MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS

FISHERIES DIVISION
JOB PROGRESS REPORT

STATE: MONTANA PROJECT TITLE: STATEWIDE FISHERIES INVESTIGATION

PROJECT NO.: F-46-R-6 STUDY TITLE: SURVEY AND INVENTORY OF WARMWATER LAKES

JOB NO.: IV-C JOB TITLE: FORT PECK RESERVOIR STUDY

PROJECT PERIOD: JULY 1, 1992 THROUGH JUNE 30, 1993

ABSTRACT

Over 1,500 walleye spawners were taken by spring trap netting in the upper Big Dry Arm. Approximately 32 million walleye eggs were obtained from 272 females, which resulted in the stocking of 17.6 million fry and nearly 1.0 million fingerlings into Fort Peck Reservoir. Condition factors and average weights of most walleye length groups appeared good. The average weight of female walleye spawners was slightly over six pounds, with male spawners averaging slightly more than two pounds. Walleyes captured during summer gill net sampling also appeared to be in good condition. The average weight for both sexes of walleye combined was 2.20 pounds. Catch rates for gill-netted walleye reservoir-wide was down from 1991. Due to declining reservoir water elevations during the spring and early summer 1992, production of forage fish, as indicated by fall beach seining, showed a dramatic drop from 1991. Cisco reproduction also appeared to have plummeted due to lack of a protective ice cover during winter egg incubation. Lake trout creel surveys during spring and fall indicated that catch rates were stable and condition of angler-caught fish was good. Average weight of lake trout during fall creel was 7.70 pounds.

OBJECTIVE AND DEGREE OF ATTAINMENT

Job Objectives:

1) To acquire a greater and consistent walleye egg supply for artificial propagation of fry and fingerlings. Accomplished entirely with state funds, results presented in Findings.

2) To determine success of walleye fry versus fingerling plants to develop future stocking guidelines. This objective was met and results are presented in Findings.

3) To determine abundance of walleye in spring spawning runs in the Missouri River upstream from Fort Peck Reservoir and assess impacts of river spawning attributable to Yellowstone River walleye stocking. This objective was partially met and is presented in Findings.

4) To encourage reservoir management practices to benefit the fishery as outlined in the water level management plan by coordinating needs with the Corps of Engineers and other states on the Missouri River Natural Resources Committee. Accomplished wholly with state funding.

5) To determine effects of reservoir water levels on abundance, distribution, and reproduction of key sport and forage fish. This objective was partially met and is presented in Findings.

6) To determine abundance and trends of spring spawning populations of walleye and northern pike. This objective was partially achieved and is reported in Findings.

7) To determine the rate of harvest for key species and angler preference for various species management. A lake trout creel survey was conducted in spring and fall and is presented in Findings.

8) To determine status of cisco and spottail shiners as to abundance, distribution, spawning success, and utilization by predators. This objective was met and results are reported in Findings.

9) To obtain greater public involvement by attending ten public/sportsmen's club meetings and providing at least five news releases per year. Accomplished entirely with state funds.

10) To collect and tabulate commercial fish harvest, prepare commercial regulations, and conduct field inspections to determine compliance and catch of non-target species. Accomplished wholly with state funds.

PROCEDURES

Spring trap-net sampling was conducted in the Big Dry Arm and lower Missouri Arm with 4- x 6-foot frame traps of 1-inch square mesh rigged with 50-foot leads. Sinking experimental gill nets 125 feet in length and 6 feet deep consisting of 25-foot panels of 3/4- x 1-, 1 1/4-, 1 1/2-, and 2-inch square mesh were fished during late summer to monitor condition, distribution and relative abundance of game fish species. Experimental gill nets were also used in the fall to acquire information on cisco spawners. Beach seining, to determine abundance and reproductive success of game and forage fish and to determine stocking success of walleye, was conducted in late summer and early fall utilizing a 100- x 9-foot beach seine of 1/4-inch square mesh. Monofilament gill nets 100- x 6-foot with 1/2-inch square mesh were fished vertically from the water's surface to sample young-of-year (YOY) cisco. Lake trout spawners were captured with 300-foot gill nets with 3-, 4-, and 5-inch square mesh.

FINDINGS

Trapping

Frame traps were used to sample game fish populations in the upper Big Dry from April 7-29, 1992. A total of 1,585 walleye were captured, of which 815 were

weighed and measured. The catch rate was 5.7 walleye per trap-day, which was slightly less than the 6.9 catch rate over the previous 5 years (Table 1). The ratio of males to females was approximately 1:1.

Table 1. Summary of the walleye and northern pike caught during spring trap-netting in the upper Big Dry Arm of Fort Peck Reservoir, 1974-92.

Date	Trap-days	No. Walleye	Walleye/ Trap-day	No. No.Pike	No.Pike/ Trap-day
1974 (4/22-5/03)	71	1,243	17.4	125	1.8
1975 (4/25-5/12)	97	1,114	11.5	102	1.1
1976 (4/07-5/13)	100	2,108	21.1	95	1.0
1977 (4/12-5/24)	323	1,727	5.3	431	1.3
1978 (4/17-5/05)	81	1,896	23.4	399	4.9
1979 (4/28-5/17)	63	326	5.2	268	4.3
1980 (4/14-5/06)	97	535	5.5	301	3.1
1981 (3/31-4/28)	140	371	2.7	93	0.7
1982 (4/21-5/07)	89	655	7.4	221	2.5
1983 (4/06-5/09)	106	725	6.8	87	0.8
1984 (4/10-5/04)	96	579	6.0	21	0.2
1985 (4/08-4/26)	97	1,202	12.4	69	0.7
1986 (4/07-4/24)	102	1,448	14.2	174	1.7
1987 (4/07-4/24)	220	1,512	6.9	78	0.3
1988 (4/06-4/22)	214	1,610	7.5	163	0.8
1989 (4/25-5/06)	207	2,360	11.4	383	1.9
1990 (4/05-5/04)	292	1,863	6.4	513	1.8
1991 (4/09-5/10)	375	793	2.1	491	1.3
1992 (4/07-4/29)	278	1,585	5.7	684	2.5

Female walleye averaged 6.13 pounds and males averaged 2.32 pounds. The average size for both sexes of walleye is the largest observed since trapping began in 1979 (Table 2). Figure 1 shows the size composition of the walleye trapped in 1992. The percent of fish in the 3-, 4-, and 5-pound categories appears to have increased significantly over previous years. Condition factors and average weight for 1-inch length groups of walleye from 14-25 inches is shown in Figures 2 and 3, respectively. Since 1990, condition and average weight for these length groups appears to have remained the same, or improved slightly.

Table 2. Summary of average weights and sex ratios for walleye trap-netted in the upper Big Dry, 1979-92.

