FISHERY MANAGEMENT INVESTIGATIONS

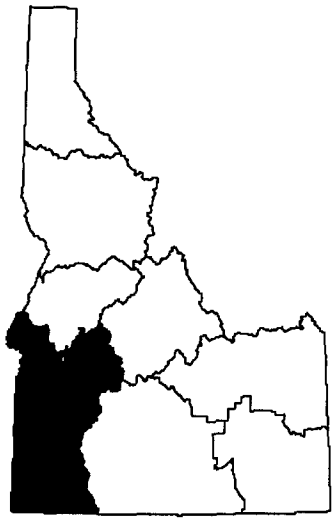
IDAHO DEPARTMENT OF FISH AND GAME

FISHERY MANAGEMENT ANNUAL REPORT

Cal Groen, Director

SOUTHWEST REGION - NAMPA

2005



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ABSTRACT

The Idaho Department of Fish and Game (IDFG) is putting increased emphasis on evaluating mountain lake fish and amphibian populations in advance of writing a Mountain Lakes Management Plan in the near future. In 2005, mountain lakes in the South Fork Payette River drainage were surveyed to evaluate fishery potential of each lake, determine presence of naturally spawning trout, evaluate contribution of hatchery trout to the fishery and determine amphibian presence in mountain lakes. Trout populations were surveyed with overnight gill net sets. Amphibian populations were surveyed using visual encounter survey methods. We recommended stocking be discontinued in two lakes because of natural recruitment and one lake should be resurveyed to evaluate hatchery stocking.

RESULTS AND DISCUSSION

Red Mountain, Cat Creek and Clear Creek Lakes

Red Mountain lakes #1, #2, #3, and #4 and the Cat Creek lakes were stocked with westslope cutthroat *Oncorhynchus clarkii* in 1995, 1996, 1997 and 1999. Rainbow *O. mykiss* x cutthroat (hybrids) stocked in 1998 and triploid rainbow trout were stocked beginning in 2000. Arctic grayling *Thymallus arcticus* were stocked in Cat Creek Lake #1 in 1996 and 1999. Stocking rates (calculated as fish/hectare) varied substantially by species and year and by lake. Stocking rates for Red Mountain lakes #1 and #2 have been decreasing over the last 10 years, while stocking rates in Red Mountain Lake #3 have increased and Red Mountain Lake # 4 were stable until stocking was discontinued in 1998 (Figure 3). Stocking rates in Cat Creek lakes #1, #3, and Clear Creek Lake #5 have been increasing while stocking rates for Cat Creek lakes #4, #6, have decreased (Figure 4). Stocking was discontinued in Red Mountain Lake #4 and Cat Creek lakes #2, and #5.

Fish survey data for Cat Creek, Clear Creek and Red Mountain lakes are in Appendix A. Data are archived in the Southwest Region Mountain Lake database.

Red Mountain Lake #1

Seven trout identified as hybrids (245 - 298 mm total length (TL)) and one westslope cutthroat (271 mm TL) were captured in gill nets in Red Mountain Lake #1. Hybrids were stocked in 1998 and westslope cutthroat were stocked in 1995-1997. No rainbow trout were captured in gill net efforts. It appears that all trout captured were from hatchery stocking.

Red Mountain Lake #2

Nine trout were captured in gill nets. Eight rainbow (130 - 160 mm and 395 mm TL) and one westslope cutthroat (368 mm TL) were captured in gill nets. The westslope cutthroat was mature. Westslope cutthroat trout were stocked from 1995 to 1997 and again in 1999, hybrids were stocked in 1998 and triploid rainbow trout were stocked yearly beginning in 2000. It appears that all trout captured were from hatchery stocking.

Red Mountain Lake #3

Fifteen trout were captured in gill nets. Eleven rainbow trout (120-192 mm TL), three westslope cutthroat (82, 231, 245 mm TL) and one hybrid female (330 mm TL) were identified. Trout sizes are consistent with stocking records but the presence of small <100 mm westslope cutthroat indicates that natural production is also occurring.

Red Mountain Lake #4

Three westslope cutthroat (152-221 mm TL) and one rainbow (440 mm TL) were captured in gill nets. Westslope cutthroat trout were stocked in 1996, 1997 and 1998 and stocking was discontinued in 1998. The westslope cutthroat trout are likely from hatchery stocking, but the origin of the large rainbow trout is uncertain. Red Mountain Lake #3 is connected to Red Mountain #4 by a small stream and the large rainbow could be from up-stream stocking.

Cat Creek Lake #1

Nine hybrid trout (131- 264 mm TL) and one rainbow trout (118 mm TL) were captured in gill nets. Fish stocking records back to 1968 do not indicate any stocking of hybrid trout in the Cat Creek Lake #1. Hybrids were stocked in Cat Creek lakes # 4, #5, #6 in 1998. The presence of hybrid trout indicates that natural spawning is taking place in the system. The small rainbow trout present is consistent with the stocking records but, the presence of the hybrid trout allows the possibility that the rainbow are from natural spawning.

Cat Creek Lake #2

No fish were captured in this lake in one gill net set overnight. No fish have been stocked in this lake since 1997. Observations indicated that the lake was too shallow to support fish.

Cat Creek Lake #3

One westslope cutthroat trout (327 mm TL) was captured in a gill net. Westslope cutthroat trout were stocked in the lake in 1999 but, all stocking since 2000 has been with triploid rainbow trout. The lack of rainbow trout in gill net sampling suggests stocking is not benefiting the lake's fish population.

