Gas	Onshore	May 1966
11. Ivan River	Gas	Onshore	October 1966
12. Albert Kaloa	Gas	Onshore	January 1968
13. Redoubt Shoal	Oil	Offshore	September 1968

Source: Situations and Prospects Kenai Peninsula Borough 1981.

Table 6.16. State Oil and Gas Lease Sales

Number	Sale Area	Proposed Date	Comment
40	Second Upper Cook	9/83	Scheduled
49	Cook Inlet	5/86	Proposed

Source: State of Alaska Current Five-year Oil and Gas Leasing Schedule - DNR revised 8/31/81 and DNR-DMEM Call for Comments 81.

Table 6-17. Coal Leaseholdings.

Company	Acreage	Employees	Startup Date
Placer Amex Inc. (Beluga Coal Company)	25,926	Construction - ? Operation - 500	1987 (30 years)
Diamond-Chuitna (Diamond Alaska Co)	20,571	Contruction - 2000 Operation - 800	1987
Mobil Oil	23,080	N/A	N/A
AMAX, Inc. (Meadowlark Farms)	3,880	N/A	N/A

Source: Tyonek Community Profile (Draft) Ralph Darbyshire and Associates, September 1981.

Table 6.18. Locations where Subsistence Occurs.

Polly Creek	The beaches in this area are used for clamming in the spring.
Redoubt Bay	The beaches in this area are used heavily and have been relied upon for many years for clams. Use occurs in both spring and fall, but spring use is especially important after winter food supplies have been depleted and before the spring salmon run begins. The beaches south of Drift River Terminal to Harriet Point are used most extensively. a. Drift River: Historically, the upper and middle reaches were used most heavily for hunting and trapping. Today, some duck and seal hunting is pursued in the lower reaches. b. Kustatan River: The entire vicinity is hunted heavily when the McArthur River area and other areas do not have many moose. Some trapping takes place here.
Trading Bay and	Upper McArthur River areas are used for moose hunting
McArthur River	and furbearer trapping. McArthur Flats is used for waterfowl hunting and furbearer trapping. a. Middle River and lower area flats are used for moose hunting, trapping and waterfowl hunting.

Chakachatna River Noaukta Slough	Used for moose hunting, trapping, and waterfowl hunting.
Chuitkilnacha Creek and associated marsh areas	Used for duck hunting.
Granite Point to Chuitna River	The shoreline areas here are relied upon for subsistence and commercial salmon and herring fishing. This is the main fishing area for Tyonek residents.
Chuitna River and Chuit Creek Area	Both are used extensively in winter months for trapping and moose hunting.

a. Chuitbuna Lake referred to as Chuit Lake) area is used for trapping and hunting especially in the winter. During the fall the area around this lake is used for berry picking. This area has a particular importance because of its proximity to Tyonek village.

b. The areas west and north of Beluga village are used very heavily in fall for hunting moose and in winter for furbearer trapping. This is also an important berry picking area.

c. Old Tyonek Creek and the lakes area around Congahbuna Lake are used for moose hunting and trapping.

Beluga Flats and Lower reaches of Beluga River	These locations are very important for hunting whale and waterfowl. Some seals are also taken here.

Susitna River	The mouth and lower reaches are used for beluga whale and seal hunting in the spring and fall.

Source: A Social, Economic and Environmental Analysis of a State Oil and Gas Lease Sale in Upper Cook Inlet; Governor's Agency Advisory Committee on Leasing, 1981.

Table 6.19. Kenai-Cook Inlet Division Area Nonagricultural Employment and Payroll Industry Series - Alaska. 3rd Quarter 1980.

Industry	Average No. of Employees	Average Monthly Wage ($)
Mining	793	3,085
Construction	902	3,531
Manufacturing	2022	1,581
Transportation, Communication and Utilities	671	3,142
Wholesale Trade	272	2,515
Retail Trade	1048	1,021
Finance, Insurance and Real Estate	203	1,259
Services	1023	1,366
Agriculture, Forestry and Fisheries	51	2,387
Government	1169	1,981
Unclassifiable	1131	1,158
Totals	8185	2,055

Source: Statistical Quarterly - 3rd Quarter, 1980. Department of Labor, State of Alaska.

Table 6.20. Anchorage Division Area Nonagricultural Employment and Payroll Industry Series - Alaska. 3rd Quarter 1980.

Industry	Average No. of Employees	Average Monthly Wage ($)
Mining	2,915	3,286
Construction	7,190	3,252
Manufacturing	2,532	2,636
Transportation, Communication and Utilities	8,318	2,264
Wholesale Trade	4,230	2,150
Retail Trade	13,324	1,171
Finance, Insurance and Real Estate	4,900	1,649
Services	17,182	1,125
Agriculture, Forestry and Fisheries	197	1,019
Government	20,356	2,061
Unclassifiable	607	1,522
TOTALS	81,751	1,958

Source: Statistical Quarterly - 3rd Quarter, 1980. Department of Labor, State of Alaska.

Table 6.21. Historic Trails.

Trail Name	Quandrangle & Number	Location	Source	Description
Susitna - Tyonek	Q70 - #2	T.11, 12, 13, 14, 15, 16, 17N. R.7, 8, 9, 10, 11W. SM	ARC Annual Report 1930 Part II, Page 61. & Fifty Years of Highways - AK Dept. Public Works, Div. of Highways 1960, pg. 29-30.	Trail begins at town of Susitna T.17N. R.7W. and runs in a SW direction for 46 miles to town of Tyonek T.11N.R11W.
Winter Trail	Q70 - #3	T.11N.R.12, 13W, SM	USGS Tyonek Quad	Trail runs from Trading Bay to cabins on Nikolai Creek.

Source: State of Alaska. Department of Highways. Alaska Existing Trail System. 1973.

Table 6.22. Airport facility characteristics.

Name	Owner	Class	Length	Surface	Comments
Tyonek	Pvt.	Utility	3350' x 100' 1427' x 100'	Gravel	
Beluga	Pvt.	Non CAB Non CAB	3500' x 110' 5000" x 110'	Gravel Gravel	Lighted Lighted
Nikolai Creek	Pvt.	Non CAB	4100' x 75'	Gravel	
Trading Bay	Pvt.	Non CAB	4500' x 100'	Gravel-dirt	Lighted
West Foreland (Unit No. 2)	Pvt.	Utility	1975'	Dirt	
Drift River	Pvt.	Non CAB	4300' x 150' 40'	Gravel Gravel	Lighted

Table 6.23. 1982 data collection program for recording gages at Chakachatna and McArthur Rivers.

Site	Description	Measuring Devices	Period of Record 1982	Recording Interval
C	Streamflow stage and temperatures of Chakachatna River at lake outlet.	Datapod Model DP211SG dual channel recorder	11 Aug. - 13 Oct. 13 Oct. - Cont.	6 Hours[a]
13.5	Streamflow stage and temperatures of upper McArthur River at rapids.	Datapod Model DP211SG dual channel recorder	11 Aug. - 17 Aug. 17 Aug. - 16 Oct. b,c 16 Oct. - Cont. c	6 Hours[a] 1 Hour 6 Hours[a]
	Streamflow temperatures of upper McArthur River at rapids.	Peabody-Ryan Model J-90 thermograph	21 Aug. - 24 Sept.	Continuous
15	Streamflow temperatures of upper McArthur River at Powerhouse	Peabody-Ryan Model J-90 thermograph	21 Aug. - 18 Sept.	Continuous

[a]Average of six measurements at 1 hour intervals.

[b]Approximate one-week data gap in September due to a storm which dislodged the gage.

[c]Data after approximately 7 October, represent water temperature in dunes of sand that buried the gage.

Table 6.24. Summary of 1982 staff gage data base.

Site ID	Number of Channels with Gages	Period of Record	Approximate Frequency	Reference Elevation[a] (ft)
1	1	15 Aug. - 16 Oct.	weekly	92.25
3	1	15 Aug. - 15 Oct.	bi-daily	93.66
4	1	16 Aug. - 15 Oct.	daily	85.32; 87.39[b]
6	1	15 Aug. - 14 Oct.	daily	95.78
8	1	15 Aug. - 15 Oct.	weekly	84.46
10	1	13 Aug. - 16 Oct.	weekly	90.39; 93.26[c]
11	1	16 Aug. - 20 Aug.	daily	92.90
12	1	13 Aug. - 19 Oct.	weekly	84.80
13	1	13 Aug. - 19 Oct.	weekly	86.24
15	1	13 Aug. - 19 Oct.	weekly	85.59
16	2	14 Aug. - 17 Oct.	bi-weekly	78.07; 87.07[b]
16A	1	15 Aug. - 17 Oct.	weekly	74.43
17	2	14 Aug. - 17 Oct.	weekly	88.98; 85.37[b]
17D	1	14 Aug. - 19 Oct.	bi-weekly	91.47; 88.94[c]
18	1	16 Aug. - 18 Oct.	weekly	95.12
19	1	16 Aug. - 17 Aug.	daily	77.12
22	1	14 Aug. - 17 Oct.	bi-weekly	88.78

[a]Reference elevation is the elevation corresponding to a gage reading of 0.0 ft., referenced to the temporary bench mark elevation.

[b]Two reference elevations represent two staff gages; the first elevation is for gage A and the second is gage B.

[c]Two reference elevations represent two staff gages; the first elevation is for the high flow gage and the second is for the low water gage.

Table 6.25. Measured discharges at selected sites in the study area during the 1982 studies, and comparable discharges measured during the 1981 reconnaissance.

Site Number	Description	1982 Date	1982 Discharge (cfs)	1981 Date	1981 Discharge (cfs)
1	Lower Chakachatna at McArthur	10 Oct	370	26 Sept.	480
3	Lower Chakachatna below Middle	8 Oct.	350	26 Sept.	430
4	Middle below split with Chakachatna	9 Oct.	34	26 Sept.	80
6	Lower Chakachatna above Middle[a]	8 Oct.	380	22 Sept.	680
13.5	Upper McArthur at Rapids	12 Oct.	270	26 Sept.	300
15	Upper McArthur at Powerhouse[b]				
	Transect 1	12 Oct.	24	-	-
	Transect 2	12 Oct.	150	24 Sept.	12
	Transect 3	12 Oct.	93	24 Sept.	41
16	Upper Noaukta Slough below Split	10 Oct.	3400	22 Sept.	1300[c]
17d	Chakachatna below Bridge	15 Oct.	3100	-	-
18	Lower Straight Creek	15 Oct.	270	21 Sept.	50
22	Chakachatna below Canyon[a]	14 Oct.	3000	21 Sept.	5800
C	Chakachatna at Lake Outlet	10 Oct.	2900	-	-

[a] 1982 and 1981 measurements significant distance apart, but have no major tributaries entering in between.

[b] Measurements at Powerhouse location are miscellaneous measurements that are not additive; they do not represent the total McArthur River discharge at that location.

[c] Partial measurement, not all of the channels were measured.

Table 6.26. Mean[a] daily discharges (cfs) in 1982 at three locations in the study area[a].

Date	August			September				October			
	C	13.5	6	C	13.5		6	C	13.5		6
					b	c			b	c	
1				4010	1140		690	3590	320	820	570
2				3960	1050		680	3480	310	810	550
3				3900	990		660	3410	290	780	530
4				3820	950		640	3330	270	760	510
5				3760	1550		620	3260	280	770	490
6				3840	1820		640	3170	260	730	470
7				3890	1490		660	3080	240	710	450
8				3890	1270		660	3020	230	700	430
9				3830	1150		640	2970	230	700	420
10				3780	1140		630	2900	220	690	400
11				3720	1040		610	2850	220	690	390
12	4510	1240	840	3610	940		580	2810	230	700	380
13	4530	1230	840	3540	1210		560		210	680	
14	4510	1320	840	3470	1230		540		210	670	
15	4560	1340	850	3490	2200		550		200	660	
16	4620	1250	870	3980	-		680		190	650	
17	4560	1190	850	4310	-		780				
18	4480	1180	830	4530	-		840				
19	4430	1210	810	4670	-		890				
20	4360	1230	790	4670	-		890				
21	4320	1260	780	4680	-		890				
22	4290	1220	770	4700	-		900				
23	4260	1230	760	4570	-		860				
					b	c					
24	4240	1240	760	4430	470	970	810				
25	4230	1210	750	4280	410	900	770				
26	4190	1190	740	4140	470	970	730				
27	4140	1210	730	4020	380	860	690				
28	4100	1130	710	3890	370	870	660				
29	4090	1370	710	3790	360	840	630				
30	4090	1340	710	3700	340	860	600				
31	4060	1240	700								

[a] Precision presented is for informational purposes of denoting trends and does not represent the accuracy of the data.

[b] Data computed using full cross section.

[c] Data computed using sedimented cross section.

Table 6.27. Summary of 1982 streamflow characteristics in comparison with U.S.G.S. records.

Site Number	Description	Year	Average Discharges for Period Indicated: 12 Aug.-12 Oct. Q (cfs)	12 Aug.-12 Oct. % of Avg.	12 Aug.-18 Aug. Q (cfs)	12 Aug.-18 Aug. % of Avg.	15 Sept.-21 Sept. Q (cfs)	15 Sept.-21 Sept. % of Avg.	6 Oct.-12 Oct. Q (cfs)	6 Oct.-12 Oct. % of Avg.
15294500	Chakachatna at Lake[a]	1959	7182	100	9633	76	4171	74	2514	80
		1960	5621	78	11014	87	4040	71	2044	65
		1961	7415	103	11243	89	8947	158	3099	99
		1962	7007	97	10443	82	5086	90	2060	66
		1963	8265	115	11109	87	6300	111	3194	102
		1964	7177	100	11843	93	4859	86	2410	77
		1965	10000	139	13571	107	13029	230	4950	158
		1966	7599	106	10629	84	6923	122	5359	171
		1967	9443	131	18642	147	3493	62	6357	203
		1968	6180	86	13686	108	3700	65	1796	57
		1969	4278	60	8874	70	3150	56	2867	91
		1970[d]	5542	77	9030	71	5049	89	2576	82
		1971[d]	7748	108	25143	198	3771	67	1517	48
		1972	-	-	12971	102	6717	119	-	-
		Avg.	7189	100	12702	100	5660	100	3134	100
		Std. Dev.	1564		4359		2672		1491	
C	Chakachatna at Lake	1982	3949 -2.07[c]	55	4537 -1.87[c]	36	4333 -0.50[c]	77	2973 -0.11[c]	95
13.5	McArthur at Rapids	1982	1066[d] 892[e]	15[d] 12[e]	1250[d]	10[d]	-	-	704[d] 231[e]	22[d] 7[e]
6	Chakachatna above Middle	1982	681	9	846	7	788	14	421	13

[a]Data from U.S.G.S. records for the period 1959 to 1972.

[b]Data for 1971 is of poor quality due to a 470,000 cfs flood on 11 August which damaged the U.S.G.S. gage.

[c]Number of standard deviations of the average 1982 data from the average value for the period of record.

[d]Data computed using full cross section for entire period.

[e]Data computed using full cross section up to the flood on 15 September and sedimented cross section from 24 September to 16 October.

Table 6.28. Summary of 1982 streamflow temperature records in °C from the recording gage on the Chakachatna River at the lake outlet.

	August			September			October		
	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.
1				8.4	8.0	8.5	7.0	7.0	7.0
2				7.9	7.5	8.0	6.9	6.5	7.0
3				8.1	7.5	8.5	6.8	6.5	7.0
4				8.0	8.0	8.0	6.5	6.5	6.5
5				6.4	5.5	7.5	6.5	6.5	6.5
6				5.6	5.5	6.0	6.0	6.0	6.0
7				8.4	8.0	8.5	6.0	6.0	6.0
8				8.5	8.5	8.5	6.1	6.0	6.5
9				7.9	7.5	8.0	6.0	6.0	6.0
10				7.0	7.0	7.0	6.0	6.0	6.0
11				7.6	7.0	8.0	6.0	6.0	6.0
12	8.1	7.5	8.5	8.0	8.0	8.0	5.9	5.5	6.0
13	8.1	8.0	8.5	6.7[a]	6.0	7.5	5.5	5.5	5.5
14	8.0	7.5	8.5	5.8	5.5	6.0			
15	8.5	8.5	8.5	6.5	6.0	7.0			
16	8.4	8.0	8.5	6.5	6.5	6.5			
17	8.5	8.5	8.5	6.5	6.5	6.5			
18	8.4	8.0	8.5	6.5	6.5	6.5			
19	8.1	8.0	8.5	6.5	6.5	6.5			
20	8.3	8.0	8.5	6.9	6.5	7.0			
21	8.0	7.5	8.5	6.6	6.5	7.0			
22	7.6	7.5	8.0	6.6	6.5	7.0			
23	7.1	7.0	7.5	7.0	7.0	7.0			
24	6.8	6.5	7.0	6.9	6.5	7.0			
25	7.5	6.5	8.0	7.0	7.0	7.0			
26	8.5	8.0	9.0	7.0	7.0	7.0			
27	8.9	8.5	9.0	7.0	7.0	7.0			
28	7.9	7.0	8.5	7.0	7.0	7.0			
29	6.1	6.0	6.5	7.0	7.0	7.0			
30	7.6	7.0	8.0	7.0	7.0	7.0			
31	8.5	8.5	8.5						

[a]Data based upon three of four readings; no data for the period 12:00-18:00.

Table 6.29. Summary of 1982 streamflow temperature records in °C from the recording gage on the McArthur River at the rapids.

	August			September			October		
	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.
1				5.2	3.0	9.5	3.8	3.5	4.5
2				4.5	2.5	7.0	3.8	3.5	4.0
3				4.9	3.5	7.5	3.6	3.5	4.0
4				4.3	3.5	6.0	3.3	3.0	3.5
5				4.5	4.0	5.5	3.0	2.5	3.0
6				4.1	3.0	4.5	1.6	0.5	2.5
7				4.0	3.0	6.5	2.5	2.0	2.5
8				4.0	2.5	5.5	2.5	2.5	2.5
9				3.9	3.5	4.5	2.5	2.5	2.5
10				4.0	3.5	5.0	2.5	2.5	2.5
11				3.0	2.0	4.0	2.2	2.0	2.5
12				4.2	3.0	5.0	2.1	2.0	2.5
13				4.4	4.0	5.0	2.1	2.0	2.5
14				5.4[b]	4.5	7.5	2.0	1.5	2.0
15				4.2[c]	3.5	4.9	1.7	1.5	2.0
16				4.6[c]	4.1	5.2	1.9	1.5	2.0
17	5.9[a]	4.0	7.5	5.7[c]	4.7	7.4			
18	5.8	3.0	10.0	4.1[c]	3.2	5.2			
19	5.7	3.0	10.0	3.6[c]	3.3	3.9			
20	5.8	3.0	10.0	3.8[c]	3.5	4.2			
21	5.6	3.0	9.5	4.0[c]	3.6	4.6			
22	4.9	3.0	7.5	4.7[c]	3.7	5.9			
23	5.3	4.0	7.0	4.5[c]	3.7	5.2			
24	4.6	4.0	5.5	4.0[d]	3.5	4.5			
25	4.8	3.5	7.0	3.1	3.0	3.5			
26	5.2	3.0	9.5	3.9	3.0	4.5			
27	5.4	3.0	9.5	3.7	3.0	4.5			
28	4.3	3.5	5.5	3.6	3.5	4.0			
29	5.0	4.0	6.5	3.6	3.5	4.0			
30	4.2	3.5	6.0	4.0	3.5	4.5			
31	4.9	2.5	8.5						

[a] Incomplete record for the day.

[b] Recording gage dislodged by rainstorm flood.

[c] Peabody-Ryan thermograph data.

[d] Recording gage reinstalled.

Table 6.30. Summary of 1982 streamflow temperature records in °C from the recording gage on the McArthur River at the powerhouse location (Station 15).

	August			September			October		
	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.
1				3.2	2.4	4.7			
2				3.1	1.9	4.8			
3				3.0	2.4	4.2			
4				3.1	2.4	4.5			
5				2.8	2.3	3.7			
6				2.5	2.2	2.8			
7				1.9	1.5	2.4			
8				2.2	1.2	3.8			
9				2.6	1.9	4.0			
10				2.3	1.8	2.9			
11				2.4	1.8	3.8			
12				1.8	0.5	4.1			
13				1.7	1.0	2.3			
14				2.4	2.2	2.7			
15				2.5	2.1	4.2			
16				3.5	2.5	4.9			
17									
18									
19									
20									
21	3.5	2.1	7.3						
22	3.4	2.1	5.9						
23	3.5	3.0	4.7						
24	3.4	2.9	4.2						
25	2.9	2.4	3.7						
26	2.9	1.8	4.9						
27	3.5	2.1	5.8						
28	3.4	2.4	5.7						
29	3.2	3.0	3.6						
30	2.8	2.3	4.0						
31	2.7	1.8	4.2						

Table 6.31. General substrate and sediment transport characteristics of the Chakachatna and McArthur River systems in 1982.

Reach	Representative Main Channel Substrate	Sediment Transport Characteristics
Chakachatna River in Chakachatna Canyon	Cobble/Boulder	Silts and sands are carried in suspension; gravel/cobble sizes are likely moved as bed load.
Chakachatna River from Canyon Outlet to Noaukta Slough Split	Gravel/Cobble	Silts and sands are carried in suspension; gravels are likely moved as bed load.
Upper McArthur River near Powerhouse	Sand with some gravel.	Silts and fine sands are moved in suspension; sand and small gravel may move as bed load.
Upper McArthur River at Rapids	Cobble/Boulder	Silts and sands are moved in suspension; gravel and cobbles likely moved as bed load.
McArthur River near Blockade Glacier	Sand with some areas of gravel/cobble.	Silts and fine sands are moved in suspension; course sands and small gravels are likely moved as bed load.
McArthur River below Blockade Glacier, Noaukta Slough, Lower Chakachatna River, and Middle River	Silty sand with limited areas of gravel.	Silts are carried in suspension; Sands are moved as bed load in large dune forms.

Table 6.32 Stream life of salmon from various sources

SPECIES	LITERATURE	DATA SOURCE: CARCASS[1] (Chakachatna Data by stream/station)	DATA SOURCE: TAGS (Chakachatna Data by stream/station)
Sockeye	12 days[2] 11.83 - 26.5 (weighted average = 13.8)[8]	∿12 days (17) <13 days (Chilligan) ∿5 days (12.4) ∿7 days (13x)	12 days (17) <13 days (Chilligan) 6 days (12.1) 5-7 days (13x)
Chinooks	13.1 - 7.7 days (early-late)[7]		∿10-14 days (19)
Pinks		∿6 days (13u) ∿6 days (12.1) ∿6 days (19)	∿7 days (19) ∿7 days (17) <7 days (12.1)
Chums	10 days[2] 17.31 ±7.19[4] (n = 65) 5-9 days[5] 11 - 18 days[6]	∿8 days (C1) <16 days (17)	10 days (C1) 9-11 days (17)
Coho	11 days †[3] 10 days	∿8 days (C1) ∿9 days (17)	9-12 days (17) <12 days (Chakachamna River Canyon) <11 days (Straight Creek Mouth

1 For areas where good counts were obtained only.

2 Bell and Atkinson (1982)

3 Wydowski and Whitney (1979)

4 Bruya (1981) - artificial spawning channels in Washington, reduced predation situation.

5 Hale, S. (1981) stream life.

6 Hale, S. (1981) freshwater life.

7 Neilsen and Green (1981) - early and late arriving spawners.

8 Barrett (1972) - stream life.

Table 6.33 Fyke Net deployment schedule for 1982

	Station[1]					
	1D	3	4	6	9	11
Date Set	Sept. 23	Sept. 19	Sept.10	Aug. 6	Sept. 26	Aug. 6
Date Pulled	Oct. 16	Oct. 17	Oct. 17	Aug. 26	Oct. 17	Aug. 7
Date Set				Sept. 10		Aug. 9
Date Pulled				Oct. 16		Aug. 26
Date Set						Sept. 14
Date Pulled						Sept. 15[2]
Date Set						Oct. 1
Date Pulled						Oct. 17

[1] See figure 6.30 for station location

[2] Net Lost

Table 6.34 Lake Chakachamna water temperatures and dissolved oxygen levels (March 22, 1982) Site 1.

Depth[1]		Water Temperature	Dissolved Oxygen Level
m	ft	(°C)	(mg/l)
0	0	0.0	13.3
1.5	5	0.5	13.3
3.0	10	1.0	12.4
4.6	15	1.0	12.3
6.1	20	1.25	12.4
7.6	25	1.25	12.0
9.1	30	1.50	11.4
10.7	35	1.50	11.4
12.2	40	1.50	11.4
13.7	45	1.50	10.6
15.2	50	1.50	10.6
16.8	55	1.50	10.8
18.3	60	1.50	11.0
19.8	65	1.50	11.1
21.3	70	1.50	11.1
23.2	76	1.65	11.0
26.8	88	1.90	11.0
29.6	97	2.00	11.0
36.0	118	2.00	11.1
41.1	135	2.10	10.8

[1]Measured from water surface.

Table 6.35 Depth distribution of targets detected under the ice, density corrected percentages, 45° and 15° transducer deployments, Chakachamna Lake, March 1982.

Depth (m)	Depth (ft)	45° Deployment Site 1 % of targets	45° Deployment Site 2 % of targets	15° Deployment Site 1 % of targets	15° Deployment Site 2 % of targets
0 - 3.0	0 - 10	99.25	100.00	78.31	65.00
3.0 - 6.1	10 - 20	0.68	0.00	5.07	35.00
6.1 - 9.1	20 - 30	0.00	0.00	7.25	0.00
9.1 - 12.2	30 - 40	0.00	0.00	6.76	0.00
12.2 - 15.2	40 - 50	0.00	0.00	1.87	0.00
15.2 - 18.3	50 - 60	0.00	0.00	0.74	0.00
18.3 - 21.3	60 - 70	0.00	0.00	0.00	0.00
21.3 - 24.4	70 - 80	0.02	0.00	0.00	0.00
24.4 - 27.4	80 - 90	0.02	0.00	0.00	0.00
27.4 - 30.5	90 - 100	0.00	0.00	0.00	0.00
30.5 - 33.5	100 - 110	0.00	0.00		
33.5 - 36.6	110 - 120	0.00	0.00		
36.6 - 39.6	120 - 130	0.00	0.00		
39.6 - 42.7	130 - 140	0.00	0.00		
42.7 - 45.7	140 - 150	0.02	0.00		
45.7 - 48.8	150 - 160		0.00		
48.8 - 51.8	160 - 170		0.00		
51.8 - 54.9	170 - 180		0.00		
54.9 - 57.9	180 - 190		0.00		
57.9 - 61.0	190 - 200		0.00		
61.0 - 64.0	200 - 210		0.00		
64.0 - 67.1	210 - 220		0.00		
76.1 - 70.1	220 - 230		0.00		
70.1 - 73.2	230 - 240		0.00		
73.2 - 76.2	240 - 250		0.00		
76.2 - 79.2	250 - 260		0.00		

Table 6.36 Habitat data measured at Station 17 sloughs, March 1982.

	Station = Left Bank Slough				
	1	2	3	4	5
Distance from left bank (m)	0.3	2.4	5.2	8.5	10.6
Depth (m)	0.8	1.6	1.0	0.6	0.5
Velocity at .6 depth (m/s)	<0.01	<0.01	<0.01	<0.01	0.03
Water temperature (°C)	2.0	2.0	2.0	1.8	2.0
Dissolved Oxygen (mg/l)	12.8	12.9	13.1	13.2	13.2
	Station = Right Bank Slough				
Distance from left bank (m)	1.5	3.0	4.5		
Depth (m)	0.4	0.6	0.4		
Velocity (m/s)	0.30	0.36	0.30		

Table 6.37 Water quality data - McArthur River, winter 1982.

Station	Temperature (°C) Mean	(SD)[3]	Dissolved Oxygen (mg/l) Mean	(SD)[3]	Depth (m) Mean	(SD)[3]	Velocity (m/s) Mean	(SD)[3]
15	1.2	(0.3)	13.0	(0.1)	0.3	(0.2)	0.1	(0.0)
13	0.3[1]	(0.1)[1]	11.1[1]	(0.3)[1]	0.2	(0.1)	0.2[1]	(0.1)[1]
	0.8[2]	(0.3)[2]	11.5[2]	(0.1)[2]			0.6[2]	(0.3)[2]

[1] Pool
[2] Riffle
[3] Standard derivation

Table 6.38 Water quality data - Chakachatna River drainage, May 1982.

Station	Temperature (°C) Mean (SD)	Dissolved Oxygen (mg/l) Mean (SD)	Conductivity (µmho/cm) Mean (SD)	Turbidity (mg/l) Mean (SD)	pH Mean (SD)	Depth (m) Mean (SD)	Velocity (m/s) Mean (SD)
29	5.3 (0.2)	10.6 (0.2)	29.0 (0.0)	17.0 (0.0)	0.4 (0.2)	0.8 (0.4)	6.6 (0.1)
30	8.4 (0.3)	9.8 (0.4)	3.0 (0.0)	5.5 (2.1)	0.2 (0.0)	0.7 (0.2)	6.6 (0.1)
26	4.2 (0.0)	10.7 (0.0)	81.0 (0.0)	410.0 (57.0)	0.3 (-)	0.7 (-)	6.8 (0.0)
22	6.7	10.6	76.0	250.0	0.6	0.6	6.8
17d	4.6	10.7	66.0	55.0	0.6	0.8	6.8
17_{LB+2}	4.2 (0.6)	10.3 (1.1)	70.0 (7.0)	65.0 (7.1)	0.4 (0.1)	0.3 (0.3)	5.7 (0.4)
17_{LB+0}	2.3 (0.3)	9.8 (0.3)	83.0 (1.4)	23.5 (3.9)	0.4 (0.3)	0.1 (0.1)	6.0 (0.1)
5	8.4 (0.1)	8.2 (0.1)	73.7 (0.6)	36.7 (0.6)	0.2 (0.1)	0.3 (0.02)	6.4 (0.0)
10	4.7	10.4	55.0	84.0	0.5	0.2	6.7
18 Main channel	2.7	11.2	20.0	54.0	5.4	0.5	1.1
18 Side channel cove	2.7	11.1	20.0	49.0	5.0	0.2	0.6
18 Side channel riffle	2.7	11.1	20.0	53.0	5.2	0.3	0.3

Table 6.39 Water quality - McArthur drainage, May 1982.

Station	Temperature (°C) Mean (SD)	Dissolved Oxygen (mg/l) Mean (SD)	Conductivity (µmho/cm) Mean (SD)	Turbidity (mg/l) Mean (SD)	pH Mean (SD)	Depth (m) Mean (SD)	Velocity (m/s) Mean (SD)
15.5	1.1 (0.1)	11.0 (0.3)	16.3 (1.2)	86.7 (5.8)	6.5 (0.1)	0.5 (0.1)	0.3 (0.1)
15	3.5 (0.0)	10.5 (0.2)	60.0(77.3)	13.7 (1.2)	5.9 (0.1)	0.3 (0.7)	0.3 (0.1)
13	4.9 (0.0)	10.8 (0.4)	155.0 (7.1)	13.0 (0.0)	6.4 (0.1)	0.6 (0.3)	0.4 (0.1)
13u Mouth area	4.2 (0.3)	10.4 (0.1)	123.3(61.1)	10.3 (2.3)	6.5 (0.2)	0.4 (0.1)	0.2 (0.1)

1 SD = Standard Deviation

Table 6.40 Plankton net sampling for outmigrants - sample location, volume and fish densities (May 25-27, 1982).

Location (station number)	Volume sampled (m^3)	Total fish density #/100m^3	Species collected
Kenibuna Lake outlet (29)	353.08	0.0	
Chakachatna River (22)	336.03	0.55	Dolly Varden (parr), sculpin (juvenile)
McArthur River (15)	144.73	-[1]	
McArthur River tributary (13U)	132.37	0.0	
Noaukta Slough (10)	77.46	-[1]	
Chakachatna River (17D)	147.46	1.36	Dolly Varden(parr), coho salmon (parr)
Middle River (5)	-	-	
Straight Creek (18)	303.78	0.0	
Chakachatna River (17) - day	348.52	0.0	
Chakachatna River (17) - night	191.47	0.0	

[1]Net clogged.

Table 6.41 Water quality data - Chakachatna River drainage, June 8-11, 1982.

Station	Temperature (°C) Mean (SD)	Dissolved Oxygen (mg/l) Mean (SD)	Conductivity (µmho/cm) Mean (SD)	Turbidity (mg/l) Mean (SD)	pH Mean (SD)	Depth (m) Mean (SD)	Velocity (m/s) Mean (SD)
31 pond	9.5	10.4	42.0	11.0	5.9	0.3 (0.1)	0.2
31	10.4	10.3	28.0	31.0	5.8	0.6 (0.2)	0.5 (0.1)
32	7.0	11.1	14.0	4.0	6.3	0.2 (0.1)	0.4 (0.3)
33	7.2	10.8	7.0	9.0	6.1	0.8 (0.2)	0.5 (0.3)
30	4.5 (0.1)	11.8 (0.1)	16.0 (1.4)	3.5 (3.5)	5.8 (0.3)	0.5 (0.2)	0.6 (0.6)
27	4.0	11.7	21.0	16.0	5.8		
25	3.3	11.6	21.0	17.0	5.7		
24	3.2 (0.1)	12.4 (0.0)	21.5 (2.1)	71.5 (21.9)	6.5 (0.1)	0.4 (0.2)	0.5 (0.2)
22	3.8 (0.1)	12.3 (0.4)	31.7 (1.2)	336.0 (20.9)	6.2 (0.1)	0.5 (0.3)	0.4 (0.2)
20	5.3	12.4	36.0	270.0	6.6	2.1 (6.0)	0.0 (0.0)
17 main	5.1	11.9	39.0	130.0	6.3	0.2	0.4
17 LB+2	5.8 (1.1)	11.5 (0.5)	59.7(23.4)	60.7 (60.6)	6.1 (0.2)	0.2 (0.3)	0.2 (0.1)
1	8.5 (0.4)	10.7 (0.3)	53.0 (1.4)	113.0 (79.2)	5.9 (0.4)	0.4 (0.2)	0.4 (0.1)
5	7.7 (0.1)	10.3 (0.8)	38.5 (2.1)	52.0 (63.6)	6.0 (0.1)	0.4 (0.3)	0.2 (0.1)
16A	4.6	12.3	29.0	470.0	6.0	0.3 (0.2)	0.2 (0.3)
10	5.1	11.5	34.0	162.0	6.2	0.5 (0.2)	0.3 (0.3)
18	3.8 (0.1)	12.1 (0.2)	13.0 (0.0)	197.5 (24.7)	5.8 (0.0)	0.3 (0.1)	0.9 (0.7)

Table 6.42 Water quality data - McArthur River drainage, June 8-11, 1982.

Station	Temperature (°C) Mean (SD)	Dissolved Oxygen (mg/l) Mean (SD)	Conductivity (µmho/cm) Mean (SD)	Turbidity (mg/l) Mean (SD)	pH Mean (SD)	Depth (m) Mean (SD)	Velocity (m/s) Mean (SD)
15 upper	3.4	11.5	2.0	55.0	6.6	0.3 (0.1)	0.6 (0.1)
15 lower	3.8 (0.4)	10.9 (0.1)	3.0 (2.8)	38.0 (7.1)	6.5 (0.1)	0.3 (0.1)	0.8 (0.2)
13	4.3	11.6	9.0	126.0	6.8	0.4 (0.1)	0.3 (0.1)
12	4.6	11.6	10.0	141.0	6.1	0.6 (0.3)	0.3 (0.1)
11.5	5.7	10.8	42.0	105.0	6.3	0.7	0.4
11	5.9	11.2	42.0	105.0	6.7	0.3 (0.1)	0.4 (0.4)
1D	6.4	10.8	17.0	171.0	5.9	0.3 (0.1)	0.3 (0.1)

Table 6.43 Estimated escapement of chinook salmon, 1982.

Waterbody	Estimated Escapement [1]	Estimated Escapement [2]
Chakachatna Drainage		
Straight Creek - Clearwater Tributary (19)	1422	1099
McArthur Drainage		
Stream 13x	452	268
13u	1633	1186
12.2	-	22[3]
Totals		
Chakachatna Drainage	1422	1099
McArthur Drainage	2107	1476

[1]Based upon 12 day stream life.
[2]Based upon count of live and dead fish.
[3]Included in drainage estimate totals.

Table 6.44 Estimated escapement of sockeye salmon, 1982.

Waterbody	Estimated Escapement 1	2	3
Chakachatna Drainage			
Chilligan River	38,576		
Igitna River	2,781		
Chakachatna Canyon Sloughs	392		
Chakachatna Tributary (C1)	238		
Straight Creek Mouth	203		
Straight Creek - Clearwater Tributary (19)	254		
Chakachatna Bridge Sloughs	1,193		
McArthur Drainage			
McArthur Canyon	333	666	
Stream 13X	2,708	5,416	3,223
Stream 13U	606	1,213	
Stream 12.1	8,356	16,711	
Stream 12.2	3,042	6,085	
Stream 12.3	1,256	2,512	
Stream 12.4	1,164	2,328	
Stream 12.5	-	-	2[4]
TOTALS:			
Chakachatna Drainage	43,637		
McArthur Drainage	17,467	34,933	

[1]Based upon 12 day stream life.
[2]Based upon 6 day stream life.
[3]Based upon peak count.
[4]Included in drainage total estimates.

Table 6.45 Estimated escapement of pink salmon, 1982.

Waterbody	Estimated Escapement [1]	Estimated Escapement [2]
Chakachatna Drainage		
Chakachatna Canyon Sloughs	279	
Chakachatna Tributary (C1)	0	
Straight Creek - Clearwater Tributary	7925	
Chakachatna Bridge Sloughs	59	
McArthur Drainage		
McArthur Canyon	56	60[3]
Stream 13x	4225	
13u	5402	
Stream 12.1	8499	
Stream 12.2	1566	
Stream 12.3		4[3]
Stream 12.4		18[3]
Stream 12.5		3[3]
Totals		
Chakachatna Drainage	8263	
McArthur Drainage	19777	

[1]Based upon 7 = day stream life.
[2]Based upon count of live and dead fish.
[3]Included in drainage estimate total.

Table 6.46 Estimated escapement of chum salmon, 1982.

Waterbody	Estimated Escapement [1]	Estimated Escapement [2]
Chakachatna Drainage		
Chakachatna Canyon Sloughs	121	
Chakachatna Tributary (C1)	165	
Straight Creek Mouth	152	
Chakachatna Bridge Sloughs	1482	
McArthur Drainage		
McArthur Canyon		1[3]
Stream 13U	23	
Stream 12.1		4[3]
Stream 12.4		1[3]
Totals		
Chakachatna Drainage	1920	
McArthur Drainage	29	

[1]Based upon 10 day stream life.
[2]Based upon peak on total counts.
[3]Included in drainage estimate total.

Table 6.47. Estimated escapement of coho salmon, 1982.

Waterbody	Estimated Escapement [1]	[2]
Chakachatna Drainage		
Chakachatna Canyon Sloughs	608	
Chakachatna Tributary (C1)	183	
Straight Creek Mouth	76	
Straight Creek - Clearwater Tributary	172	
Chakchanta Bridge Sloughs	1560	
McArthur Drainage		
McArthur Canyon	1182	
Stream 13X	1378	
Stream 13U	32	
Stream 12.1	2000	
Stream 12.2	46	
Stream 12.3	89	
Stream 12.5		2[3]
Totals		
Chakachatna Drainage	2599	
McArthur Drainage	4729	

[1] Based upon 10 days stream life.
[2] Based upon peak count (live and dead fish).
[3] Included in drainage estimate total.

Table 6.48 Percent species composition of fish collected for all fyke net combined. - 1982

Species	Percent Composition			
	August	September	October	August-October
Dolly Varden	83.4	72.7	59.4	66.8
Coho salmon	2.9	8.6	15.8	12.4
Rainbow trout	1.6	11.8	14.6	11.84
Round whitefish	0.8	2.1	3.3	2.7
Pygmy whitefish	1.5	1.5	3.5	2.7
Bering cisco	0.0	1.2	0.9	0.9
Slimy sculpin	1.9	0.4	0.8	0.8
Three-spine stickleback	4.6	0.0	0.0	0.4
Chum salmon	0.0	1.1	0.1	0.4
Longfin smelt	0.0	0.0	0.6	0.3
Pink salmon	3.3	0.0	0.0	0.3
Eulachon	0.0	0.3	0.3	0.3
Chinook salmon	0.0	0.2	0.02	0.07
Sockeye salmon	0.0	0.1	0.02	0.07
Rainbow smelt	0.0	0.0	0.02	0.01

Table 6.49 Percentage species composition of fish collected in fyke net 6, Chakachatna River. - 1982[1]

Species	Percent Composition		
	August	September	October
Dolly Varden	89.57	77.57	55.43
Coho salmon	0.54	5.14	23.93
Rainbow trout	1.62	10.00	12.38

[1]only net set continuously during sampling

Table 6.50 Monthly catch per effort values for all lifestages of major species collected by fyke nets - 1982

Species	Catch Per Effort (All Nets) August	September	October
Dolly Varden	33.50	78.87	155.8
Coho salmon	1.15	12.82	41.5
Rainbow trout	0.63	17.64	38.3

Species	Catch Per Effort (Net 6)[1] August	September	October
Dolly Varden	24.90	15.10	67.2
Coho salmon	0.15	1.00	29.0
Rainbow trout	0.45	1.95	15.0

[1]only net set continuously during sampling

Table 6.51 Percentage of total fyke net catch per effort represented by sub-adults of all species - 1982.

	% of Total August	% of Total September	% of Total October
Chakachatna (Net 6)	43.5	57.6	79.9
Chakachatna (Net 3)	*	53.2	63.7
McArthur (Net 11)	79.5	+	71.5
McArthur (Net 1D)	*	85.6	65.26
Noaukta Slough (Net 9)	*	49.4	47.6
Middle River (Net 4)	*	59.0	66.6

* Not Sampled

\+ Net Lost

Table 6.52 Species composition by location Fyke Nets - 1982

Species	McArthur River Stations 1 & 11	Chakachatna River Stations 3 & 6	Middle River Station 4	Noaukta Slough Station 9
Dolly Varden	74.0	61.5	69.6	72.9
Coho salmon	9.4	16.2	7.3	7.7
Rainbow trout	4.5	13.2	19.8	9.5
Round whitefish	1.3	3.6	0.6	4.1
Pygmy whitefish	0.3	3.8	1.5	3.8
Bering cisco	4.4	0.0	0.0	0.0
Slimy sculpin	0.5	0.9	1.0	0.3
Threespine stickleback	1.8	0.04	0.0	0.0
Chum salmon	0.9	0.1	0.2	0.9
Longfin smelt	1.6	0.0	0.0	0.0
Pink salmon	0.1	0.5	0.0	0.0
Eulachon	1.2	0.0	0.0	0.3
Chinook salmon	0.0	0.03	0.1	0.5
Sockeye salmon	0.0	0.1	0.2	0.0
Rainbow smelt	0.1	0.0	0.0	0.0

Table 6.53 Percentage of species - specific catch per effort (c/f) represented by each lifestage for major species collected by fyke net 6 - 1982[1].

	Percent of c/f by Life Stage		
	August	September	October
Dolly Varden	c/f=24.9	c/f=15.1	c/f=67.2
Parr	1.8	1.4	0.2
Juvenile	40.6	59.6	85.0
Adult	56.2	39.0	14.9
Coho salmon	c/f= 0.2	c/f= 1.0	c/f=29.01
Parr	0.0	58.0	97.45
Juvenile	0.0	0.0	2.3
Adult	100.0	42.0	0.2
Rainbow trout	c/f= 0.5	c/f= 2.0	c/f=15.01
Parr	11.1	2.6	0.5
Juvenile	33.3	29.7	53.8
Adult	55.6	67.7	45.8

[1]only net set continuously throughout sampling

Table 6.54 Mean ($\bar{X}$) and standard error (SE) for catch per effort - values for all lifestages of major species collected by fyke net - 1982.

Species	McArthur River		Chakachatna River		Middle River		Noaukta River	
	$\bar{X}$	SE	$\bar{X}$	SE	$\bar{X}$	SE	$\bar{X}$	SE
Dolly Varden	17.6	7.2	28.4	10.1	23.2	9.0	19.7	10.1
Coho salmon	2.4	1.2	7.5	5.5	2.4	1.3	2.1	1.7
Rainbow trout	1.1	0.4	6.1	2.6	6.6	4.7	2.6	0.9

Table 6.55 Results of mark and recapture of Dolly Varden (DV) and rainbow trout (RT) on the McArthur-Chakachatna system.
Fish tagged at fyke net stations - 1982

Recapture Station	Tagging Station 1	3	4	6	9	11
1	4 DV	1 RT 2 DV	1 RT 7 DV	3 DV		
2						
3	3 DV	4 RT 11 DV		3 RT 7 DV		2 DV
4		2 DV	9 RT 24 DV	1 RT 5 DV		
5			1 RT			
6	3 DV	4 RT 9 DV	9 RT 28 DV	2 RT 21 DV	1 RT	1 DV
9	2 DV				1 RT 2 DV	1 DV
11	2 DV	2 RT		1 RT 37 DV		3 DV
12.1			2 DV	1 DV		

Note: ___ indicates that fish were recaptured at same station as marked.

TABLE 6.56. CATCH PER EFFORT: MINNOW TRAP SAMPLES
AUGUST, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
0006	100882	DOLLY VARDEN	PARR	4	0.50	8.00	0.00	1
		SLIMY SCULPIN		4	0.50	0.00	0.00	0
	110882	DOLLY VARDEN	PARR	3	1.40	11.58	1.79	5
		DOLLY VARDEN	JUVENILE	3	0.33	13.70	0.00	1
		SLIMY SCULPIN	JUVENILE	3	0.67	7.70	0.42	2
0010	150882	DOLLY VARDEN	PARR	3	2.00	8.05	1.63	6
		SLIMY SCULPIN	JUVENILE	3	1.00	7.33	0.71	3
0011	110882	DOLLY VARDEN	PARR	4	2.00	11.76	1.80	8
		THREESPINE STICKLEBACK	ADULT	4	1.50	8.02	0.75	6
0013	170882	DOLLY VARDEN	PARR	4	1.50	8.88	2.14	6
		COHO SALMON	PARR	4	0.25	5.40	0.00	1
0016	160882	DOLLY VARDEN	PARR	5	2.00	9.03	0.95	10
		DOLLY VARDEN	JUVENILE	5	0.20	14.20	0.00	1
		SLIMY SCULPIN	JUVENILE	5	0.80	7.40	0.45	4
0019	130882	DOLLY VARDEN	PARR	10	5.60	9.22	2.06	54
		COHO SALMON	PARR	10	2.70	6.10	1.49	26
		CHINOOK SALMON	PARR	10	3.20	5.82	0.48	31
		CHINOOK SALMON	JUVENILE	10	0.10	14.00	0.00	1
		RAINBOW TROUT	PARR	10	0.40	7.60	1.01	4
		SLIMY SCULPIN	JUVENILE	10	0.50	8.00	0.61	5
		SLIMY SCULPIN	ADULT	10	0.20	12.60	4.10	2
0022	160882	DOLLY VARDEN	PARR	3	3.00	10.30	2.03	9
		SLIMY SCULPIN	JUVENILE	3	0.67	9.70	0.00	2
0023	140882	DOLLY VARDEN	PARR	3	2.67	10.00	2.07	8
		DOLLY VARDEN	JUVENILE	3	0.33	13.10	0.00	1
006A	240882	DOLLY VARDEN	JUVENILE	3	5.33	11.57	1.68	15
		DOLLY VARDEN	ADULT	3	1.33	14.75	0.59	4

TABLE 6.56. CATCH PER EFFORT: MINNOW TRAP SAMPLES
AUGUST, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
006A	240882	SLIMY SCULPIN	JUVENILE	3	0.67	8.80	1.70	2
		SLIMY SCULPIN	ADULT	3	0.33	9.00	0.00	1
016A	160882	DOLLY VARDEN	PARR	2	4.50	11.29	2.05	9

TABLE 6.57. CATCH PER EFFORT: MINNOW TRAP SAMPLES
SEPTEMBER, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
0001	140982	DOLLY VARDEN	PARR	4	1.00	9.53	1.75	4
		COHO SALMON	PARR	4	0.25	6.80	0.00	1
0002	140982	DOLLY VARDEN	PARR	4	0.25	9.30	0.00	1
		COHO SALMON	PARR	4	1.25	6.50	1.57	5
		PYGMY WHITE FISH	PARR	4	0.25	6.10	0.00	1
		SLIMY SCULPIN	JUVENILE	4	0.25	7.20	0.00	1
		THREESPINE STICKLEBACK	ADULT	4	0.25	8.60	0.00	1
0003	140982	DOLLY VARDEN	PARR	4	0.50	9.55	1.34	2
		DOLLY VARDEN	JUVENILE	4	0.25	12.90	0.00	1
		COHO SALMON	PARR	4	0.75	7.03	1.11	3
0004	200982	DOLLY VARDEN	PARR	4	1.25	10.14	0.42	5
		DOLLY VARDEN	JUVENILE	4	0.25	14.10	0.00	1
		SLIMY SCULPIN	JUVENILE	4	0.25	8.20	0.00	1
		SLIMY SCULPIN	ADULT	4	0.50	9.80	1.13	2
0005	200982	SLIMY SCULPIN	ADULT	4	0.75	9.53	0.68	3
		THREESPINE STICKLEBACK	JUVENILE	4	0.25	5.70	0.00	1
		THREESPINE STICKLEBACK	ADULT	4	0.25	8.40	0.00	1
0006	200982	SLIMY SCULPIN	JUVENILE	2	2.50	6.46	1.74	5
0008	210982	DOLLY VARDEN	PARR	4	0.50	7.30	1.41	2
		DOLLY VARDEN	JUVENILE	4	0.25	14.10	0.00	1
		COHO SALMON	PARR	4	0.25	5.90	0.00	1
0009	230982	DOLLY VARDEN	PARR	4	1.50	11.20	1.65	6
		DOLLY VARDEN	JUVENILE	4	0.50	14.35	0.07	2
		PYGMY WHITE FISH	JUVENILE	4	0.25	10.00	0.00	1
		SLIMY SCULPIN	JUVENILE	4	0.25	4.90	0.00	1
0010	230982	PYGMY WHITE FISH	JUVENILE	4	0.75	9.33	0.23	3
		SLIMY SCULPIN	ADULT	4	0.50	9.90	1.41	2

TABLE 6.57. CATCH PER EFFORT: MINNOW TRAP SAMPLES
SEPTEMBER, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
0011	120982	COHO SALMON	PARR	4	4.00	7.24	2.28	16
		SLIMY SCULPIN	JUVENILE	4	0.25	3.60	0.00	1
		SLIMY SCULPIN	ADULT	4	0.25	10.30	0.00	1
		THREESPINE STICKLEBACK	JUVENILE	4	2.00	5.18	0.58	8
		THREESPINE STICKLEBACK	ADULT	4	0.25	7.80	0.00	1
0012	120982	DOLLY VARDEN	PARR	4	1.75	10.50	2.82	7
		SOCKEYE SALMON	PARR	4	1.00	7.18	1.40	4
		SLIMY SCULPIN	JUVENILE	4	0.25	7.20	0.00	1
		NINESPINE STICKLEBACK	ADULT	4	0.50	5.50	0.14	2
0013	120982	DOLLY VARDEN	PARR	4	4.50	7.60	1.95	18
		COHO SALMON	PARR	4	0.25	5.00	0.00	1
0014	120982	DOLLY VARDEN	PARR	4	4.50	8.76	1.74	18
0015	120982	DOLLY VARDEN	PARR	4	0.75	9.07	1.01	3
0016	210982	DOLLY VARDEN	PARR	3	0.33	9.10	0.00	1
0017	250982	DOLLY VARDEN	PARR	4	2.00	9.85	3.24	8
		SLIMY SCULPIN	JUVENILE	4	0.50	5.25	0.35	2
0018	250982	DOLLY VARDEN	PARR	3	5.33	9.08	2.54	10
		DOLLY VARDEN	JUVENILE	3	0.33	14.00	0.00	1
		COHO SALMON	PARR	3	4.67	6.66	0.81	13
		CHINOOK SALMON	PARR	3	0.33	6.80	0.00	1
0019	250982	DOLLY VARDEN	PARR	4	0.75	7.27	1.19	3
		DOLLY VARDEN	JUVENILE	4	0.25	13.80	0.00	1
		SLIMY SCULPIN	JUVENILE	4	0.25	7.30	0.00	1
0020	250982	DOLLY VARDEN	PARR	3	4.33	7.21	1.84	12
		DOLLY VARDEN	JUVENILE	3	0.67	12.60	1.98	2
		COHO SALMON	PARR	3	0.67	8.10	0.14	2

TABLE 6.57 . CATCH PER EFFORT: MINNOW TRAP SAMPLES
SEPTEMBER, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
0020	250982	SOCKEYE SALMON	PARR	3	0.33	8.00	0.00	1
0021	240982	DOLLY VARDEN	PARR	4	1.75	10.53	1.63	6
		DOLLY VARDEN	JUVENILE	4	0.25	13.20	0.00	1
0022	240982	DOLLY VARDEN	PARR	4	0.50	10.90	0.28	2
		DOLLY VARDEN	JUVENILE	4	0.50	14.25	0.07	2
0023	240982	DOLLY VARDEN	PARR	6	0.17	11.80	0.00	1
		DOLLY VARDEN	JUVENILE	6	0.83	13.66	1.67	5
0024	240982	DOLLY VARDEN	PARR	4	1.00	9.73	2.09	4
		DOLLY VARDEN	JUVENILE	4	0.25	12.80	0.00	1
		LAKE TROUT	PARR	4	0.50	7.80	0.14	2
006A	230982	DOLLY VARDEN	PARR	4	1.25	11.12	1.41	5
016A	210982	DOLLY VARDEN	PARR	8	5.50	11.67	2.16	44
		DOLLY VARDEN	JUVENILE	8	0.62	13.54	0.62	5
		COHO SALMON	PARR	8	1.13	7.28	1.13	9
		SOCKEYE SALMON	PARR	8	0.50	7.48	0.74	4
		SLIMY SCULPIN	JUVENILE	8	0.12	7.60	0.00	1
		SLIMY SCULPIN	ADULT	8	0.25	8.55	0.21	2
		NINESPINE STICKLEBACK	JUVENILE	8	0.50	5.68	0.33	4
		NINESPINE STICKLEBACK	ADULT	8	0.25	7.40	0.28	2
017D	220982	DOLLY VARDEN	PARR	4	1.50	9.48	0.99	6
		SLIMY SCULPIN	JUVENILE	4	0.25	7.70	0.00	1
		SLIMY SCULPIN	ADULT	4	0.25	10.80	0.00	1

TABLE 6.58. CATCH PER EFFORT: MINNOW TRAP SAMPLES
OCTOBER, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
0001	161082	DOLLY VARDEN	PARR	4	0.50	10.45	3.04	2
		COHO SALMON	PARR	4	6.00	8.02	2.01	24
		PYGMY WHITE FISH	PARR	4	0.25	5.40	0.00	1
		SOCKEYE SALMON	PARR	4	2.25	6.26	0.54	9
		SOCKEYE SALMON	JUVENILE	4	0.50	5.60	1.41	2
		SLIMY SCULPIN	JUVENILE	4	0.25	4.90	0.00	1
		NINESPINE STICKLEBACK		4	4.75	0.00	0.00	0
		NINESPINE STICKLEBACK	JUVENILE	4	28.75	5.33	0.65	35
		NINESPINE STICKLEBACK	ADULT	4	4.50	6.89	0.48	8
0002	151082	DOLLY VARDEN	PARR	3	0.33	6.10	0.00	1
		COHO SALMON	PARR	3	0.33	12.40	0.00	1
		PYGMY WHITE FISH	PARR	3	0.33	6.40	0.00	1
		SOCKEYE SALMON	PARR	3	0.33	6.10	0.00	1
		SLIMY SCULPIN	JUVENILE	3	2.00	5.13	0.79	6
		SLIMY SCULPIN	ADULT	3	0.33	10.90	0.00	1
		NINESPINE STICKLEBACK	JUVENILE	3	4.67	5.66	0.67	14
0003	151082	DOLLY VARDEN	PARR	4	1.00	8.85	1.31	4
		COHO SALMON	PARR	4	0.25	14.40	0.00	1
		SLIMY SCULPIN	JUVENILE	4	1.25	6.24	1.26	5
0004	151082	DOLLY VARDEN	PARR	4	0.50	10.25	2.33	2
		DOLLY VARDEN	JUVENILE	4	0.75	8.80	0.85	2
		COHO SALMON	PARR	4	0.25	6.10	0.00	1
		SOCKEYE SALMON	PARR	4	0.25	5.90	0.00	1
		SLIMY SCULPIN	JUVENILE	4	0.25	8.10	0.00	1
		SLIMY SCULPIN	ADULT	4	0.25	9.10	0.00	1
0005	151082	COHO SALMON	PARR	2	1.00	6.50	2.69	2
		COHO SALMON	JUVENILE	2	0.50	6.30	0.00	1
		SOCKEYE SALMON	PARR	2	1.00	6.50	0.42	2
		NINESPINE STICKLEBACK	JUVENILE	2	2.00	4.75	0.61	4
		NINESPINE STICKLEBACK	ADULT	2	0.50	7.70	0.00	1
0006	151082	DOLLY VARDEN	PARR	4	0.25	5.70	0.00	1
		DOLLY VARDEN	JUVENILE	4	0.25	14.30	0.00	1
		COHO SALMON	PARR	4	0.25	13.00	0.00	1
		PYGMY WHITE FISH	JUVENILE	4	0.25	9.20	0.00	1

TABLE 6.58. CATCH PER EFFORT: MINNOW TRAP SAMPLES
OCTOBER, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
0006	151082	SLIMY SCULPIN	JUVENILE	4	1.50	6.15	1.30	6
		SLIMY SCULPIN	ADULT	4	0.50	9.75	1.48	2
		NINESPINE STICKLEBACK	JUVENILE	4	0.25	5.40	0.00	1
0008	151082	DOLLY VARDEN	PARR	4	3.75	10.68	1.18	15
		DOLLY VARDEN	JUVENILE	4	0.50	13.60	0.42	2
		COHO SALMON	PARR	4	1.75	7.30	1.84	7
		SLIMY SCULPIN	JUVENILE	4	0.25	6.90	0.00	1
		NINESPINE STICKLEBACK	JUVENILE	4	0.75	5.50	0.69	3
0009	171082	DOLLY VARDEN	PARR	4	1.50	8.58	3.56	6
		DOLLY VARDEN	JUVENILE	4	0.25	16.30	0.00	1
		COHO SALMON	PARR	4	0.50	6.65	0.64	2
		PYGMY WHITE FISH	PARR	4	0.50	6.30	0.00	2
		PYGMY WHITE FISH	ADULT	4	0.25	10.30	0.00	1
		SOCKEYE SALMON	PARR	4	0.50	7.80	1.98	2
		SLIMY SCULPIN	JUVENILE	4	0.50	6.70	2.12	2
0010	161082	DOLLY VARDEN	PARR	4	1.50	10.98	1.83	6
		DOLLY VARDEN	JUVENILE	4	0.75	13.87	0.58	3
		COHO SALMON	PARR	4	0.50	9.95	2.76	2
		SLIMY SCULPIN	JUVENILE	4	0.50	7.00	0.28	2
		SLIMY SCULPIN	ADULT	4	1.00	9.75	0.72	4
0011	161082	COHO SALMON	PARR	4	0.75	7.63	0.76	3
		SOCKEYE SALMON	PARR	4	0.25	7.30	0.00	1
		NINESPINE STICKLEBACK	JUVENILE	4	0.25	4.70	0.00	1
0012	191082	DOLLY VARDEN	PARR	4	0.50	7.95	2.62	2
0013	191082	DOLLY VARDEN	PARR	4	0.50	8.70	2.26	2
		SLIMY SCULPIN	JUVENILE	4	0.25	8.70	0.00	1
0014	191082	DOLLY VARDEN	PARR	4	6.25	9.16	2.16	25
		COHO SALMON	PARR	4	2.75	6.90	0.66	11
		SLIMY SCULPIN	JUVENILE	4	0.75	7.77	0.49	3
		NINESPINE STICKLEBACK	JUVENILE	4	0.25	6.80	0.00	1

TABLE 6.58. CATCH PER EFFORT: MINNOW TRAP SAMPLES
OCTOBER, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
0015	191082	DOLLY VARDEN	PARR	4	5.75	8.05	2.07	23
		DOLLY VARDEN	JUVENILE	4	0.25	16.70	0.00	1
		COHO SALMON	PARR	4	0.25	7.80	0.00	1
0016	171082	DOLLY VARDEN	PARR	4	0.25	11.70	0.00	1
		DOLLY VARDEN	JUVENILE	4	1.25	14.80	0.99	5
		SLIMY SCULPIN	ADULT	4	0.25	10.10	0.00	1
0017	171082	DOLLY VARDEN	PARR	4	0.50	8.70	2.83	2
		SLIMY SCULPIN	JUVENILE	4	0.25	5.20	0.00	1
0018	181082	DOLLY VARDEN	PARR	4	0.25	8.40	0.00	1
		COHO SALMON	PARR	4	0.25	5.60	0.00	1
0019	181082	COHO SALMON	PARR	4	0.50	6.40	0.99	2
		CHINOOK SALMON	PARR	4	0.50	7.05	0.07	2
		NINESPINE STICKLEBACK	JUVENILE	4	0.25	5.30	0.00	1
0021	181082	DOLLY VARDEN	PARR	4	0.50	11.60	0.14	2
		DOLLY VARDEN	JUVENILE	4	0.75	14.43	1.17	3
		PYGMY WHITE FISH	ADULT	4	0.25	12.80	0.00	1
		SLIMY SCULPIN	ADULT	4	0.25	11.50	0.00	1
0022	181082	DOLLY VARDEN	PARR	4	0.50	13.10	0.14	2
		SLIMY SCULPIN	JUVENILE	4	0.25	5.20	0.00	1
006A	171082	DOLLY VARDEN	PARR	3	1.00	10.07	2.39	3
		PYGMY WHITE FISH	JUVENILE	3	0.33	10.00	0.00	1
016A	171082	DOLLY VARDEN	PARR	4	0.25	10.30	0.00	1
		COHO SALMON	PARR	4	3.50	8.00	2.16	14
		COHO SALMON	JUVENILE	4	0.25	6.30	0.00	1
		SLIMY SCULPIN	JUVENILE	4	2.00	6.96	0.56	8
		SLIMY SCULPIN	ADULT	4	0.25	7.60	0.00	1
		NINESPINE STICKLEBACK	JUVENILE	4	6.25	5.86	0.77	25
		NINESPINE STICKLEBACK	ADULT	4	2.75	7.27	0.36	11

TABLE 6.58. CATCH PER EFFORT: MINNOW TRAP SAMPLES
OCTOBER, 1982

STATION	DATE	SPECIES	LIFE STAGE	NUMBER OF REPLICATES	CATCH/ EFFORT	LENGTH (CM) MEAN	S.D.	N
017D	191082	DOLLY VARDEN	PARR	4	2.25	11.33	1.98	9
		COHO SALMON	PARR	4	0.25	12.70	0.00	1
		SLIMY SCULPIN	JUVENILE	4	1.75	5.91	1.04	7
		SLIMY SCULPIN	ADULT	4	0.50	9.25	0.07	2

Table 6.59 Dolly Varden parr catch per effort using minnow traps 1982.[1]

Station	August	September	October
1	-	1.00	0.50
2	-	0.25	0.33
3	-	1.25	1.00
4	-	1.25	0.50
5	-	0.00	0.00
6	2.83	0.00	0.25
6A	0.00	1.25	1.00
8	-	0.50	3.75
9	-	1.50	1.50
10	1.50	0.00	1.50
11	2.00	0.00	0.00
12	-	1.75	0.50
13	1.50	4.50	0.50
14	-	4.50	6.25
15	-	0.75	5.75
16	2.00	0.25	0.25
16A	4.50	5.50	0.25
17	-	2.00	0.50
17D	-	1.50	2.25
18	-	4.00	0.00
19	5.60	0.75	0.00
20	-	2.60	0.00
21	-	1.75	0.50
22	3.00	0.50	0.50
23	2.00	0.17	-
24	-	1.00	0.00

- not fished

[1] fish/trap/day

Table 6.60 Dolly Varden juveniles catch per effort using minnow traps 1982.

Station	August	September	October
1	-	0.00	0.00
2	-	0.00	0.00
3	-	0.25	0.00
4	-	0.25	0.75
5	-	0.00	0.00
6	0.50	0.00	0.25
6A	5.33	0.00	0.00
8	-	0.25	0.50
9	-	0.50	0.25
10	0.00	0.00	0.75
11	0.00	0.00	0.00
12	-	0.00	0.00
13	0.00	0.00	0.00
14	-	0.00	0.00
15	-	0.00	0.25
16	0.20	0.00	1.25
16A	0.00	0.62	0.00
17	-	0.00	0.00
17D	-	0.00	0.00
18	-	0.25	0.00
19	0.00	0.25	0.00
20	-	0.40	0.00
21	-	0.25	0.75
22	0.00	0.50	0.00
23	0.25	0.83	-
24	-	0.25	0.00

- not fished

Table 6.61 Dolly Varden juvenile and parr catch per effort using minnow traps 1982.[1]

Station	August	September	October
1	-	1.00	0.50
2	-	0.25	0.33
3	-	1.50	1.00
4	-	1.50	1.25
5	-	0.00	0.00
6	3.33	0.00	0.50
6A	5.33	1.25	1.00
8	-	0.75	4.25
9	-	2.00	1.75
10	1.50	0.00	2.25
11	2.00	0.00	0.00
12	-	1.75	0.50
13	1.50	4.50	0.50
14	-	4.50	6.25
15	-	0.75	6.00
16	2.20	0.25	1.50
16A	4.50	6.12	0.50
17	-	2.00	0.25
17D	-	1.50	2.25
18	-	4.25	0.25
19	5.60	1.00	0.00
20	-	3.00	0.00
21	-	2.00	1.25
22	3.00	1.00	0.50
23	2.25	1.00	-
24	-	1.25	0.00

- not fished

[1] fish/trap/day

Table 6.62 Percentage incidence of juveniles of important salmonid species by month for all collection gear, sampling stations downstream of Chakachamna Lake - 1982.

Species	August	September	October
Dolly Varden	95.0	80.8	92.3
Coho salmon	60.0	46.2	61.5
Chinook salmon	15.0	11.5	11.5
Sockeye salmon	30.0	26.9	34.6
Rainbow trout	15.0	23.1	23.1
Pygmy whitefish	30.0	38.5	46.2

Table 6.63 Mean c/f for each reach by month for juvenile Dolly Varden and coho salmon - 1982.[1]

	Dolly Varden (parr 7 juveniles)			Coho Salmon (parr)		
	Aug	Sept	Oct	Aug	Sept	Oct
Upper Chakachatna River (Canyon)	2.63	1.08	0.25	0.00	0.00	0.00
Mid-Chakachatna River	-	2.13	1.00	-	0.10	0.06
Noaukta Slough	2.73	1.08	2.00	0.00	0.28	1.30
Lower Chakachatna River	3.05	0.63	0.68	0.00	0.52	0.31
Upper McArthur River	1.50	3.25	4.25	0.13	0.08	1.00
Lower McArthur River	2.00	1.42	0.33	0.00	1.42	2.25
Chakachatna Tributaries	5.60	2.63	0.13	2.70	1.75	0.38

Upper Chakachatna River (Canyon)	Stations 22, 23, 24
Mid-Chakachatna River	Stations 17, 17D, 20, 21
Noaukta Slough	Stations 8, 9, 10, 16, 16A
Lower Chakachatna River	Stations 1, 2, 3, 4, 5, 6, 6A
Upper McArthur River	Stations 13, 14, 15
Lower McArthur River	Stations 1D(1), 11, 12
Chakachatna Tributaries	Stations 18, 19

Table 6.64 Percentage of total catch of minnow trap captures based on catch/effort 1982.[1]

SPECIES	August	September	October
Dolly Varden	70.6	61.8	24.7
Coho salmon	6.6	17.3	14.2
Chinook salmon	7.3	0.4	0.4
Rainbow trout	0.9	0.0	0.0
Threespine stickleback	3.3	4.4	0.0
Slimy sculpin	12.0	9.0	11.8
Sockeye	0.0	2.5	3.6
Pygmy whitefish	0.0	1.8	1.7
Ninespine stickleback	0.0	1.8	42.9
Lake trout	0.0	0.7	0.0

[1] fish/trap/day

Table 6.65 Coho salmon parr catch per effort using minnow traps 1982.[1]

Station	August	September	October
1	-	0.25	6.00
2	-	1.25	0.33
3	-	0.75	0.25
4	-	0.00	0.25
5	-	0.00	0.50
6	0.00	0.00	0.25
6A	0.00	0.00	0.00
8	-	0.25	1.75
9	-	0.00	0.50
10	0.00	0.00	0.50
11	0.00	4.00	0.75
12	-	0.00	0.00
13	0.25	0.25	0.00
14	-	0.00	2.75
15	0.00	0.00	0.25
16	0.00	0.00	0.00
16A	0.00	1.13	3.50
17	-	0.00	0.00
17D	-	0.00	0.25
18	-	3.50	0.50
19	2.70	0.00	0.00
20	-	0.40	0.00
21	-	0.00	0.00
22	0.00	0.00	0.00
23	0.00	0.00	-
24	-	0.00	0.00

- not fished

[1] fish/trap/day

Table 6.66 Distribution of juveniles of important salmonid species August - 1982

Station	Dolly Varden	Coho	Chinook	Sockeye	Rainbow Trout	Pygmy Whitefish
1	+			+		+
3	+	+				+
4		+				
5	+	+				
6	+	+				+
6A	+					
8	+					
10	+					+
11	+	+	+	+		
12	+			+		
13	+	+			+	
15	+					
16	+	+				
16A	+	+				
17	+	+		+		
18	+	+	+			+
19	+	+	+		+	
20	+	+		+		+
22	+					
23	+			+		

Table 6.67 Distribution of juveniles of important salmonid species September - 1982

Station	Dolly Varden	Coho	Chinook	Sockeye	Rainbow Trout	Pygmy Whitefish
1	+	+		+	+	+
2	+	+				+
3	+	+			+	+
4	+	+		+	+	+
5						
6	+	+		+	+	+
6A	+	+				+
8	+	+				
9	+		+		+	+
10						+
11		+				
12	+			+		
13	+	+				+
14	+					
15	+					
16	+			+		
16A	+	+	+	+		+
17	+				+	
17D	+					
18	+	+	+			
19	+					
20	+	+		+		
21	+					
22	+					
23	+					
24	+					

Table 6.68 Distribution of juveniles of important salmonid species October - 1982

Station	Dolly Varden	Coho	Chinook	Sockeye	Rainbow Trout	Pygmy Whitefish
1	+	+		+	+	+
2	+	+		+		+
3	+	+	+		+	+
4	+	+		+	+	+
5	+	+		+		
6	+	+		+	+	+
6A	+					+
8	+	+				+
9	+	+		+	+	+
10	+	+				
11	+	+	+	+	+	
12	+					
13	+					
14	+	+				
15	+	+				
16	+					
16A	+	+				
17	+					+
17D	+	+				
18	+	+				+
19		+	+			
20				+		+
21	+					+
22	+					
23	+					
24	+			+		

Table 6.69 Distribution of juveniles of important salmonid species all collection gears - 1982

	Aug	Sept	Oct	Aug	Sept	Oct
	Dolly Varden			Coho		
Upper Chakachatna River (Canyon)	+	+	+			
Mid-Chakachatna River	+	+	+	+	+	+
Noaukta Slough	+	+	+	+	+	+
Lower Chakachatna River	+	+	+	+	+	+
Upper McArthur River	+	+	+	+	+	+
Lower McArthur River	+	+	+	+	+	+
Chakachatna Tributary Streams	+	+	+	+	+	+
	Chinook			Sockeye		
Upper Chakachatna River (Canyon)				+		+
Mid-Chakachatna River				+	+	+
Noaukta Slough		+			+	+
Lower Chakachatna River			+	+	+	+
Upper McArthur River						
Lower McArthur River	+		+	+	+	+
Chakachatna Tributary Streams	+	+	+			
	Rainbow Trout			Pygmy Whitefish		
Upper Chakachatna River (Canyon)						
Mid-Chakachatna River		+		+		+
Noaukta Slough		+	+	+	+	+
Lower Chakachatna River	+	+	+	+	+	+
Upper McArthur River	+			+	+	
Lower McArthur River		+	+	+	+	+
Chakachatna Tributary Streams	+			+		+

Upper Chakachatna River (Canyon)	Stations 22, 23, 24
Mid-Chakachatna River	Stations 17, 17D, 20, 21
Noaukta Slough	Stations 8, 9, 10, 16, 16A
Lower Chakachatna River	Stations 1, 2, 3, 4, 5, 6, 6A
Upper McArthur River	Stations 13, 14, 15
Lower McArthur River	Stations 1D(1), 11, 12
Chakachatna Tributaries	Stations 18, 19

Table 6.70 Chinook salmon juvenile and parr catch per effort using minnow traps 1982.

Station	August	September	October
1	-	0.00	0.00
2	-	0.00	0.00
3	-	0.00	0.00
4	-	0.00	0.00
5	-	0.00	0.00
6	0.00	0.00	0.00
6A	0.00	0.00	0.00
8	-	0.00	0.00
9	-	0.00	0.00
10	0.00	0.00	0.00
11	0.00	0.00	0.00
12	-	0.00	0.00
13	0.00	0.00	0.00
14	-	0.00	0.00
15	-	0.00	0.00
16	0.00	0.00	0.00
16A	0.00	0.00	0.00
17	-	0.00	0.00
17D	-	0.00	0.00
18	-	0.25	0.00
19	3.30	0.00	0.50
20	-	0.00	0.00
21	-	0.00	0.00
22	0.00	0.00	0.00
23	0.00	0.00	-
24	-	0.00	0.00

- not fished

Table 6.71 Sockeye salmon parr catch per effort using minnow traps 1982.

Station	August	September	October
1	-	0.00	0.25
2	-	0.00	0.33
3	-	0.00	0.00
4	-	0.00	0.25
5	-	0.00	0.50
6	0.00	0.00	0.00
6A	0.00	0.00	0.00
8	-	0.00	0.00
9	-	0.00	0.50
10	0.00	0.00	0.00
11	0.00	0.00	0.25
12	-	1.00	0.00
13	0.00	0.00	0.00
14	-	0.00	0.00
15	-	0.00	0.00
16	0.00	0.00	0.00
16A	0.00	0.50	0.00
17	-	0.00	0.00
17D	-	0.00	0.00
18	-	0.00	0.00
19	0.00	0.00	0.00
20	-	0.20	0.00
21	-	0.00	0.00
22	0.00	0.00	0.00
23	0.00	0.00	-
24	-	0.00	0.00

- not fished

Table 6.72 Pygmy whitefish catch per effort using minnow traps 1982.

Station	August	September	October
1	-	0.00	0.25
2	-	0.25	0.33
3	-	0.00	0.00
4	-	0.00	0.00
5	-	0.00	0.00
6	0.00	0.00	0.25
6A	0.00	0.00	0.33
8	-	0.00	0.00
9	-	0.25	0.75
10	0.00	0.75	0.00
11	0.00	0.00	0.00
12	-	0.00	0.00
13	0.00	0.00	0.00
14	-	0.00	0.00
15	-	0.00	0.00
16	0.00	0.00	0.00
16A	0.00	0.00	0.00
17	-	0.00	0.00
17D	-	0.00	0.00
18	-	0.00	0.00
19	0.00	0.00	0.00
20	-	0.00	0.00
21	-	0.00	0.25
22	0.00	0.00	0.00
23	0.00	0.00	-
24	-	0.00	0.00

- not fished

Table 6.73 Water quality profiles of Chukachamna Lake - August, 1982

Depth (meters)	Depth (feet)	Temperature (°C)	Dissolved Oxygen (mg/l)	Conductivity (umho/cm)	Turbidity (mg/l)
0.0	0.0	16.5	11.4	38	35
0.4	1.25	11.7	11.9	34	40
0.8	2.5	11.7	12.0	31	44
1.5	5.0	8.6	12.2	29	44
2.3	7.5	8.6	12.2	25	42
3.0	10.0	8.2	12.4	29	45
3.8	12.5	8.2	12.4	29	44
4.5	15.0	8.0	12.4	29	44
5.3	17.5	7.8	12.4	28	43
6.1	20.0	7.8	12.5	28	42
6.9	22.5	7.8	12.6	27	43
7.6	25.0	7.7	12.6	27	43
8.4	27.5	7.6	12.7	26	43
9.1	30.0	7.5	10.9	26	43
12.2	40.0	7.2	11.1	29	310
15.2	50.0	7.1	11.2	30	245
18.3	60.0	7.1	11.2	30	125
21.3	70.0	7.2	11.0	33	150
30.5	100.0	7.0	11.3	33	328
36.6	120.0	6.5	11.3	30	82
45.7	150.0	5.9	11.6	30	76
61.0	200.0	5.7	11.6	33	210
76.2	250.0	5.6	11.6	25	320
87.8	288.0	5.3	11.6	27	200

Table 6.74 Lake Chakachamna/Transect 1. Hydroacoustic Fish Density Estimates, 19 September, 1982 (1 is North shore area).