Year	Average Weight Males	Sample Size	Average Weight Females	Sample Size	Sex Ratio[1] Male:Female
1992	2.32	229	6.13	522	1:1
1991	1.82	234	5.31	106	2:1
1990	2.08	362	5.77	142	2:1
1989	1.78	192	4.88	129	3:1
1988	1.69	283	3.68	239	2:1
1987	1.22	152	2.94	94	2:1
1986	1.31	851	2.43	216	3:1
1985	1.31	606	2.54	111	5:1
1984	.88	454	2.14	34	13:1
1983	.80	644	3.24	37	18:1
1982	1.07	565	2.95	58	10:1
1981	2.27	209	3.70	96	2:1
1980	1.77	247	3.43	122	2:1
1979	1.50	204	3.40	61	3:1

[1]Sample size larger than fish sample used to determine average weights and lengths.

The catch rate for northern pike in frame traps in the upper Big Dry Arm was 2.5 fish per trap-day. This was the best catch rate since 1982 (Table 1). Of the 319 northerns weighed and measured, lengths ranged from 22.5-44.0 inches, and weights from 2.70-24.30 pounds. Average length was 29.1 inches and average weight was 6.80 pounds.

Gill Netting

Gill netting to determine the distribution, composition and relative abundance of sport and forage fish populations was conducted at 21 different locations throughout the reservoir from July 21-August 20, 1992.

The Big Dry Arm appeared to have the largest concentration of walleye, with a catch rate of 6.9 fish per net-day (Table 3). The catch rate for walleye reservoir-wide was 3.7 fish per net-day, which was down from 5.8 fish in 1989.

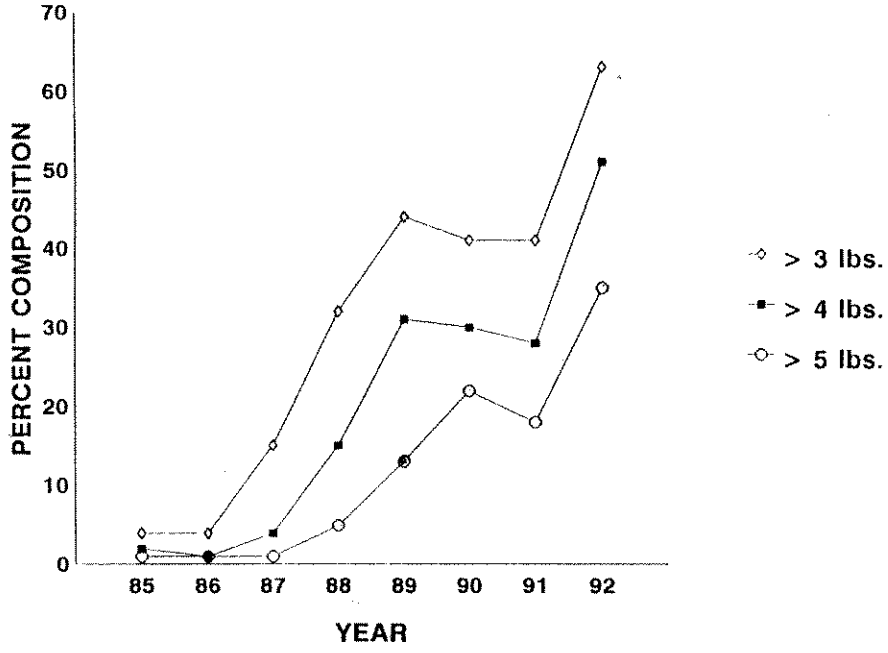

Figure 1. An illustration of the change in size of walleye captured during spring trapping in the upper Big Dry Arm of Fort Peck Reservoir, 1985-92.

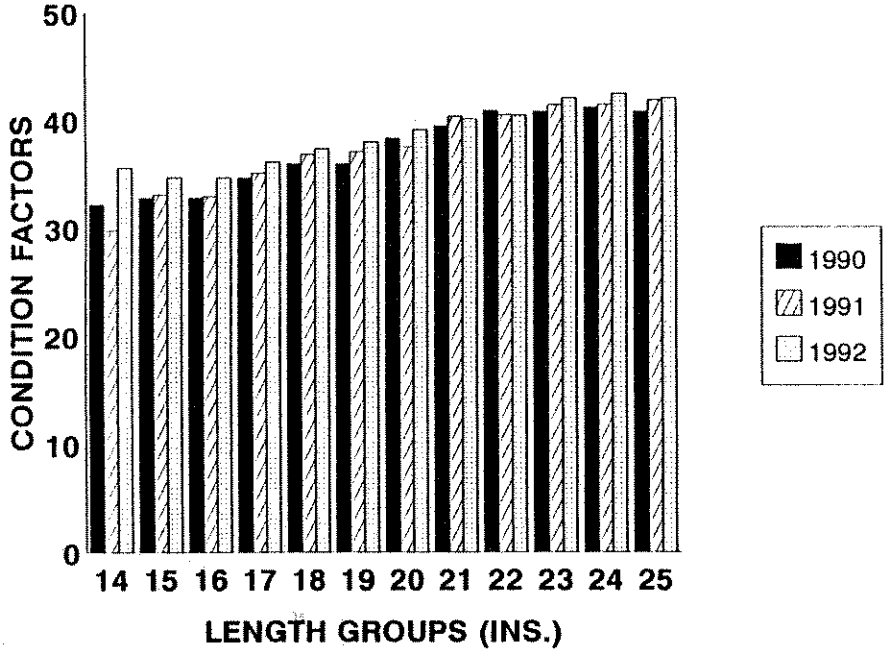

Figure 2. Average condition factors for various 1-inch length groups of walleye trap netted in the upper Big Dry Arm of Fort Peck Reservoir, 1990-92.