Cat Creek Lake #4

Seventeen westslope cutthroat trout (133 - 304 mm TL) and two rainbow trout (100 – 105 mm TL) were captured in gill nets resulting in the highest catch per unit effort of any of the lakes surveyed in 2005 (Figure 5). The variable size of the cutthroat trout indicates that natural recruitment is most likely occurring with low survival of hatchery rainbow trout.

Cat Creek Lake #5

Cat Creek Lake #5 was not sampled. This lake has not been stocked since 1999.

Cat Creek Lake #6

Three westslope cutthroat trout (398 - 431 mm TL) and nine rainbow trout (145-205 mm TL) were captured in gill nets. The presence of large cutthroat and small rainbow trout appears consistent with the stocking records.

Cat Creek Lake #9

Three rainbow trout (152 - 168 mm TL) and one westslope cutthroat trout (415 mm TL) were captured in gill nets. Fish sizes and species are consistent with stocking records.

Clear Creek Lake #1

This lake was described as a bog. Observers determined that the lake was too shallow to support fish and it was not sampled. Stocking records indicate this lake was stocked in 2004.

Clear Creek Lake #4

No fish were observed in this lake. The lake was surveyed visually (no gill net effort).

Clear Creek Lake #5

No fish were captured in two gill nets. One dead trout was observed from shore. This lake was stocked with triploid rainbow trout in 2001, 2002 and 2004.

Trail Creek, Trailer and Regan Lakes

Stocking rates for Trail Creek lakes, Trailer Lake #1 and Regan lakes have remained reasonably stable over the last 10 years. Species stocked has only been changed once in Trail Creek Lake #2 (Figure 6). Fish data for Trail Creek, Trailer and Regan lakes are in Appendix B.

Trail Creek Lake #1

No fish were captured in one gill net set overnight on Trail Creek #1. This lake is not stocked and no fish activity was observed in this lake.

Trail Creek Lake #2

Ten rainbow trout (150 - 320 mm TL) and six westslope cutthroat trout (168 to 285 mm TL) were captured in gill nets. Trail Creek Lake #2 has been stocked only with westslope cutthroat trout for the last 10 years. The presence of rainbow trout indicates that fish are immigrating into the lake from the outlet or natural recruitment is occurring.

Trail Creek Lake #3

Six westslope cutthroat trout (100 - 451 mm TL) were captured in two gill nets. This is consistent with the stocking records.

Trailer Lake #1

Sixty-nine westslope cutthroat trout (150 to 360 mm TL) were captured in two gill nets. This is consistent with the stocking records.

Trailer Lake #3

No fish were captured in one gill net set overnight on Trailer Creek Lake #3. This lake is not stocked and no fish activity was observed in this lake. The lake was sampled because it is downstream from Trailer Lake #1 and upstream of Regan Lake, both lakes are stocked with westslope cutthroat trout. There is a large cascade between Trailer Lake #1 and Trailer Lake #3. A small cascade about 1 m high is present near the inlet between Regan Lake and Trail Creek Lake #3.

Regan Lake

Two westslope cutthroat trout (270 - 340 mm TL) were captured in Regan Lake. This is consistent with stocking records.

Amphibian Surveys

Fourteen lakes were surveyed for the presence of amphibians using visual encounter survey methods (Table 1). Three species of amphibians were encountered during the visual encounter surveys; Columbian spotted frogs *Rana luteiventris* were present in seven lakes, tailed frogs *Ascaphus truei* were present in one lake, and long-toed salamanders *Ambystoma macrodactylum* were present in four lakes. This sampling effort is conducted in conjunction with surveys which have a primary goal of assessing fish populations. Small obviously fishless water was not surveyed (except Clear Creek Lake #4).

Human Use

Lakes sampled during July 2005 spanned a range of human use (Table 2). Clear Creek #5, Red Mountain #3 and Trail Creek #2 had evidence of high use. High use lakes were associated with well developed trails and signs directing people to the lakes. Low use lakes were identified by poor difficult trails. Trailer Lake #1 showed very little sign of human use on the land surrounding the lake, but several of the fish captured had maxillary hook scars indicating that the lake was receiving angling pressure. Lakes in close proximity may not have signs of human use from camping activity but may receive anglers using other nearby lakes as a base camp.

Review of 2005 Fish Stocking Requests

We modified 11 of the 56 stocking requests for 2005. Adjustments to the 2005 stocking requests are presented in Table 3.

MANAGEMENT RECOMMENDATIONS

1) Due to high use of Clear Creek Lake #5, this lake should be re-surveyed within the next two years to determine if stocking has re-established a fish population.

2) Drop Cat Creek Lake #3 and Cat Creek Lake #4 from stocking due to natural recruitment.

3) Drop Blue Rock, Lake Creek Lake #2, Confusion Lake (Timpa #3) and Pitchfork Creek Lake #1 from stocking rotation.

4) Reduce westslope cutthroat trout stocking to 250 in Flat Top Lake #1 and 500 in Snowbank Lake.

5) Reestablish Arctic grayling stocking (500) in Pinchot Lake #1, and increase Arctic grayling stocking in Ten Lake Creek Lake #11 (1,000).