Depth 3.05m (10 ft) Strata	Sample Volume (m^3)	Number of Fish Per m^3 x 10^{-3} Distance from Start of Transect (180m Increments) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Total
1	146																				0.0
2	441																				0.0
3	731																			1.37	1.37
4	1026		0.98																		0.98
5	1319																			0.76	0.76
6	1611																		1.24	0.62	1.86
7	1886	1.06																1.59	1.06	2.12	5.83
8	2198	0.46	0.46				0.46					0.46					0.46	1.82	0.91	4.09	9.15
9	2489															0.40	0.40	2.81	0.80	5.22	9.63
10	2785		0.36		0.36	0.36								1.08			1.08	3.59	0.72	4.67	12.22
11	3076								0.32		0.32			1.30				1.95	0.96	2.28	7.13
12	3370													0.30				1.48	0.59	0.59	2.96
13	3661													0.27					1.09		1.36
14	3956																		0.25		0.25
15	4248					0.23															0.23
16(49m)	4541																		0.22	0.22	0.44
	Total	1.52	1.80	0.0	0.36	0.59	0.46	0.0	0.32	0.0	0.32	0.46	0.0	2.95	0.0	0.40	1.94	13.24	7.84	21.94	
Maximum Bottom Depth in meters		73	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	82	

Table 6.75 Lake Chakachamna -- Transect 2. Hydroacoustic Fish Density Estimates, 19 September, 1982 (1 is South shore area).

Depth 3.05 meters (10 ft) Strata	Sample Volume (m^3)	Number of Fish Per $m^3 \times 10^{-3}$ Distance from Start of Transect (180m Increments) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	Total
1	146																		0.0
2	441															6.80	4.54		11.34
3	731															6.84	2.74		9.58
4	1026															9.75	2.92	0.97	13.64
5	1319															11.37	3.79		15.16
6	1611															3.10	3.10	1.86	8.06
7	1886	1.59		1.06				0°	°0.53	0.53			0.53	0.53		4.25	3.19		12.21
8	2198		0.91													1.82	1.82		4.55
9	2489	0.80					0.40	0.40							0.80	1.61	1.21	1.21	6.43
10	2785		0.36	0.36	0.36											0.72			1.80
11	3076		0.98	0.33						0.33			0.33				0.33	0.33	2.42
12	3370	0.30	0.59	0.30				0.30		0.30		0.30				0.30	0.59		2.98
13	3661		0.55	0.82				0.27								0.55	0.27		2.46
14	3956		0.25	0.25							0.25					0.51	0.25		1.51
15	4248																		0.0
16(49.m)	4541																		0.0
	Total	2.69	3.64	3.12	0.36	0.0	0.40	0.97	0.53	1.16	0.25	0.30	0.86	0.53	0.80	47.72	24.75	4.37	
Maximum Bottom Depth(m)		46	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	

Table 6.76 Lake Chakachamna -- Transect 3. Hydroacoustic Fish Density Estimates, 19 September, 1982 (1 is North Shore area).

Depth 3.05 meters (10 ft.) Strata	Sample Volume (m^3)	Number of Fish Per m^3 x 10^{-3} Distance from Start of Transect (180m Increments) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
1	146																	0.0
2	441										4.54							4.54
3	731									1.37								1.37
4	1026									1.95								1.95
5	1319									0.76	0.76					1.52		3.04
6	1611									1.24						0.62		1.86
7	1886				0.53					1.06		0.53			0.53	0.53		2.65
8	2198									1.36	1.36	0.45			0.45	0.45		4.07
9	2489								0.40	0.80	0.40	0.80		0.40	0.40	1.21		4.41
10	2785					0.36	0.36			0.36		0.36	0.36	0.36		1.08	0.72	3.96
11	3076									0.33	0.33		0.65			0.65	0.33	2.31
12	3370					0.30					0.30				0.30	0.89	0.30	2.09
13	3661															0.82	0.55	1.37
14	3956										0.25					1.01	0.25	1.51
15	4248																0.24	0.24
16(49m)	4541										0.22					0.22	0.66	1.10
	Total	0.0	0.0	0.0	0.53	0.66	0.36	0.0	0.40	9.23	8.16	2.14	1.01	0.76	1.68	8.78	3.08	
Maximum Bottom Depth (m)		3	29	55	78	90	91+	91+	91+	91+	91+	91+	91+	91+	91+	91+	56	

Table 6.77 Water Quality Profiles of Chakachamna Lake
September, 1982

Depth		Temperature	Dissolved Oxygen	Conductivity	Turbidity
(meters)	(feet)	(°C)	(mg/l)	(umho/cm)	(mg/l)
0.0	0.0	5.9	11.9	23	54
0.8	2.5	6.0	10.8	23	58
1.5	5.0	6.0	12.5	23	58
2.1	7.0	5.9	12.5	23	57
3.0	10.0	5.9	12.4	27	58
4.6	15.0	5.9	11.9	27	61
6.1	20.0	5.9	12.1	23	63
7.6	25.0	5.9	11.6	24	64
9.1	30.0	5.9	11.9	28	64
15.2	50.0	6.2	[2]	28	66
22.9	75.0	6.3	[2]	24	70
30.5	100.0	6.2	[2]	25	62
45.7	150.0	6.3	[2]	23	54
61.0	200.0	6.3	[2]	23	53
76.2	250.0	6.3	[2]	22	58
91.4	300.0	6.5	[2]	23	80

1 - Data taken immediately follwing heavy rains and storm, waves 1.2 - 1.5 meters (4.5 - 5.0 ft).

2 - Samples taken with Van Dorn bottle showed signs of supersaturation - effervescence, dissolved oxygen could not be measured reliably.

Table 6.78 General substrate and cover characteristics by station. (1982)

Station no.	Substrate	Cover
1	sand-sand/silt	vegetation - limited
1D	sand/silt	none
2	sand/silt	vegetation/snags
3	sand/silt some small gravel	vegetation/snags - limited
4	sand/silt some small area of gravel	vegetation/snags - limited
5	sand/silt	vegetation
6	sand/silt some gravel	vegetation/snags
6A	sand/silt	vegetation/roots
8	sand/silt some small gravel	snags - limited
9	silt/mud	vegetation
10	silt/mud	snags
11	sand-sand/silt	snags - limited
11.5	sand/silt	snags - limited
12	sand-silt	snags - limited
13	gravel/cobble-sand	cobble/rubble
14	sand/silt	vegetation
15	gravel/sand	vegetation/boulders, rubble
16	cobble/gravel-armored in channel	snags/rubble
16A	sand/silt/gravel	snags/cobble
17	gravel/cobble/sand - main channel armored	cobble/vegetation few snags
17D	cobble/gravel - heavily armored	cobble/snags
18	sand/gravel	snags/vegetation
19	gravel/sand	snags/vegetation
20	small boulders/cobble/sand	boulders/cobble/snags
21	cobble/rubble/some gravel	cobble/snags
22	gravel/cobble-armored in channel	cobble/snags
23	rubble/cobble/sand-armored in channel	rubble
24	cobble/rubble/gravel - some sand-armored in channel	rubble/snags
25	sand	
26	sand	
27	sand/gravel some cobble	cobble
28	rubble, bedrock	rubble
29	cobble, gravel	cobble
30	gravel, cobble	cobble/vegetation, snags
31	sand/silt/little gravel	vegetation
32	gravel/sand	cobble
33	cobble/gravel	cobble/rubble

Table 6.79 Water quality data by station, July 1982.

Station	Water Temperature Mean	Water Temperature S.D.[1]	Dissolved Oxygen Mean	Dissolved Oxygen S.D.	Conductivity Mean	Conductivity S.D.	Turbidity Mean	Turbidity S.D.	N
15	4.5	0.0							1
17	10.3	0.4	13.0	0.4	51.0	1.4	12.0	4.2	2
13X	10.3	0.0	11.3	0.6	3.0	0.0	9.0	2.8	2
30	7.1	0.2	11.3	0.2	13.7	0.6	29.3	0.6	3
19	8.0	0.0							

[1]Standard Deviation

Table 6.80 Water quality data by station, August 1982.

Station	Water Temperature Mean	S.D.	Dissolved Oxygen Mean	S.D.	Conductivity Mean	S.D.	Turbidity Mean	S.D.	N
1	10.5	-	10.1	-	42.0	-	53.0	-	1
1D	5.8	0.35	11.0	0.70	20.3	0.58	72.0	1.73	3
2	8.3	-	11.9	-	51.0	-	27.0	-	1
3	8.9	0.04	10.6	0.64	39.6	3.21	73.0	7.84	5
4	12.9	-	9.2	-	46.0	-	70.0	-	1
5	10.8	-	10.2	-	41.0	-	60.0	-	1
6	7.9	2.22	11.5	0.75	34.7	4.08	83.1	35.16	14
6A	8.8	0.05	10.6	0.34	33.8	0.45	72.8	6.83	5
8	9.3	0.16	11.4	0.55	33.3	1.50	166.1	42.60	9
10	8.2	0.44	11.7	0.33	42.8	23.62	218.1	28.65	8
11	11.3	1.37	10.5	1.08	43.0	9.30	61.9	31.40	20
12	3.7	0.47	12.7	0.61	7.4	1.19	228.1	82.46	8
12L	1.8	-	13.7	-	7.0	-	436.0	-	1
13	5.9	1.95	11.0	1.99	46.6	22.43	70.1	57.03	7
15	4.9	1.73	12.7	0.51	14.6	25.75	30.7	8.03	9
16	8.2	0.32	12.1	0.12	35.6	14.23	130.6	59.10	10
16A	9.5	0.24	10.8	0.86	36.3	4.92	114.0	20.99	4
17	9.2	0.36	10.0	1.67	36.2	2.17	91.2	7.16	5
$17_{LBO\&1}$	10.2	10.21	9.9	0.80	44.9	8.65	21.4	6.64	50
$17_{LBO\&2}$	11.6	1.12	11.5	0.80	61.9	17.34	4.5	7.30	13
18	5.0	0.82	12.1	0.70	51.8	3.63	272.1	15.00	9
19	9.0	2.47	10.8	1.18	20.8	10.10	14.0	9.06	21
19A	8.4	0.21	10.9	1.34	18.0	0	10.5	0.71	2
20	8.8	0.34	11.7	0.16	36.5	4.36	108.5	1.29	4
22	8.1	0.15	11.9	0.21	50.0	20.66	92.3	21.94	3
23	8.2	0.20	11.6	0.85	45.3	0.58	21.3	5.86	3
27	12.5	2.57	11.0	1.06	47.7	17.49	41.5	9.57	10
28	10.0	1.19	11.9	0.40	26.7	1.15	47.7	4.62	3
30	6.4	-	10.1	-	22.0	-	4.0	-	1

[1] standard deviation

Table 6.81 Water quality data by station, September 1982.

Station	Water Temperature Mean	Water Temperature S.D.	Dissolved Oxygen Mean	Dissolved Oxygen S.D.	Conductivity Mean	Conductivity S.D.	Turbidity Mean	Turbidity S.D.	N
1	7.5	0.45	10.7	0.89	46.5	7.72	107.5	49.78	4
2	6.8	0.22	12.3	0.21	37.5	1.00	105.0	17.66	4
3	6.4	0.05	12.0	0.10	36.5	0.58	89.5	5.07	4
6A	6.9	0.18	12.0	0.13	33.0	0.82	129.5	9.98	4
8	7.1	0.10	11.5	0.56	26.8	2.36	335.3	72.72	4
9	6.6	0.19	12.3	0.26	31.5	1.00	286.3	275.90	4
10	5.5	0.13	12.5	0.51	29.8	1.50	108.3	18.95	4
11	7.4	0.36	10.2	1.26	40.5	2.38	178.8	48.87	4
12	3.0	0.78	13.2	0.71	12.0	6.24	594.3	419.23	3
13	5.0	0.46	11.4	0.70	62.5	13.18	19.8	14.45	4
14	2.9	0.31	13.8	0.31	9.5	1.73	23.0	1.83	4
15	2.6	0.34	13.8	1.27	10.2	13.20	13.7	10.63	9
16	6.3	0.19	12.3	0.52	25.3	1.26	455.0	23.09	4
16A	7.1	0.20	11.1	0.69	29.0	3.19	451.7	113.02	12
17LB &2	6.5	0.05	12.7	0.22	34.3	2.22	78.0	9.63	4
17D	6.4	0.13	10.7	0.10	30.3	0.50	201.8	21.11	4
19	3.8	0.13	13.1	0.15	14.0	0.0	67.3	17.84	4
20	5.8	-	12.4	-	34.0	-	75.0	-	1
21	6.8	0.08	12.8	0.85	31.0	0	87.3	11.93	4
22	6.6	0.08	11.5	0.35	31.0	0	84.3	10.24	4
23	6.6	0.23	12.0	0.46	38.7	8.43	86.8	89.28	6
24	6.3	0.10	12.4	0.50	22.5	1.00	88.5	30.49	4

[1]standard deviation

Table 6.82 Water quality data by station, October 1982.

Station	Water Temperature Mean	Water Temperature S.D.	Dissolved Oxygen Mean	Dissolved Oxygen S.D.	Conductivity Mean	Conductivity S.D.	Turbidity Mean	Turbidity S.D.	N
1	2.1	0.56	11.5	0.29	59.5	4.73	85.3	89.65	4
2	2.9	0.10	13.9	0.06	47.0	1.73	64.7	26.39	3
3	2.5	0.05	13.7	0.37	46.5	1.91	65.8	17.76	4
4	0.7	0.48	5.9	6.78	57.8	12.09	42.0	6.63	4
5	0.2	-	-	-	14.0	4.24	33.0	1.41	2
6	4.1	3.63	12.5	0.54	44.8	3.20	59.0	4.24	4
6A	3.8	0.61	11.7	0.20	53.3	11.85	43.0	12.77	3
8	0.5	0.40	13.4	0.23	21.8	6.95	9.0	2.83	4
9	3.6	0.05	12.0	0.26	47.8	2.87	70.3	16.76	4
10	3.8	0.05	11.0	0.31	50.5	11.03	59.5	3.00	4
11	3.6	0.10	10.3	0.62	52.0	12.11	74.8	37.03	4
12	0.1	0.06	12.8	0.59	17.0	-	38.5	2.52	4
13	0.5	0.22	12.5	0.47	24.8	3.50	60.3	19.64	4
14	0.7	0.18	11.9	0.75	13.6	2.07	6.2	1.64	5
15	1.2	0.26	12.7	0.21	15.8	5.19	2.3	0.50	4
16	4.2	0.15	11.7	0.19	53.0	4.24	74.3	16.38	4
16A	2.0	0.38	8.8	0.72	74.8	10.21	38.3	14.24	4
$17_{LB\&2}$	3.8	0.72	10.8	0.54	60.1	3.44	10.7	2.28	17
17D	4.6	0.13	12.2	0.57	51.3	2.99	65.0	7.44	4
18	1.7	0.24	12.0	0.18	35.0	1.15	81.0	59.94	4
19	1.5	0.10	11.1	0.71	15.5	2.65	65.3	40.01	4
20	2.3	0.17	11.9	0.06	43.3	1.26	186.5	85.78	4
21	4.6	0.05	11.7	0.24	49.8	0.96	148.3	59.13	4
22	4.5	0.18	11.3	0.42	47.3	0.50	68.8	10.53	4
23	4.2	0.06	10.8	0.12	57.0	8.66	64.7	0.58	3
24	4.8	0.28	10.9	0.28	22.3	7.70	73.0	7.35	8

[1] standard deviation

Table 6.83 Sources of Additional Inflow Identified at Sampling Stations 1982

Location	Station	Upwelling (slough) flow present	Clearwater tributary flow present	Other additional in flow present
Another River	33		+	
Igitna River	32	+	+	
Neacola River	31		+[1]	
Chilligan River	30	+	+	
Kenibuna Lake Outlet	29			
Chakachamna Lake	28			
Chakachamna Lake	27			
Nisishlamina River Delta	26			+
Chakachamna Lake	25			
Chakachatna River Canyon	24			
Chakachatna River Canyon	23			
Chakachatna River Canyon	22			
Chakachatna Canyon Sloughs	(22)	+	+	
Chakachatna River	21			
Tributary C1	(21)	+	+	
Buckwater Area	20			+[2]
Clearwater Tributary	19		+	
Straight Creek	18			
Straight Creek Mouth Area	(18)	+	+	
Chakachatna River Bridge Area	17	+		
Chakachatna River	17D			
Noaukta Slough	16			
Noaukta Slough	16A		+	
McArthur Canyon	15	+	+	
Lower McArthur Canyon	14			+[1]
Upper McArthur River	13	+		
McArthur River	12			
McArthur River	11			
Noaukta Slough	10			+[1,2]
Noaukta Slough	9			
Noaukta Slough	8		+	+[2]
Chakachatna River	6A			
Chakachatna River	6			
Middle River	5			+[1,2]
Middle River	4			
Lower Chakachatna River	3			
Chakachatna River	2			+[2]
Chakachatna River	1			
McArthur River	1D			
Tributary	13U		+	+[1]
Tributary	13X		+	+[2]
Tributary	12.1		+	+[2]
Tributary	12.2		+	+[2]
Tributary	12.3		+	+[2]
Tributary	12.4		+	+[2]
Tributary	12.5		+	+[2]

[1] Beaver Pond Seepage
[2] Run-off from land drainage

Table 6.84. Summary of estimated salmon escapement by waterbody and drainage for 1982.

CHAKACHATNA RIVER DRAINAGE

Species	Straight Creek Mouth	Chakachatna Bridge Side Channels and Sloughs	Chakachatna Canyon Sloughs	Chakachatna Tributary (C1)	Igitna River	Chilligan River	Straight Creek	Straight Creek Clearwater Tributary	Drainage Total
Sockeye Salmon	203	1,193	392	238	2,781	38,576	0	254	43,637
Chinook Salmon	0	0	0	0	0	0	0	1,422	1,422
Pink Salmon	0	59	279	0	0	0	0	7,925	8,263
Chum Salmon	152	1,482	121	165	0	0	0	0	1,920
Coho Salmon	76	1,560	608	183	0	0	0	172	2,599

MCARTHUR RIVER DRAINAGE

Species	McArthur Canyon	Stream 13X	Stream 13U	Streams 12.1	12.2	12.3	12.4	12.5	Drainage Total
Sockeye Salmon	666	5,416	1,213	16,711	6,085	2,512	2,328	0	34,933
Chinook Salmon	0	452	1,633	0	22	0	0	0	2,107
Pink Salmon	60	4,225	5,402	8,499	1,566	4	18	3	19,777
Chum Salmon	1	0	23	4	0	0	1	0	29
Coho Salmon	1,182	1,378	32	2,000	46	89	0	0	4,729

FIGURES

FIGURE 6.1

Approximate Boundary Of
Chakachamna Lake Study Area
1981

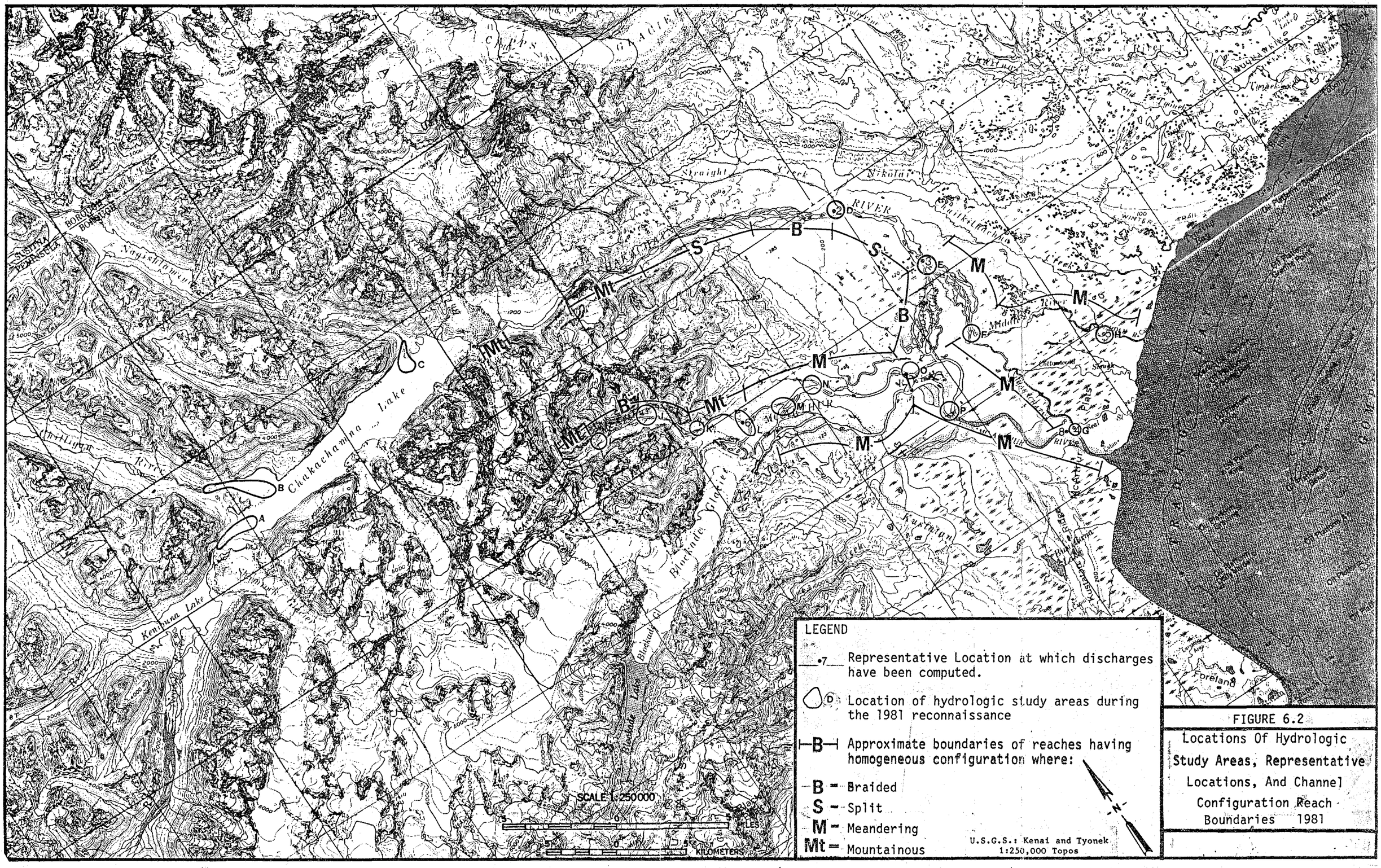
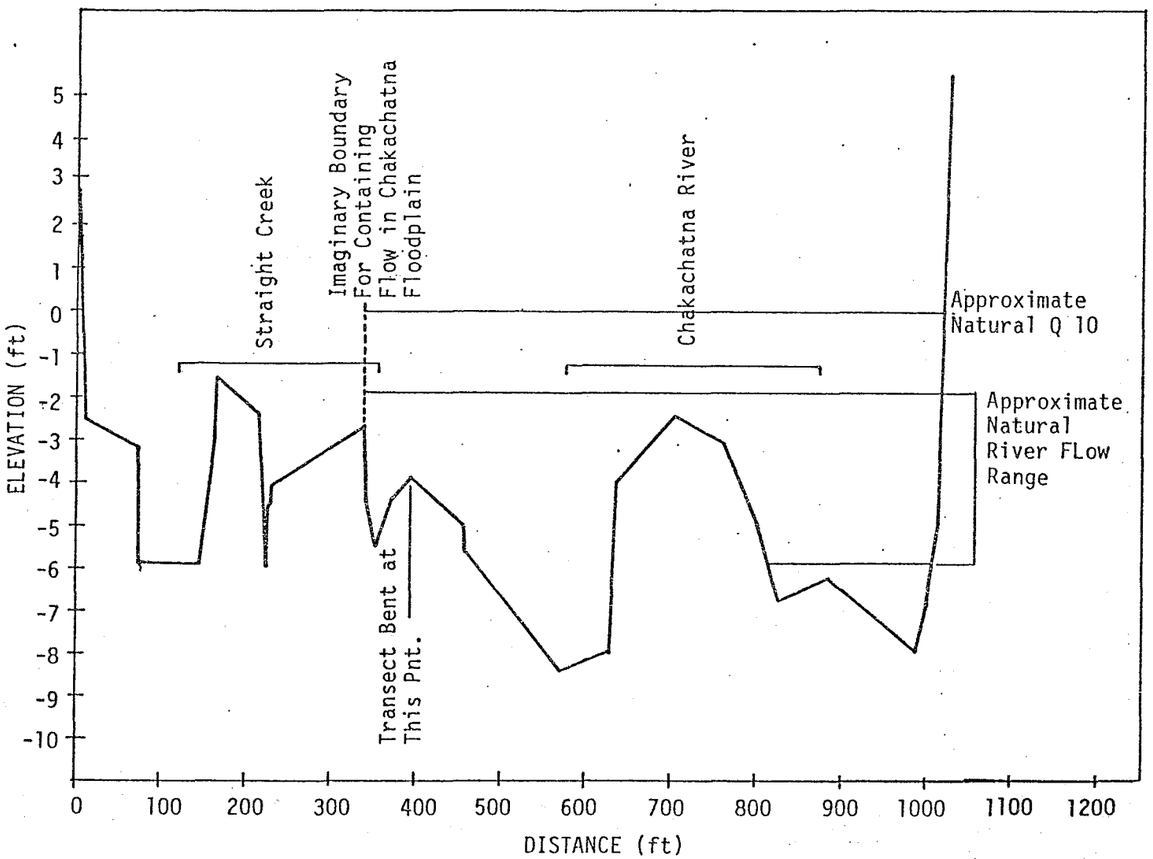


FIGURE 6.2

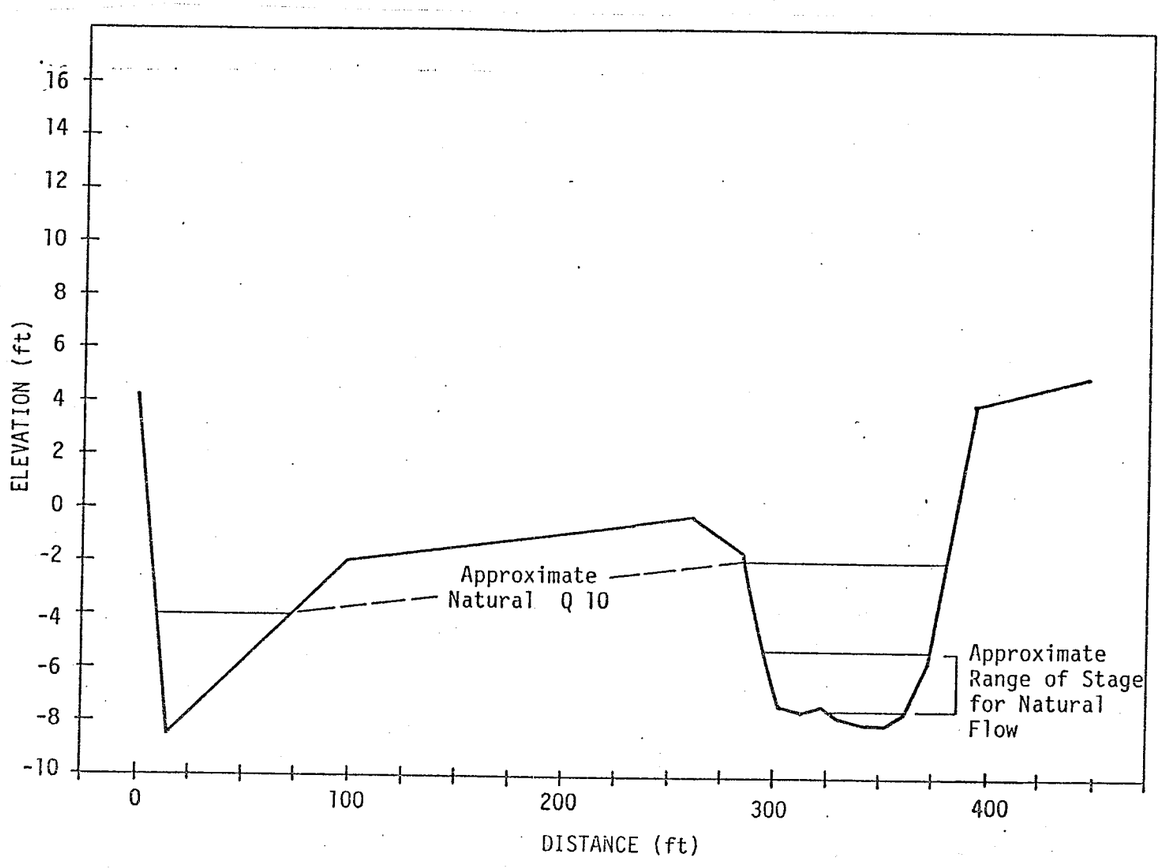
Locations Of Hydrologic Study Areas, Representative Locations, And Channel Configuration Reach Boundaries 1981



Note: Site is located upstream of confluence with Straight Creek in Study Area D. Transect as shown is looking in downstream direction.

Figure 6.3

Stream And Floodplain Transect on Chakachatna River Showing Approximate Range of Natural Stages 1981



Note: Site is located upstream of confluence with Upper Blockade Glacier Channel in Study Area L. Transect as shown is looking in downstream direction.

Figure 6.4

1981
Stream and Floodplain Transect
on Upper McArthur River
Showing Approximate Range
of Natural Stages

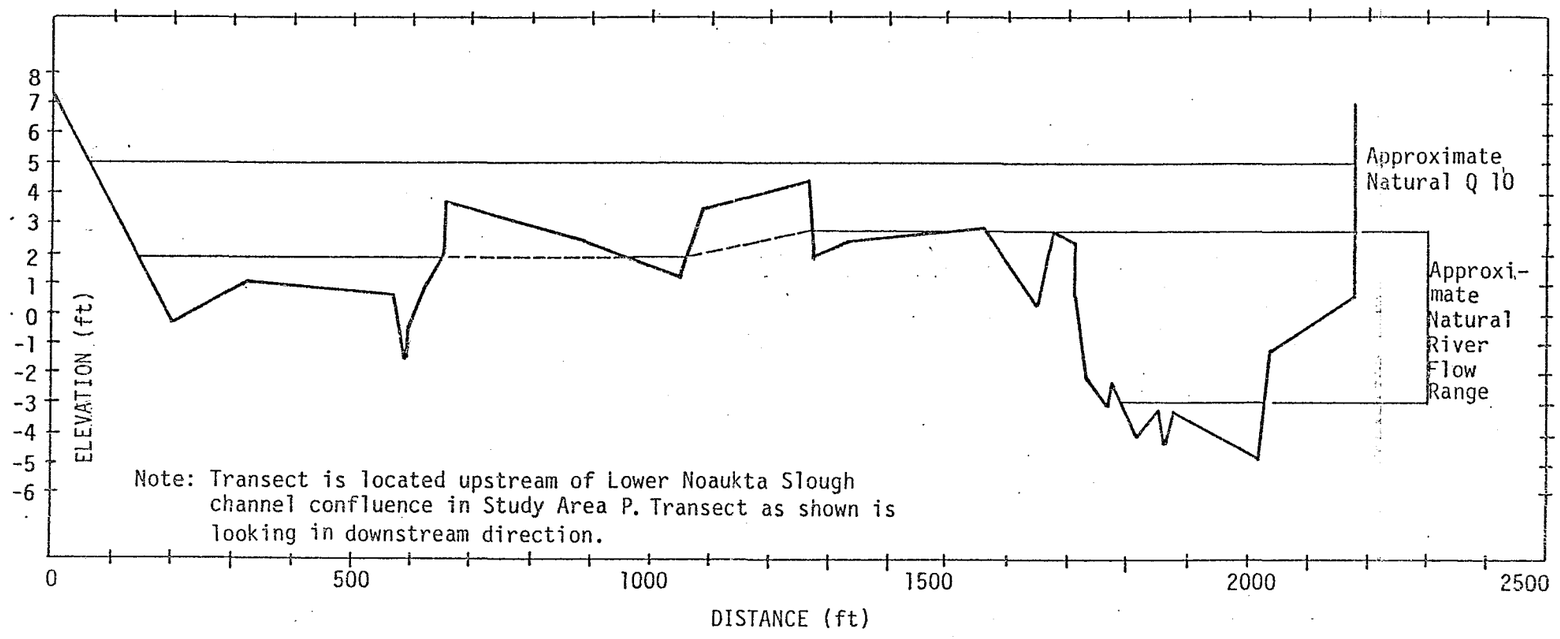
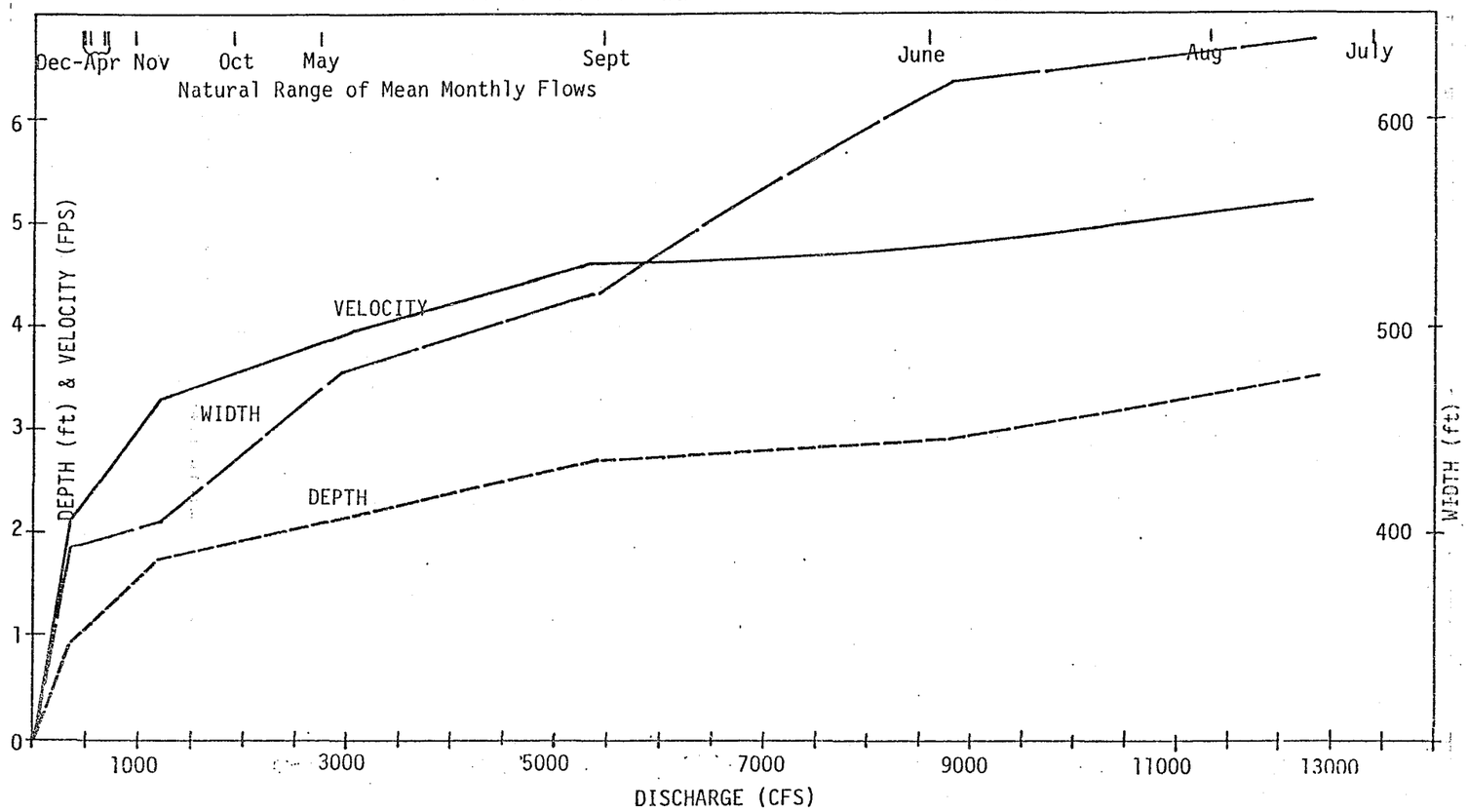


Figure 6.5

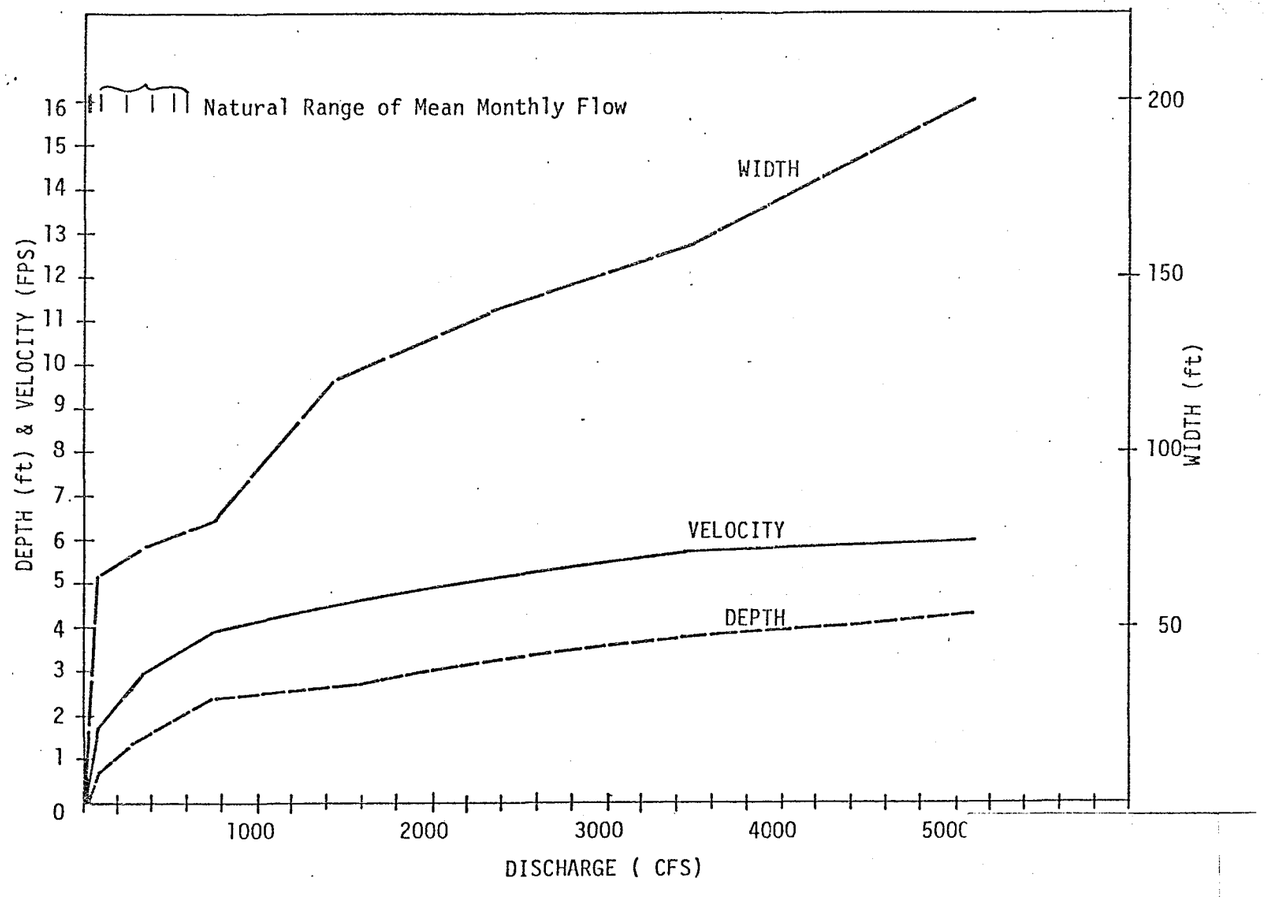
Stream and Floodplain Transect
on McArthur River Showing
Approximate Range of
Natural Stages
1981



Note: Site is located upstream of confluence with Straight Creek in Study Area D. For transect, refer to Figure 6.3.

Figure 6.6

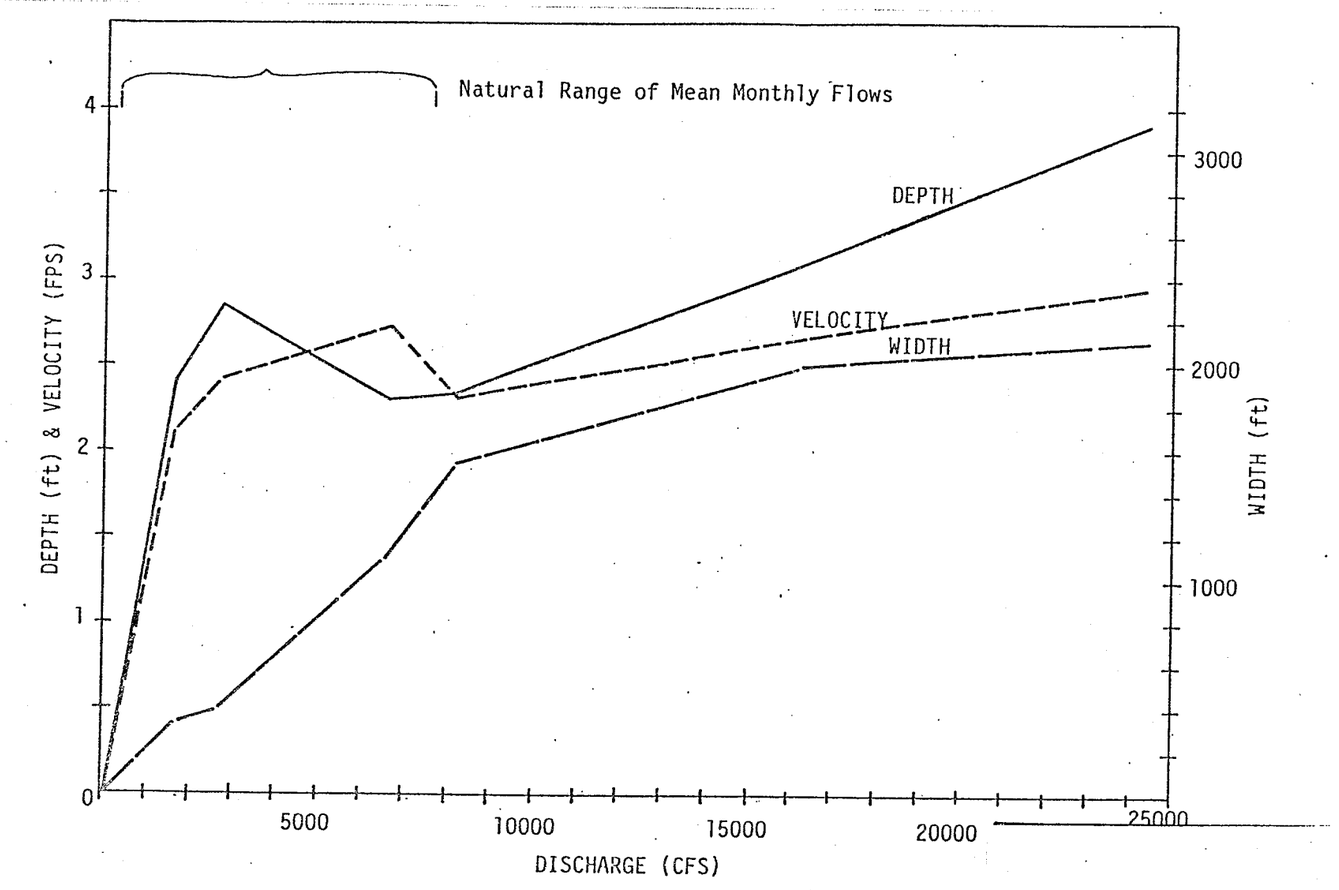
Hydraulic Geometry of Chakachatna River Showing Approximate Range of Natural Flow 1981



Note: Site is located upstream of confluence with Upper Blockade Glacier Channel in Study Area L. For transect, refer to Figure 6.4.

Figure 6.7

Hydraulic Geometry of Upper McArthur River Showing Approximate Range of Natural Flow 1981



Note: Site is located upstream of confluence with Lower Noaukta Slough Channel in Study Area P. For transect, refer to Figure 6.5.

Figure 6.8

Hydraulic Geometry of McArthur River Showing Approximate Range of Natural Flow 1981

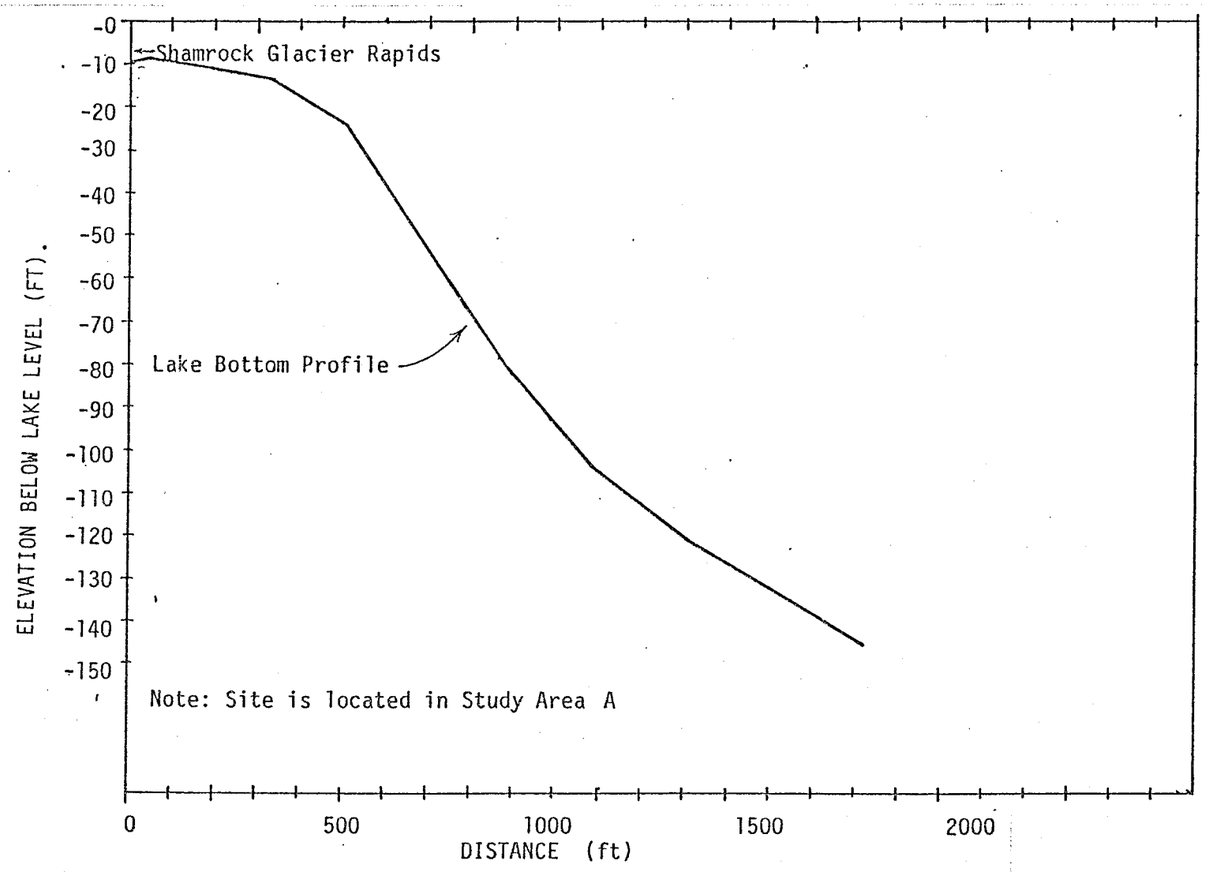
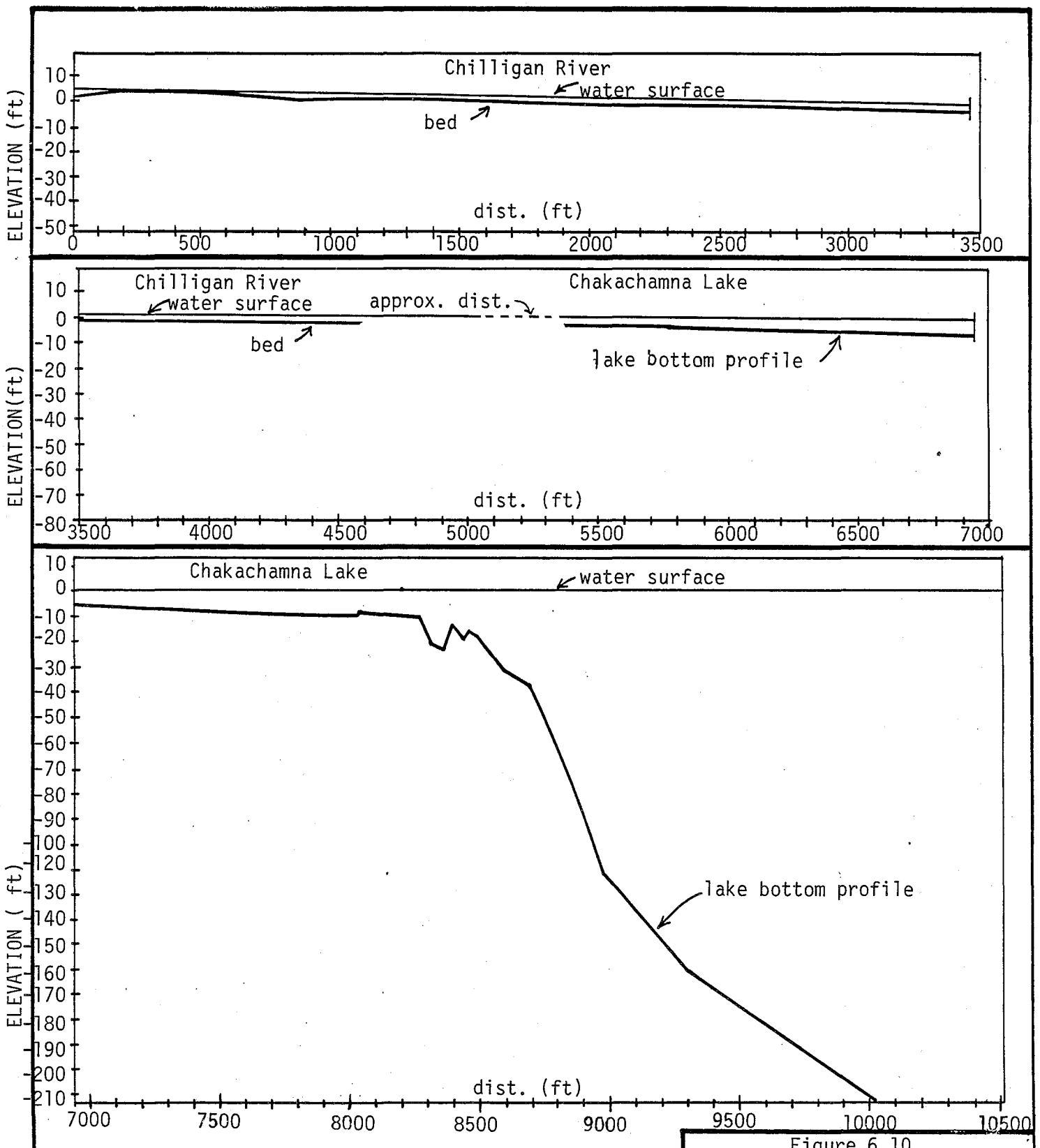


Figure 6.9

Chakachamna Lake Bottom Profile Offshore From Shamrock Glacier Rapids 1981

94052



Note: Site is located in Study Area B.

Figure 6.10

Chilligan River and Chakachamna Lake Bottom Profiles 1981

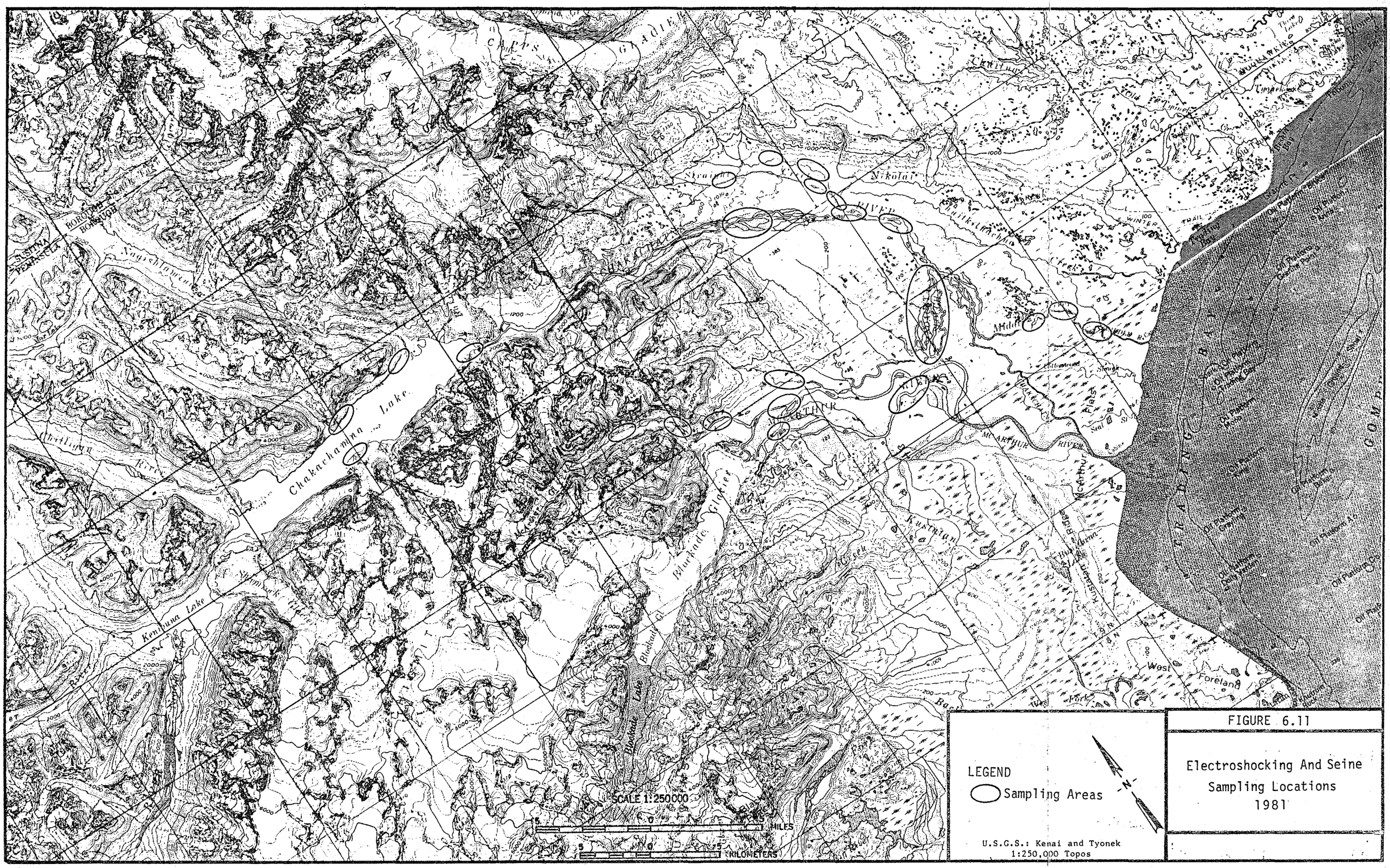


FIGURE 6.11

Electroshocking And Seine
Sampling Locations
1981

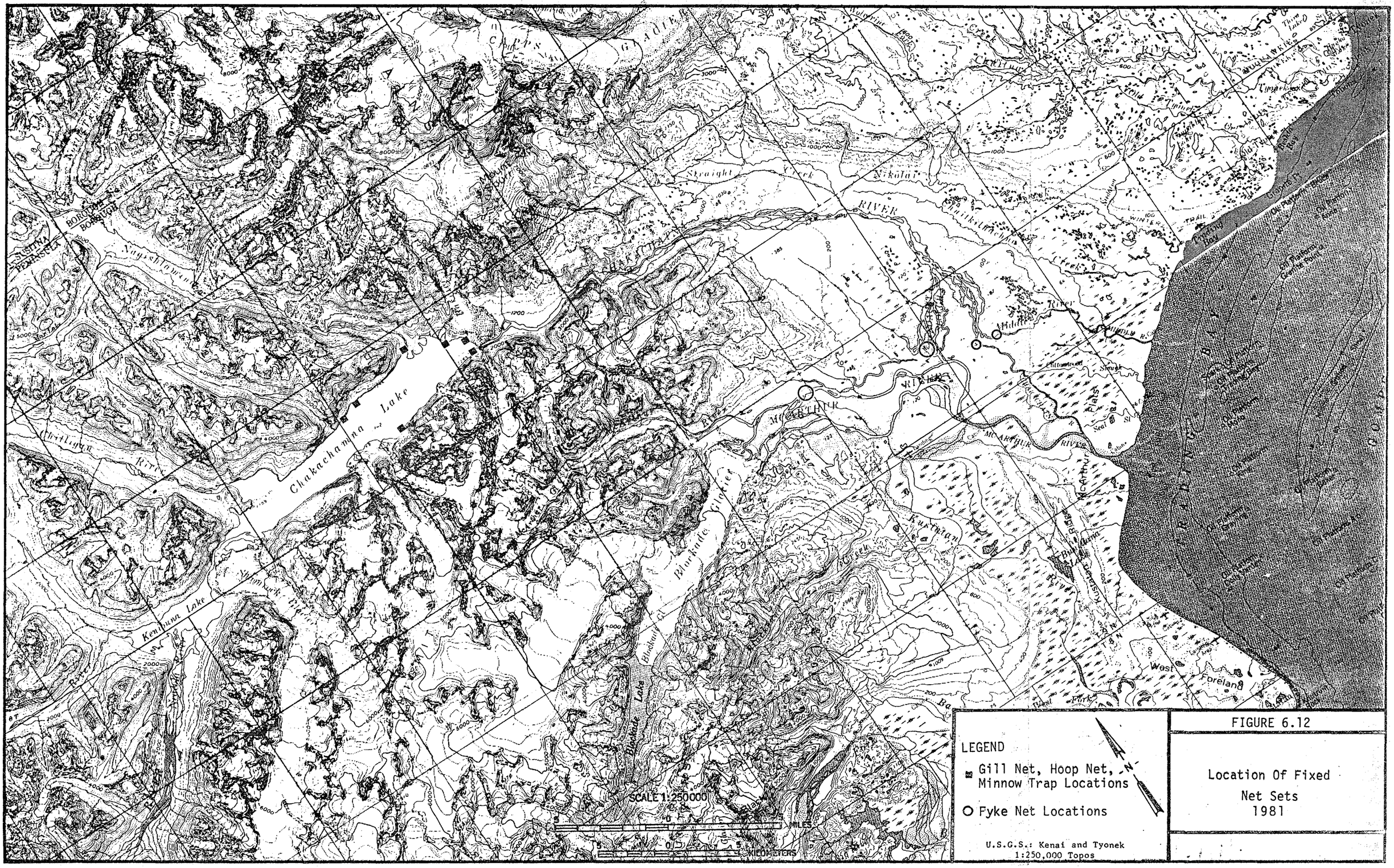
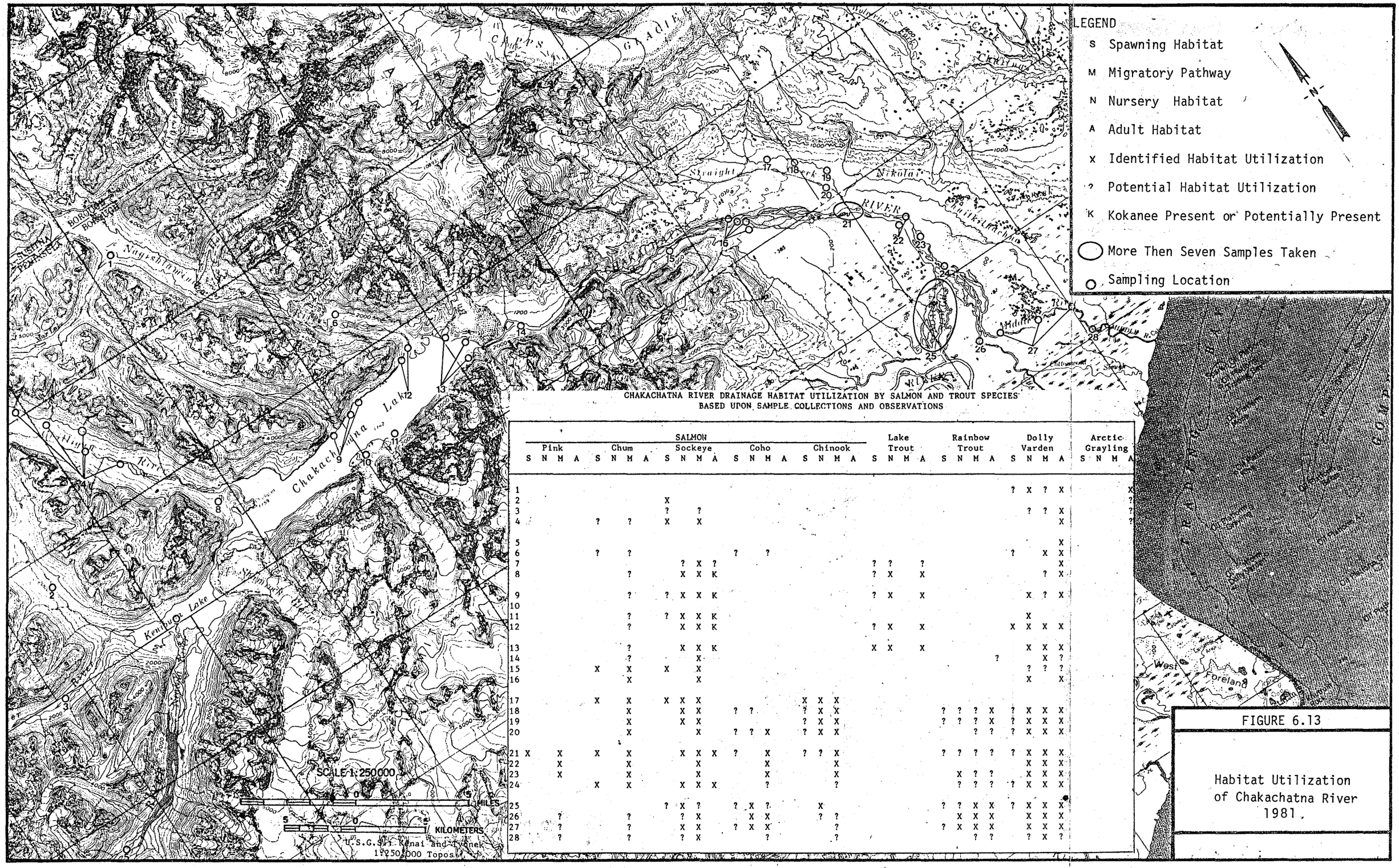


FIGURE 6.12

Location Of Fixed Net Sets 1981



CHAKACHATNA RIVER DRAINAGE HABITAT UTILIZATION BY SALMON AND TROUT SPECIES
BASED UPON SAMPLE COLLECTIONS AND OBSERVATIONS

	SALMON																				Lake Trout				Rainbow Trout				Dolly Varden				Arctic Grayling			
	Pink				Chum				Sockeye				Coho				Chinook																			
	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A
1																													?	X	?	X				X
2									X																											?
3									?		?																			?	?	X				?
4					?		?		X		X																					X				?
5																																X				
6					?		?						?		?														?		X	X				
7										?	X	?									?	?		?								X				
8							?			X	X	K									?	X		X							?	X				
9							?		?	X	X	K									?	X		X							X	?	X			
10																																				
11							?		?	X	X	K																			X					
12							?			X	X	K									?	X		X							X	X	X	X		
13							?			X	X	K									X	X		X							X	X	X			
14							?				X																	?			X	?				
15					X		X		X		X																				?	?	?			
16							X				X																				X		X			
17					X		X		X	X	X						X	X	X																	
18							X			X	X		?	?			?	X	X						?	?	?	X	?	X	X	X				
19							X			X	X						?	X	X						?	?	?	X	?	X	X	X				
20							X				X		?	?	X		?	X	X								?	?	?	X	X	X				
21	X		X		X		X			X	X	X	?		X		?	?	X						?	?	?	?	?	X	X	X				
22			X				X				X				X				X											X	X	X				
23			X				X				X				X				X							X	?	?		X	X	X				
24					X		X			X	X	X			?				?							?	?	?	?	?	X	X	X				
25									?	X	?		?	X	?			X							?	?	X	X	?	X	X	X				
26		?					?			?	X			X	X			?	?							X	X	X		X	X	X				
27		?					?			X	X		?	X	X				?						?	X	X	X		X	X	X				
28		?					?			?	X				?				?								?	?		?	X	?				

FIGURE 6.13

Habitat Utilization of Chakachatna River 1981.

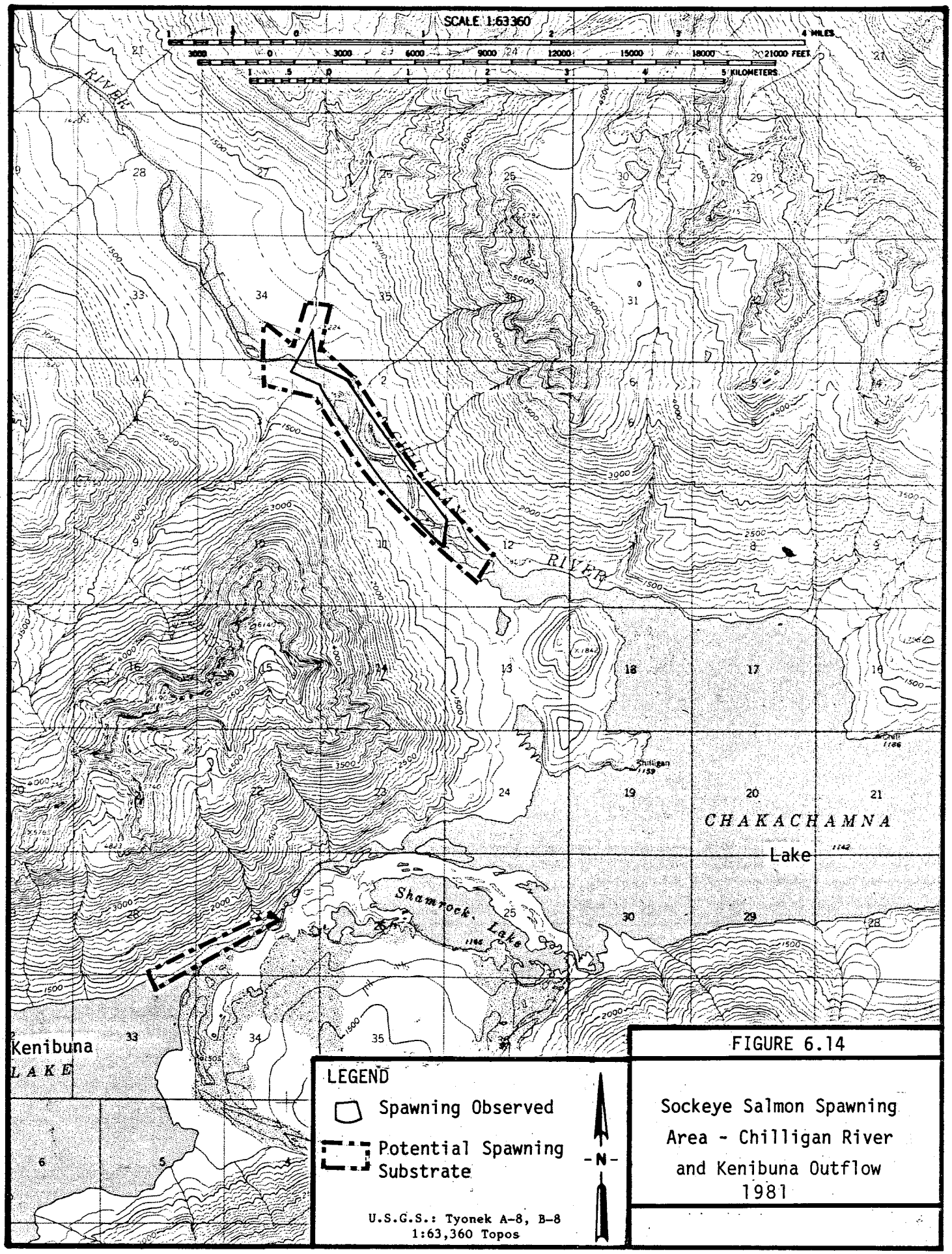


FIGURE 6.14

Sockeye Salmon Spawning Area - Chilligan River and Kenibuna Outflow 1981

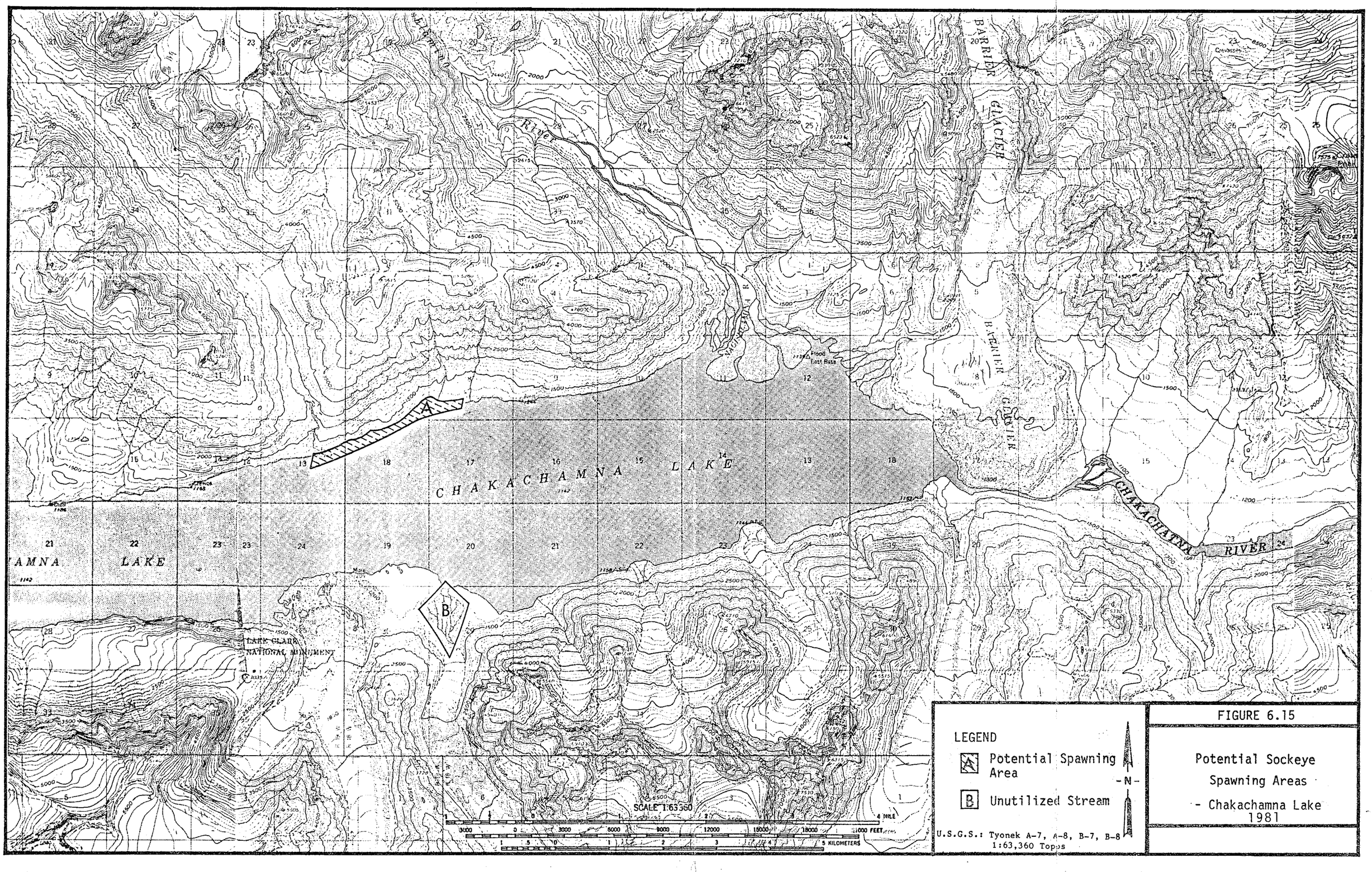


FIGURE 6.15

Potential Sockeye Spawning Areas - Chakachamna Lake 1981

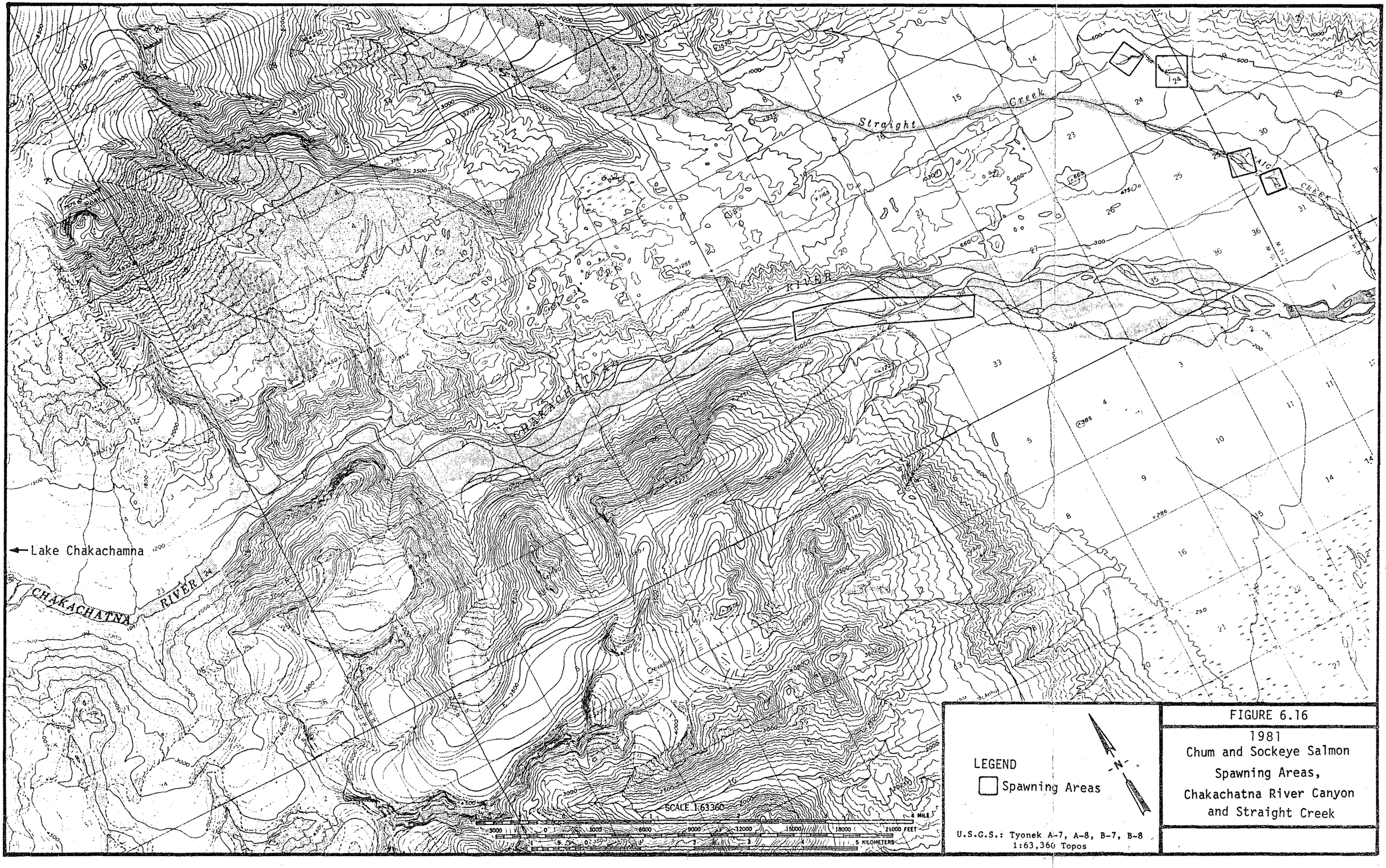
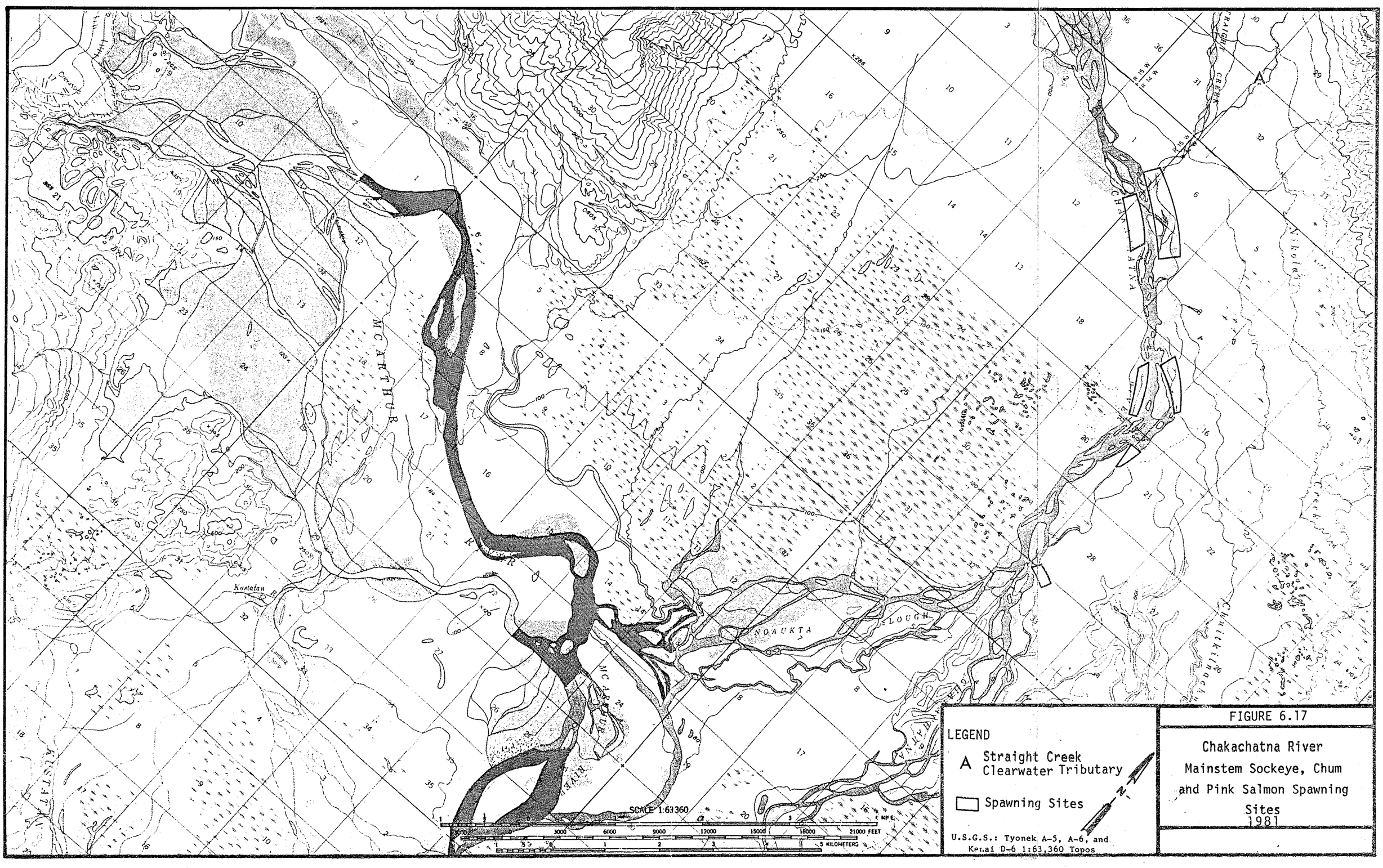