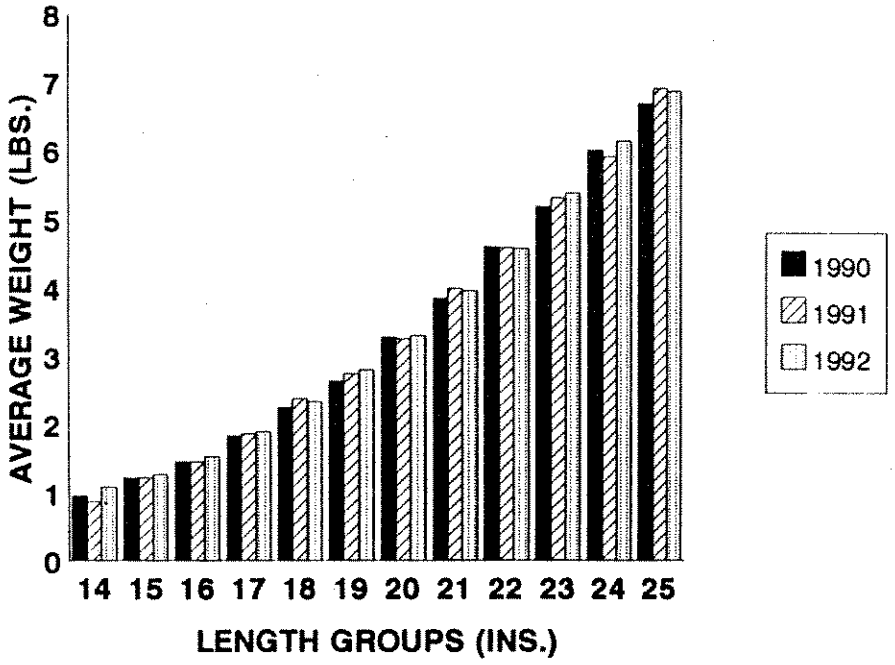

Figure 3. Average weights for various 1-inch length groups of walleye trap netted in the upper Big Dry Arm, Fort Peck Reservoir, 1990-92.

Average weights and lengths for gill-net captured walleye in all areas except the upper reservoir, appears to have increased in 1992 (Table 4). Figures 4 and 5 show a slight increase in average weight and condition factor for most 1.0 inch length groups, with a greater abundance of walleye 24 inches and larger.

Catch rates for gill-netted northern pike, sauger, and yellow perch remained low as in 1989, with catch rates of 0.4, 1.3, and 1.0, respectively (Table 3). Catch rates for goldeye and channel catfish increased slightly from 1989, while the catch for cisco remained constant. Gill-net sampling shows cisco to be well dispersed throughout the reservoir. Figure 6 shows the annual catch rates for goldeye taken with experimental gill nets since 1981.

Beach Seining

Beach seining to determine the reproductive success of sport and forage fish was conducted throughout the reservoir from August 24-September 3, 1992. A total of 8,564 fish were captured with 133 seine hauls (Table 5). Total numbers and the overall catch rate for 1992 was much less than 1991 when over 18,000 fish were sampled. The reservoir-wide catch rate dropped from 121 fish per seine haul to 64 fish per seine haul. The apparent decline in production resulted from a lower reservoir pool and a minimal spring rise in 1992.

Table 3. Fish captured by 125-foot experimental gill nets in Fort Peck Reservoir, 1992.

Species[1]	UBD[2] No. Fish	UBD[2] No./ Net Day	LBD[3] No. Fish	LBD[3] No./ Net Day	LMA[4] No. Fish	LMA[4] No./ Net Day	MMA[5] No. Fish	MMA[5] No./ Net Day	UMA[6] No. Fish	UMA[6] No./ Net Day	Total No. Fish	Total No./ Net Day
WE	48	6.9	96	4.0	70	3.5	81	3.4	15	1.9	310	3.7
NP	2	0.3	14	0.6	8	0.4	10	0.4	2	0.3	36	0.4
SG	0	---	7	0.3	19	1.0	39	1.6	43	5.4	108	1.3
YP	9	1.3	26	1.1	7	0.4	31	1.3	7	0.9	80	1.0
GE	0	---	192	8.0	105	5.3	365	15.2	70	8.9	732	8.8
CC	49	7.0	19	0.8	3	0.2	26	1.1	60	7.5	157	1.9
SS	0	---	0	---	0	---	0	---	0	---	0	---
CI	70	10.0	124	5.2	19	1.0	33	1.4	45	5.6	291	3.5
Totals	178	25.4	478	19.9	231	11.6	585	24.4	242	30.3	1,714	20.7
No. Net Days	7		24		20		24		8		83	

[1]WE - walleye, NP - northern pike, SG - sauger, YP - yellow perch, GE - goldeye, CC - channel catfish, SS - shovelnose sturgeon, CI - cisco

[2]Upper Big Dry: Nelson Cr., Short Cr., Lone Tree Cr., McGuire Cr.
[3]Lower Big Dry: Box Cr., S. Fork Rock Cr., N. Fork Rock Cr., Box Elder Cr., Sandy Arroyo, Spring Cr.
[4]Lower Missouri Arm: Spillway Bay, Bear Cr., N. Fork Duck Cr., S. Fork Duck Cr., Main Duck
[5]Mid Missouri Arm: Pines, Gilbert Cr., Cattle Cr., Hell Cr., Sutherland, Snow Cr.
[6]Upper Missouri Arm: Timber Cr., Devil's Cr.

Table 4. A summary of walleye size and catch rates in 125-foot experimental gill nets for areas of Fort Peck Reservoir.

Area	Year	No. Sampled	Length (in.) Ave.	Length (in.) Range	Weight (lbs.) Ave.	Weight (lbs.) Range	Weight (lbs.) % >1.0#	Net Sets Total Sets	Net Sets No./ Set
Big Dry Arm	1992	144	14.5	5.6-29.8	1.58	0.03-9.80	40.0	31	4.6
	1989	219	13.6	6.4-26.5	0.94	0.10-7.03	26.0	30	7.3
	1988	86	13.3	6.6-23.4	0.88	0.06-4.26	19.8	24	3.6
	1987	106	14.1	6.5-21.4	1.04	0.12-3.33	34.7	33	3.2
	1986	109	13.4	7.3-24.6	0.86	0.07-5.40	27.8	24	4.5
	1985	219	13.7	7.7-26.5	0.91	0.14-4.56	29.7	30	7.3
Lower Reservoir	1992	70	15.9	7.2-27.0	2.02	0.10-8.30	46.4	20	3.5
	1989	93	15.5	7.8-24.1	1.61	0.13-5.60	55.0	15	6.2
	1988	57	15.1	8.1-23.9	1.46	0.14-5.30	59.6	18	3.2
	1987	48	16.3	10.8-21.5	1.61	0.32-4.08	66.7	15	3.2
	1986	---	----	---------	----	---------	----	--	---
	1985	65	13.5	9.9-19.3	0.71	0.24-2.94	12.3	18	3.6
Mid Reservoir	1992	81	16.9	7.9-29.9	2.66	0.15-11.0	50.0	24	3.4
	1989	80	16.5	10.0-24.2	1.85	0.32-5.90	58.8	18	4.4
	1988	49	15.8	8.2-22.8	1.67	0.15-4.70	57.1	21	2.3
	1987	88	14.0	8.0-22.0	0.98	0.14-4.35	30.7	21	4.2
	1986	56	13.4	8.4-22.3	0.85	0.20-3.00	30.0	21	2.7
	1985	102	14.7	7.9-22.1	1.01	0.11-3.60	35.3	21	4.9
Upper Reservoir	1992	15	16.3	7.8-29.3	2.54	0.10-10.0	35.7	8	1.9
	1989	11	19.4	9.9-25.8	3.36	0.23-6.20	63.6	6	1.8
	1988	15	11.8	7.6-19.3	0.57	0.19-2.57	13.3	12	1.3
	1987	32	12.7	8.8-20.4	0.72	0.14-2.96	18.8	12	2.7
	1986	3	11.5	9.2-14.4	0.50	0.20-0.97	0.0	6	0.5
	1985	31	12.7	8.5-18.2	0.65	0.20-1.72	19.4	18	1.7