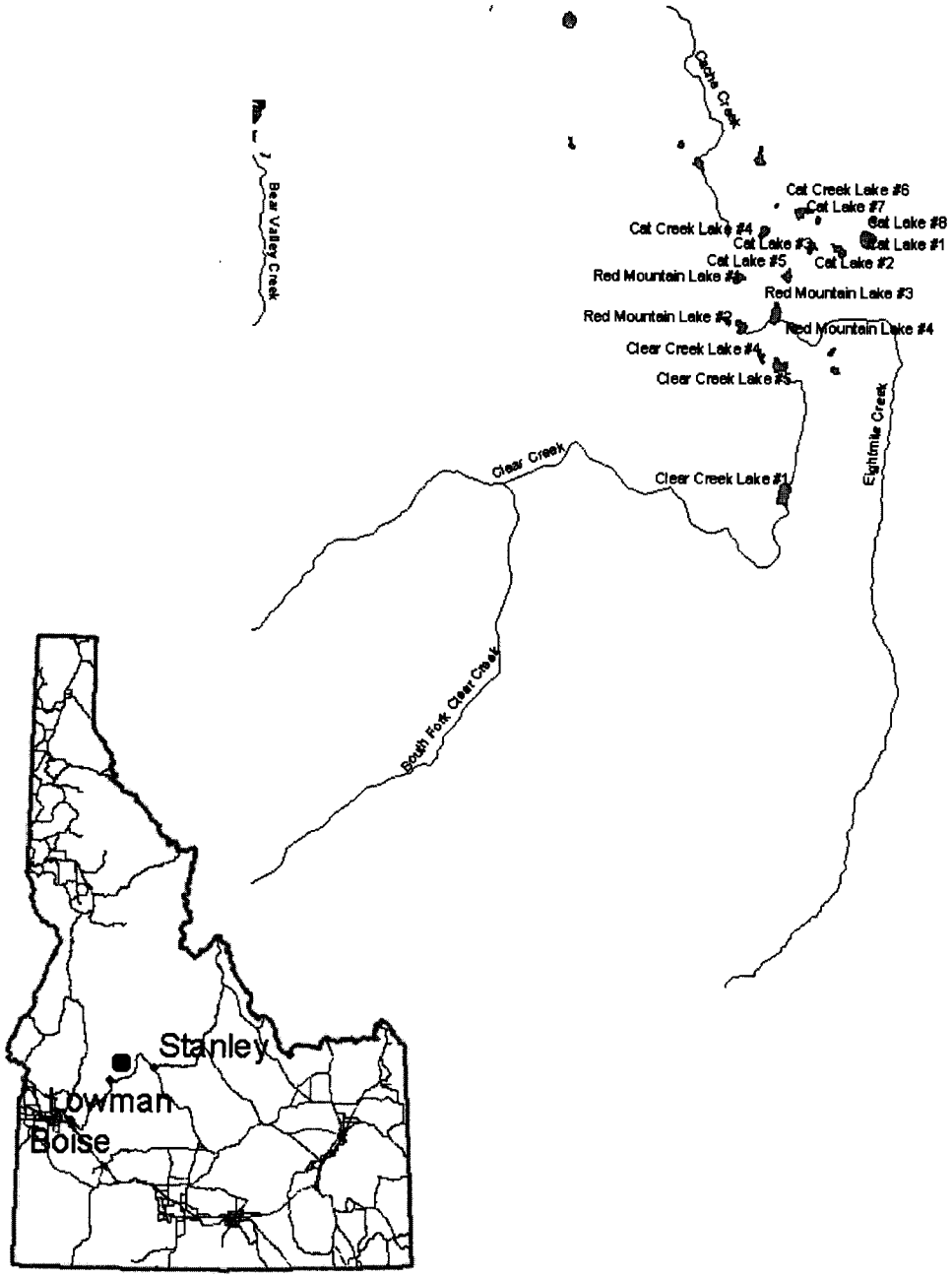

Figure 1. Location of Red Mountain, Cat Creek and Clear Creek Lakes in the South Fork Payette River Drainage sampled in 2005.

