IDAHO DEPARTMENT OF FISH AND GAME

FEDERAL AID IN FISH RESTORATION
2002 JOB PERFORMANCE REPORT
PROGRAM F-21-R-27

Cal Groen, Director

REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS
MAGIC VALLEY REGION (Subprojects I-H, II-H, III-H)

PROJECT I.	**SURVEYS AND INVENTORIES**
Job a.	**Magic Valley Region Mountain Lakes Investigations**
Job b.	**Magic Valley Lowland Lakes Investigations**
Job c.	**Magic Valley Rivers and Stream Investigations**
PROJECT II.	**TECHNICAL GUIDANCE**
PROJECT III.	**HABITAT MANAGEMENT**

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State of: Idaho | Program: Fisheries Management F-21-R-27

Project I: Surveys and Inventories | Subproject I-E: Magic Valley Region

Job: a | Title: Mountain Lakes Investigations

Contract Period: July 1, 2002 to June 30, 2003

ABSTRACT

Five high mountain lakes were stocked by regional personnel in 2002. Species stocked included Henry's Lake cutthroat trout *Oncorhynchus clarkii* and Artic grayling *Thymallus arcticus.*

Baker Lake was the only regional high mountain that was investigated in 2002. Gill netting indicated that there are four species of trout present in Baker Lake. Amphibians found at several locations included long-toed salamander *Ambystoma macrodactylum*.

Authors:

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INTRODUCTION

BAKER LAKE

Baker Lake is a high mountain cirque lake located at the headwaters of Baker Creek (SE ¼, SEC 9, T4N, R15E), a tributary to the upper Big Wood River in Blaine County. It is approximately 4.5 hectares in surface area and 2,681 m in elevation. The lake is fed by underwater springs and snow melt and has an intermittent inlet. The outlet forms a small stream which flows about 150 m over boulders and rubble with small pockets of gravel before descending down a steep cascade. No definite barrier was observed, but it is unlikely that fish can migrate up to the lake from the lower drainage. Access to the lake is by hiking 2 km up a good trail from the end of Baker Creek road.

METHODS

Fish populations in Baker Lake were sampled with Swedish-made Lundgrens Type A lightweight multi-filament gill nets. These are sinking nets, measuring 1.5 m wide, with six 7.6 m panels, and the following bar mesh sizes: 46, 38, 33, 30, 25, and 19 mm. Nets were set and retrieved using a small inflatable raft. Fish data analysis included calculating length-at-age, length frequencies, and species composition. Length-at-age was calculated from a least-squares linear regression between scale radius and fish total lengths.

Bathometric profiles were taken with a portable hand-held depth finder at various places on the lake from the raft. Lake area and elevation were estimated from a U.S. Geological Survey (USGS) 7.5-minute topographic map.

Water quality was measured from mid-lake surface samples for alkalinity ($CaCo_3$), and total hardness using a HACH kit three days after collecting the sample. Water temperature was taken with a pocket thermometer.

GRANT OBJECTIVE

To obtain current information for fishery management decisions on mountain lakes, including angler use and success, fish population characteristics, spawning potential, stocking success, limnology, morphology, and notes on other aquatic life and develop appropriate management recommendations.

RESULTS

One gill net was set overnight on the evening of August 22, 2002 and pulled on August 23, 2002. The total time set was approximately 15 hours. A total of 25 fish were sampled. Fish sampled included 3 brown trout *Salmo trutta*, 18 cutthroat trout *Oncorhynchus clarkii,* 1 rainbow trout *O. mykiss,* and 3 golden trout *O. mykiss aquabonita*. All species were retained and measured (Table1). Of the brown trout netted, two were mature fish in prespawning condition. One was a mature female that was 420 mm in total length and 510 g in weight. The other was a male that was 380 mm in total length and 430 g in weight. Of the cutthroat trout netted, one was a mature female in prespawning condition that was 340mm in length and 380 g in weight.

Table 1. Total length frequencies and average weights of fish sampled with a single sinking gill net set overnight at Baker Lake on August 22, 2002.

Total length (mm)	Brown trout		Cutthroat trout		Golden trout		Rainbow trout	
	Number sampled	Avg. wt. (g)	Number sampled	Avg. wt. (g)	Number sampled	Avg. wt. (g)	Number sampled	Avg. wt. (g)
160			1	50	1	40		
210					1	90		
220			1	100				
230			2	125				
260	1	190						
280			1	220				
290			1	260				
310			1	280				
320			1	315	1	295		
340			2	340				
350			1	340				
360			2	448				
370			2	440				
380	1	430	3	478			1	490
420	1	510						
Total sampled:	3		18		3		1	

2002 ANNUAL PERFORMANCE REPORT

State of: Idaho

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Title: Lowland Lakes Investigations

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ABSTRACT

Kokanee *Oncorhynchus nerka* in Anderson Ranch Reservoir were monitored with nighttime midwater trawl samples and spawning run trend counts. Results of the monitoring indicate poor recruitment over the last few years as a result of low water conditions and a partial fish kill in the reservoir in 2001.

Dog Creek Reservoir was sampled with two sinking gill nets, two floating gill nets, two trap nets and 44 minutes of nighttime electrofishing. The majority of fish sampled included common carp *Cyprinus carpio*, largemouth bass *Micropterus salmoides,* bluegill *Lepomis macrochirus,* and yellow perch *Perca flavescens*. Rainbow trout *O. mykiss*, channel catfish *Ictalurus punctatus,* largescale suckers *Castostomus macroccheilus,* and tiger muskie *Esox lucius x E. masquinongy* were sampled.

Wilson Lake was sampled with two sinking gill nets, two floating gill nets, two trap nets and 45 minutes of nighttime electrofishing. Species sampled included common carp, brown bullhead *Ameiurus nebulosus*, and Utah suckers *Catostomous ardens.* Small numbers of yellow perch and redside shiner *Richardsonius balteatus* were also sampled.

Brown trout *Salmo trutta* redds were counted as part of an annual survey on the Big Wood River to document trends in the Magic Reservoir population. The count was made in November between the mouth of Rock Creek and a site upstream of Stanton Crossing. A total of 62 redds were counted which is the second lowest since counts began in 1986.

Mormon Reservoir was sampled with 36 hours of gill net effort in the spring to determine the carry-over of fish through the low water conditions during the previous winter. Fish sampled include 60 rainbow trout (recently stocked hatchery fish), 3 bridgelip suckers *Catostomus columbian* and 11 yellow perch. Results indicate that there was no, or little, survival of rainbow trout.

Other monitoring efforts at several reservoirs included measurements of daytime temperature and dissolved oxygen profiles and forage fish sampling.

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OBJECTIVES

To obtain current information for fishery management decisions on lowland lakes and reservoirs, including angler use, success, harvest and opinions, fish population characteristics, stocking success, return-to-the-creel for hatchery trout, limnology and develop appropriate management recommendations.

ANDERSON RANCH RESERVOIR

Introduction

Anderson Ranch Reservoir is a Bureau of Reclamation (BOR) impoundment on the South Fork Boise River with a maximum storage capacity of 493,180 acre-feet, of which 28,980 acre-feet is considered dead storage (U.S.G.S. 1996). Anglers fishing Anderson Ranch Reservoir target mostly kokanee *Oncorhynchus nerka*, rainbow trout *O. mykiss*, smallmouth bass *Micropterus dolomieu* and yellow perch *Perca flavescens*. Several other nongame fish species and bull trout *Salvelinus confluentus* are also present. The kokanee are managed as a consumptive fishery with a daily bag limit of 25 fish and a possession limit of 50 fish. Kokanee populations were monitored within Anderson Ranch Reservoir and the South Fork Boise River upstream of the reservoir as part of an annual monitoring program to forecast future recruitment of fish. Temperature and dissolved oxygen profiles were measured to determine the amount of useable fish habitat within the water column.

Methods

Kokanee were sampled in Anderson Ranch Reservoir using a nighttime midwater trawl on the nights of July 10 and 11, 2002 following methods described by Rieman (1992) with population estimates made from the data using a Microsoft Excel spreadsheet developed by IDFG fishery research. All kokanee sampled were classified into 3 age groups, fish up to 99 mm in total length were classified as age 0+ fish, fish from 100 to 199 mm long were classified as age 1+ fish, and fish at least 200 mm long were classified as age 2+ fish. The reservoir was partitioned into three strata for the midwater trawl samples. Strata 1 had five trawls that included the area from the dam upreservoir to, and including the Fall Creek arm. Strata 2 had five trawls from the Fall Creek Arm to, and included the Lime Creek arm. Strata 3 had five trawls from the Lime Creek arm to the Curlew boat ramp. Kokanee density and population estimates were also made using hydroacoustic equipment by IDFG Fishery Research personnel on May 15 and September 9, 2002 (Butts and Teuscher, 2002).

Spawning kokanee were counted at twelve sites along the South Fork Boise River upstream of Anderson Ranch Reservoir and one site on lower Trinity Creek. These are the same sites that kokanee have been counted on a weekly basis during the run since 1989. This year there were seven counts made between August 21 and October 24 with a one week time span between the first four counts then a two to three week span between the last three to monitor for late spawning kokanee. Historical spawner trend data with ensuing population estimates of young of the year kokanee were graphed to determine if there is a measurable correlation between spawning counts and in-reservoir populations.

Measurements of temperature and dissolved oxygen profiles were made in-situ during daylight hours on July 17, 2002 at five locations using a Yellow Springs Instruments model 57 temperature/dissolved oxygen meter from a boat. Limnological samples were taken by

sampling surface waters for total hardness and alkalinity. A Hach Kit was used for the total hardness and alkalinity measurements.

Results

A total of 22 kokanee were sampled with the nighttime midwater trawl to provide population and density estimates within each of the three strata and the entire reservoir (Table 1). The kokanee population estimate from the hydroacoustic survey is significantly higher than the estimate made from the trawl (Tables 2 and 3).

There were 521 adult kokanee counted at the 13 trend count sites on the South Fork Boise River (Table 4). Although counts were extended to October 24, 2002, the last spawning kokanee observed was on September 21, 2002. Figure 1 provides a graphical representation of annual spawner trend counts and population estimates of young of the year kokanee based on midwater trawls. Figure 2 provides a linear regression for predicting the population estimate of the number of age 0 kokanee from the number of spawners counted the previous fall.

Results of the temperature and dissolved oxygen profiles are given in Table 5. Surface water temperatures exceeded 24^{o}C at the five locations measurements that were made on July 17, 2002 . Total alkalinity measured as $CaCO_3$ was 22 mg/l and total hardness was 250mg/l for a sample taken from the surface.

Discussion

Results of the midwater kokanee trawl estimates indicate a decline in the population of age-0 kokanee since 1999. However, the age-0 kokanee population estimate derived from using hydro-acoustic equipment in September is more than ten times greater than the estimate derived from using the midwater trawl. The coefficient of variation (S.D./Mean) for density estimates derived from the midwater trawl exceeds 100% in almost all strata for each age class of kokanee. These results and a comparison of the two methods call into question the validity of the estimates. Further comparisons between spawner run size, ensuing midwater trawl results, and its capability to predict spawner run sizes, also call into question its suitability as tool to estimate population sizes and predicting future recruitment. The predictive equation of year class strength plotted against spawner run size appears to be valid only when at least 15,000 spawners are counted in the annual trend counts. Further analysis of correlates with other types of data such as information from hydroacoustics need to be done before a predictor of year class strength can be developed.

CAREY LAKE

Introduction

Carey Lake is approximately 215 ha in surface area with a maximum depth of 4.0 m when full, although most of the lake is less than one meter deep (IDFG 1999). The lake receives its water from several sources with most of it being spring run-off from the Little Wood River. It also receives water from a hot spring located in the northeast section of the management area, which keeps 1 to 2 acres of the lake from freezing over during the winter. The fishery was surveyed in 2001, for which results and a description of the lake are available in the 2001 Magic Valley Regional Fisheries Report (in press). In February and March 2002 a creel survey was performed to estimate wintertime angler use and harvest of fish.

Table 2. Anderson Ranch Reservoir kokanee population and density (fish/ha) estimates based on nighttime midwater trawling results from 1993 to 2000. Stratified estimates are reported only for trawl completed on July 10 and 11, 2002.

Year	Strata (# trawls)	Estimate	Age group			
			Age-0	Age-1	Age-2	Age-3
2002	Strata 1 (5)	Population (95%CI)	8,990 (13,671)	3,775 (10,475)	0	0
		Density	16	7	0	0
		SD	20	15	-	-
	Strata 2 (5)	Population (95%CI)	7,397 (12,582)	0	1,190 (3,303)	0
		Density	14	0	2	0
		SD	19	-	5	-
	Strata 3 (5)	Population (95%CI)	2,357 (4,324)	0	775 (2,151)	0
		Density	8	0	6	0
		SD	11	0	6	-
	Reservoir	Population (95%CI)	18,744 (14,339)	3,775 (7,775)	1,965 (3,103)	0
		Density	13	3	1	0
2001	Reservoir	Population (95%CI)	33,702 (23,245)	34,570 (61,034)	28,736 (18,606)	0
		Density	41	78	35	0
2000	Reservoir	Population (95%CI)	819,828 (1.08×10^6)	54,455 (40,645)	4,189 (6,488)	0
		Density	565	38	3	0
1999	Reservoir	Population (95%CI)	1,446,945 (521,699)	12,549 (5,578)	15,210 (8,980)	0
		Density	1,201	10	13	0
1998[a]	Reservoir	Population (Var)	117,620 (5×10^8)	32,815 (8×10^8)	10,039 (8.9×10^6)	0
		Density	109	29	8	0
1997[a]	Reservoir	Population (Var)	853,932 (7×10^8)	34,582 (5×10^7)	5,831 (2.1×10^6)	0
		Density	497	23	4	0
1996[a]	Reservoir	Population (Var)	109,400 (2×10^8)	7,733 (4×10^7)	3,551 (7×10^6)	0
		Density	64	6	2	0
1995[a]	Reservoir	Population (Var)	3,134 (3×10^6)	15,995 (3×10^7)	38,364 (5×10^7)	0
		Density	2	11	25	0
1994[a]	Reservoir	Population (Var)	230,411 (2×10^{10})[b]	444,791 (1×10^{11})[c]	33,709 (5×10^8)	0
		Density	191	368	28	0
		Population (Var)	126,916 (6×10^8)[d]			
		Density	106			
1993	Reservoir	Population (Var)	212,788 (5×10^9)[b]	2,380 (6×10^6)	1,427 (2×10^6)	660 (4×10^5)
		Density	212	2	1	1
		Population (Var)	33,564 (4×10^8)[d]			
		Density	26			

[a] Based on model by Rieman (1992)
[b] Wild fish
[c] Estimate of wild and hatchery fish combined for year.
[d] Hatchery fish

Table 2. Hydroacoustic generated kokanee abundance and density estimates (fish/ha) by transect and length class in Anderson Ranch Reservoir on May 15, 2002. Transects 1-10 were too shallow to safely sample using the hydroacoustic boat.