FIGURE 6.16

1981
Chum and Sockeye Salmon
Spawning Areas,
Chakachatna River Canyon
and Straight Creek



LEGEND

A Straight Creek Clearwater Tributary

Spawning Sites

U.S.G.S.: Tyonek A-5, A-6, and Kenai D-6 1:63,360 Topos

FIGURE 6.17

Chakachatna River
Mainstem Sockeye, Chum and Pink Salmon Spawning Sites
1981

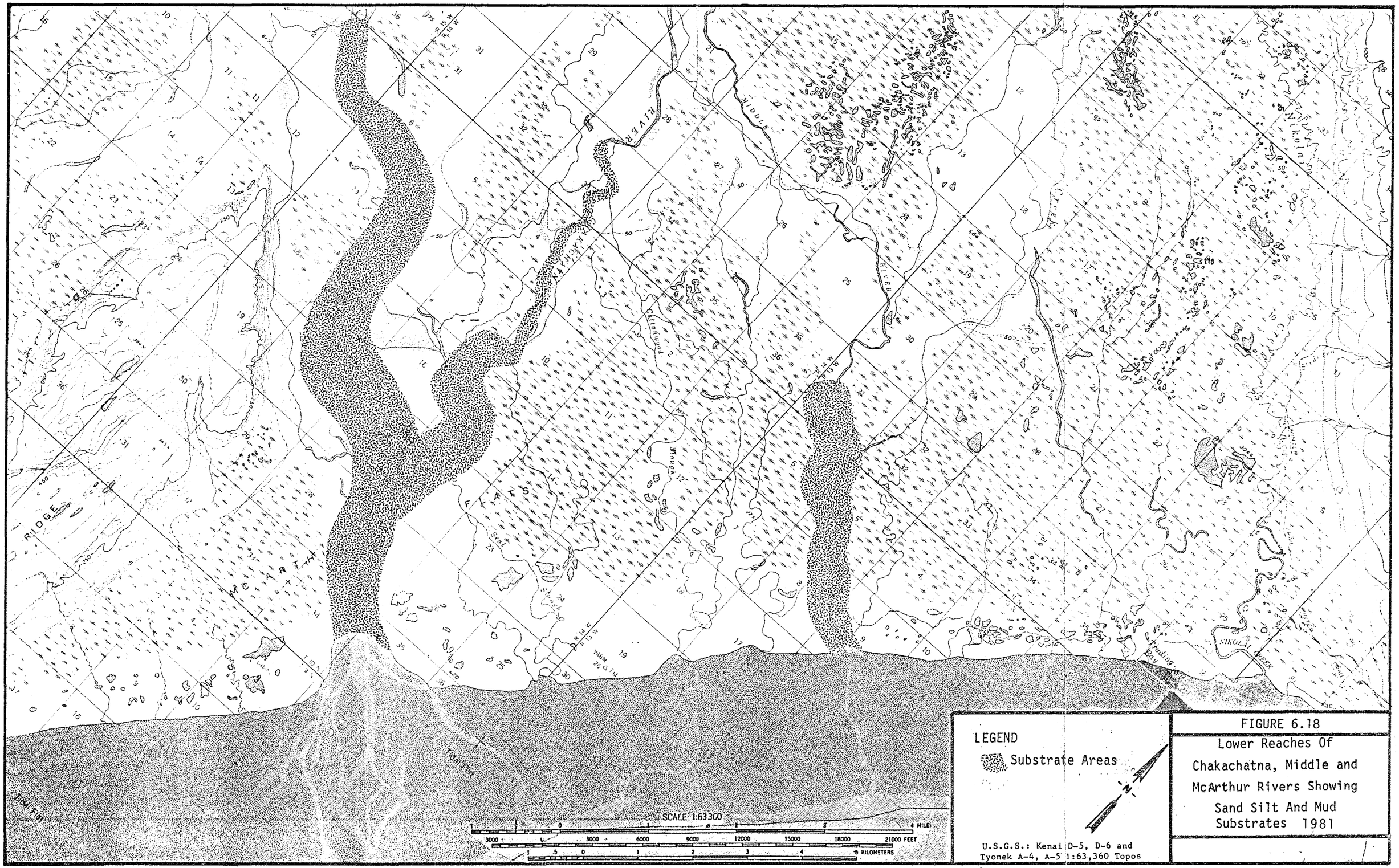


FIGURE 6.18

Lower Reaches Of Chakachatna, Middle and McArthur Rivers Showing Sand Silt And Mud Substrates 1981

U.S.G.S.: Kenai D-5, D-6 and Tyonek A-4, A-5 1:63,360 Topos

SCALE 1:250000

5 0 5 MILES

5 0 5 KILOMETERS

LEGEND

S Spawning Habitat

M Migratory Pathway

N Nursery Habitat

A Adult Habitat

X Identified Habitat Utilization

? Potential Habitat Utilization

More Then Seven Samples Taken

O Sampling Location

U.S.G.S.: Kenai and Tyonek 1:250,000 Topos

MCARTHUR RIVER DRAINAGE HABITAT UTILIZATION BY SALMON AND TROUT SPECIES
BASED UPON SAMPLE COLLECTIONS AND OBSERVATIONS

	SALMON																				Lake Trout				Rainbow Trout				Dolly Varden				Arctic Grayling			
	Pink				Chum				Sockeye				Coho				Chinook																			
	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A	S	N	M	A
1	?		X		?		X		X		X		X		X		X	?	X											X	X	X				
2	?		?		?		?		X	X	X		X		X		?	?	?										X	X	X	X				
3			?				?		X		X		X		X		X		X											X	X	X				
4			?				?		X	X	X		?	X	X		?	?	?										?	X	?	X				
5			?				X			X	X			X	X				X											X	X	?				
6			?				X			X	X			X	X			?	X											X	X	X				
7					X		X		X	X	X		?	X	?		X	X	X										?	X	X	X				
8					?		?			?	?		X	?	X		?	?							?	?	?		?	?	?	?				
9							?			X	X			X	X											?	X			X	X	X				
10							?			X	?			X	?				?											X	X	X				
11							?			X	X			X	X				?							?	X			X	X	X				
12							?			X	X			X	X				?							?	X			X	X	X				

FIGURE 6.19

Habitat Utilization of McArthur River 1981

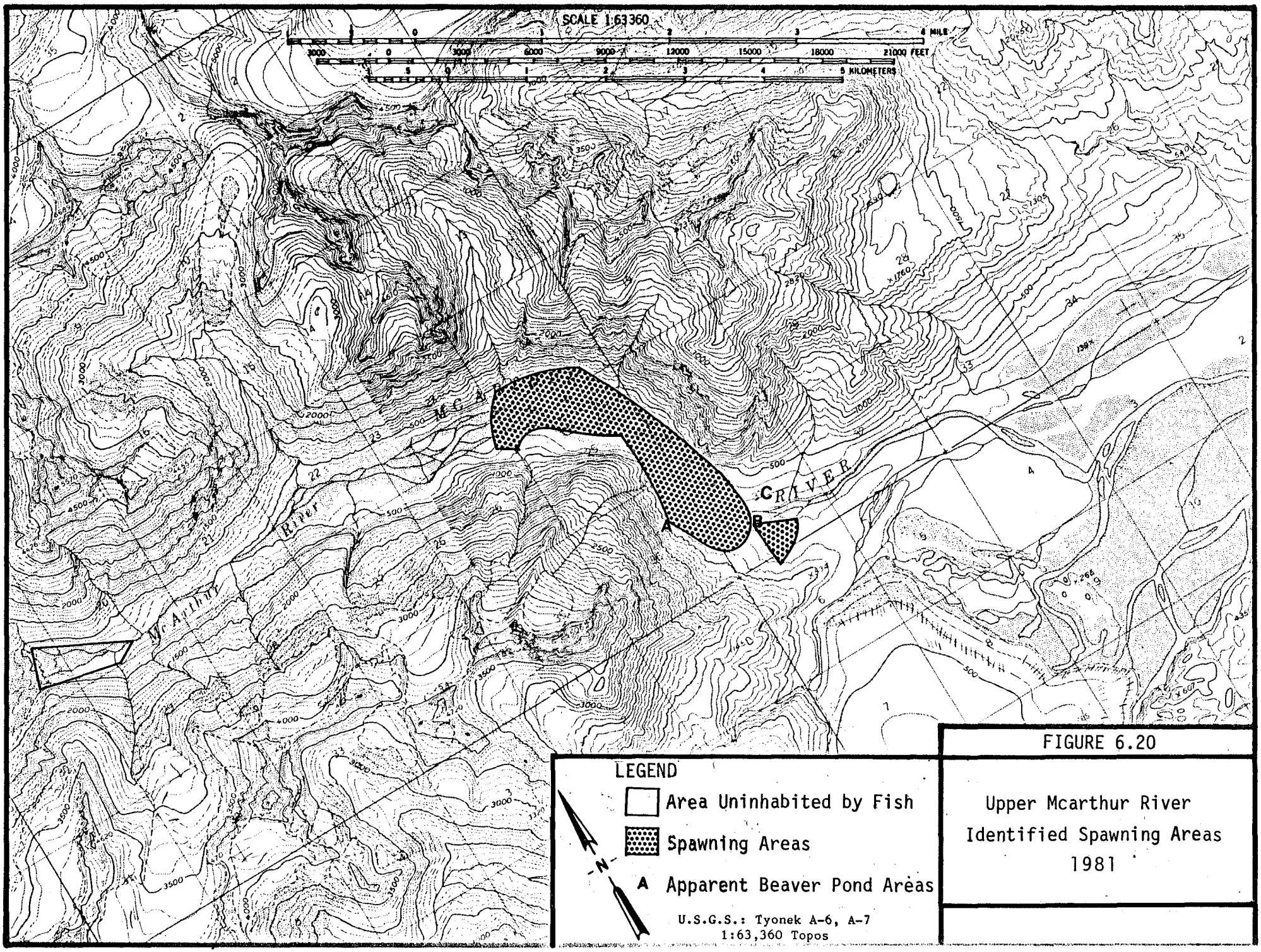
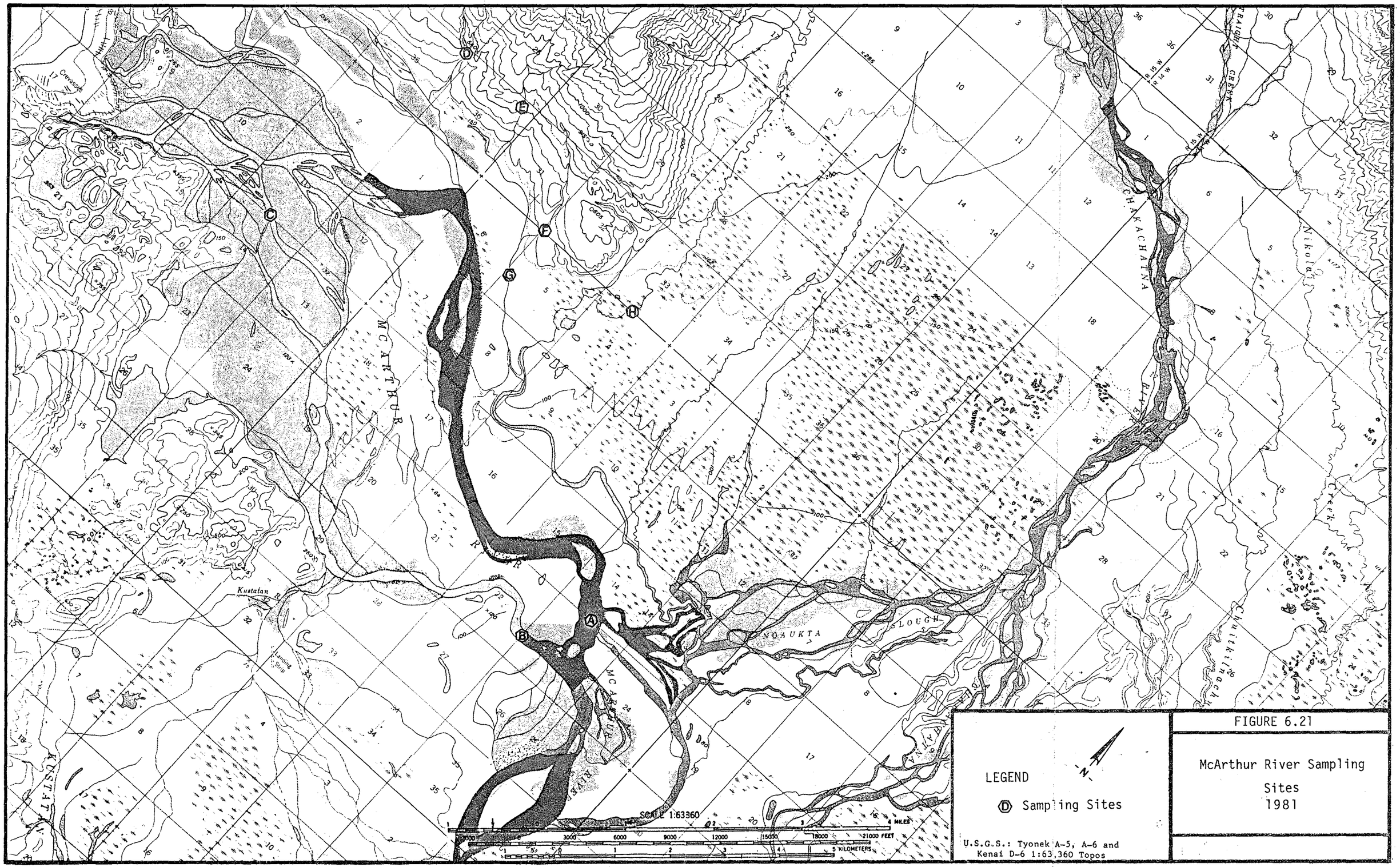


FIGURE 6.20

Upper Mcarthur River
Identified Spawning Areas
1981



LEGEND

Ⓓ Sampling Sites

U.S.G.S.: Tyonek A-5, A-6 and Kenai D-6 1:63,360 Topos

FIGURE 6.21

McArthur River Sampling Sites 1981

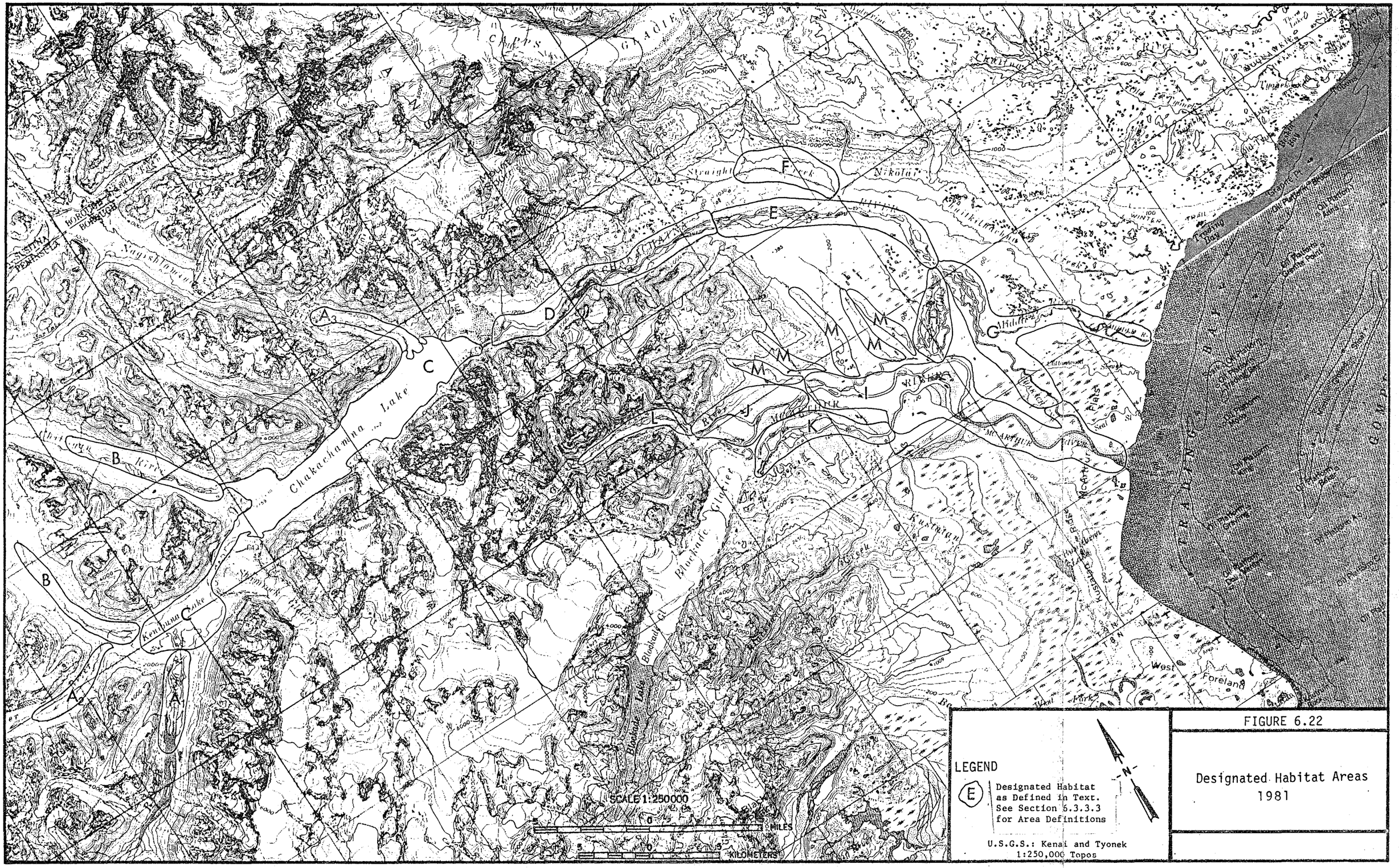


FIGURE 6.22

Designated Habitat Areas
1981

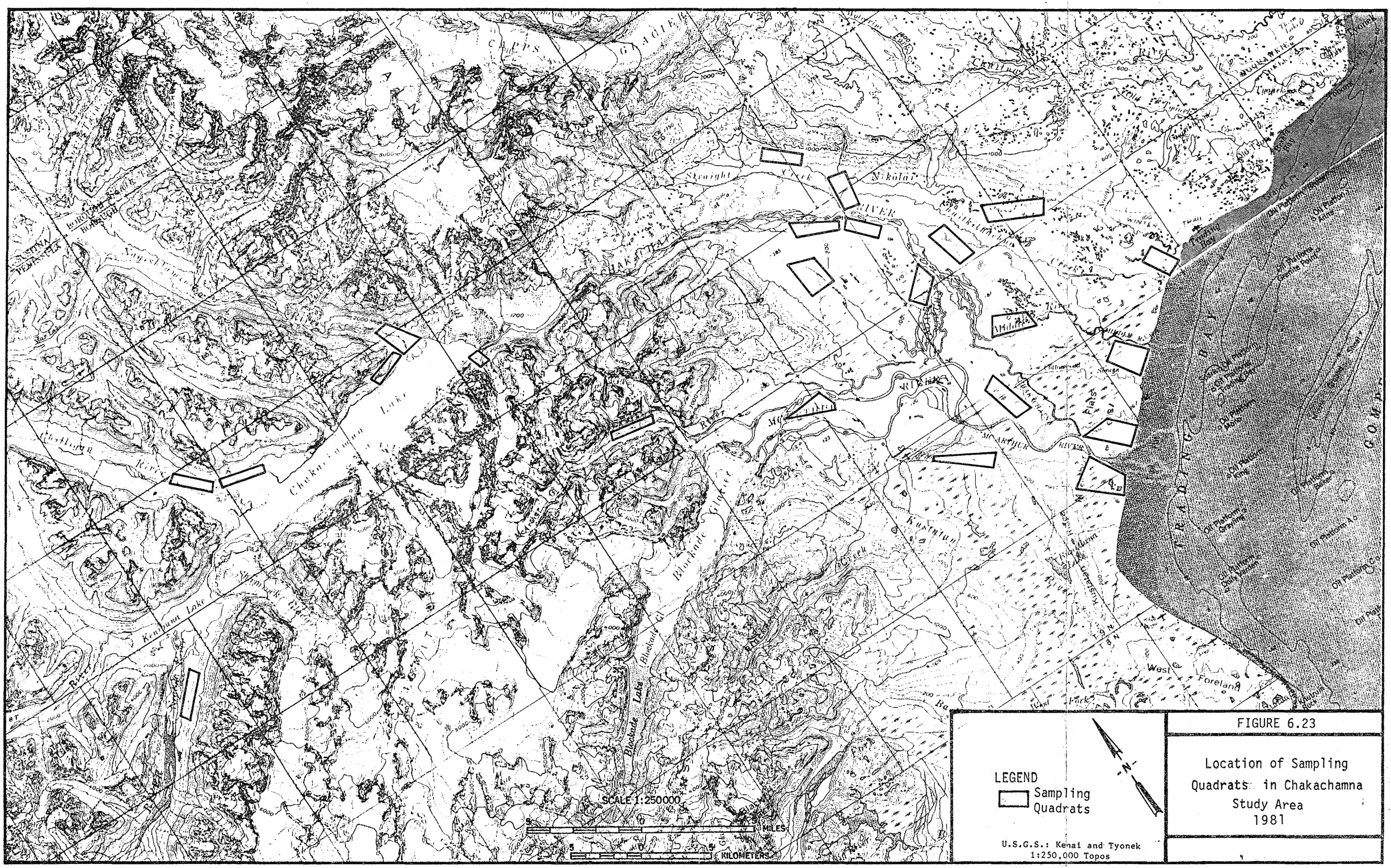
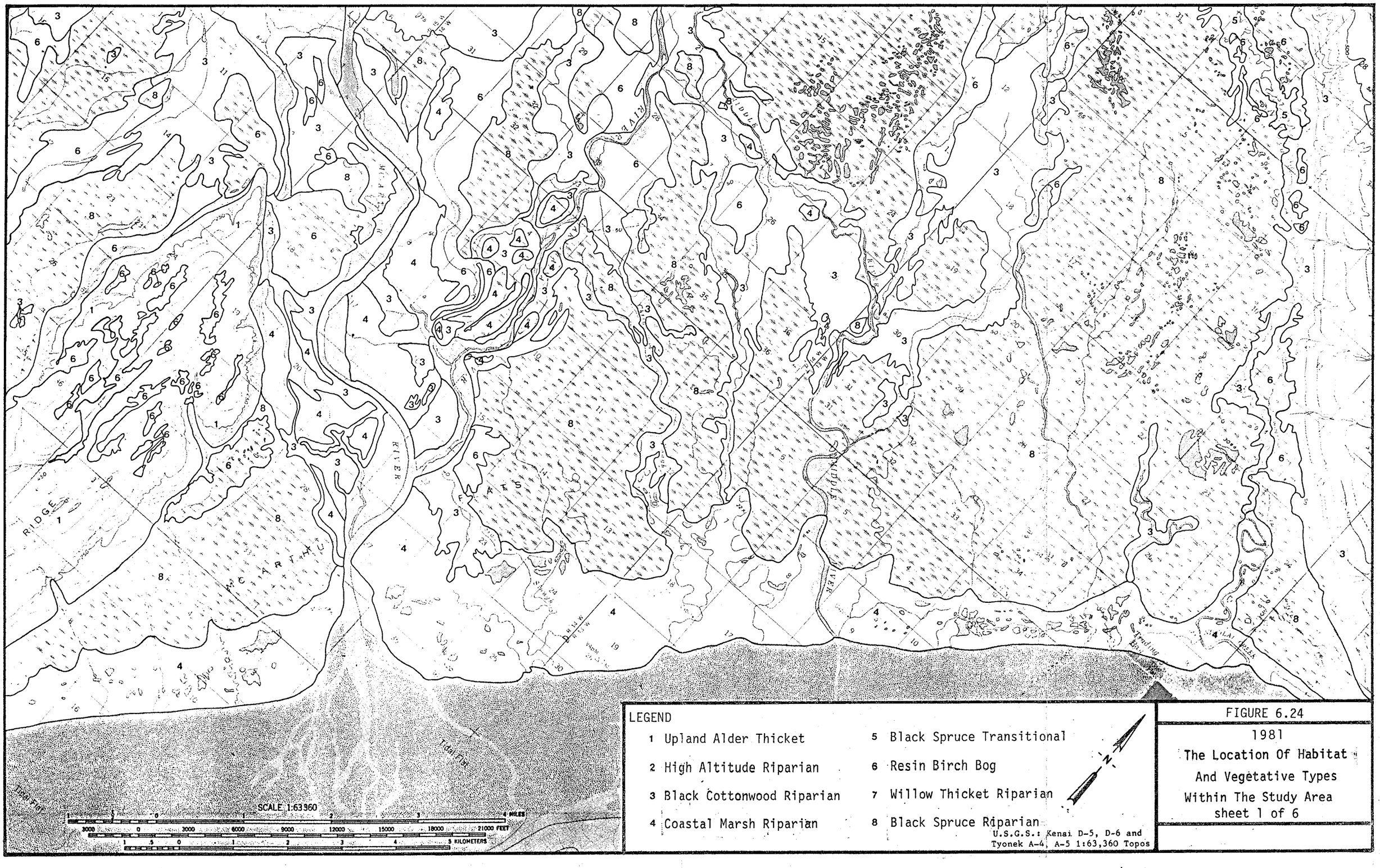


FIGURE 6.23

Location of Sampling Quadrats in Chakachamna Study Area 1981



LEGEND

1 Upland Alder Thicket
2 High Altitude Riparian
3 Black Cottonwood Riparian
4 Coastal Marsh Riparian
5 Black Spruce Transitional
6 Resin Birch Bog
7 Willow Thicket Riparian
8 Black Spruce Riparian

N

U.S.G.S.: Kenai D-5, D-6 and Tyonek A-4, A-5 1:63,360 Topos

FIGURE 6.24

1981

The Location Of Habitat And Vegetative Types Within The Study Area

sheet 1 of 6

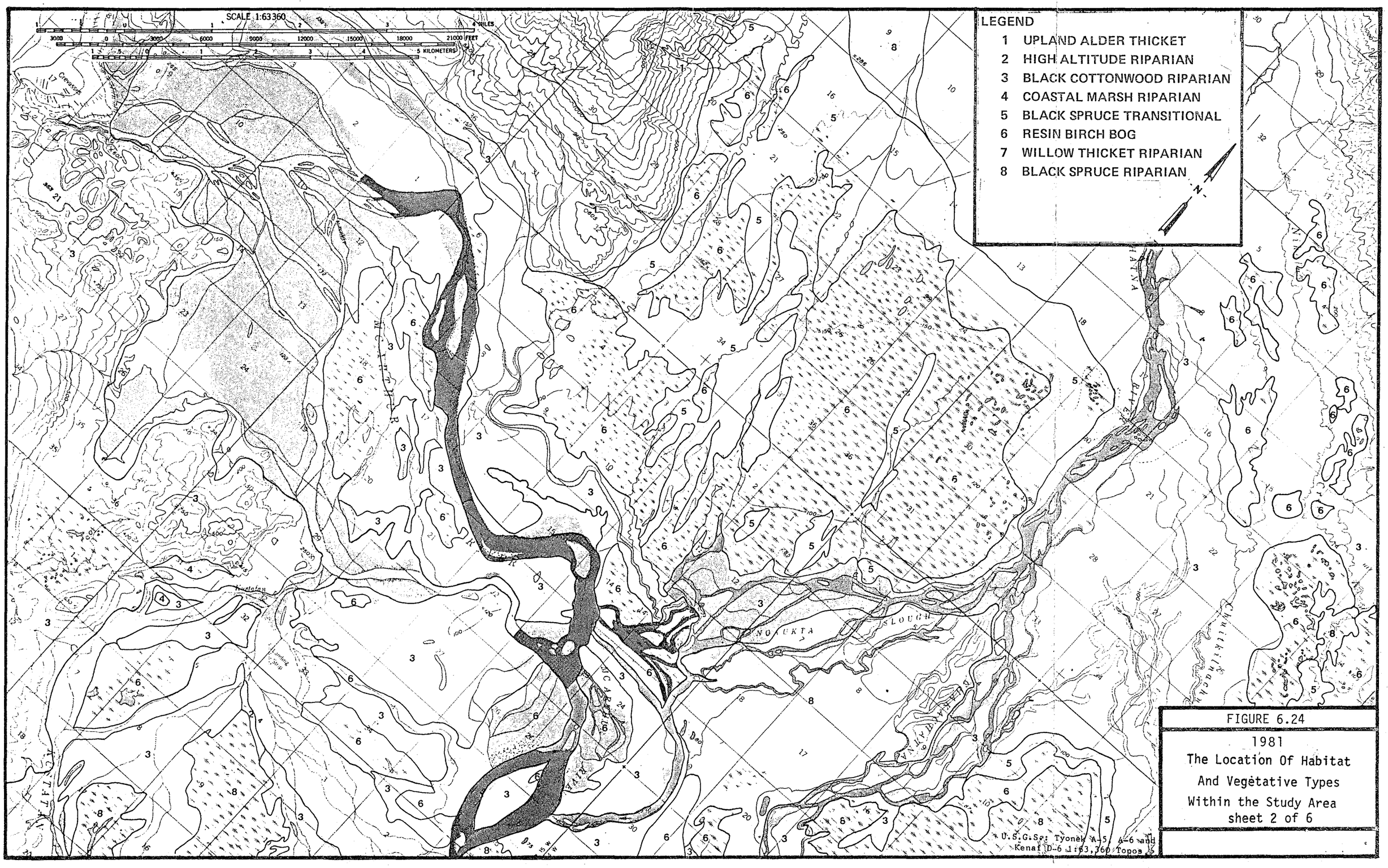


FIGURE 6.24

1981
The Location Of Habitat
And Vegetative Types
Within the Study Area
sheet 2 of 6

LEGEND

1 Upland Alder Thicket

2 High Altitude Riparian

3 Black Cottonwood Riparian

4 Coastal Marsh Riparian

5 Black Spruce Transitional

6 Resin Birch Bog

7 Willow Thicket Riparian

8 Black Spruce Riparian

N

Straight Creek

STRAIGHT CREEK

CHAKACHATNA RIVER

SCALE 1:63360

0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

0 1 2 3 4 5 KILOMETERS

U.S.G.S. Tyonek A-5, A-6, A-7, B-6
1:63,360 Topos

FIGURE 6.24

1981
The Location Of Habitat
And Vegetative Types
Within The Study Area
sheet 3 of 6

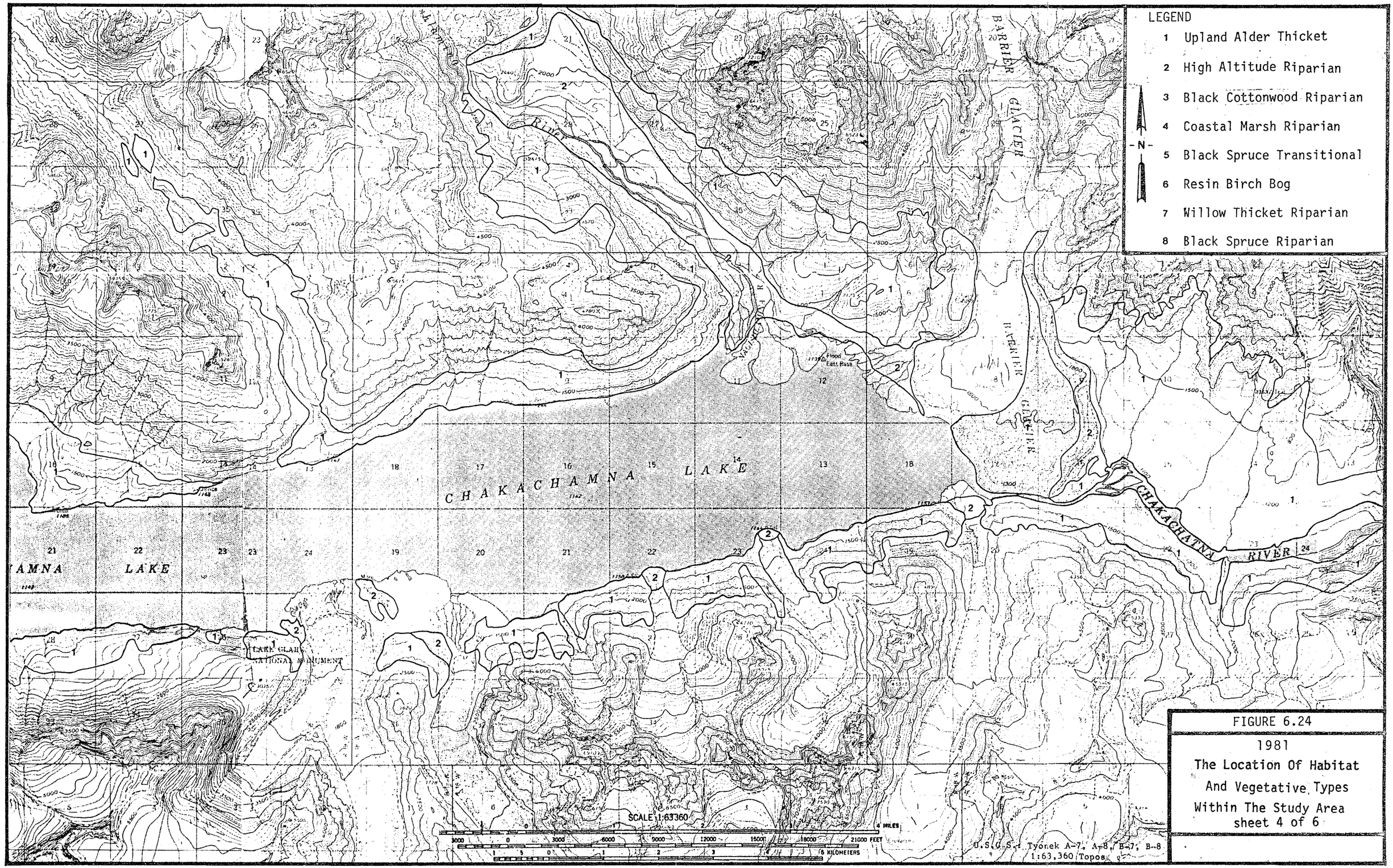


FIGURE 6.24

1981

The Location Of Habitat And Vegetative Types Within The Study Area

sheet 4 of 6

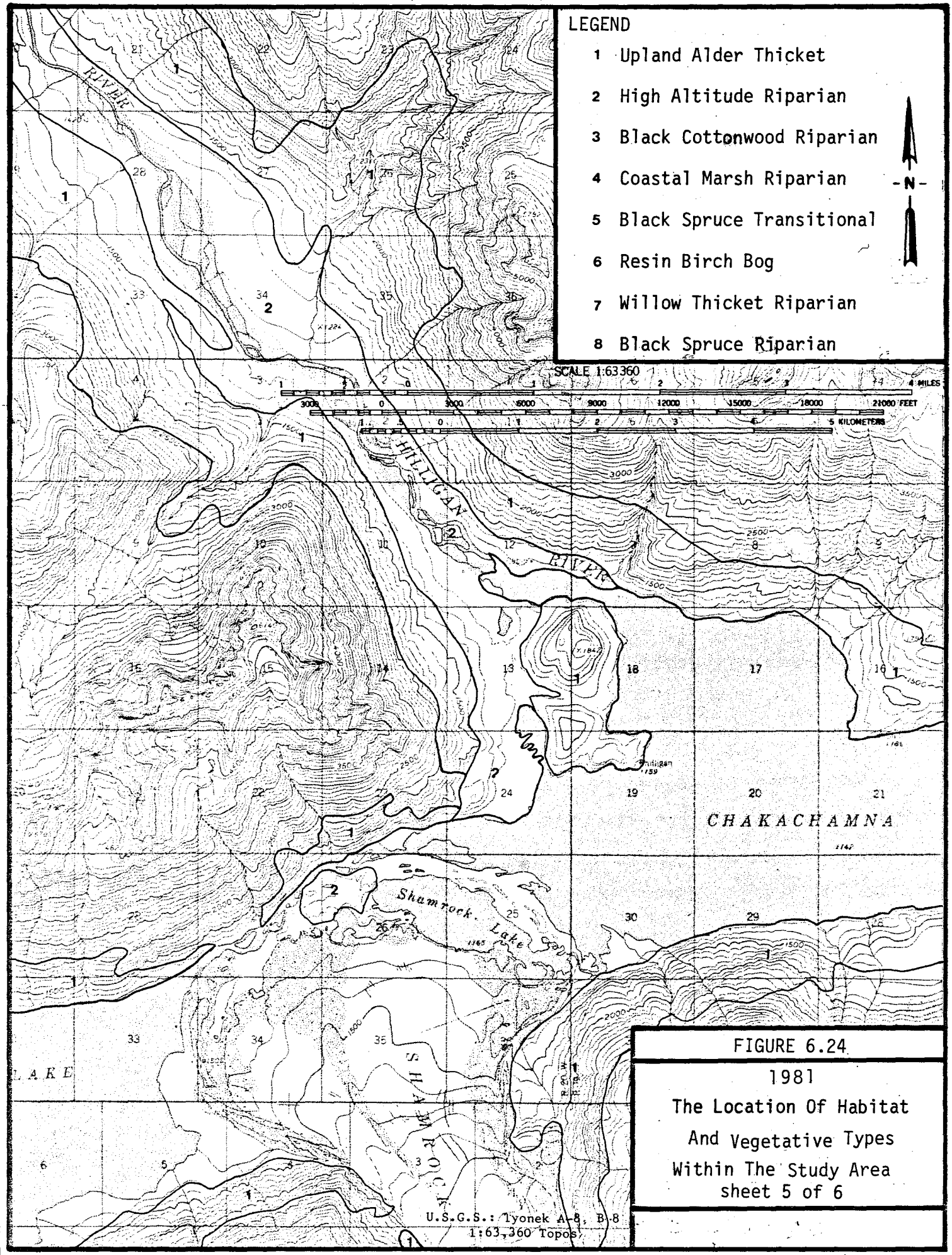


FIGURE 6.24

1981

The Location Of Habitat And Vegetative Types Within The Study Area

sheet 5 of 6

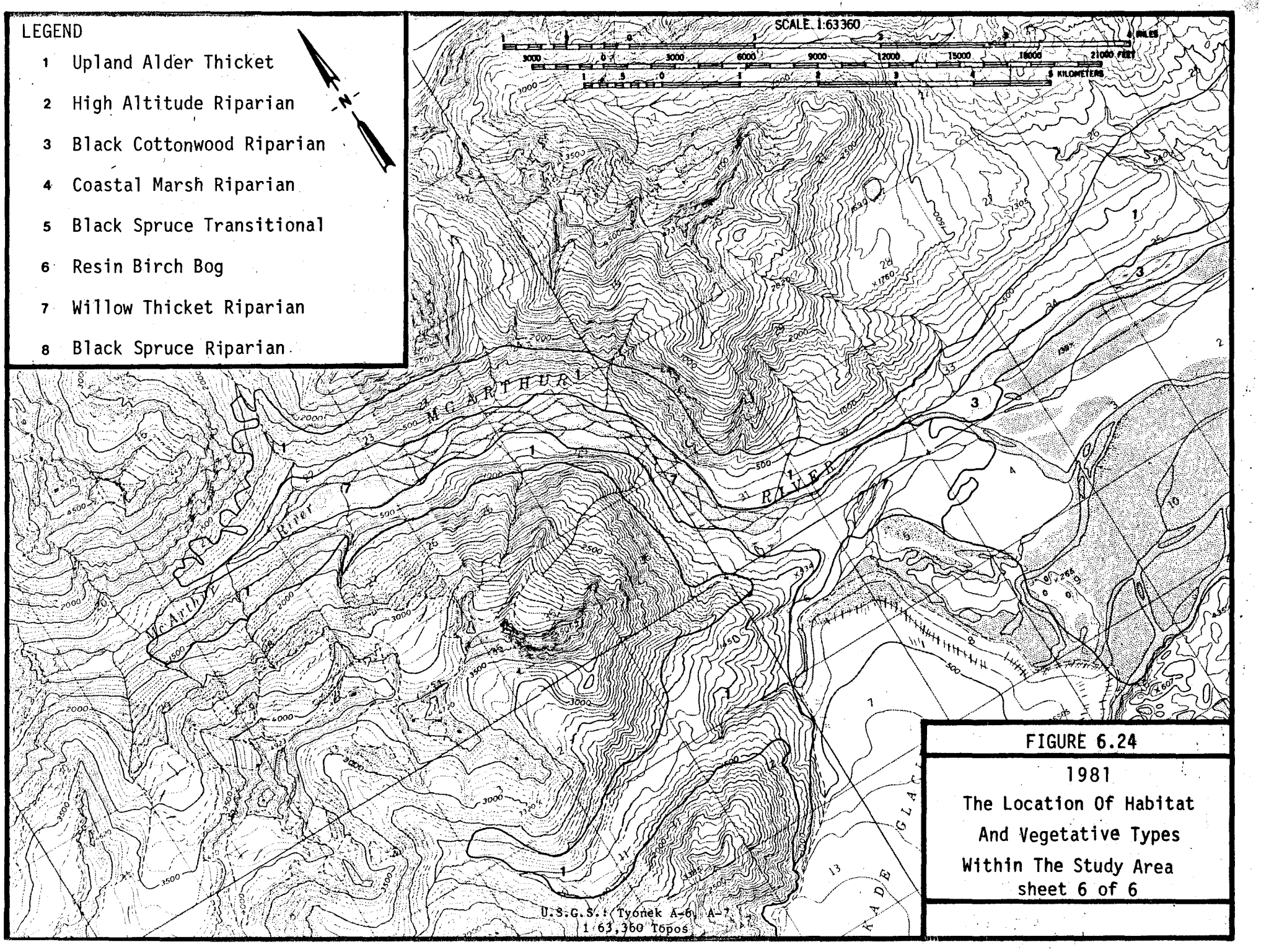


FIGURE 6.24

1981

The Location Of Habitat And Vegetative Types Within The Study Area

sheet 6 of 6

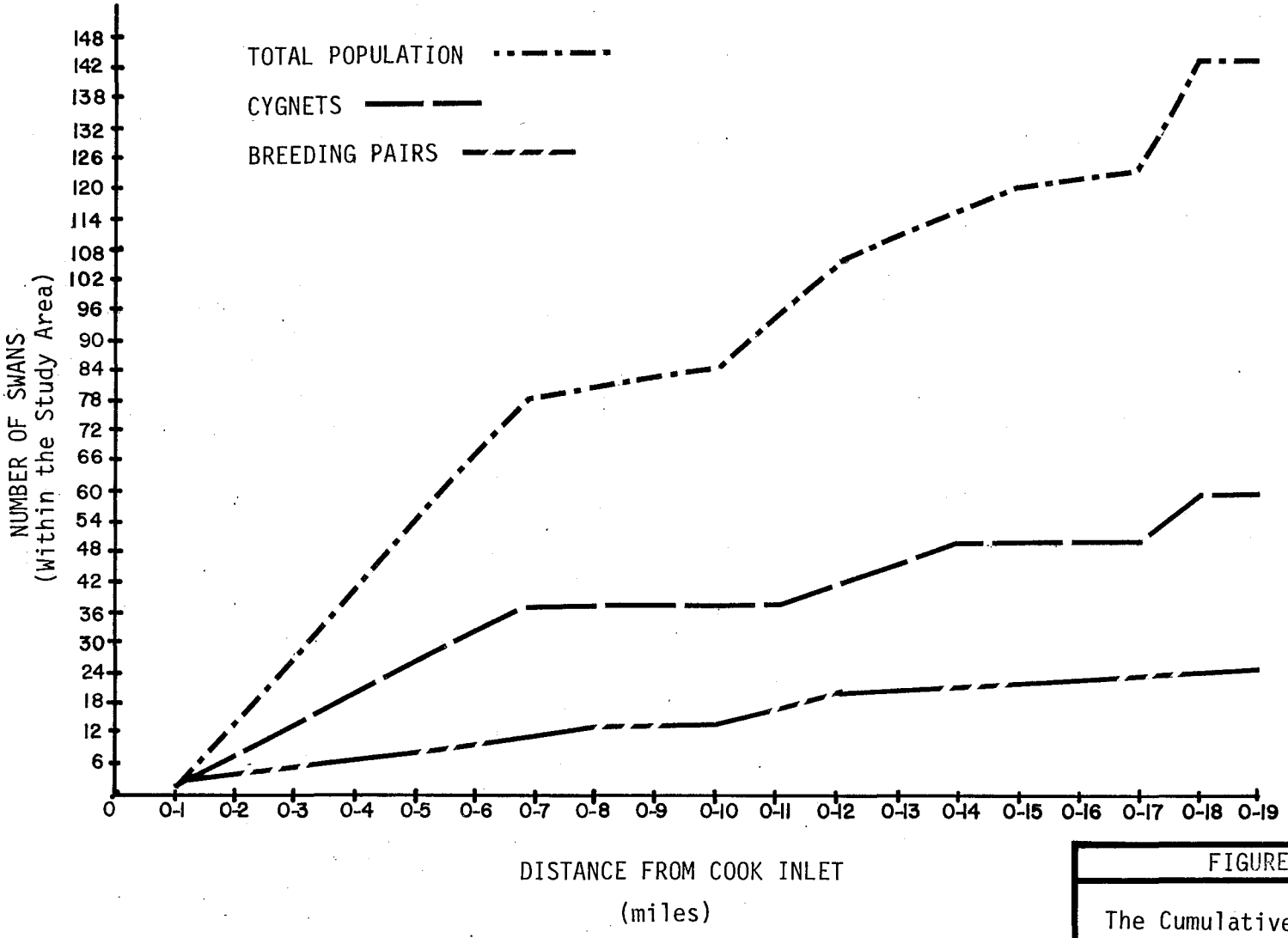


Figure is based on data obtained in a 1980 USFWS survey of the Cook Inlet waterfowl refuges.

FIGURE 6.25

The Cumulative Number of Breeding Pairs Within the Study Area 1981

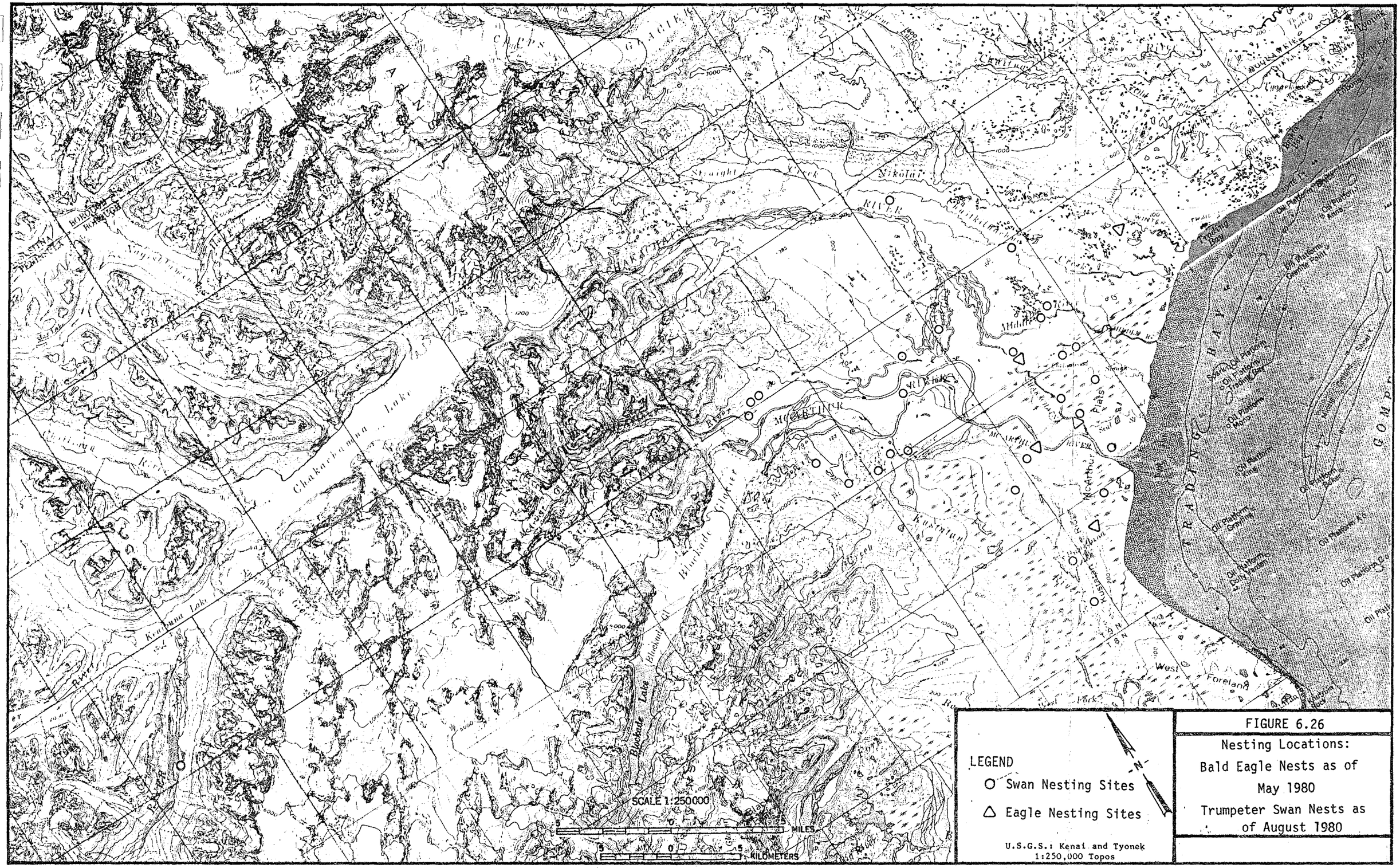


FIGURE 6.26

Nesting Locations:
Bald Eagle Nests as of
May 1980
Trumpeter Swan Nests as
of August 1980

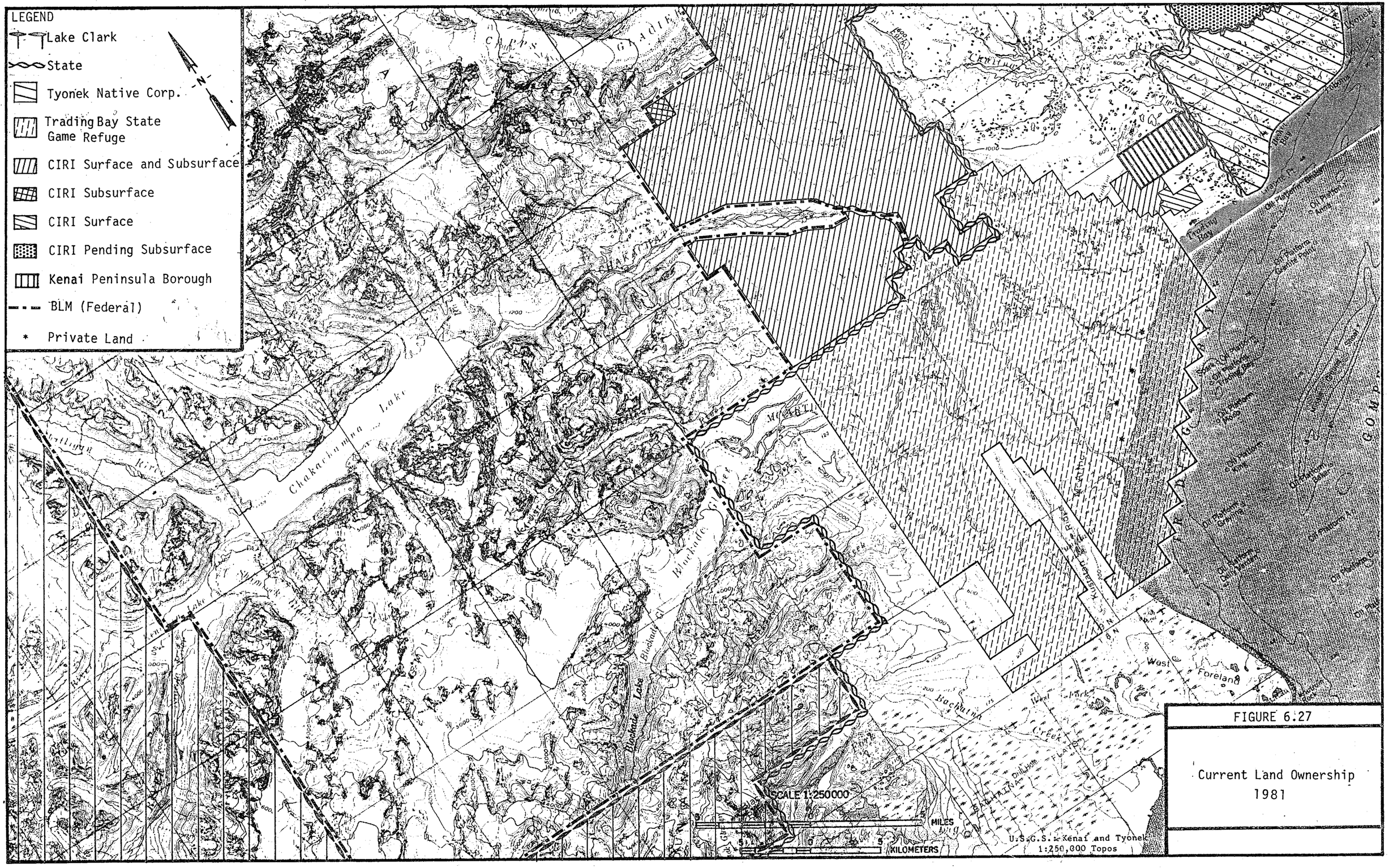


FIGURE 6.27

Current Land Ownership
1981

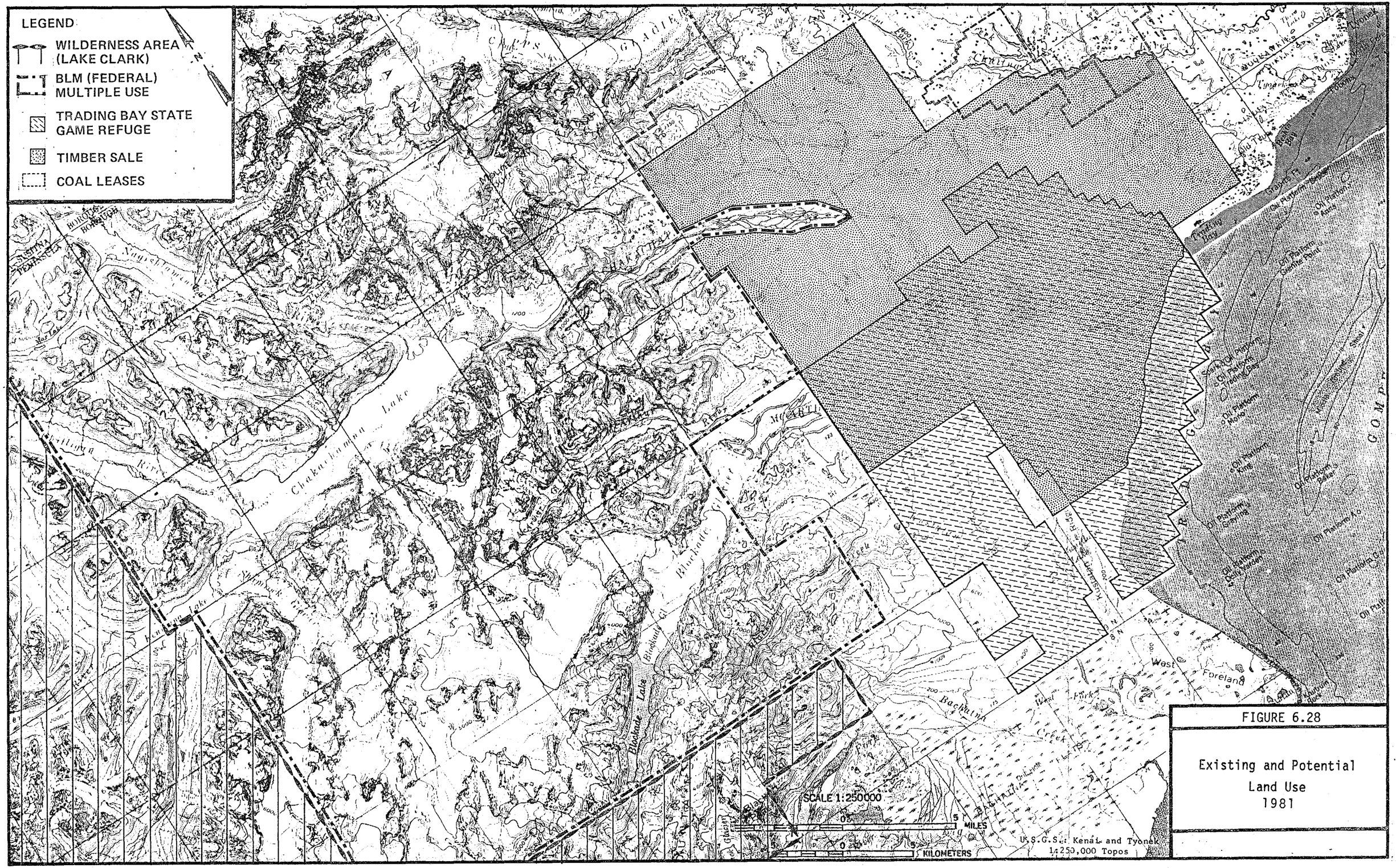


FIGURE 6.28

Existing and Potential Land Use 1981

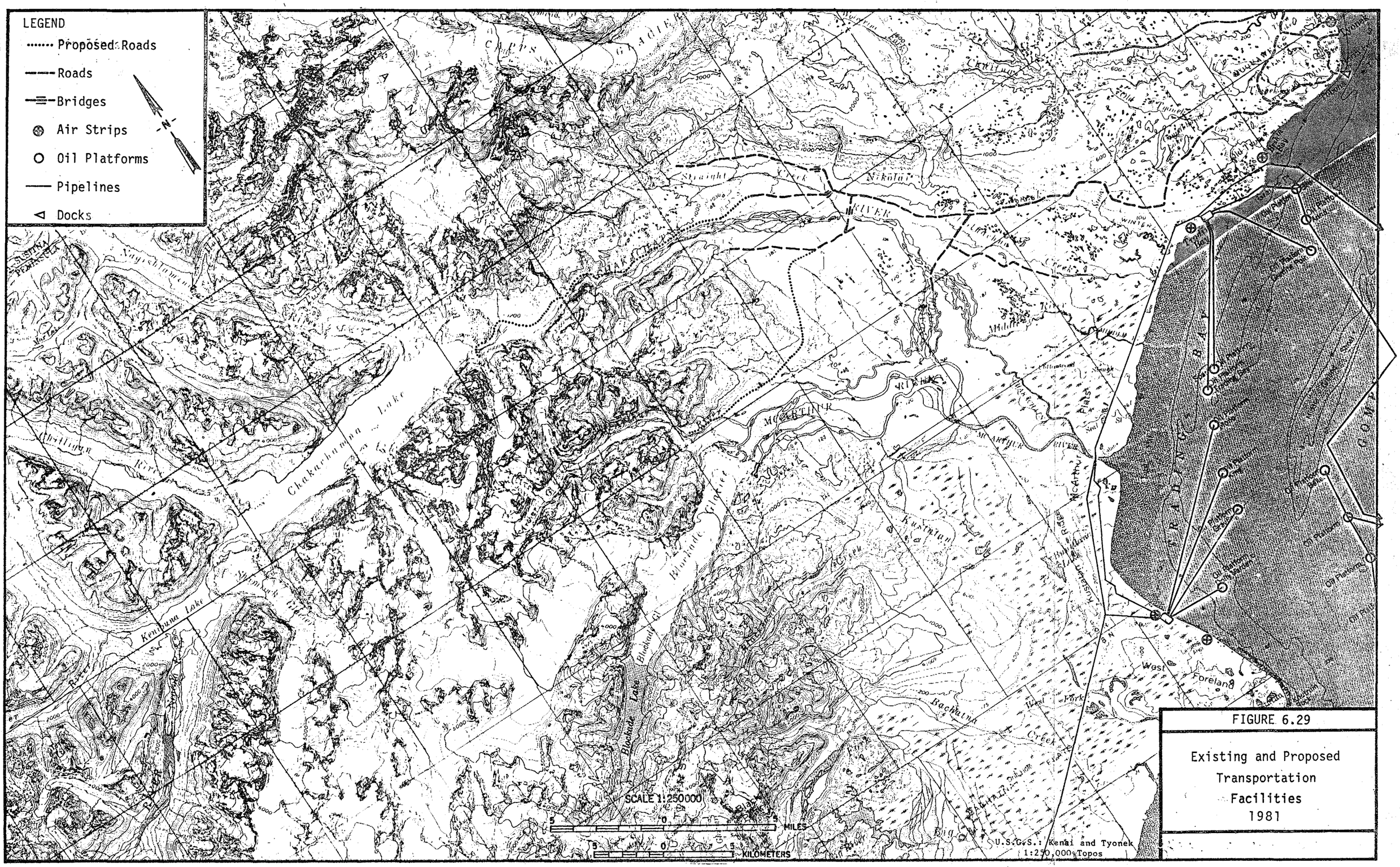


FIGURE 6.29

Existing and Proposed Transportation Facilities 1981

FIGURE 6.30

LOCATION AND IDENTIFICATION OF 1982 SAMPLING STATIONS

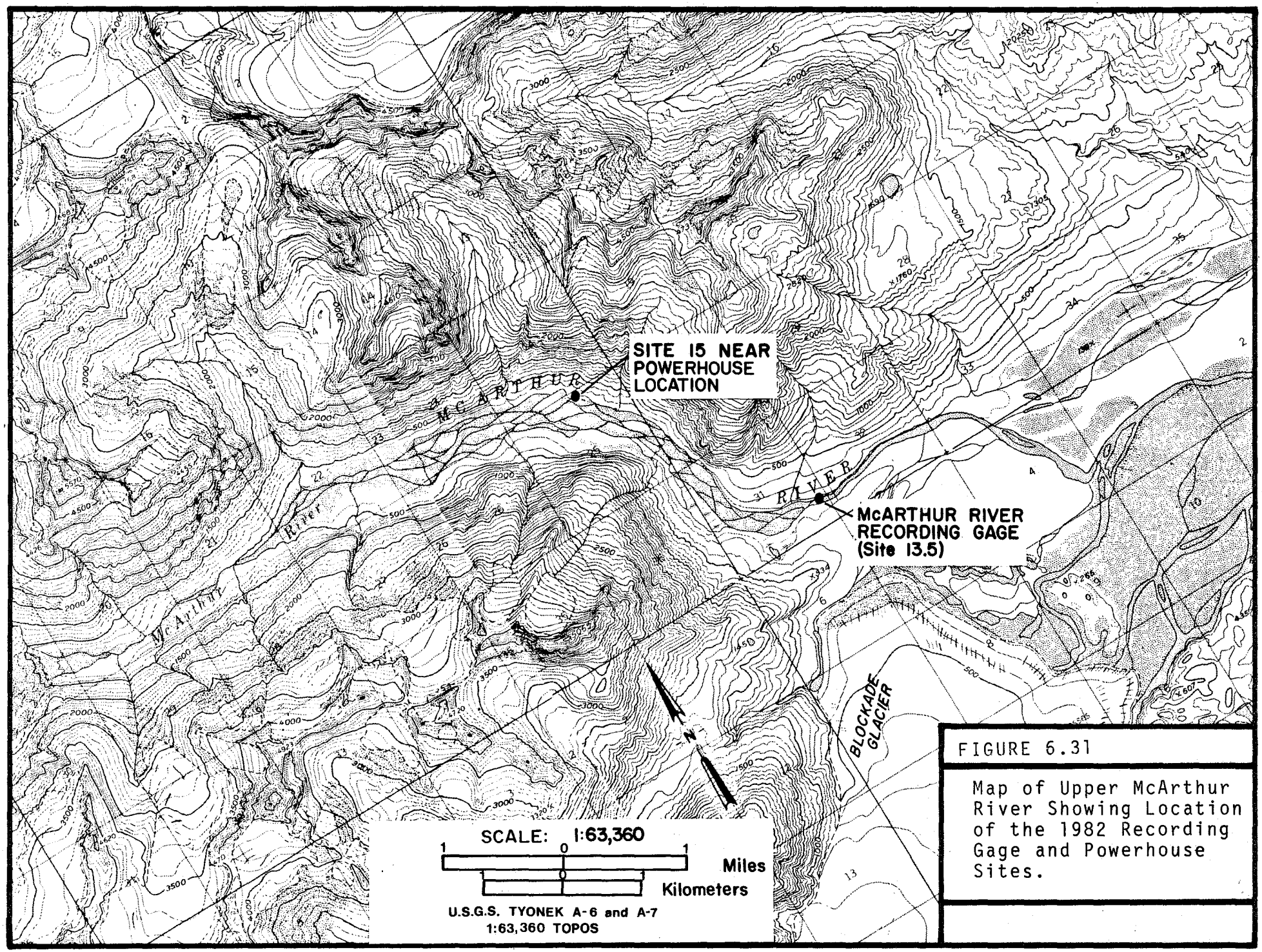
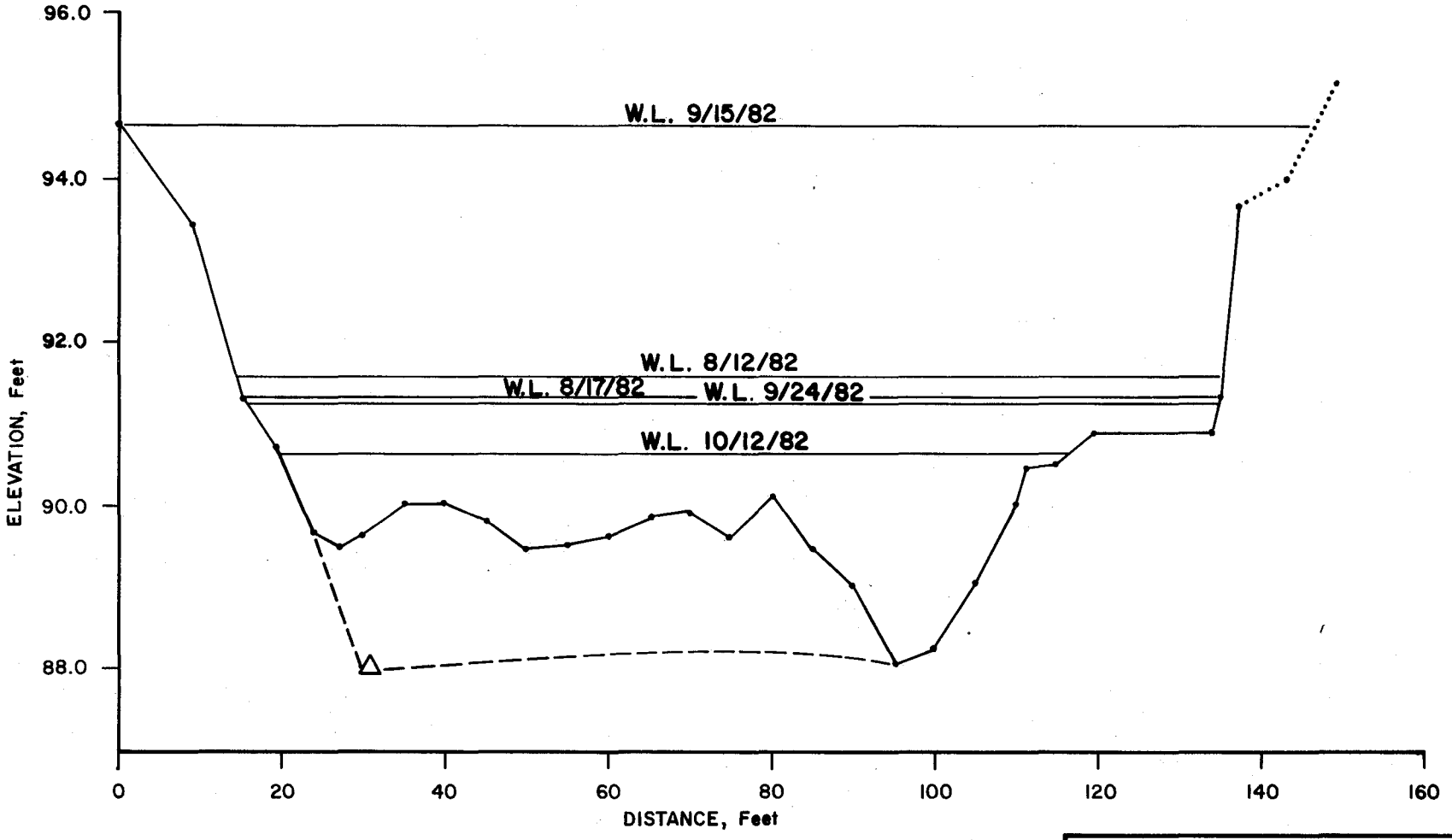


FIGURE 6.31

Map of Upper McArthur River Showing Location of the 1982 Recording Gage and Powerhouse Sites.



△ APPROXIMATE GAGE LOCATION

TRANSECT DATA SURVEYED ON 12 OCTOBER 1982

---- APPROXIMATE TRANSECT CONFIGURATION PRIOR TO THE FLOOD

..... APPROXIMATE BANK PROFILE

FIGURE 6.32

1982 Cross-Section of McArthur River at Recording Gage, Looking Downstream.

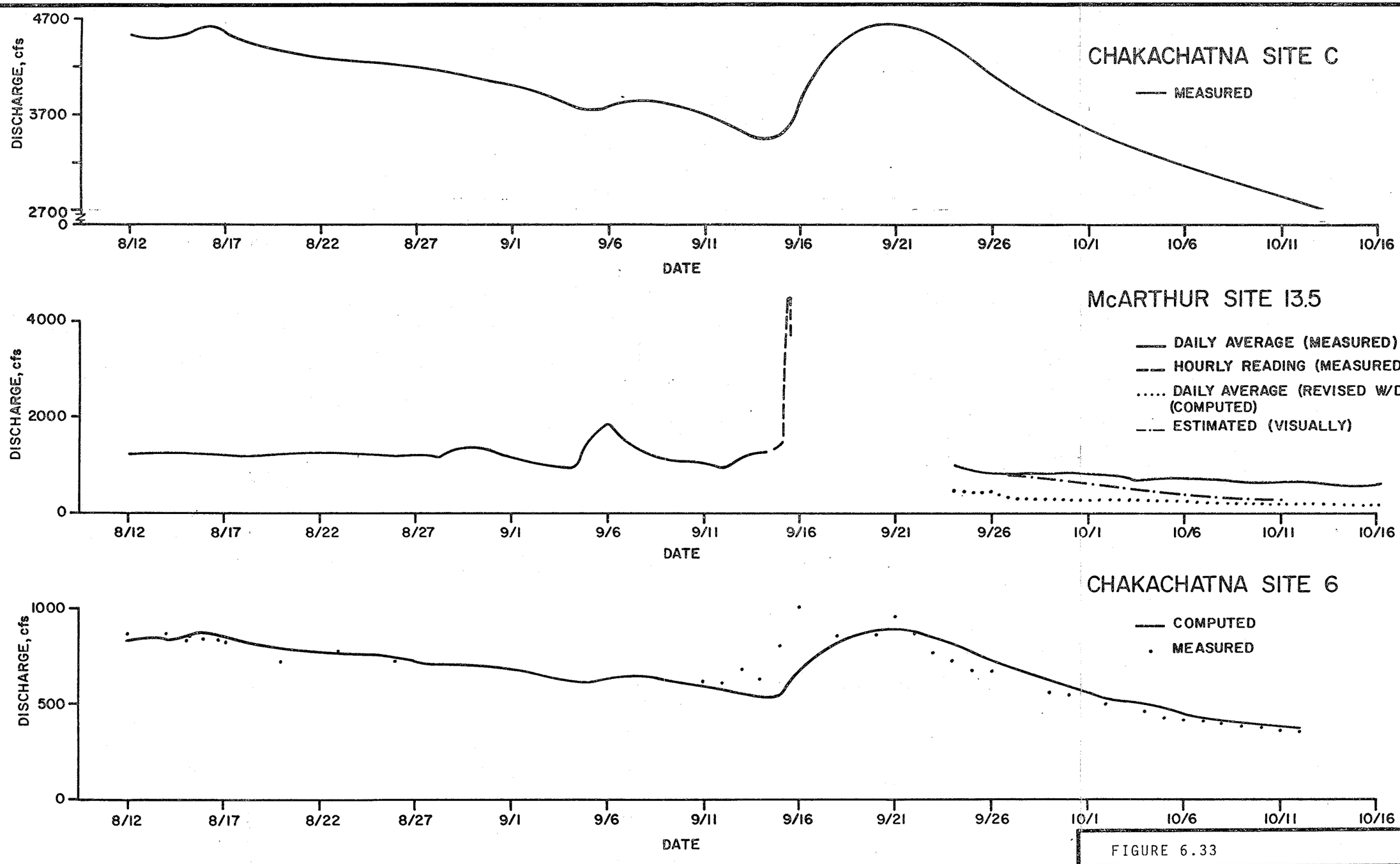


FIGURE 6.33

Hydrographs of 1982 Mean Daily Flows At Three Locations in the Study Area.