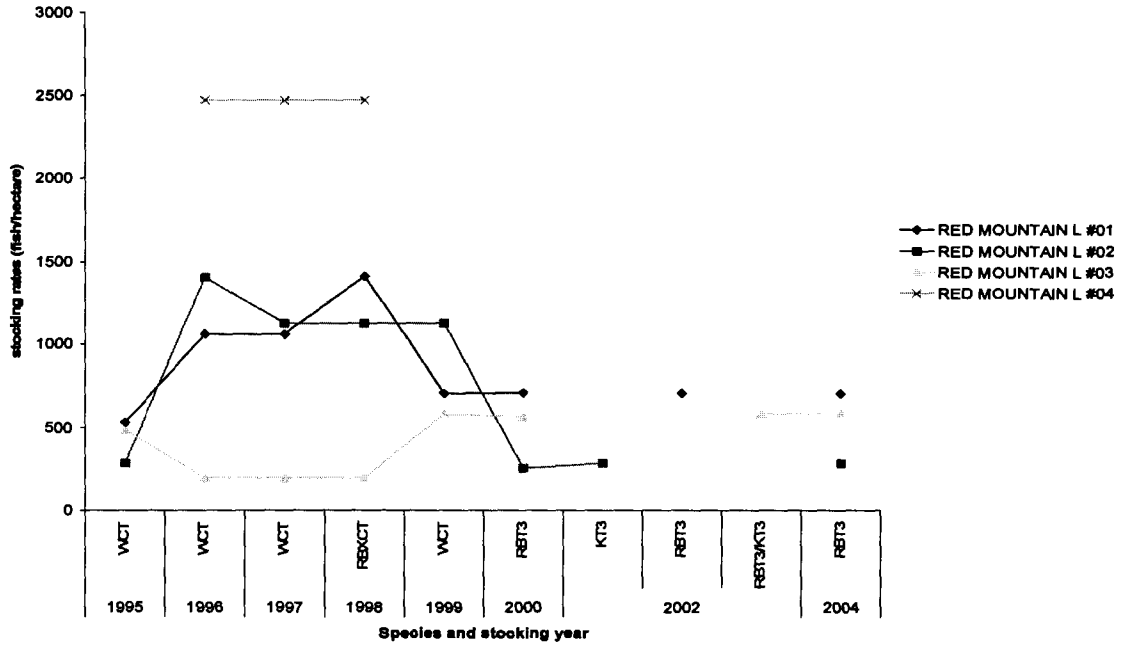

Figure 3. Stocking history for previous 10 years for Red Mountain Lakes 1, 2, 3 and 4. Species names are abbreviated as follows; westslope cutthroat trout (WCT), rainbow cutthroat trout hybrid (RB x CT), triploid rainbow trout (RBT3), Kamloops triploid rainbow trout (KT3).

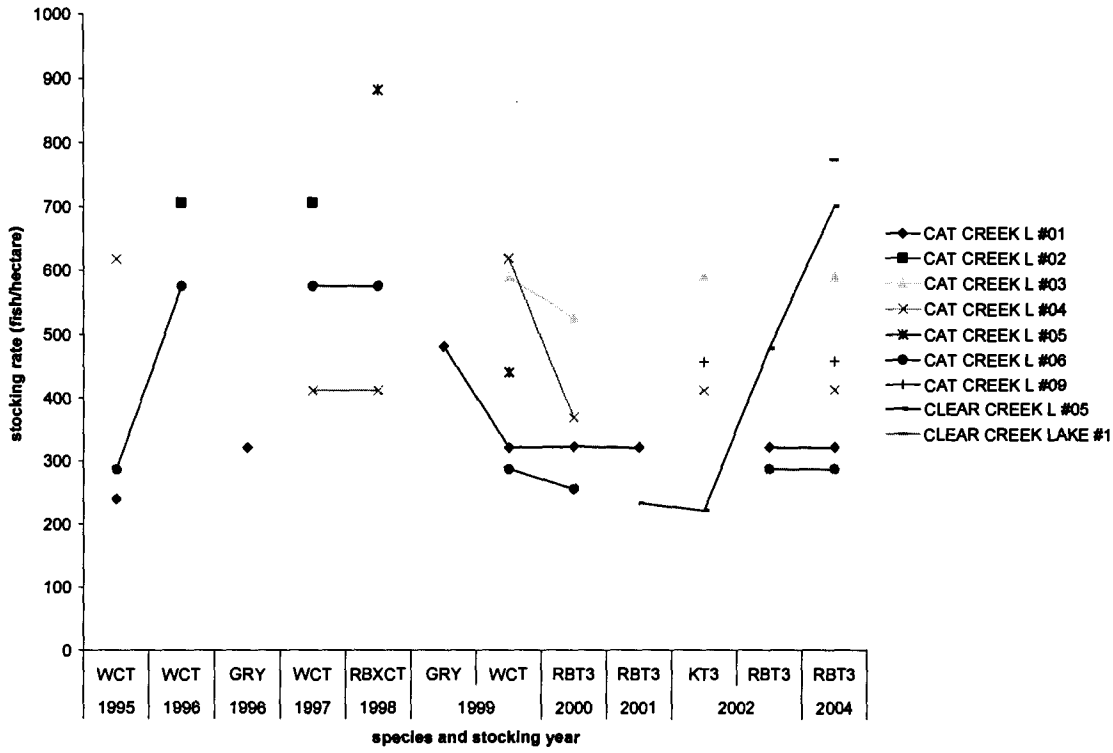

Figure 4. Stocking history for previous 10 years for Cat and Clear Creek lakes. Species names are abbreviated as follows; westslope cutthroat trout (WCT), Arctic grayling (GRY), rainbow cutthroat trout hybrid (RB x CT), triploid rainbow trout (RBT3), Kamloops triploid rainbow trout (KT3).