		Fish densities (number/ha)			
Transect	Transect length (m)	<100mm	100-200 mm	>200 mm	Total
1-9	--	--	--	--	--
10	869	13.3	30.8	18.1	62.2
11	506	37.8	40.0	8.7	86.5
12	738	51.2	58.1	38.1	147.4
13	196	91.6	36.8	0.0	128.4
14	565	58.8	25.1	34.6	118.5
15	2008	36.4	43.7	26.7	106.8
16	1365	49.9	55.2	55.9	161.0
17	1074	85.1	88.3	121.0	294.4
18	519	78.9	100.2	131.1	310.3
19	820	65.1	126.4	89.5	281.0
20	1294	98.9	119.7	102.8	321.5
21	716	120.2	159.1	198.9	478.2
22	1003	131.8	104.0	198.4	434.1
23	592	47.4	124.9	148.2	320.4
24	987	101.2	134.8	148.9	385.0
25	762	60.7	143.4	120.7	324.8
26	992	48.5	63.5	67.4	179.4
27	640	22.2	42.6	38.1	103.0
	Mean	66.6	83.1	86.0	235.7
	95% CI	16.3	21.9	31.4	64.1
	Abundance	70,083 $\pm$ 17,184	87,464 $\pm$ 23,013	90,422 $\pm$ 33,078	247,970 $\pm$ 67,435

Table 3. Hydroacustic generated kokanee abundance and density estimates (fish/ha) by transect and length class in Anderson Ranch Reservoir on September 9, 2002. Transects began near the reservoir inlet and finished at the dam.

		Fish densities (number/ha)			
Transect	Transect length (m)	<100mm	100-200mm	>200mm	Total
1	778	161.8	35.4	6.6	203.8
2	822	383.0	34.8	4.2	422.0
3	541	304.3	50.0	9.2	363.4
4	493	316.6	62.7	0.0	379.3
5	381	149.2	58.8	10.1	218.1
6	595	268.6	83.7	0.0	352.3
7	474	170.0	29.1	15.2	214.2
8	559	177.3	31.5	5.1	214.0
9	846	180.9	28.7	5.1	214.7
10	1453	213.5	35.2	13.8	262.5
11	811	146.1	15.8	8.0	169.8
12	1155	127.3	18.5	26.6	172.4
13	826	213.0	51.3	51.6	315.9
14	1317	172.6	24.2	22.8	219.7
15	740	250.6	36.2	30.9	317.8
16	1082	191.6	41.8	29.7	263.1
17	532	207.6	73.1	53.0	333.6
18	1026	274.7	45.1	31.4	351.1
19	567	325.8	90.0	81.1	496.8
20	938	466.2	78.8	50.8	595.8
21	604	262.3	52.5	50.4	365.2
22	641	223.0	39.5	38.1	300.6
	Mean	235.7	46.2	24.7	306.6
	95% CI	37.4	9.3	9.7	47.6
	Abundance	219,408 ± 34,788	43,017 ± 8,610	22,996 ± 9,017	285,421 ± 44,332

Table 4. Number of kokanee observed at selected sites on the South Fork Boise River during spawning ground surveys in 2002.

	Survey date						
Location[a]	8/21	8/30	9/6	9/11	9/21	10/3	10/24
1	0	2	4	2	0	0	0
2	6	4	4	14	0	0	0
3	0	2	4	12	0	0	0
4	0	6	12	8	0	0	0
5	0	0	0	0	0	0	0
6	50	60	70	40	26	0	0
7	0	0	4	0	0	0	0
8	0	0	0	0	0	0	0
9	10	4	24	8	0	0	0
10	4	2	35	10	0	0	0
11	4	16	10	50	14	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
Total:	74	96	167	144	40	0	0

[a]Site descriptions:
1 - Trap site: NW1/4, NE1/4, Sec 30, T2N, R10E
2 - Prospect hole: NW1/4, NE1/4, Sec 18, T2N, R10E
3 - Johnson hole: SW1/4, NE1/4, Sec 5, T2N, R10E
4 - Paradise hole: SW1/4, NW1/4, Sec 33, T3N, R10E
5 - Trinity Creek: SE1/4, SW1/4, Sec 9, T3N, R10E
6 - Section 10 hole: SE1/4, NE1/4, Sec 10, T3N, R10E
7 - Chaparral campground: NE1/4, NE1/4, Sec 12, T3N, R10E
8 - Ranger station hole: NE1/4, NE1/4, Sec 8, T3N, R11E
9 - Virginia Gulch Bridge: SE1/4, SE1/4, Sec 9, T3N, R11E
10 - Baumgartner campground hole: SE1/4, SE1/4, Sec 7, T3N, R12E
11 - Deadwood confluence: NE1/4, NE1/4, Sec 22, T3N, R12E
12 - Big hole: SE1/4, SW1/4, Sec 18, T3N, R13E
13 - Smoky Creek confluence: SE1/4, SW1/4, Sec 9, T3N, R13E

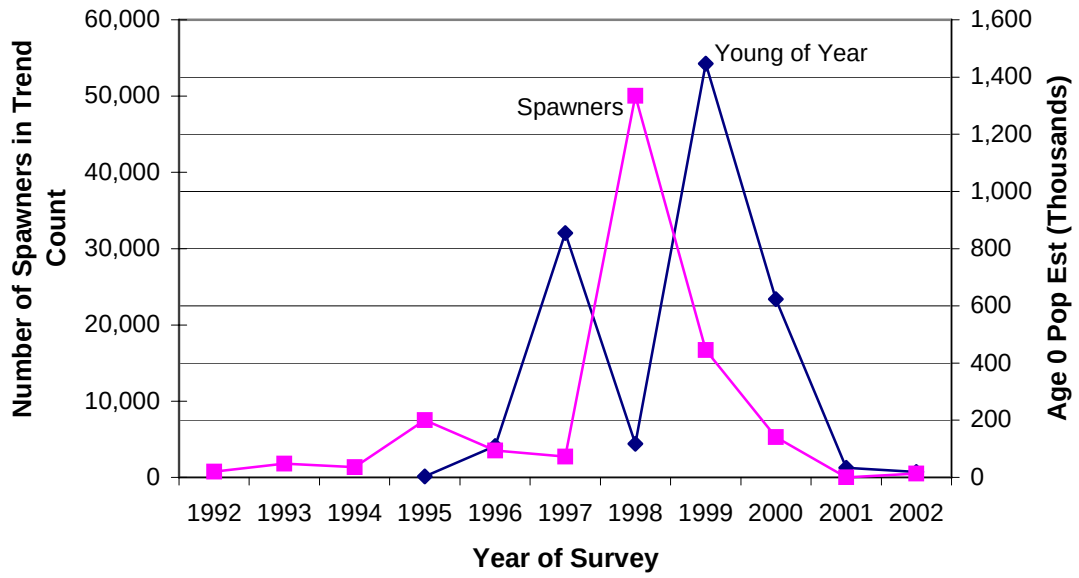

Figure 1. Number of adult kokanee spawners counted in annual trend counts on the South Fork Boise River and the annual population estimate of young of the year kokanee sampled with a midwater trawl in Anderson Ranch Reservoir.

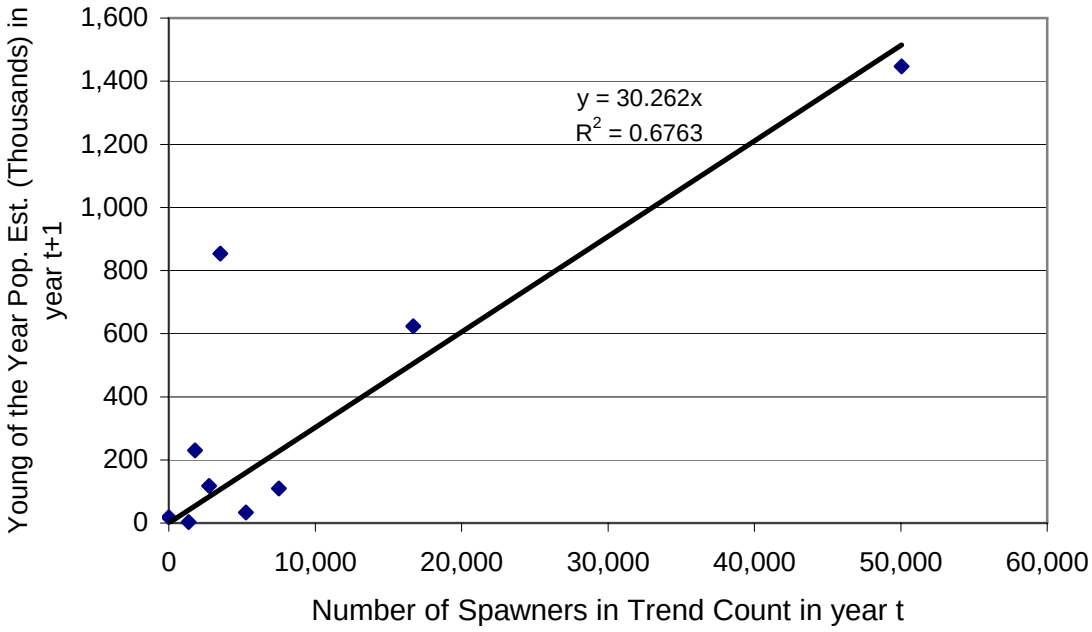

Figure 2. Linear regression of young of the year kokanee population estimates plotted against parental stock spawner trend counts in annual surveys on the South Fork Boise River.

Table 5. Temperature (C) and dissolved oxygen (mg/l) profiles measured at five locations on Anderson Ranch Reservoir on July 17, 2002.

	Front of Dam [a]		Fall Creek Arm [b]		The Narrows [c]		Lime Creek Arm [d]		Badger Creek [e]	
Depth (m)	Temp	DO_2	Temp	DO_2	Temp	DO_2	Temp	DO_2	Temp	DO_2
S	25	7.4	25	7.7	25	7.7	25	10.0	25	8.7
1	25	7.7	24	7.9	24	7.7	25	8.0	23	8.8
2					24	7.7	24	7.8	23	8.8
3	24	7.7	24	8.2	24	7.7	24	7.8	23	8.6
4					24	7.7	24	7.8	23	8.3
5	24	7.7	23	8.2	23	7.8	23	7.6	21	8.0
6					21	7.5	20	7.2	21	7.0
7	23	8.0	21	8.5	20	7.0	19	6.8	19	7.1
8	19	8.7	18	7.8	19	6.3	18	6.5	18	6.0
9	17	8.5	17	7.4	17	6.2	17	6.0	17	5.1
10					16	6.0	16	5.8	15	4.6
11	15	7.7	15	7.1	15	6.0	15	5.6	15	4.6
12					15	5.7	15	5.6		
13	14	6.7	14	6.4	14	5.5	14	5.7		
14					14	5.7	13	6.0		
15	13	6.6	13	6.3	13	5.8	13	6.1		
16					13	6.0	13	6.1		
17	12	6.5	13	6.3	13	3.1	13	6.1		
18					13	6.3	13	6.0		
19	12	6.6	12	6.5	13	6.3	12	5.7		
20					12	6.3	12	5.7		
21	11	6.7	11	6.7	12	6.3	12	5.7		
22					11	6.3	11	5.7		
23	11	6.8	11	6.8	11	6.2	11	5.7		
24					11	6.1	11	5.7		
25	11	7.0	11	7.0	11	6.0	11	5.7		
26					11	5.8	11	5.5		
27	11	7.0	11	7.0	11	5.7	11	5.0		
28					10	5.5				
29	10	7.1	10	6.8	10	5.3				
30					10	5.2				
31	9	7.3	10	6.8	9	4.8				
32					9	4.6				
33	9	7.4	9	6.5	9	4.5				
34					9	4.5				
35	9	7.4			9	4.5				
36					9	4.5				
37	9	7.5			9	4.5				
38					9	4.5				
39	8	7.4								
41	8	7.4								
43	8	7.4								
45	7	7.4								
47	7	7.1								
49	6	6.8								
51	6	6.7								
53	5	6.6								
57	5	6.6								
59	5	6.7								
61	5	6.6								
65	8	7.4								

[a] UTM Zone 11, 626,501m E, 4,801,976m N
[b] UTM Zone 11, 630,883m E, 4,805,876m N
[c] UTM Zone 11, 635,257m E, 4,807,234m N
[d] UTM Zone 11, 637,587m E, 4,808,680m N
[e] UTM Zone 11, 637,040m E, 4,811,906m N

Methods

Four weekend days and six weekday days were randomly selected to count and interview anglers for the months of February and March 2002. On those specific days conservation officers counted the total number of anglers fishing at the time that the officers arrived at the lake then interviewed them to determine the number of hours they had been fishing and the number of fish they had caught. Total angler effort and catch rates and harvest for the two-month time period was calculated from formulas provided by McArthur (1993).

Results

There were a total of 23 anglers counted on all ten days for an average of 2.3 anglers per count. With 619.5 daylight hours available for fishing, the estimated total amount of angler effort was 1,424 +/- 922 angler hours. Out of 13 anglers interviewed three had a total of 23 bluegill *Lepomis macrochirus* in the creel and had released 44 for a catch rate of 0.84 fish/hour for bluegill kept and an overall catch rate of 2.44 fish/hour. Most of the bluegill checked in the creel were less than 20 cm long. Only two largemouth bass *Micropterus salmoides* had been reported to have been caught and released, both less than 30 cm long.

DOG CREEK RESERVOIR

Introduction

Dog Creek Reservoir (Irving Reservoir) is a 38 ha impoundment located approximately 10 km northwest of Gooding, Idaho. Stored water is held for the benefit of fish and wildlife with the only fluctuations in levels resulting from the fall removal and spring replacement of dam boards for dam safety purposes. This usually results in a maximum annual fluctuation of one meter or less. The reservoir offers a diversity of fishing opportunities with the 2001-2006 Fisheries Management Plan listing yellow perch, put-and-take rainbow trout, largemouth bass, bluegill, channel catfish *Ictalurus punctatus*, tiger muskie *Esox lucius x E. masquinongy* and brown bullhead *Ameiurus nebulosus* as species managed for (IDFG 2001). It has been stocked with a total of 1,420 tiger muskies since 1991 with the most recent stocking occurring on June 27, 2002. An average of 3,000 channel catfish fingerlings have been stocked in Dog Creek Reservoir in intermittent years since 1991. The fishery was sampled in 2002 in an effort to determine the overall success of the tiger muskie and channel catfish stocking program and to assess the fish community.