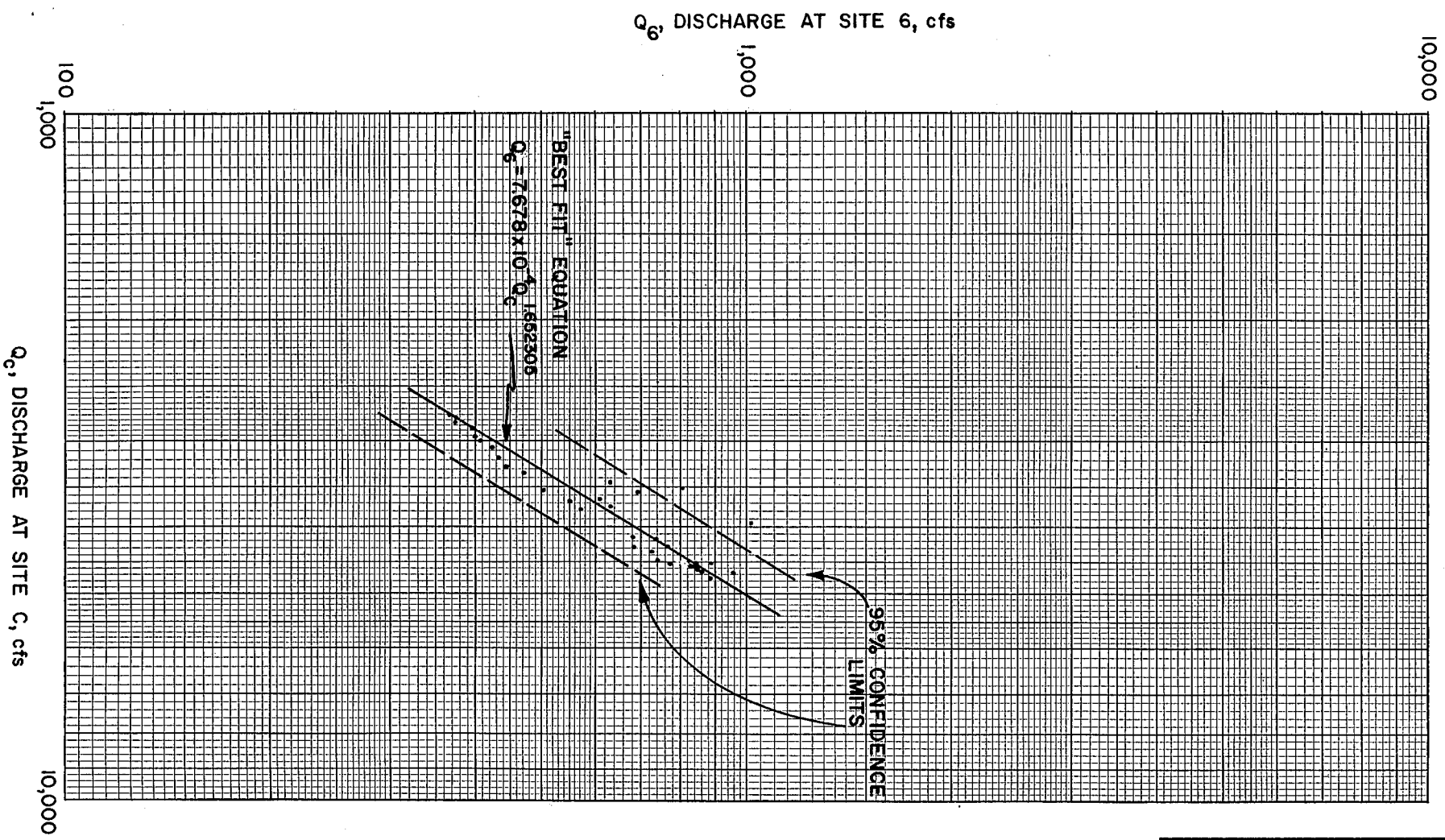


FIGURE 6.34

1982 Regression Relationship Between Discharges at Site 6 and Discharges at the Chakachatna Recording Gage.

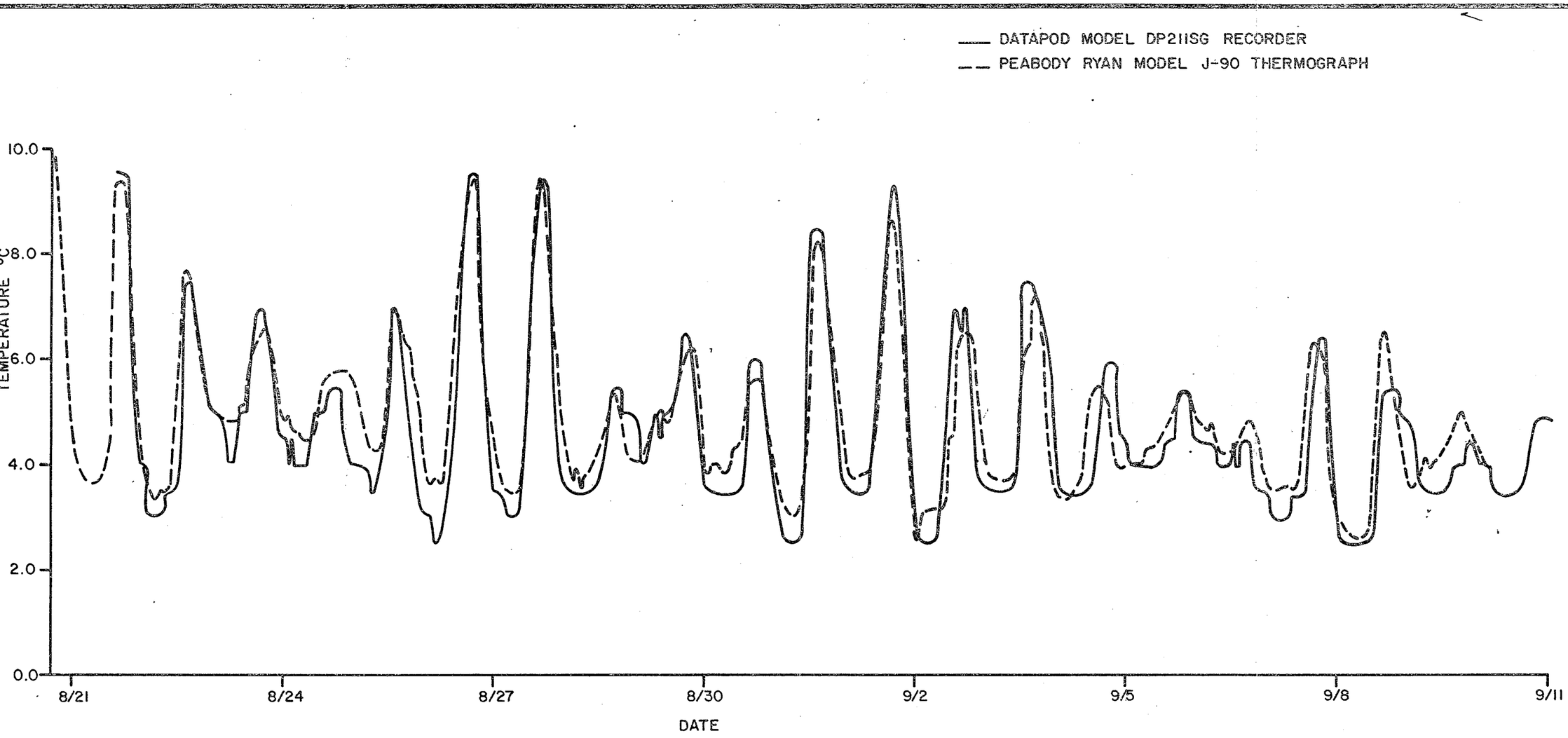


FIGURE 6.35

1982 Water Temperature Records at the McArthur River Recording Gage Site Showing Diurnal Variation.

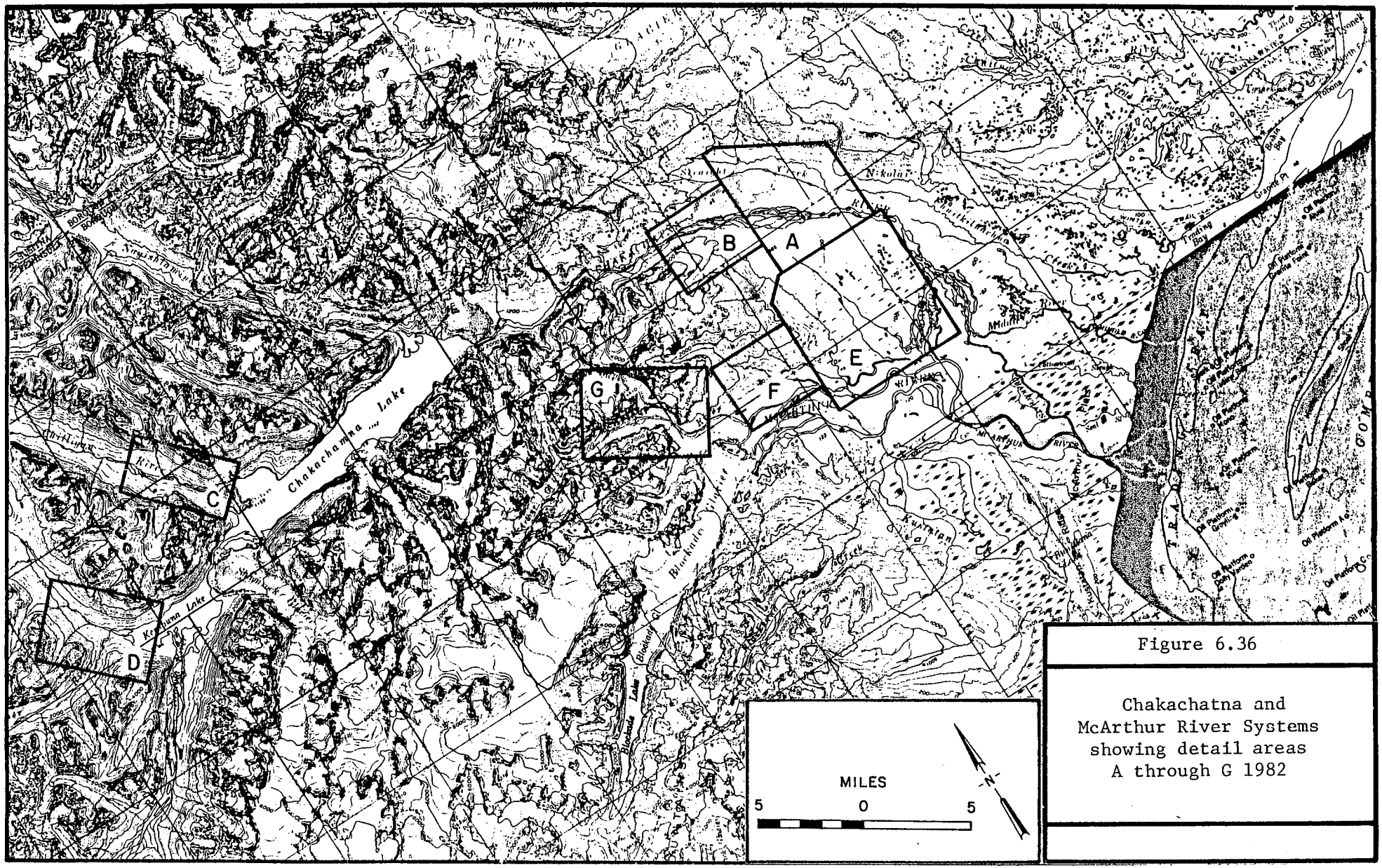


Figure 6.36

Chakachatna and McArthur River Systems showing detail areas A through G 1982

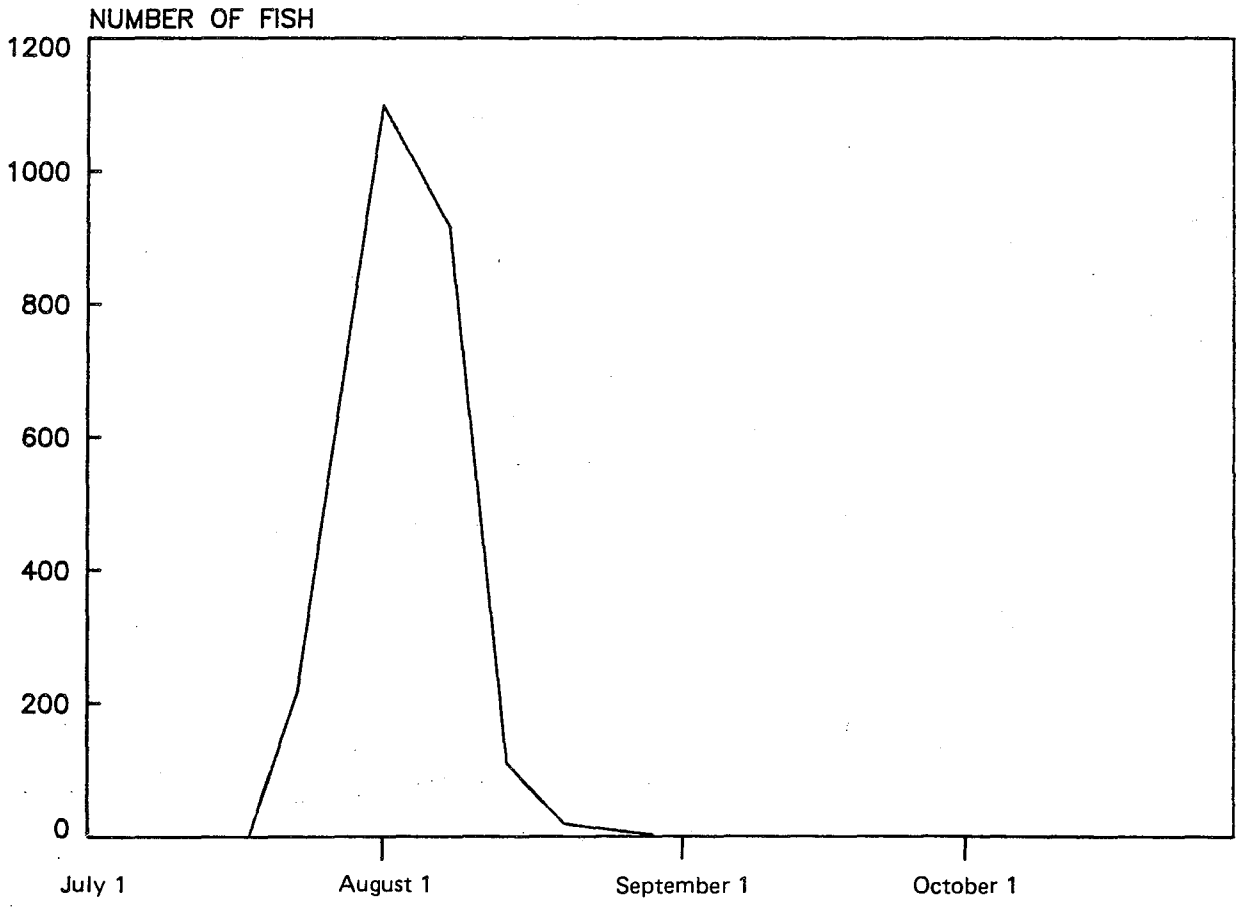


Figure 6.37

Chinook Salmon
Estimated Fish
Escapement For
Clearwater Tributary
to Straight Creek (19)

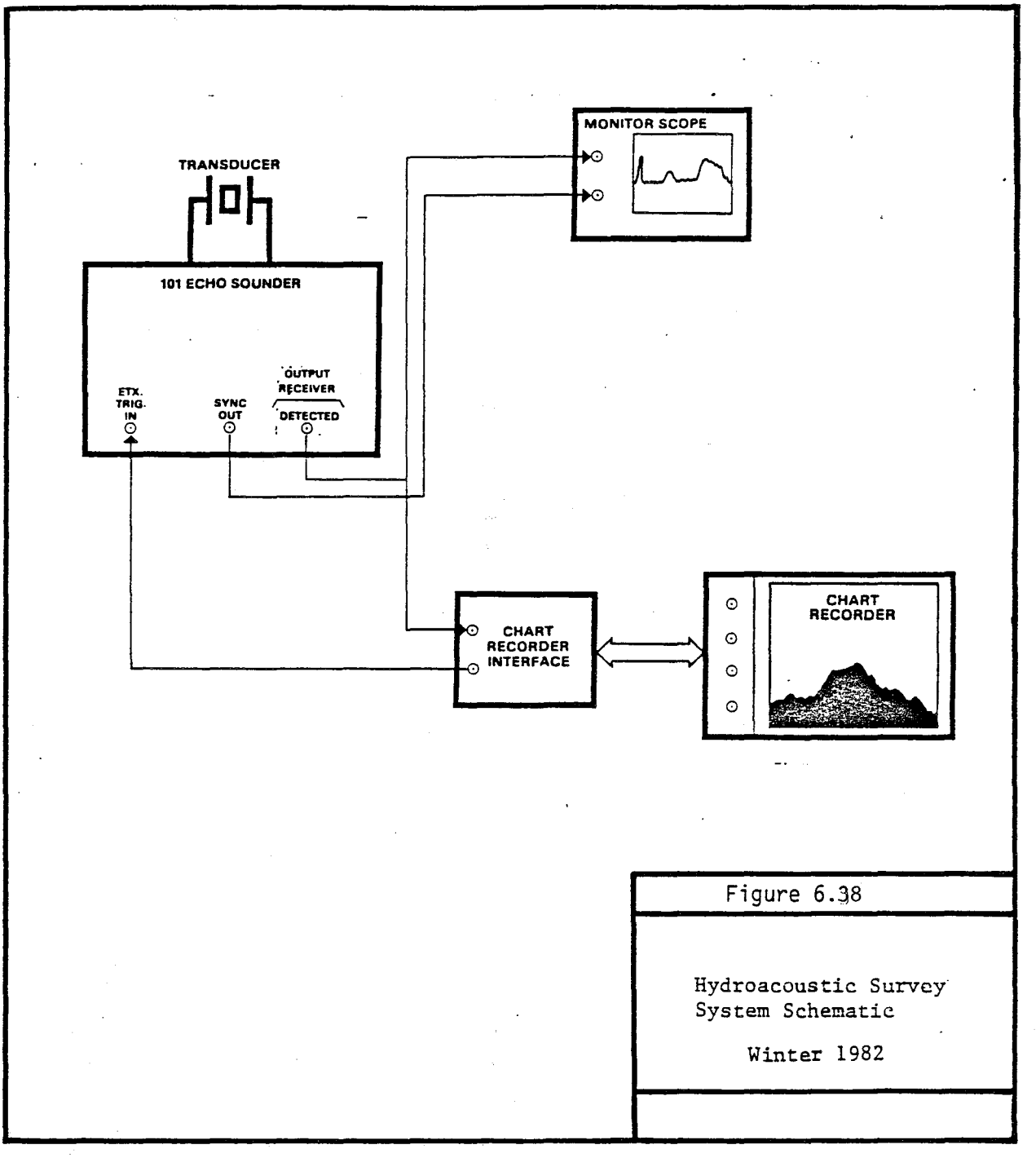
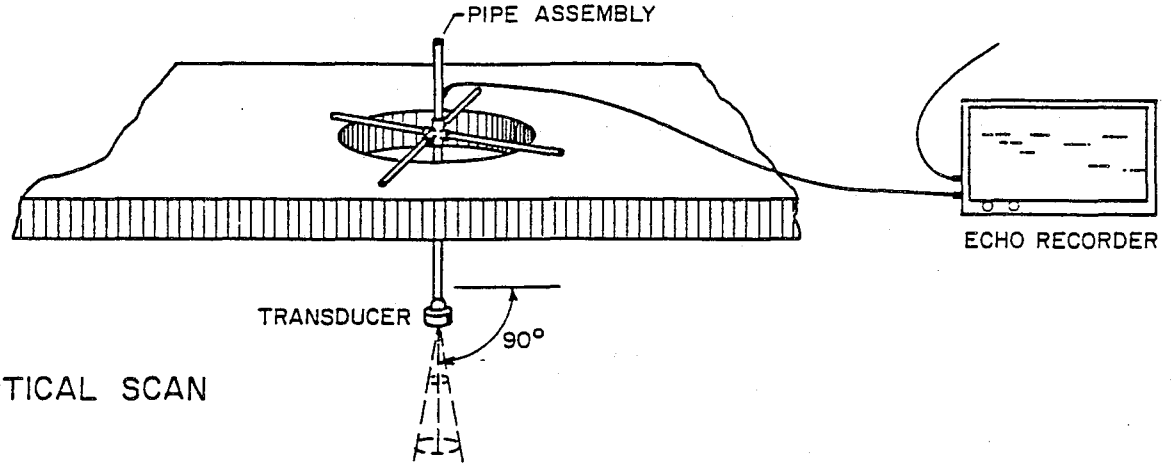


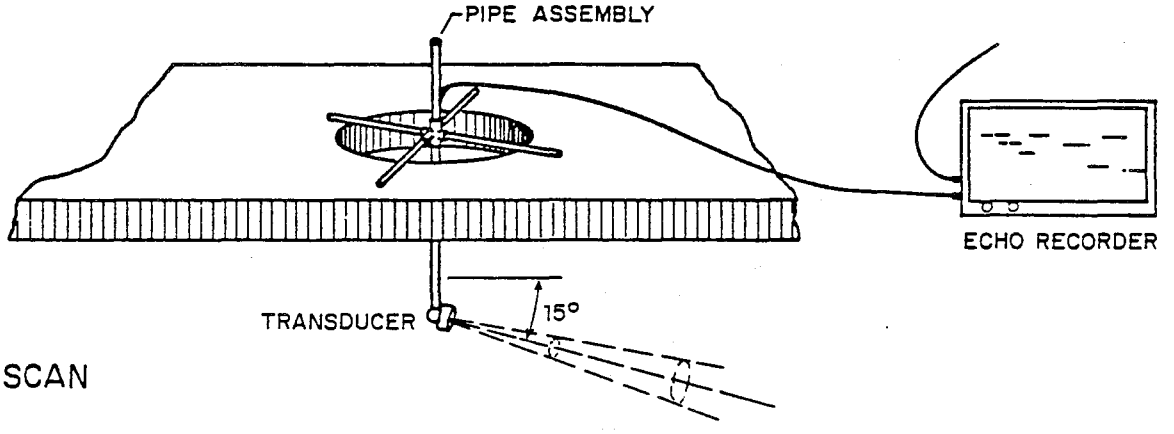
Figure 6.38

Hydroacoustic Survey System Schematic

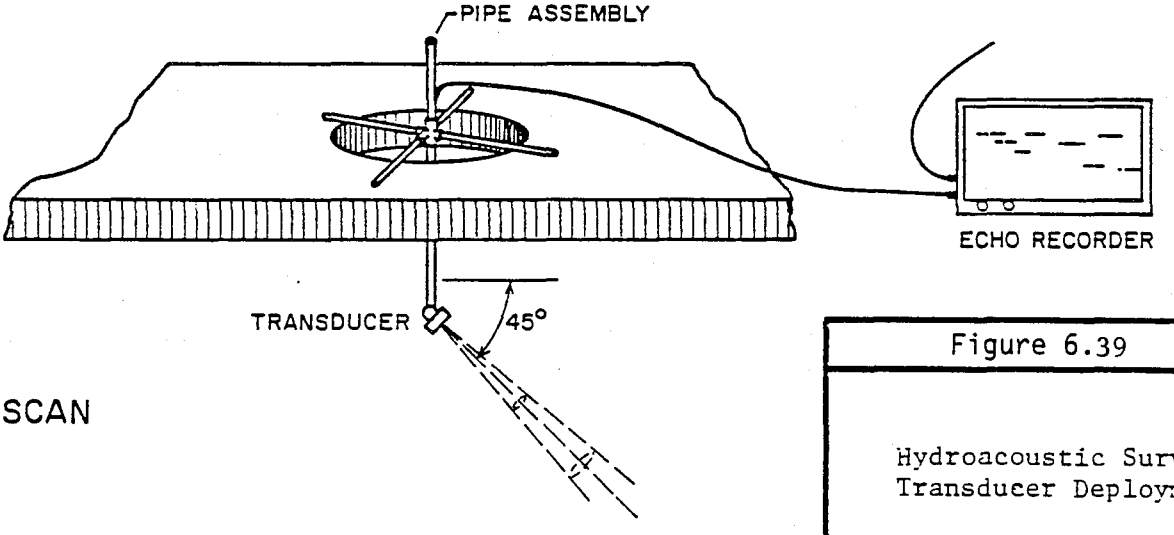
Winter 1982



VERTICAL SCAN



15° SCAN



45° SCAN

Figure 6.39

Hydroacoustic Survey
Transducer Deployment

Winter 1982

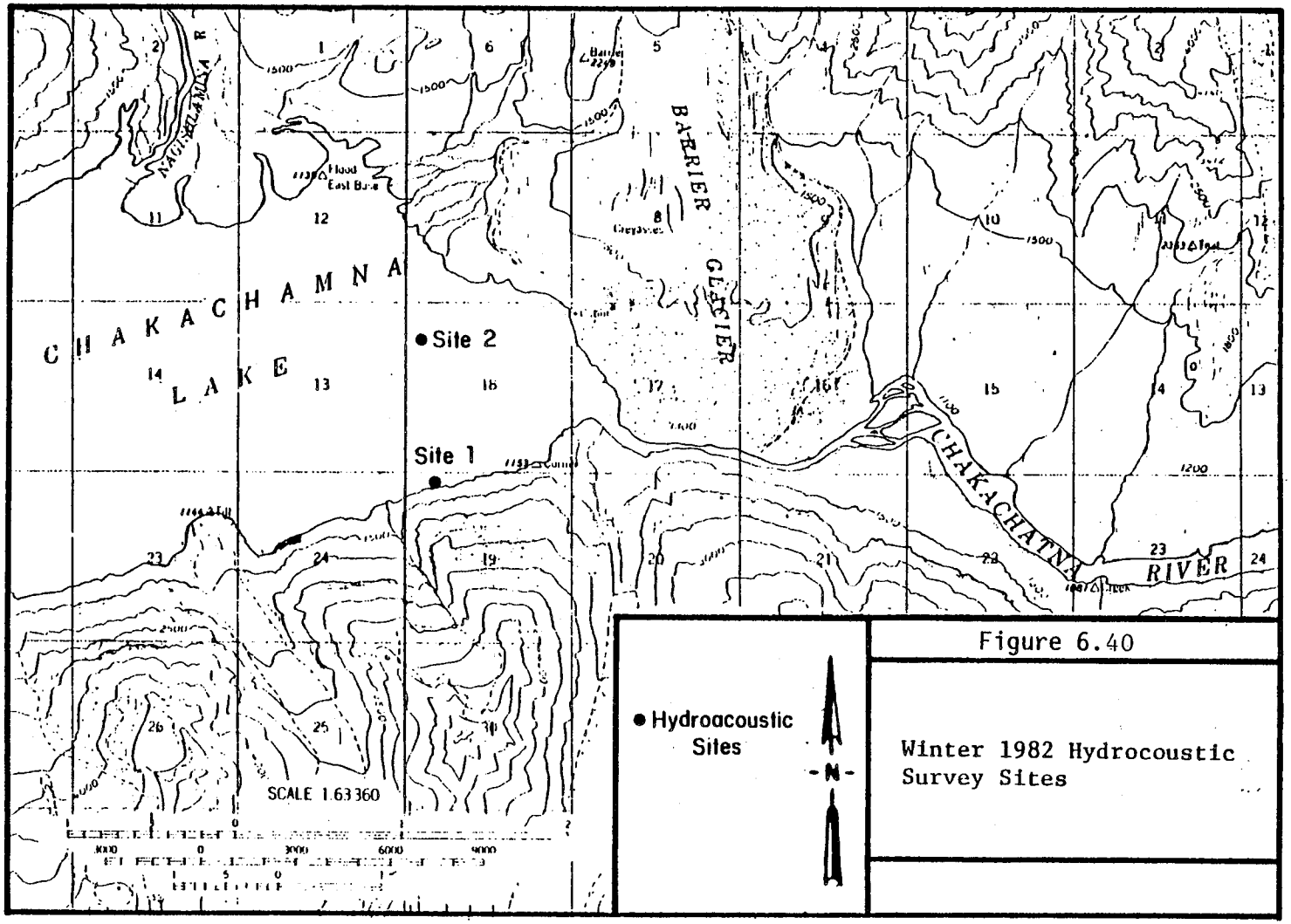


Figure 6.40

Winter 1982 Hydrocoustic Survey Sites

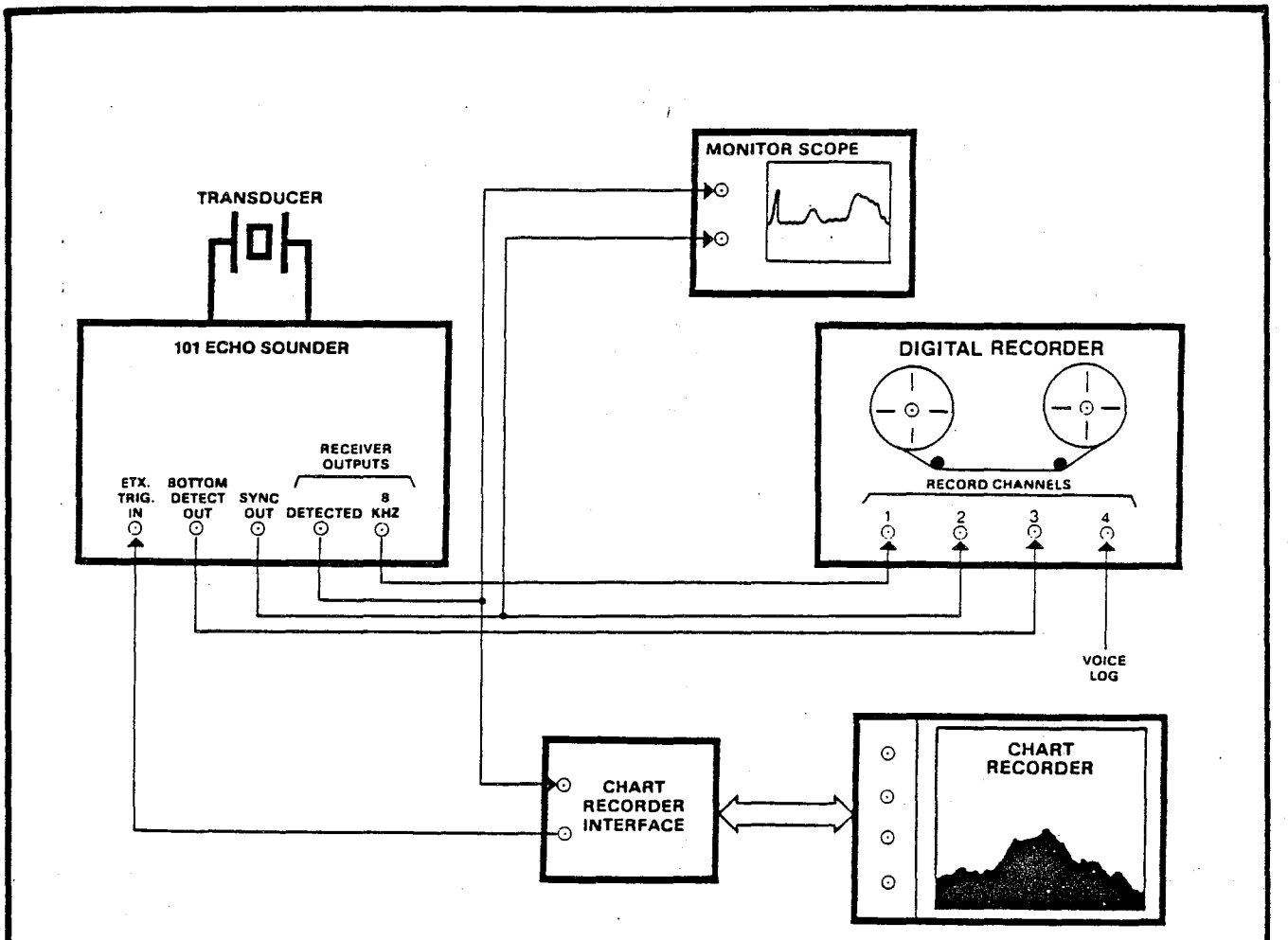


Figure 6.41

Hydroacoustic Survey System Schematic

Summer-Fall 1982

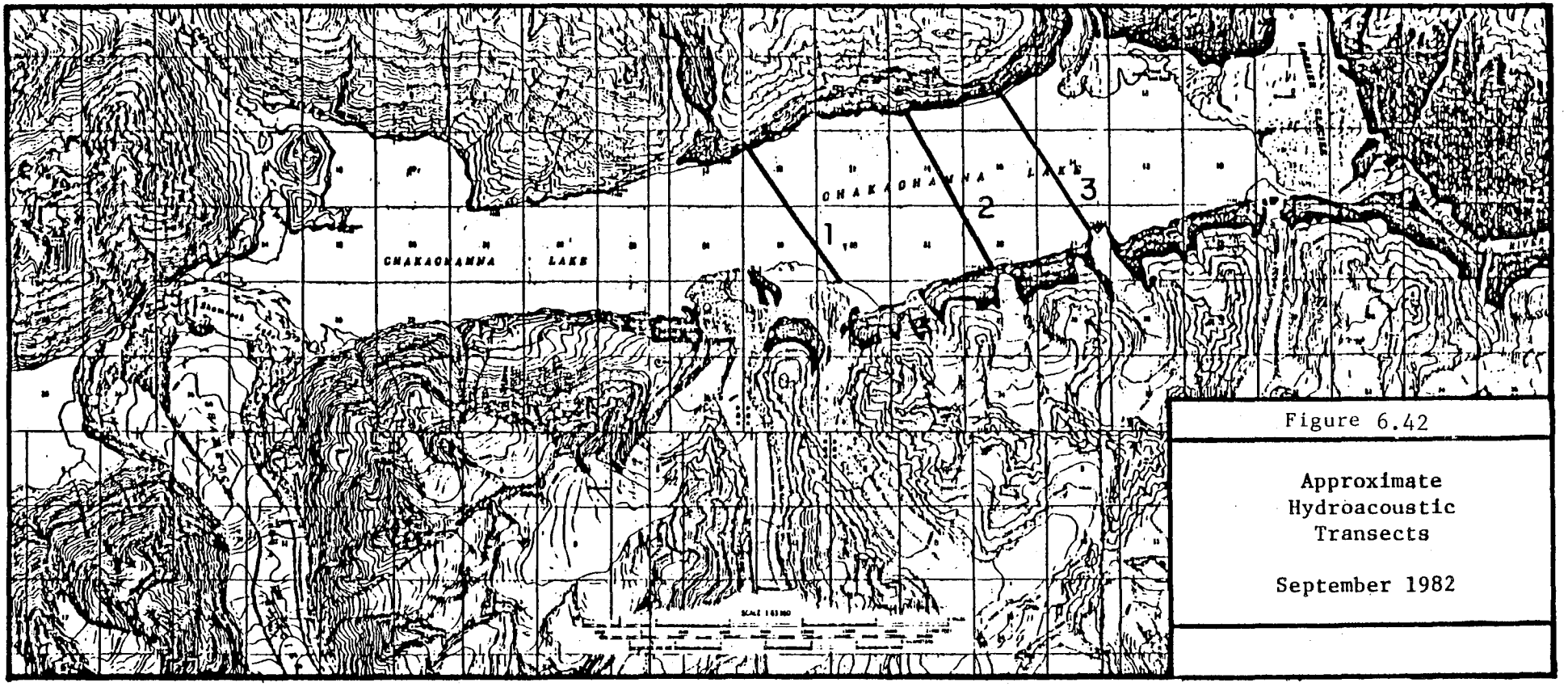


Figure 6.42

Approximate
Hydroacoustic
Transects

September 1982

Figure 6.43

Chinook Salmon
spawning areas
1982 study

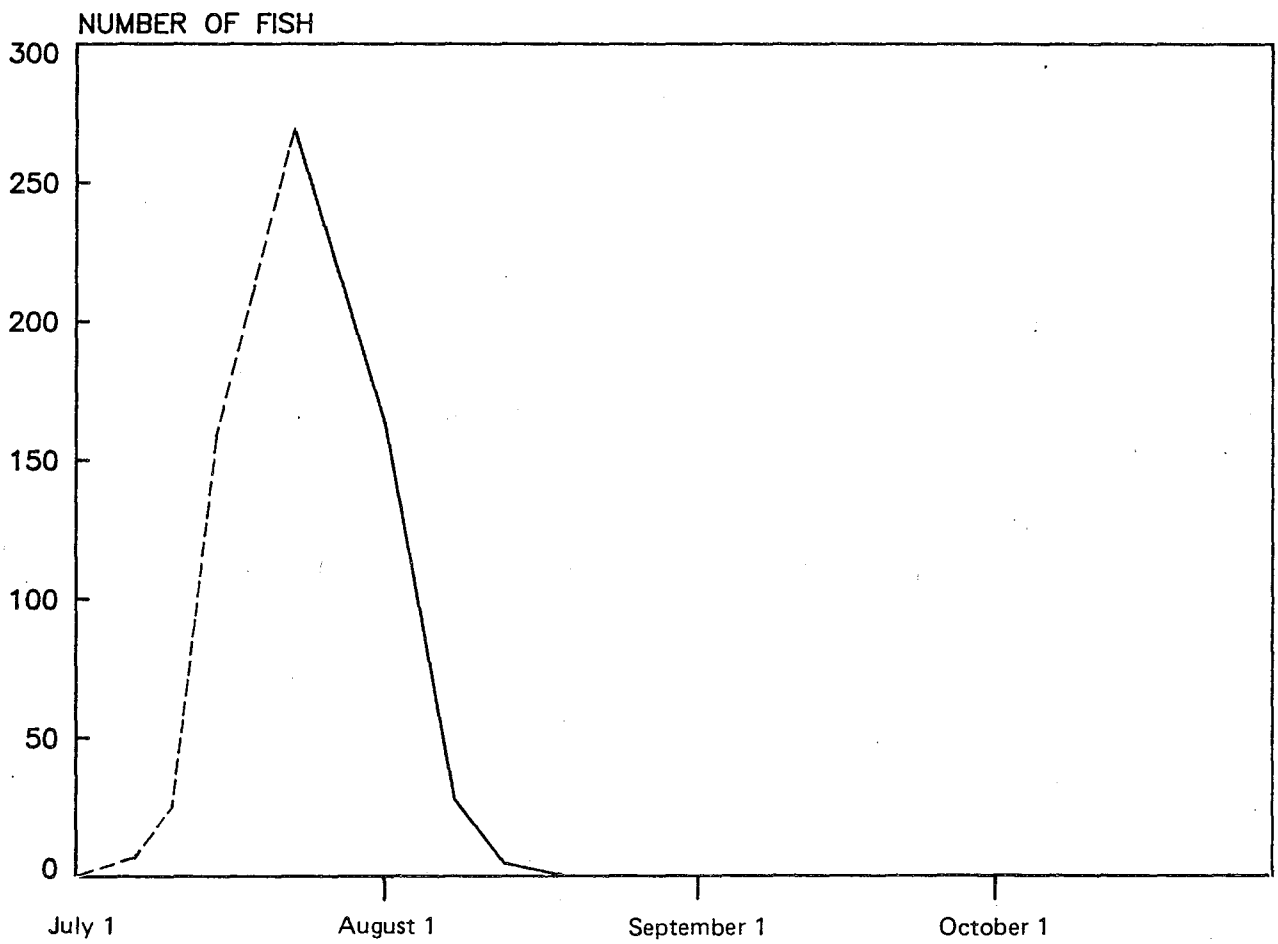


Figure 6.44

Chinook Salmon
Estimated Fish
Escapement For
McArthur River
Oxbow Creek (13X)

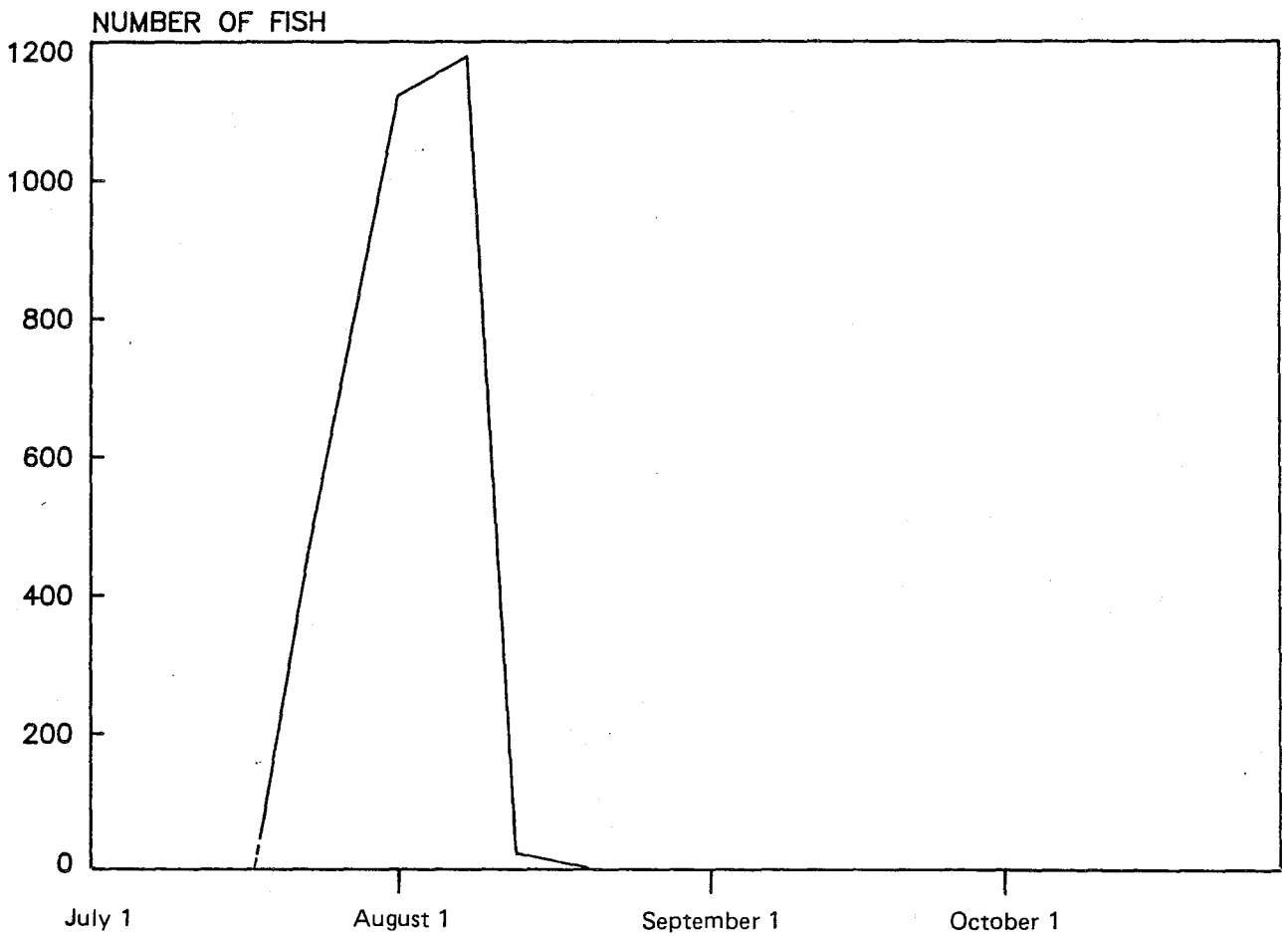


Figure 6.45

Chinook Salmon
Estimated Fish
Escapement For
McArthur River
Upper Tributary (13U)

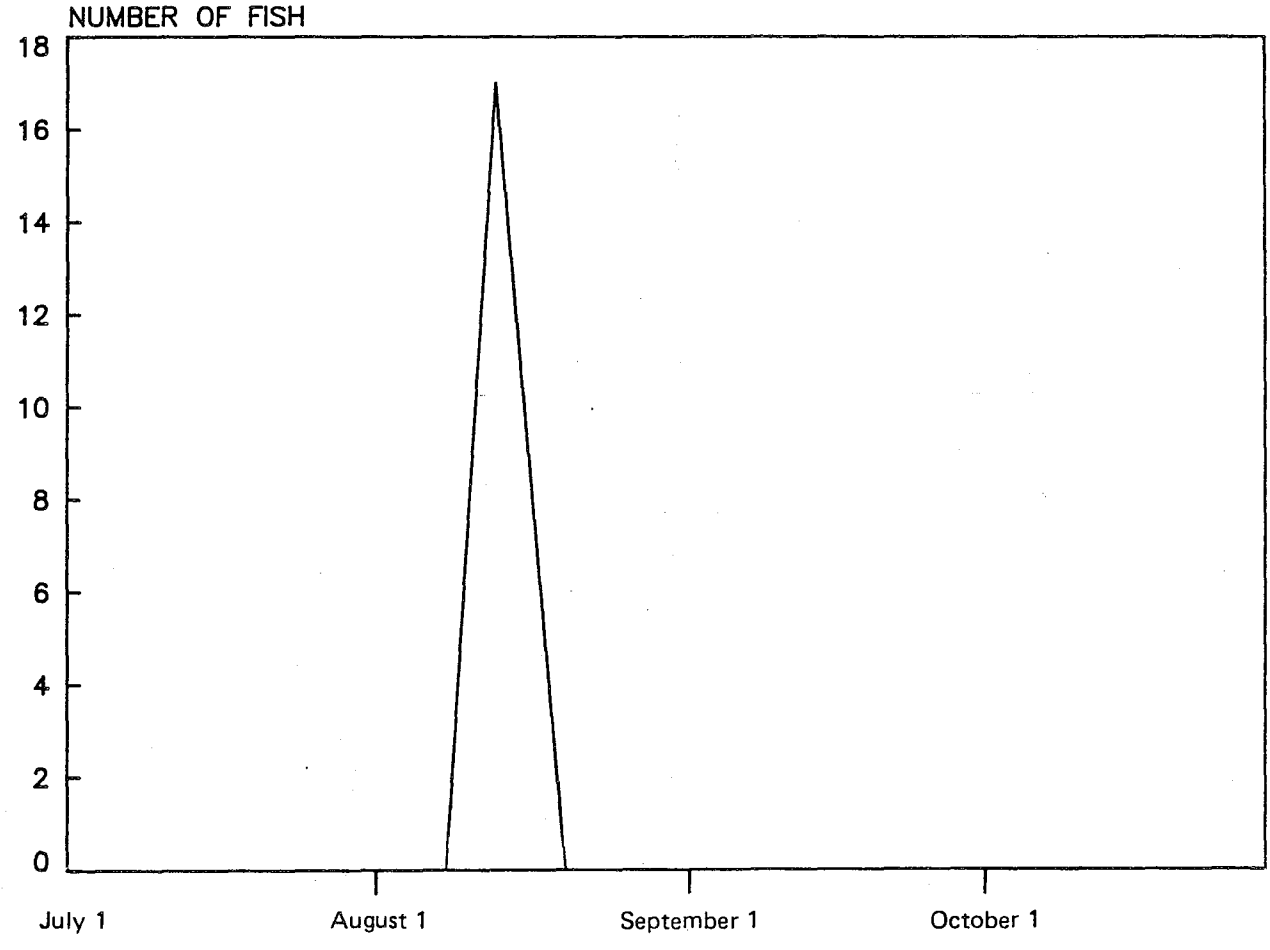


Figure 6.46

Chinook Salmon
Estimated Fish
Escapement For
Tributary 12.2

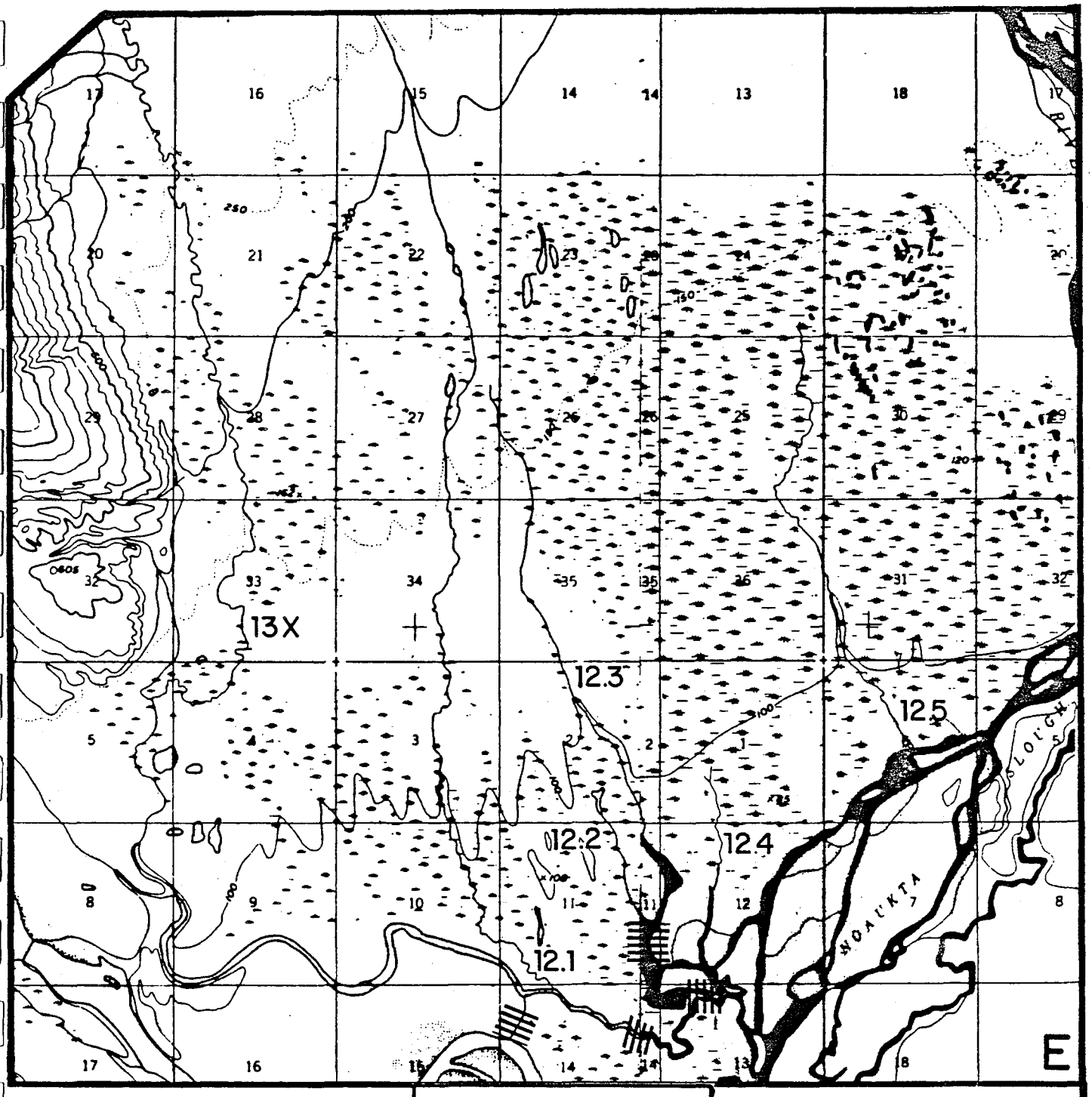


Figure 6.47

Sockeye Milling Areas
Streams 13X, 12.1,
12.2, 12.3
1982
Detail Area E

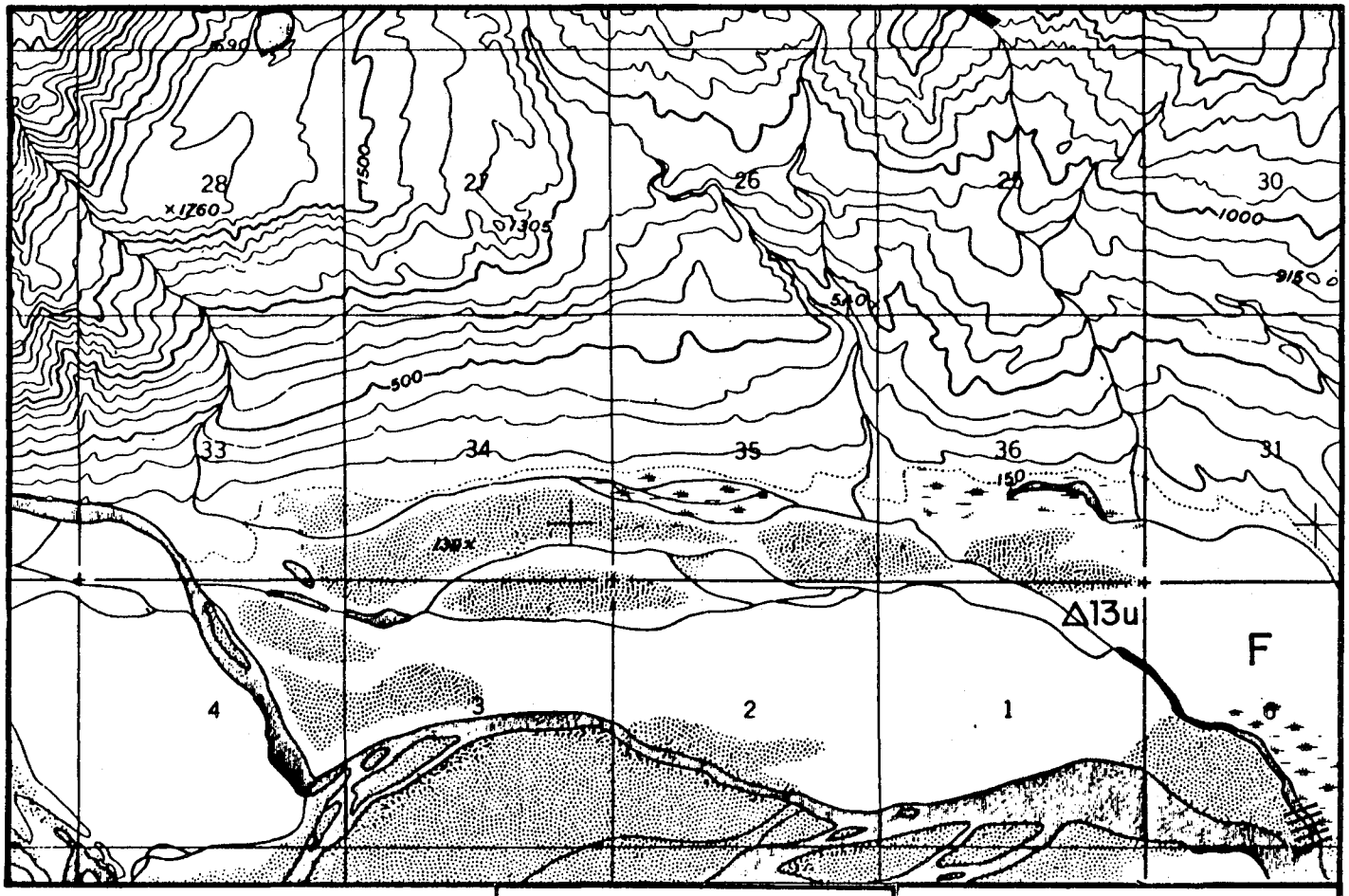


Figure 6.48

Sockeye Milling Area
at Stream 13u
1982
Detail Area F

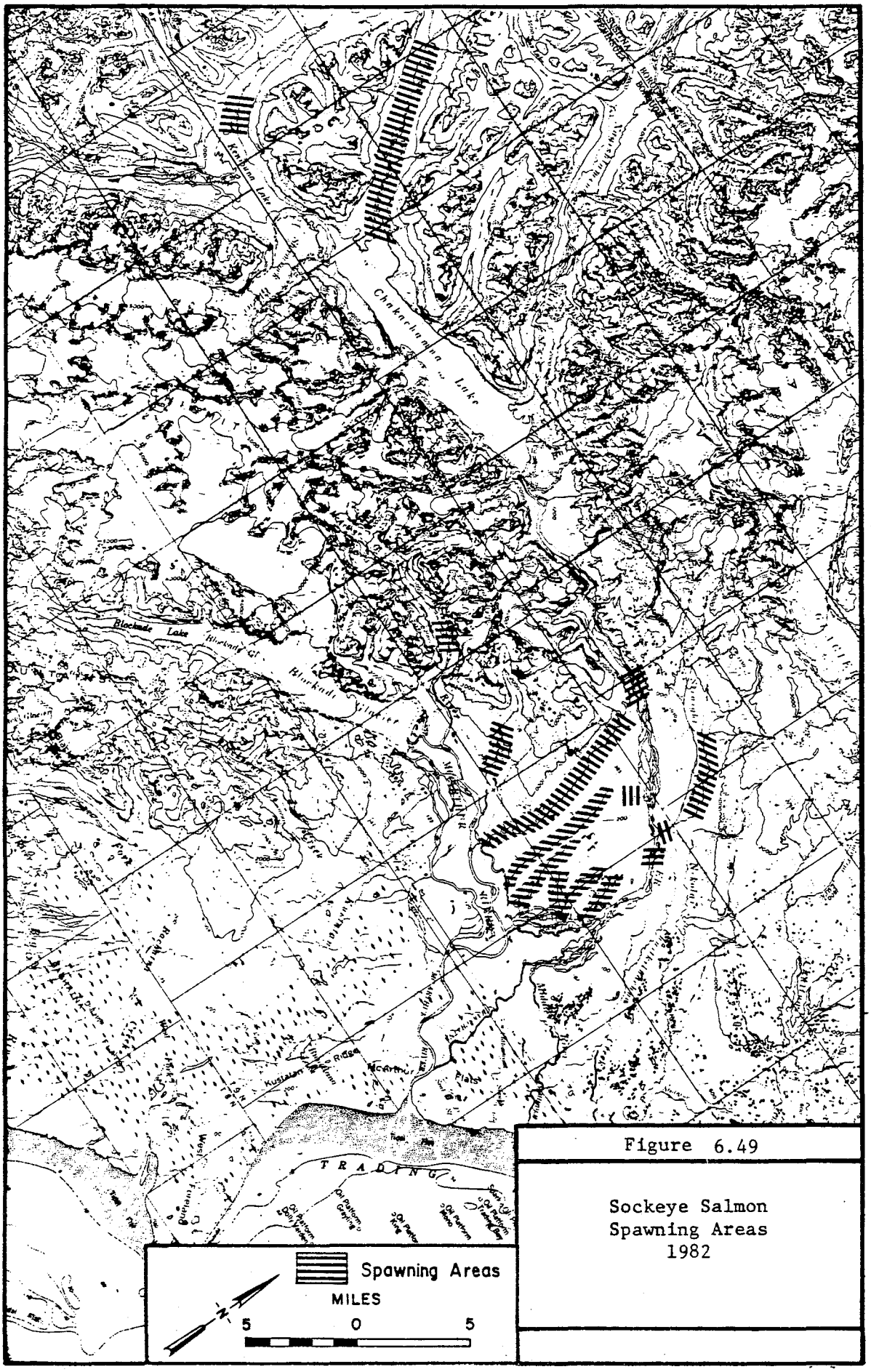


Figure 6.49

Sockeye Salmon
Spawning Areas
1982

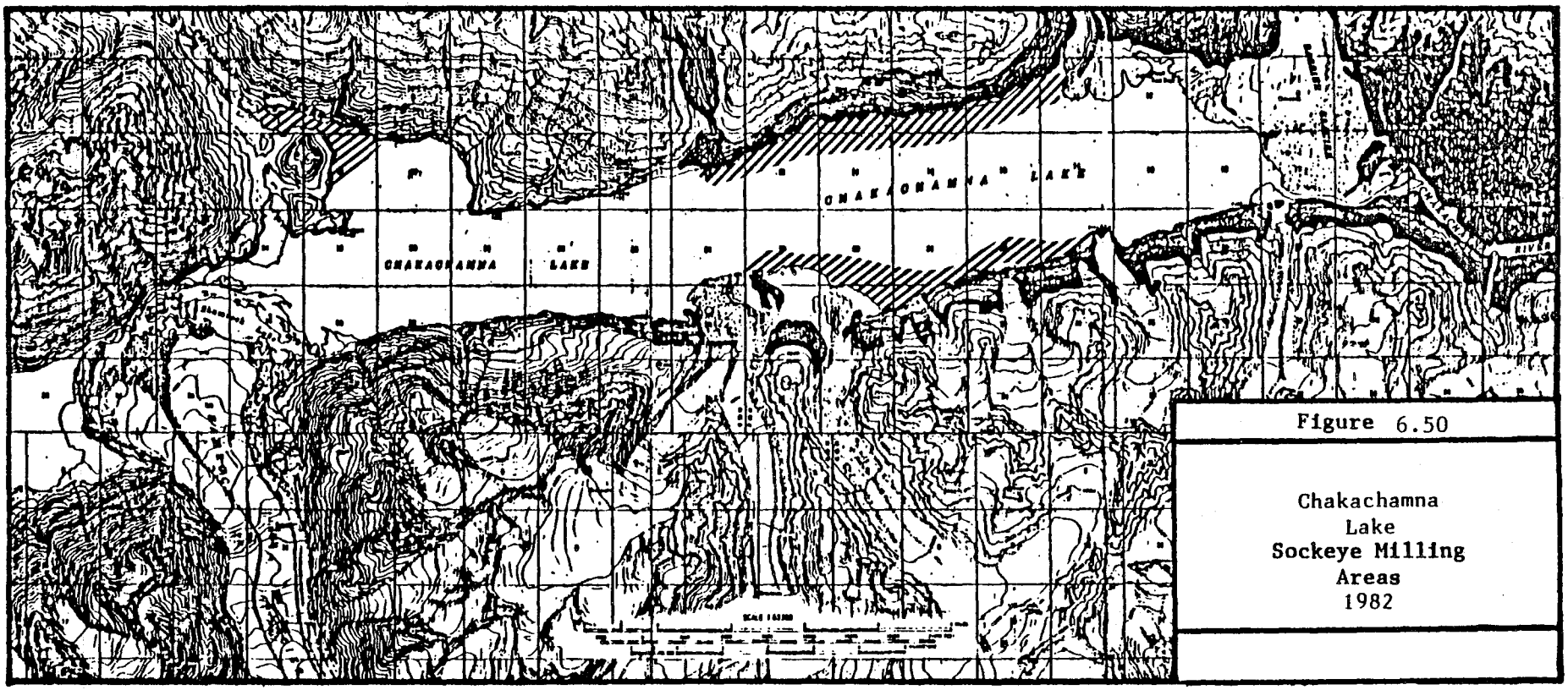


Figure 6.50

Chakachamna
Lake
Sockeye Milling
Areas
1982

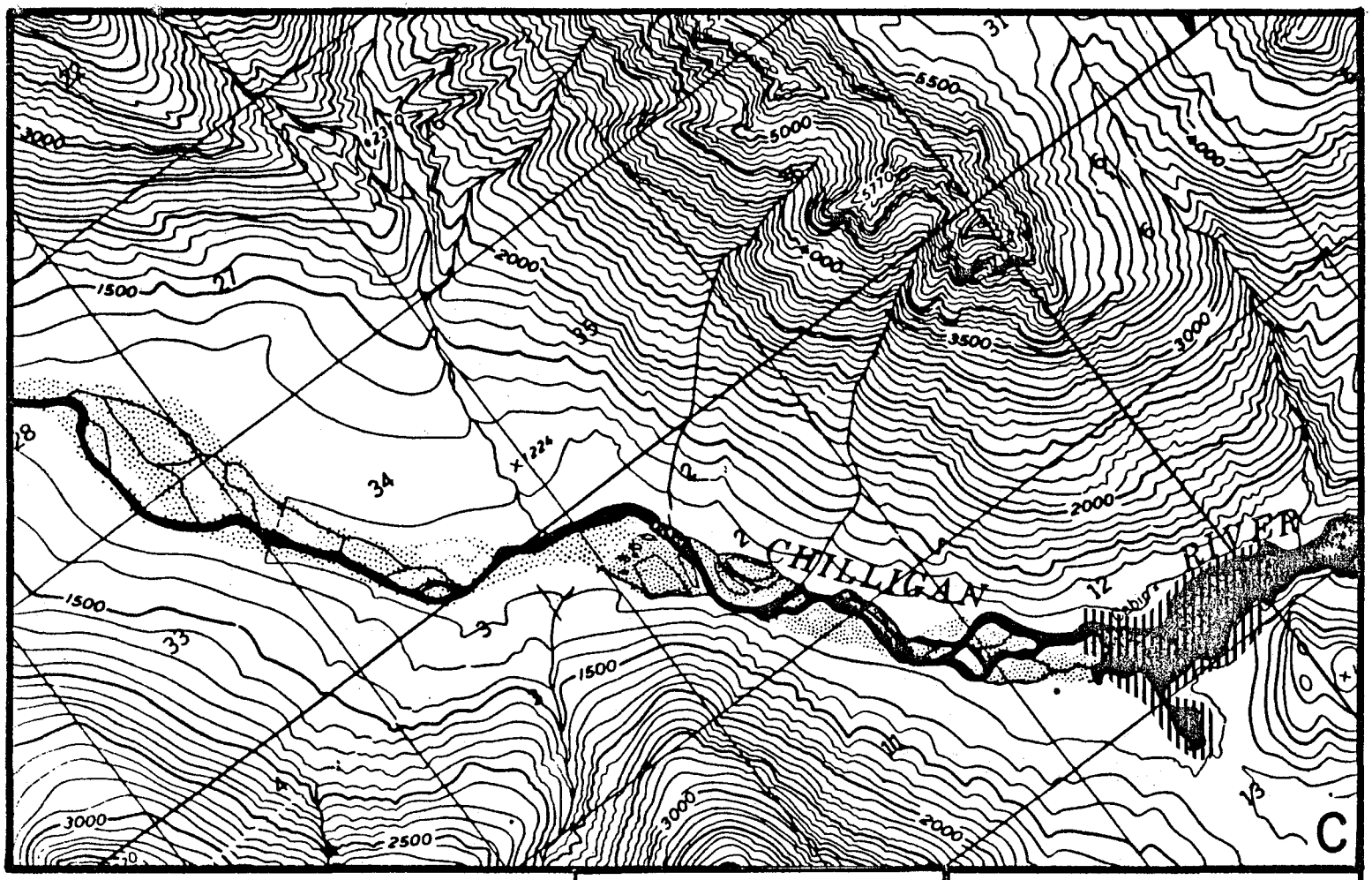
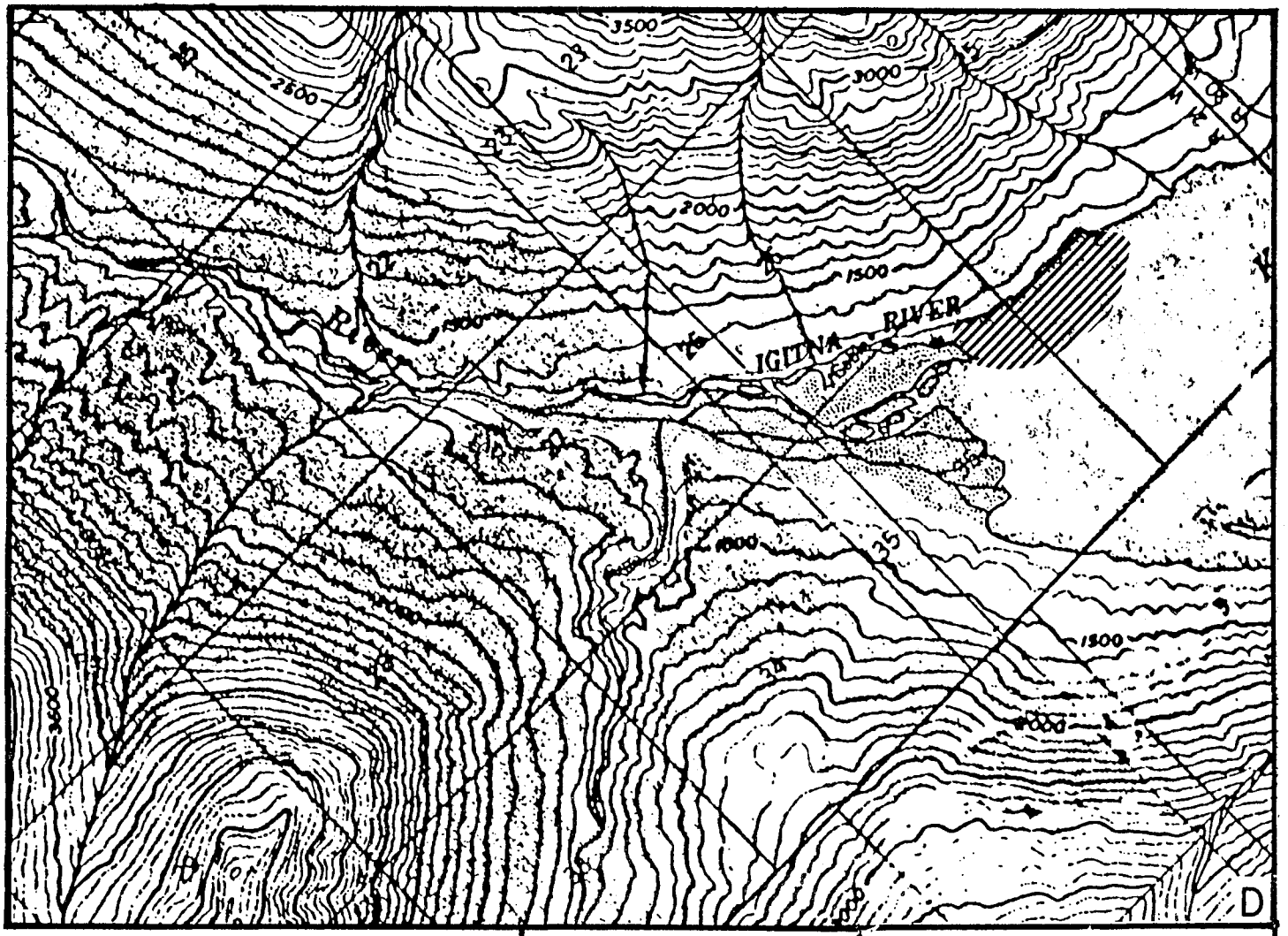


Figure 6.51

Sockeye Salmon Milling areas Chilligan River 1982

Detail Area C



Milling Area

MILES
0 1/2 1

Figure 6.52

Sockeye Salmon
Milling Areas
Igitna River

Detail Area D

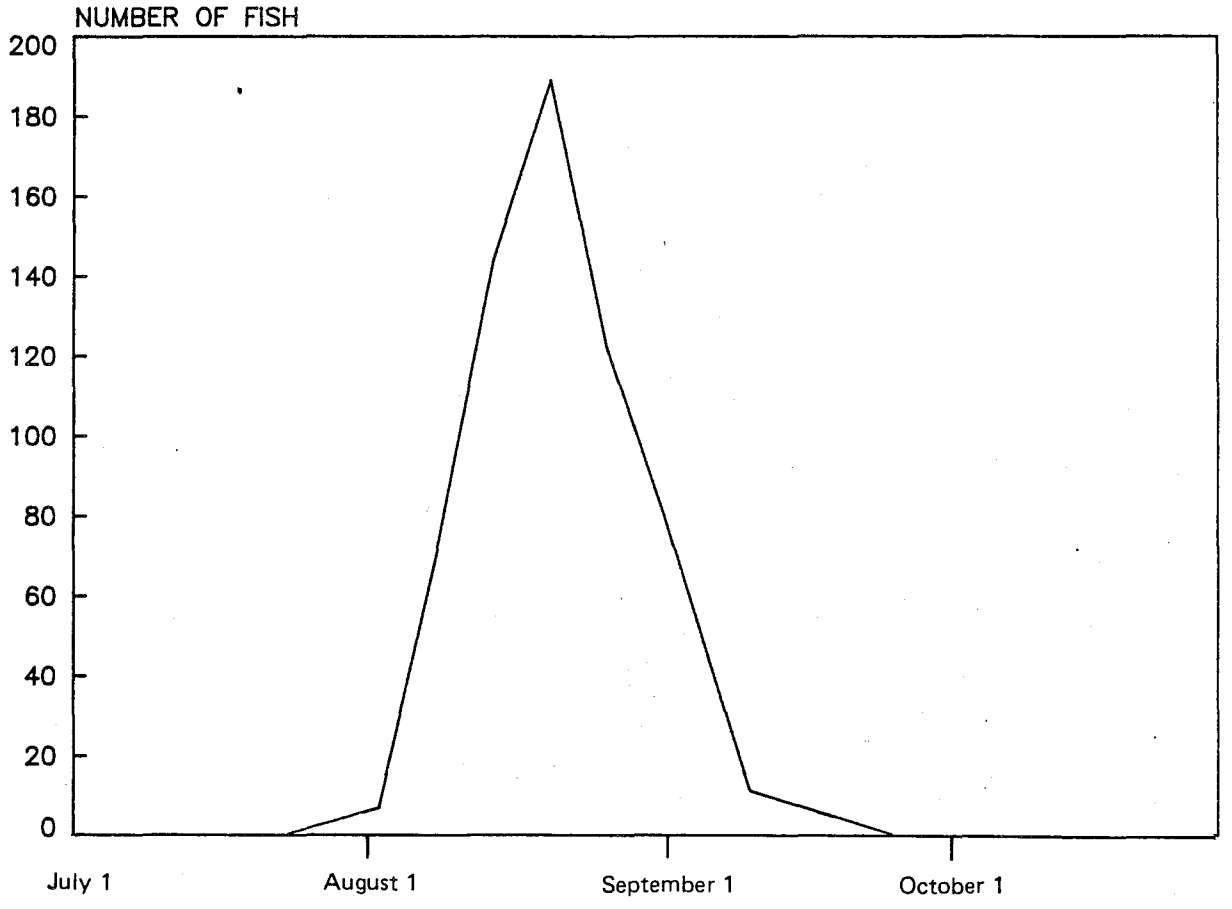


Figure 6.53

Sockeye Salmon
Estimated Fish
Escapement For
McArthur River
Canyon (stations 15 & 14)

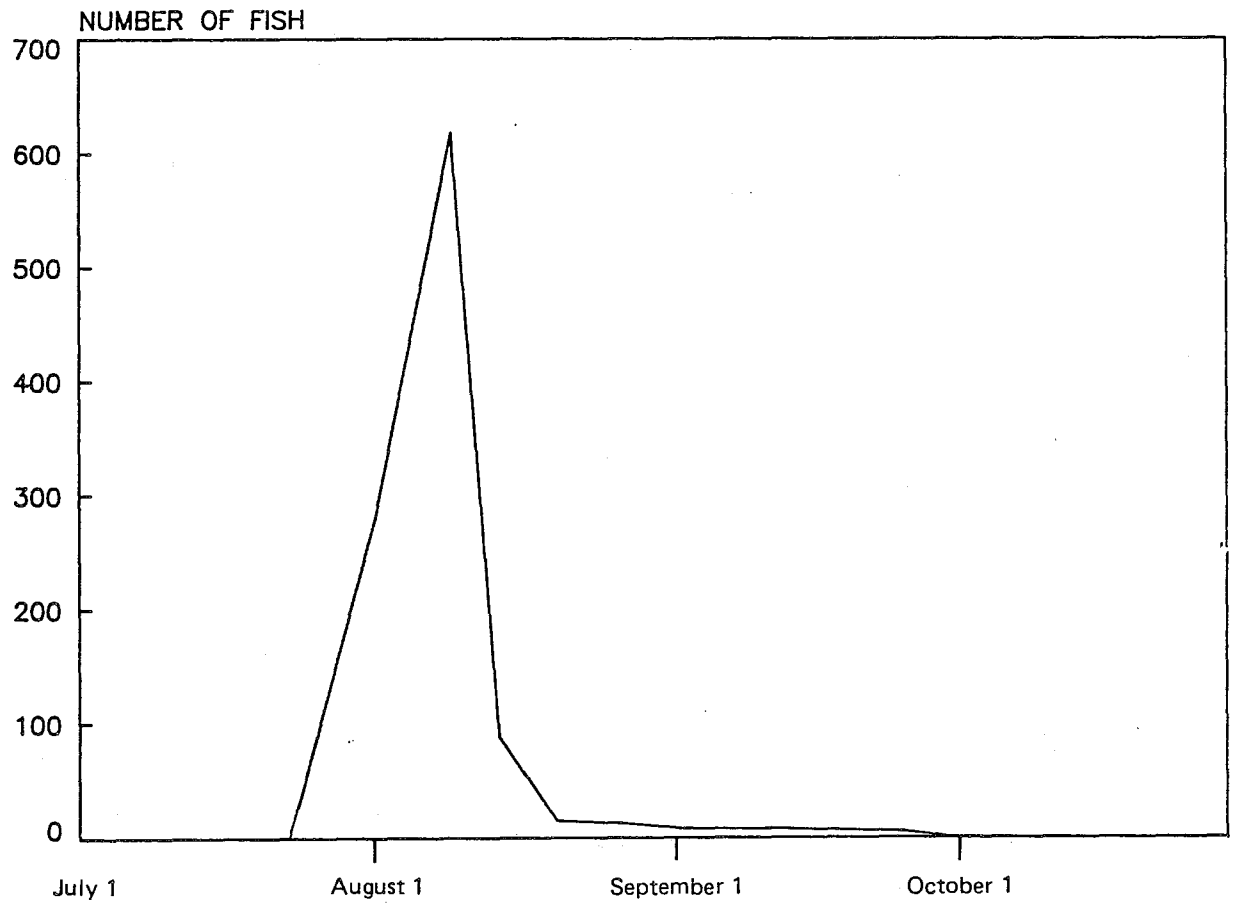


Figure 6.54

Sockeye Salmon
Estimated Fish
Escapement For
McArthur River Upper
Tributary (13U)

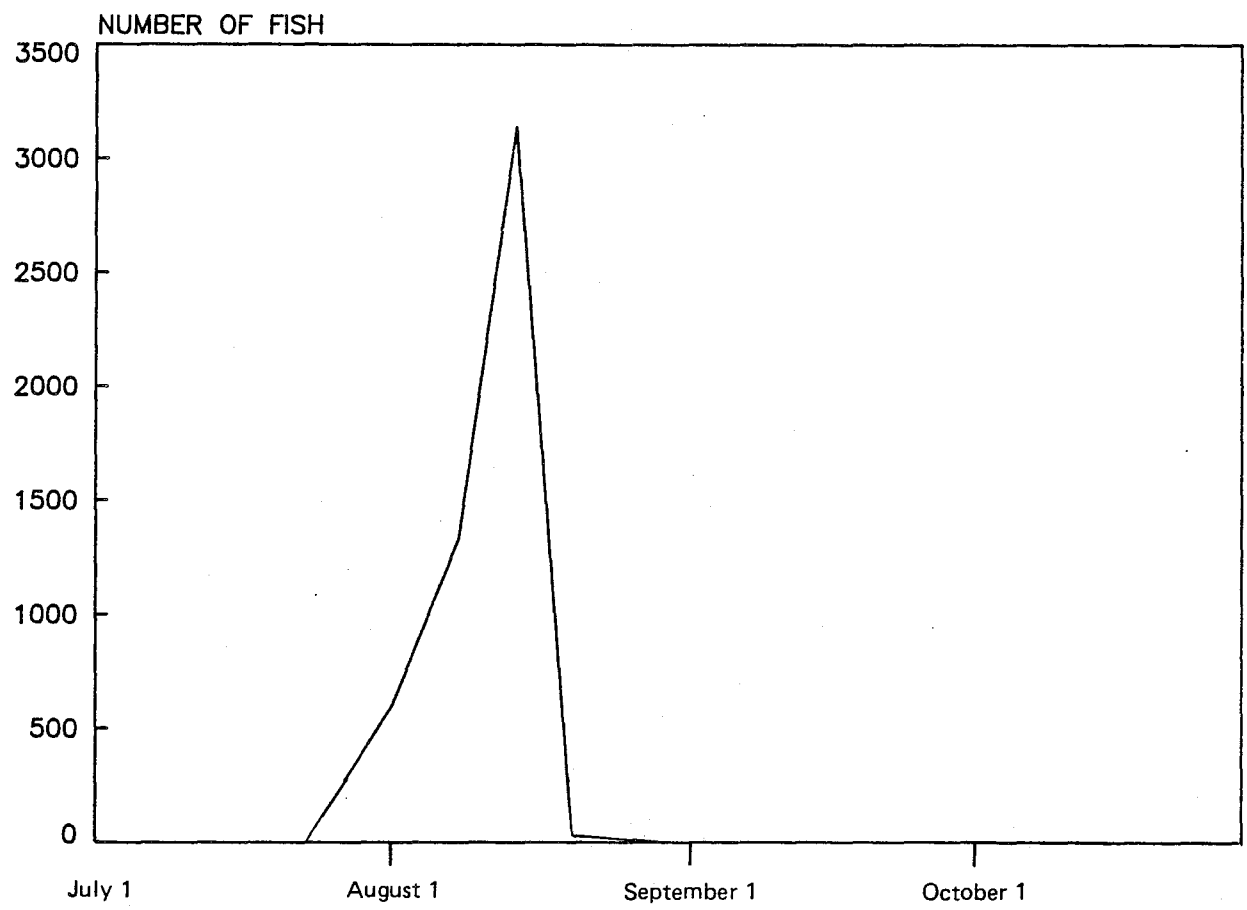


Figure 6.55

Sockeye Salmon
Estimated Fish
Escapement For
McArthur River
Oxbow Creek (13X)