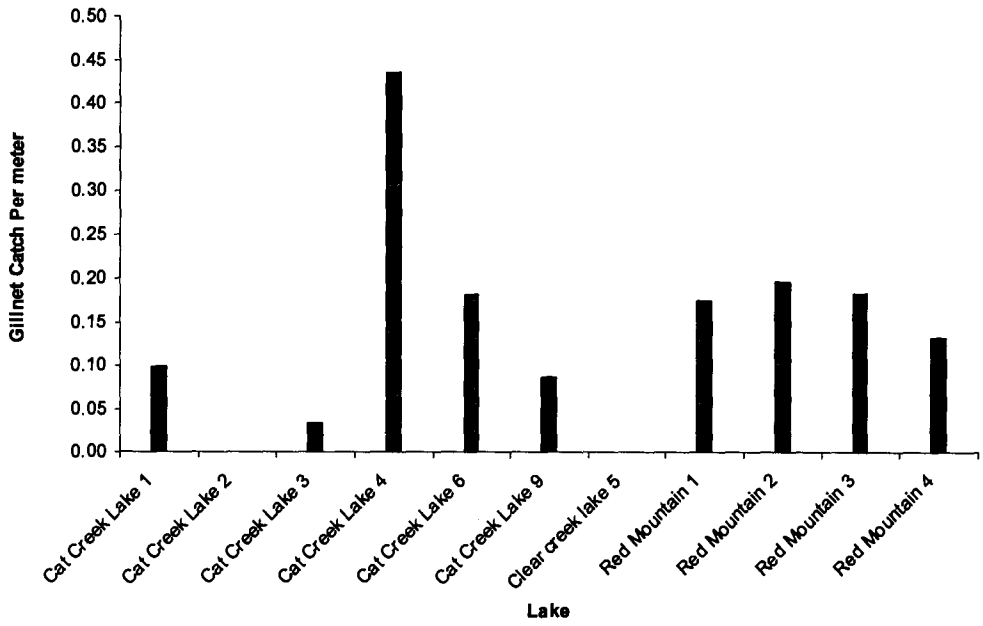

Figure 5. Catch per unit effort for gill net samples of Cat Creek lakes, Red Mountain lakes and Clear Creek Lake #5. Catch was standardized per meter of net length to account for differences in net lengths.

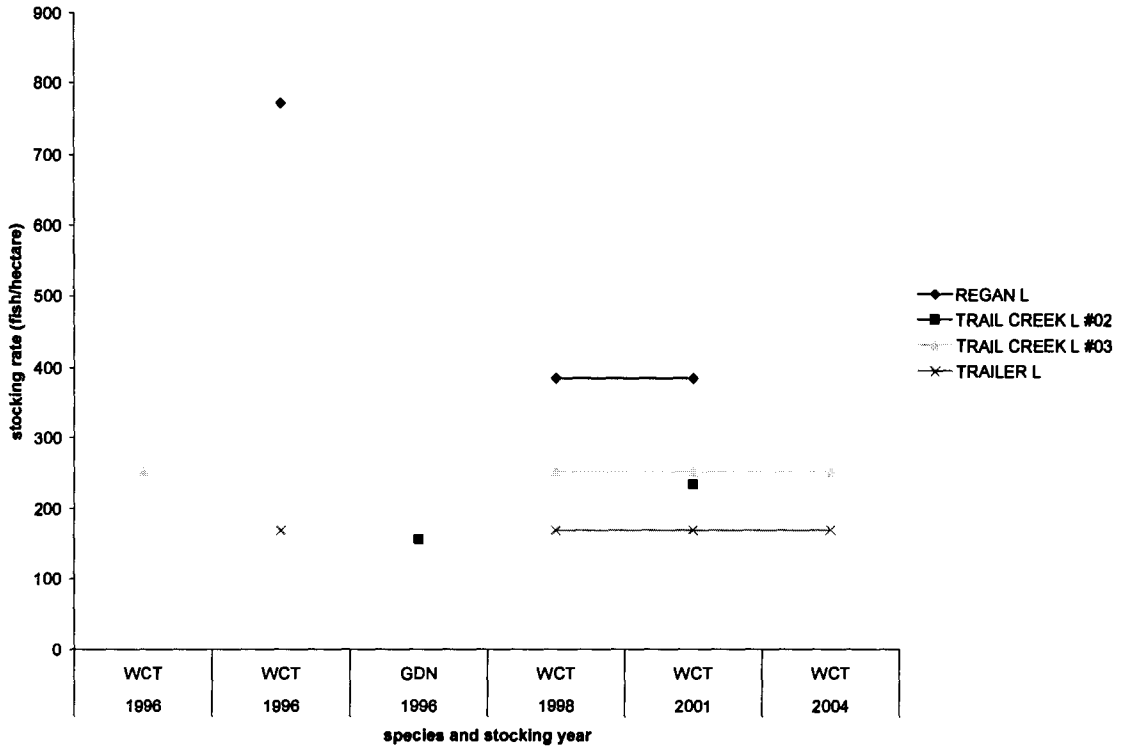

Figure 6. Stocking history for previous 10 years for Regan, Trail and Trailer Creek lakes. Species names are abbreviated as follows; westslope cutthroat trout (WCT), golden trout (GDN).

Table 1. Amphibian species observed during visual encounter surveys performed during mountain lakes sampling by Southwest Region fisheries personnel in July 2005. Status of lake as fishless is also noted.

Lake name	Plant number	Survey date	Spotted frog		Tailed frog		Long-toed salamander	Fishless
			adult	larval	adult	larval	larval	
Cat #1	090129	7/27/2005	10	6	0	0	0	NO
Cat #2	090130	7/26/2005	4	0	0	0	0	YES
Cat #3	090131	7/26/2005	18	4	0	0	0	NO
Cat #4	090132	7/27/2005	5	0	0	0	0	NO
Cat #6	090122	7/27/2005	5	0	0	0	15	NO
Cat #9	090133	7/26/2005	6	0	0	0	1	NO
Clear Creek #4	09u038	7/28/2005	0	0	0	0	56	YES
Clear Creek #5	090123	7/28/2005	0	0	0	0	0	NO[1]
Red Mountain #1	090125	7/25/2005	0	0	0	0	0	NO
Red Mountain #2	090126	7/25/2005	0	0	0	0	0	NO
Red Mountain #3	090127	7/25/2005	8	1	0	0	0	NO
Red Mountain #4	090128	7/25/2005	0	0	0	0	0	NO
Regan	091142	7/20/2005	0	0	0	0	0	NO
Trail Creek #3	090141	7/19/2005	0	0	1	0	8	NO

[1] No fish captured during sampling, but the lake is stocked and a dead trout was observed.