Methods

A standardized lowland lake survey was done on Dog Creek Reservoir in August 2002. Fish were sampled with two trap nets, two sinking gill nets, two floating gill nets and 44 minutes of nighttime electrofishing effort. The gill nets measured 38 m x 1.8 m with variable (19 mm to 64 mm) bar mesh. Trap nets were constructed of a 1.8 x 0.9 m box and five 76 cm diameter hoops covered with 2 cm bar mesh netting. A Smith-root Model SR-18 electrofishing boat with a Model 5.0 pulsator was used for nighttime electrofishing with two netters on the bow attempting to net all fish stunned regardless of size or species. Due to the high turbidity of the water at Dog Creek Reservoir, gill netting effort was done during daylight hours and nets were checked on a rotating basis every two to three hours to reduce mortality to tiger muskies.

All fish sampled were identified to species and measured with a subsample weighed. A total length frequency distribution of all fish sampled includes average weights of fish within 10 mm length ranges. Results were standardized as the total number and biomass of fish caught per unit of effort, with one unit effort equal to the combined catch of one sinking and one floating gill net, one trap net, and one hour of electrofishing effort. A proportional stock density was calculated from the catch of largemouth bass and bluegill following methods described by Anderson and Gutreuter (1983). Scale samples were taken from some of the largemouth bass and bluegill to estimate lengths at age.

Daytime temperature and dissolved oxygen profiles were measured in-situ near the dam using a Yellow Springs Instruments model 57 temperature/dissolved oxygen meter on August 1, 2002. A Yellow Springs Instruments Model 30 conductivity meter was used to measure specific and ambient conductivity and a Secchi disc visability measurement was taken at the same location and time. A surface sample of water was taken mid-reservoir and analyzed for total alkalinity and total hardness with a Hach Kit.

Results

Fish species sampled by all gear types combined include bluegill, brown bullhead, channel catfish, common carp *Cyprinus carpio*, largemouth bass, largescale sucker *Catostomus macrocheilus*, rainbow trout *Oncorhynchus mykiss*, tiger muskie *Esox masquinongy*, and yellow perch *Perca flavescens* (Table 6). Lowland lakes sampling results standardized to one unit of effort is summarized in Table 7. The proportional stock density of largemouth bass sampled by all gear types was 47% and was 4% for bluegill. Back calculated lengths at age estimated from scale samples are summarized in Tables 8 and 9. Based on these results it takes approximately four years to grow a largemouth bass to legal harvest size (305 mm) in Dog Creek Reservoir.

The maximum depth of the reservoir was 3.5 m with water temperatures ranging from 20^{o} C at the surface to 23^{o} C at the bottom and dissolved oxygen levels ranging from 8.5 mg/l at the surface to 7.4 mg/l at the bottom during daylight hours on August 1, 2002. Secchi visibility measured .2 meters. Total alkalinity measured 85 mg/l and total hardness measured 142mg/l. Surface water specific conductivity measured 412 µSiemens/cm and ambient conductivity measured 376 µSiemens/cm.

Discussion

With only three channel catfish sampled with the combined efforts the stocking program may need to either be adjusted or discontinued. A review of the literature indicates that angler harvest of channel catfish and survival of stocked fish when largemouth bass are present is positively correlated to size at time of stocking (Storck and Newman 1988 and Shaner et al. 1996). The greatest cost:benefit ratio for size at stocking in the study by Shaner et al. (1996) occurred at 254 mm and the minimum recommended size at stocking was 203 mm. In the same study, catfish stocking rates at 18 study lakes ranged up to 200 catfish/acre (494 catfish/ha) and averaged 71 catfish/acre (175 catfish/ha) and total weight of stocked catfish ranged up to 120 lb/acre (134 kg/ha) and averaged 20 lb/acre (22 kg/ha). Since harvest rates increased linearly with stocking density, an optimal stocking density did not exist in the study. Assuming 100% survival of stocked channel catfish in Dog Creek Reservoir in two consecutive years, if two-thirds of the overall population of fish averaged 0.3 kg and one-third averaged 0.6 kg, then the average standing crop of channel catfish would be 31 kg/ha. With the presence of largemouth bass and tiger muskie, it is not likely that many of the stocked channel catfish

Table 6. Fish sampled with four gill nets, two trap nets and 2,640 seconds of electrofishing effort at Dog Creek Reservoir on August 1 and 6, 2002.

	Bluegill						
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)	Relative Weight
30	1				1		
60	12				12	5	150
70	27				27	5	90
80	12		1		13		116
90	5				5		157
100	33				33	20	110
110	19				19	25	100
120	13				13	41	124
130	7				7	47	108
140	4				4	60	108
150	2				2	79	113
160	1				1	70	81
170				1	1	100	95
Total number sampled	136		1	1	138		

	Brown bullhead					
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
250			1		1	250
Total number sampled			1		1	

	Hatchery rainbow trout					
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
200		1			1	80
220	6	4	1		11	102
230	4	3	3		10	109
240	1	3			4	127
250	2	2	2		6	135
260	2				2	143
270	1				1	180
280	1	1	1		3	180
290			2		2	210
310	1				1	230
Total number sampled	19	14	9		42	

	Channel catfish					
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
320	1		1		2	295
420	1				1	660
Total number sampled	2		1		3	

Table 6. Continued.

Total length (mm)	Largemouth bass						
	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)	Relative Weight
40	9			1	10		
50	15				15	2	157
60	12				12		
70	1				1	4	107
80	1				1		
110	3		1		4		
120	3				3	22	106
130	5	1			6	30	112
140	6				6	36	105
150	8				8	45	106
160	4	1			5	56	107
190	1				1	94	104
200	4	1	1		6	111	105
210	3				3	131	105
220	3				3	151	105
240	1				1	222	117
290	4				4	338	97
300	1		1		2	365	94
320	1				1	440	92
330	4				4	530	101
340	4				4	559	97
350	1				1	650	103
410	2				2	1225	117
420	1				1	1250	110
Total number sampled	97	3	3	1	104		

Total length (mm)	Common carp					
	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
210	1				1	100
410	1				1	810
420				1	1	
430	1				1	
440	2	1	1		4	1117
450	6		1	1	8	1183
460	3	1	2		6	1263
470	7	1	2		10	1333
480	1		1		2	1350
490	5		1		6	1600
500	3				3	1525
510	2				2	1600
520	2	1			3	1625
550				1	1	
Total number sampled	34	4	8	3	49	

Table 6. Continued.

Total length (mm)	Largescale sucker					
	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
	Yellow perch					
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
320			1		1	400
350		1			1	470
410		1			1	800
420		1		1	2	900
430		1			1	900
440	1	3			4	850
450		2			2	987
460		1			1	1150
470		4	1		5	1350
480		1			1	1200
490		3	2		5	1360
510		1			1	1650
520		1			1	1550
540		2			2	1875
Total number sampled	1	22	4	1	28	

Total length (mm)	Tiger muskie					
	Electrofishing	Sinking gill net	Floating gill net	Trapnet	Total sampled	Average weight (g)
350				1	1	210
630	1				1	1800
670		1			1	2000
Total number sampled	1	1		1	3	

Total length (mm)	Yellow perch					
	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trapnet	Total sampled	Average weight (g)
50	1				1	0
60	1				1	0
90	11				11	9
100	3				3	0
110	7				7	15
120	5				5	18
130	3				3	24
140	4			1	5	30
150	2			1	3	33
Total number sampled	37			2	39	

Table 7. Dog Creek Reservoir lowland lake sampling results from August 2002, standardized to one unit of sampling effort.

	Min.-max. total length (mm) of fish sampled	Number of fish per unit of effort	Percent by number	Weight (kg) of fish per unit of effort	Percent by weight
Bluegill	30-170	184	39	40.2	3
Brown bullhead	250-250	1	0	1.2	0
Channel catfish	320-420	3	1	14.4	1
Common carp	210-550	53	11	701.0	58
Largemouth bass	40-420	134	28	187.0	15
Largescale sucker	320-540	14	3	177.6	15
Rainbow trout	200-310	36	7	45.8	4
Tiger muskie	350-670	2	0	35.3	3
Yellow perch	50-150	50	11	8.0	1
Total:		477		1,210.5	

Table 8. Back calculated length at annulus (mm) for bluegill sampled at Dog Creek Reservoir in August, 2002. Standard deviation is in parenthesis.

Year class	Number of fish	Mean length at annulus		
		1	2	3
2001	6	45 (5.60)		
2000	14	49 (7.41)	89 (12.78)	
1999	6	42 (2.54)	82 (5.54)	130 (15.72)
Weighted avg. length:		46	87	130

Table 9. Back calculated length at annulus (mm) for largemouth bass sampled at Dog Creek Reservoir in August, 2002. Standard deviation is in parenthesis.

Year class	Number of fish	Mean length at annulus				
		1	2	3	4	5
2001	19	89 (15.19)				
2000	12	72 (13.47)	162 (22.30)			
1999	5	92 (28.71)	188 (26.72)	263 (21.24)		
1998	5	79 (13.26)	176 (32.69)	256 (23.46)	307 (7.77)	
1997	1	121 (-)	239 (-)	327 (-)	369 (-)	395 (-)
Weighted avg. length:		84	174	265	318	395

survive to their first year; therefore we are probably not stocking enough fish to provide a channel catfish fishery. Length of fish at time of stocking (76 to 152 mm) was also lower than recommended minimum sizes in both studies since largemouth bass are present. The presence of piscivorous species may be keeping the common carp population from composing more than the current level of 58% of the total fish biomass that was sampled. The low Secchi disc visibility indicates an elevated level of suspended solids, which may be partially contributed to the presence of common carp.

MAGIC RESERVOIR

Introduction

Magic Reservoir is a Big Wood River impoundment with a volume of approximately 191,500 acre-feet of water when full. The reservoir provides a year-round fishery for rainbow trout, brown trout *Salmo trutta*, yellow perch *Perca flavescens* and occasionally smallmouth bass *Micropterus dolomieu*. Most of the rainbow trout are of hatchery origin, some are of wild origin and all of the brown trout are of wild origin. Most of the trout of wild origin were probably recruited from the Big Wood River where spawning occurs. Objectives this year were to continue monitoring the annual brown trout spawning with redd counts.

Methods

A spawning ground survey was performed on the Big Wood River upstream of Magic Reservoir to monitor brown trout that had moved upstream from the reservoir to spawn. The survey included the reach from Rock Creek to the outflow of a private pond on the east side of the Big Wood River approximately 1.5 km upstream of the Stanton Crossing Bridge on November 14, 2002.

Results

A total of 62 redds were counted in the annual brown trout spawning redd survey (Table 10). This was the second lowest redd count (43 redds in 1992 and 1993) since the counts began in 1986.

MORMON RESERVOIR

Introduction

Mormon Reservoir is located approximately eight kilometers south of Fairfield, Idaho and has a surface area of 1,200 ha when full with a capacity to hold 21,400 acre-feet of water for an average depth of 2.4 m. The eutrophic status of Mormon Reservoir is attributed to its shallow characteristics and its propensity to retain nutrients. This has resulted in a dense stand of water smartweed *Polygonum sp.* and other macrophytes over a significant proportion of its surface area. The reservoir is managed as an irrigation impoundment releasing water only on demand from the water rights holders. Demands for water have approached total reservoir storage capacity several times over the past decade leaving only a small shallow pool to carry fish over through the winter. The fishery is managed for rainbow trout and yellow perch with a two trout daily bag limit. Concerns about the survivability of the fish through the winter were the impetus for sampling the fishery in 2002. A creel survey was also performed to estimate the amount of wintertime angling effort in February and March, 2002.

Table 10. Brown trout redd counts and spawning activity on the Big Wood River and Rock Creek upstream of Magic Reservoir monitored since 1986.

	Big Wood River[a]				
Date	Reach 1	Reach 2	Reach 3	Reach 4	Total
Nov. 19, 1986	--[c]	26	--[b]	96	122
Nov. 19, 1987	104	62	--[b]	30	196
Nov. 15, 1988	13	75	31	39	158
Nov. 18, 1989	6	20	33	8	67
Nov. 20, 1990	1	25	30	14	70
Nov. 15, 1991	3	30	38	15	86
Nov. 19, 1992	5	14	9	15	43
Nov. 24, 1993	1	28	--[b]	15	43
Nov. 16, 1994	9	27	56	5	97
Nov. 16, 1995	2	29	54	32	117
Nov. 11, 1996	--[c]	8	37	51	96
Nov. 25, 1997	--[c]	44	53	23	120
Nov. 23, 1998	--[c]	45	139	71	255
Nov. 23, 1999	--[c]	104	209	130	443
Nov. 17, 2000	--[c]	79	211	153	443
Nov. 16, 2001	21	30	36	24	111
Previous 10 Yr. Avg.					174
Nov. 14, 2002	6	26	13	17	62

[a] Reach 1 - Rock Creek to Sheep Bridge.
Reach 2 - Sheep Bridge to fence at U.S.G.S. station.
Reach 3 - Fence to Stanton Crossing.
Reach 4 - Stanton Crossing to Davis Pond.
[b] Combined with previous reach.
[c] Not surveyed.

Methods

Four weekend days and six weekday days in February and March 2002 were randomly selected to count and interview anglers for an angler survey. On those specific days conservation officers counted the total number of anglers fishing at the time of the officers' arrival at the lake then interviewed them to determine the number of hours they had been fishing and the number of fish they had caught. Total angler effort and catch rates and harvest for the two-month time period were to be calculated from formulas provided by McArthur (1993).

Fish in Mormon Reservoir were sampled with 38 m x 1.8 m variable mesh (19 mm to 64 mm) gill nets on April 26 and May 8, 2002. Three gill nets were set and pulled on the evening of April 26 for a total of four hours of gill net effort then two gill nets set overnight on May 8 and pulled on May 9 for a total of 29 hours of gill net effort.

Usable fish habitat within the water column under the ice was determined by measuring water temperature and dissolved oxygen profiles at three locations in Mormon Reservoir on February 21. Measurements were made in-situ during daylight hours using a Yellow Springs Instruments model 57 temperature/dissolved oxygen meter through holes drilled with an ice auger.