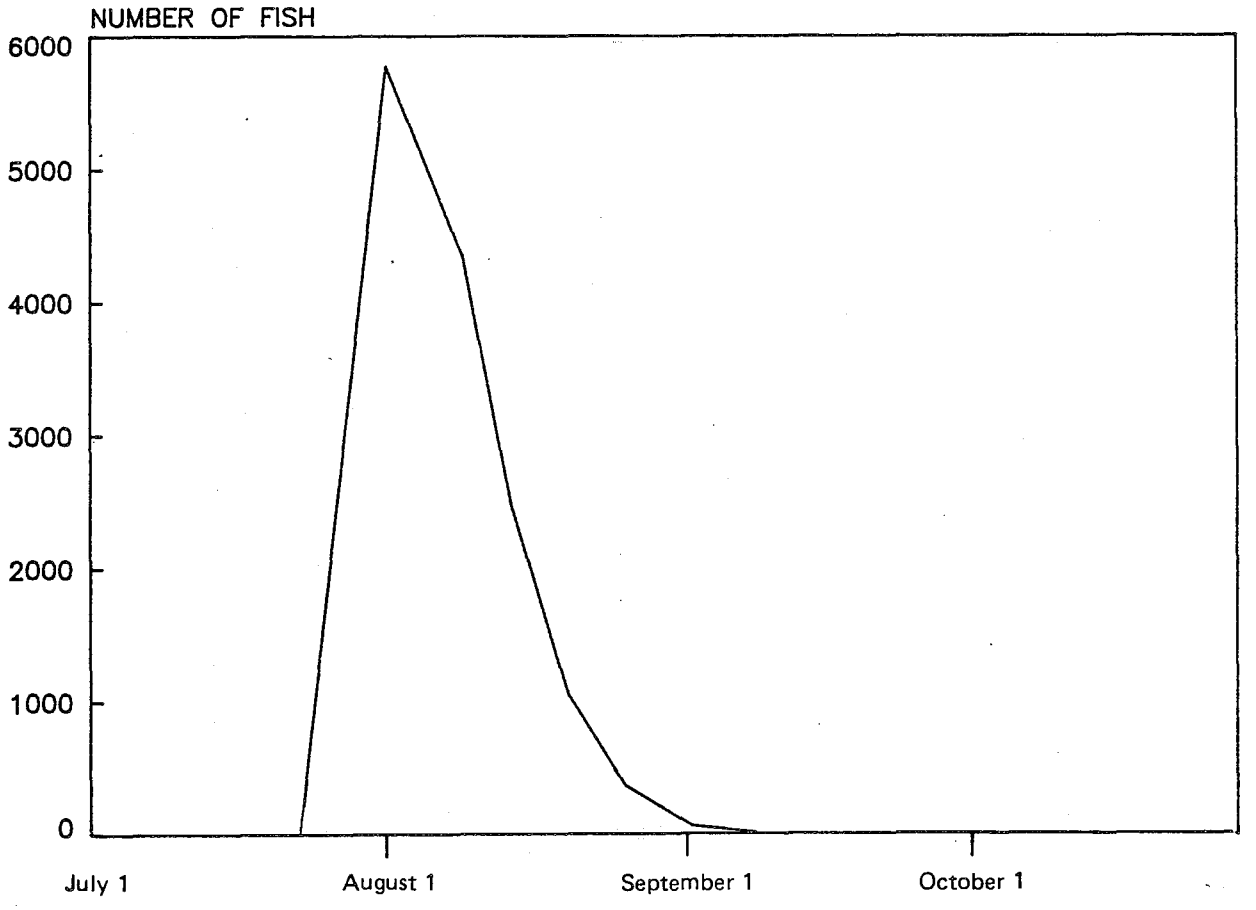


Figure 6.56

Sockeye Salmon
Estimated Fish
Escapement For
Tributary 12.1

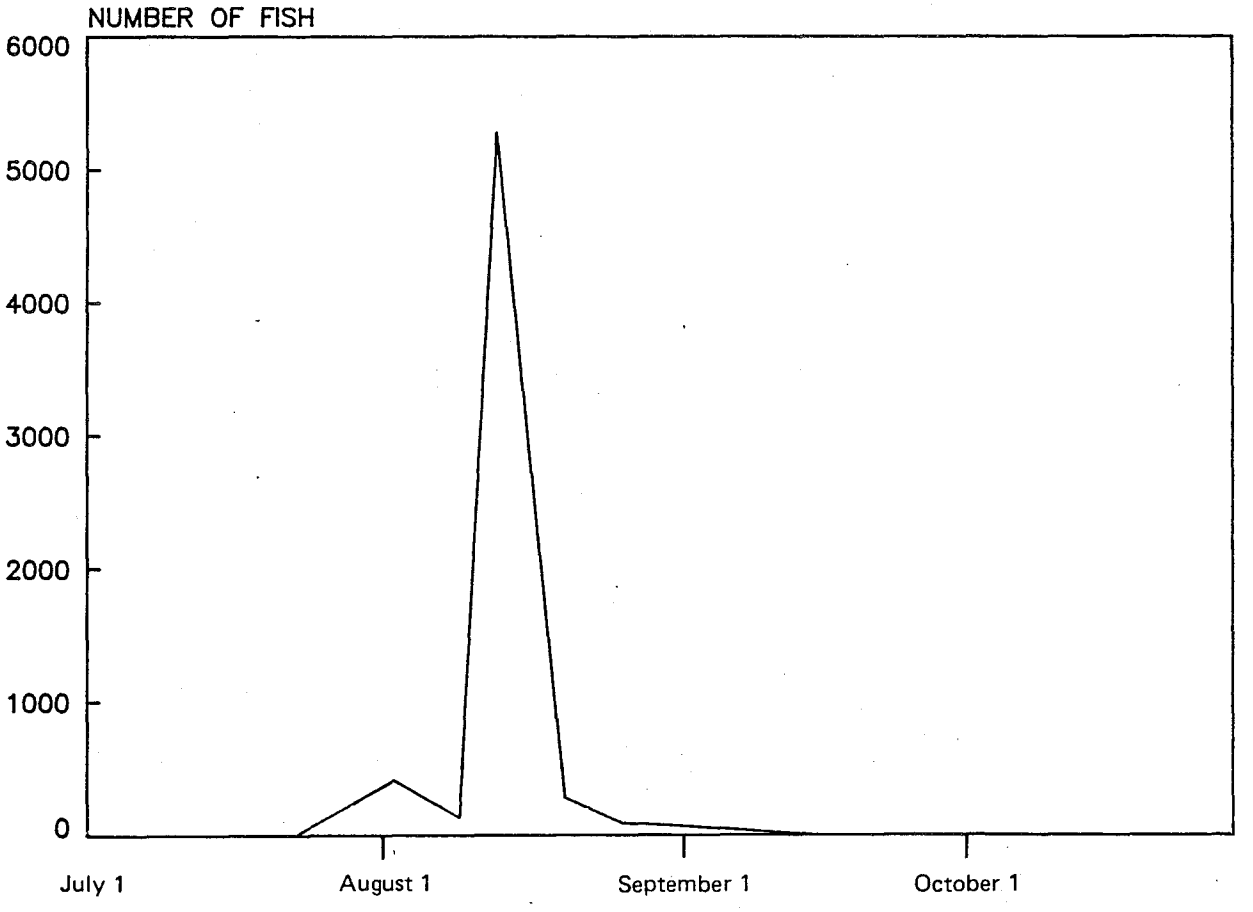


Figure 6.57

Sockeye Salmon
Estimated Fish
Escapement For
Tributary 12.2

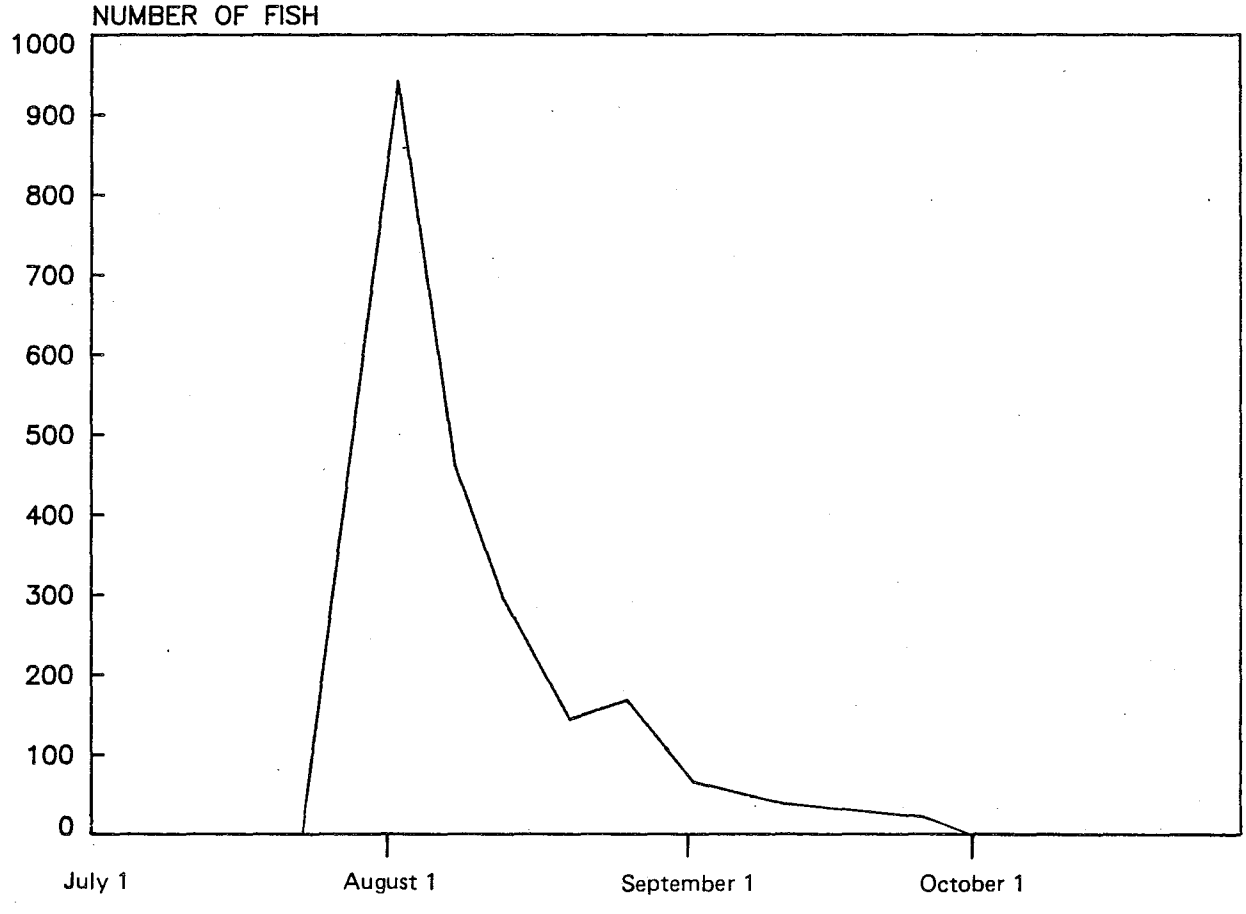


Figure 6.58

Sockeye Salmon
Estimated Fish
Escapement For
Tributary 12.3

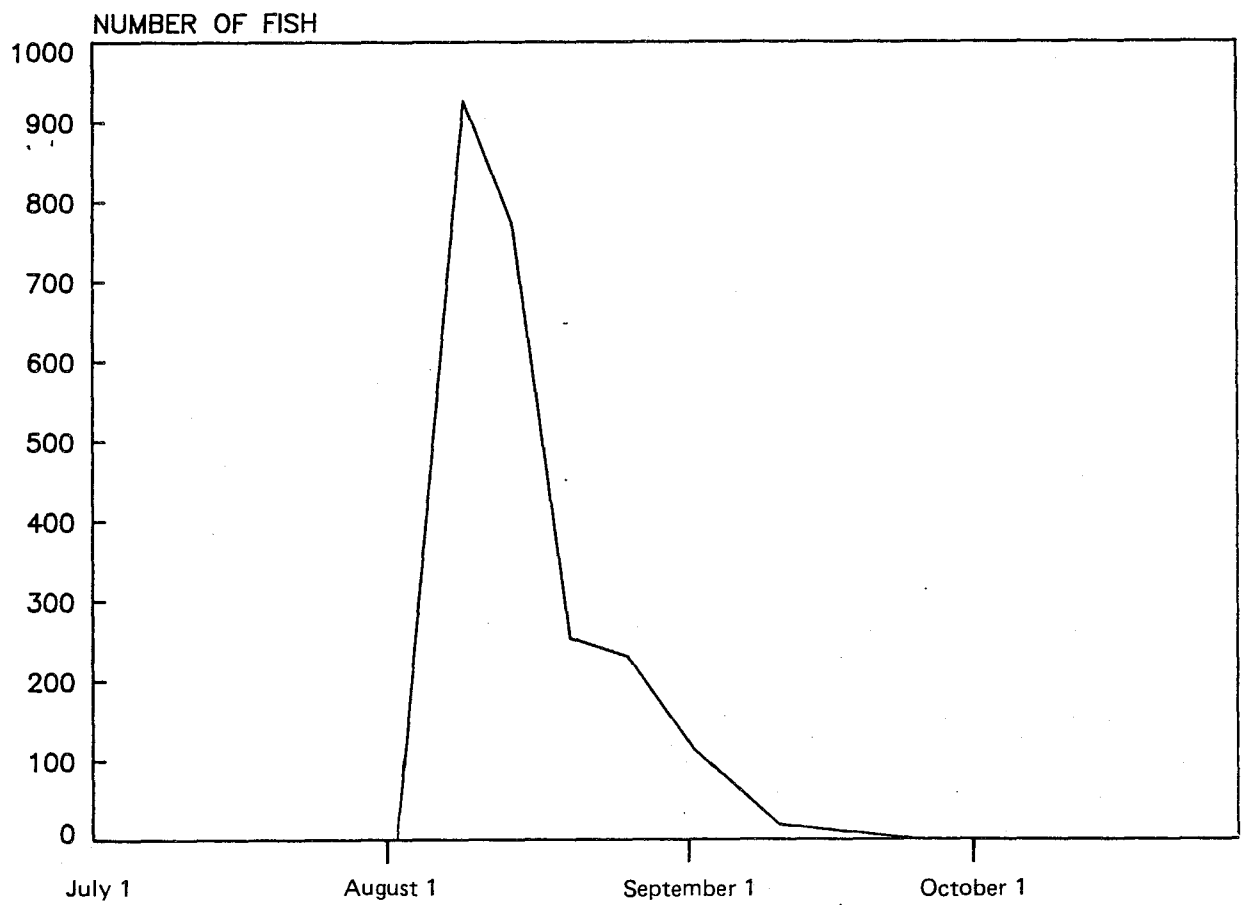


Figure 6.59

Sockeye Salmon
Estimated Fish
Escapement For
Tributary 12.4

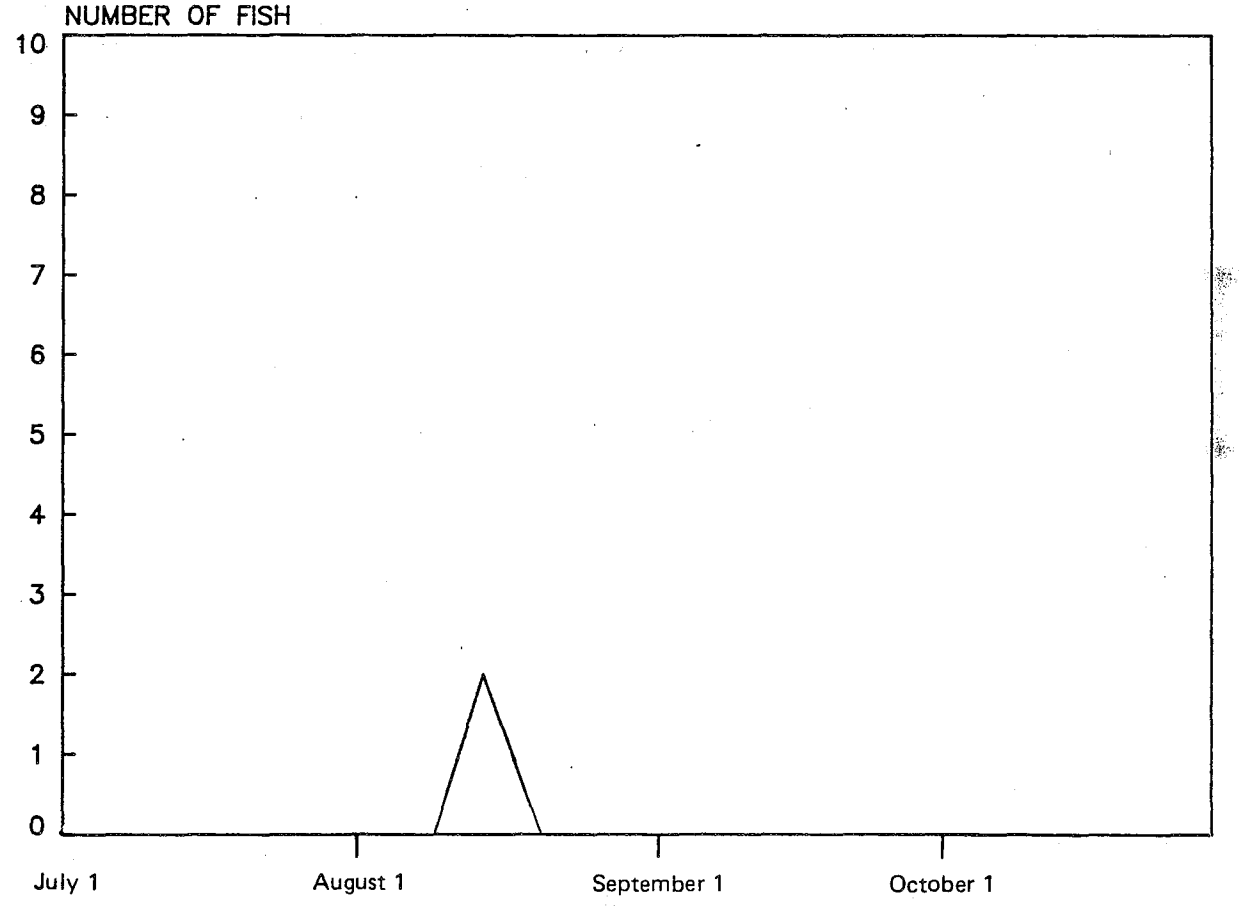


Figure 6.60

Sockeye Salmon
Estimated Fish
Escapement For
Tributary 12.5

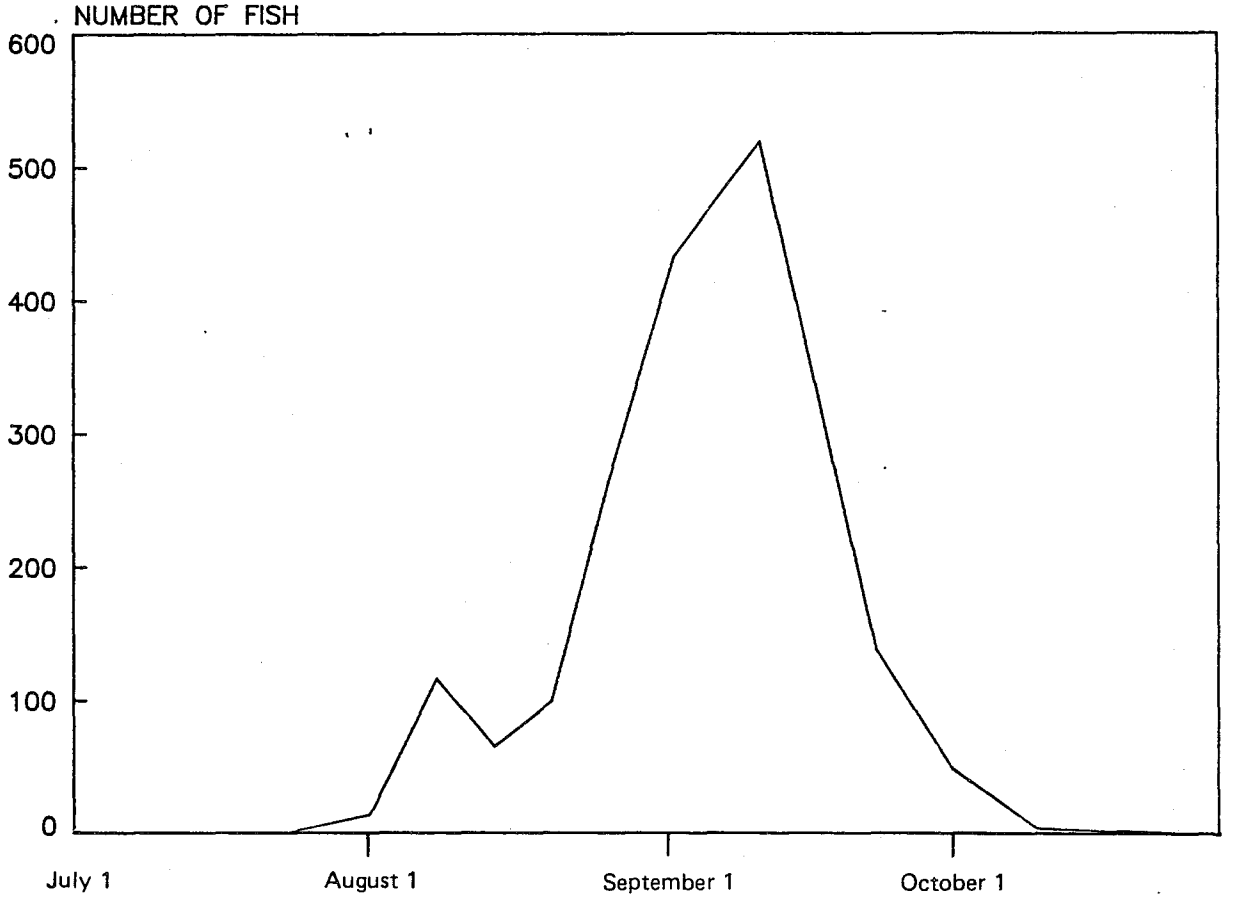


Figure 6.61

Sockeye Salmon
Estimated Fish
Escapement For
Bridge Area
Chakachatna River (17)

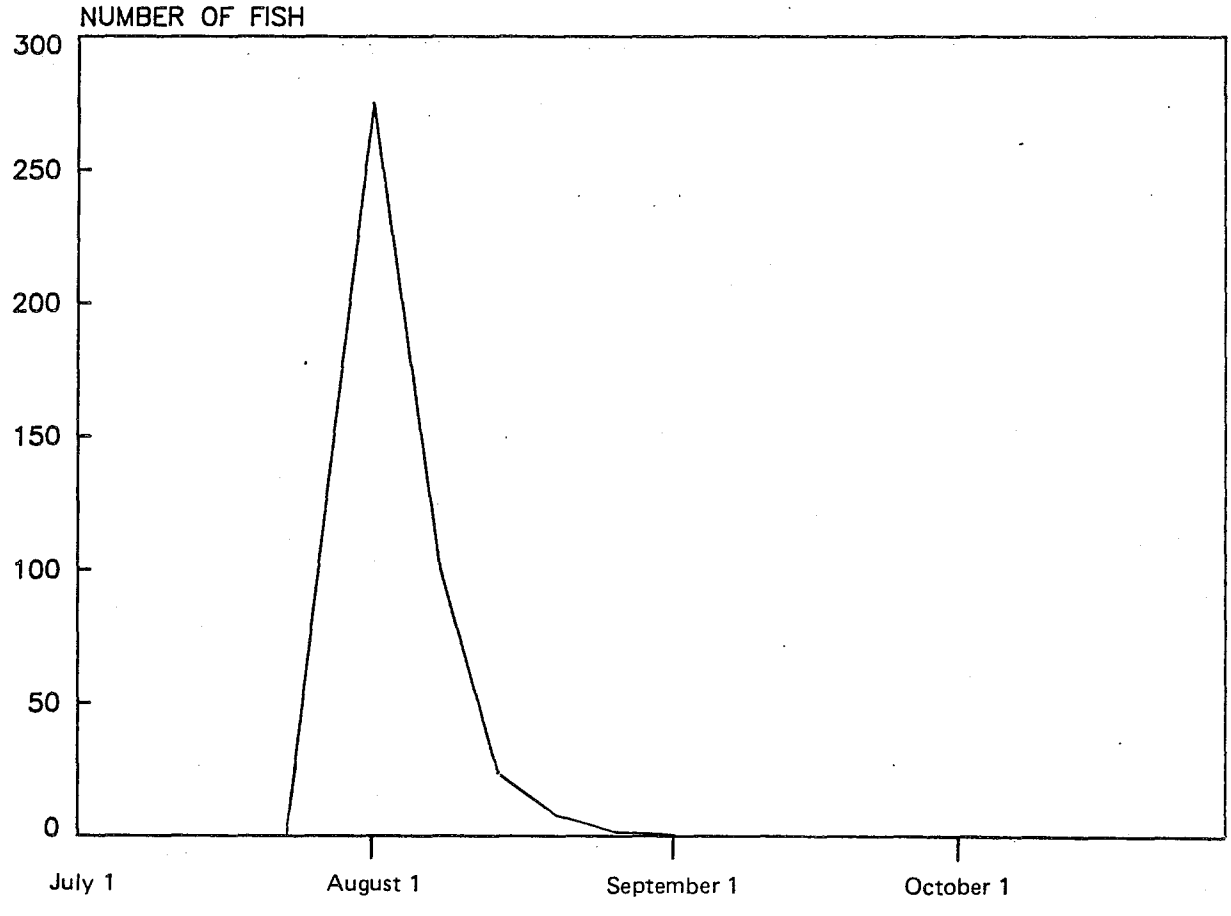


Figure 6.62

Coho Salmon
Estimated Fish
Escapement For
Clearwater Tributary to
Straight Creek (19)

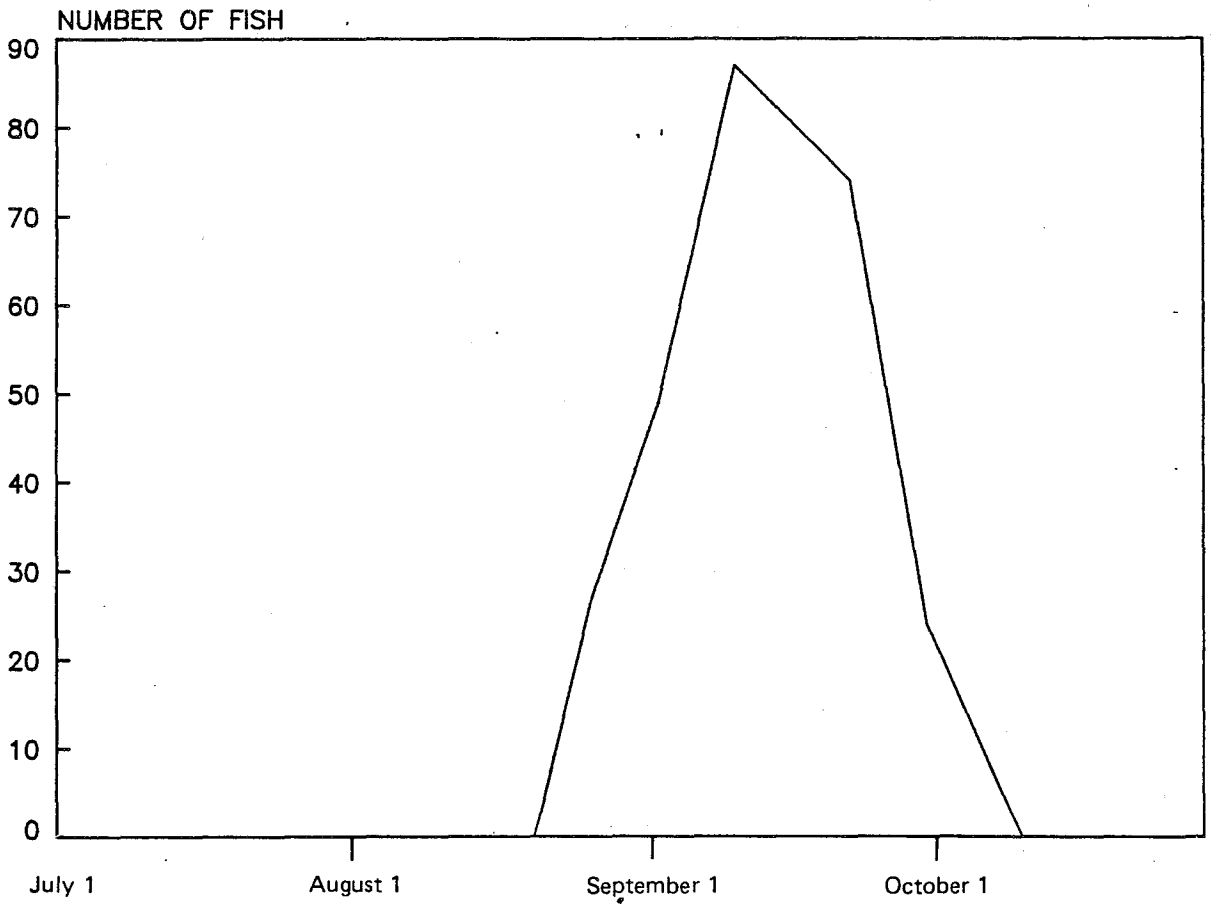


Figure 6.63

Sockeye Salmon
Estimated Fish
Escapement For
Clearwater Tributary
to Straight Creek (19)

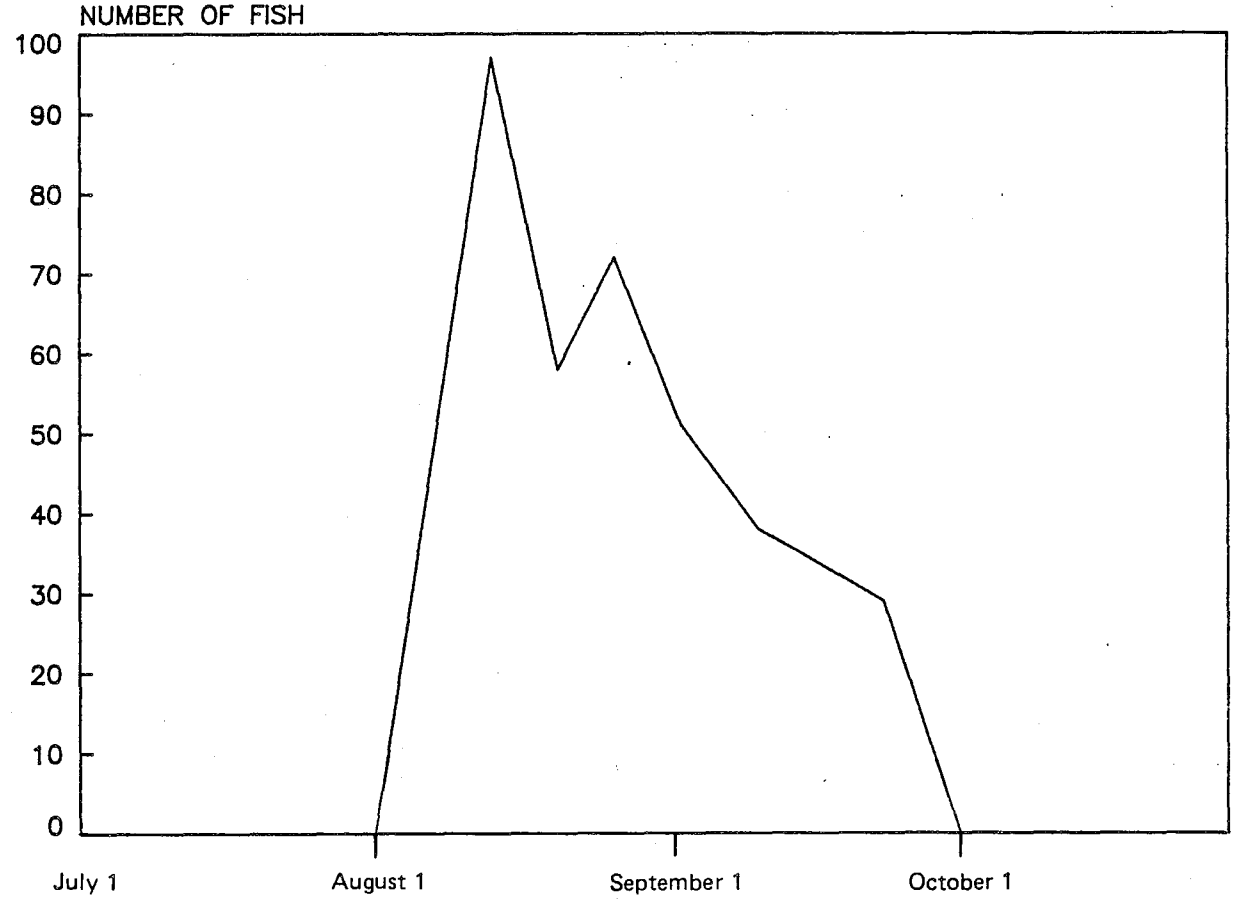


Figure 6.64

Sockeye Salmon
Estimated Fish
Escapement For
Chakachatna River
Tributary (C_1)

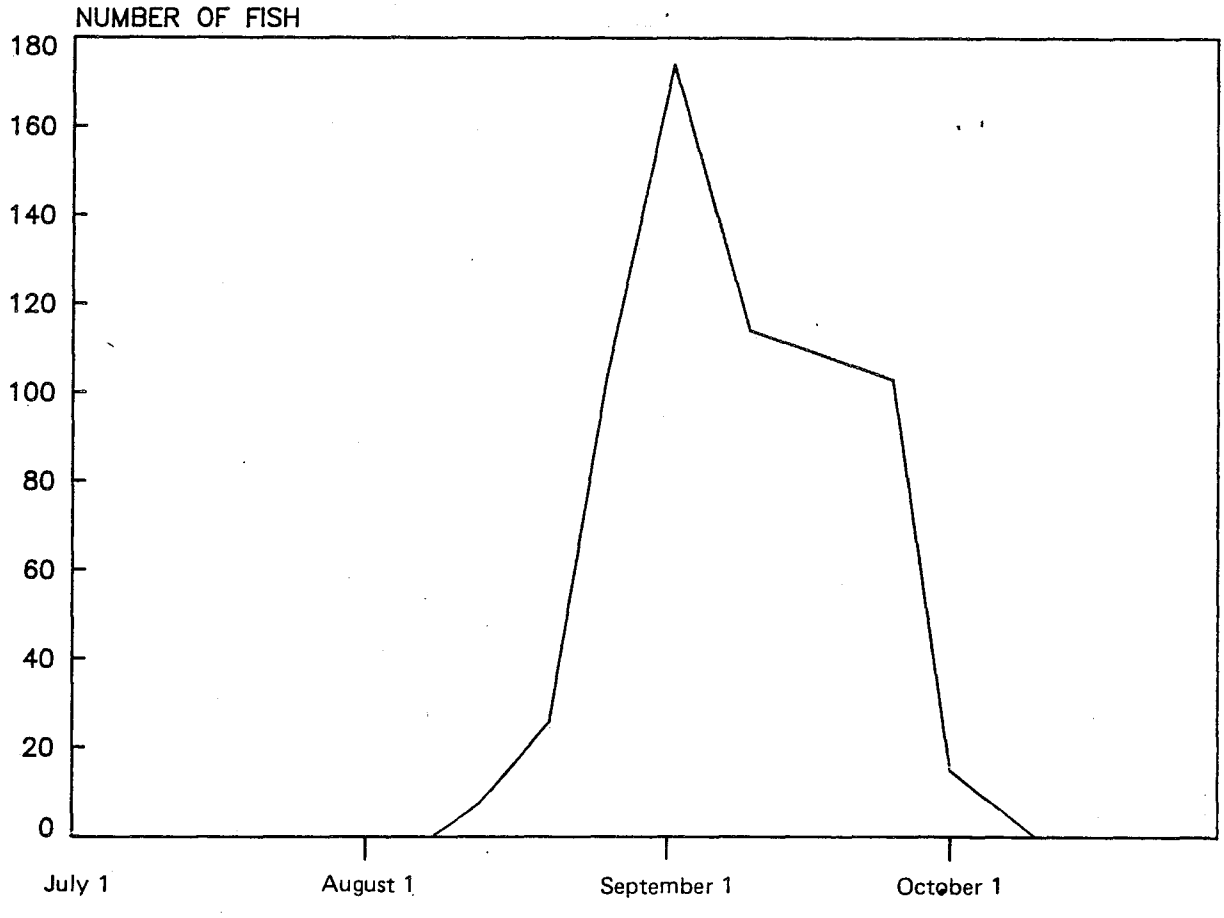


Figure 6.65

Sockeye Salmon
Estimated Fish
Escapement For
Chakachatna River
Canyon Sloughes

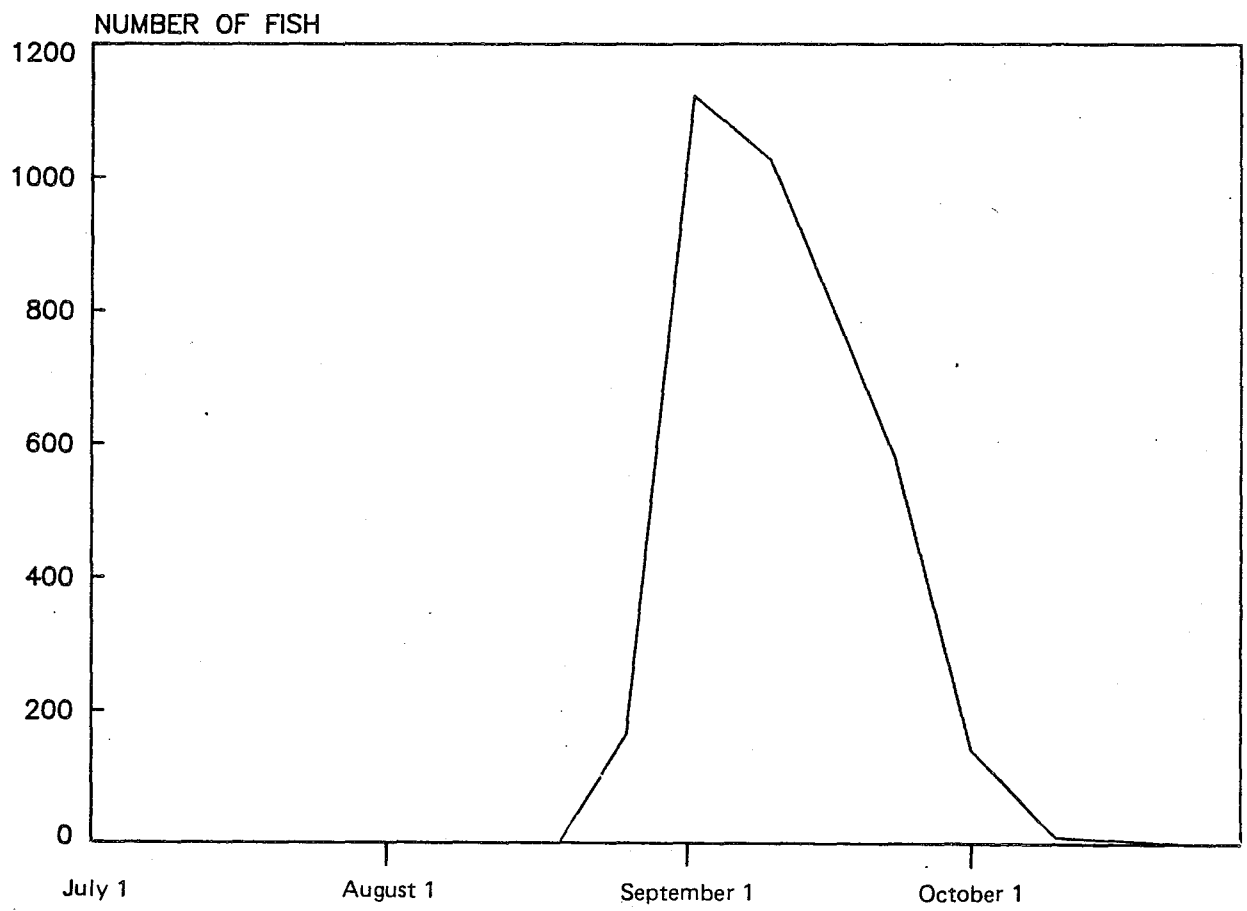


Figure 6.66

Sockeye Salmon
Estimated Fish
Escapement For
Igitna River

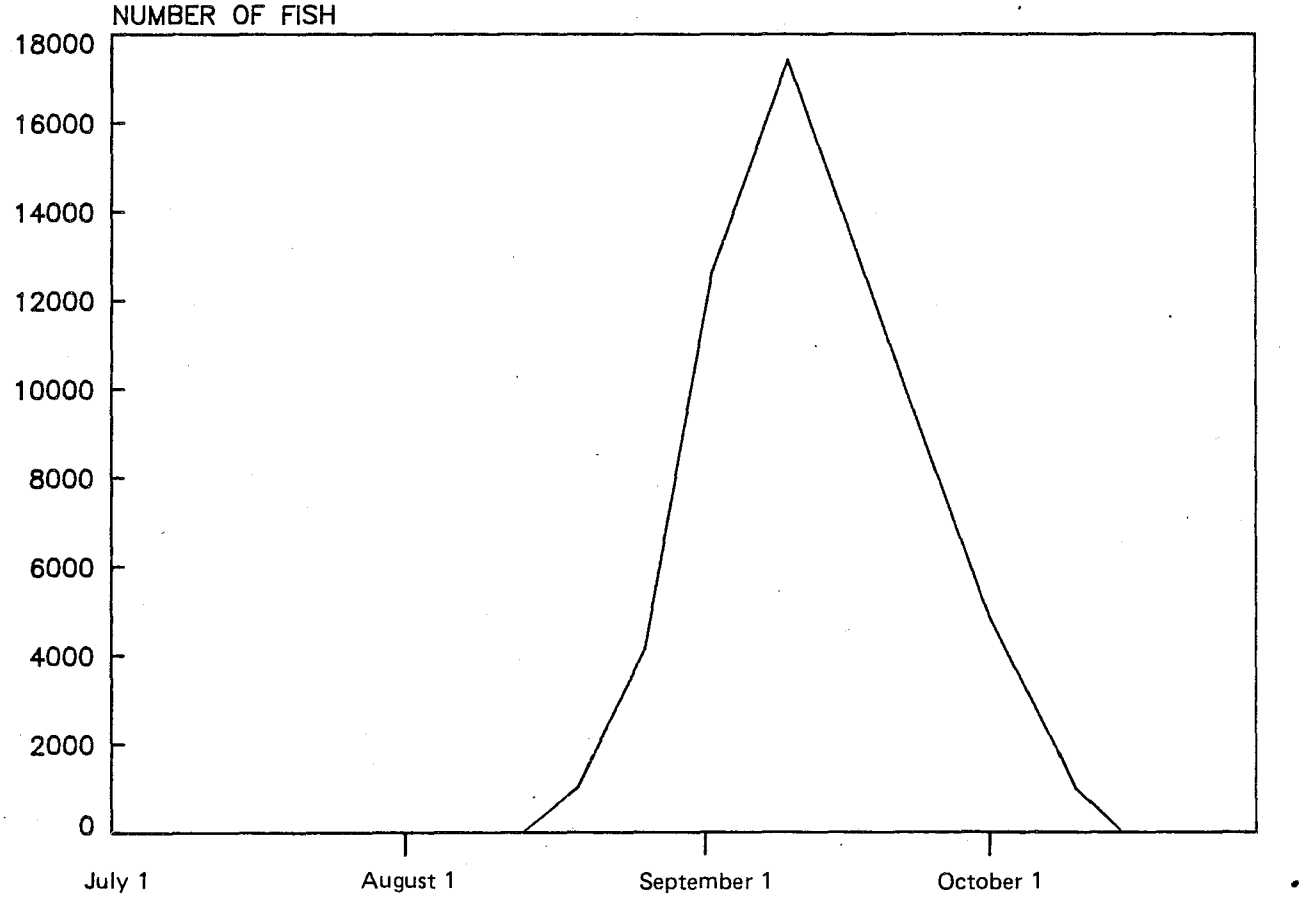


Figure 6.67

Sockeye Salmon
Estimated Fish
Escapement For
Chilligan River

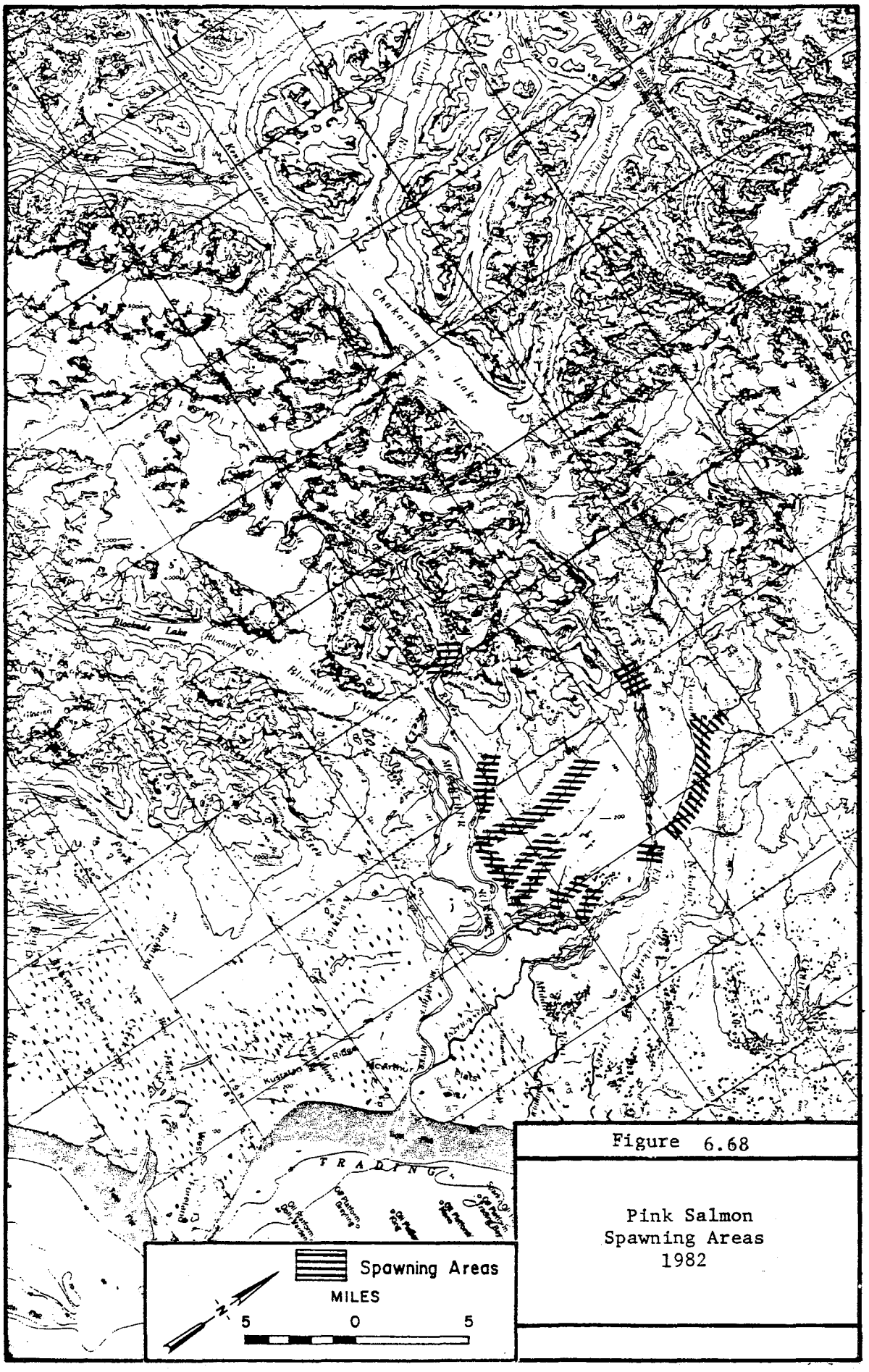


Figure 6.68

Pink Salmon
Spawning Areas
1982

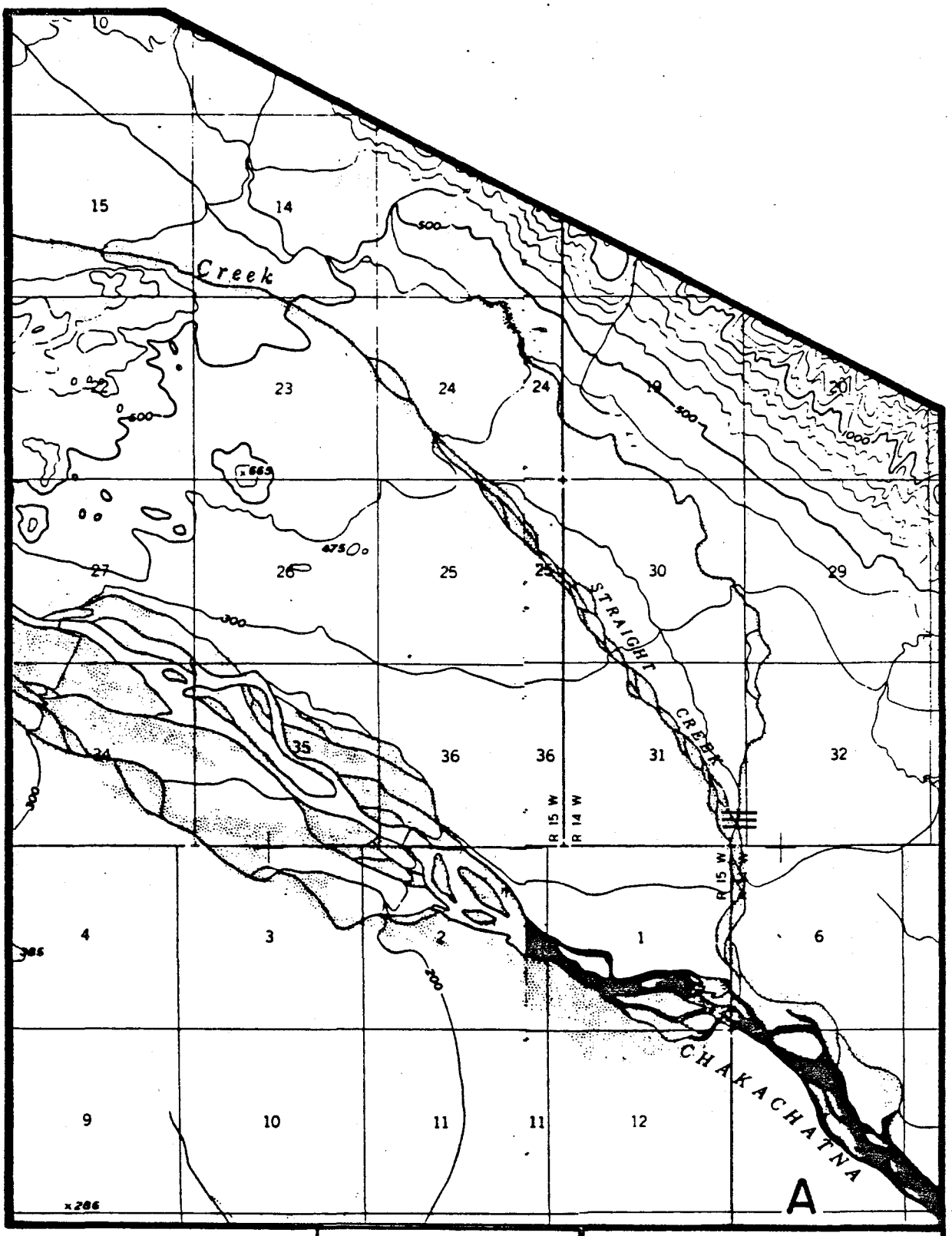


Figure 6.69

Pink Salmon Milling
Area Stream 19
1982

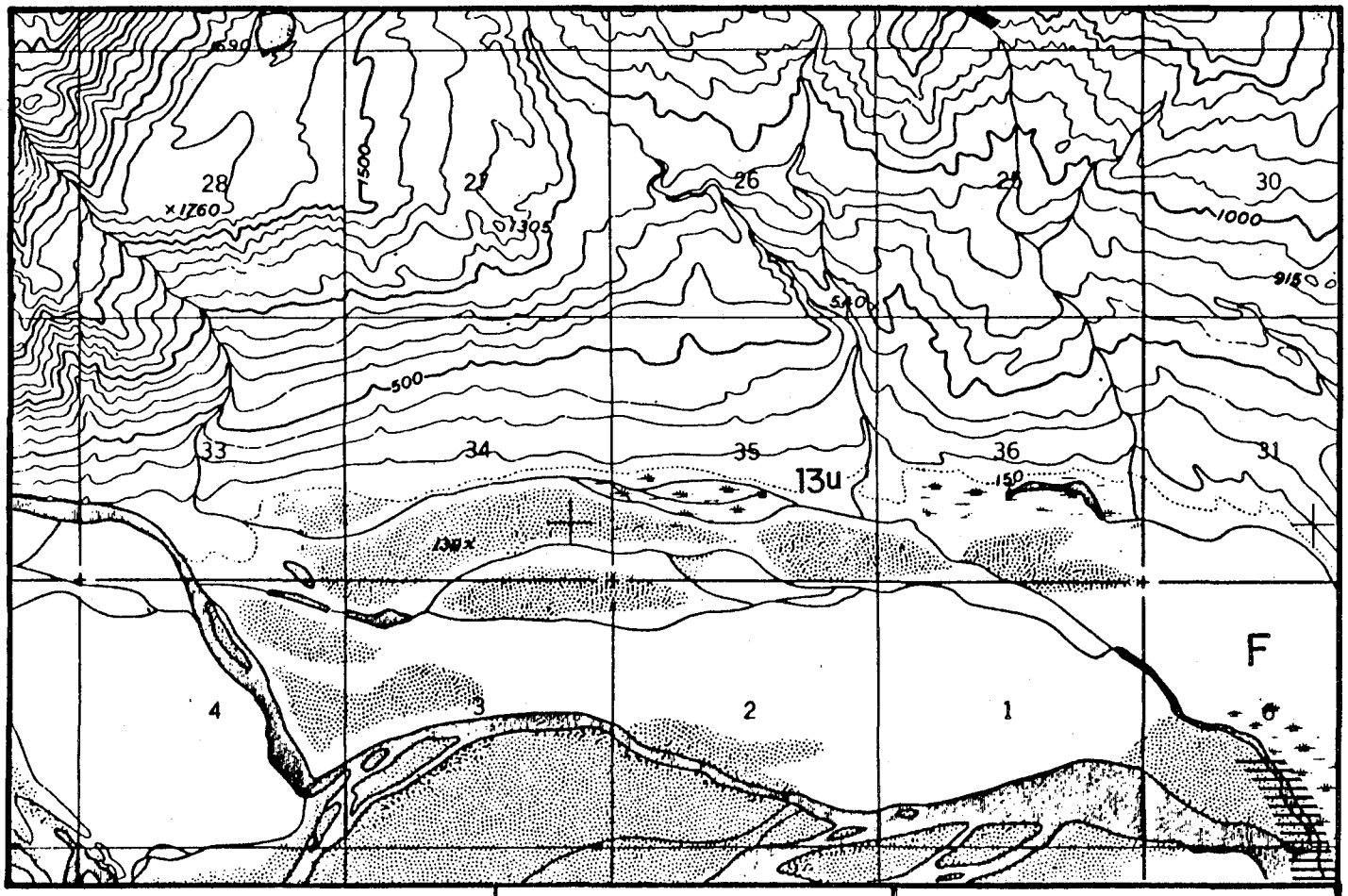
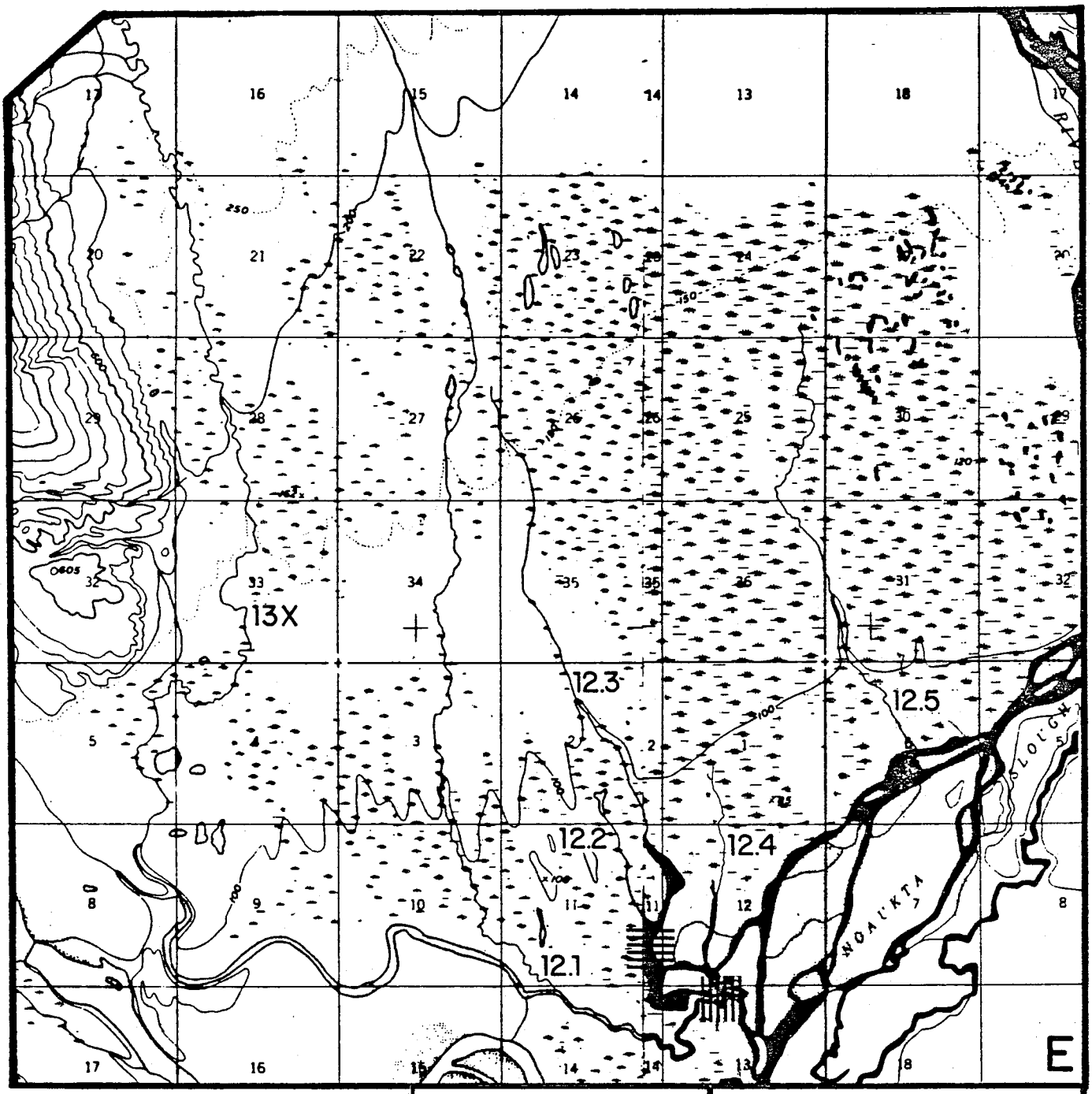


Figure 6.70

Pink Salmon
Milling Area
Stream 13u
1982



Milling Areas

MILES
0 1/2 1

N

Figure 6.71

Pink Salmon
Milling Areas
Streams 12.1, 12.2, 12.3
1982

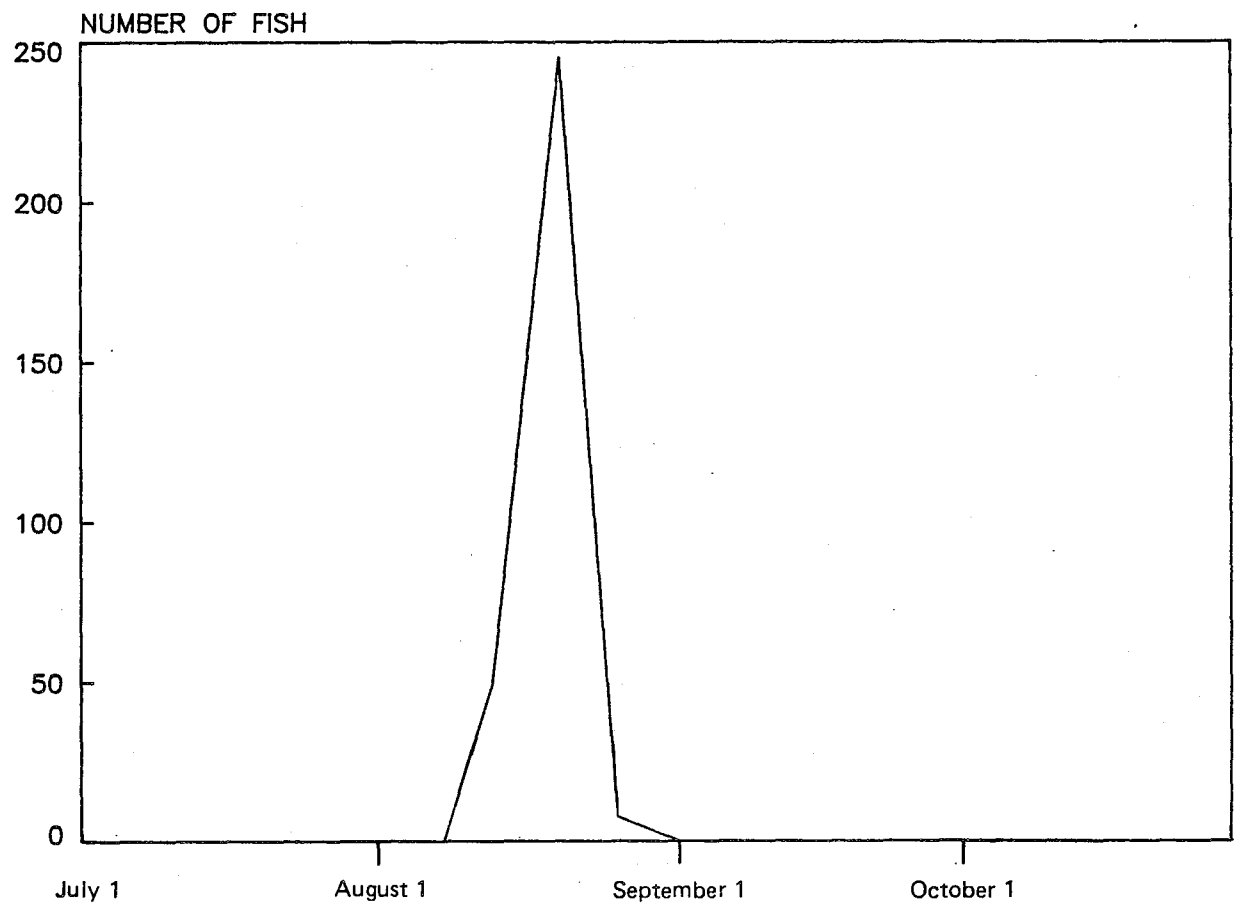


Figure 6.72

Pink Salmon
Estimated Fish
Escapement For
Chakachatna River
Canyon Sloughes

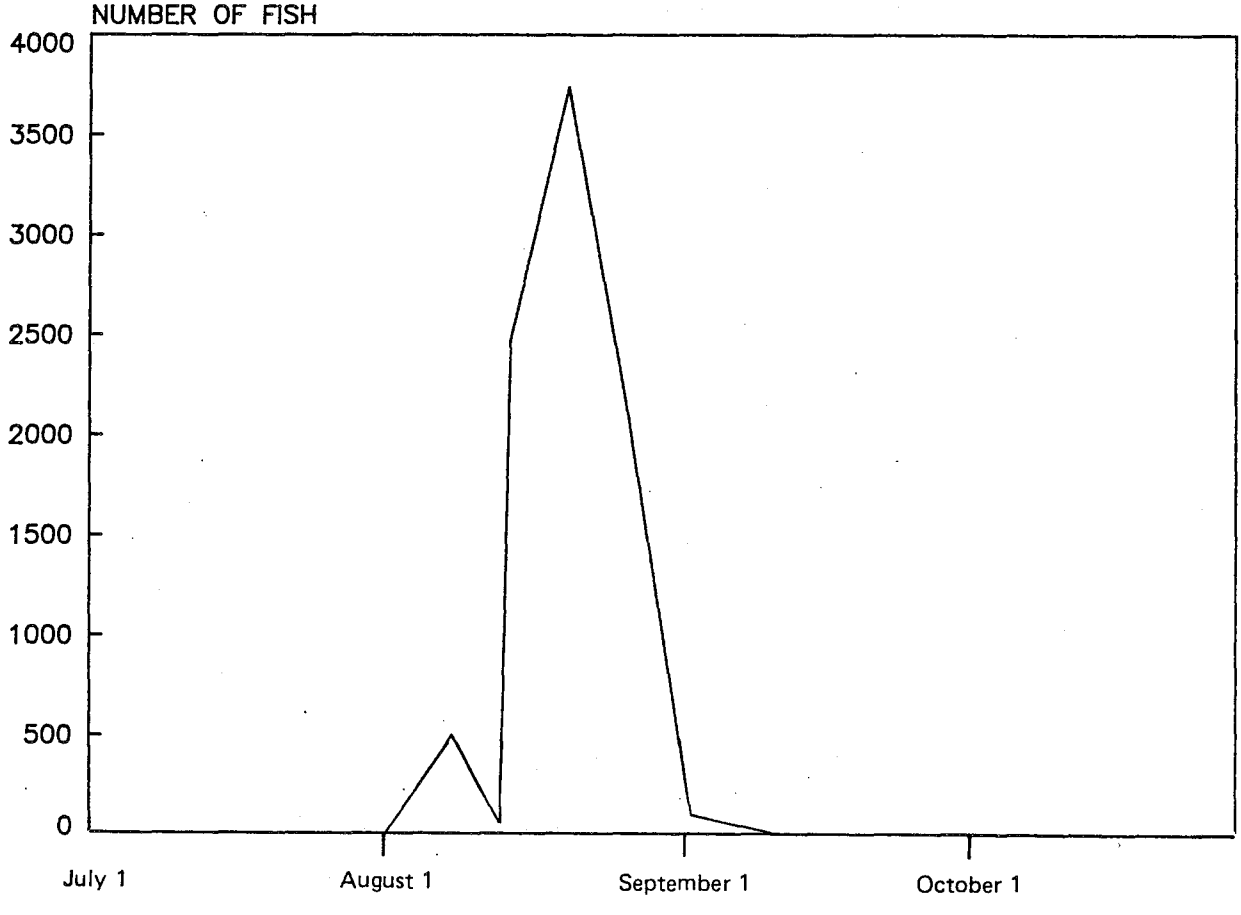


Figure 6.73

Pink Salmon
Estimated Fish
Escapement For
Cleanwater Tributary to
Straight Creek (19)

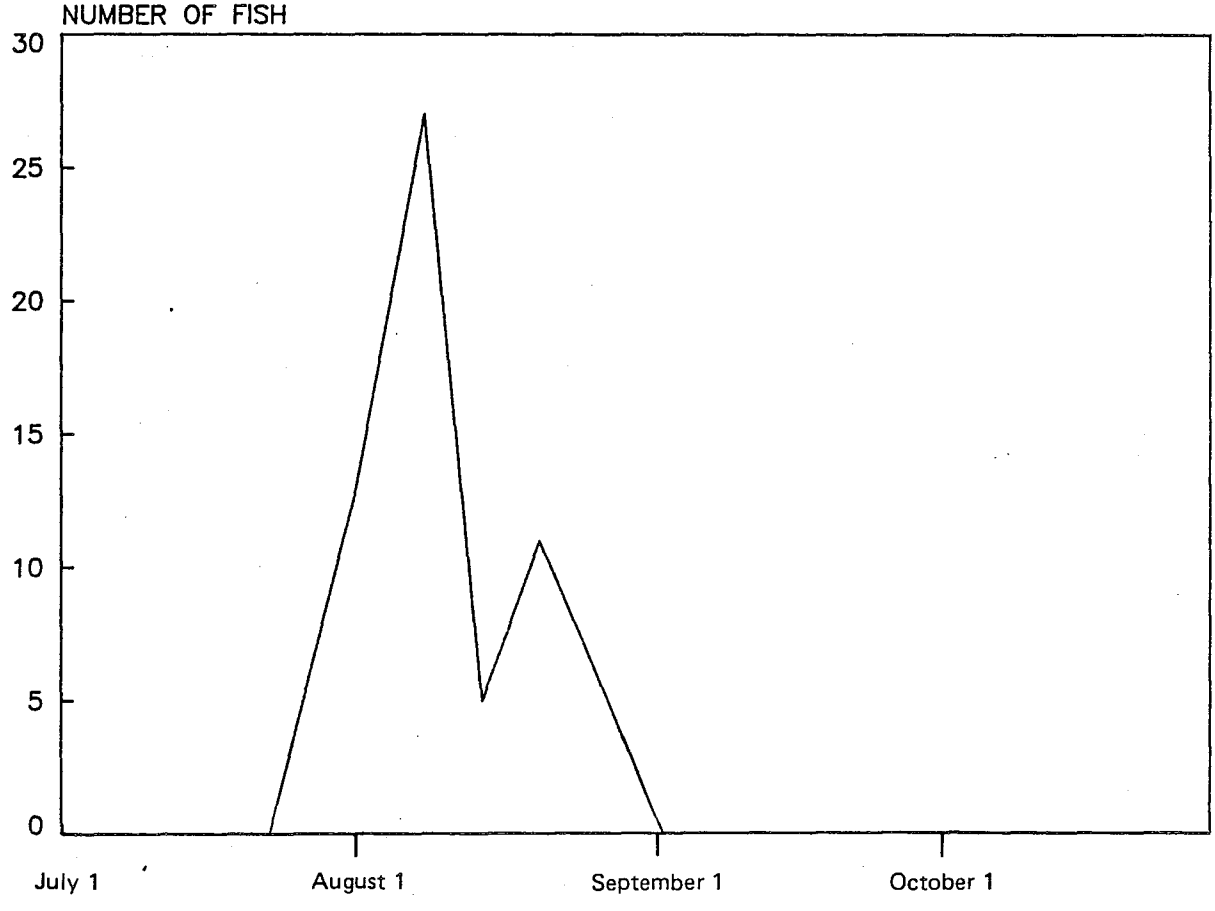


Figure 6.74

Pink Salmon
Estimated Fish
Escapement For
Bridge Area
Chakachatna River (17)

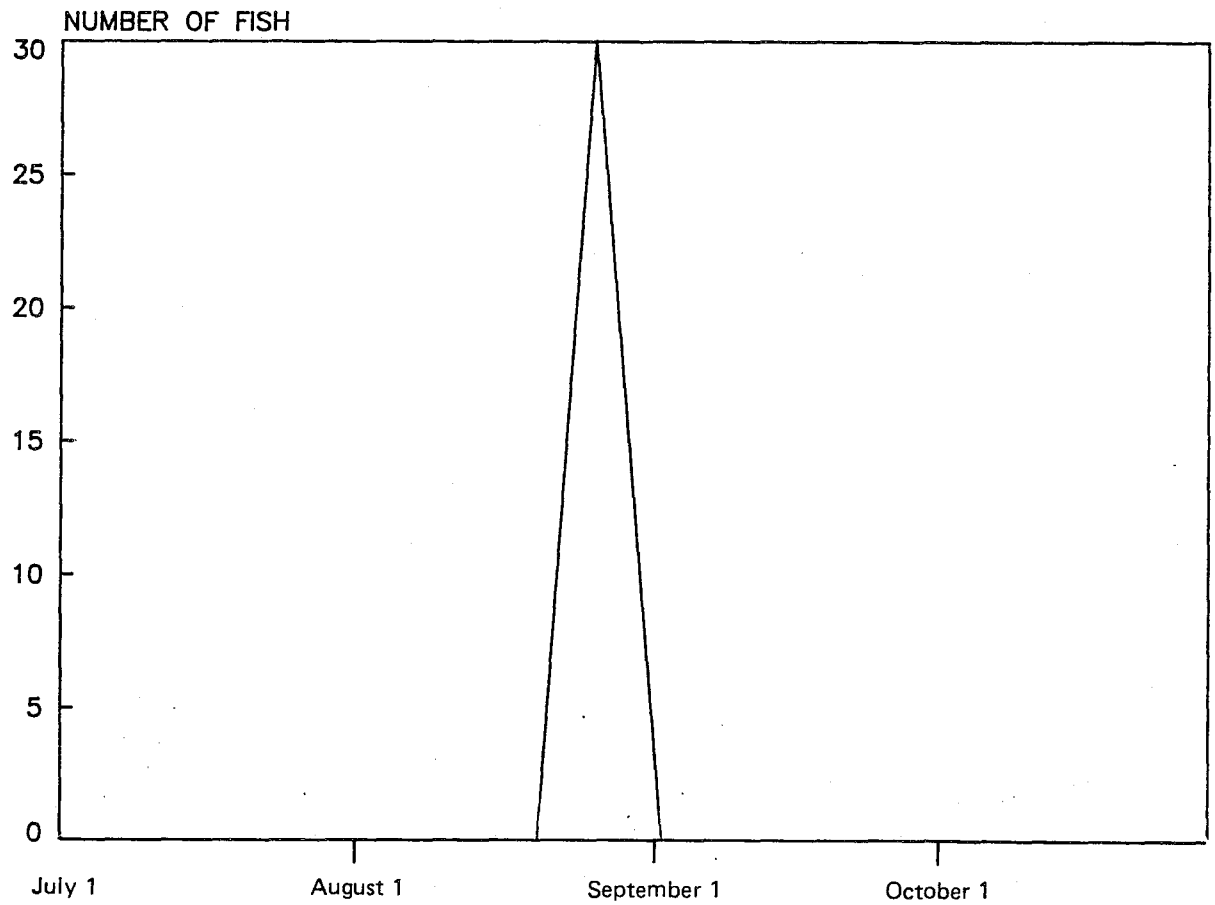


Figure 6.75

Pink Salmon
Estimated Fish
Escapement For
McArthur River
Canyon

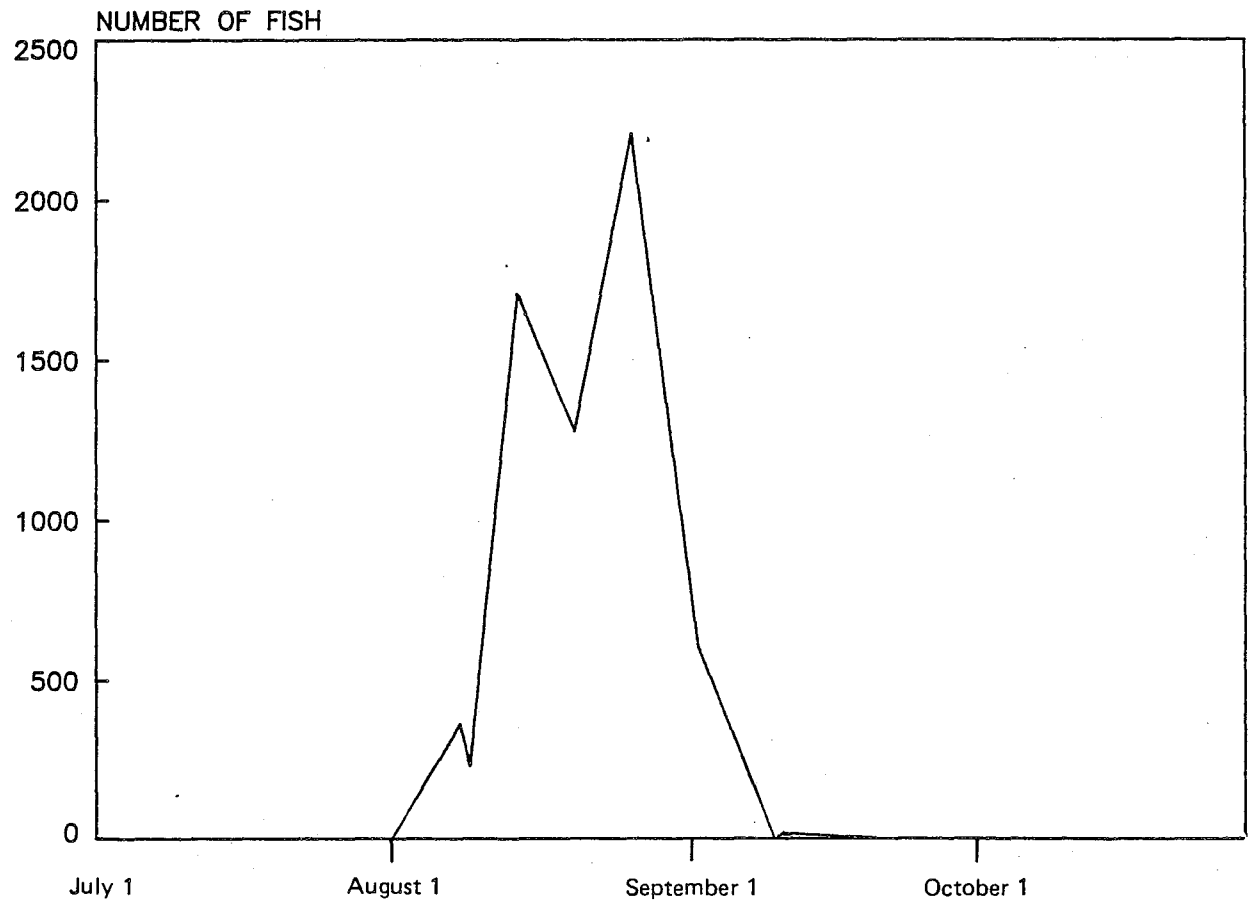


Figure 6.76

Pink Salmon
Estimated Fish
Escapement For
McArthur River
Upper Tributary (13U)