Table 2. Relative human use of mountain lakes sampled during July 2005 by Southwest Regional fishery staff.

Lake	Catalog #	Human use	Campsites			Access trail condition		Litter
			Condition	Number	Campfire rings	Condition	Difficulty	
Cat Creek Lake #6	090122	low	none	0	0	none	difficult	none
Clear Creek Lake #5	090123	high	well developed	3	3	fair	moderate	rare
Red Mountain #1	090125	low	none	0	0	poor	difficult	none
Red Mountain #2	090126	low	none	0	0	none	difficult	none
Red Mountain #3	090127	high	well developed	2	2	good	moderate	rare
Red Mountain #4	090128	moderate	poorly developed	1	1	good	moderate	rare
Cat Creek Lake #1	090129	high	well developed	2	2	fair	moderate	rare
Cat Creek Lake #2	090130	low	poorly developed	1	1	poor	moderate	none
Cat Creek Lake #3	090131	low	none	0	0	none	moderate	none
Cat Creek Lake #4	090132	low	none	0	0	poor	moderate	none
Cat Creek Lake #9	090133	moderate	well developed	3	3	fair	moderate	rare
Trail Creek Lake #1	090139	low	none	0	0	fair	moderate	rare
Trail Creek Lake #2	090140	high	well developed	4	3	fair	moderate	rare
Trail Creek Lake #3	090141	moderate	none	0	1	fair	moderate	none
Trailer Lake #1	091141	low	none	0	0	none	difficult	none
Regan Lake	091142	low	none	0	0	poor	difficult	none
Clear Creek Lake #4	09U038	moderate	none	0	0	poor	moderate	none
Trailer Lake #2	09U117	low	none	0	0	none	difficult	none
Trailer Lake #3	09U118	low	none	0	0	none	difficult	none

Table 3. Changes made to the 2005 southwest region mountain lake stocking requests and reasons for the changes. Species abbreviations as follows: c2= westslope cutthroat trout, GR = grayling, GN= golden trout, T1= triploid rainbow trout.

Catalog #	Species	Number	Comments
		Blue Rock Lake	
09-0163	none	None	Drop from stocking. Natural recruitment.
		Flat Top Lake #1	
10-0212	C2	Reduce to 250	Small lake with poor growth
		Lake Creek Lake #2	
09-0176	none	None	Drop from stocking. Natural recruitment
		Pinchot Creek Lake #01	
09-0179	Change to GR	500	GN stocking probably a typo, GR were stocked in past years. GR can come from Pitchfork Creek L (see below)
		Pitchfork Creek Lake	
09-0184	none	None	Drop from stocking. Move 500 GR to Pinchot Creek L. #1 and an extra 500 to Ten Lake Creek L. #11 (see below)
		Snowbank Lake	
10-0252	C2	Reduce to 500	Small lake with poor growth
		Ten Lake Creek Lake #11	
09-0222	GR	Increase to 1000	
		Confusion Lake (Timpa L. #03)	
10-0280	None	None	Drop from stocking. Natural recruitment
		Cow Lake	
10-0355	C2	750	Stocking records indicate it was stocked in 2004, do not stock in 2005, but keep in rotation for 2007.
		Twin Sisters Lake #1 (North)	
10-0185	T1	500	needs to be added to stocking database
		Twin sisters Lake #2 (South)	
10-0184	T1	1000	needs to be added to stocking database

2005 Southwest Region (Nampa) Fishery Management Report

2005 Lowland Lakes Surveys

ABSTRACT

A spot creel survey was conducted on Lucky Peak Reservoir to evaluate angler success. Kokanee *O. nerka* catch rates were 0.5 fish/hour. Rainbow trout catch rates were 0.16 fish/hour. Kokanee caught by anglers had a 0.98 probability of harvest.

Urban ponds in the Treasure Valley are not stocked during the warm summer months. This lack of stocking likely reduces fishing effort. All ponds except Riverside Pond had temperature or DO conditions that would likely be fatal to trout. Temperatures and DO conditions in Riverside Pond may allow trout stocking in July.

An evaluation of the rainbow trout population in Sagehen Reservoir was conducted to determine the relative contributions of hatchery and wild trout. Wild rainbow trout comprised 21% of the rainbow trout sampled. Total lengths were similar for both groups.

Crane Creek Reservoir was surveyed using IDFG standard lowland lake survey procedures. White crappie *Pomoxis annularis* was the most common fish sampled by number though sizes were relatively small with only 3% greater than 250 mm total length. Channel catfish *Ictalurus punctatus* have established a naturally reproducing population with good numbers of fish over 400 mm total length.

Little Blue Creek Reservoir was sampled to evaluate the status of stocked Lahontan cutthroat trout. Gill net CPUE effort for Lahontan cutthroat trout has declined steadily from 1995. Overall stocking rates have remained stable since 1995.