Results

No anglers were present on any of the randomly selected days that counts were made for the creel census. Fish species sampled by gill netting on April 26 included one bridgelip sucker and three yellow perch. Gill net efforts on May 8 and 9 yielded 60 rainbow trout, 8 yellow perch and 2 bridgelip suckers. Total lengths of rainbow trout sampled ranged from 195 to 390 mm and averaged 256 mm long. All but the 390 mm long rainbow trout sampled in the May gill net effort were most likely from the May 1st stocking of 10,300 catchable-sized fish. Results of the temperature and dissolved oxygen profiles are given in Table 11. Results of the gill netting efforts and temperature and dissolved oxygen profiles indicate that trout may not have survived through the winter of 2001 and 2002.

OAKLEY RESERVOIR

Introduction

Oakley Reservoir is a 548 ha irrigation impoundment when full located in the lower reaches of the Goose Creek and Trapper Creek drainages. The fishery is managed for rainbow trout and walleye *Stizostedion vitreum*. One million walleye were initially stocked in April 21, 1989 with 500,000 to 1,000,000 fish stocked on intermittent years after that. Most of these fish have been received and stocked as fry from the Garrison National Fish Hatchery in North Dakota. Rainbow trout are stocked on a regular basis as catchable-sized fish and as fingerlings. This year 1,000,000 walleye fry were stocked on June 10, 2002. Forage fish were sampled as part of an annual trend monitoring program.

Methods

Forage fish were sampled by beach seining four sites at Oakley Reservoir on August 29, 2002. The seine measured 15.2 x 1.4 m with 6.2 mm bar mesh. Beach seine samples were taken by holding one end of the seine stationary at the shoreline while the other end was taken

Table 11. Temperature and dissolved oxygen profiles measured at three locations on Mormon Reservoir on February 2, 2002.

	Near the Dam at UTM Zone 11, 678,517m E, 4,794,104m N		Near the Narrows at UTM Zone 11, 678,161m E, 4,793,296m N		Near the Springs Area at UTM Zone 11, 675,691m E, 4,791,312m N	
Depth (m)	Temp (C)	DO_2 (mg/l)	Temp (C)	DO_2 (mg/l)	Temp (C)	DO_2 (mg/l)
S	0.5	1.0	0	2.5	1	3.5
0.5	0.5	0.7	.5	2.0	1.5	1.25
1	2	0.6	2	1.8		
1.5	3	0.4	3	0.5		
2	4	0.3	3	0.3		
2.5	5	0.25				

straight out into the water perpendicular to the shoreline. With the shore end remaining stationary, the other end was swept shoreward with the lead line held near the bottom.

Results

Fish species sampled by beach seining include several hundred young-of-the-year yellow perch, 21 spottail shiner *Notropis hudsonius*, four sculpin *Cottus sp.*, 10 walleye and 1 rainbow trout (Table 12). Eight crayfish were also sampled. The surface water temperature measured 18^{o} C at the time of seining.

SALMON FALLS CREEK RESERVOIR

Introduction

Salmon Falls Creek Reservoir is a 1,400 ha impoundment with a capacity for 234,650 acre-feet of water when full. It is managed as an irrigation impoundment releasing water only on demand from the water right holders. The irrigation outlet next to the dam is over 30 m above the historic stream channel, leaving a significant volume of inactive storage water in the reservoir. The fishery is managed for walleye, rainbow trout, kokanee, yellow perch, smallmouth bass and crappie *Pomoxis sp.* (IDFG 2001). Catch rates for walleye have been excellent in recent years but anglers have been concerned that the overall size of fish in their creel has decreased significantly in the last couple of years. The objective of the fishery survey conducted in 2002 was to continue studying the status of the fishery, including growth rates of walleye. Other objectives were to collect young of the year walleye to look for oxytetracycline (OTC) marks to determine what percent of stocked walleye fry are being recruited into the fishery and to determine recruitment from the naturalized population.

Other activities at Salmon Falls Creek Reservoir included a joint project with the Idaho chapter of the Walleye Unlimited club to create woody aquatic habitat for forage fish spawning and to provide cover. In this project juniper trees were collected and sunk in the reservoir (See habitat enhancement section of this report) then fish were sampled by electrofishing to

Table 12. Fish sampled by beach seining four sites at Oakley Reservoir on August 29, 2002.

Total Length	Spottail shiner	Yellow perch > age 0	Age 0 Yellow perch	Unidentified Sculpin species	Walleye	Rainbow trout
40			3	2		
50	2		49	2		
60	2		12			
70	8				1	
80	5					
90					3	
100					3	
110		1			2	
120		1			1	
200		1				
230		1				
420						1
Unmeasured:	4		679			
Total Sampled:	21	4	743	4	10	1

determine if forage fish utilized these areas. An intensive creel survey and annual trend sampling for forage fish was also conducted on the reservoir this year.

Methods

A survey of angler effort, catch rates and harvest of fish was implemented on Salmon Falls Creek Reservoir for the time period from April 1, 2002 until October 13, 2002. Survey methodologies followed those described by McArthur (1993). The time period was divided into seven 28-day intervals that were stratified into weekend-holiday and weekday day types to reduce total angler effort estimate variability. Three weekend-holiday day types and three weekday day types were randomly selected for angler count days within each 28-day interval. One angler count time was randomly selected within each count day. Counted anglers were classified as boat, bank, or float tube anglers. After the initial count anglers were interviewed to determine number of hours fished that day, number of fish caught, kept and released. Subsamples of fish harvested were taken for total length measurements.

Annual trend sampling for forage fish was conducted by beach seining five sites at Salmon Falls Creek Reservoir on August 28, 2002. The seine measured 15.2 x 1.4 with 6.2 bar mesh. Beach seine samples were taken by holding one end of the seine stationary at the shoreline while the other end was taken straight out into the water perpendicular to the shoreline. With the shore end remaining stationary, the other end was swept shoreward with the lead line held near the bottom.

Daytime temperature and dissolved oxygen profiles were measured at three locations on June 30, three locations on July 21 and one location on September 9, 2002. Measurements were made in-situ using a Yellow Springs Instruments model 57 temperature/dissolved oxygen meter from a boat.

A total of 750,000 walleye fry were stocked into Salmon Falls Creek Reservoir on June 10, 2002. The fry were shipped from Garrison National Fish Hatchery in a solution of 700 mg/l

of OTC. Young-of-the-year walleye were subsequently sampled with two sinking small mesh gill nets on September 9, 2002. Each net measured 45.7 m long and 1.8 m wide and consisted of three mesh sizes in 15.24 m long panels. The mesh sizes were 25.4 mm, 19.05 mm, and 12.7 mm. Most of the gill netting effort was across from Norton Bay on the west shore near the submerged juniper trees. Total net effort was six hours. Most of the walleye that appeared to be older than age-1+ were released. Walleye that appeared to be Age-0+ and age-1+ (less than 300 mm long) were frozen and sent to Ron Brooks at the Fisheries and Illinois Aquaculture Center and Department of Zoology at Southern Illinois University in Carbondale for analysis. Otoliths were inspected for age analysis and presence of OTC marks.

In an effort to determine forage fish use of the submerged juniper structures, three sites were electrofished during the daytime on September 25, 2002. Two control sites along the shoreline in adjacent bays from the juniper structures and one treatment site among the juniper structures were sampled. The two control sites were electrofished for 1,072 seconds and for 596 seconds, respectively and the treatment site was electrofished for 231 seconds. All sites electrofished were in water less than three meters deep and an equal effort was made to net all fish stunned regardless of size or species. Some of the walleye less than 200 mm long were retained and frozen for later analysis for OTC marks and ageing.

Results

There were 662 anglers counted on 42 randomly selected days between April 1 and October 13, 2002 to estimate total angler effort and 616 resident and 46 nonresident anglers contacted for catch rate information. Analysis of survey data indicate that there were a total of 66,644 +/- 15,829 hours of angler effort (Table 13) with 12,222 $\pm$ 3,996 rainbow trout and 2,762 +/- 1,971 walleye harvested during that time period (Table 14). The average total length of walleye kept by anglers was 367 mm and the average total length of rainbow trout kept was 418 mm. Compared to data collected during a similar angler survey in 1995 (Partridge et al. 2003), the average length of walleye checked in the angler creel had dropped from 400 mm.

Electrofishing efforts to determine abundance of fish around the juniper structures on September 25, 2002 sampled rainbow trout, spottail shiner, crappie, smallmouth bass, walleye and yellow perch (Table 15). The catch per unit of electrofishing effort (60 seconds) was highest within the treatment site (among the junipers) for yellow perch. Crappies were sampled only from the treatment site.

Sampling efforts using the small mesh experimental gill nets on September 9, 2002 netted a total of 87 walleye, 21 white crappie, 1 redside shiner *Richardsonius balteatus*, one spottail shiner, 84 yellow perch, and 2 rainbow trout (Table 16).

Table 13. Estimated total angler effort on Salmon Falls Creek Reservoir for April 1 through October 13, 2002. Confidence intervals are 95%.

	Angler Hours			
Interval	Boat	Bank	Float tube	Total
April 1 – April 28	5,022 ± 3,780	5,076 ± 3,542	144 ± 288	10,242 ± 5,189
April 29 – May 26	6,139 ± 3,151	7,150 ± 4,667	209 ± 298	13,499 ± 5,639
May 27 – June 23	4,520 ± 4,099	8,653 ± 8,684	91 ± 181	13,263 ± 9,604
June 24 – July 21	975 ± 1,140	4,840 ± 5,017	0	5,815 ± 5,145
July 22 – Aug 18	2,631 ± 1,839	7,611 ± 5,161	76 ± 151	10,318 ± 5,481
Aug 19 – Sept 15	1,738 ± 477	4,742 ± 4,581	113 ± 225	6,592 ± 4,611
Sept 16 – Oct 13	2,122 ± 1,596	4,733 ± 4,387	61 ± 122	6,915 ± 4,670
Season Totals	23,147 ± 6,962	42,805 ± 14,205	694 ± 541	66,644 ± 15,829

Table 14. Estimated number of fish caught and harvested by anglers at Salmon Falls Creek Reservoir from April 1 through October 13, 2002. Confidence intervals are 95%.

Interval	Rainbow trout	Smallmouth bass	Walleye	Yellow perch	Total kept	Total caught
April 1 – April 28	3,172 ± 1,823	0	73 ± 123	140 ± 260	3,385 ± 1,894	3,510 ±1,955
April 29 – May 26	2,016 ± 1,138	74 ± 157	300 ± 315	1,012 ± 1,886	3,394 ± 2,506	4,620 ±3,193
May 27 – June 23	1,074 ± 927	676 ± 781	1,865 ± 1,895	171 ± 233	3,781 ± 3,149	6,991 ±5,226
June 24 – July 21	818 ± 992	167 ± 254	391 ± 377	0	1,194 ± 1,377	3,386 ±3,322
July 22 – Aug 18	2,088 ± 2,327	78 ± 142	103 ± 173	0	2,287 ± 2,363	4,817 ±3,293
Aug 19 – Sept 15	1,860 ± 1,752	87 ± 135	30 ± 62	0	1,977 ± 1,762	3,022 ±2,624
Sept 16 – Oct 13	1,194 ± 1009	0	0	0	1,194 ± 1,009	1,770 ±1,494
Season Totals	12,222 ± 3,996	1,082 ± 859	2,762 ± 1,971	1,343 ± 1,918	17,415 ± 5,603	28,116 ± 8,504

Table 15. Total length frequencies of all fish sampled at three sites on Salmon Falls Creek Reservoir on September 25, 2002 to determine abundance of fish species associated with newly submerged juniper structures.

	Control site 1 at UTM Z11; 4,665,5455 E; 686,425 N				Control site 2 at UTM Z11; 4,665,944 E; 686,350 N				Treatment site (submerged Junipers) at UTM Z11; 4,665,139 E; 686,126 N				
Total Length (mm)	RBT	SMB	WE	YP	RBT	SMP	SPT	WE	CRP	RBT	SMB	SPT	YP
0									1				1
50							3		11				
60				5					4			1	8
70				7									15
80				4	1								6
90	2				3								1
100	4												
110	1												
150													
170													
190													
250													
260													
270													
280		1											
290					1								
310		1											
320						1							
330													
340		1	1			2							
350					1								
360													
370								2					
390		1						1					
410													
460								1					
470								1					
480								1					
530			1										
Unmeasured:									4				112
TOTAL:	7	4	2	16	7	3	3	11	23	3	4	1	143
CPUE (60 seconds)	0.39	0.22	0.11	0.89	0.70	0.30	0.30	1.11	5.97	0.78	1.04	0.26	37.14

Table 16. Total length frequencies of fish sampled at Salmon Falls Creek Reservoir with two sinking small mesh gill nets on September 9, 2002.

Total Length	White crappie	Rainbow trout	Redside shiner	Spottail shiner	Walleye	Yellow perch
70	21					
80						5
90			1			38
100				1		8
120					1	
130					8	5
140					9	16
150					2	11
160					3	
170					4	1
180					6	
190					2	
220					2	
230					3	
240					9	
250					10	
260					11	
270					2	
280					3	
300					1	
330		1				
370					3	
390					1	
400					3	
410					1	
440		1				
540					1	
660					1	
750					1	
Totals:	21	2	1	1	87	84

Fish collected on September 9 and on September 25, 2002 were pooled for a 62 fish sample and sent to Ron Brooks to be inspected for aging and OTC marks. Of the 62 fish examined, 35 were age-0 and 27 were age-1 (Table 17). Five of the 35 age-0 fish (14%) had OTC marks indicating that they were of hatchery origin.

Temperature and dissolved oxygen profiles are provided in Tables 18, 19 and 20 and results of the forage species sampled by beach seining is summarized in Table 21.

WILSON LAKE RESERVOIR

Introduction

Wilson Lake Reservoir is an irrigation impoundment located on the North Side Main Canal system 1.6 km north of Hazelton. It receives Snake River water diverted from Milner Reservoir Dam and has a full pool storage capacity of 2,500 acre-feet. Water is shut off at the head of the North Side Main Canal at Milner Dam every Fall at the end of the irrigation season, and water is allowed to drain out of the reservoir leaving only a small shallow pool to over-winter fish. The 2001-2006 Fishery Management Plan states that the fishery is managed for brown bullhead, yellow perch, channel catfish, and largemouth bass (IDFG 2001). Channel catfish have been stocked almost annually since 1996. The objective of sampling Wilson Lake Reservoir this year was to determine the success of the channel catfish stocking program and assess the overall fishery.