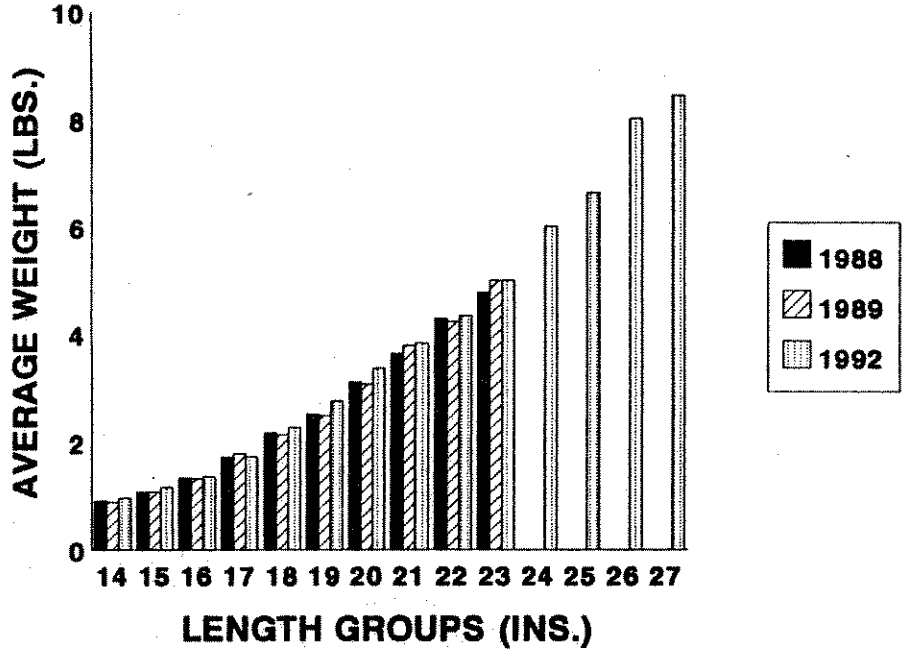

Figure 4. Average weight of various 1-inch length groups of walleye captured with experimental gill nets in Fort Peck Reservoir, 1988-92.

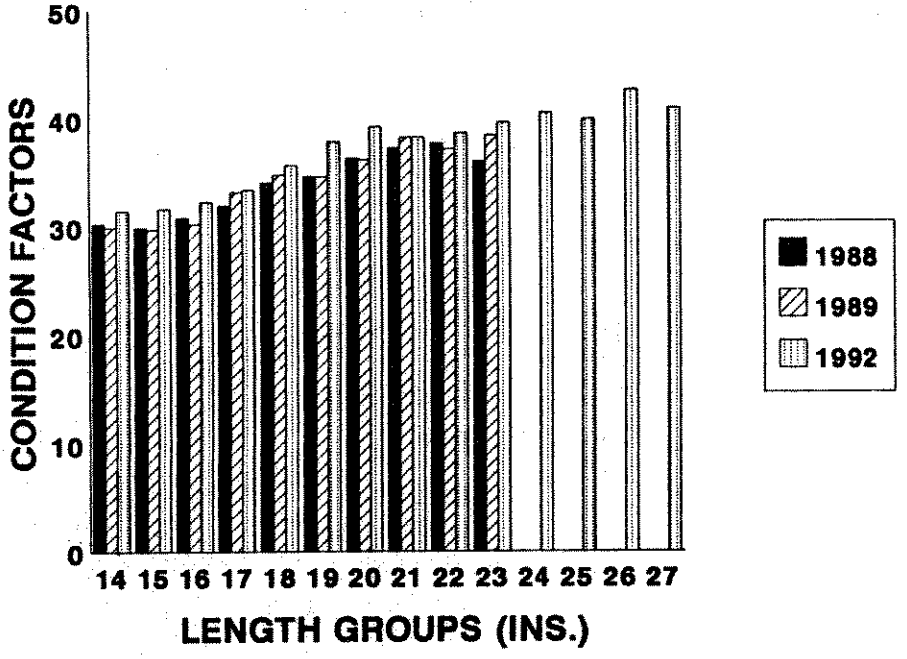

Figure 5. Average condition factors for various 1-inch length groups of walleye captured with experimental gill nets in Fort Peck Reservoir, 1988-92.

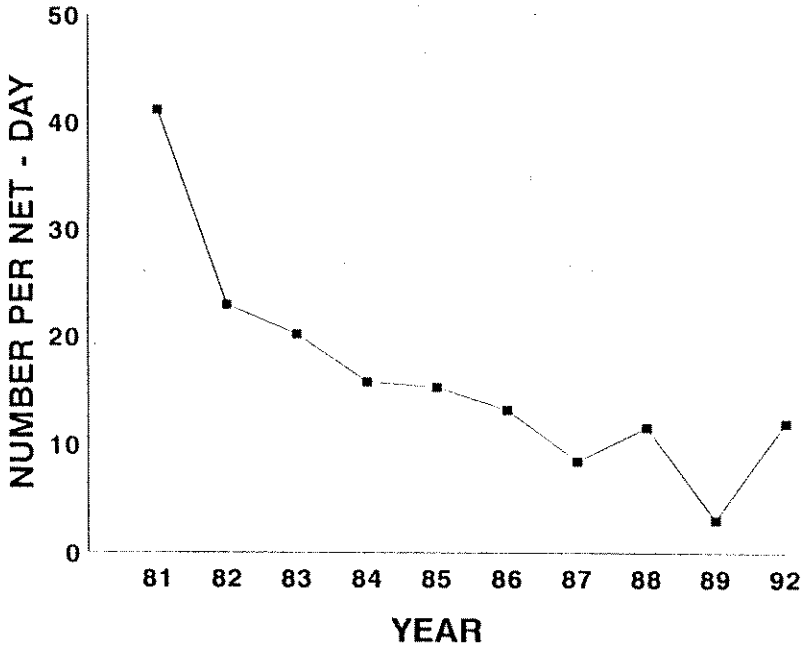

Figure 6. Annual catch rate of goldeye captured by experimental gill nets, Fort Peck Reservoir, 1981-92.