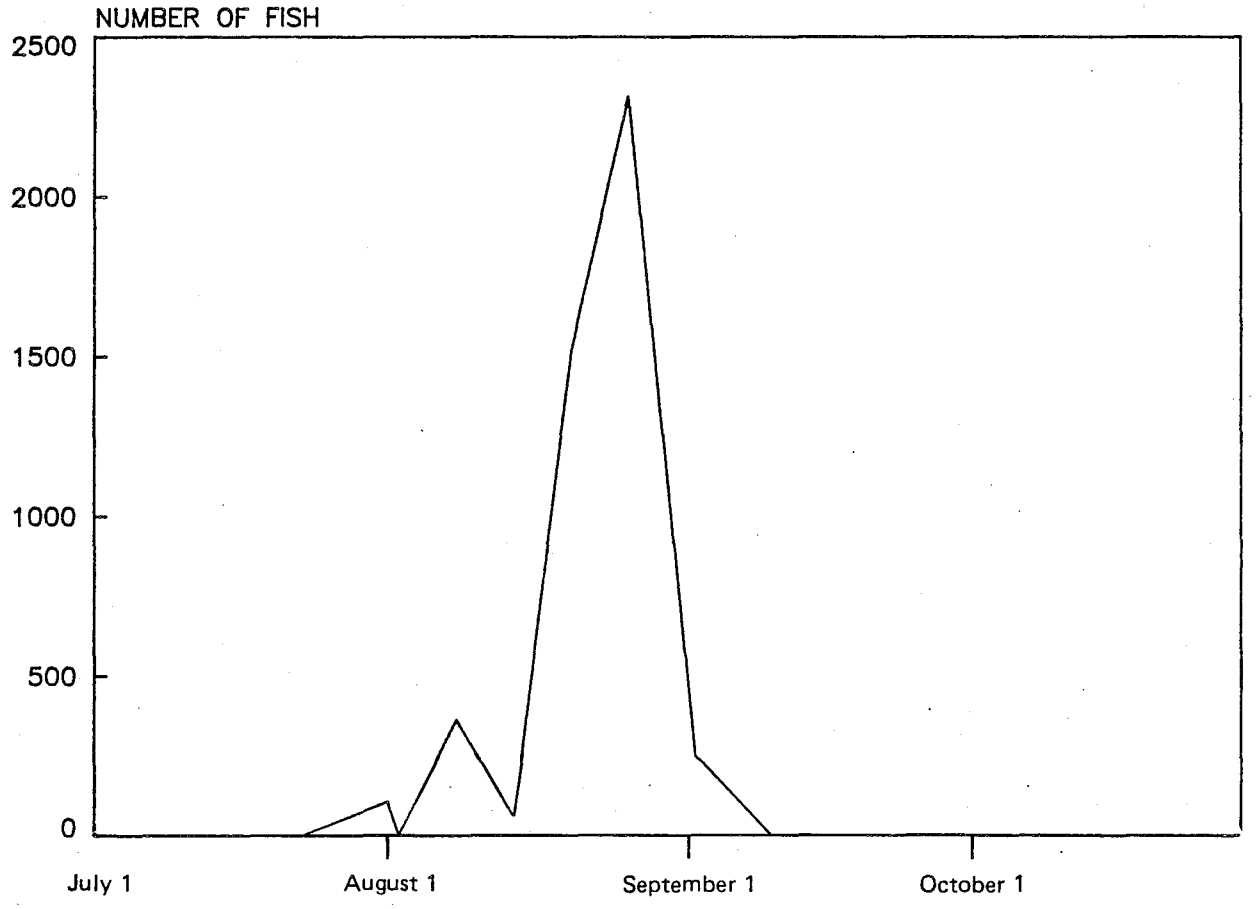


Figure 6.77

Pink Salmon
Estimated Fish
Escapement For
McArthur River
Oxbow Creek (13X)

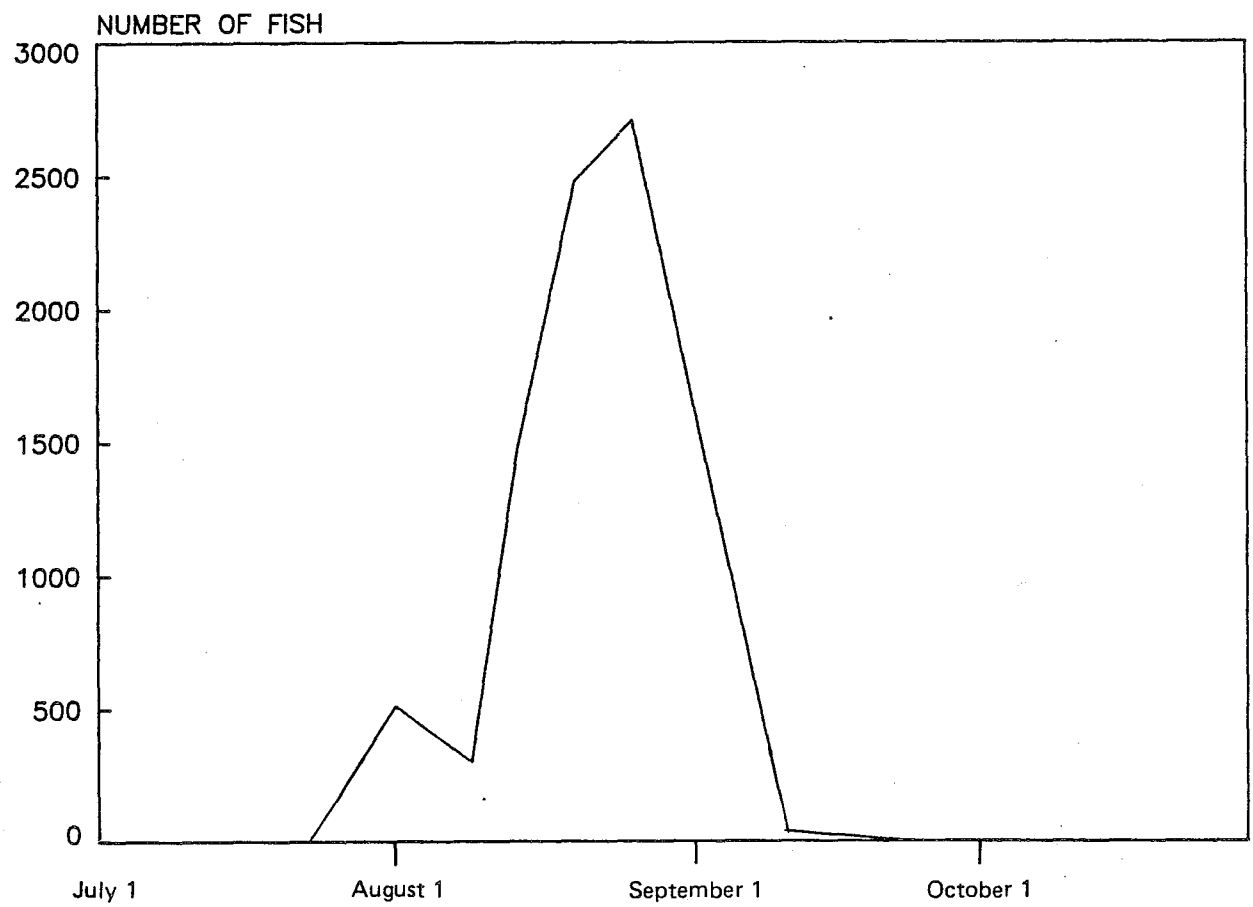


Figure 6.78

Pink Salmon
Estimated Fish
Escapement For
Tributary 12.1

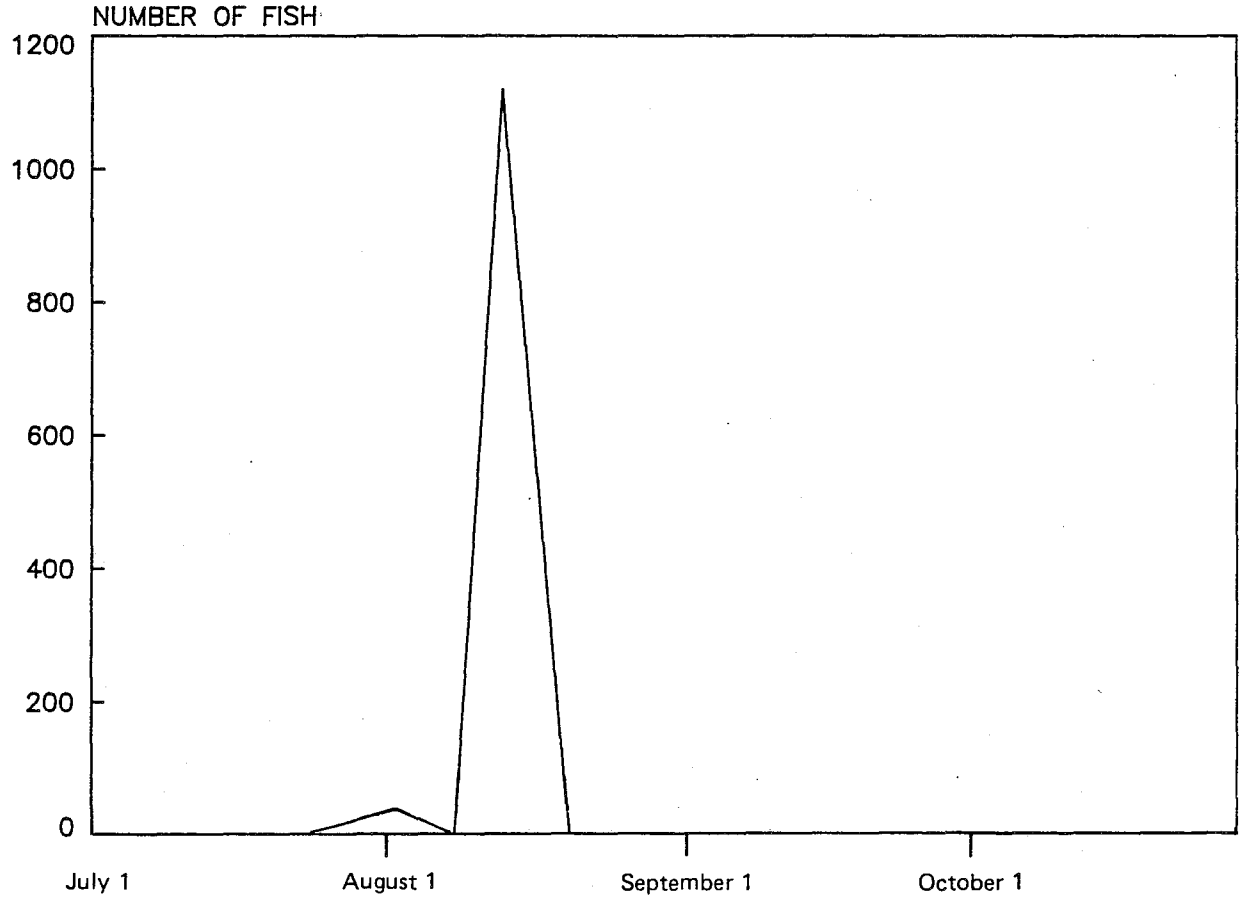


Figure 6.79

Pink Salmon
Estimated Fish
Escapement For
Tributary 12.2

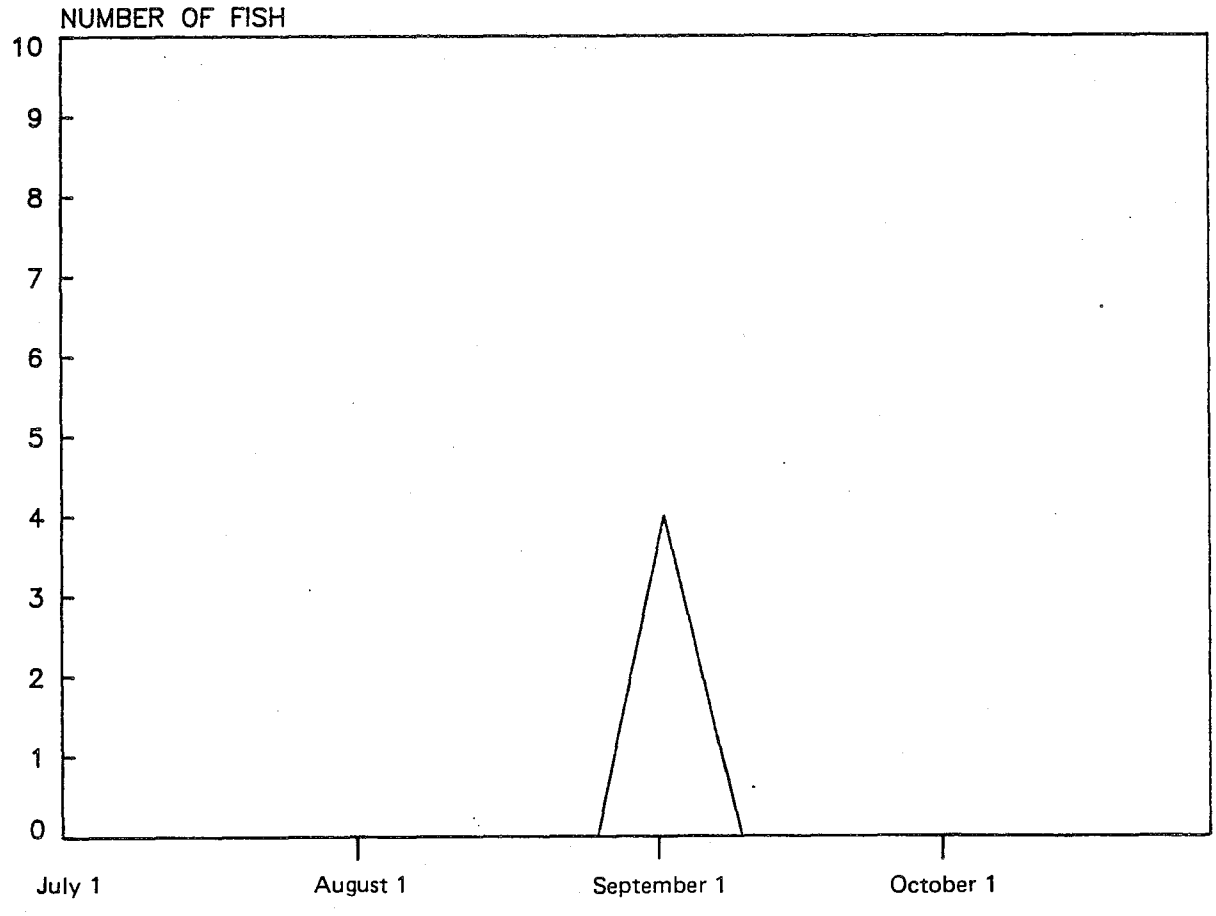


Figure 6.80

Pink Salmon
Estimated Fish
Escapement For
Tributary 12.3

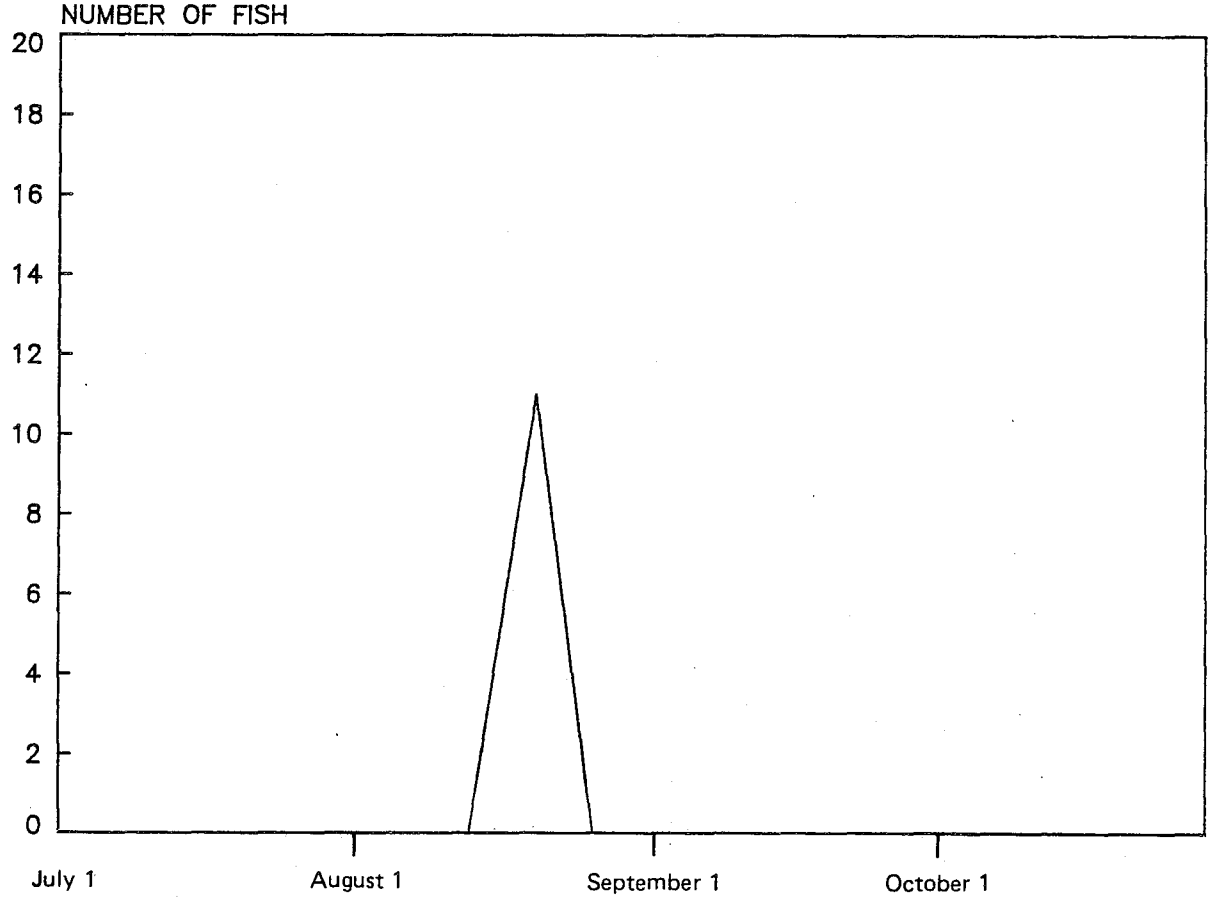


Figure 6.81

Pink Salmon
Estimated Fish
Escapement For
Tributary 12.4

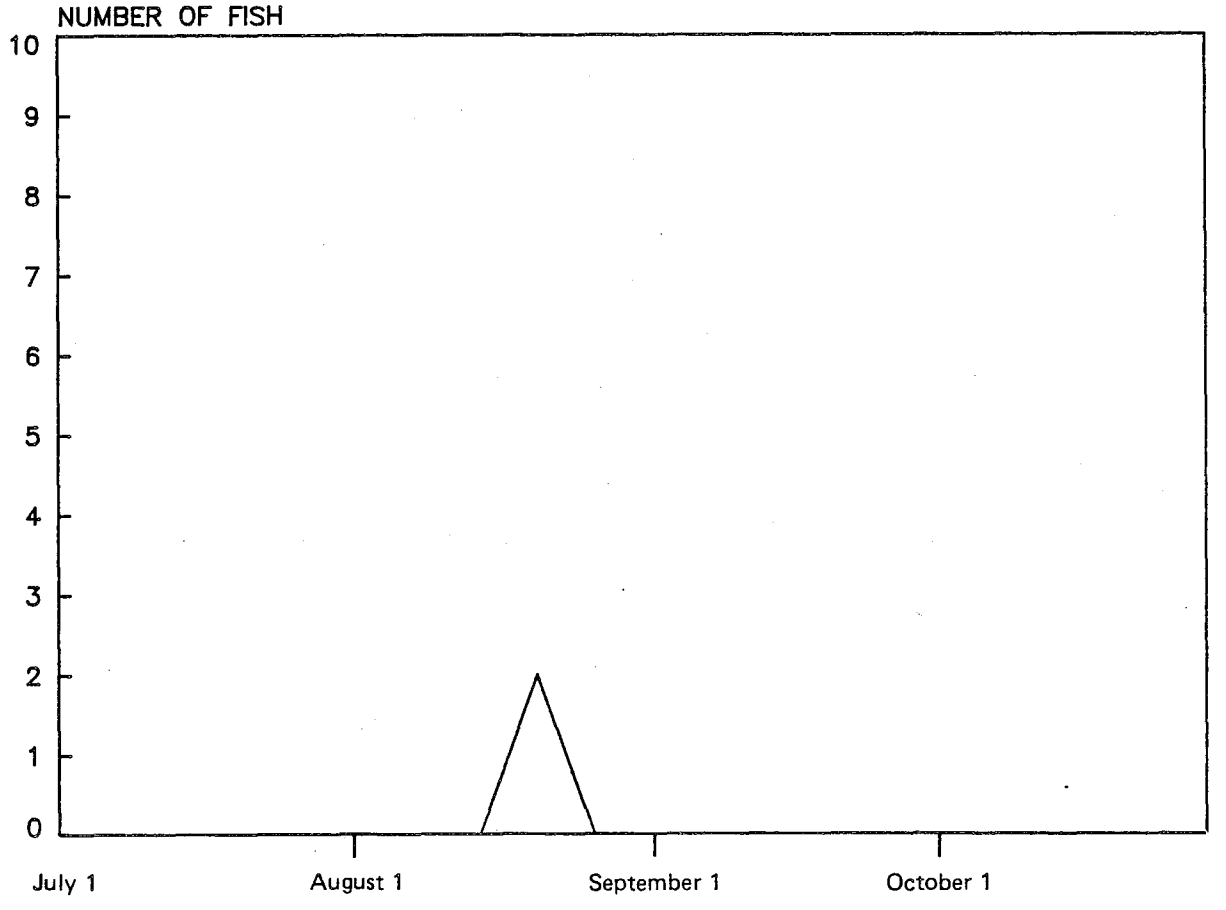


Figure 6.82

Pink Salmon
Estimated Fish
Escapement For
Tributary 12.5

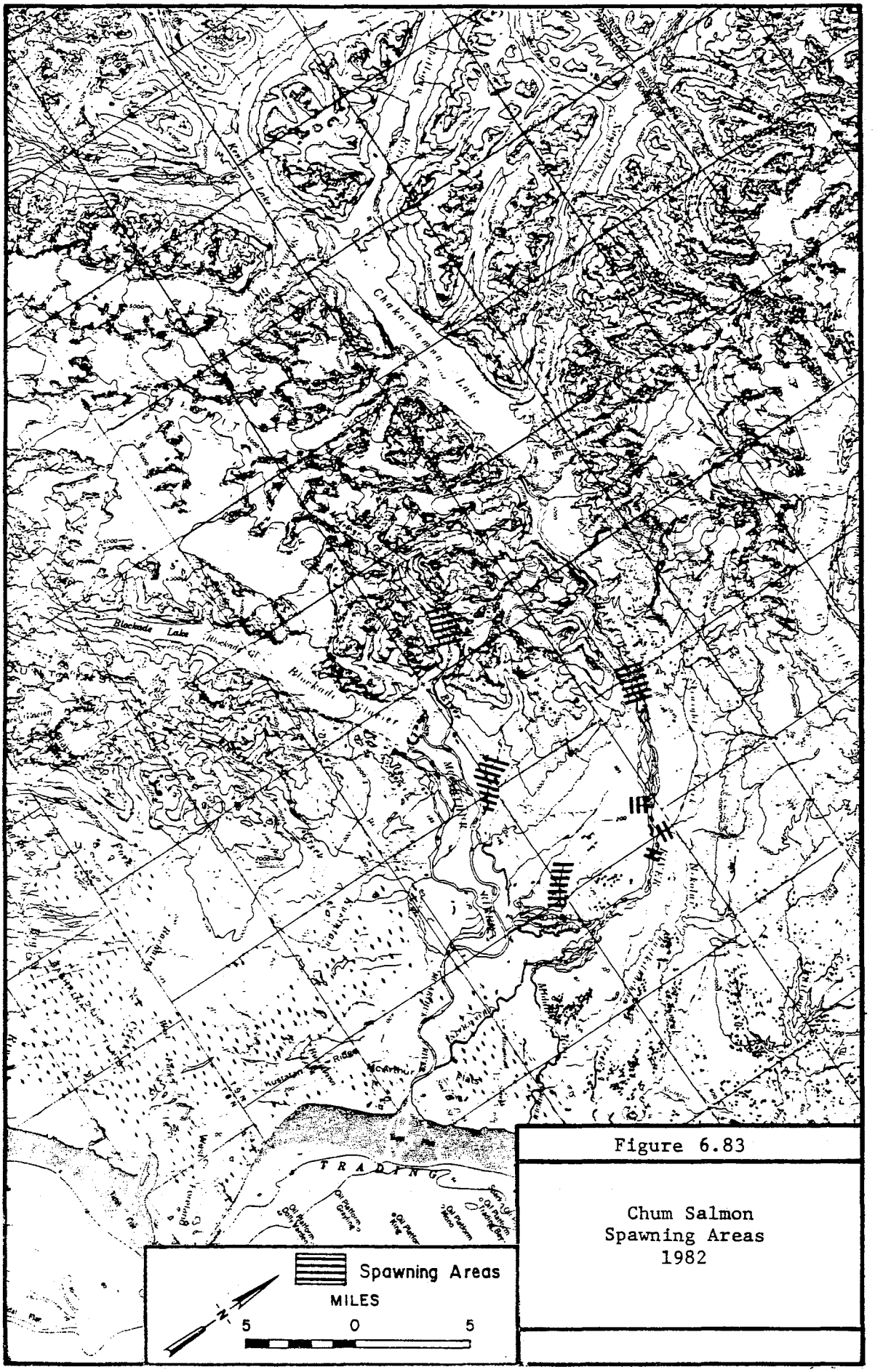


Figure 6.83

Chum Salmon
Spawning Areas
1982

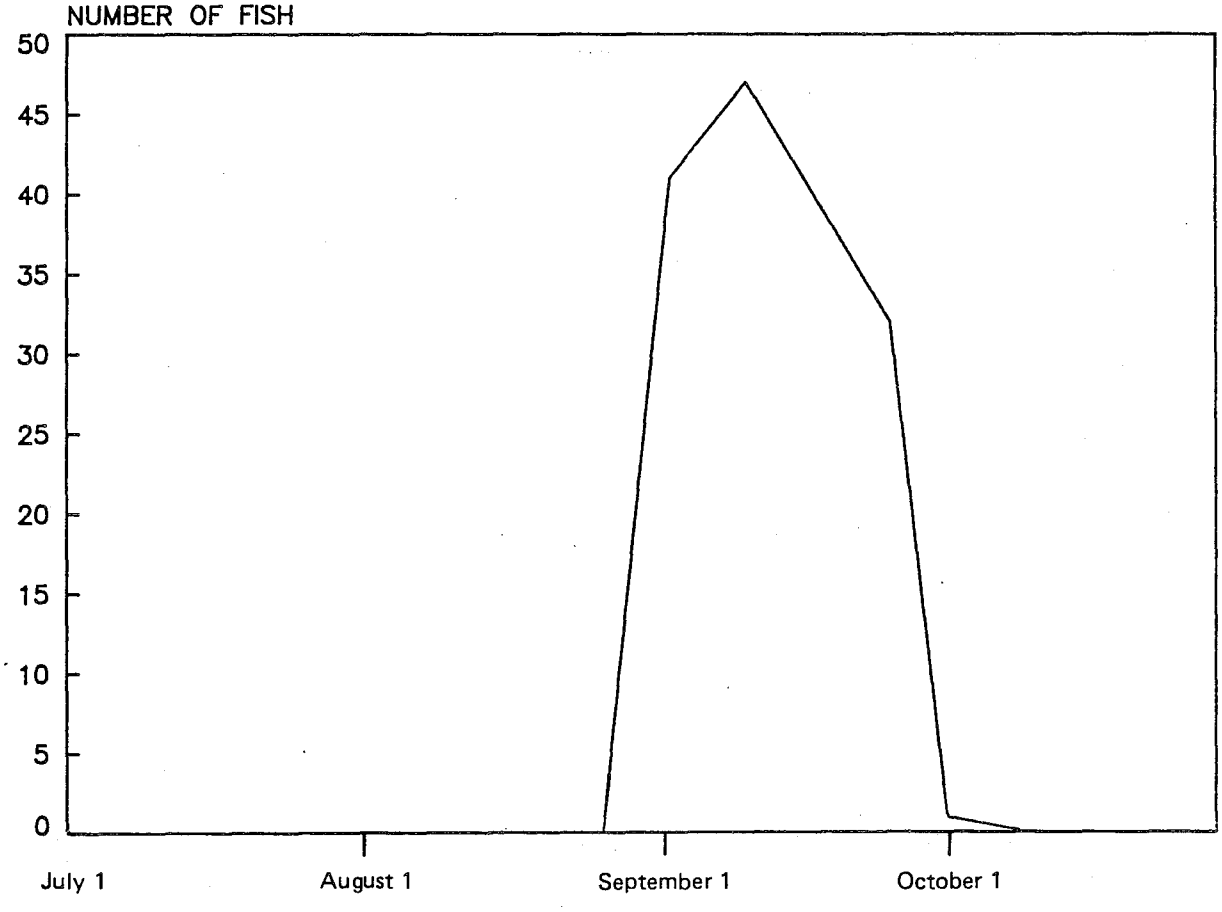


Figure 6.84

Chum Salmon
Estimated Fish
Escapement For
Chakachatna River
Canyon Sloughes

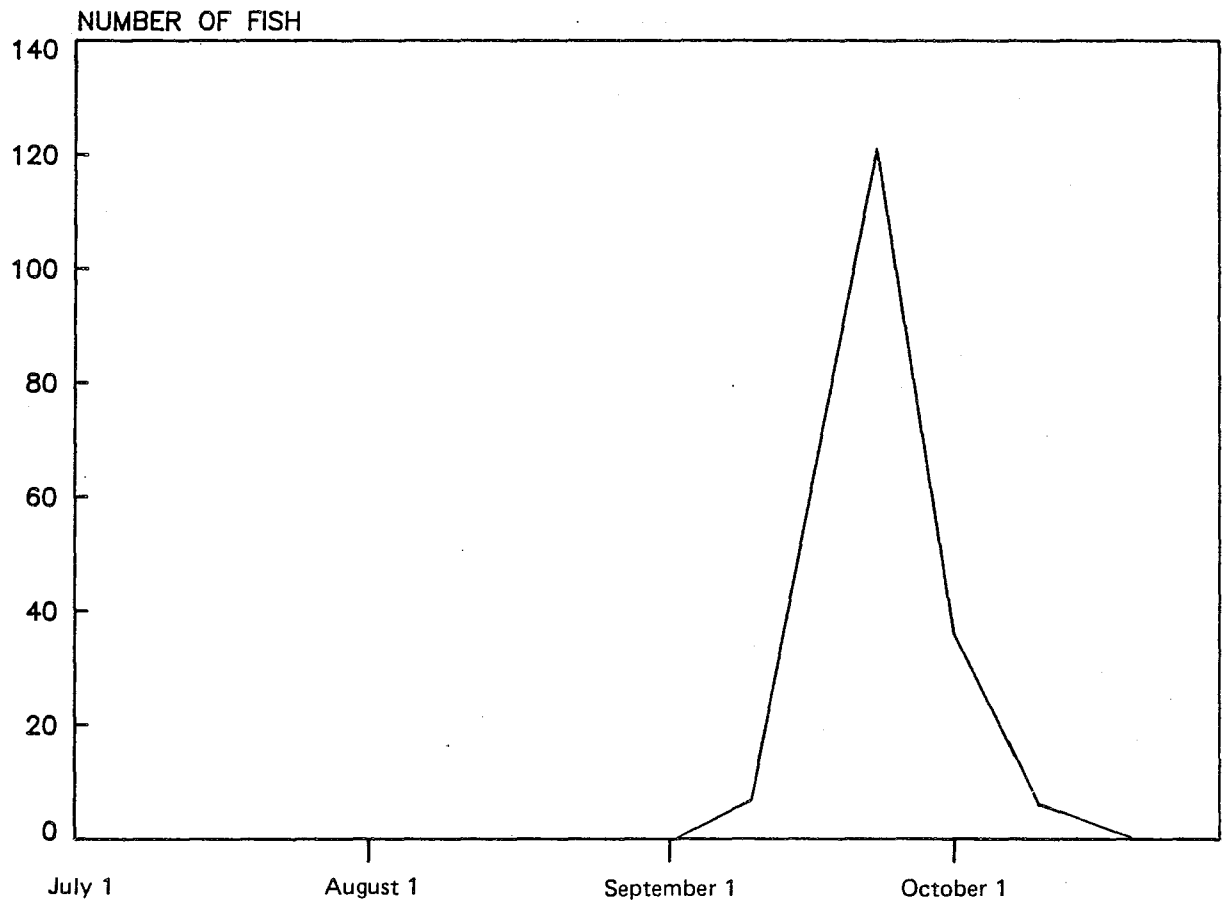


Figure 6.85

Chum Salmon
Estimated Fish
Escapement For
Chakachatna River
Tributary (C_1)

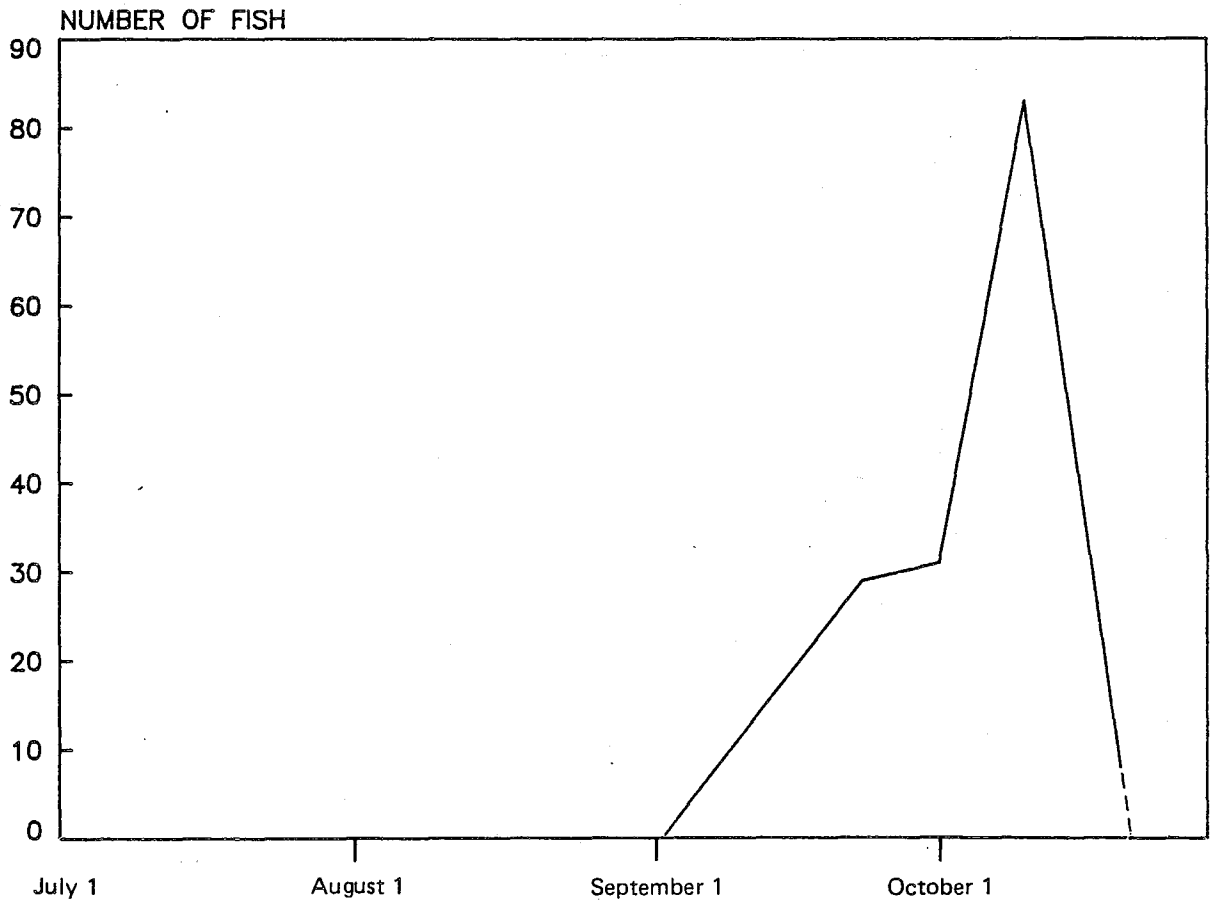


Figure 6.86

Chum Salmon
Estimated Fish
Escapement For
Straight Creek
Mouth Sloughes

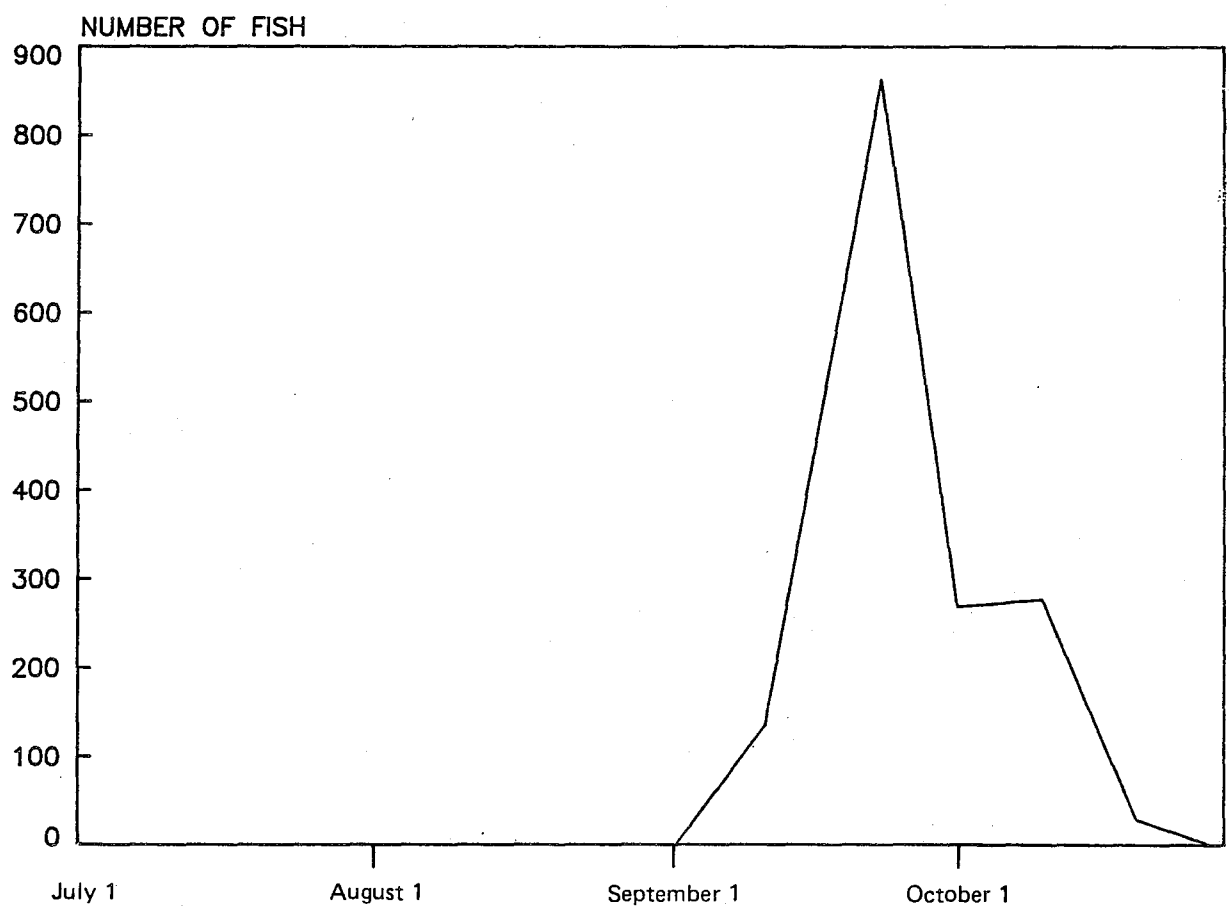


Figure 6.87

Chum Salmon
Estimated Fish
Escapement For
Bridge Area
Chakachatna River (17)

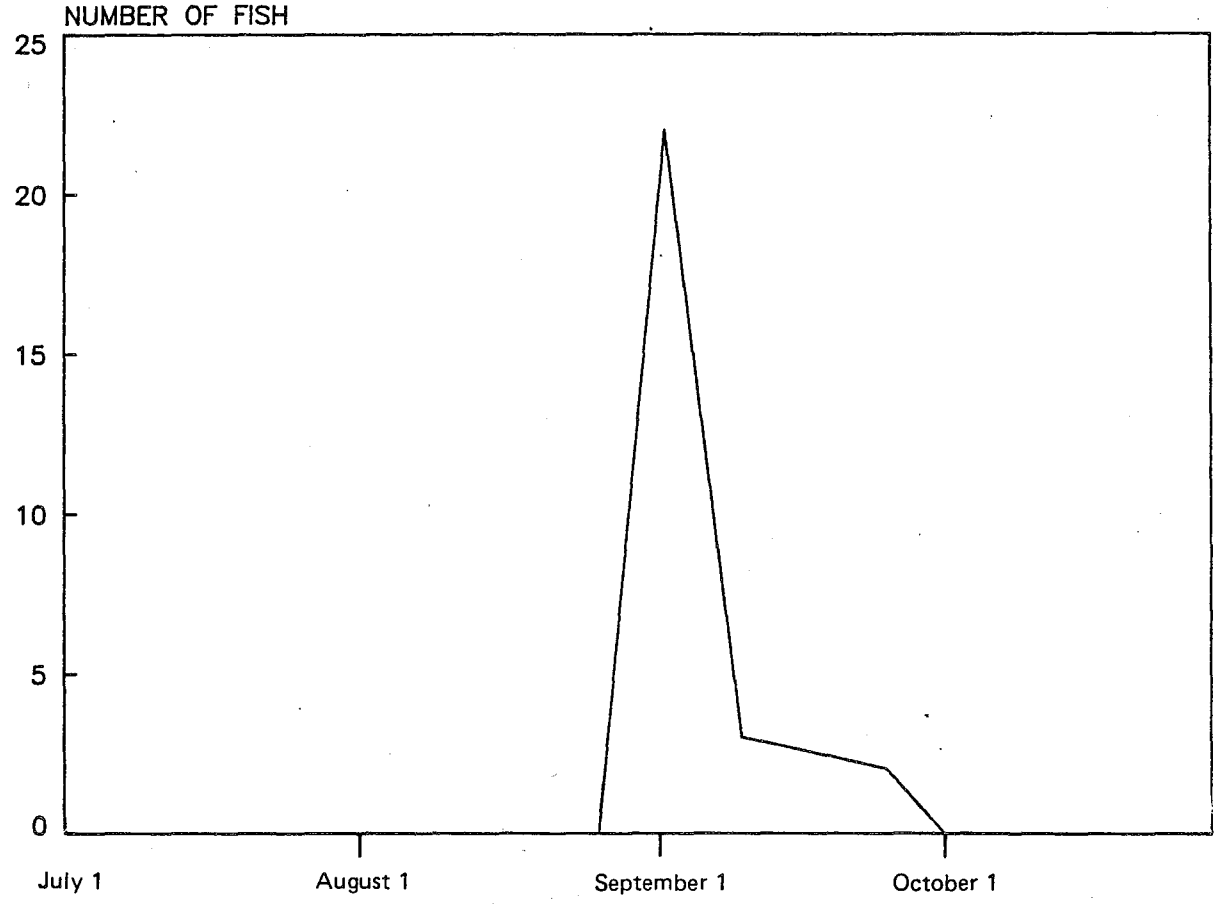


Figure 6.88

Chum Salmon
Estimated Fish
Escapement For
McArthur River
Upper Tributary (13u)

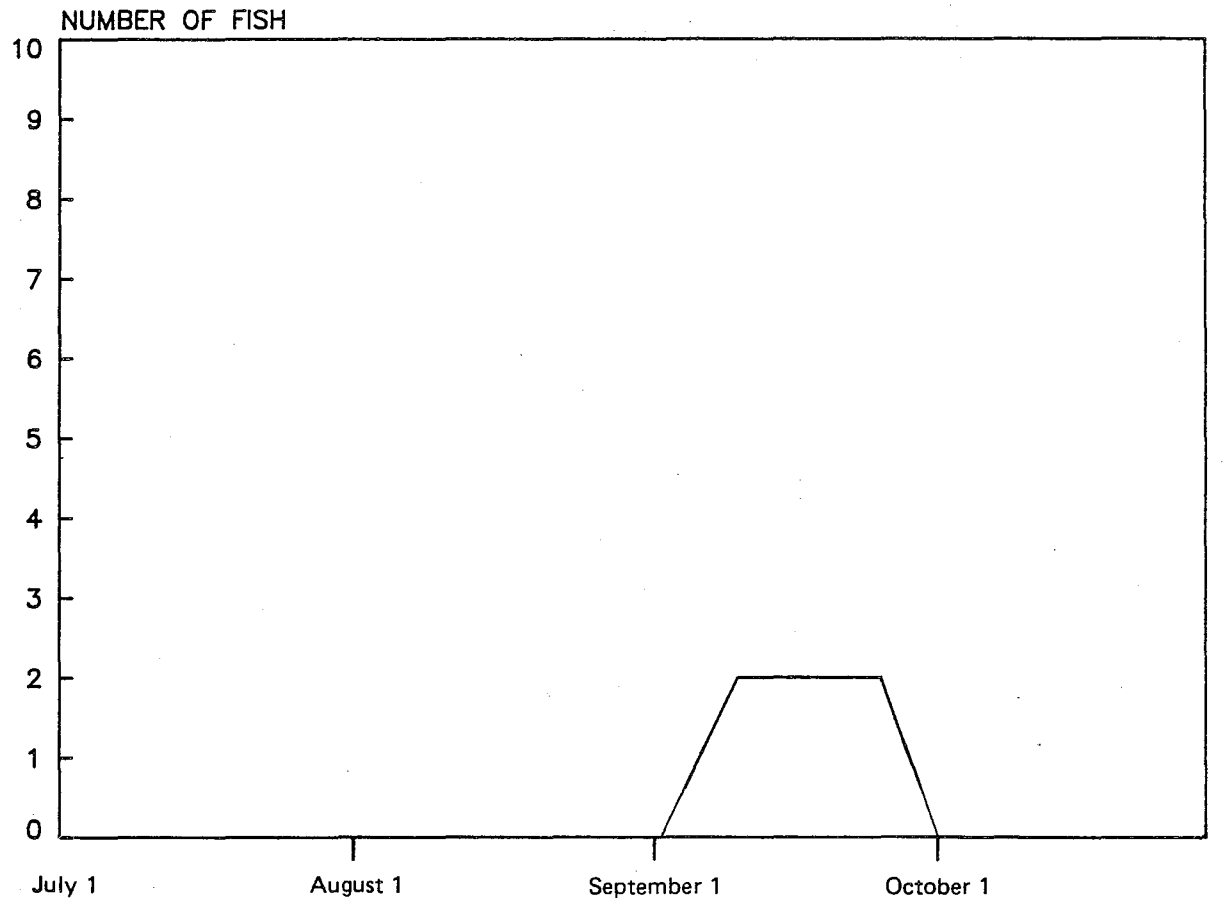


Figure 6.89

Chum Salmon
Estimated Fish
Escapement For
Tributary 12.1

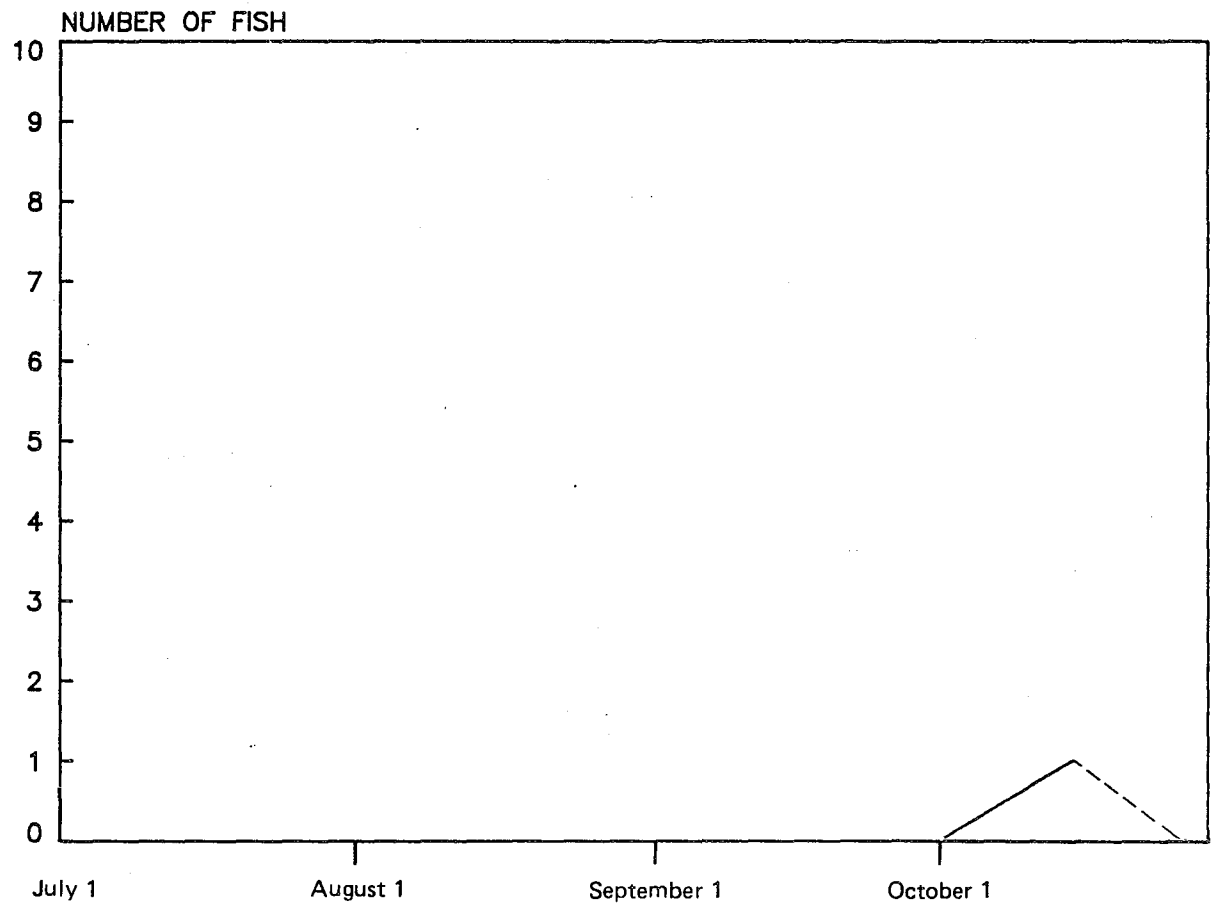


Figure 6.90

Chum Salmon
Estimated Fish
Escapement For
Tributary 12.4

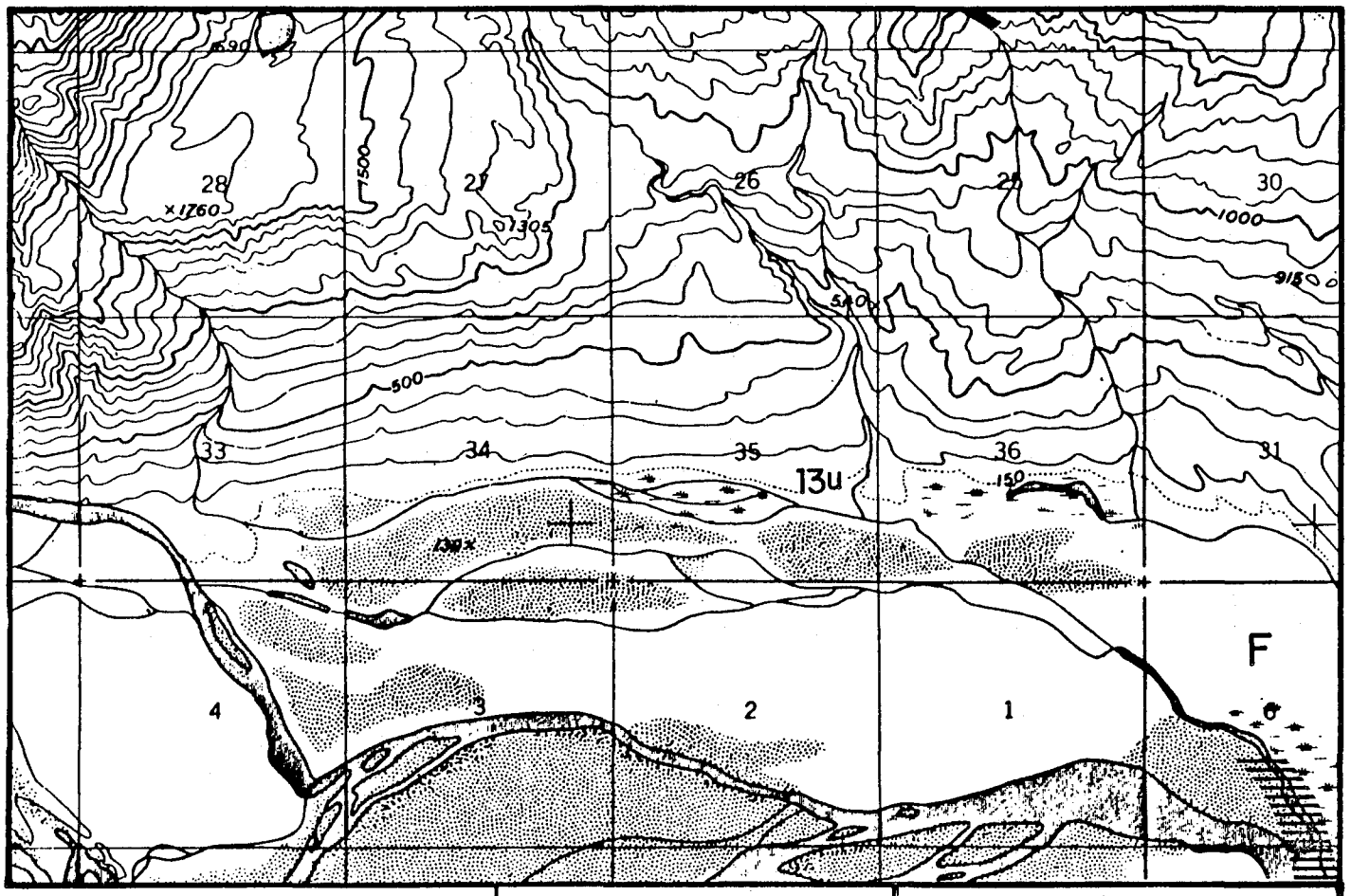


Figure 6.91

Coho Salmon
Milling Area
Stream 13 u
1982
Detail Area F

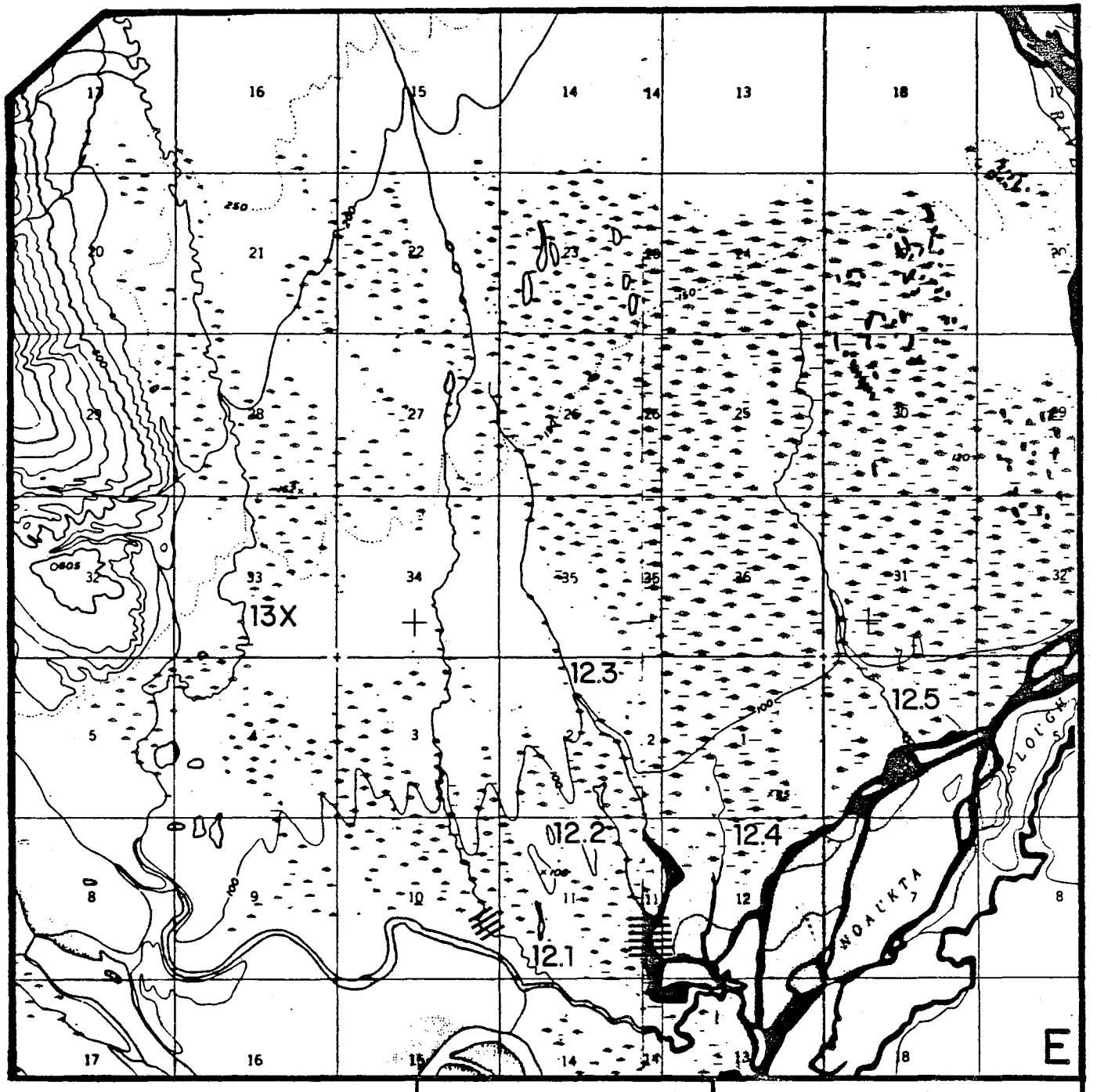


Figure 6.92

Coho Milling Areas
Streams 13X, 12.1, 12.2, 12.3, 12.4
1982
Detail Area E

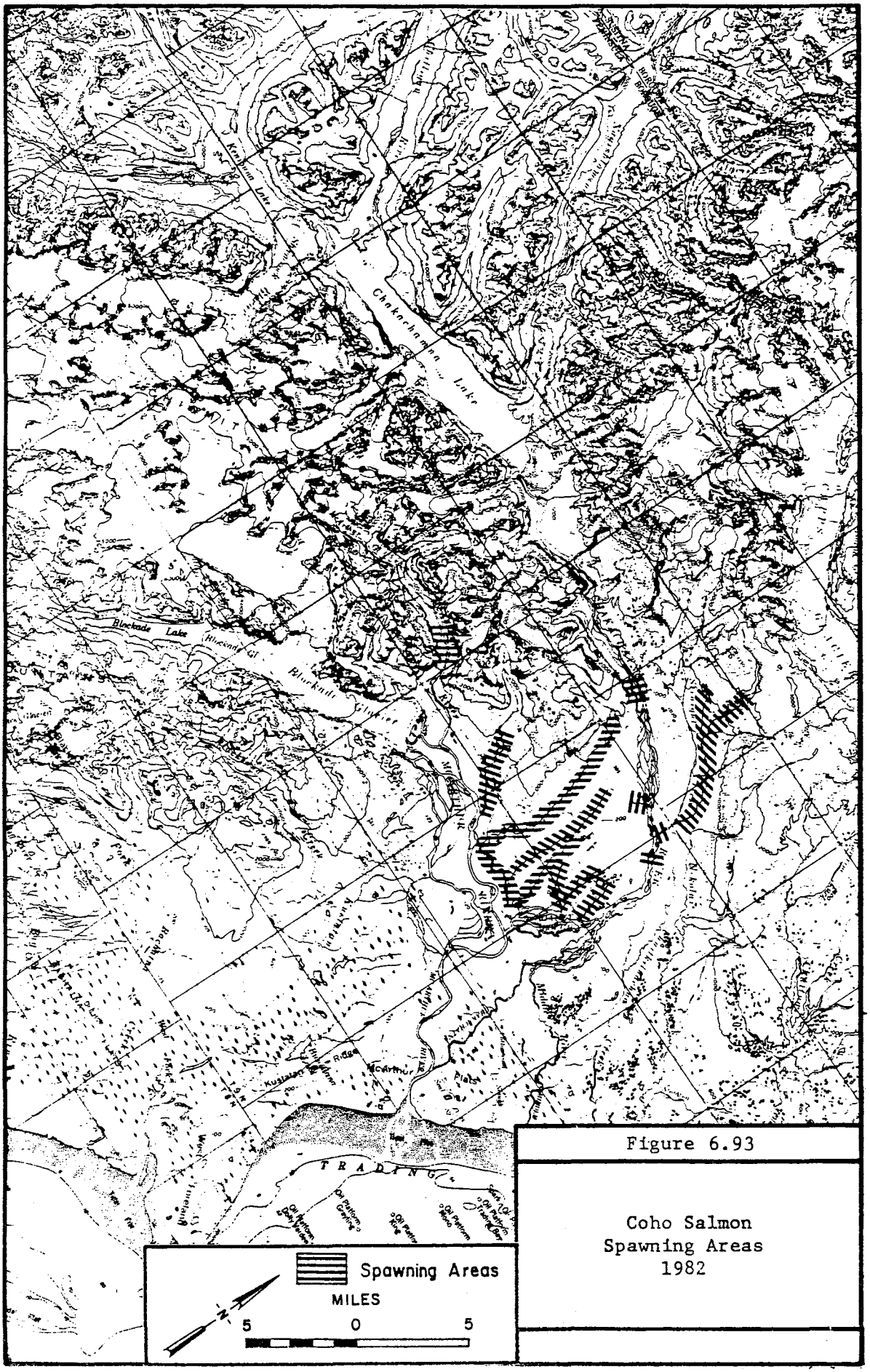


Figure 6.93

Coho Salmon
Spawning Areas
1982

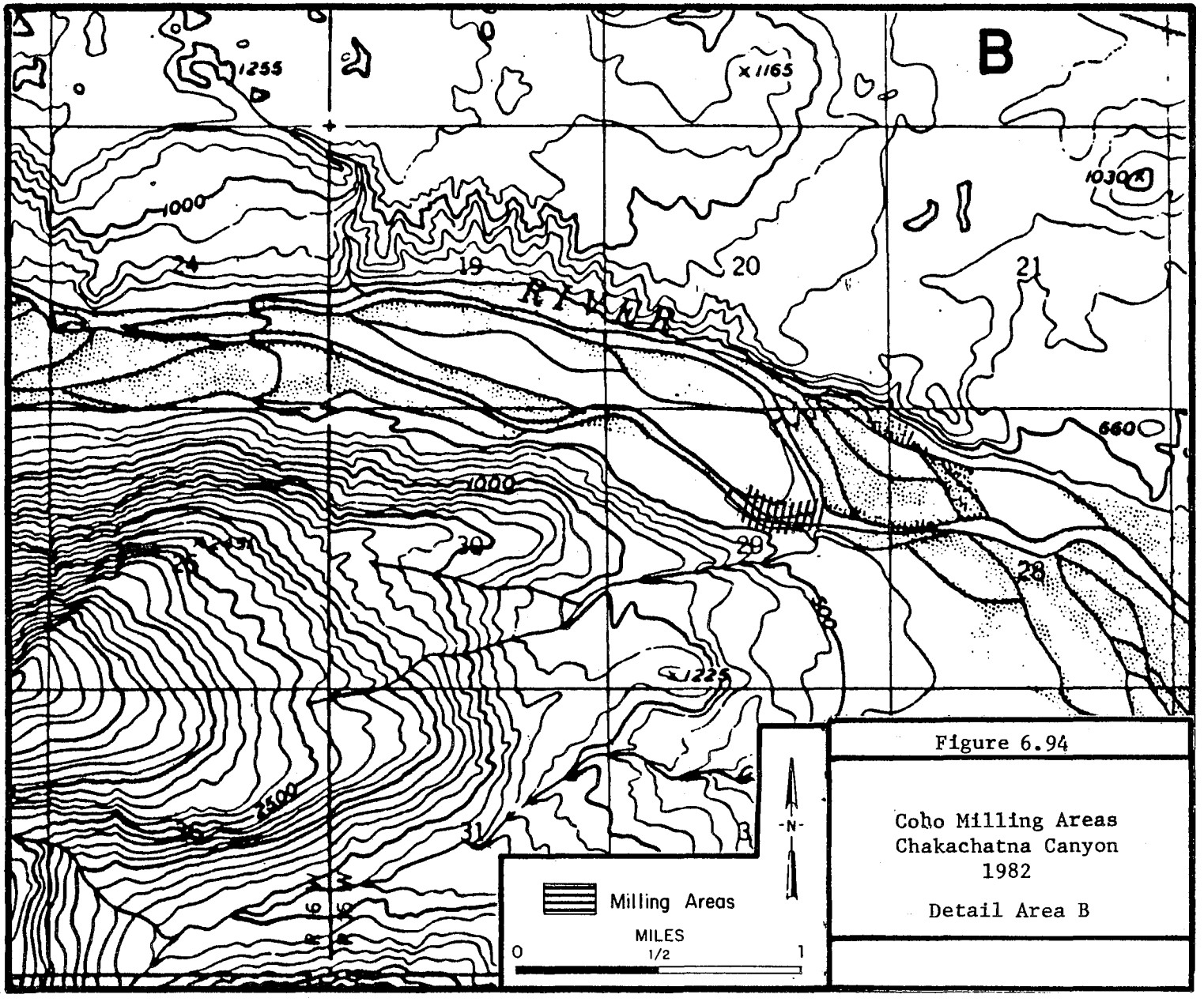


Figure 6.94

Coho Milling Areas
Chakachatna Canyon
1982

Detail Area B

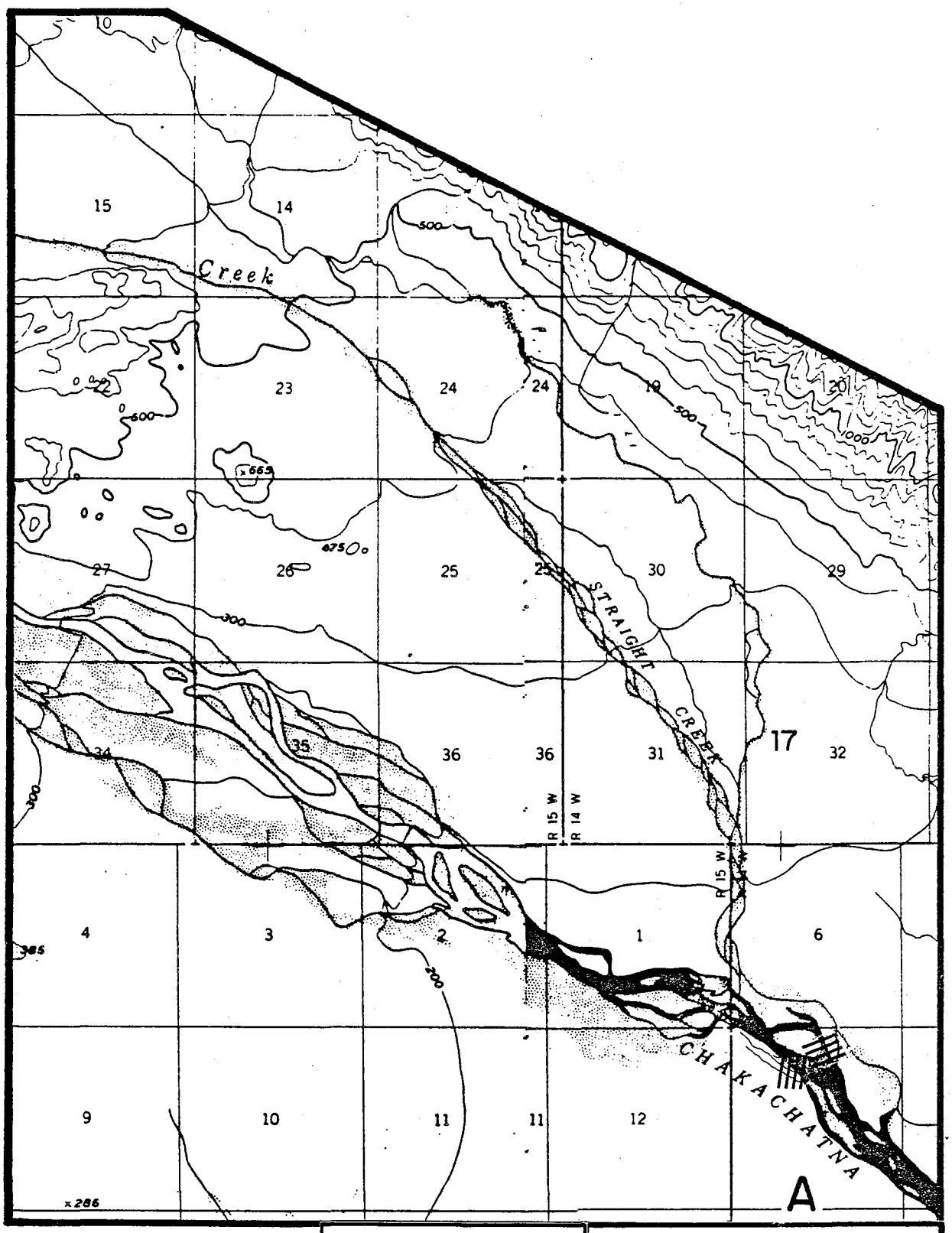


Figure 6.95

Coho Milling Areas
Station 17
1982

Detail Area A

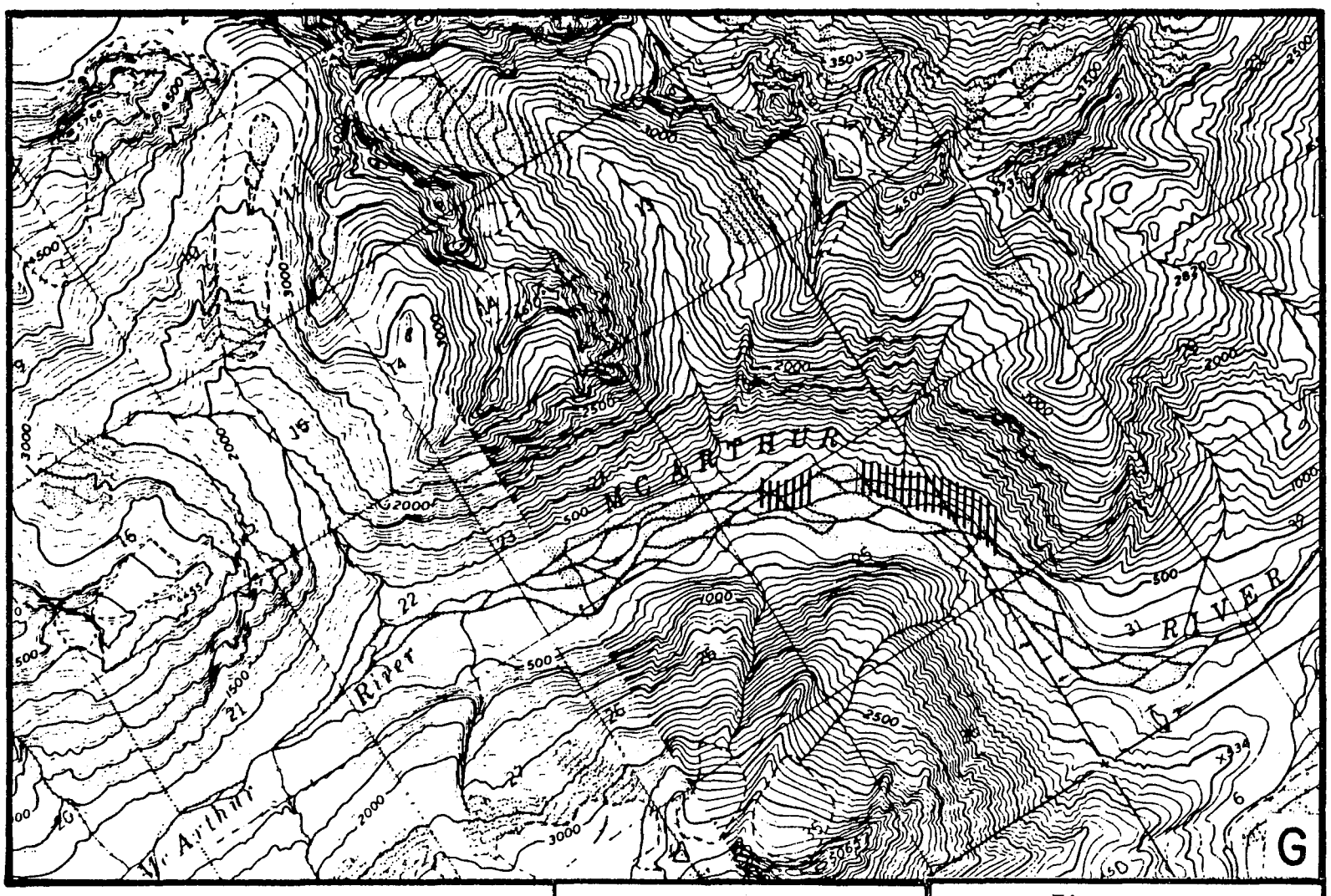


Figure 6.96

Coho Milling Area
McArthur Canyon
1982

Detail Area G

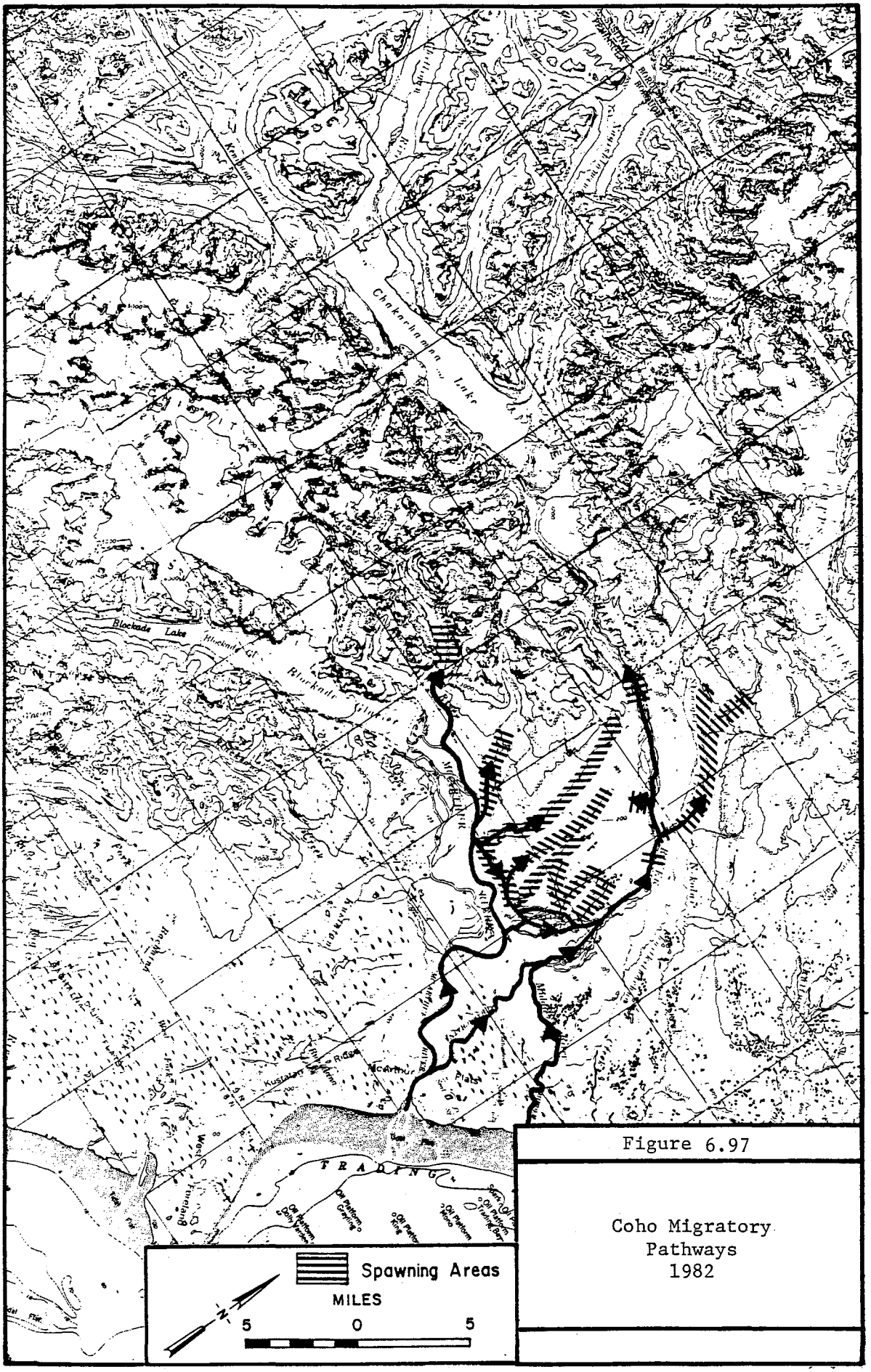


Figure 6.97

Coho Migratory Pathways 1982

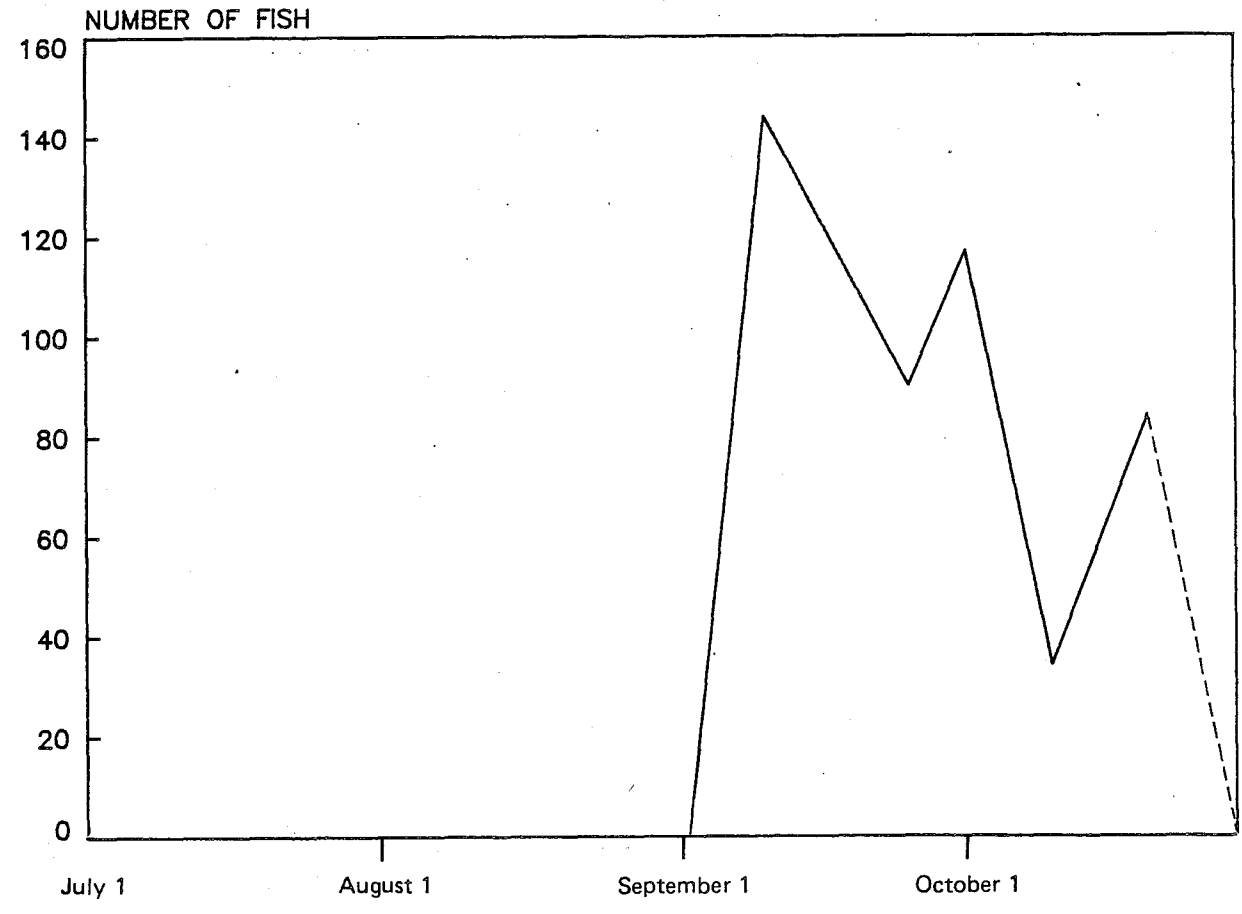


Figure 6.98

Coho Salmon
Estimated Fish
Escapement For
Chakachatna River
Canyon Sloughes

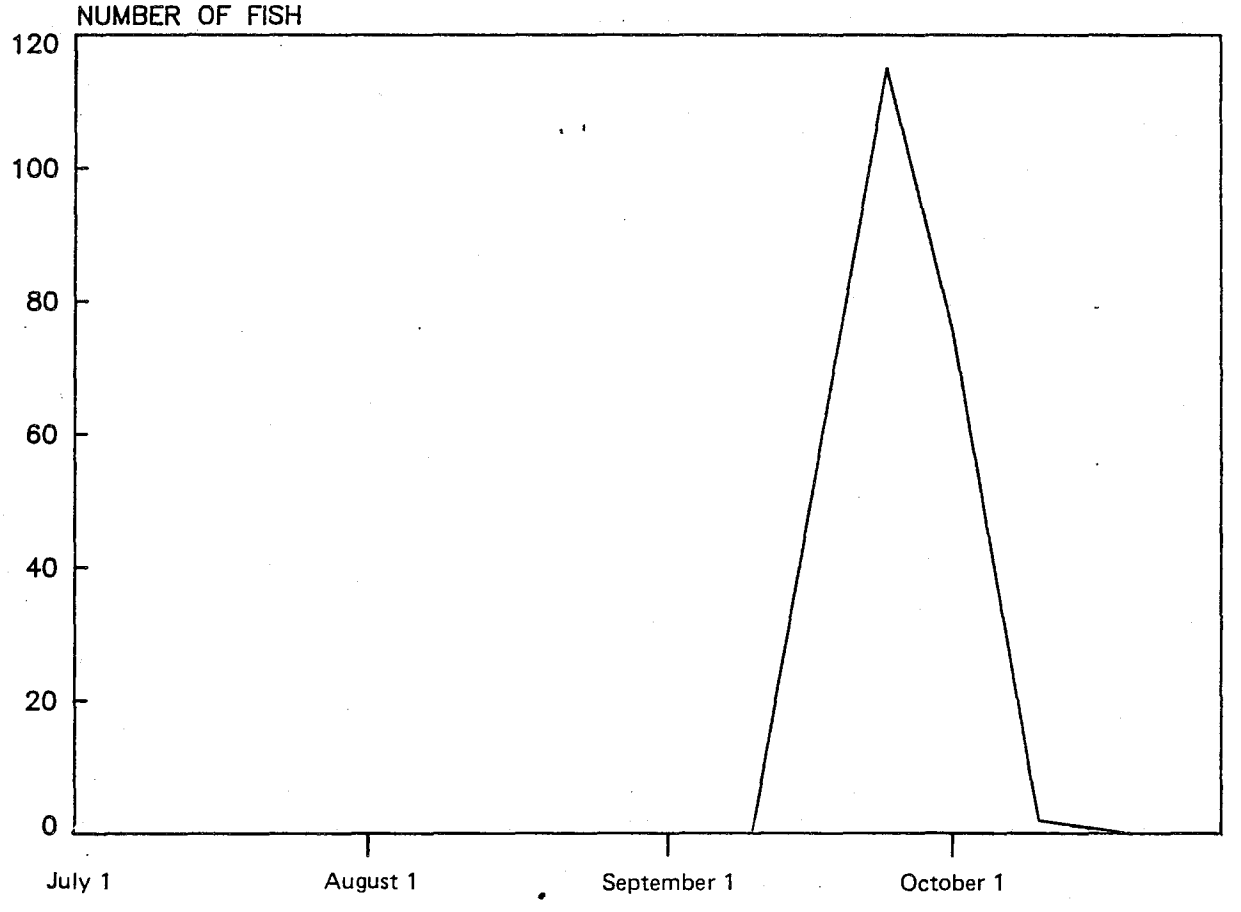


Figure 6.99

Coho Salmon
Estimated Fish
Escapement For
Chakachatna River
Tributary (C_1)