Methods

A standardized lowland lake survey was done on Wilson Lake Reservoir on June 4-6, 2002. Two sinking gill nets, two floating gill nets and two trap nets were set overnight and one night of electrofishing effort was used to sample fish. The gill nets were 38 m x 1.8 m variable mesh (19 mm to 64 mm) monofilament experimental nets. Each was set with the end of the small mesh anchored at the shore. The trap nets were composed of a 1.8 x 0.9 m box followed with four 76 cm diameter hoops covered by 2 cm bar mesh netting and with crowfoot throats on the first and third hoop. There was a 23 m lead attached to the front of the frame, which was anchored at the shore with the frame structure anchored in water one to two meters deep. A Smith-root Model SR-18 electrofishing boat with a Model 5.0 pulsator was used for nighttime electrofishing with two netters on the bow attempting to net all fish stunned regardless of size or species. Three separate sites were electrofished varying in effort from 900 seconds to 930 seconds for a total of 2,752 seconds. Equal effort was made to net all fish stunned regardless of size or species.

All fish sampled were identified to species and measured with a subsample weighed. Total length frequency distribution of all fish sampled include average weights of fish within 10 mm length ranges. Catch was summarized by standardizing effort to a single unit being equal to the combined catch of one sinking and one floating gill net, one trap net, and one hour of electrofishing effort.

Daytime temperature and dissolved oxygen profiles were measured in-situ at two locations using a Yellow Springs Instruments model 57 temperature/dissolved oxygen meter during the day on June 3, 2002. Secchi disc visibility readings were taken at the same locations. A surface sample of water was taken midreservoir on the same date and analysis run for total alkalinity, total hardness and pH. A Hach Kit was used for the total hardness and alkalinity measurements and an Oakton PhTest2 was used for measuring pH. An Onset

Table 17. Length frequencies of age-0 and age-1 walleye sampled from Salmon Falls Creek Reservoir in September 2002 and determination of presence of OTC marks on the otolith.

	Age-0 Walleye		Age-1 Walleye
	OTC Mark Present		
Total Length (mm)	No	Yes	
110		1	
120	4	1	
130	8	1	
140	5	1	
150	3	1	
160	2		
170	7		
180	1		
190			2
200			2
220			5
230			2
240			7
250			4
260			2
270			1
280			1
290			1
Total:	30	5	27

Table 18. Temperature and dissolved oxygen profiles measured at three locations on Salmon Falls Creek Reservoir on June 30, 2002.

	Near the Dam at UTM Zone 11, 686,744m E, 4,674,376m N		Near Antelope Bay Arm at UTM Zone 11, 686,138m E, 4,671,405m N		West of Grey's Landing at UTM Zone 11, 686,989m E, 4,666,729m N	
Depth (m)	Temp (C)	DO_2 (mg/l)	Temp (C)	DO_2 (mg/l)	Temp (C)	DO_2 (mg/l)
S	19	8.6	19	7.7	21	7.2
1	19	8.6	19	7.5	21	7.3
2	19	8.6	19	7.6	21	7.3
3	19	8.7	19	7.5	20	7.3
4	19	8.7	19	7.6	19	7.2
5	19	8.6	18	7.6	17	6.4
6	18	8.5	17	7.4	15	5.2
7	17	8.0	17	7.2	13	4.0
8	15	7.5	14	6.7	13	3.5
9	14	7.3	13	6.0	11	2.5
10	13	7.0	12	5.9	11	1.9
11	12	7.0	12	5.8	11	1.5
12	11	6.7	11	5.5		
13	11	6.5	11	5.1		
14	10	6.2	10	4.5		
15	10	6.0	9	3.6		
20	8.0	2.4	8.0	.6		
21			8.0	.3		
25	7.0	0.6				
29(B)	7.0	0.4				

Table 19. Temperature and dissolved oxygen profiles measured at three locations on Salmon Falls Creek Reservoir on July 21, 2002.

	Near the Dam at UTM Zone 11, 686,973m E, 4,674,540m N		Near Antelope Bay Arm at UTM Zone 11, 686,356m E, 4,671,123m N		Across from Grey's Landing at UTM Zone 11, 687,267m E, 4,666,729m N	
Depth (m)	Temp (C)	DO_2 (mg/l)	Temp (C)	DO_2 (mg/l)	Temp (C)	DO_2 (mg/l)
S	21	7.5	21	7.3	21	7.5
1	20	7.4	21	7.3	21	7.6
2			20	7.6	21	7.4
3	20	7.3	20	7.2	21	7.5
4			20	7.2	20	6.7
5	20	7.4	20	7.1	18	3.7
6			19	6.6	15	1.5
7	20	7.3	16	3.0	13	0.6
8			13	1.5	11	0.3
9	16	4.0	13	1.8	11	0.2
9.2(B)					11	0.2
10			11	2.6		
11	12	4.0	11	2.5		
12						
13	11	4.4	10	2.0		
14						
15	9	2.4	9	0.5		
16						
17	9	1.8	9	0.3		
17.5(B)			9	0.3		
18						
19	9	0.3				
20						
21	8	0.2				
22						
23	8	0.2				
24						
25	7	0.2				
25.2(B)	7	0.2				
20						
21						
25						
29(B)						

Table 20. Temperature and dissolved oxygen profiles measured at three locations on Salmon Falls Creek Reservoir on September 9, 2002.

Near the Dam at UTM Zone 11, 687,219m E, 4,674,933m N					
Depth (m)	Temp (C)	DO_2 (mg/l)	Depth (m)	Temp (C)	DO_2 (mg/l)
S	17	9.0	15	10	<0.5
1	17	9.0	20	9	<0.5
2	16	8.7	23	8	<0.5
3	16	8.6			
4	16	8.5			
5	16	8.3			
6	16	8.2			
7	16	8.1			
8	16	8.0			
9	16	7.9			
10	16	7.8			
11	13	<1.0			
12	11	<1.0			
13	11	<1.0			
14	11	<1.0			

Table 21. Number of fish and crayfish sampled by beach seining five locations on Salmon Falls Creek Reservoir on August 28, 2002.

Beach seining site	Crayfish	Crappie (<100 mm)	Smallmouth bass (<150 mm)	Yellow perch (< 100 mm)
Near Dam				132
Whiskey slough	12	2		51
Marble Cliff			3	
Grey's Landing	6		2	
Luds Point	15	12	3	5
Total Sampled:	33	14	8	188

StowAway water temperature data logger (Onset computer corporation, Pocasset, MA) set to record temperature every 48 minutes was used for continuously recorded temperature information. It was placed in the reservoir on June 4, 2002 and retrieved on September 23, 2002.

Results

Fish species sampled by all gear types combined from Wilson Lake Reservoir include brown bullhead, common carp, redside shiner, Utah chub *Gila atraria*, Utah sucker, and yellow perch (Table 22). Over 80% of the total biomass of fish sampled was composed of common carp and Utah suckers (Table 23). The only gamefish sampled were 13 yellow perch, which comprised 9% of the total number of fish sampled. Although channel catfish have been stocked none were sampled. The Optic StowAway temperature data logger recorded temperatures only until August 11, 2002 (Figure 3). Results indicate that water temperatures remained above 20^{o} C for at least a few weeks during the latter part of July. Temperature and dissolved oxygen profiles results indicate no stratification had developed at all by early June (Table 24), and the low retention rate and shallow nature of the reservoir probably means that the thermograph record is indicative of temperatures throughout the reservoir for most of the summer. Total alkalinity measured 107 mg/l, total hardness 160 mg/l and the pH was 7.3. Maximum depth of Secchi disc visibility ranged from 2.9 m to 3.2 m at the lower site and from 2.6 m to 3.2 m at the upper site.

The most significant limiting factor to producing more warm water gamefish in Wilson Lake Reservoir is probably the annual draw down of water after the irrigation season. The quality of water in the minimum pool left over during the winter may be capable of supporting only the brown bullhead and possibly a low number of other fish species. Most of the fish sampled may be transients from Milner Reservoir.

Regional Creel Surveys

Anglers were contacted by conservation officers and regional fishery staff to gather general creel information on waters throughout the region. Results of these angler interviews are given in Table 25.

Table 22. Fish sampled with four gill nets, two trap nets and 2,752 seconds of electrofishing at Wilson Lake Reservoir in June, 2002.

Total length (mm)	Utah sucker					
	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
100	1				1	
110	4				4	15
120	3				3	15
130	2				2	25
140	1				1	24
190	1				1	76
200			1		1	70
220			3		3	100
230	1				1	150
240		1			1	130
320			1		1	360
410		1			1	900
440		1			1	
470		1			1	1500
480		2	1		3	1317
490		2	1		3	1275
500		4	2		6	1550
510		13	4		17	1695
520		9	9		18	1773
530		4	7		11	1925
540		10	4		14	2065
550		6	2		8	2191
560		4	2		6	2150
570		5	1		6	2233
580		2	2		4	2425
590		2	2		4	2500
610		1			1	
630			1		1	3150
Total number sampled	13	68	43		124	

Table 22. Continued.

	Brown bullhead					
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
50	1				1	
60	1				1	
140		3			3	20
150	1				1	58
160		1	1	1	3	60
180		1	2		3	55
220		6	2		8	185
230		7	2	1	10	215
240		19	10		29	238
250	2	12	16	2	30	262
260	3	26	16	1	46	295
270	3	7	6	1	17	326
280	1	1	4	1	7	350
290	2	2	2	1	7	373
300			1	3	4	497
310	1		1	4	6	474
320		1		2	3	567
330				1	1	630
350	1				1	730
360				1	1	780
Total number sampled	16	86	63	19	184	

Table 22. Continued.

	Common carp					
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
140		1			1	
150		1			1	40
340			1		1	700
350	1				1	810
360			1		1	800
370			2		2	800
430	1				1	
510			1		1	2267
530	1				1	
540	2				2	
550			1		1	2721
560	1				1	
570	3				3	
580	4		3		7	2850
590	2		1		3	3000
600	6				6	
610	5				5	
620	2				2	
640	3		1		4	3200
650	2				2	
660	1				1	
680	1		1		2	4400
700	1				1	
710	2				2	
750			1		1	10432
760	1				1	8300
Total number sampled	39	2	13		54	

Table 22. Continued.

	Utah chub					
Total length (mm)	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
140		3	1		4	
150	1	7	1		9	20
160	2	13			15	10
170		5	2		7	23
180	1	4			5	51
190		1	1		2	60
200		2	1		3	80
210	1	1			2	70
220		3			3	130
230	2				2	
240		2	1		3	173
260		1	2		3	190
280	1	1	1		3	335
310	1	3	1		5	387
320			1		1	450
330	1	1	1		3	470
340		1	6		7	523
350	2	2	3		7	598
360		2	3		5	632
370			1		1	620
380			1		1	770
390		1				770
Total number sampled	12	53	27		92	

Table 22. Continued.

Total length (mm)	Redside shiner					
	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
50	1				1	2
60	12				12	
70	13				13	2
100	6				6	11
Total number sampled	32				32	

Total length (mm)	Yellow perch					
	Electrofishing	Sinking gill net	Floating gill net	Trap net	Total sampled	Average weight (g)
170		1			1	
180			1		1	50
190			1		1	50
200	2	1	1		4	83
210			4		4	95
220	1				1	144
230			1			150
Total number sampled	3	2	8		13	

Table 23. Wilson Lake Reservoir lowland lake sampling results from June 2002, standardized to catch per unit of effort.

	Min.-max. total length (mm) of fish sampled	Number of fish per unit of effort	Percent by number	Weight (kg) of fish per unit of effort	Percent by weight
Brown bullhead	50-360	105	31	29.8	8
Common carp	140-760	59	17	214.0	60
Redside shiner	50-100	42	12	0.1	<1
Utah chub	140-390	56	16	12.8	4
Utah sucker	100-630	73	21	101.7	28
Yellow perch	230-170	9	3	0.8	<1
Total:		344		359.2	

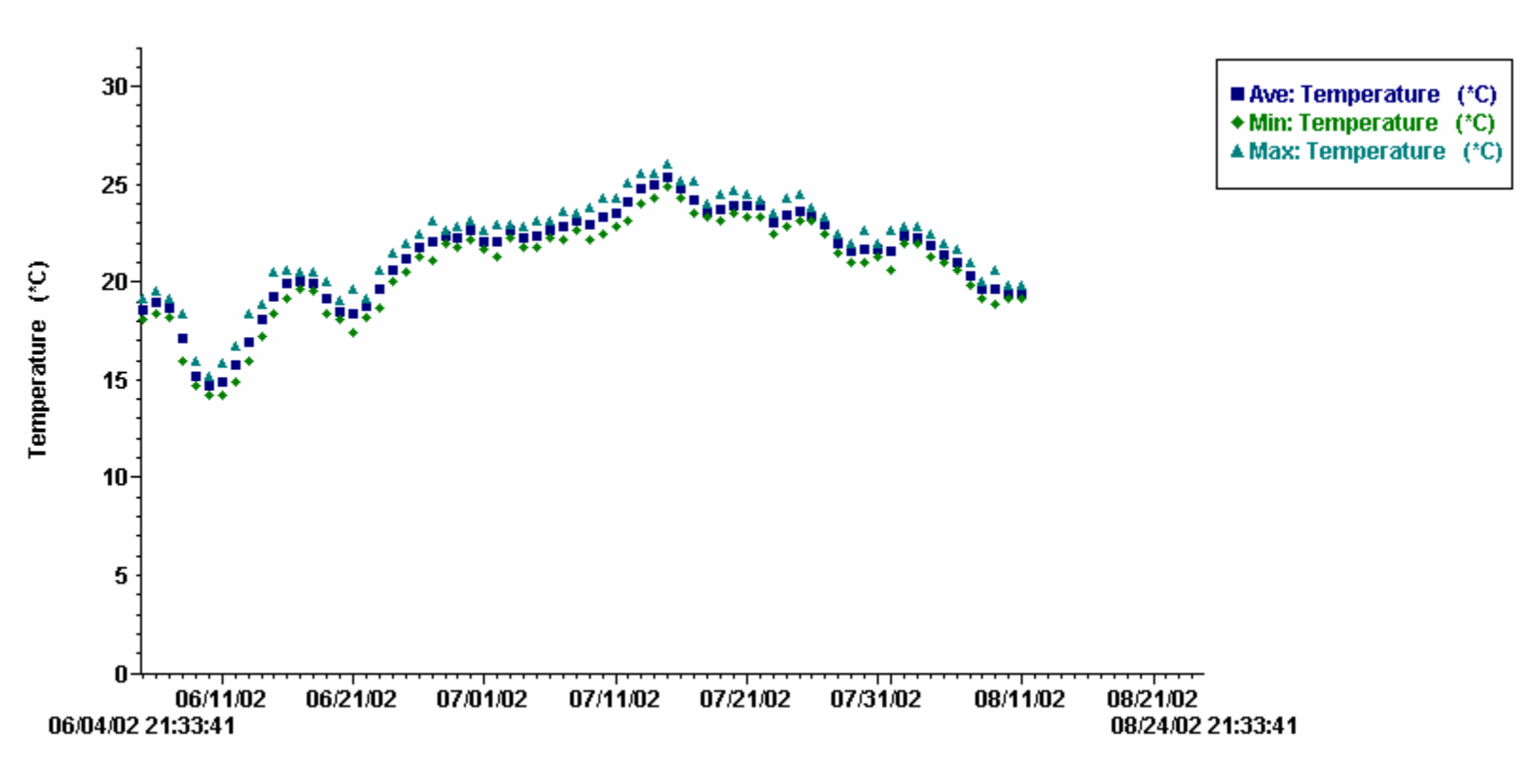

Figure 3. Daily average, minimum and maximum water temperatures recorded by a continuously recording thermograph set in approximately two meters of water in Wilson Lake Reservoir.