The most common YOY game fish sampled by seining was smallmouth bass (Table 6). The overall catch rate was 1.6 fish per haul, which was similar to the 1.7 fish catch rate in 1989, the highest catch rate observed for smallmouth bass YOY. The regions of the reservoir where YOY bass were most abundant was in the mid-Missouri Arm and upper Big Dry Arm. The lowest catch rate for YOY smallmouth bass occurred in the lower Missouri Arm (Table 5).

The catch rate for YOY walleye sampled reservoir-wide was 0.1 fish per haul, which was the same as 1991. The best catch rate for YOY walleye was in the mid-Missouri Arm (Table 5). Walleye YOY were also captured in the upper Missouri Arm which had poor reproduction in 1991. It is assumed that YOY sampled in this area of the reservoir result from natural reproduction, as no walleye are stocked in this region. In the lower Missouri Arm, YOY walleye were also sampled by beach seining, however, at a slightly lower catch rate. No YOY walleye were captured in the Big Dry Arm. Table 7 shows a summary of seining results to evaluate stocking of walleye fry and fingerling. Overall, it appears that stocking success was marginal in most locations. The best survival appeared to have resulted from the planting of nearly 80,000 walleye fingerlings at the Pines. Fry stocking in the Duck Creek area was the only region of the reservoir where sampling showed discernable results. During 1992, the total number of walleye fry stocked throughout the reservoir was 17.6 million and the total number of fingerling was approximately 1.0 million.

Table 5. Species and number of forage minnows and young-of-year fish captured by beach seining in Fort Peck Reservoir, 1992.

Species[1]	Upper Big Dry		Lower Big Dry		Lower Missouri		Mid-Missouri		Upper Missouri		Totals	
	No. Fish	No./ Haul	No. Fish	No./ Haul	No. Fish	No./ Haul	No. Fish	No./ Haul	No. Fish	No./ Haul	No. Fish	No./ Haul
WE	---	----	-----	----	6	0.1	7	0.3	5	0.2	18	0.1
NP	---	----	1	<0.1	6	0.1	-----	----	-----	----	7	<0.1
SG	---	----	-----	----	-----	----	-----	----	22	1.0	22	0.2
YP	118	13.1	736	30.6	245	4.9	222	7.9	3	0.1	1,324	10.0
GE	---	----	-----	----	-----	----	-----	----	1	<0.1	1	<0.1
WS	---	----	4	0.2	28	0.6	10	0.4	3	0.1	45	0.3
RC	1	0.1	-----	----	-----	----	-----	----	10	0.5	11	<0.1
LC	---	----	-----	----	-----	----	-----	----	5	0.2	5	<0.1
CP	---	----	-----	----	7	0.1	1	<0.1	-----	----	8	<0.1
SR	---	----	-----	----	-----	----	-----	----	1	<0.1	1	<0.1
GS	---	----	-----	----	-----	----	-----	----	2	<0.1	2	<0.1
FD	---	----	-----	----	-----	----	-----	----	26	1.2	26	0.2
BA	10	1.1	17	0.7	6	0.1	170	6.1	4	0.2	207	1.6
SM	---	----	-----	----	-----	----	-----	----	5	0.2	5	<0.1
CR	---	----	51	2.1	-----	----	1	<0.1	5	0.2	57	0.4
FM	1	0.1	1	<0.1	-----	----	-----	----	-----	----	2	<0.1
ES	76	8.4	527	22.0	1,178	23.6	768	27.4	1,425	64.8	3,974	29.9
ST	27	3.0	540	22.5	1,323	26.5	948	33.9	11	0.5	2,849	21.4
Totals	233	25.9	1,877	78.2	2,799	56.0	2,127	76.0	1,528	69.5	8,564	64.4
No. Hauls	9		24		50		28		22		133	

[1]WE - walleye
NP - northern pike
SG - sauger
YP - yellow perch
WS - white sucker
RC - river carpsucker
LC - lake chub
CP - carp
GS - green sunfish
FD - freshwater drum
BA - smallmouth bass
SM - plains/silvery minnow
FM - fathead minnow
ES - emerald shiner
ST - spottail shiner

Table 6. A summary of the total catch and catch rate for selected sport and forage fish taken by seining in Fort Peck Reservoir, 1981-92.

		Species[1]						
		WE	NP	SG	BA	YP	GE	WSU
1981	No. Hauls--142							
	No. Sampled	33	18	70	19	8,099	1,359	459
	No./Haul	0.2	0.1	0.5	0.1	57.0	9.6	3.2
1982	No. Hauls--195							
	No. Sampled	116	34	113	23	9,604	1,410	1,392
	No./Haul	0.6	0.2	0.6	0.1	49.3	7.2	7.1
1983	No. Hauls--263							
	No. Sampled	52	70	70	77	8,324	0	1,120
	No./Haul	0.2	0.3	0.3	0.3	32.0	0	4.3
1984	No. Hauls--21							
	No. Sampled	115	23	96	27	19,280	1,361	453
	No./Haul	0.5	0.1	0.5	0.1	91.8	6.5	2.2
1985	No. Hauls--197							
	No. Sampled	219	29	36	10	31,695	509	969
	No./Haul	1.1	0.1	0.2	0.1	160.9	2.6	4.9
1986	No. Hauls--176							
	No. Sampled	74	88	61	149	6,597	1,081	861
	No./Haul	0.4	0.5	0.3	0.8	37.5	6.1	4.9
1987	No. Hauls--185							
	No. Sampled	14	10	9	145	2,093	0	48
	No./Haul	0.1	<0.1	<0.1	0.8	11.3	0	0.3
1988	No. Hauls--174							
	No. Sampled	47	74	17	135	1,045	1	258
	No./Haul	0.3	0.4	<0.1	0.8	6.0	<0.1	1.5
1989	No. Hauls--176							
	No. Sampled	178	7	2	305	895	161	200
	No./Haul	1.0	<0.1	<0.1	1.7	5.1	0.9	1.1
1990	No. Hauls--165							
	No. Sampled	59	1	34	163	308	73	85
	No./Haul	0.4	<0.1	0.2	1.0	1.9	0.4	0.5
1991	No. Hauls--149							
	No. Sampled	0	19	10	170	1,630	13	259
	No./Haul	0.1	0.1	0.1	1.1	10.9	0.1	1.7
1992	No. Hauls--133							
	No. Sampled	18	7	22	207	1,324	1	45
	No./Haul	0.1	<0.1	0.2	1.6	10.0	<0.1	0.3

Table 6. Continued.