Kokanee populations on Deadwood Reservoir were monitored using midwater trawl and escapement was estimated using tributary surveys. Total kokanee population estimated with midwater trawling was 469,672 (± 220,122) fish with an estimated biomass of 6,521 kilograms (kg). We estimated natural egg deposition from kokanee at 8 million eggs.

OBJECTIVES

Obtain current information for fishery management decisions on lowland lakes and ponds including angler use and success, fish population characteristics, spawning potential, stocking success and limnology, and develop appropriate management recommendations.

Evaluate late summer temperature and oxygen levels in a sample of urban ponds in the region to assess suitability for summer trout stocking.

Use standardized sampling methods to describe wild redband and hatchery rainbow trout composition in Sagehen Reservoir.

Compare the composition of the present fish population in Crane Creek Reservoir with historical sampling efforts.

Monitor tournament-caught fish on Lake Lowell to supplement fish data collected by standardized fish sampling techniques on selected waters.

Determine whether the introduced Lahontan cutthroat trout survived the winter and describe the size structure and species composition changes in Little Blue Creek Reservoir over time.

Evaluate midwater trawling in Deadwood Reservoir for determining population size and year class strength and determine adult kokanee spawner escapement and tributary use.

METHODS

Spot creel data was collected on five weekdays between June 29 and August 5 on Lucky Peak Reservoir. Clerks interviewed boat and bank anglers. Anglers were asked how long they had fished, type of terminal tackle used, species of fish caught and released and species of fish harvested. Anglers were asked what species of fish they were targeting to increase the accuracy of catch rates estimates for the specific species. Creel clerks recorded fish species, number of fish caught, and fish total length (or angler reported length) in an effort to describe length distribution in the harvest for kokanee and rainbow trout.

Sampling was conducted to determine if Treasure Valley urban ponds provided suitable habitat for trout during warm summer weather conditions. Sampling was conducted on six Family Fishing Waters in the Treasure Valley between August 9 and August 29. The waters sampled included McDevitt, Merrill, Park Center, Veteran's, Riverside, and Quinn's ponds.

Data were collected for depth, dissolved oxygen concentration (DO), and water temperature at each of the ponds using a dissolved oxygen/temperature meter (Hydrolab® Quanta). Measurements were taken at the center of each pond as visually determined by the data collectors. Measurements at Merrill Pond were taken at each end along the long axis of the pond to account for the close proximity to the Boise River (south end) and a fountain aerator (north end). Measurements for depth, DO, and temperature were recorded at 305 mm increments from the surface down to the pond substrate. Ponds were considered to be capable of supporting trout if at some level in the water column temperatures were less than 19 °C and DO was ≥ 5.0 mg/l (Heimer and Howser 1990).

Gill netting efforts were conducted on Sagehen Reservoir on June 17 and June 22 as part of an ongoing effort to determine the proportions of hatchery rainbow trout to wild redband trout. Beginning in 2004, all hatchery rainbow trout catchables stocked in Sagehen Reservoir have been marked with adipose fin clips to better evaluate the fishery. Gill nets were set overnight on both sample dates. Sampling consisted of four nets (2 floating and 2 sinking) set overnight. Gill netting was done with standard floating and sinking experimental gill nets 45.7 m long by 1.8 m deep, composed of six -7.6 m long panels of 1.9, 2.5, 3.2, 3.8, 5.2, and 6.4 cm bar mesh. Nets were set by tying or anchoring one end of the net near on shore in water less than 0.5 m deep and extending the net perpendicular to shore. Nets were set to alternate large and small mesh ends next to the shore. Gill net CPUE was calculated as the combined catch of one floating and one sinking experimental net fished over night. Hatchery fish planted in 2004 and 2005 were adipose fin-clipped. Hatchery fish captured in gill nets were identified based on presence of adipose fin-clips and fin wear. Total lengths were taken to generate length frequencies.

Crane Creek Reservoir was sampled with two-pair of floating/sinking gill nets (2 unit of effort). Hereafter, gill net catch refers to combined catch from one floating and one sinking experimental gill net.

Six standard trap nets (1.9 cm mesh with a 22.8 m lead with 0.9 by 1.8 m frame with crowfoot throats on first and third of five hoops) were used to sample Crane Creek Reservoir. The CPUE for a trap net is calculated as catch of one net fished overnight.

Electrofishing was conducted from a boom mounted electrofishing boat with one or two netters. Sampling was along shorelines at night for 0.79 hectare (h). Attempts were made to collect all immobilized fish. Electrofishing CPUE was calculated as catch, by both number and weight, per hour of activated electrode time.

Proportional Stock Density (PSD) and relative weights (Wr) were from methods in Anderson and Neumann (1996). Biomass estimates were made by determining an average fish weight/species/year and multiplying by number of fish caught/species/year.

To examine trends in regional fisheries, historic survey data were retrieved from the Southwest Region Lowland Lake Survey database. Historic fish stocking information was retrieved from the IDFG Fish Stocking Database (http://fishandgame.idaho.gov/fish/stocking/).

Regional fisheries personnel measured tournament caught bass at the weigh-in that was held at the Caldwell Boat Ramp on Lake Lowell on April 16, 2005. Bass were measured for total lengths and weighed to the nearest g after they had been weighed for tournament score and prior to being loaded on the fish transport barge for release to the lake. Fish were not anesthetized prior to measurements.

Little Blue Creek Reservoir was sampled using gill nets (3 pair) on June 17.