Table 24. Temperature and dissolved oxygen profiles measured at two locations on Wilson Lake Reservoir on June 3, 2002.

Upper Site at UTM Zone 11, 735,141m E, 4,721,559m N					
Depth (m)	Temp (C)	DO_2 (mg/l)	Depth (m)	Temp (C)	DO_2 (mg/l)
S	19	11.2			
1	19	11.6			
2	19	12.7			
2.5(B)	19	16.5			

Near the Dam at UTM Zone 11, 732,331m E, 4,723,097m N					
Depth (m)	Temp (C)	DO_2 (mg/l)	Depth (m)	Temp (C)	DO_2 (mg/l)
S	19	10.0	5(B)	19	9.9
1	19	10.0			
2	19	9.8			
3	19	9.9			
4	19	9.9			

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2002 ANNUAL PERFORMANCE REPORT

State of: Idaho | Program: Fisheries Management F-71-R-27

Project I: Surveys and Inventories | Subproject I-E: Magic Valley Region

Job: c | Title: Rivers and stream surveys and studies

Contract Period: July 1, 2002 to June 30, 2003

ABSTRACT

Billingsley Creek was electrofished for a population estimate of rainbow trout in two segments of the fly-fishing only reach and within the Wildlife Management Area (WMA). Densities of rainbow trout *Oncorchynchus mykiss* > 100 mm TL were estimated to be 6.2 ± 3.4 fish/100m^2 and 43.5 ± 18.9 fish/100m^2 in the two fly-fishing only segments. Whereas only two rainbow trout were sampled from the WMA reach no population estimate was made. Several hundred Utah chub *Gila atraria***,** were sampled from the three sites combined. Trout densities were low and reflect poor efficiency in the current stocking program.

Clover Creek, a tributary to the Bruneau River, was sampled by electrofishing five sites in July 2002. This effort was to study redband trout distribution within the Bruneau River drainage. Results are summarized in a separate report.

The Little Wood River at the Bear Tracks Williams access site was sampled with two passes of electrofishing in May, 2002. Total numbers of fish sampled include 42 brown trout and 14 rainbow trout with only one fish recaptured in the second pass. No population estimate was made.

The Snake River at the King Hill U.S. Geological Survey gauging station was sampled by electrofishing for the annual North American Water Quality Assessment program in July, 2002. Fish sampled include bridgelip sucker *Catostomus columbian*, chiselmouth chub *Acrocheilus alutaceus*, common carp *Cyprinus carpio*, leopard dace *Rhinichthys falcatus*, largescale sucker *Catostomus macrocheilus*, mottled sculpin *Cottus bairdi*, mountain whitefish *Prosopium williamsoni*, northern pikeminnow *Ptychocheilus oregonensis*, redside shiner *Richardsonius balteatus*, smallmouth bass *Micropterus dolomieu* and speckled dace *Rhinichthys osculus* .

White sturgeon *Acipenser transmontanus* were sampled by set-lines and by angling on the Snake River between Bliss Dam and Lower Salmon Falls Reservoir in June, 2002. No white sturgeon *Acipenser transmontanus* were sampled from Bliss Reservoir but eight were sampled by angling between the mouth of the Malad River and Lower Salmon Falls Dam. No population estimate was made.

A population estimate of game fish was made on a reach of the South Fork Boise River that is managed for quality rainbow trout fishing. Results showed a rainbow trout density of 0.30 ± 0.09 per 100m^2 for trout ≥ 200 mm TL. No rainbow trout 355 mm or longer were sampled.

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RIVER AND STREAM SURVEY OBJECTIVES

To obtain current information for fishery management decisions on rivers and streams, including angler use, success, harvest and opinions, fish population characteristics, spawning success, habitat characteristics, return-to-the-creel for hatchery trout, and develop appropriate management recommendations.

BILLINGSLEY CREEK

Introduction

Billingsley Creek is a 13.6 km-long spring fed stream that flows into Lower Salmon Falls Reservoir - a Snake River impoundment near the town of Hagerman, Idaho. The stream is used extensively as a source of irrigation water, commercial fish production and hydroelectric production.

The fishery in Billingsley Creek was surveyed in 2001. Surveys were repeated on two reaches to continue establishing baseline trend information.

Study site

The Billingsley Creek fish population was sampled at two locations in 2002. Specific locations and dimensions are described in Table 1. The first location (hereby referred to as WMA) resides on land owned by the State of Idaho and managed by IDFG (Billingsley Creek Wildlife Management area) and Idaho Department of Parks and Recreation (Billingsley State Park). The second sampled reach is surrounded by private land owned by Bill Jones. This reach was split into two segments for sampling purposes: 1) Jones-Upper, and 2) Jones-Lower. This reach was stratified based on stream habitat characteristics.

Methods

Fish populations were sampled differently at each location due to habitat differences. The electrofishing array consisted of a 5,000 watt Honda generator providing AC power to a Coffelt Model 15 variable voltage pulsator (VVP) at both locations. Fish were collected during nighttime hours in a downstream pass from an aluminum drift boat with fixed anodes on the WMA. All fish species were netted for the first 619 seconds of electrofishing while only trout species were netted for the following 499 seconds of electrofishing. The marking run occurred on June 16th with no recapture run. On the Jones sites, handheld anodes were used as netters waded upstream. An aluminum canoe carried the generator and the VVP and served as the cathode. All fish species were netted in the first 43 m of the Jones-Upper section in order to determine species composition. Only rainbow trout were netted in the remaining portion of the Jones-Upper section. The marking run occurred on June 22 and the recapture run on June 29, 2002.

All fish collected were anesthetized, measured (TL), tagged, recovered in fresh water, and subsequently released back into the stream. Fish $\geq$ 100 mm long were marked with a caudal punch. All trout on the WMA were tagged with a lower caudal punch. Different tags were used on the Jones locations since the two sections were in close proximity. A lower caudal punch was used in the Jones-Lower reach and an upper caudal punch was used in the Jones-Upper reach.

Table 3. Coordinates and segment dimensions of sites sampled on Billingsley Creek in June 2002.

		UTM Coordinates [a]			Dimensions		
Reach	Segment	Boundary	Easting (m)	Northing (m)	Length (m)	Avg. width (m)	Area (m^2)
WMA	-none-	Upper	673,696	4,743,272	1,800	--	--
		Lower	672,953	4,743,745			
Jones	Lower	Upper	674,547	4,739,897	139	14.7	2,040
		Lower	674,636	4,739,800			
	Upper [b]	Upper	674,692	4,139,716	225	21.9	4,919
		Lower	674,733	4,739,501			

[a] UTM coordinates all in zone 11
[b] All fish species were targeted in first 43 m of this segment, only rainbow trout in the remaining portion

The Chapman's modified Peterson estimator was used to generate fish population estimates (Ricker 1958).

Results and Discussion

Only two rainbow trout were sampled with a total of 1,118 seconds of nighttime electrofishing effort on the WMA. Other fish sampled include one redside shiner *Richardsonius balteatus*, and 255 Utah chub (Table 2). No population estimate was made due to poor sample size.

There were 301 rainbow trout sampled in the Jones-Lower segment (Table 2) and 166 sampled in the Jones-Upper segment of the Jones reach (Table 2). Other fish sampled included 73 redside shiner and 256 Utah chub in both Jones sections combined. A total of 33 rainbow trout, 57 redside shiner and 204 Utah chub were sampled in the 43-m reach used to estimate species composition (Table 2). A length frequency histogram of rainbow trout sampled on the Jones location is provided in Figure 1. Population estimates were possible only for combined length groups $\geq$ 100 mm TL on the Jones-Upper and Lower segments (Table 3).

Rainbow trout densities were substantially higher in the Jones-Lower segment compared to the Jones-Upper segment. The majority of the fish captured in the Jones-Lower section were < 150 mm TL. These fish were likely fingerlings that were stocked on May 10, 2002. Fish are stocked from the bridge that separates the Jones-Upper and Lower segments and the fingerling trout drifted into the Jones-Lower segment. Assuming the Jones-Lower density estimate is inflated, the Jones-Upper segment most likely reflects natural densities. Densities of 6 trout/100 m^2 are low and indicate poor survival of stocked trout.

It is recommended that the current stocking program be reevaluated. Consider the use of brown trout in addition to or in lieu of the current rainbow trout stocking program. Mark all stocked brown trout and evaluate returns and survival of stocked fingerlings and catchables.

LITTLE WOOD RIVER

Introduction

The Little Wood River between the town of Richfield and its confluence with Silver Creek is managed as a rainbow trout and brown trout fishery (IDFG 2001). Brown trout fingerlings

Table 2. Length frequency (TL) and average weight (g) of fish sampled from three reaches of Billingsley Creek in May 2002. Recaptured marked fish were not included.

			Rainbow trout			
Reach	Segment	TL (mm)	#'s	Avg. Wgt. (g)	Redside shiner	Utah chub
WMA [a]	-None-	90	--	--	--	2
		100	--	--	--	2
		130	--	--	1	--
		140	--	--	--	1
		160	--	--	--	2
		190	--	--	--	4
		200	--	--	--	3
		210	--	--	--	1
		220	--	--	--	2
		230	--	--	--	4
		240	--	--	--	3
		250	--	--	--	2
		280	--	--	--	2
		290	--	--	--	1
		300	--	--	--	1
		360	1	520	--	--
		390	1	390	--	--
		Unmeasured				222
		Total	2		1	255
Jones [b]	Lower	30	1	--	--	--
		40	5	--	--	--
		50	4	--	1	2
		60	6	--	2	1
		70	22	4	--	1
		80	19	6	1	1
		90	14	--	2	3
		100	14	10	3	5
		110	27	34	4	6
		120	47	21	2	2
		130	69	29	--	5
		140	31	32	--	2
		150	7	31	--	2
		160	3	45	--	4
		170	3	54	--	3
		180	--	--	--	1
		190	2	69	--	2
		200	3	75	--	1
		210	3	95	--	--
		220	1	--	--	1
		230	3	129	--	--
		240	5	132	--	--
		250	2	162	--	--
		260	2	164	--	--
		270	2	190	--	--
		290	1	206	--	--
		300	2	234	--	--
		310	1	287	--	--
		360	1	460	--	--
		420	1	580	--	--
		Total	301		15	42

Table 2. Continued …

Reach	Segment	TL (mm)	Rainbow trout #'s	Rainbow trout Avg. Wgt. (g)	Redside shiner	Utah chub
Jones [b]	Upper	30	--	--	--	1
		40	3	--	--	--
		50	11	--	--	2
		60	17	--	--	1
		70	12		1	1
		80	11	--		1
		90	4	--	--	--
		100	5	13	--	--
		110	12	--	--	1
		120	15	17	--	--
		130	12	--	--	--
		140	8	--	--	--
		150	2	--	--	--
		160	--	--	--	1
		170	1	--	--	1
		180	2	73	--	--
		210	1	--	--	1
		220	1	100	--	--
		230	1	--	--	--
		240	2	--	--	--
		250	4	150	--	--
		260	1	--	--	--
		270	1	--	--	--
		280	1	215	--	--
		290	2	220	--	--
		300	1	275	--	--
		320	1	340	--	--
		Total	131		1	10
Jones [c]	Upper	50	1	--	--	--
		60	1	--	1	1
		70	1	2	1	--
		80	4	7	7	--
		90	1	--	28	1
		100	4	12	10	6
		110	7	16	9	17
		120	3	23	1	15
		130	7	28	--	19
		140	3	29	--	19
		150	--	--	--	30
		160	--	--	--	21
		170	--	--	--	21
		180	--	--	--	8
		190	--	--	--	16
		200	--	--	--	12
		210	--	--	--	8
		220	--	--	--	2
		230	--	--	--	4
		240	1	120	--	4
		Total	33		57	204

[a] Single pass of electrofishing on May 16, 2002. All species netted

[b] Two passes of electrofishing on May 22nd and 29th, 2002. Only trout species targeted; other species incidental.

[c] Two passes of electrofishing on May 22nd and 29th, 2002. All species netted.

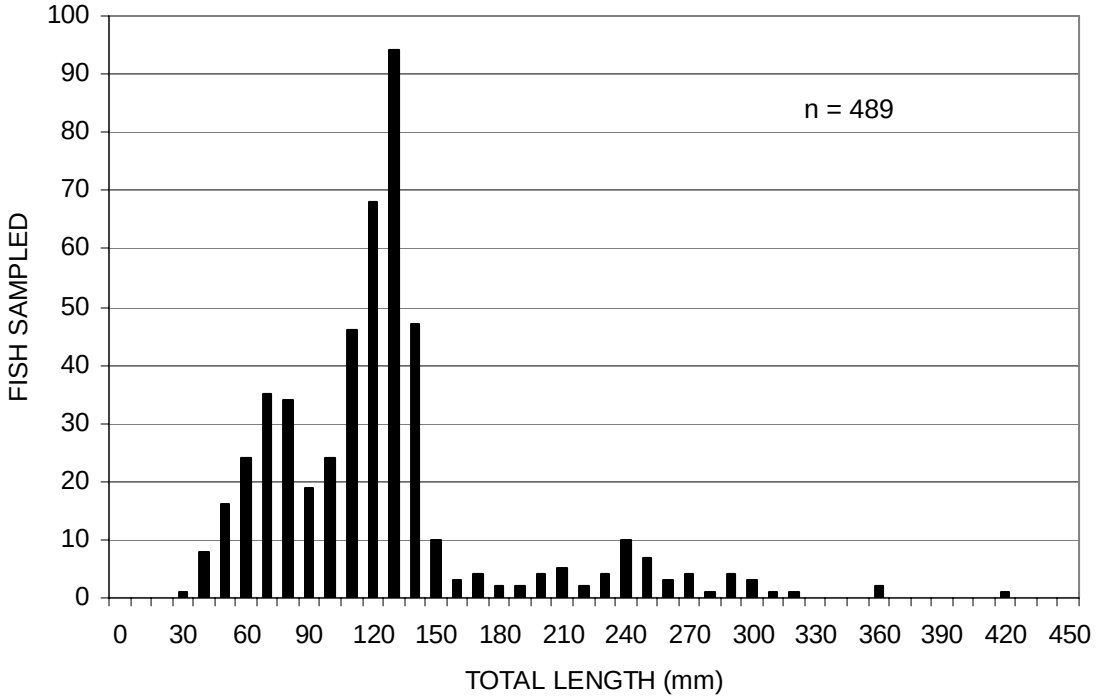

Figure 1. Length frequency histogram of rainbow trout sampled by electrofishing on the Bill Jones property on May 22 and 29, 2002.