		Species[1]					
		BUFF	CARP	FWD	B/WC	ES	ST
1981	No. Hauls--142						
	No. Sampled	1,252	1,047	1,122	3,388	2,488	------
	No./Haul	8.8	7.4	7.9	23.9	17.5	------
1982	No. Hauls--195						
	No. Sampled	4,577	742	658	6,958	2,764	0
	No./Haul	23.5	3.8	3.4	35.7	14.2	0
1983	No. Hauls--263						
	No. Sampled	2,345	1,582	245	9,244	5,859	1,681
	No./Haul	8.9	6.0	0.9	35.1	22.3	6.4
1984	No. Hauls--210						
	No. Sampled	11,414	1,853	584	7,858	10,312	2,120
	No./Haul	54.4	8.8	2.8	37.4	49.1	10.1
1985	No. Hauls--197						
	No. Sampled	363	289	640	1,907	14,109	4,444
	No./Haul	1.8	1.5	3.2	9.7	71.6	22.6
1986	No. Hauls--176						
	No. Sampled	1,378	951	713	3,011	6,443	22,436
	No./Haul	7.8	5.4	4.1	17.1	36.6	127.5
1987	No. Hauls--185						
	No. Sampled	388	509	43	40	3,688	10,027
	No./Haul	2.1	2.7	0.2	0.2	19.9	54.2
1988	No. Hauls--174						
	No. Sampled	24	154	405	12	1,449	10,089
	No./Haul	0.1	0.9	2.3	<0.1	8.3	58.0
1989	No. Hauls--176						
	No. Sampled	107	66	770	21	3,450	5,093
	No./Haul	0.6	0.4	4.4	0.1	19.6	28.9
1990	No. Hauls--165						
	No. Sampled	4	87	202	120	1,413	3,624
	No./Haul	<0.1	0.5	1.2	0.7	8.6	22.0
1991	No. Hauls--149						
	No. Sampled	101	214	112	616	5,762	5,849
	No./Haul	0.7	1.4	0.8	4.1	38.7	39.2
1992	No. Hauls--133						
	No. Samples	------	8	26	57	3,974	2,849
	No./Haul	------	<0.1	0.2	0.4	29.9	21.4

[1]WE - walleye
NP - northern pike
SG - sauger
BA - smallmouth bass
YP - yellow perch
GE - goldeye
WSU - white sucker
BUFF - smallmouth & bigmouth buffalo
CARP - carp
FWD - freshwater drum
B/WC - black/white crappie
ES - emerald shiner
ST - spottail shiner

Table 7. Summary of walleye stocking and young-of-year abundance determined by beach seining in Fort Peck Reservoir, 1992.

Area	Fingerling	Fry	Number Seine Hauls	Number YOY WE Caught	No. YOY WE/Haul
Bear Creek	195,752	-------	7	0	0
Cattle/Crooked Creek	37,666	-------	8	1	0.1
Duck Creek	-------	3.9 mil	10	2	0.2
Gilbert Creek	64,050	-------	5	0	0
Hell Creek	73,891	4.1 mil	9	0	0
McGuire Creek	-------	3.0 mil	3	0	0
Rock Creek	-------	2.6 mil	6	0	0
Pines	79,257	-------	4	5	1.3
E. Pines	164,119	-------	4	1	0.3
Prairie Dog Island	-------	1.0 mil	3	0	0
Spillway Bay	-------	3.0 mil	7	0	0
Sutherland Creek	55,524	-------	8	0	0

A catch rate of 0.1 for northern pike YOY seined in 1992 indicated very poor production (Table 5). Sauger YOY production appeared to increase slightly in 1992, with 0.2 fish captured per seine haul.

Beach seining to evaluate production of key forge fish species indicated a significant decline from 1991 (Tables 5 and 6). The catch rate for plains/silvery minnows dropped from 15.9 to less than 0.1 fish per haul in 1992. The catch rate for emerald shiners fell from 38.7 to 29.9 fish per haul. The spottail shiner catch rate decreased from 39.2 to 21.4 fish per haul. Yellow perch production appeared to be stable with 10.0 fish sampled per haul, compared to 10.9 fish in 1991. Production also seemed to be down from the previous year for other rough fish species as well.

Lake Trout

Creel surveys at boat ramps near Fort Peck Dam were conducted in the spring and fall, 1992. During the spring creel from May 15-June 6, 437 fishermen were interviewed. The angler catch rate was 0.07 fish per hour, which was the same as spring creel in 1991 (Table 8). Fall creel was conducted from October 13-November 7, with 129 anglers interviewed. The catch rate was up slightly from 1991, with 0.19 lake trout captured per hour, compared to 0.10.

During the spring creel, male lake trout averaged 26.2 inches and 7.58 pounds, while females averaged 26.7 inches and 7.87 pounds. The average length and

weight for lake trout, both sexes combined, was 26.2 inches and 7.55 pounds. This data indicates a slight decline in average size of lake trout caught since 1989 (Table 8).

Table 8. A summary of lake trout creel census of boat fishermen and size data collected near the dam, Fort Peck Reservoir, 1985-92 (spring creel: April-May and fall creel: October-November).

						Males		Females	
	No. Anglers Creeled	No. LT Caught	LT Per Trip	Avg. No.Hrs. Fished	Catch Rate/ Hour	Avg. Lgth. (in.)	Avg. Wt. (lbs.)	Avg. Lgth. (in.)	Avg. Wt. (lbs.)
1985									
Spring	72	77	1.1	3.8	0.28	20.2	3.05	20.9	3.26
Fall	97	176	1.8	3.8	0.48	21.4	3.20	22.0	3.66
1986									
Spring	56	56	1.0	3.8	0.26	21.2	2.98	20.9	2.95
Fall	206	299	1.5	4.9	0.30	21.4	3.49	23.0	4.26
1987									
Spring	58	48	0.8	4.9	0.17	22.0	3.73	22.2	4.40
Fall	240	239	1.0	4.7	0.21	23.8	5.50	23.8	5.84
1988									
Spring	153	105	0.7	4.5	0.15	24.1	5.63	24.1	5.56
Fall	164	194	1.2	4.6	0.26	25.8	7.16	24.8	6.33
1989									
Spring	207	197	1.0	5.6	0.17	25.0	6.85	26.4	8.28
Fall	142	194	0.5	4.8	0.09	26.5	7.44	25.4	7.12
1990									
Spring	451	356	0.8	5.4	0.15	26.6	8.06	27.2	9.07
Fall	551	201	0.4	3.8	0.10	26.5	7.52	27.6	8.56
1991									
Spring	550	267	0.5	6.1	0.07	27.0	8.47	26.4	8.21
Fall	215	83	0.4	3.8	0.10	26.7	7.97	27.4	8.60
1992									
Spring	437	150	0.3	4.8	0.07	26.2	7.58	26.7	7.85
Fall	129	88	0.7	3.6	0.19	27.0	7.87	26.9	7.59

The average length and weight for lake trout during fall creel, sexes combined, was 26.9 inches and 7.69 pounds. Males averaged 27.0 inches and 7.87 pounds, while females averaged 26.9 inches and 7.59 pounds. A summary of condition factors and average weights sampled during the fall creels from 1985-92 is shown in Figure 7. The average condition of lake trout over this time period appears to be relatively stable. This also appears to be the case for various 1-inch length groups of lake trout sampled over the last three years (Figures 8 and 9).