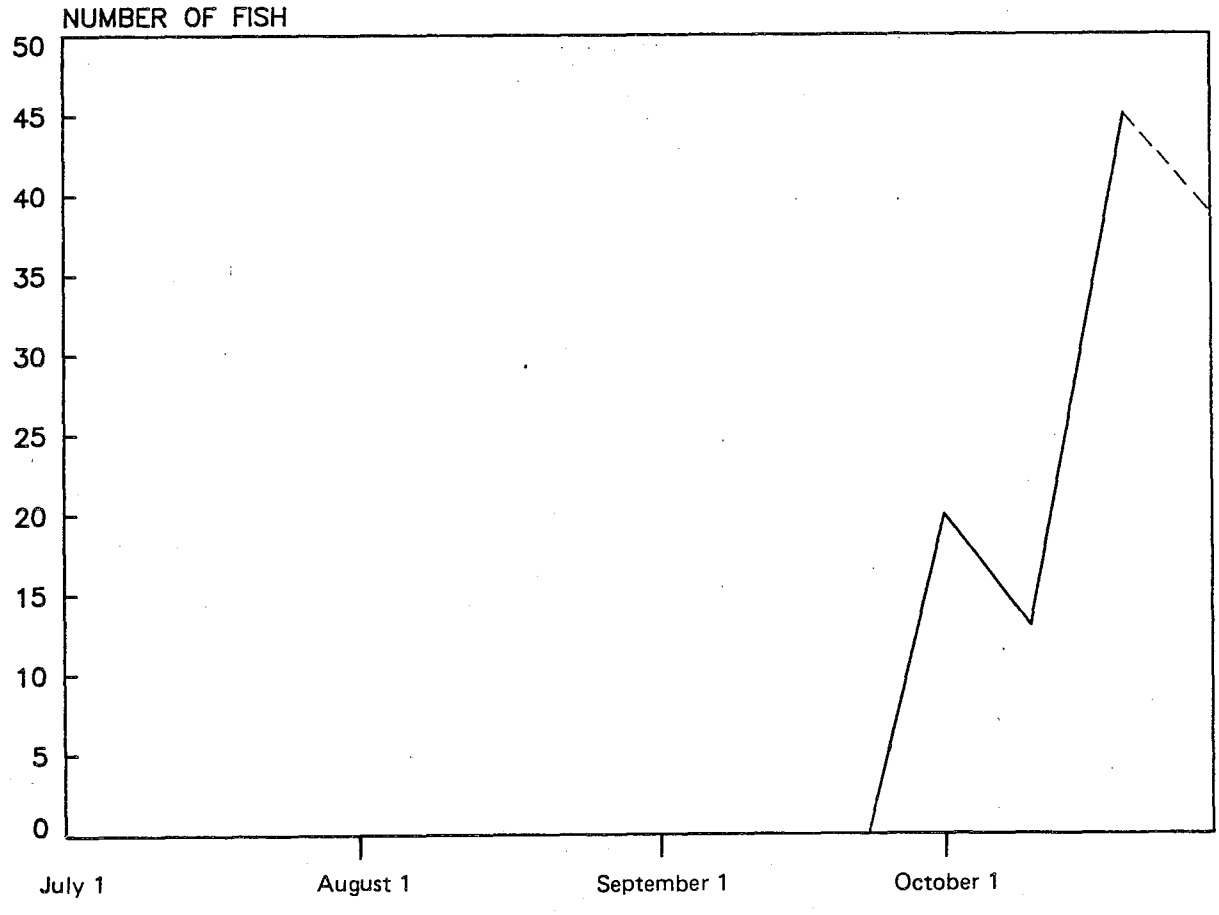


Figure 6.100

Coho Salmon
Estimated Fish
Escapement For
Straight Creek
Mouth Sloughes

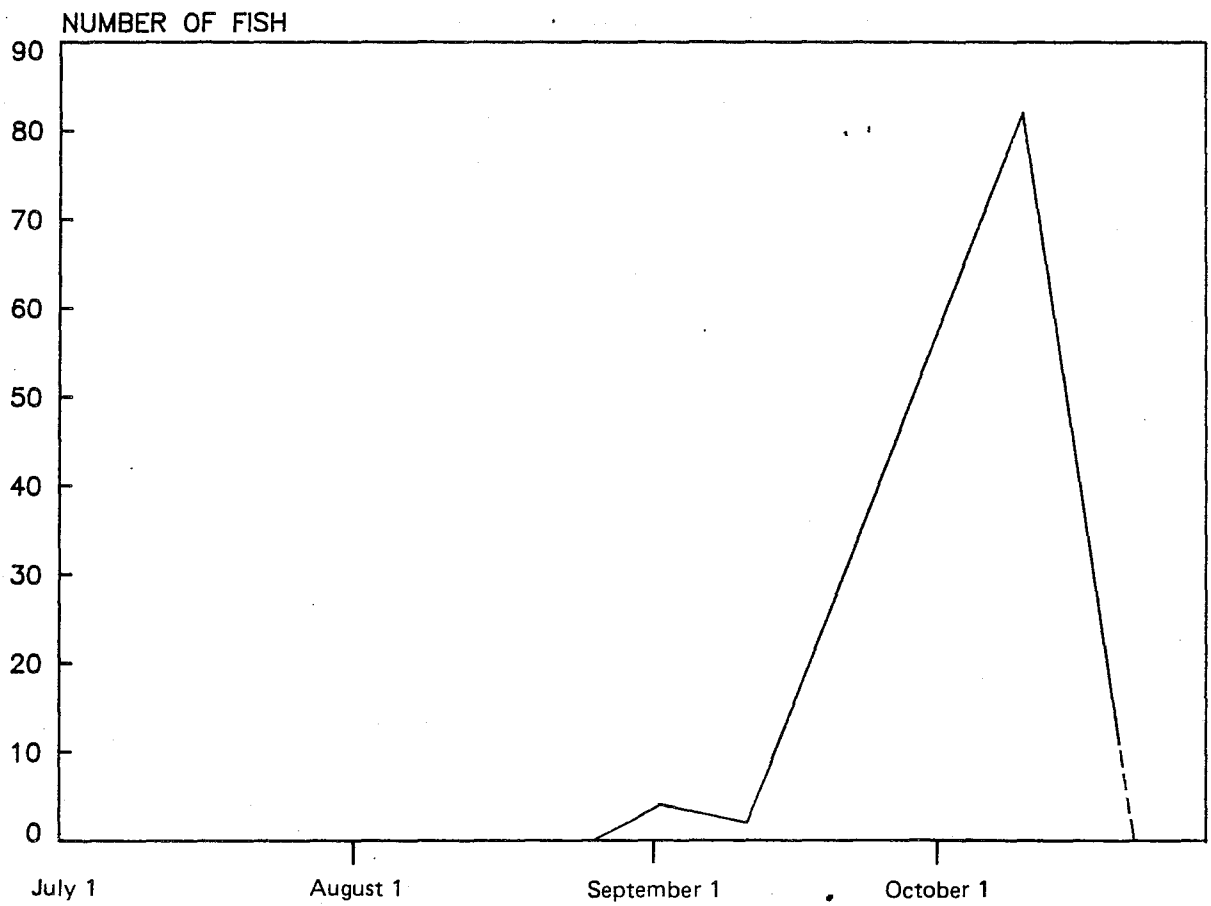


Figure 6.101

Coho Salmon
Estimated Fish
Escapement For
Clearwater Tributary
to Straight Creek (19)

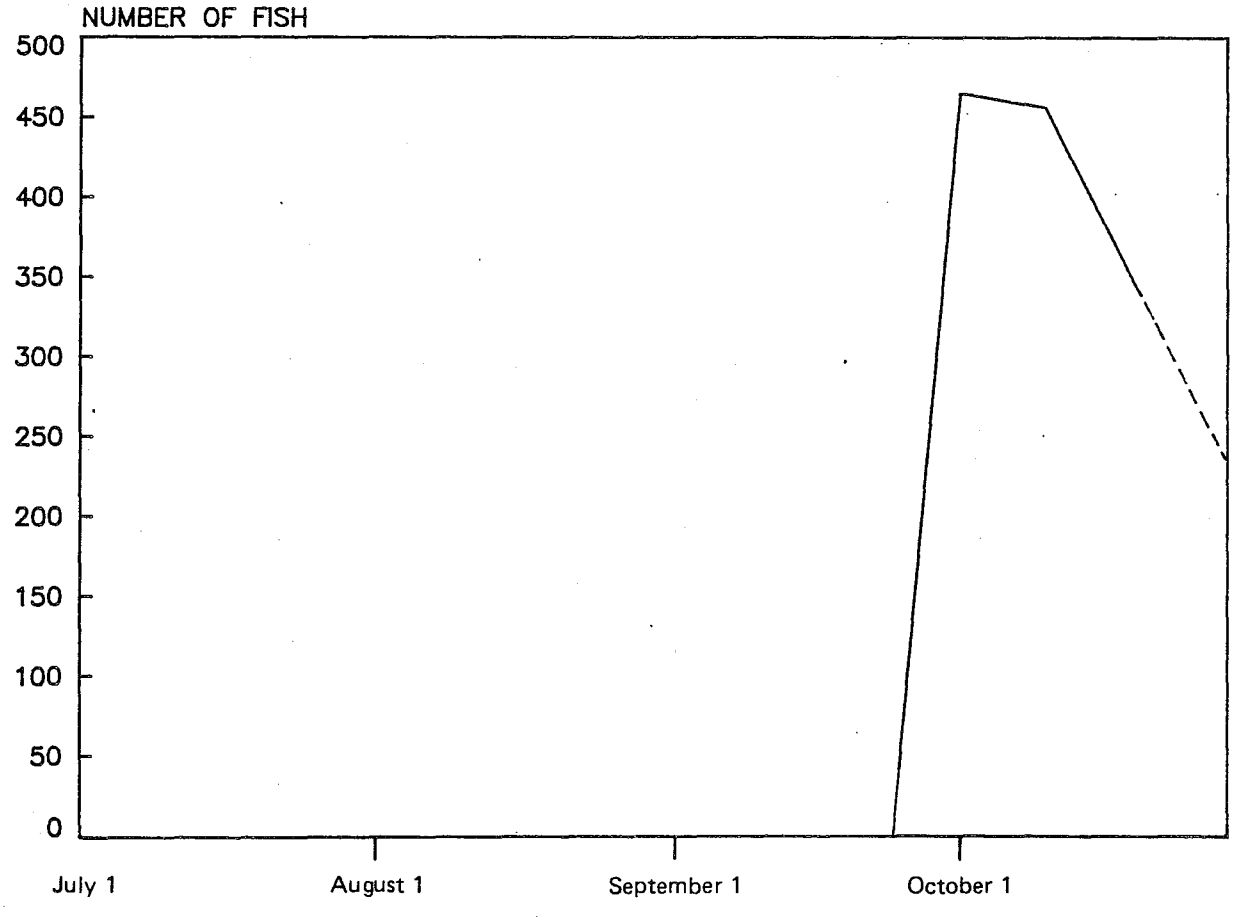


Figure 6.102

Coho Salmon
Estimated Fish
Escapement For
Bridge Area
Chakachatna River (17)

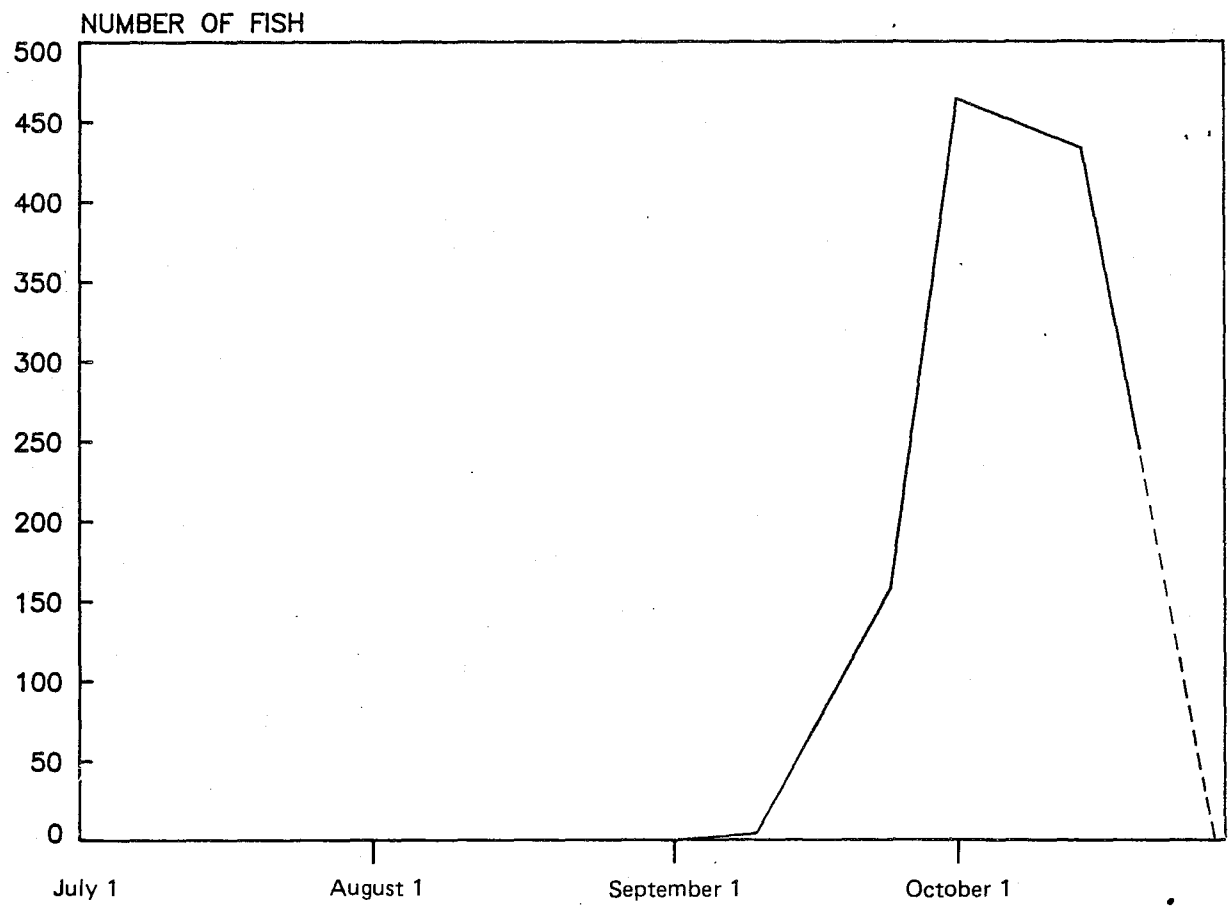


Figure 6.103

Coho Salmon
Estimated Fish
Escapement For
McArthur River
Canyon

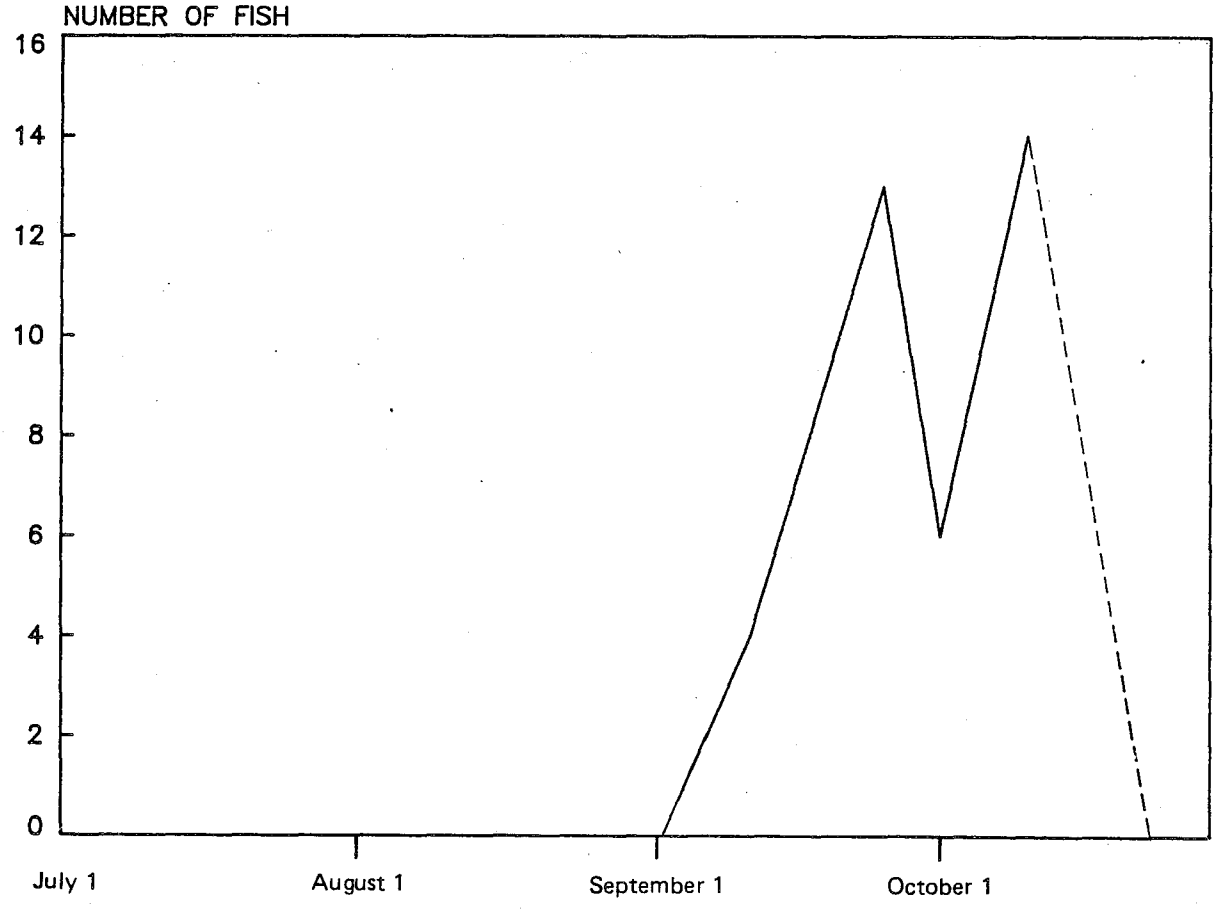


Figure 6.104

Coho Salmon
Estimated Fish
Escapement For
McArthur River
Upper Tributary (13u)

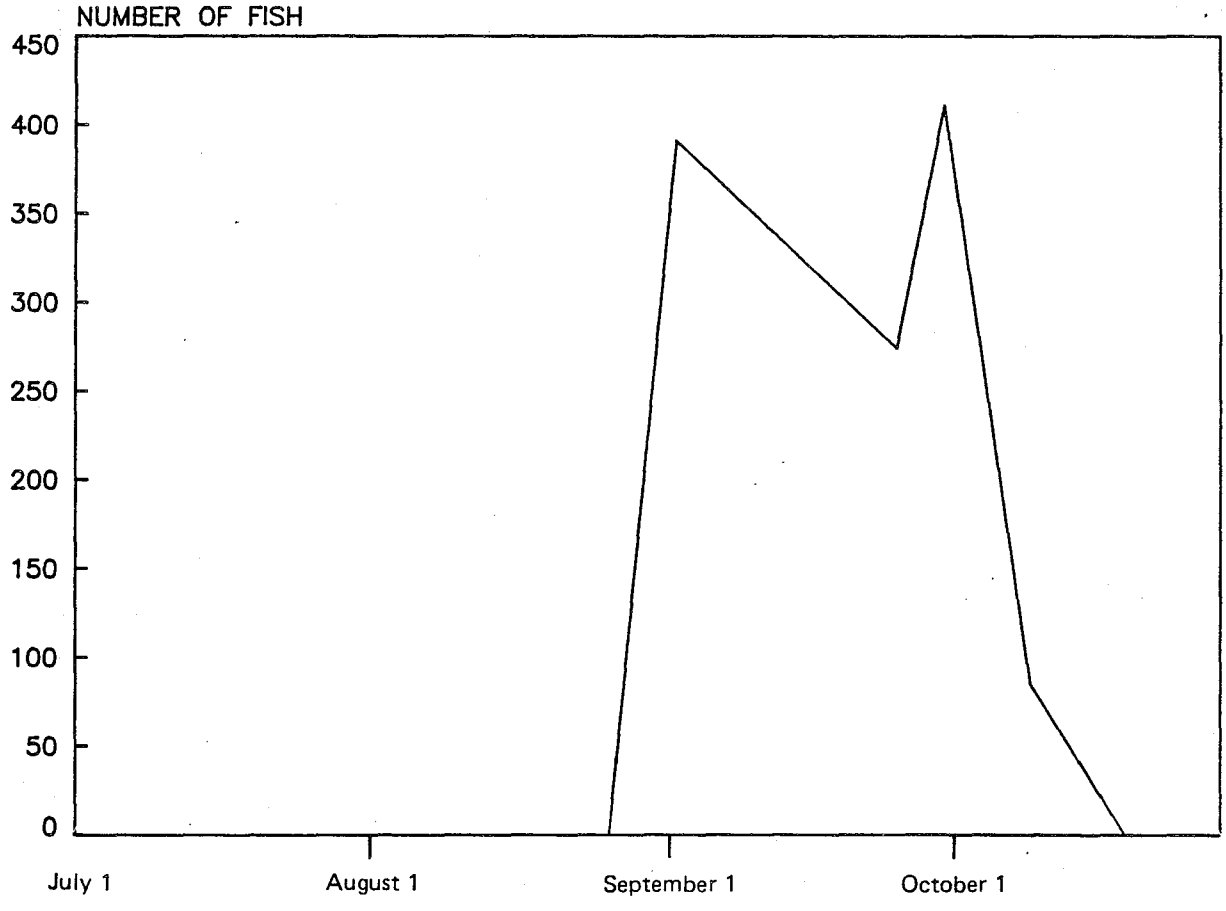


Figure 6.105

Coho Salmon
Estimated Fish
Escapement For
McArthur River
Oxbow Creek (13X)