Table 3. Population and density estimates (fish/100m^2) of rainbow trout ≥ 100 mm (TL) sampled from three locations in Billingsley Creek in June 2002.

	TL range (mm)			Population estimate					
Transect	Min.	Max.	Ave.	TL (mm)	M	C	R	N_{est} (95%CI)	Density (95%CI))
WMA [a]	360	390	375		0	---	---	---	---
Jones – Upper	40	320	114	≥ 100	62	43	8	307 (170)	6.2 (3.4)
Jones – Lower	30	420	126	≥ 100	104	143	16	888 (386)	43.5 (18.9)

[a] Insufficient sample size to generate population estimate

were annually stocked within this reach until 1998 and triploid fingerling rainbow trout have been stocked annually since 2000. Fish were sampled in 2002 to determine the success of the current stocking program and to estimate presence and densities of other fish of wild origin.

Study Site

Fish were sampled for a population estimate (modified Peterson estimator) of rainbow trout and brown trout *Richardsonius balteatus* on the Bear Tracks Williams State Recreation Area. The starting point was at UTM Zone 11, 740,166 m E, 4,783,173 m N and the ending point was at UTM Zone 11, 739,714 m E, 4,781,918 m N, which is at the trestle bridge.

Methods

The Little Wood River was electrofished on May 23 and May 30, 2002 for the marking run and recapture run, respectively. The electrofishing array used was an aluminum drift boat outfitted with a 5,000 watt generator, a Coffelt VVP-15, and two dangling cable anodes suspended from the bow of the boat. All fish species were netted regardless of size. A total of 1,317 seconds of electrofishing effort was expended in both passes combined.

Results and Discussion

Too few fish were recaptured to generate a population estimate. Poor sampling efficiency was due to habitat complexity and low fish densities. It is recommended that this reach be re-sampled using a multiple mark-recapture Schnabel estimator (Ricker 1975).

Fish sampled in the mark and recapture runs combined include 42 brown trout and 14 rainbow trout (Table 4). Other species sampled include bridgelip sucker *Catostomus columbian*, longnose dace *Rhinichthys cataractae*, speckled dace *Rhinichthys osculus*, redside shiner *Richardsonius balteatus* and Utah chub *Gila atraria* (Table 4).

Table 4. Length frequency distribution and average weight (g) of fish sampled with 3,317 seconds of electrofishing at Little Wood River on May 23 and 30, 2002. Does not include marked fish sampled in recapture run.

	Brown trout		Rainbow trout		LND [a]		BLS [a]		RSS [a]		SPD [a]		UTC [a]	
TL (mm)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)
30	--	--	--	--	--	--	--	--	--	--	1	--	--	--
40	--	--	--	--	--	--	--	--	5	--	10	--	--	--
50	--	--	--	--	1	--	--	--	11	--	11	2	--	--
60	--	--	--	--	4	5	--	--	22	3	8	4	--	--
70	--	--	--	--	3	5	1		34	5	10	5	--	--
80	--	--	--	--	1	--	2	6	13	7	5	6	--	--
90	--	--	--	--	--	--	6	10	3	--	--	--	--	--
100	--	--	1	9	--	--	12	13	2	15	--	--	--	--
110	1	16	--	--	--	--	1	18	--	--	--	--	--	--
120	--	--	--	--	--	--	3	20	--	--	--	--	--	--
130	2	21	3	21	--	--	3	28	--	--	--	--	1	28
140	--	--	1	25	--	--	4	34	--	--	--	--	--	--
150	--	--	--	--	--	--	2	38	--	--	--	--	--	--
160	--	--	3	44	--	--	4	27	--	--	--	--	--	--
170	--	--	2	48	--	--	2	54	--	--	--	--	--	--
180	--	--	2	66	--	--	2	60	--	--	--	--	--	--
200	1	77	--	--	--	--	--	--	--	--	--	--	--	--
210	--	--	--	--	--	--	3	95	--	--	--	--	--	--
230	3	146	--	--	--	--	1	121	--	--	--	--	--	--
240	3	169	1	149	--	--	1	124	--	--	--	--	--	--
250	1	170	1	180	--	--	--	--	--	--	--	--	--	--
260	9	207	--	--	--	--	--	--	--	--	--	--	--	--
270	6	219	--	--	--	--	--	--	--	--	--	--	--	--
280	1	280	--	--	--	--	--	--	--	--	--	--	--	--
290	3	281	--	--	--	--	--	--	--	--	--	--	--	--
300	2	308	--	--	--	--	--	--	--	--	--	--	--	--
310	3	320	--	--	--	--	--	--	--	--	--	--	--	--
320	1	340	--	--	--	--	--	--	--	--	--	--	--	--
340	1	440	--	--	--	--	--	--	--	--	--	--	--	--
350	1	450	--	--	--	--	--	--	--	--	--	--	--	--
360	1	465	--	--	--	--	--	--	--	--	--	--	--	--
400	1	770	--	--	--	--	--	--	--	--	--	--	--	--
510	1	1550	--	--	--	--	--	--	--	--	--	--	--	--
Not Meas.	0		0		10		63		62		62			
Total	41		14		21		113		155		110		1	

[a] LND=longnose dace; BLS=bridgelip sucker; RSS=redside shiner; SPD=speckled dace; UTC=Utah sucker

SNAKE RIVER (NAWQA SAMPLE)

Introduction

The U.S. Geological Survey (USGS) has been monitoring the fishery of the Snake River as part of the National Water Quality Assessment Program (NAWQA) on an annual basis since 1993 (Marat 1997). One of the goals of this program is to address the relation of physical and chemical characteristics of streams and associated fish assemblages in the upper Snake River Basin, which includes select sites within the watershed upstream of King Hill. The IDFG has been assisting with the fish sampling component of this program since it was implemented. In 2002 IDFG continued their assistance with electrofishing at the King Hill site located at the USGS gauging station.

Study Site

Fish were sampled along the north shoreline of the Snake River between the cable of the USGS gauging station (river mile 547) downstream to the boat launch located immediately downstream of the county road bridge at King Hill.

Methods

Fish were collected by electrofishing during daylight hours. Samples were taken on July 2, 2002 using a Smith-Root SR-18 electrofishing boat and two netters. A total of 1,577 seconds of electrofishing effort was expended and all fish encountered were netted. Fish sampled were identified to species, measured and weighed.

Results and Discussion

Total length of river sampled along the north shoreline was 1,065 m. Nongame fish sampled include bridgelip sucker, chiselmouth chub, common carp, leopard dace *Rhinichthys falcatus*, largescale sucker *Catostomus macrocheilus*, mottled sculpin *Cottus bairdi*, northern pikeminnow, redside shiner, and speckled dace (Table 5). Gamefish sampled include smallmouth bass *Micropterus dolomieu* and mountain whitefish *Prosopium williamsoni* (Table 5).

Most of the fish sampled from the Snake River at King Hill are somewhat tolerant to warm water and capable of surviving eutrophic conditions. The fish assemblage sampled are indicative of the continuing poor water quality associated with reduced flows in the Snake River due to upstream irrigation diversions and high nutrient loadings. Monitoring should continue through the NAWQA program to measure any significant shifts in the fish community resulting from changes in water quality.

SNAKE RIVER (WHITE STURGEON SAMPLE)

Introduction

The current range of white sturgeon *Acipenser transmontanus* in the Snake River includes the entire reach downstream of Shoshone Falls to the Columbia River. The construction of Bliss Dam, Lower Salmon Falls Dam and Upper Salmon Falls dam has created upstream migration barriers isolating the population upstream of C.J. Strike Reservoir into four groups. The longest free flowing reach of river within the Magic Valley Region where sturgeon have historically existed is between the backwaters of the C.J. Strike impoundment, at about

Table 5. Fish sampled with 1,577 seconds of daytime electrofishing the Snake River at King Hill on July 2, 2002.

	BLS [a]		CMC [a]		CC [a]		LD [a]		LSS [a]		MTS [a]	
TL (mm)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)
30	--	--	--	--	--	--	--	--	4	1	--	--
40	--	--	--	--	--	--	--	--	1	1	--	--
50	--	--	--	--	--	--	--	--	--	--	1	6
60	--	--	2	4	--	--	1	6	--	--	18	9
70	--	--	5	4	--	--	2	8	--	--	14	15
80	--	--	4	6	--	--	1	10	--	--	--	--
90	--	--	2	7	--	--	1	18	--	--	--	--
100	--	--	1	12	--	--	--	--	--	--	--	--
110	1	17	2	13	--	--	--	--	4	14	--	--
120	1	20	1	19	--	--	--	--	4	20	--	--
130	1	23	1	19	--	--	--	--	2	25	--	--
140	1	31	1	23	--	--	--	--	4	30	--	--
150	1	33	1	34	--	--	--	--			--	--
160	--	--	--	--	--	--	--	--	2	45	--	--
170	--	--	--	--	--	--	--	--	1	57	--	--
180	--	--	--	--	--	--	--	--	1	49	--	--
190	--	--	--	--	1	130	--	--	2	73	--	--
200	--	--	--	--	--	--	--	--	1	83	--	--
210	--	--	--	--	--	--	--	--	2	92	--	--
270	--	--	--	--	--	--	--	--	1	202	--	--
280	--	--	--	--	3	408	--	--	--	--	--	--
320	--	--	--	--	1	600	--	--	--	--	--	--
340	--	--	--	--	1	690	--	--	--	--	--	--
370	--	--	--	--	1	950	--	--	--	--	--	--
380	--	--	--	--	--	--	--	--	1	550	--	--
390	--	--	--	--	--	--	--	--	1	552	--	--
400	--	--	--	--	--	--	--	--	1	573	--	--
410	--	--	--	--	1	1100	--	--	--	--	--	--
420	--	--	--	--	--	--	--	--	1	850	--	--
440	--	--	--	--	--	--	--	--	1	750	--	--
450	--	--	--	--	--	--	--	--	1	800	--	--
470	--	--	--	--	--	--	--	--	1	1000	--	--
500	--	--	--	--	2	2000	--	--	2	1225	--	--
520	--	--	--	--	2	2095	--	--	--	--	--	--
530	--	--	--	--	2	2225	--	--	--	--	--	--
540	--	--	--	--	1	2300	--	--	1	1700	--	--
550	--	--	--	--	--	--	--	--	1	1950	--	--
560	--	--	--	--	--	--	--	--	1	1850	--	--
630	--	--	--	--	1	3400	--	--	--	--	--	--
710	--	--	--	--	1	5700	--	--	--	--	--	--
740	--	--	--	--	1	7700	--	--	--	--	--	--
Not measured			22						23			
Total	5		42		18		5		64		33	

Table 5. Continued.

	MTW [a]		NPM [a]		RSS [a]		SMB [a]		SPD [a]	
TL (mm)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)
30	--	--	3	1	--	--	--	--	--	--
40	--	--	6	2	--	--	--	--	--	--
50	--	--	3	4	2	1	--	--	1	3
60	--	--	3	4	6	2	--	--	--	--
70	--	--	3	5	8	3	--	--	1	5
80	--	--	5	7	3	5	--	--	2	7
90	--	--	1	6	2	7	--	--	3	6
100	--	--	2	12	2	11	--	--	--	--
110	--	--	--	--	3	13	--	--	--	--
120	--	--	3	15	1	17	1	60	--	--
130	--	--	7	34	--	--	--	--	--	--
140	--	--	2	24	--	--	1	38	--	--
160	--	--	1	33	--	--	--	--	--	--
170	--	--	1	38	--	--	--	--	--	--
200	--	--	--	--	--	--	1	134	--	--
210	--	--	3	79	--	--	--	--	--	--
230*	--	--	--	--	--	--	1	178	--	--
240	--	--	--	--	--	--	1	200	--	--
260	--	--	1	165	--	--	--	--	--	--
280	--	--	1	180	--	--	--	--	--	--
290	--	--	--	--	--	--	1	403	--	--
300	1	254	--	--	--	--	1	431	--	--
310	--	--	--	--	--	--	1	440	--	--
340*	--	--	1	397	--	--	--	--	--	--
390	--	--	1	632	--	--	--	--	--	--
430	--	--	1	781	--	--	--	--	--	--
490	--	--	1	1000	--	--	--	--	--	--
Not measured			79		87					
Total	1		128		114		8		7	

[a] BLS=bridgelip sucker; CMC=Chiselmouth chub; CC=common carp; LD=leopard dace; LSS=largescale sucker; MTS=mottled sculpin; MTW=mountain whitefish; NPM=northern pikeminnow; RSS=redside shiner; SMB=smallmouth bass; SPD=speckled dace

river mile 520, upstream to Bliss Dam at river mile 560. Reaches upstream of Bliss Dam to Shoshone Falls appear to have little or no natural recruitment (Lukens 1981). The population from Bliss Dam upstream to Lower Salmon Dam was investigated in 2002 to update information on the status of the white sturgeon population within that reach.

Study Site

White sturgeon were sampled with setlines and by angling in the reach of the Snake River from Bliss Dam upstream to Lower Salmon Falls Dam.

Methods

Setlines were only used in the Snake River reach upstream of Bliss Dam throughout the slackwater to the rapids just downstream of Bliss Bridge. Setlines (n=10) were placed every 0.5-1.0 km and were fished continuously from the morning of June 18, 2002 until the afternoon of June 21, 2002. Setlines were configured with a 15 m length of rope with a chain anchor on each end with a float attached to one of the anchors. Six circle-hooks (pairs of 12/0, 14/0 and 16/0 sized hooks) were attached with longline snaps at equal distances along the setline. Hooks were baited with a segment of rainbow trout acquired from a hatchery. Setlines were checked and baited twice daily.