Usually during the lake trout creel chinook salmon are often sampled; however, recently with limited stocking of fingerlings, only one salmon was observed. During the spring and fall lake trout creel surveys, stomach contents of lake trout are examined to determine utilization of cisco. At the spring creel, approximately 38.0% of the angler-caught lake trout contained cisco. During the fall creel only 7.4% of the lakers contained cisco. A reduction in the number of cisco observed in lake trout stomachs is typical during fall creel due to spawning.

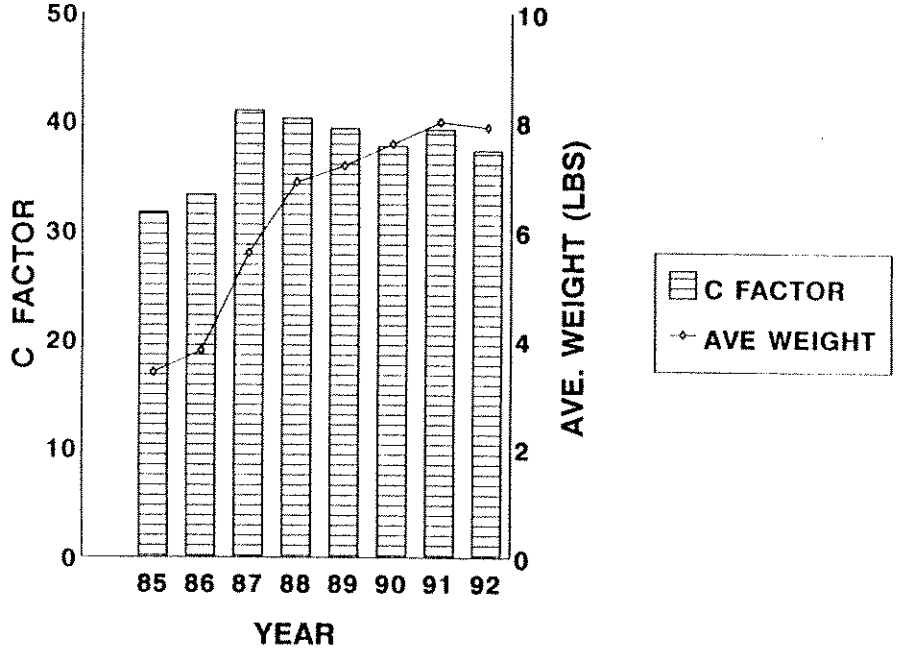

Figure 7. Condition factors and average weight of lake trout sampled during fall creel, Fort Peck Reservoir, 1985-92.

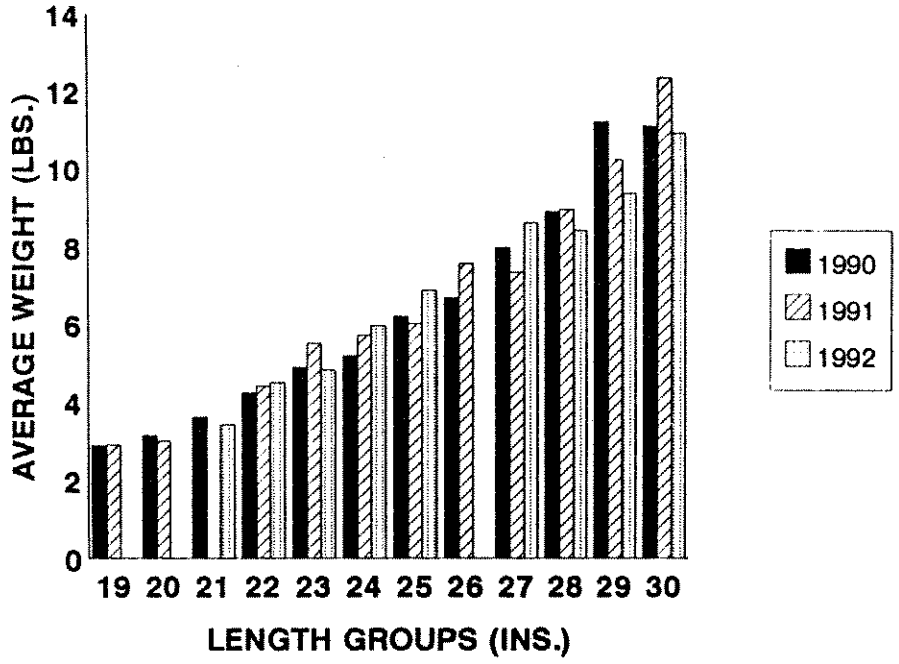

Figure 8. Average weight of various 1-inch length groups of lake trout sampled during fall creel, Fort Peck Reservoir, 1990-92.

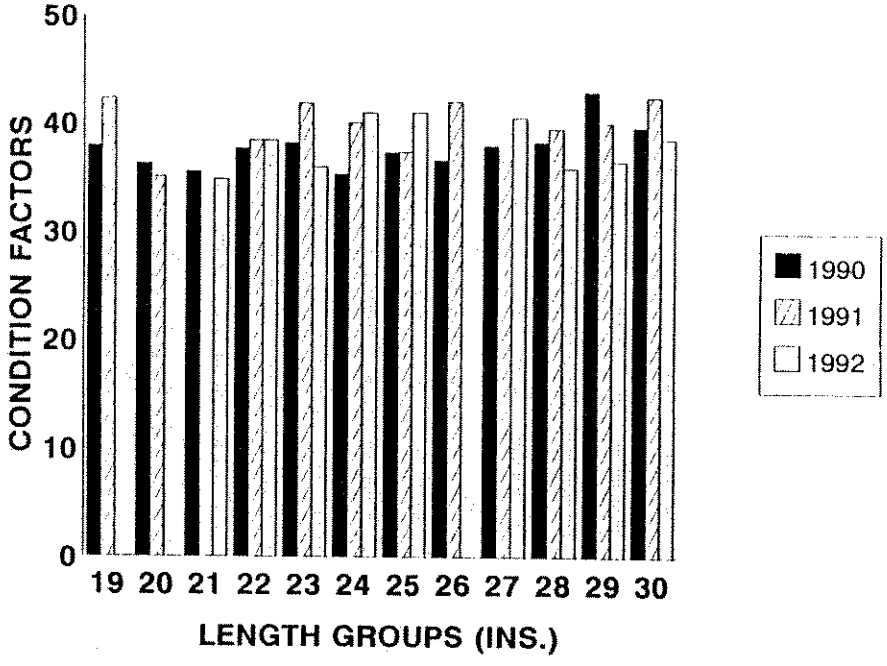

Figure 9. Condition factors of various 1-inch length groups of lake trout sampled during fall creel, Fort Peck Reservoir, 1990-92

Lake trout spawning habitat on the face of Fort Peck Dam was reduced in the fall of 1992 as a result of lower lake levels. Dewatered rock rip-rap in October on the face was approximately 29 vertical feet below normal pool (2,240). To augment natural reproduction lost due to lower lake levels, an attempt was made to capture spawning lake trout and obtain fertilized eggs. Two gill nets 300' x 6' with 4-inch square mesh, were set off the dam face to capture spawners on November 2 and 11. Although this technique has been successful in capturing ripe lake trout the past two years, only one ripe female and 78 males were taken in 1992. No eggs were obtained as a result of the skewed sex ratio. The reason for the poor lake trout catch is not known.