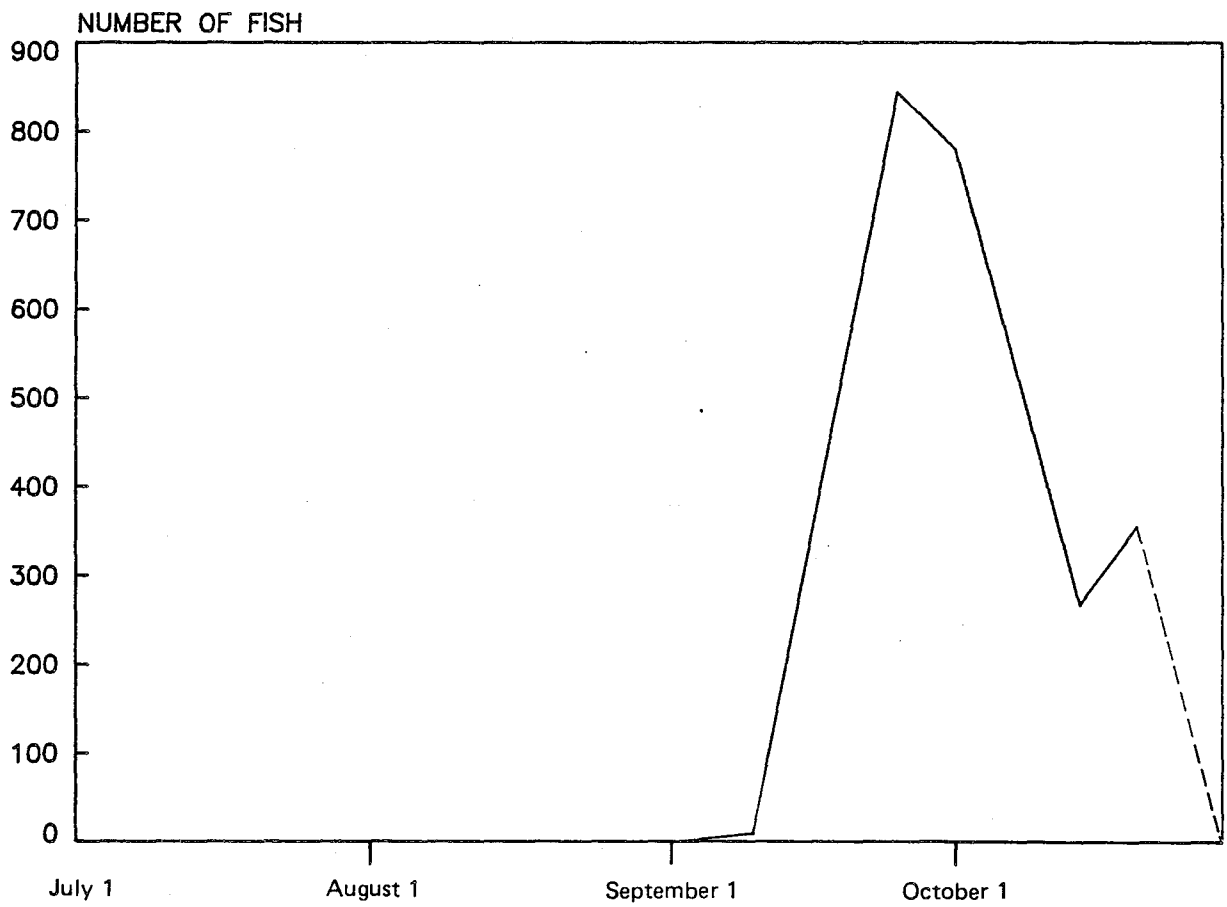


Figure 6.106

Coho Salmon
Estimated Fish
Escapement For
Tributary 12.1

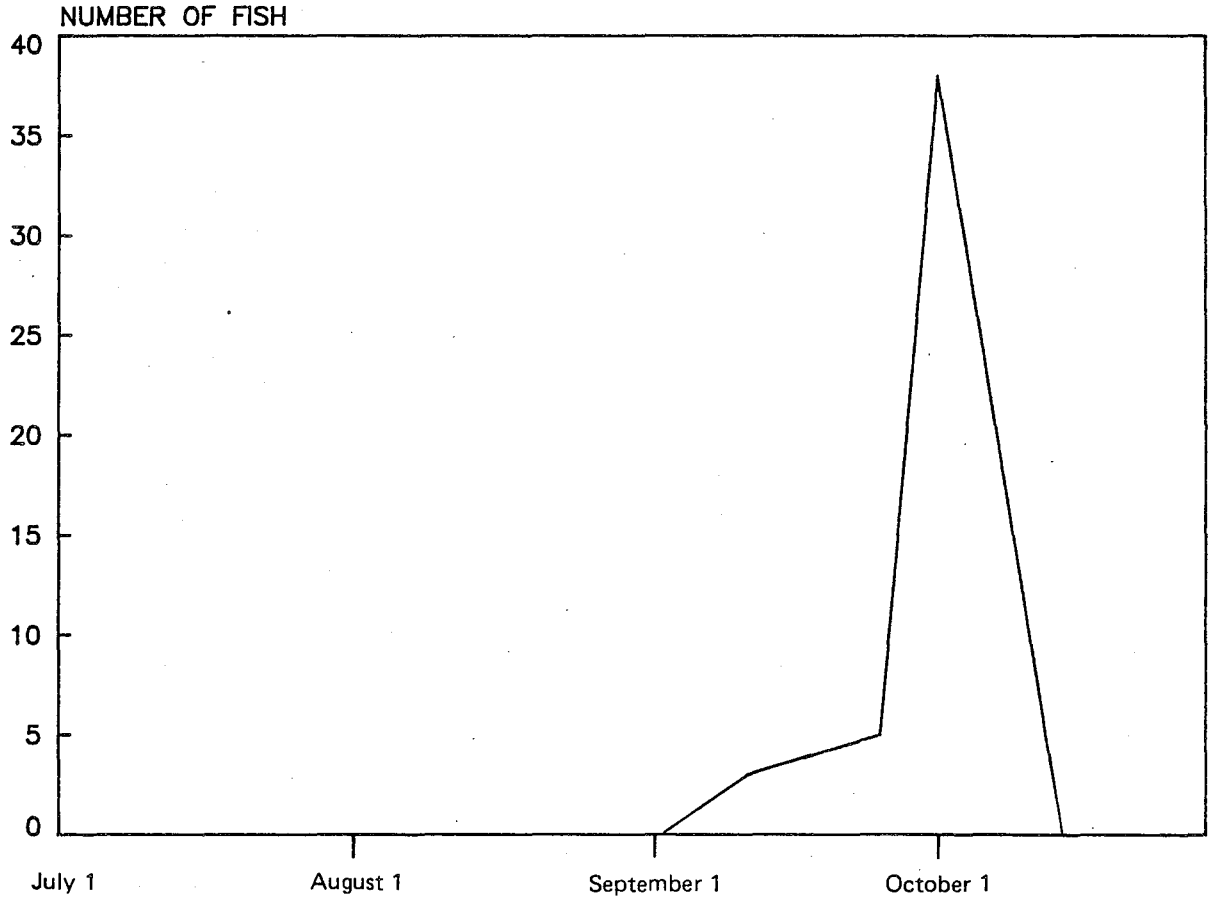


Figure 6.107

Coho Salmon
Estimated Fish
Escapement For
Tributary 12.2

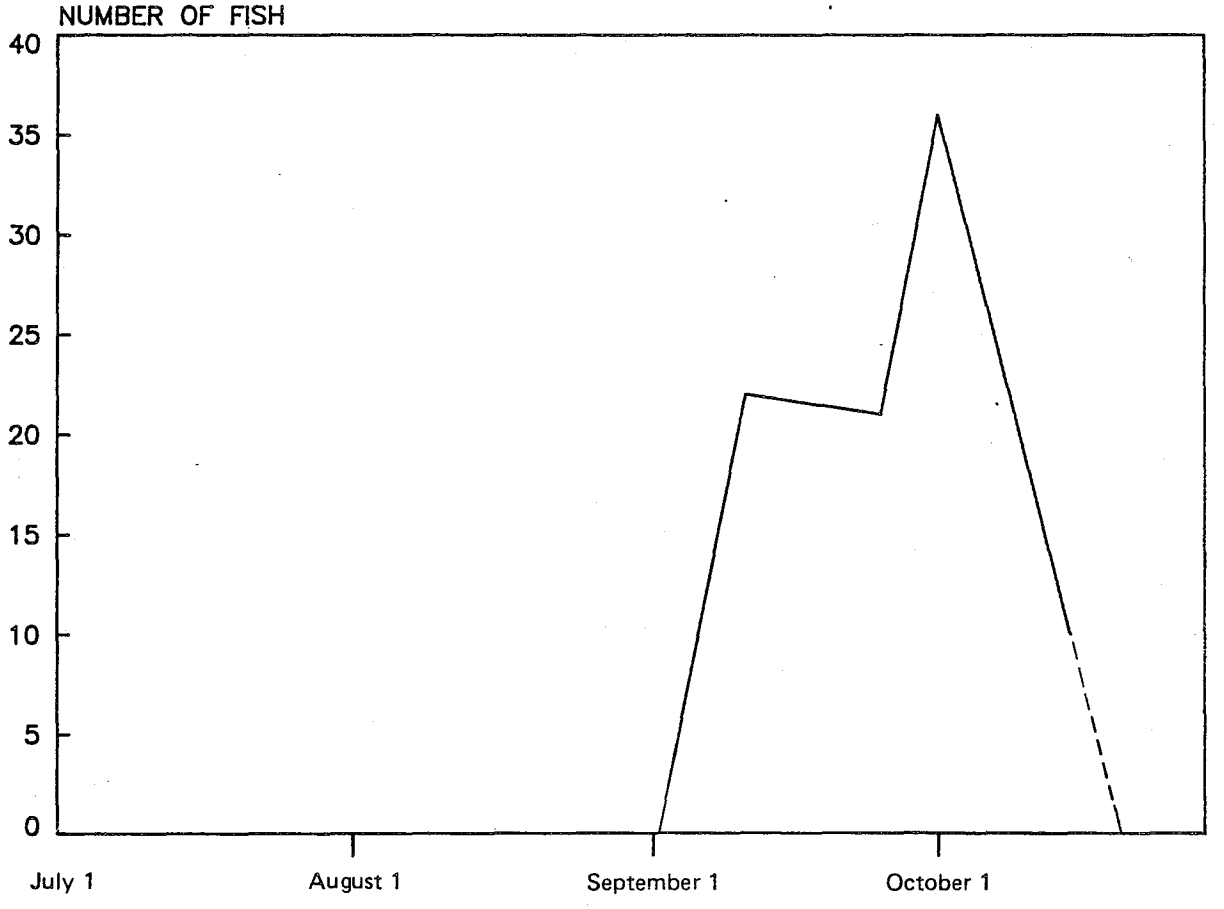


Figure 6.108

Coho Salmon
Estimated Fish
Escapement For
Tributary 12.3

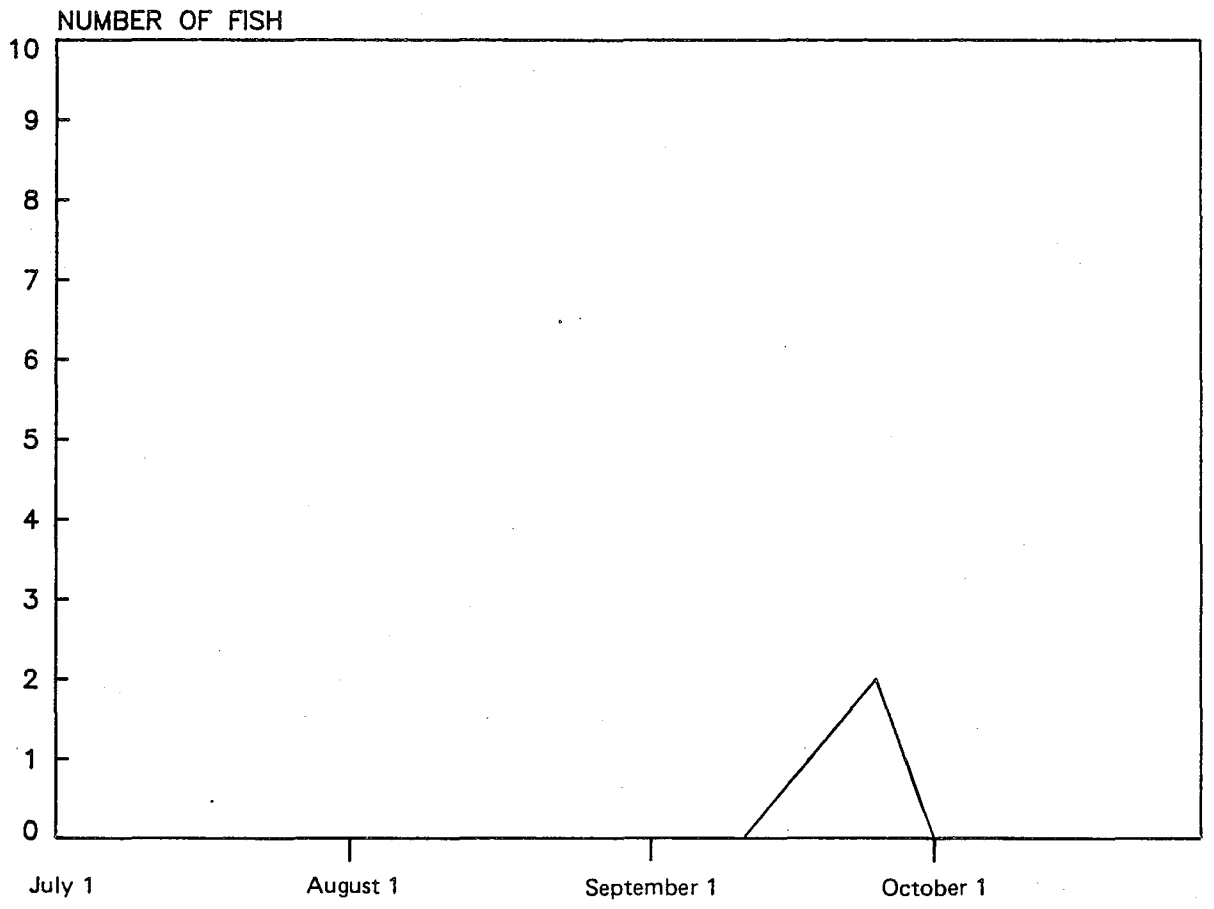


Figure 6.109

Coho Salmon
Estimated Fish
Escapement For
Tributary 12.5

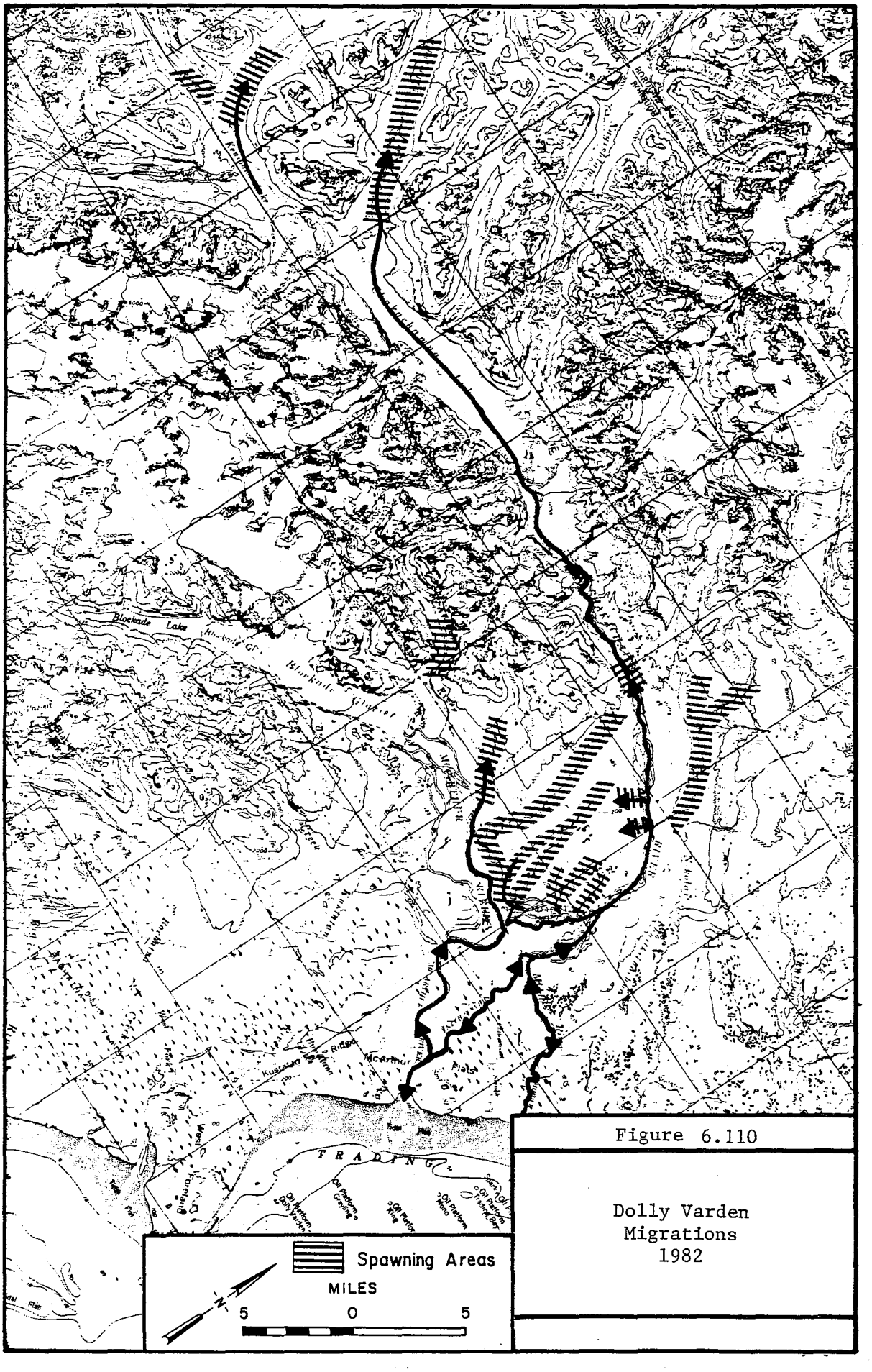


Figure 6.110

Dolly Varden
Migrations
1982

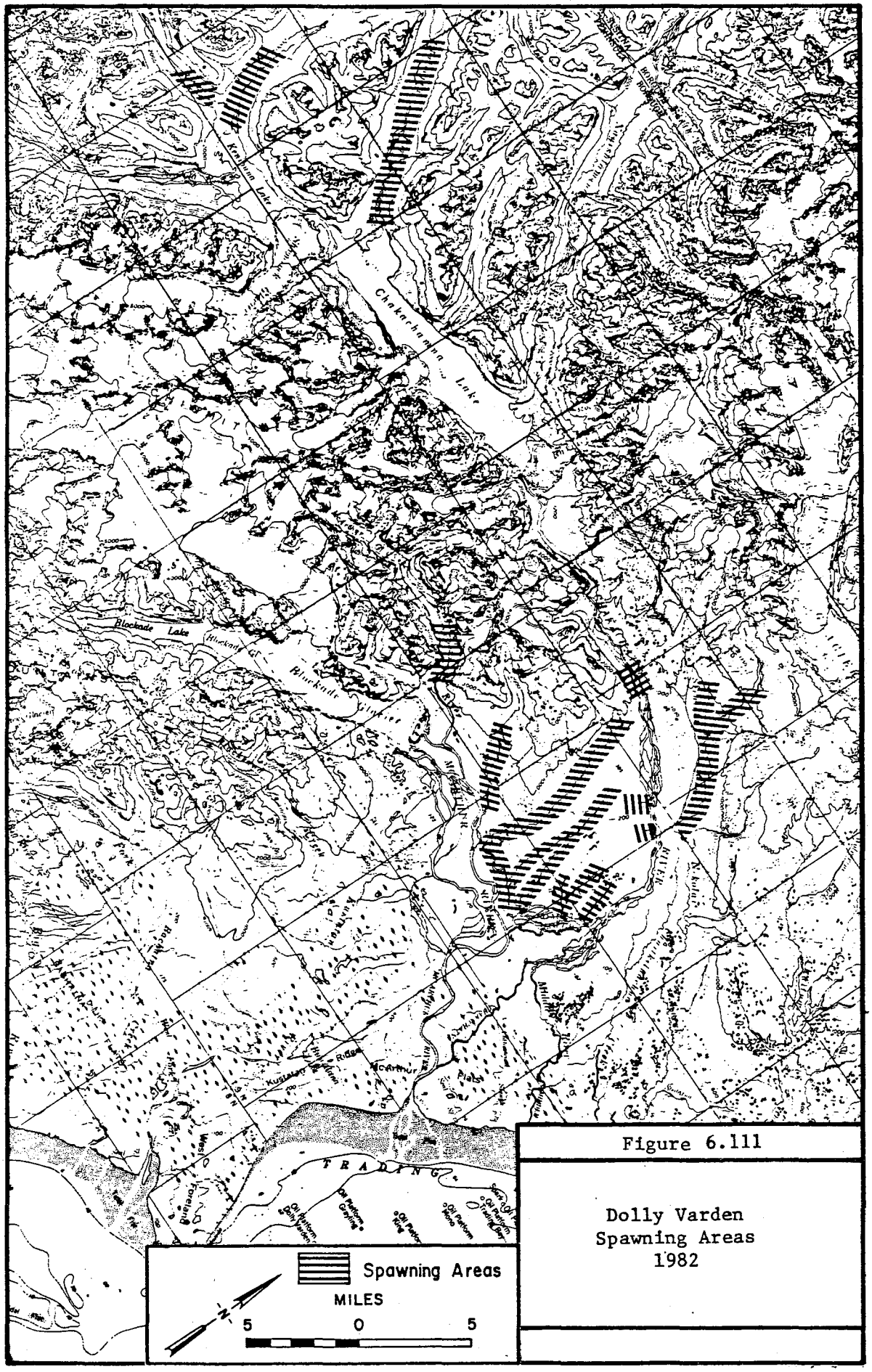


Figure 6.111

Dolly Varden
Spawning Areas
1982

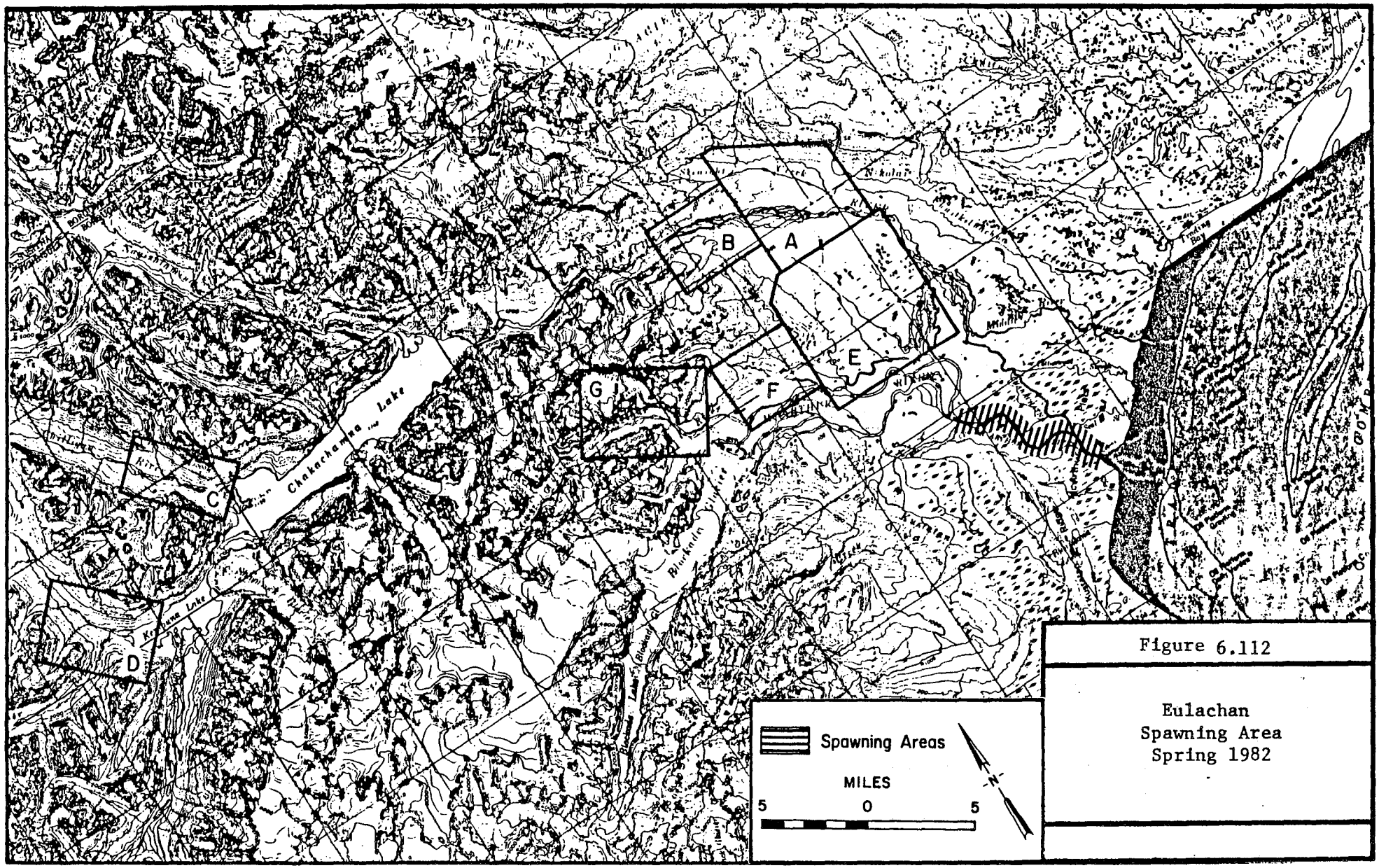


Figure 6.112

Eulachan
Spawning Area
Spring 1982

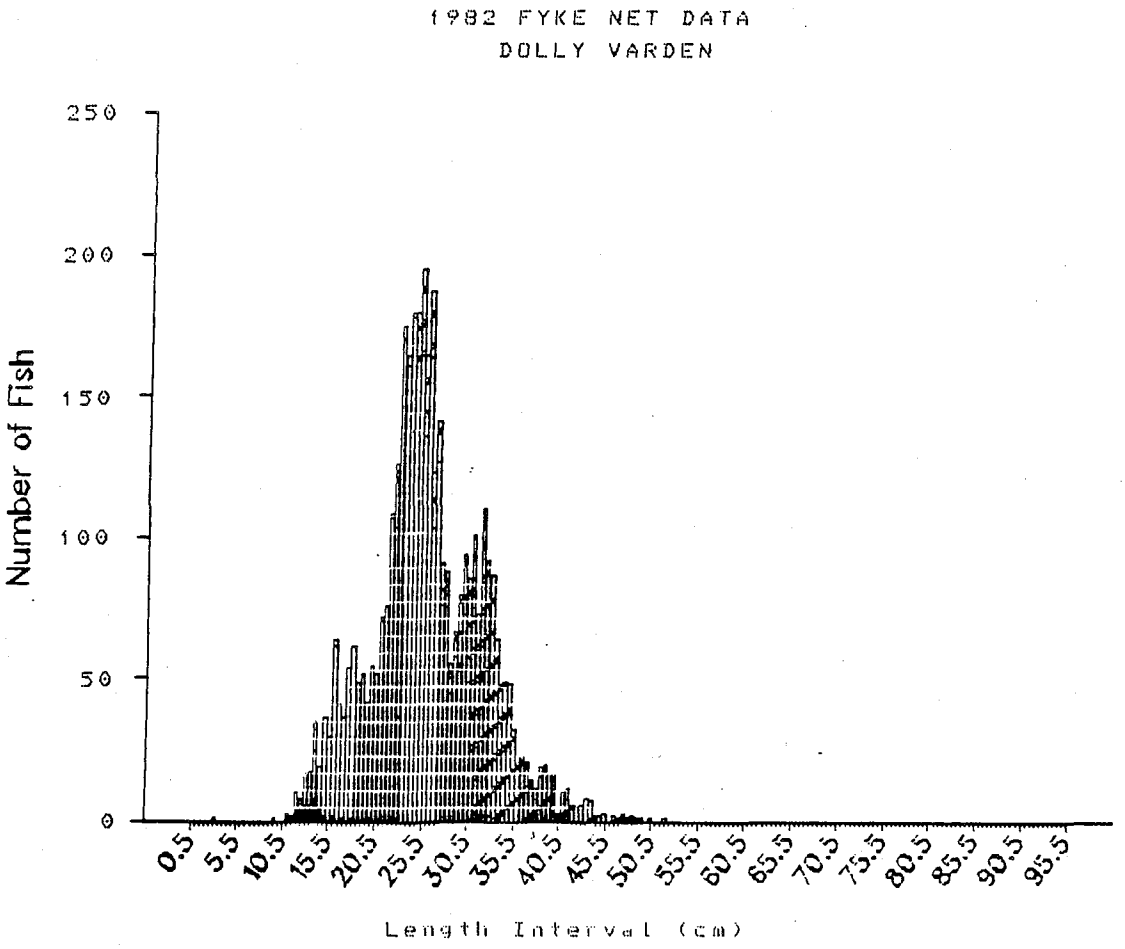


Figure 6.113

Dolly Varden
Length-Frequency Histogram
August-October Fyke Nets
1982

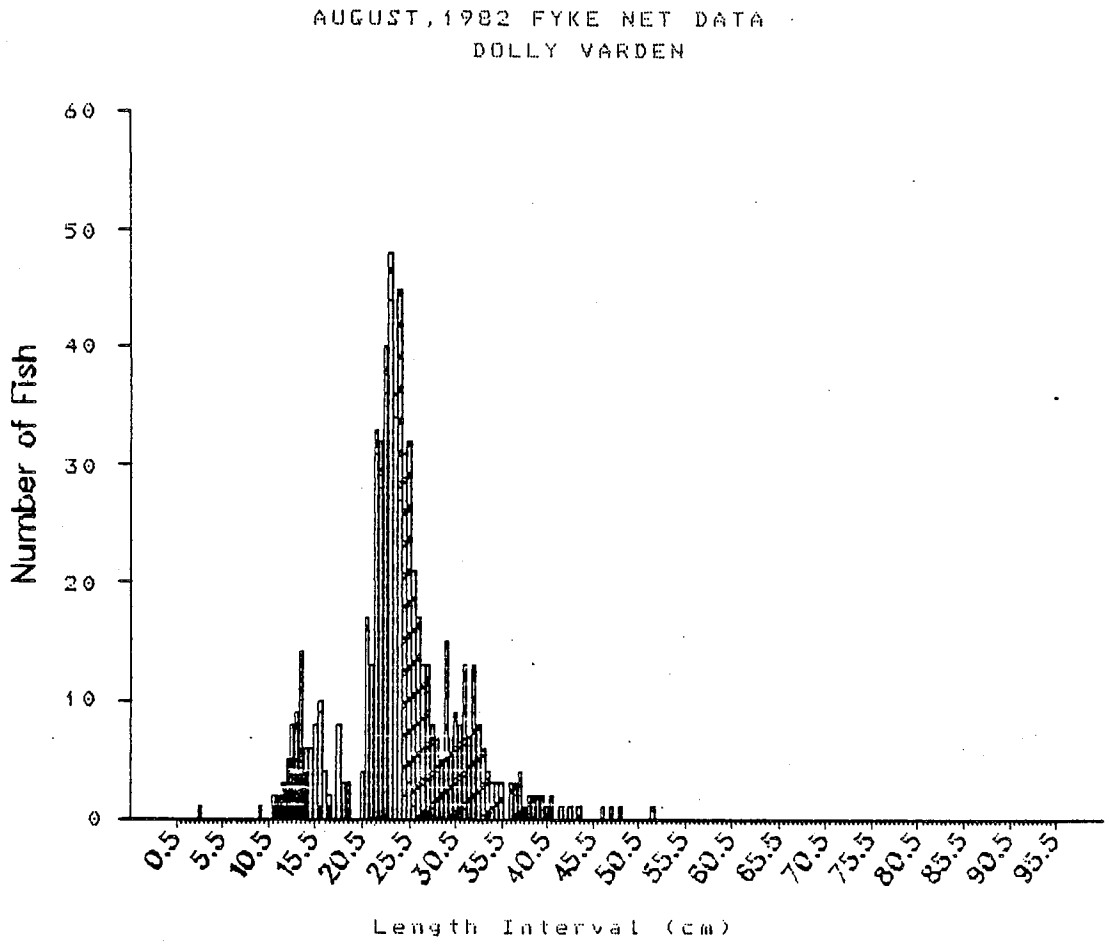


Figure 6.114

Dolly Varden
Length-Frequency Histogram
August Fyke Nets
1982

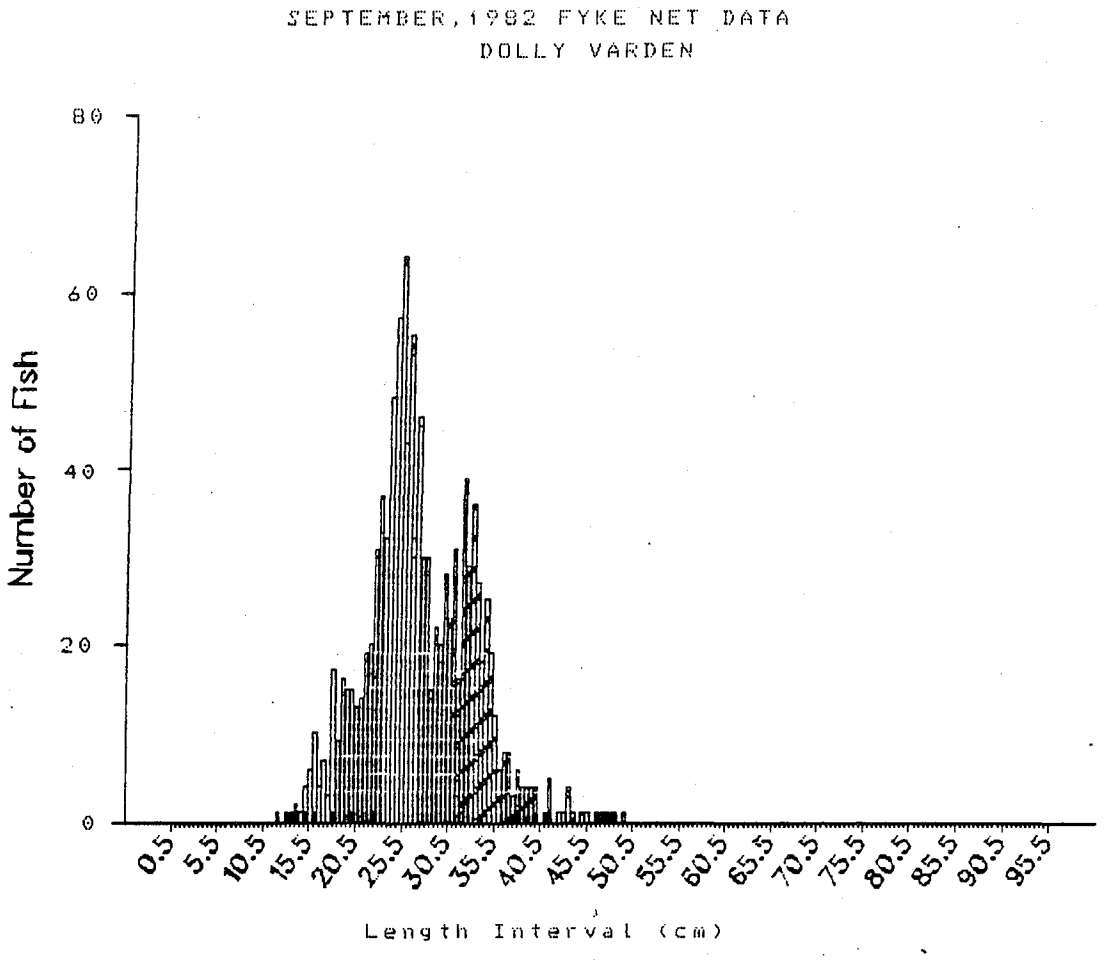


Figure 6.115

Dolly Varden
Length-Frequency Histogram
September Fyke Nets
1982

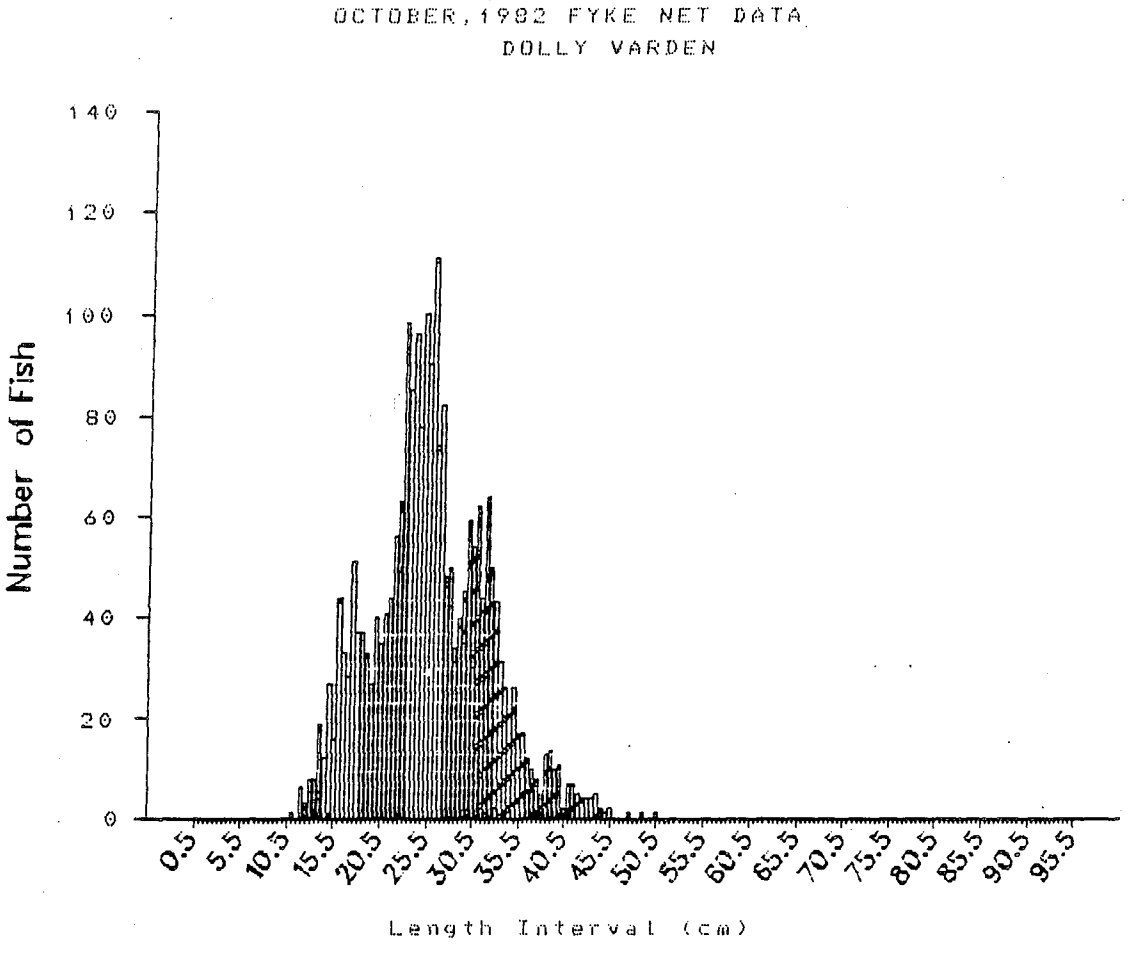


Figure 6.116

Dolly Varden
Length-Frequency Histogram
October Fyke Nets
1982

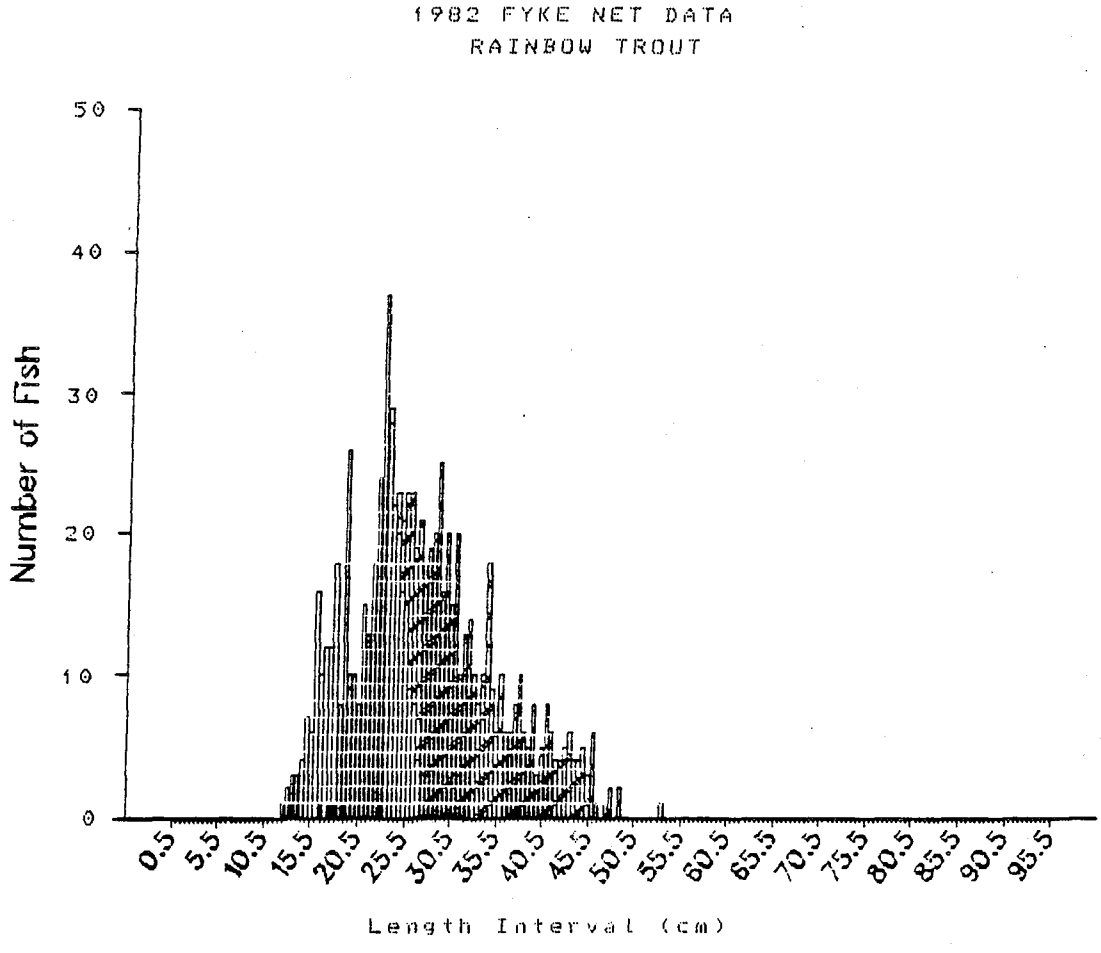


Figure 6.117

Rainbow Trout
Length-Frequency Histogram
August-October Fyke Nets
1982

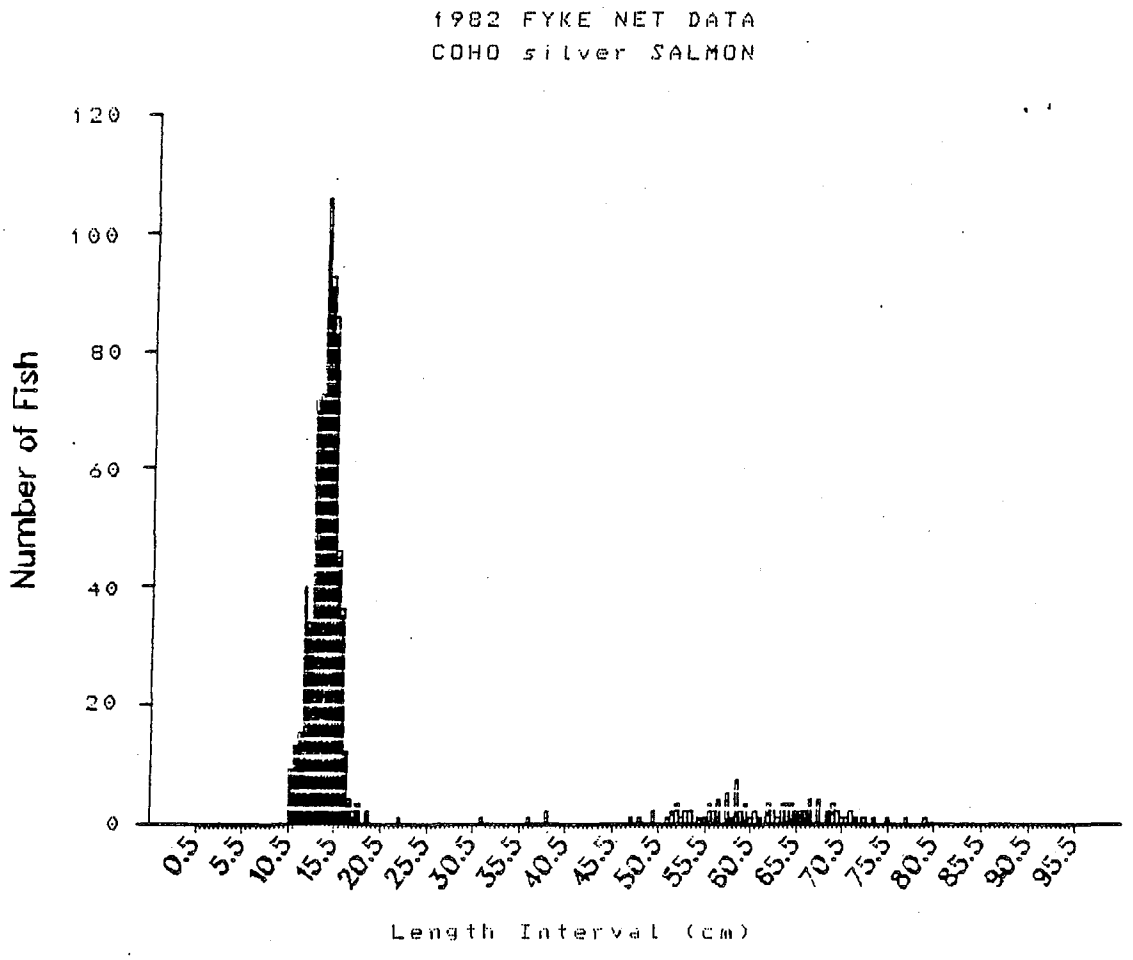


Figure 6.118

Coho (Silver) Salmon
Length-Frequency Histogram
August-October Fyke Nets
1982

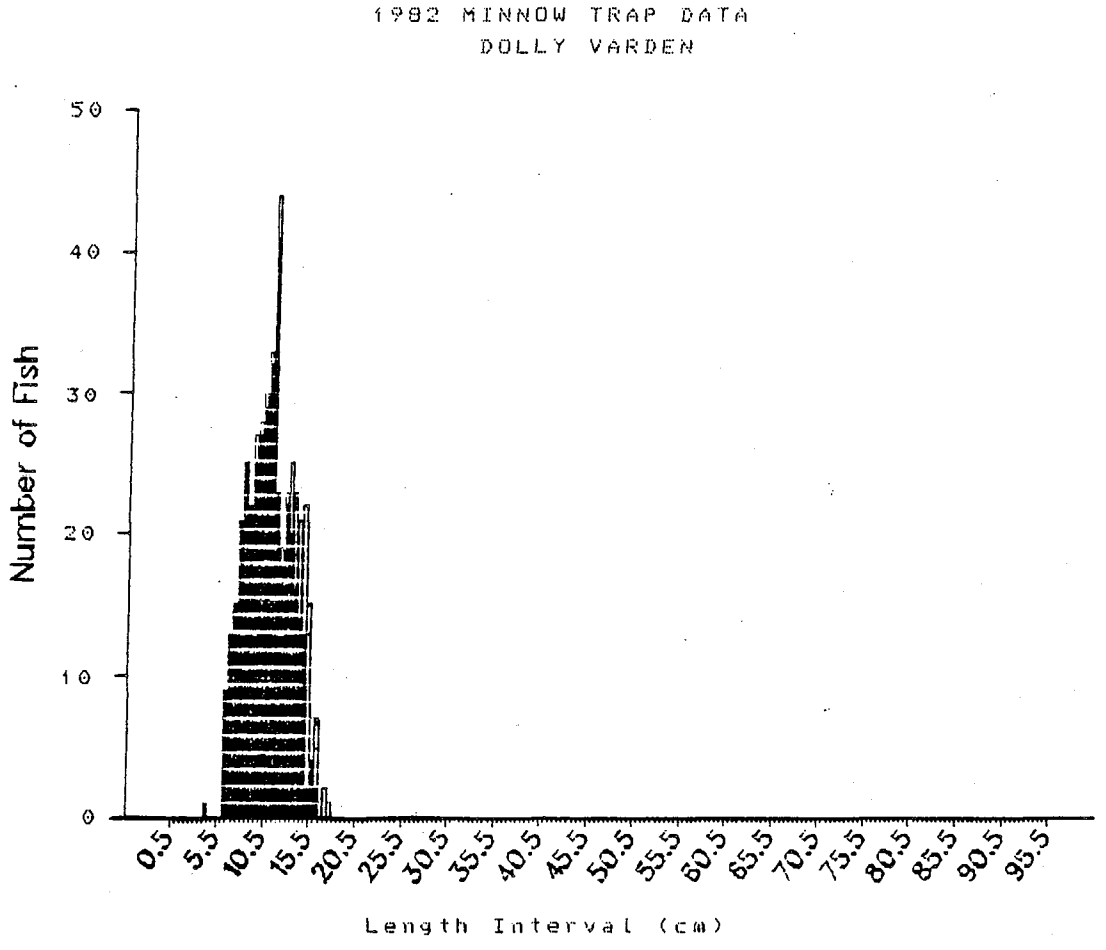


Figure 6.119

Dolly Varden
Length-Frequency Histogram
Summer-Fall Minnow Traps
1982

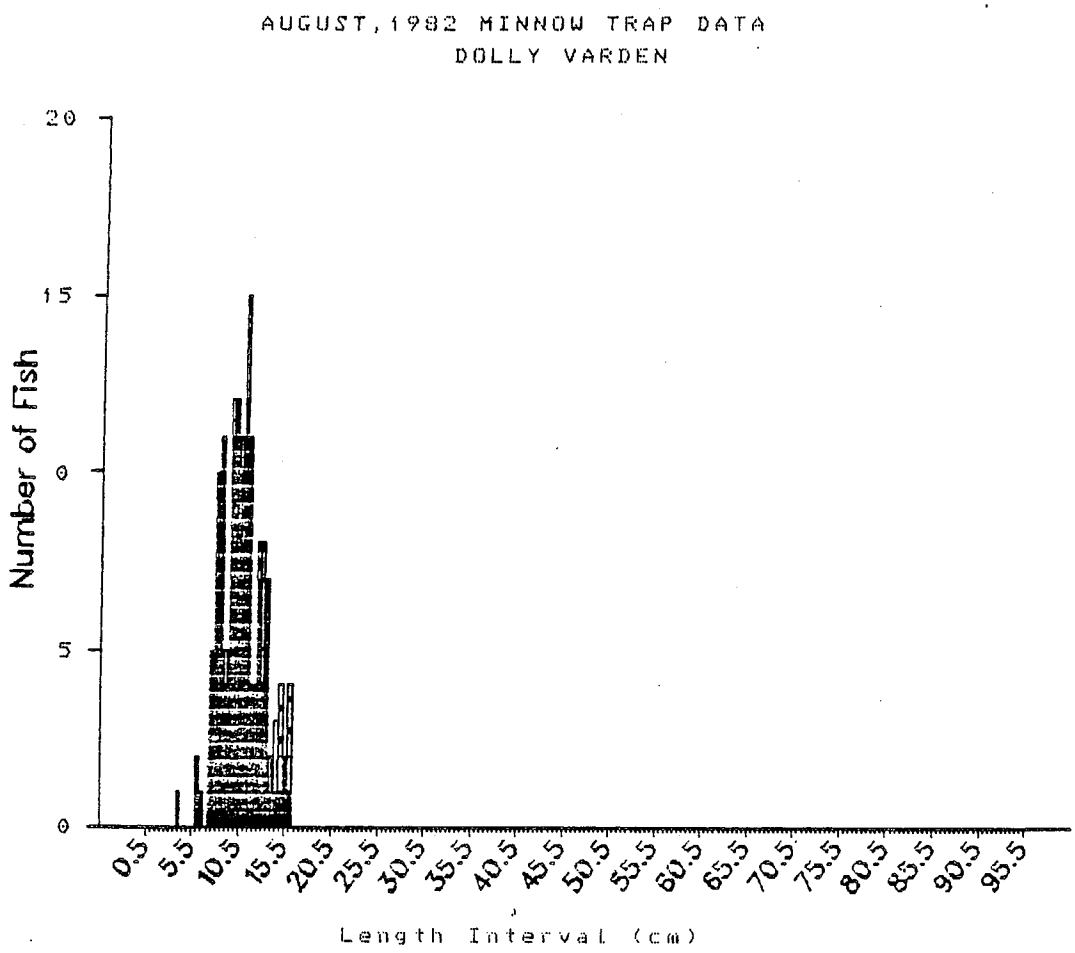


Figure 6.120

Dolly Varden
Length-Frequency Histogram
August Minnow Traps
1982

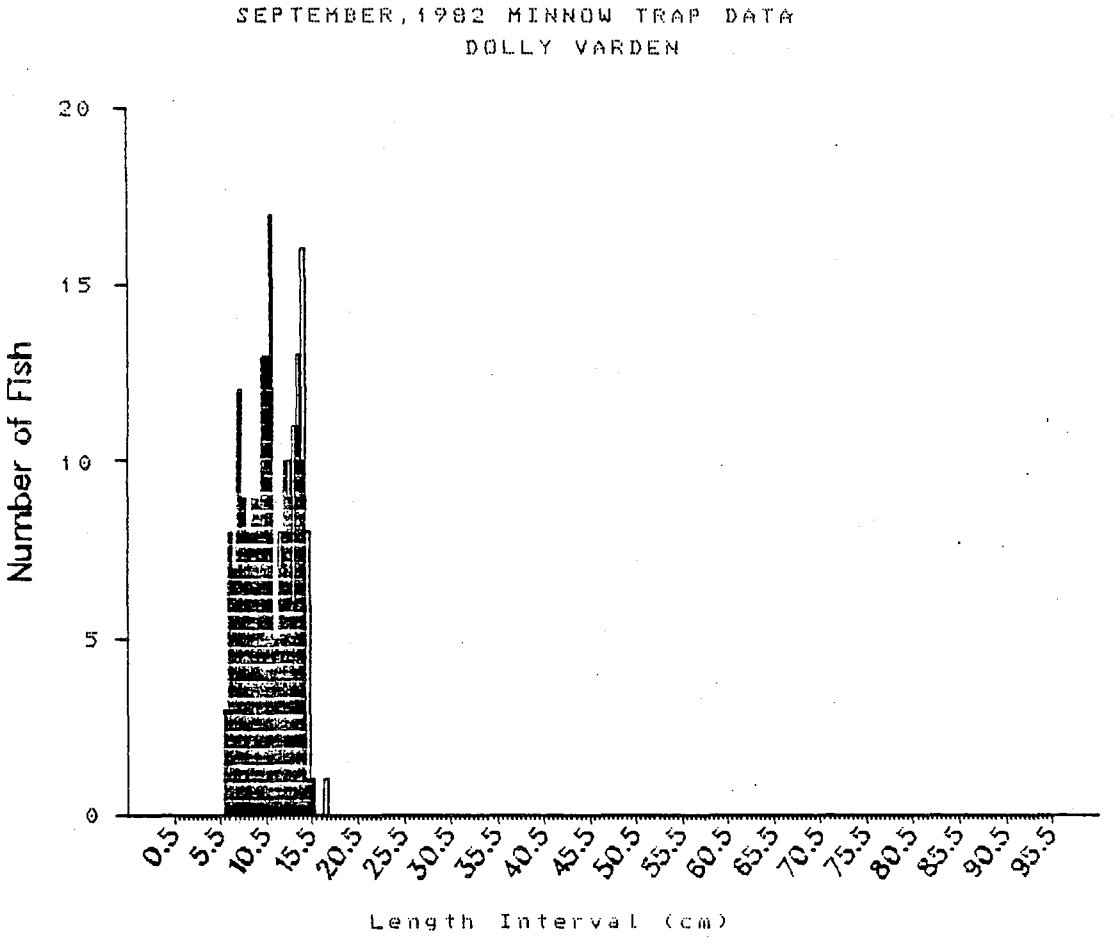


Figure 6.121

Dolly Varden
Length-Frequency Histogram
September Minnow Traps
1982

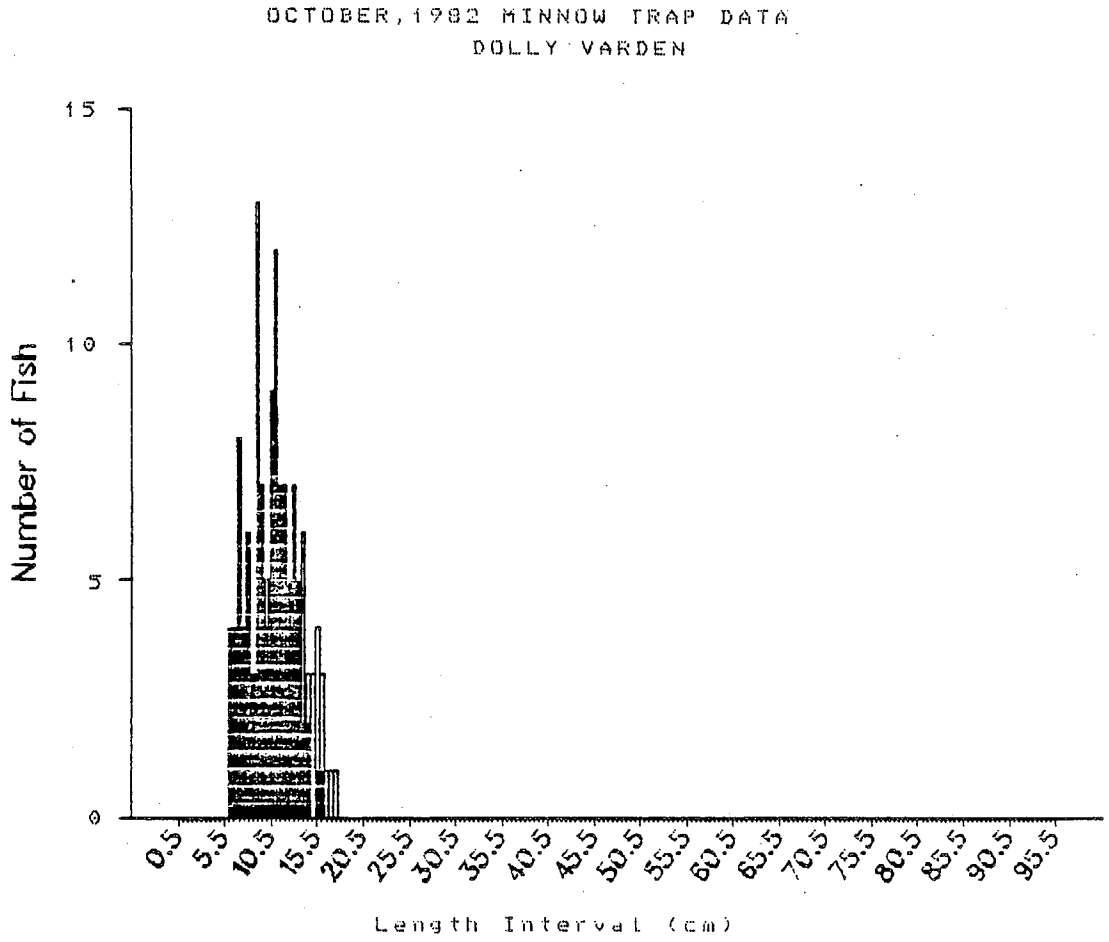


Figure 6.122

Dolly Varden
Length-Frequency Histogram
October Minnow Traps
1982

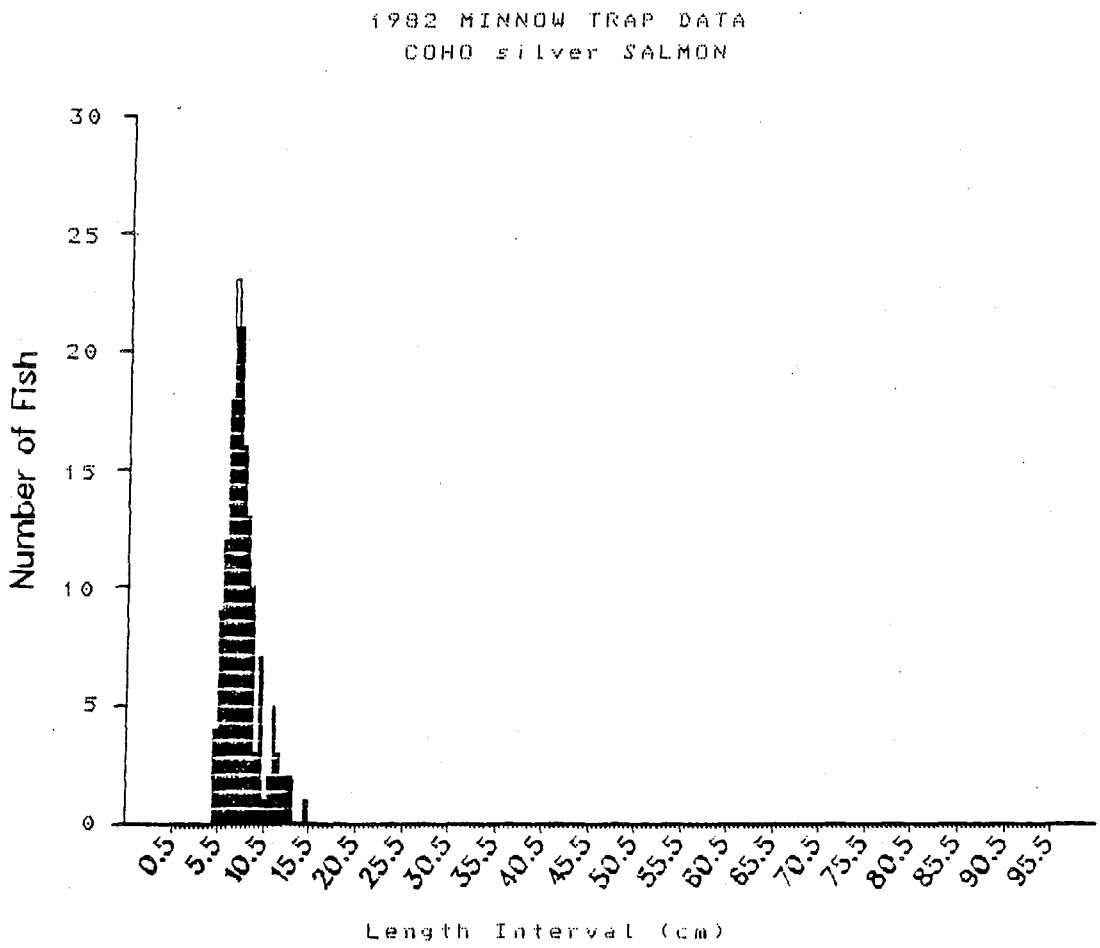


Figure 6.123

Coho (Silver) Salmon
Length-Frequency Histogram
August-October Minnow Traps
1982

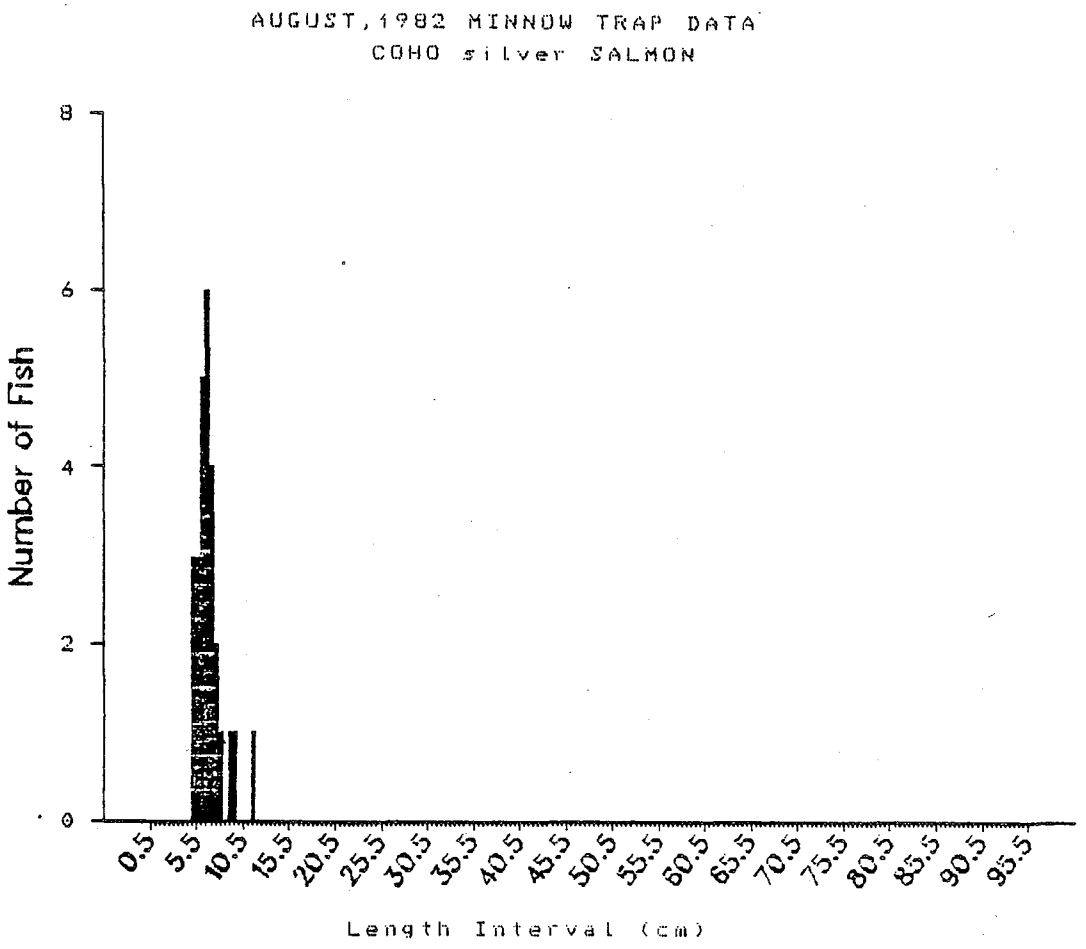


Figure 6.124

Coho (Silver) Salmon
Length-Frequency Histogram
August Minnow Traps
1982

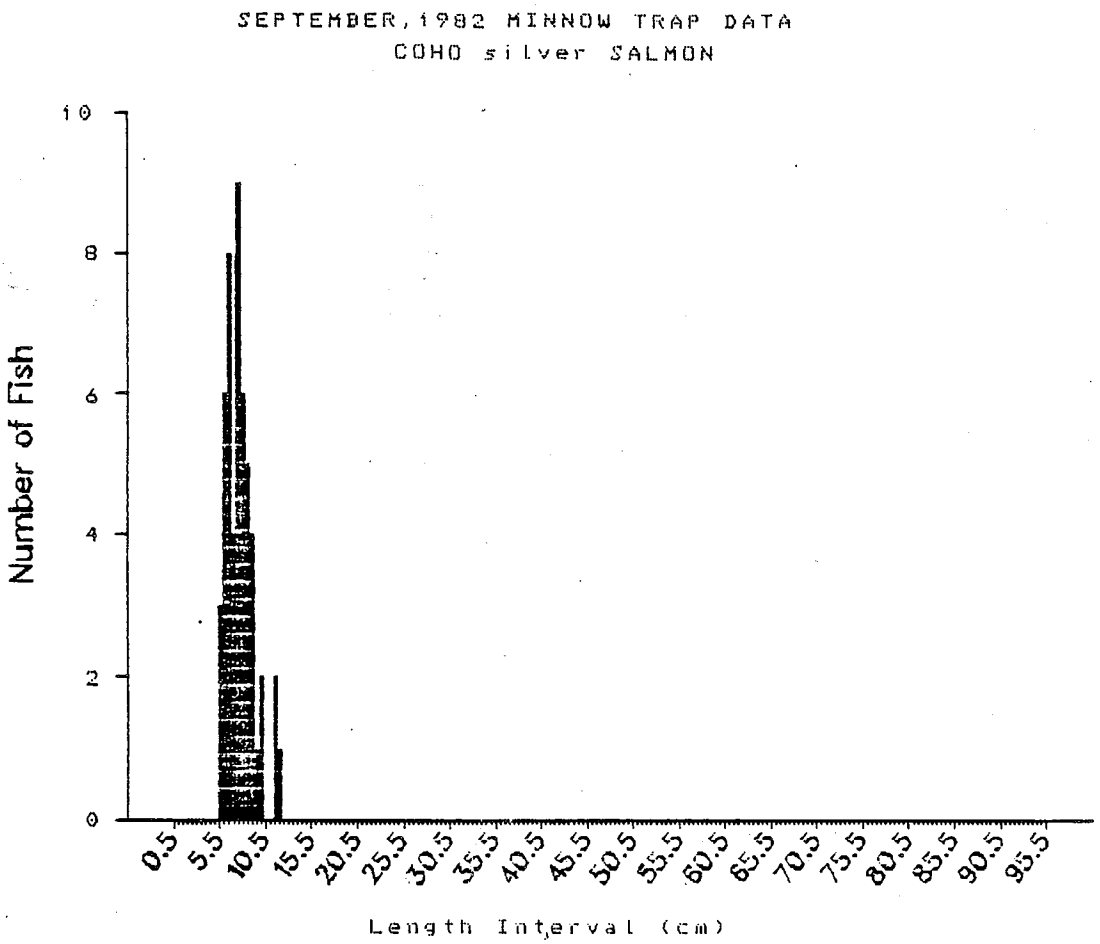


Figure 6.125

Coho (Silver) Salmon
Length-Frequency Histogram
September Minnow Traps
1982

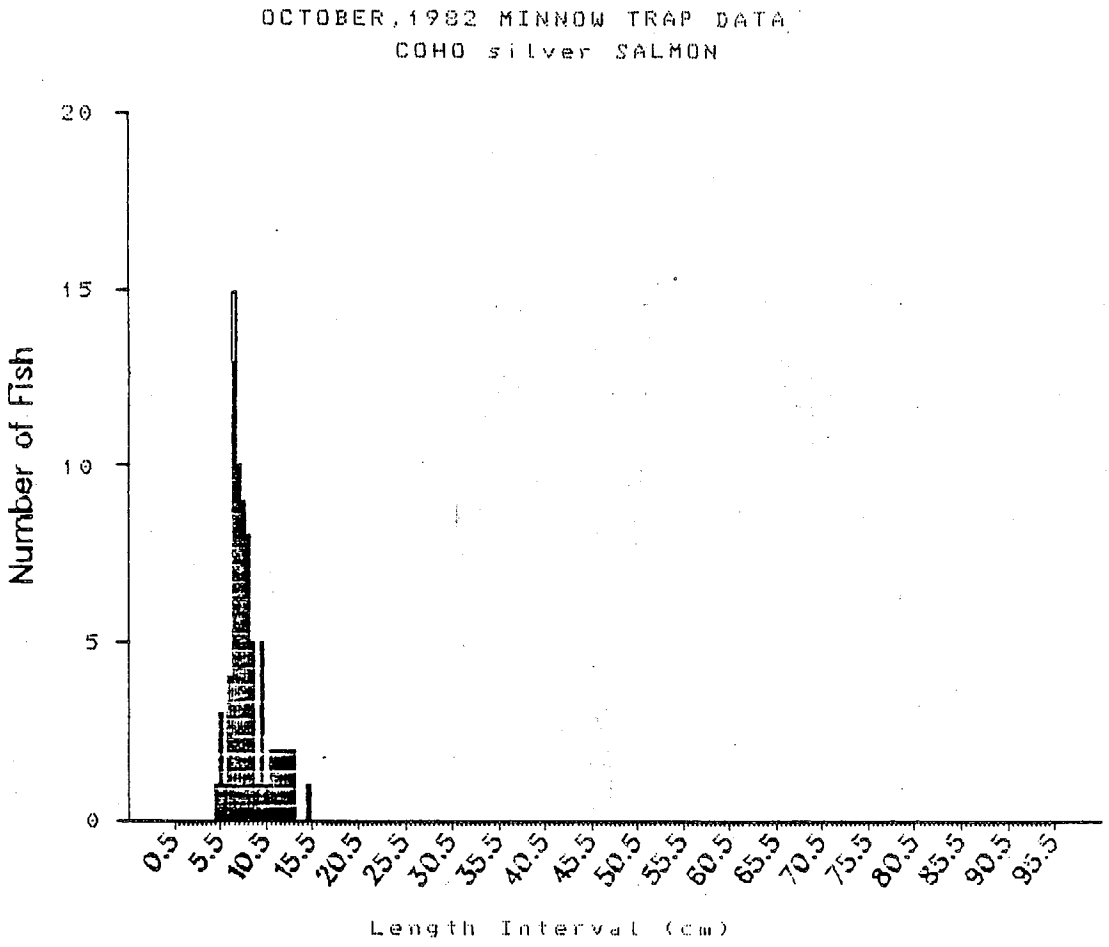


Figure 6.126

Coho (Silver) Salmon
Length-Frequency Histogram
October Minnow Traps
1982

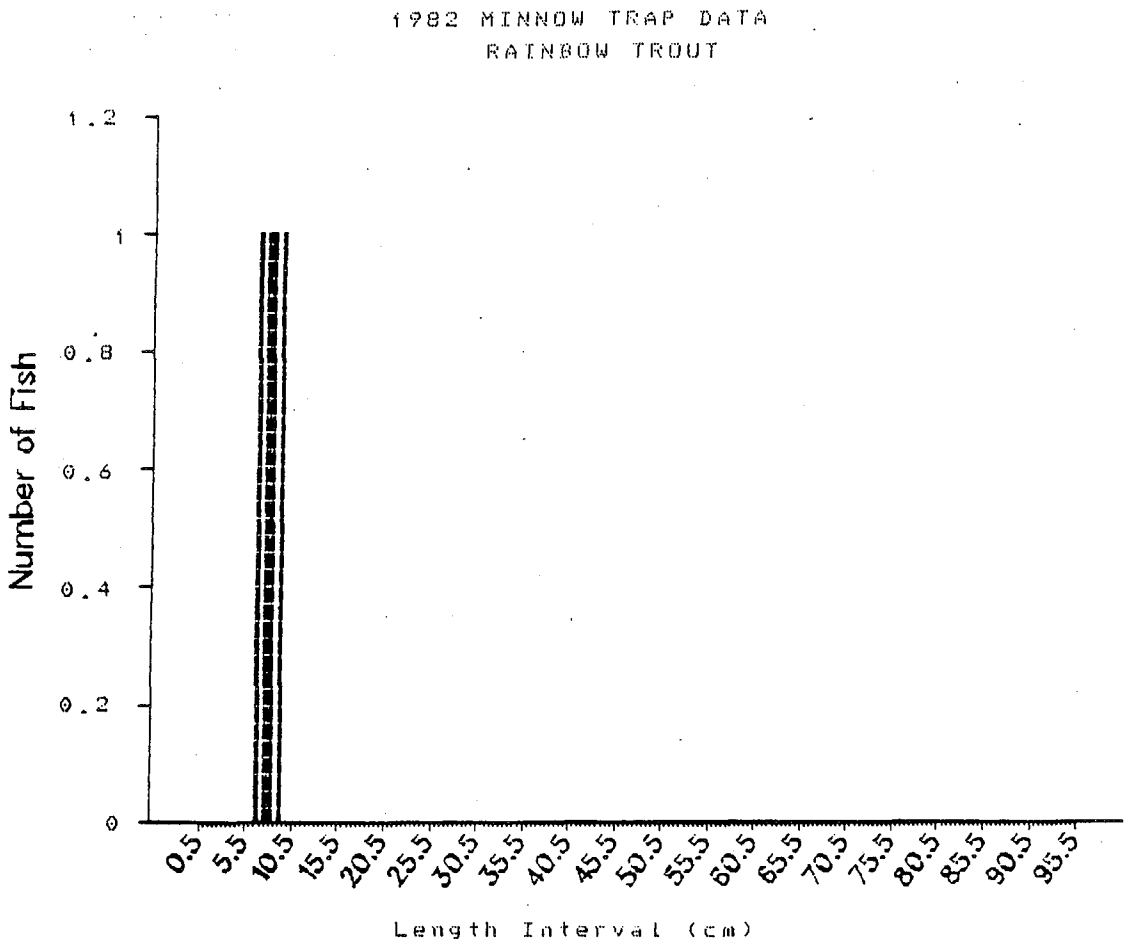


Figure 6.127

Rainbow Trout
Length-Frequency Histogram
August-October Minnow Traps
1982

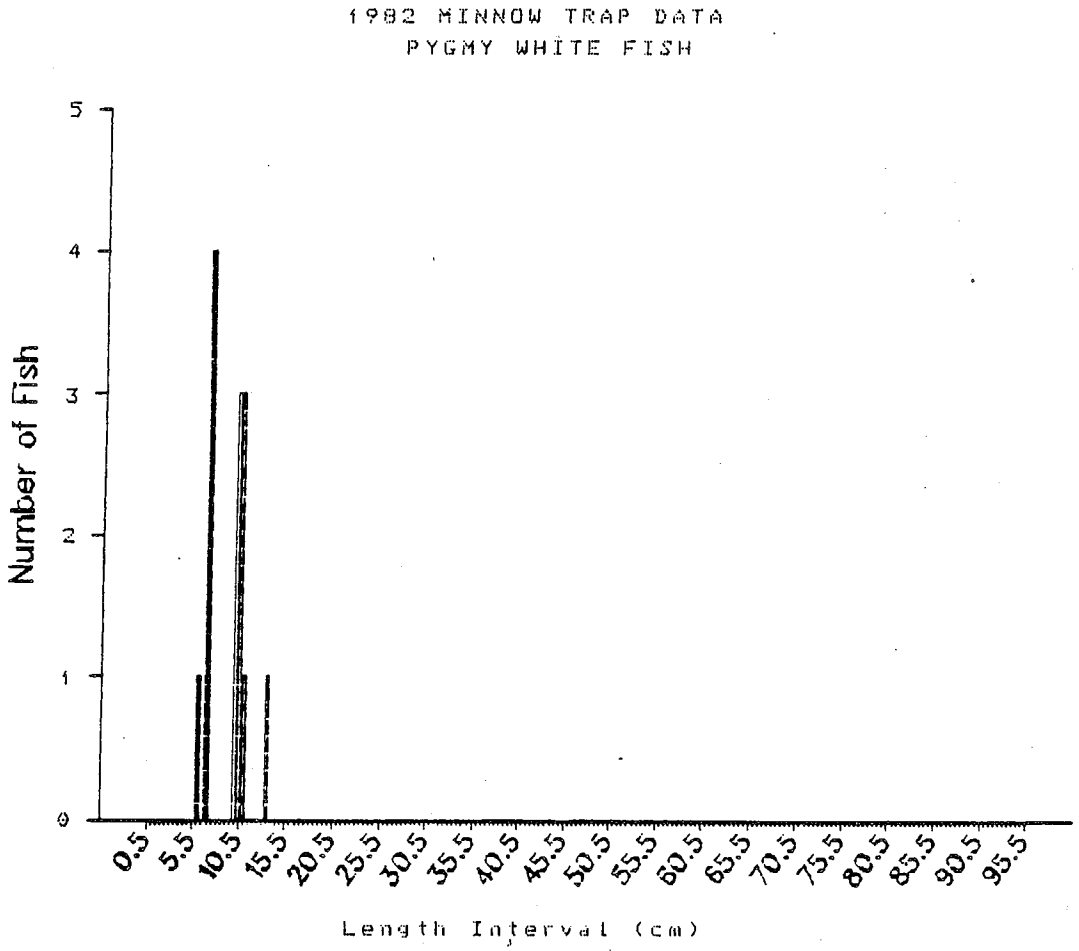


Figure 6.128

Pygmy Whitefish
Length-Frequency Histogram
August-October Minnow Traps
1982

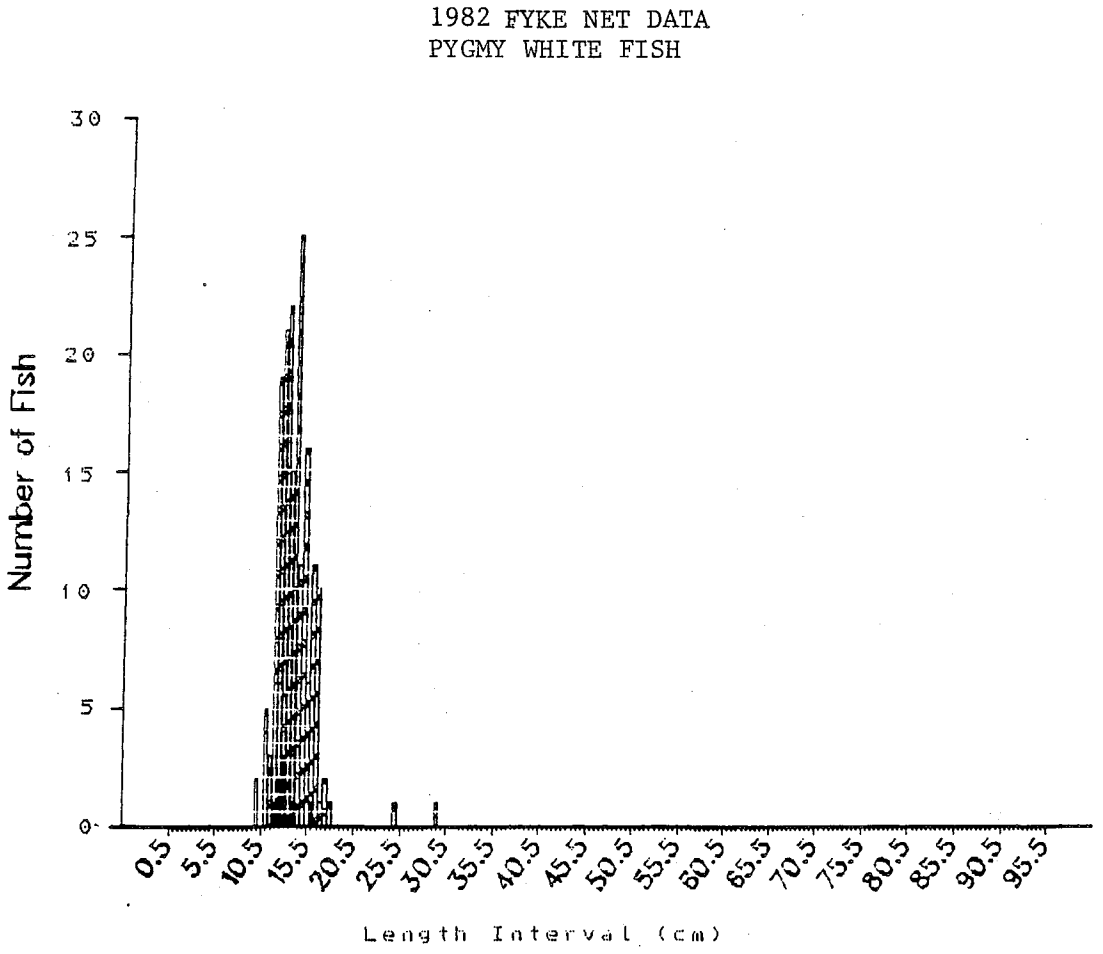


Figure 6.129

Pygmy Whitefish
Length-Frequency Histogram
August-October Fyke Nets
1982

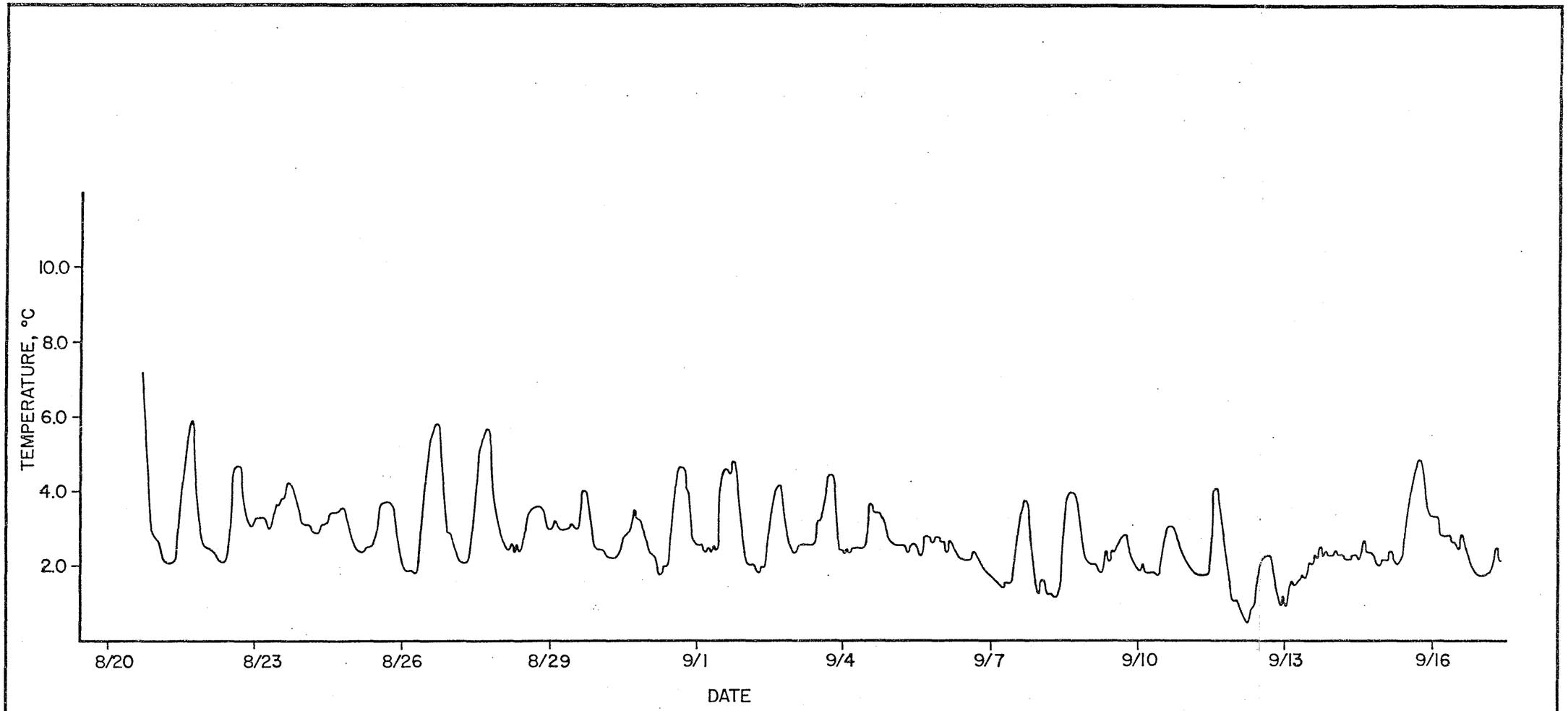
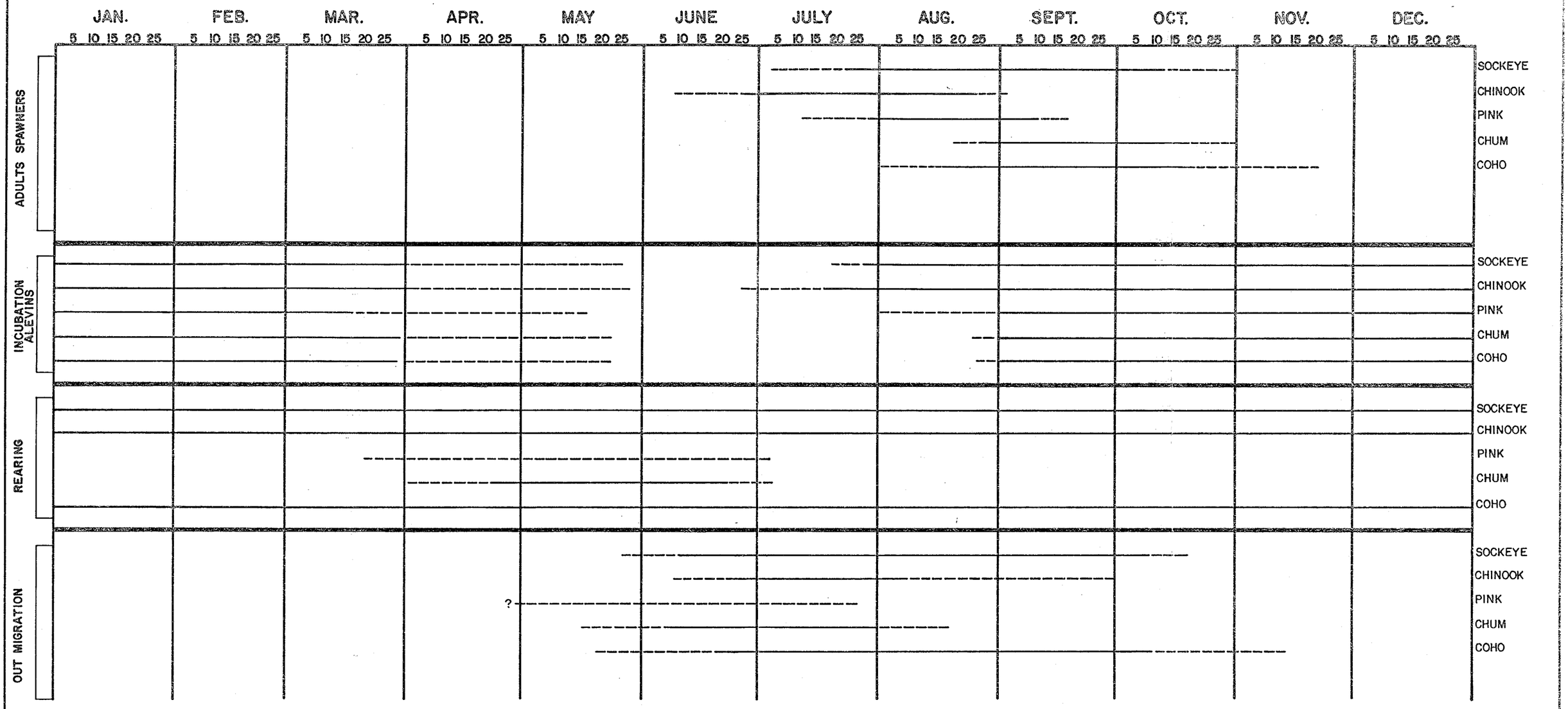


Figure 6.130

Water Temperature Record at Station 15
(Powerhouse Location)
Peabody-Ryan J-90 Thermograph



[1]Based in part on Susitna data (Trent, 1982).

[2]Based entirely on Susitna data (Trent, 1982).

[3]May rear in system for more than one full year.

Figure 6.131

Phenology of Major Life History Events For Salmon Species Chakachatna and McArthur Rivers 1982

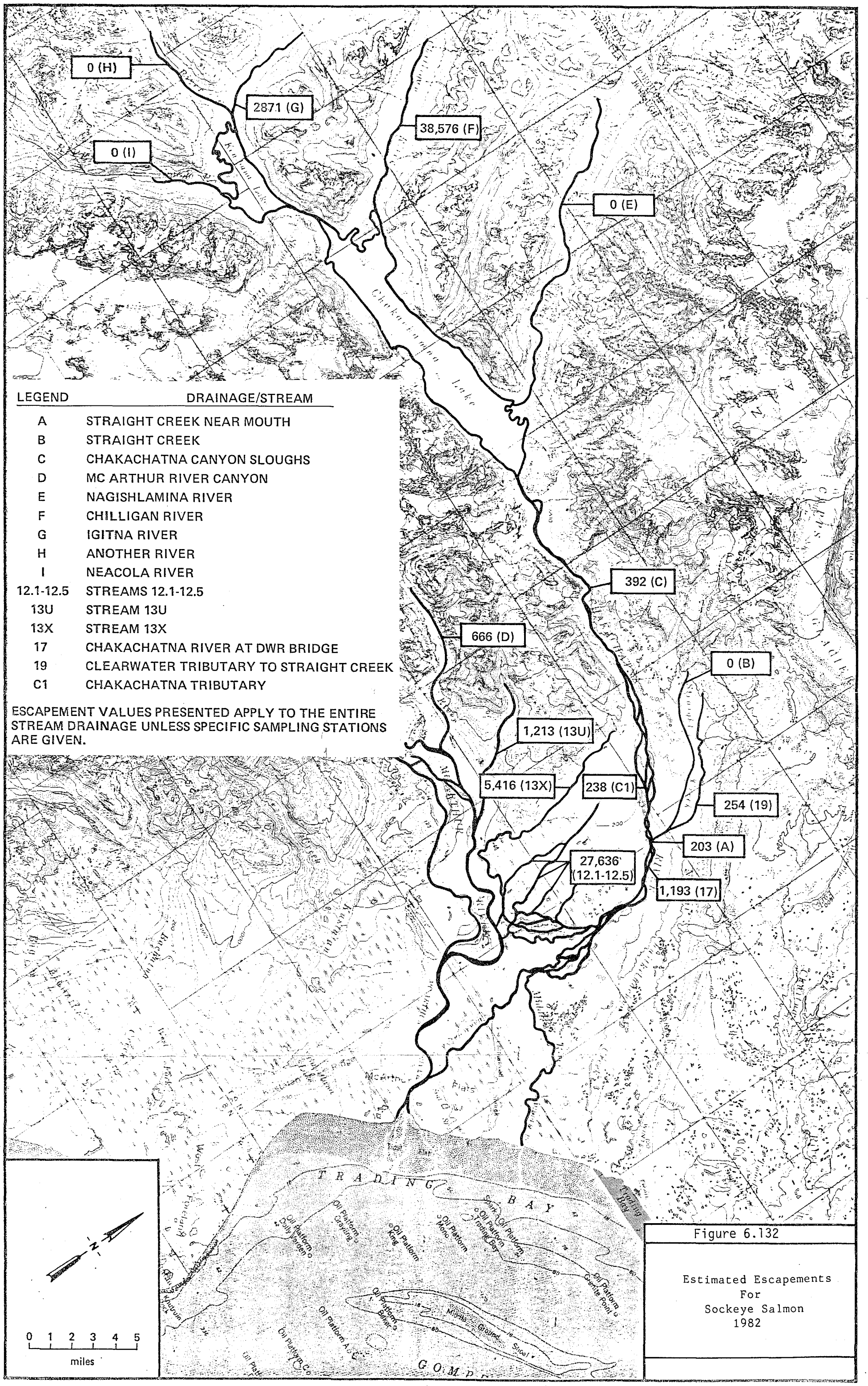


Figure 6.132

Estimated Escapements
For
Sockeye Salmon
1982

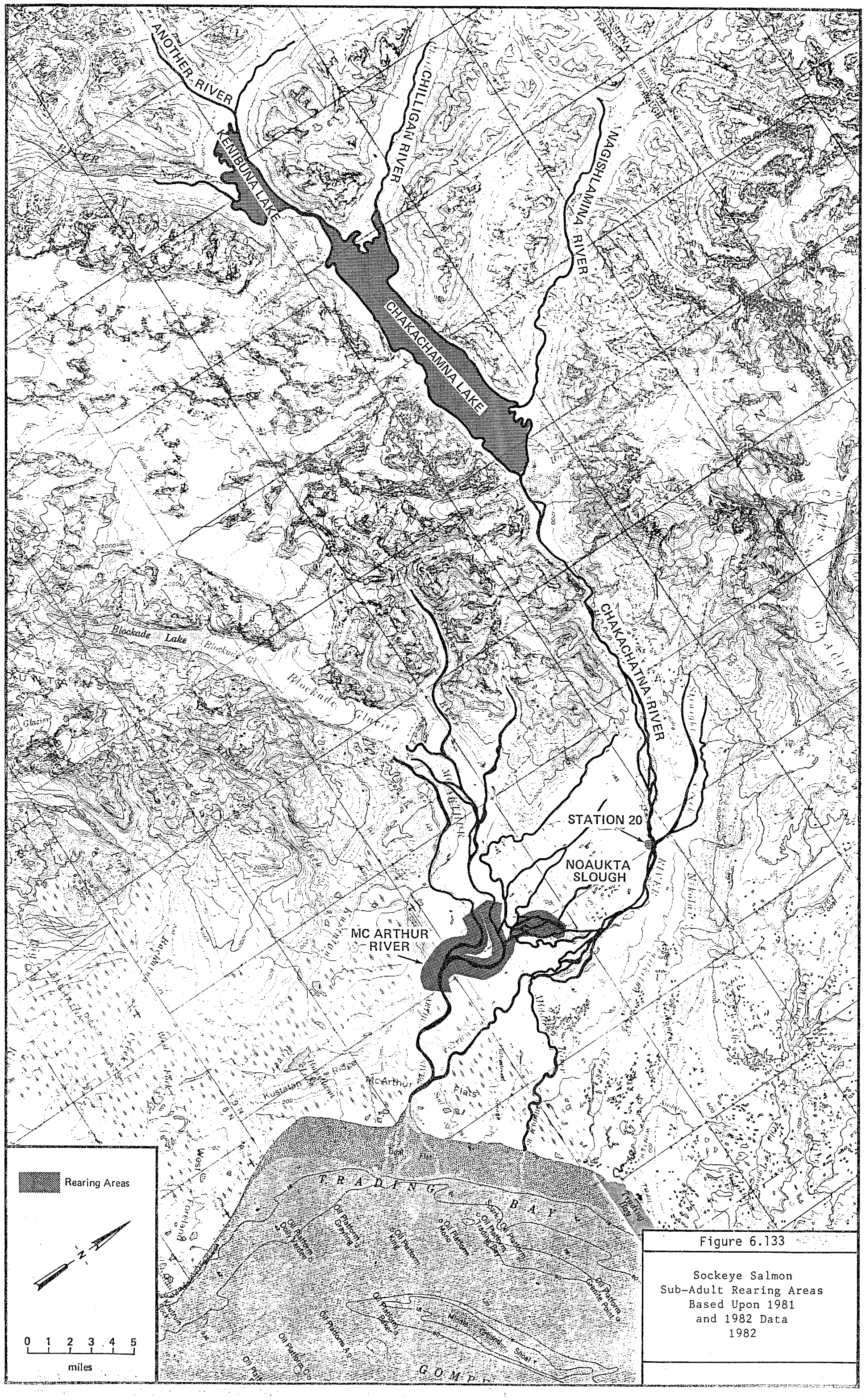


Figure 6.133

Sockeye Salmon
Sub-Adult Rearing Areas
Based Upon 1981
and 1982 Data
1982

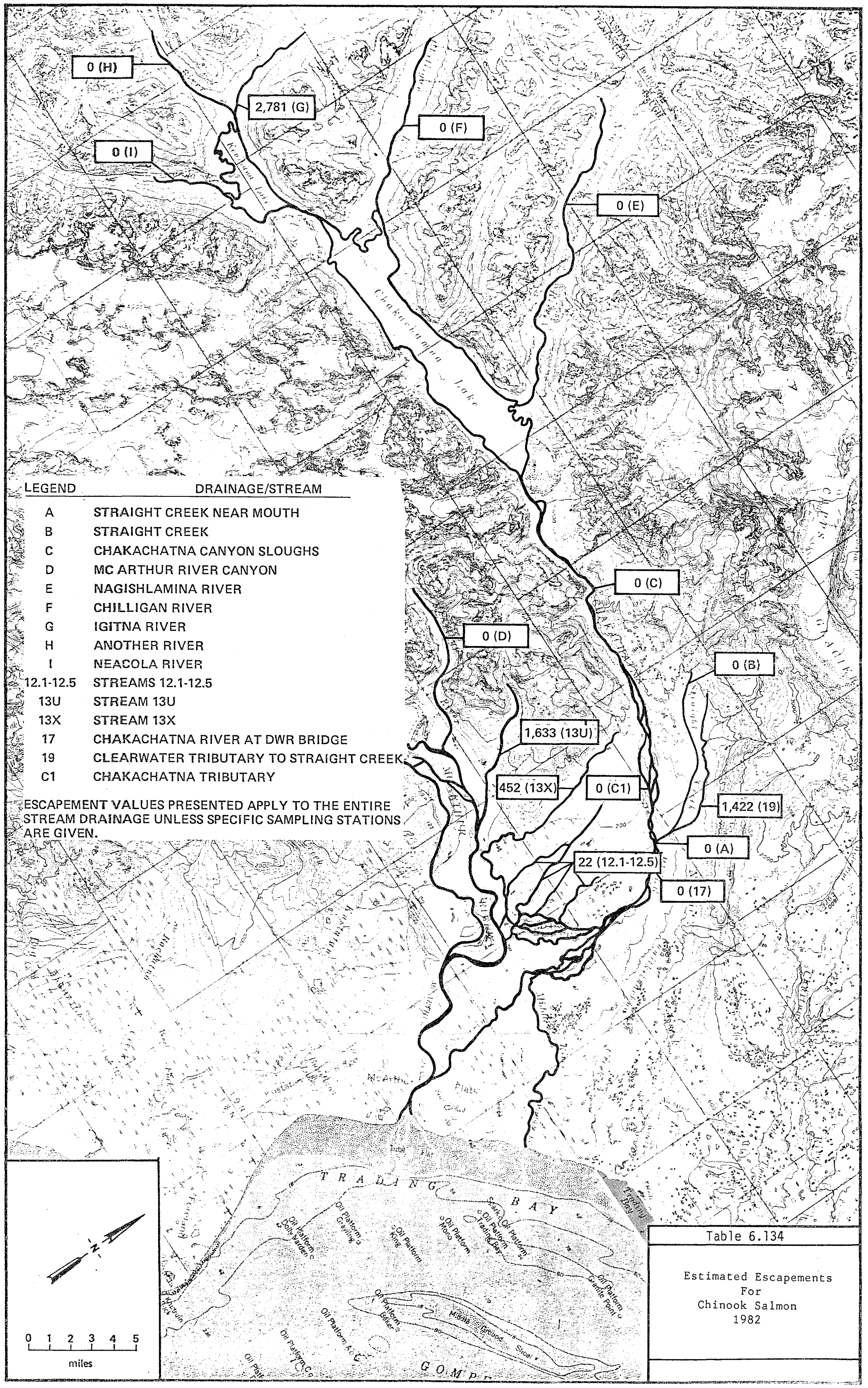


Table 6.134

Estimated Escapements
For
Chinook Salmon
1982

KENIBUNA LAKE

CHAKACHAMNA LAKE

CHAKACHATNA RIVER

STATION 15

STATION 13

MOUTH OF STREAM 13X

STREAM 14

CHAKACHATNA RIVER STATION 17

NOAUKTA SLOUGH

Rearing Areas

0 1 2 3 4 5

miles

Figure 6.135

Chinook Salmon
Sub-Adult
Rearing Areas
1982

LEGEND	DRAINAGE/STREAM
A	STRAIGHT CREEK NEAR MOUTH
B	STRAIGHT CREEK
C	CHAKACHATNA CANYON SLOUGHS
D	MC ARTHUR RIVER CANYON
E	NAGISHLAMINA RIVER
F	CHILLIGAN RIVER
G	IGITNA RIVER
H	ANOTHER RIVER
I	NEACOLA RIVER
12.1-12.5	STREAMS 12.1-12.5
13U	STREAM 13U
13X	STREAM 13X
17	CHAKACHATNA RIVER AT DWR BRIDGE
19	CLEARWATER TRIBUTARY TO STRAIGHT CREEK
C1	CHAKACHATNA TRIBUTARY

ESCAPEMENT VALUES PRESENTED APPLY TO THE ENTIRE STREAM DRAINAGE UNLESS SPECIFIC SAMPLING STATIONS ARE GIVEN.

0 (H)

0 (G)

0 (F)

0 (I)

0 (E)

279 (C)

60 (D)

0 (B)

5,402 (13U)

4,225 (13X)

0 (C1)

7,925 (19)

0 (A)

10,090 (12.1-12.5)

59 (17)

0 1 2 3 4 5
miles

Figure 6.136

Estimated Escapements
For
Pink Salmon
1982

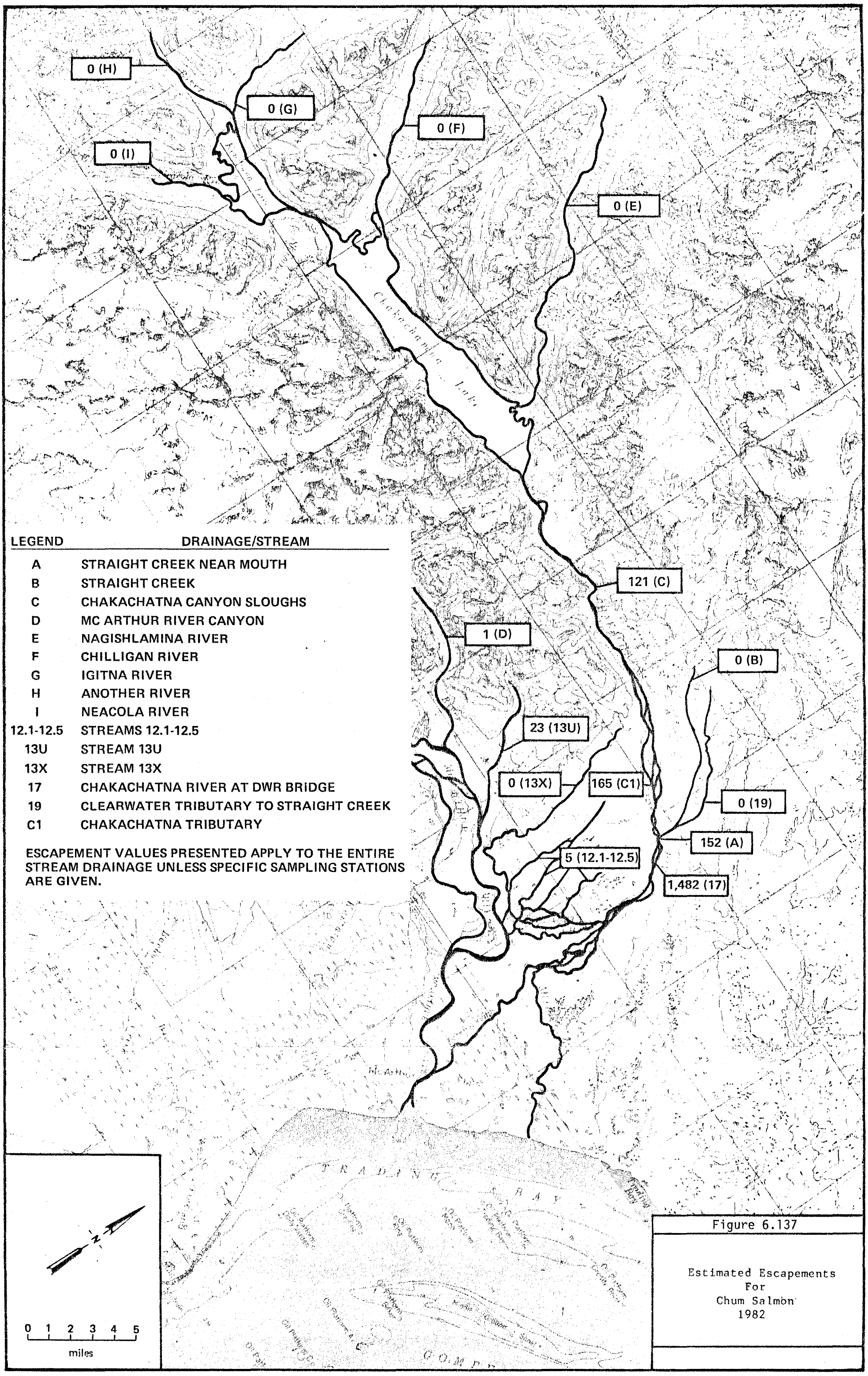


Figure 6.137

Estimated Escapements
For
Chum Salmon
1982

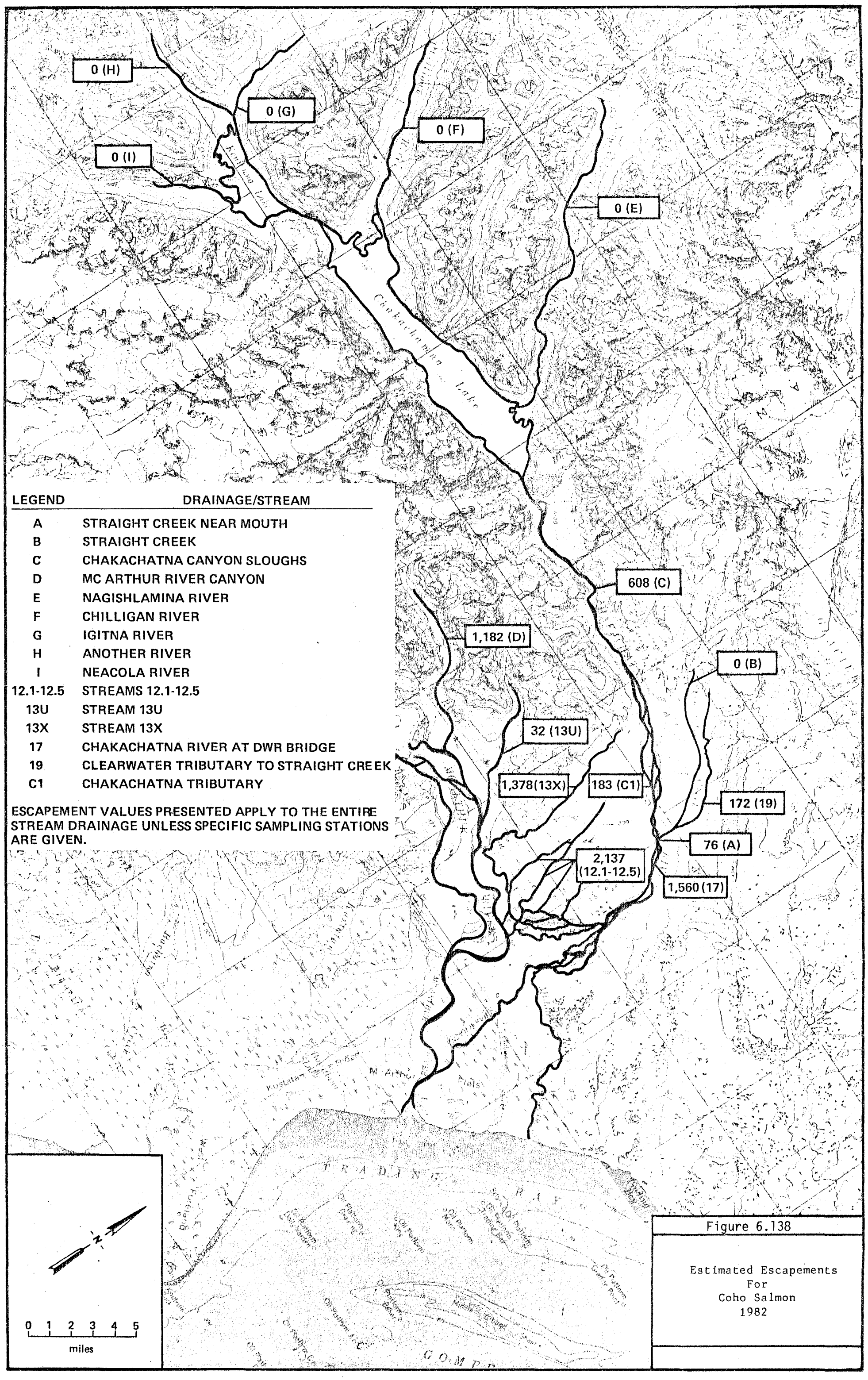


Figure 6.138

Estimated Escapements
For
Coho Salmon
1982

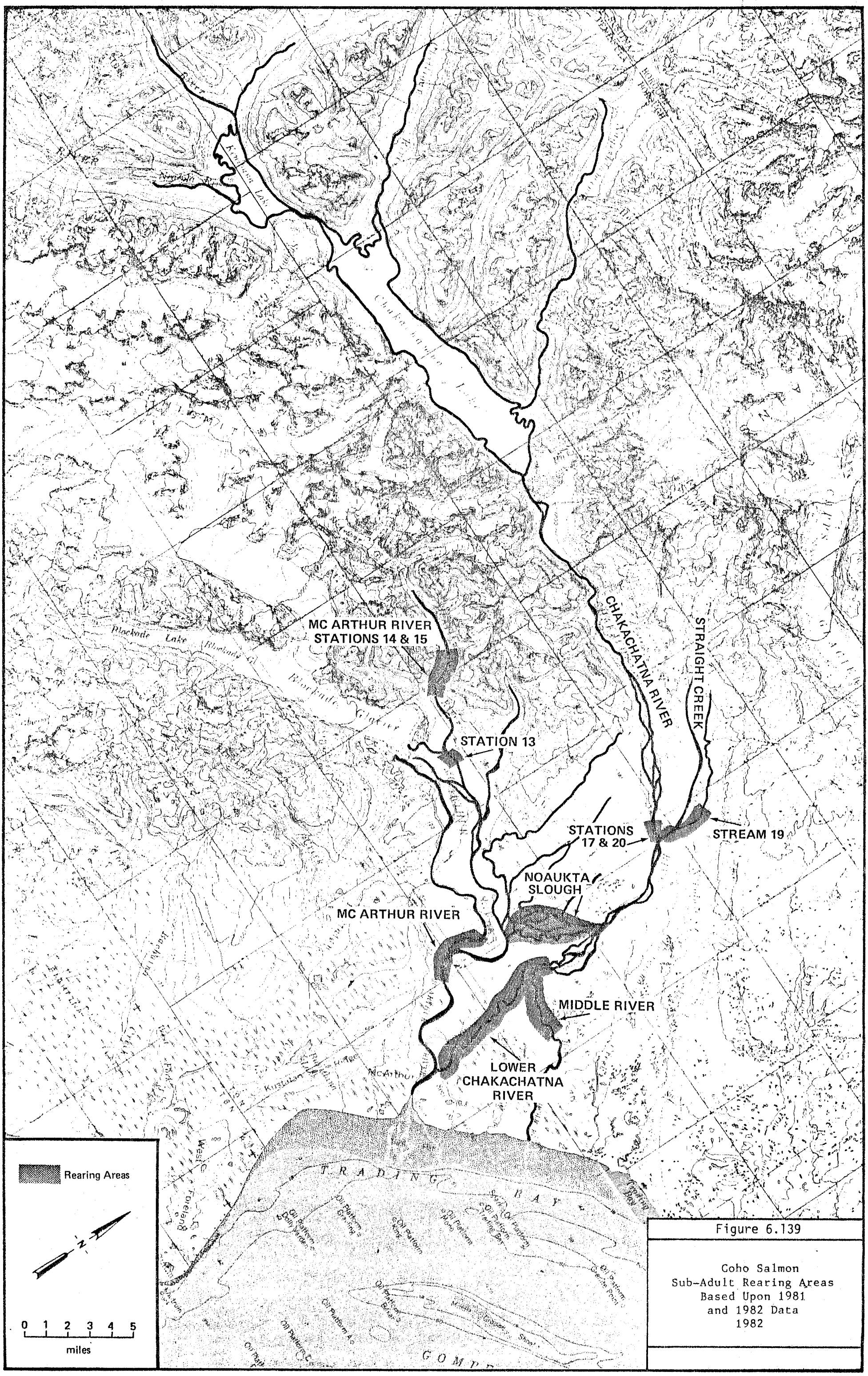
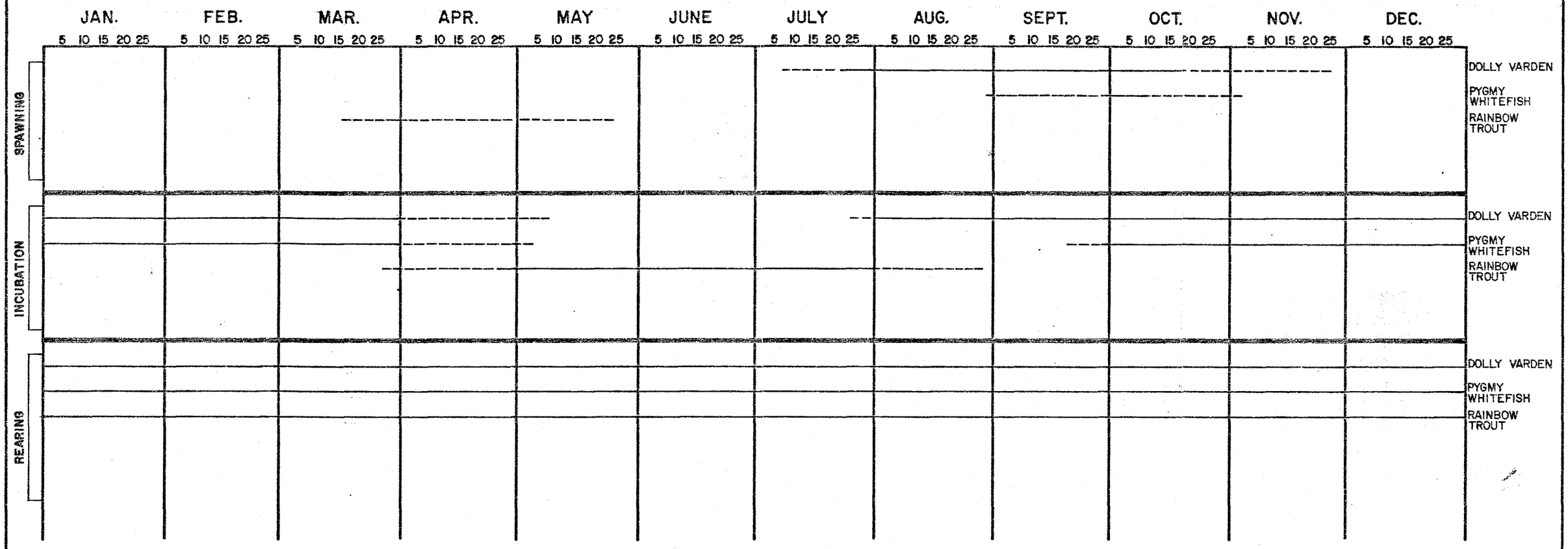


Figure 6.139

Coho Salmon
Sub-Adult Rearing Areas
Based Upon 1981
and 1982 Data
1982



[1]Based partially upon Morrow, 1980.

[2]Based upon Morrow, 1980.

Figure 6.140

Phenology of Important Non-Salmon species Life History Events

Chakachatna and McArthur Rivers

1982

ANOTHER RIVER

NEACOLA RIVER

CHILLIGAN RIVER

CHAKACHAMNA LAKE

NAGISHLAMINA RIVER

CHAKACHATNA RIVER

STRAIGHT CREEK

STATION 19

MC ARTHUR RIVER

NOAUKTA SLOUGH

MIDDLE RIVER

LOWER CHAKACHATNA RIVER

Rearing Areas

N

0 1 2 3 4 5

miles

Figure 6.141

Dolly Varden
Sub-Adult
Rearing Areas
1982

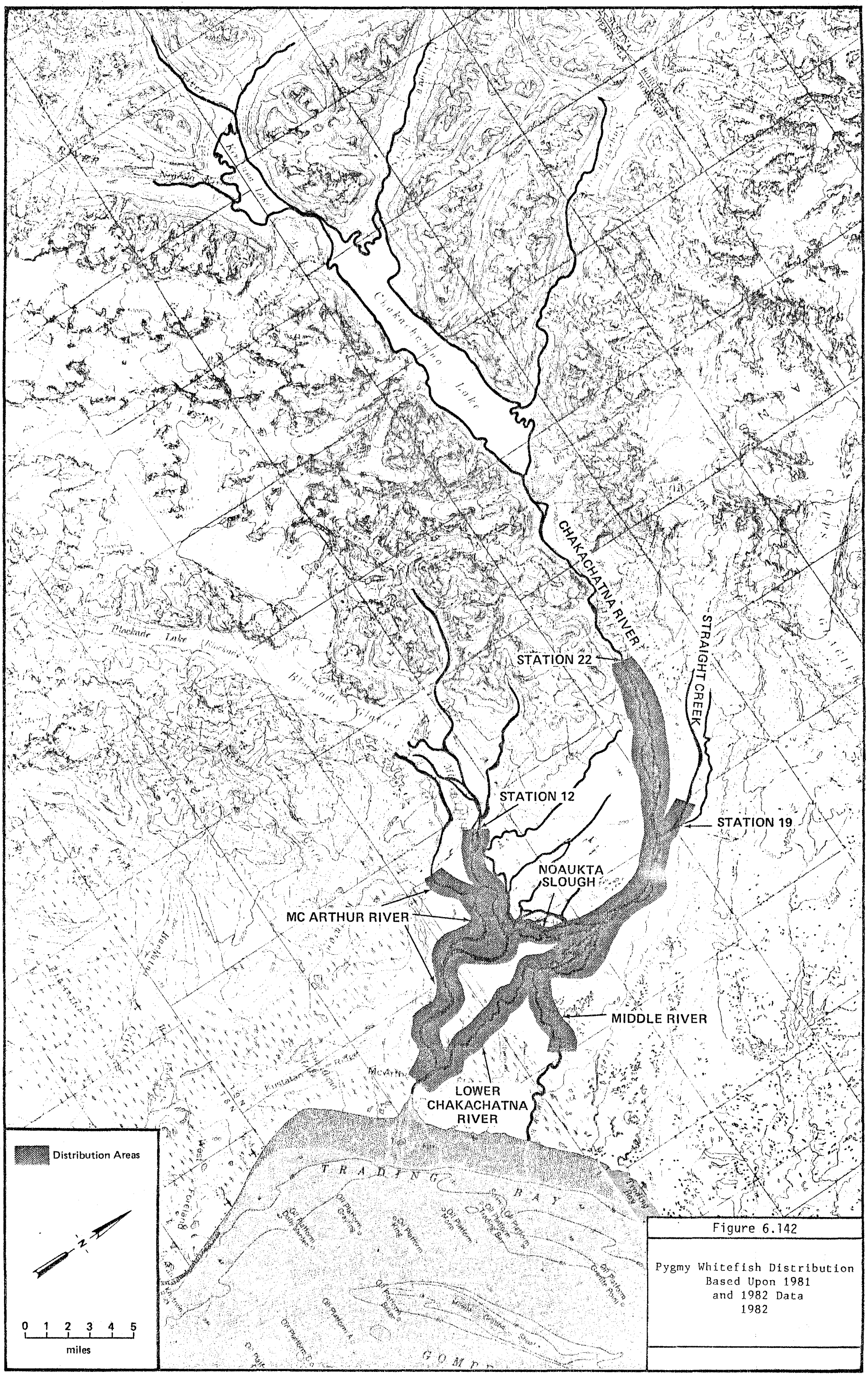


Figure 6.142

Pygmy Whitefish Distribution
Based Upon 1981
and 1982 Data
1982

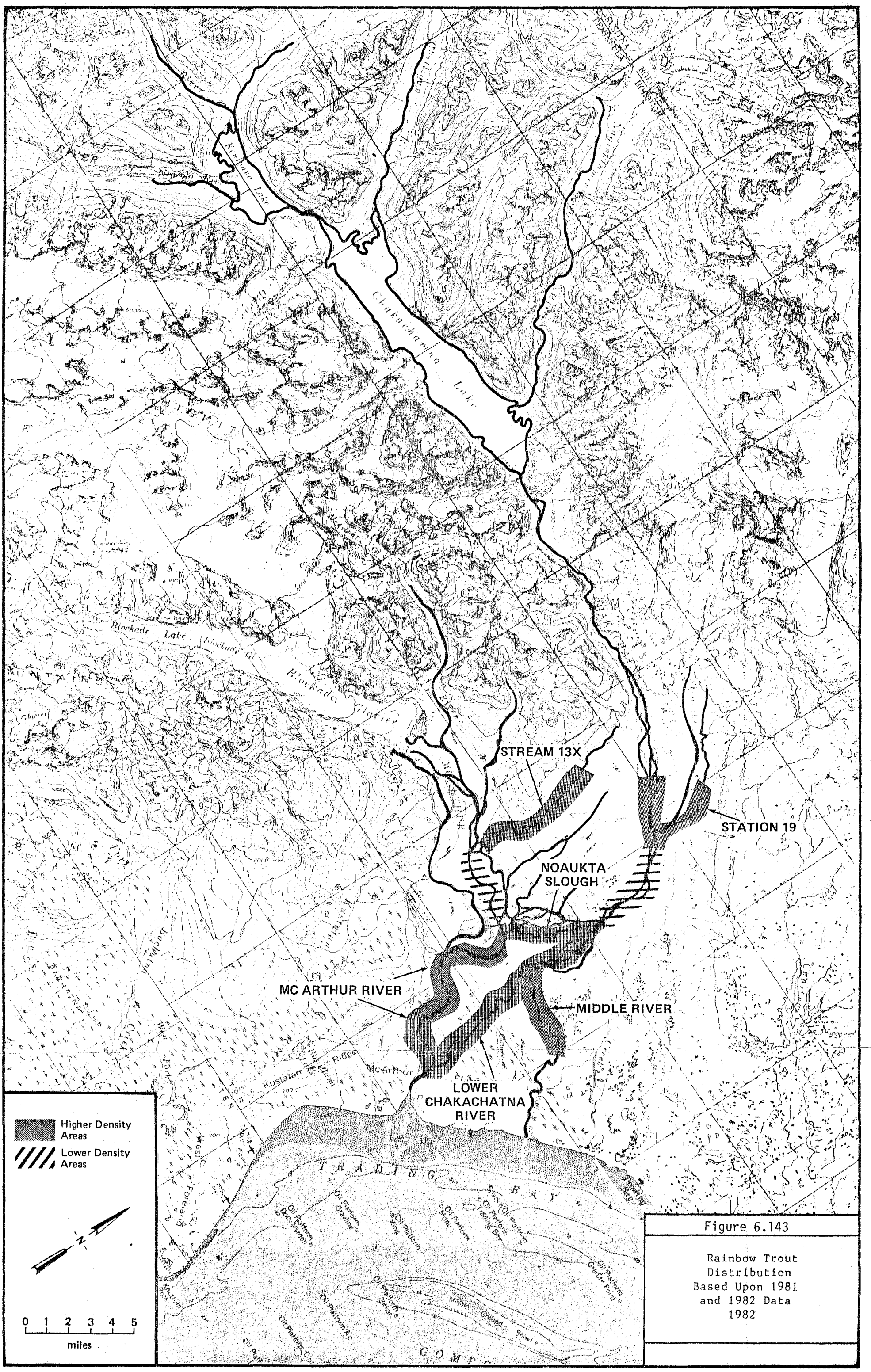


Figure 6.143

Rainbow Trout Distribution Based Upon 1981 and 1982 Data 1982

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Library & Information Services
Anchorage, Alaska

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Alaska Reso
Library & Informat
Anchorage, Al