A total of 27 hours of angling was expended within this same reach. From the mouth of the Malad River upstream to Lower Salmon Dam, white sturgeon were sampled with approximately 108 angling hours on June 25, 2002 and 110 angling hours on June 26, 2002. Squid and rainbow trout were used for bait (Table 6).

Measurements taken on all white sturgeon sampled include total length, fork length, weight and girth as measured posterior of the pectoral fins. The second anterior lateral scute on the left side was removed to mark captured sturgeon for the population estimate. All fish were scanned for passive integrated transponder (PIT) tags injected in previous studies. All fish not having PIT tags were implanted with one in the muscular tissue at the base of the dorsal fin for long-term identification.

Results and Discussion

Low catch rates precluded efforts to generate a population estimate. No white sturgeon were sampled with the setlines or by angling within the Bliss pool downstream of Bliss Bridge. The total catch was seven northern pike minnow in this reach. Eight white sturgeon were sampled by angling in the Snake River from the mouth of the Malad River upstream to Lower Salmon Dam (Table 6). A previously implanted PIT tag was detected in only one sturgeon.

SOUTH FORK BOISE RIVER

Introduction

The South Fork Boise River upstream of Anderson Ranch Reservoir flows mostly through U.S. Forest Service lands in Elmore and Camas counties. Access between Pine and Big Smokey Creek is by an improved gravel road that follows the river throughout most of its length. The fishery in the reach of river from the bridge at Pine upstream 39 km to the Beaver Creek confluence is managed with no exceptions to the general fishing rules for rivers and streams. The 16 km reach from Beaver Creek upstream to the Big Smoky Creek confluence

Table 6. White sturgeon sampled by angling on the Snake River between the mouth of the Malad River and Lower Salmon Dam on June 25 and 26, 2002.

PIT tag #	Total length (cm)	Fork length (cm)	Girth (cm)	Weight (kg)
421D7C3647 *	232	205	67.0	50.3
7F7D11176E *	236	213	91.0	--
421E107F65 *	176	153	64.5	32.2
421E1C2A00 *	187	163	69.0	39.9
421E0E353E *	190	163	64.0	33.5
421D663950 *	186	160	60.0	28.1
423A6B0502 *	167	146	53.0	17.2
7F7F137E0D	141	126	44.0	11.7

* New tag implanted

has been managed with a two trout limit with none less than 14 inches long (356 mm), and fishing gear restricted to artificial flies and lures with a single barbless hook since 1992. The reach upstream from Big Smoky Creek including all tributaries is managed with no exceptions to the general rules. Both reaches that are managed with no exceptions to the general rules are stocked with catchable sized rainbow trout for a put-and-take fishery. Bull trout *Salvelinus confluentus* are present in this reach of the South Fork Boise River. Kokanee *Oncorhynchus nerka* migrate upstream from Anderson Ranch Reservoir to spawn in the river from late August into early October.

Past fish population estimates were made in 1991 (Partridge et al. 1994), 1994 (Warren et al. 1996) and in 1998 (Warren et al. 2003). An estimate was made again on the same reach in 2002 to measure trends and shifts in the population over the past several years.

Study Site

Estimates of fish population numbers were made on a reach of the South Fork Boise River from the mouth of Deadwood Creek upstream 1.44 km.

Methods

Fish were sampled during daylight hours with a single downstream electrofishing pass for both the marking and recapture runs. Fish were marked on August 13, 2002 then recaptured on August 20, 2002. The electrofishing array consisted of an aluminum canoe (cathode), a 5,000 watt Honda generator, a Coffelt Model 15 variable voltage pulsator (VVP), and two hand-held anodes. One to two netters collected stunned fish around each anode. Greater effort was made to net stunned game fish than nongame fish species. All rainbow trout, bull trout and mountain whitefish $\geq$ 100 mm TL were marked with a caudal punch on the dorsal lobe. The Chapman modification of the mark-recapture model was used to generate a population estimate (Ricker 1958).

Total river discharge at the time of electrofishing was taken from provisional archived data for the U.S. Geological Survey gauging station located on the South Fork Boise River near Featherville. Estimated wetted area of the segment of river electrofished was based on total reach length and average width measurements taken every 50 m.

Results and Discussion

Game fish sampled in both runs combined included bull trout, kokanee, mountain whitefish and rainbow trout of wild origin and of hatchery origin (Table 7). Nongame fish included bridgelip sucker, longnose dace *Rhinichthys cataractae*, and mottled sculpin (Table 8). Population estimates for bull trout, rainbow trout, mountain whitefish are given in Table 9. No population estimate was attempted for adult kokanee since they are migratory and present only during spawning. Electrofishing efforts did not sample a single rainbow trout of minimum legal size (355 mm) for harvesting and the density estimate of rainbow trout at least 200 m long was 0.30 $\pm$ 0.09 per 100m^2 of stream.

Estimated river discharge at the USGS gauging station near Featherville measured 5.4 and 4.4 m^3/sec on August 13 and 20, 2002, respectively. Length of river electrofished was 1,438 m and total area electrofished was estimated to be 31,967 m^2.

Table 7. Total length frequency distribution and average weights of game fish sampled in mark and recapture runs of electrofishing at South Fork Boise River on August 13 and 20, 2002. Does not include marked fish caught in the recapture run.

	Bull trout		Kokanee		Mt. whitefish		Rainbow trout [a]		Rainbow trout [b]	
TL (mm)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)
40	--	--	--	--	--	--	--	--	--	--
50	--	--	--	--	--	--	--	--	--	--
60	--	--	--	--	--	--	--	--	--	--
70	--	--	--	--	1	4	--	--	--	--
80	--	--	--	--	2	--	--	--	--	--
90	--	--	--	--	5	6	--	--	2	7
100	--	--	--	--	1	--	--	--	5	10
110	--	--	--	--	1	--	--	--	11	14
120	--	--	--	--	--	--	--	--	18	18
130	--	--	--	--	--	--	--	--	21	23
140	--	--	--	--	1	23	--	--	13	25
150	--	--	--	--	1	32	--	--	16	32
160	--	--	--	--	3	36	--	--	13	38
170	2	45	--	--	4	47	--	--	14	51
180	--	--	--	--	7	56	--	--	18	58
190	1	54	--	--	6	67	--	--	17	68
200	3	63	--	--	--	--	--	--	9	84
210	1	78	--	--	1	84	--	--	10	91
220	--	--	--	--	1	89	--	--	10	100
230	1	97	--	--	2	102	--	--	8	123
240	--	--	--	--	1	135	--	--	5	127
250	--	--	--	--	8	143	1	160	4	153
260	1	125	--	--	8	180	1	178	3	166
270	1	174	--	--	7	184	2	188	4	190
280	--	--	--	--	8	203	2	251	1	214
290	--	--	1	230	17	229	1	260	3	243
300	1	275	--	--	16	248	1	259	3	267
310	--	--	2	320	13	292	--	--	--	--
320	--	--	1	310	14	302	--	--	--	--
330	--	--	1	360	7	332	--	--	--	--
340	--	--	--	--	4	375	--	--	--	--
350	--	--	--	--	3	400	--	--	--	--
360	2	370	--	--	7	420	--	--	--	--
370	--	--	--	--	1	544	--	--	--	--
380	--	--	--	--	3	523	--	--	--	--
390	--	--	--	--	2	540	--	--	--	--
430	--	--	--	--	1	745	--	--	--	--
Total	13		5		156		8		208	

[a] Hatchery origin rainbow trout
[b] Wild origin rainbow trout

Table 8. Total length frequency distribution and average weights of nongame fish sampled in mark and recapture runs of electrofishing at South Fork Boise River on August 13 and 20, 2002.

	Bridgelip sucker		Longnose dace		Mottled sculpin	
TL (mm)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)	#'s	Avg. wt. (g)
40	--	--	--	--	1	--
50	--	--	--	--	11	--
60	--	--	1	--	17	--
70	--	--	--	--	14	--
80	2	8	2	4	17	--
90	2	--	2	--	7	13
100	--	--	5	11	4	10
110	1	--	2	18	1	16
120	--	--	2	19	--	--
130	3	22	1	--	--	--
140	1	27	--	--	--	--
150	1	42	--	--	--	--
160	--	--	--	--	--	--
170	--	--	--	--	--	--
180	2	61	--	--	--	--
190	--	--	--	--	--	--
200	--	--	--	--	--	--
210	1	110	--	--	--	--
220	--	--	--	--	--	--
Total	13		15		72	

Table 9. Population and density (fish/100m^2) estimates of rainbow trout, bull trout and mountain whitefish sampled from the South Fork Boise River in August, 2002.

	TL (mm)			Population estimate					
Species	Min.	Max.	Ave.	Length group (mm)	M	C	R	N_{est} (95%CI)	Density (95%CI)
Rainbow trout	90	310	176	100-199	83	76	14	430 (172)	1.34
				$\geq$ 200	33	39	13	96 (30)	0.30
Bull trout	170	360	240	$\geq$ 100	4	9	0	--- [a]	--- [a]
Mountain whitefish	80	430	275	100-199	7	17	0	--- [a]	--- [a]
				200-299	25	33	6	125 (67)	0.39
				$\geq$ 300	47	34	10	152 (63)	0.47

[a] Insufficient sample size to generate population estimate

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2002 ANNUAL PERFORMANCE REPORT

State of: Idaho | Program: Fisheries Management F-71-R-27

Project II: Technical Guidance | Subproject II-E: Magic Valley Region

Contract Period: July 1, 2002 to June 30, 2003

ABSTRACT

Magic Valley Region fishery management personnel furnished verbal and written comments of technical guidance to other agencies, consultants, and private individuals and organizations. Fishing information was provided to anglers in the forms of brochures, angler guides, public meetings news releases, telephone, email, and in person.

Many miscellaneous activities were commented on, participated in, or otherwise addressed, and numerous meetings regarding fisheries were attended.

Author:

Karen A. Frank
Regional Fishery Technician

OBJECTIVES

To provide current fisheries and habitat information, concerns, and recommendations as needed to Department habitat specialists or directly to state, federal, and private parties contemplating projects with the potential to affect fish.

To provide technical fish and habitat management advise to public and private landowners and other agencies to sustain or enhance fish resources.

Methods

Reviews, field inspections, comments, expertise, and recommendations were furnished to all governmental agencies, private organizations, consultants and individuals upon request. We participated in meetings, tours, and gave presentations where requested or necessary. Expertise on regional fisheries was provided to the regional environmental coordinator to assist him in commenting on the numerous habitat related projects in the region.

Findings

Magic Valley regional fishery management personnel collected data, inspected, commented on and/or provided advice on the following major projects in 2001:

Public information – Prepared and provided input on regional fishing, recreation and access to the public in various forms including 1-800 ASKFISH service and as requested by public, students, media, organized fishing clubs and at the Twin Falls County Fair. Provided information to local fishing clubs and elementary school classes on regional fisheries and basic habitat needs of fish in the Magic Valley Region.

Agency assistance – Regional fishery personnel provided equipment and assistance to US Geological Service, Idaho Division of Environmental Quality, US Forest Service and Bureau of Land Management in the collection of fish to provide long term monitoring of water quality conditions in rivers and streams and to document the presence of fish species.

Threatened and species of concern – Collected data, summarized collecting permit reports and provided information to the US Forest Service, Bureau of Land Management, Bureau of Reclamation, US Fish and Wildlife Service, Idaho Division of Environmental Quality on bull trout *Salvelinus confluentus* in the South Fork Boise River and redband trout in the Clover Creek River drainages.

2002 ANNUAL PERFORMANCE REPORT

State of: Idaho Program: Fisheries Management F-71-R-27

Project III: Habitat Management Subproject III-E: Magic Valley Region

Contract Period: July 1, 2002 to June 30, 2003

ABSTRACT

Minimum instream water rights were approved for Billingsley Creek through the Idaho Water Resources Board and the 2003 legislative process. Minimum flows are now protected from future diversions within three segments of Billingsley Creek with water rights that have priority dates of June 24, 1991 and July 16, 1999.

Aquatic habitat was developed in Salmon Falls Creek Reservoir with the assistance of the Idaho Chapter of the Walleye Unlimited club. Clusters of juniper tree branches were submerged and anchored with cement blocks near the west shoreline across from Norton Bay.

Author:

Charles D. Warren
Regional Fishery Biologist

OBJECTIVES

Work with other agencies, private land owners and nongovernment organizations to improve or increase the capacity of habitat to support gamefish or to improve fishing.

Methods

Habitat improvement and preservation projects were targeted with federal and state agencies and private groups to select sites and acquire funds to improve fish habitat and provide additional fishing opportunity. Permits were applied for and acquired where needed for specific projects, and water levels were managed under terms and conditions of existing water rights for the benefit of aquatic fish and wildlife resources. Water rights were applied for through the Idaho Department of Water Resources and through the Idaho Water Resources Board.

Results and Discussion

The IDFG holds several water rights in the region including nonconsumptive rights for the benefit of fish and wildlife. Some of the waters are actively managed through diversions and water control structures but most are temporarily held in flow-through systems or left in natural stream courses to provide habitat for fish. Regional personnel maintained records and paid water measurement fees to retain these rights in 2002.

BILLINGSLEY CREEK

Minimum instream water rights were applied for by IDFG in 1991 and in 1999 to provide habitat for fish and wildlife resources in Billingsley Creek, which were approved during the 2003 Idaho State Legislative session. A minimum flow of 75 cubic feet per second (CFS) was granted for the period from April 1 through September 30 and a flow of 140 CFS from October 1 through March 31 for the segment between the Buckeye Ditch diversion and the Snake River. The priority date for these minimum instream water rights is June 24, 1991. A minimum instream water right was granted for the segment from the outflow of the hatchery immediately downstream of Vader Grade through the property owned by Bill Jones. This water right is for 30 CFS from April 1 through September 30 and for 40 CFS from October 1 through March 31 with a priority date of July 16, 2002. Additionally, a minimum instream water right was granted for the reach within the Billingsley Creek Wildlife Management Area (WMA) for a year-round flow of 100 CFS, also with a July 16, 2002 priority date.

SALMON FALLS CREEK RESERVOIR

The IDFG assisted the Idaho Chapter of the Walleye Unlimited club with a project to provide aquatic habitat for forage fish and walleye on Salmon Falls Creek Reservoir on April 20, 2002. Juniper tree branches were strung together on approximately five meters of cable with three 0.01 cubic meter cement blocks used as anchors. Each structure was submerged in water three to six meters deep near the west shoreline across from Norton Bay. Approximately 25 individual structures were submerged in close proximity to each other.

Submitted by:

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Approved by:

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