Cisco

Small mesh, vertical gill nets were used to sample YOY cisco throughout the reservoir from September 11-24 (Table 9). The overall catch rate was only 10.0 YOY per net set, which was the poorest catch since sampling for cisco began in 1986.

The meager 1992 year-class was probably due to lack of reservoir ice cover during the 1991-92 winter. Studies of cisco in the Great Lakes have shown similar consequences during ice-free winters (Brown et al. 1993, Freeberg et al. 1990, Taylor et al. 1987). In these studies, wave action during ice-free winters displaced incubating eggs, resulting in eggs being redeposited in unsuitable habitat. Survival of cisco eggs in Grand Traverse Bay, Lake Michigan, during winters with ice cover, was over three times greater than during ice-free winters. In Fort Peck, eggs broadcast during the fall spawn may have been smothered by silt generated by winter wave action. The lower region of Fort Peck Reservoir was also ice-free during the winter of 1986-87, which also resulted in a subsequent drop in YOY sampled during the summer of 1987 (Wiedenheft, 1987).

A total of 156 YOY cisco were captured in vertical gill nets in 1992. The average size was 5.1 inches, with lengths ranging from 4.2-6.0 inches.

Figure 10 compares lake elevations and annual cisco production from 1986-92. Although water levels have dropped since 1986, it is not believed that low water has significantly impacted cisco. Cold water habitat is believed to have been sufficient during this period, as no major fish kills during summer months were observed, or reported.

Commercial Fishing

In 1992, only one commercial fishing permit was issued on Fort Peck Reservoir. No notable commercial fishing regulation changes were made. One commercial fishing report was submitted containing commercial harvest in May. The catch consisted of the following species and quanities: carp, 115 pounds; buffalo, 2,325 pounds; goldeye 1 pound. The number of game fish reported captured and released was six.

Table 9. Summary of young-of-year cisco taken by vertical monofilament gill nets in Fort Peck Reservoir during August 1986 and 1987, and during September 1988-92.

Station	Number Net Sets							Young-of-Year Per Set						
	'86	'87	'88	'89	'90	'91	'92	'86	'87	'88	'89	'90	'91	'92
Bear Cr.	4	4	4	4	4	-	4	39	13	7	23	41	--	8
Shaft Houses	2	2	2	2	2	-	2	162	10	6	6	20	--	2
Dam	2	2	2	2	2	-	2	321	6	9	3	1	--	--
Bear Cr. West	2	2	--	2	2	1	2	220	10	---	8	3	12	2
Marina	2	2	2	2	2	-	2	77	1	46	17	72	--	5
So. Fork Duck Cr.	2	1	2	2	2	-	2	447	12	151	86	50	--	15
Pines-Gilbert Cr.	4	4	4	4	4	1	4	466	11	311	26	48	50	15
Hell-Sutherland Cr.	2	2	2	2	2	1	2	298	6	150	73	56	49	53
Timber Cr.	1	--	1	1	1	1	1	5	----	178	6	7	25	6
Devils Cr.	1	--	1	1	--	-	1	1	----	46	2	--	--	--
No. Fork Rock Cr.	1	2	2	2	2	-	2	46	24	164	9	1	--	6
Bug Cr.	1	2	2	2	2	-	2	15	16	11	1	1	--	--
Totals	24	23	24	26	25	4	26	213.8	11.4	107	22.9	31	34	10

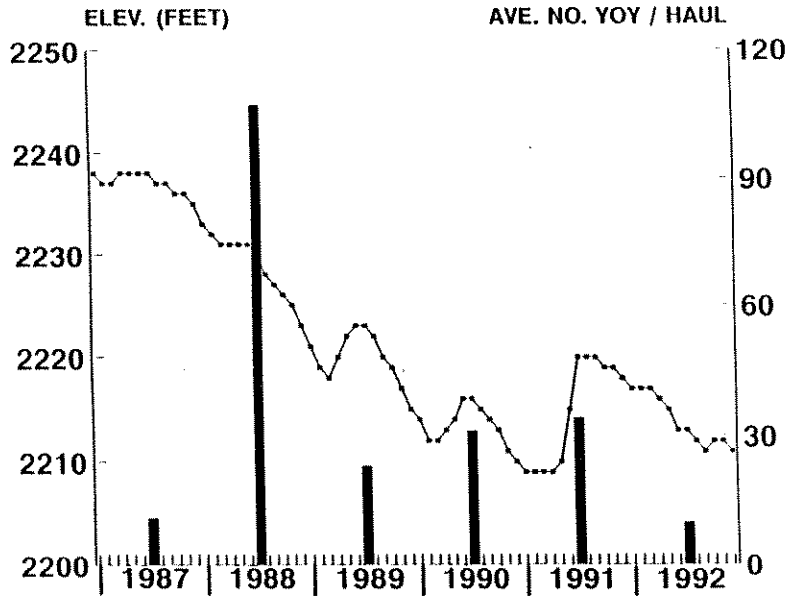

Figure 10. Mean monthly reservoir elevations and annual cisco production as determined by vertical gill netting, Fort Peck Reservoir, 1987-92.

DISCUSSION

A declining pool during spring and summer, 1992, resulted in a predictable drop in forge fish production. Late summer beach seining confirmed a plunge in the reservoir-wide catch rate for key forage fish species. Cisco reproduction was also down, but the poor year-class was caused by lack of ice-cover, rather than low lake levels.

In spite of the poor reproduction of cisco and littoral zone forage fish in 1992, game fish condition factors and average weights remained stable, or improved slightly. Good forage fish production during previous years was apparently sufficient to provide ample abundance of prey for walleye and lake trout.

Continued stocking of lake trout hatched and reared from the resident population in Fort Peck Reservoir is recommended as long as low water levels persist. Hopefully, stocking lake trout fingerlings will help to ease the negative impact to natural reproduction caused by dewatered spawning habitat at the dam.

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