RESULTS AND DISCUSSION

2005 Lucky Peak Reservoir Creel Survey

Spot creel surveys were conducted at Lucky Peak Reservoir in June, July and August of 2005 in an effort to evaluate angler success. Our intent was to evaluate success of anglers specifically targeting either kokanee or rainbow trout, as well as overall angling success for general fish species during the summer months. Catch rates of 0.52 fish/hour indicate that

Lucky Peak is a strong kokanee fishery. Rainbow trout catch rates were 0.16 fish/hour, although lower than kokanee, rainbow trout provide consistent angler success. Overall angler catch rates for any gamefish species (0.43 fish/hour) show good angler success.

There were a total of 130 anglers interviewed, consisting of 19 bank anglers and 111 boat anglers. Total fishing effort was 310 hours. The number of fish caught for rainbow trout, kokanee, and smallmouth bass *Micropterus dolomieui* combined was 134. The majority of anglers were targeting kokanee (52%), with 23% of anglers targeting rainbow trout and 2% of anglers targeting smallmouth bass. The remaining 23% did not have a species preference (Figure 7).

The catch rate for anglers targeting kokanee was 0.52 kokanee/hour. Anglers' specifically targeting rainbow trout had a catch rate of 0.16 trout/hour. Catch rates for rainbow trout by anglers targeting kokanee, rainbow trout, or any species was 0.10 trout/hour. The overall catch rate for rainbow trout, kokanee and smallmouth bass by all anglers surveyed was 0.43 fish/hour (Figure 8).

Fish sizes were satisfactory with average size of rainbow trout and kokanee harvested at 324 mm and 299 mm TL, respectively. Length frequency results for kokanee show that fish in the 291-390 mm length group comprise 44% of the harvest (Figure 9). The kokanee population size structure, coupled with the 0.52 kokanee/hour catch rate, is meeting the fishery objectives for kokanee in Lucky Peak Reservoir. Length frequencies for rainbow trout indicate that 85% of fish harvested are between 299 and 359 mm total length (Figure 9).

Results indicate that anglers fishing Lucky Peak Reservoir are highly focused on harvesting fish. Of the 161 fish reported caught by anglers 137 were harvested. Dividing the number of fish harvested by the total of fish caught gives a measure of harvest probability. Kokanee encountered by anglers had a harvest probability of 0.98 meaning that nearly every kokanee caught was harvested (Table 4). Rainbow trout had harvest probabilities of 0.84 indicating the majority of rainbow trout caught were harvested. Northern pikeminnow *Ptychocheilus oregonensis* and smallmouth bass were also harvested by anglers, but very low numbers were caught so the harvest probability does not mean much for either of these species. One bull trout *Salvelinus confluentus* was caught and released by an angler as required by law.

Urban Pond Temperature and Dissolved Oxygen Sampling

Many local area fishing ponds located throughout the Treasure Valley are designated by the IDFG as Family Fishing Waters. Family Fishing Waters provide a unique urban fishing opportunity within easy access of many citizens of the Treasure Valley. As public use of these waters increases, so does the priority to maximize the recreational potential of these ponds. Under the current stocking schedule, trout are not stocked in any Family Fishing Waters during the warm summer months, potentially reducing recreational use during that period.

McDevitt Pond

Sampling was conducted on August 9. Maximum air temperature on the date of sample was 36.1°C (Figure 10). Pond depth at the point of sampling was 3.4 m. Water temperatures ranged from 22.2 to 24.7 °C, with a decrease in temperature observed as water depth increased. Dissolved oxygen readings ranged from 7.02 to 5.90 mg/l, decreasing with depth (Figure 11).

Merrill Pond

Sampling was conducted on August 15. Pond depth at the north end point of sampling was 4.6 m. Water temperatures ranged from 18.4 - 23.5°C, with a decrease in temperature observed as water depth increased. Dissolved oxygen readings ranged from 5.94-0.23 mg/l, decreasing with depth (Figure 12).

Sampling at the South End was conducted on August 15. Pond depth at the point of sampling was 4.6 m. Water temperatures ranged from 18.3 - 23.8°C, with a decrease in temperature observed as water depth increased (Figure 13). Dissolved oxygen readings ranged from 5.81-1.51 mg/l, decreasing with depth (Figure 13). The DO data collected for the greatest depth (4.6 m) in this pond is an assumed outlier, likely the result of a foreign artifact near or on the substrate being drawn into the meter sensor housing.

Park Center Pond

Sampling was conducted on August 29. Pond depth at the point of sampling was 4.9 m. Water temperatures ranged from 25.4 - 26.7°C, with a decrease in temperature observed as water depth increased (Figure 14). Dissolved oxygen readings ranged from 6.86-1.24 mg/l, decreasing with depth (Figure 14). Results show thermal conditions in Park Center Pond during warm summer months will not support trout. In addition, Park Center Pond was the only pond sampled that contains aerators.

Quinn's Pond

Sampling was conducted on August 9. Pond depth at the point of sampling was 8.8 m. Water temperatures ranged from 13.2 - 27.4°C, with a decrease in temperature observed as water depth increased (Figure 15). Dissolved oxygen readings ranged from 6.52 - 0.14 mg/l, decreasing with depth (Figure 15). Results show an increase in dissolved oxygen levels within the 4.0 - 5.5 m depth range. The increase in DO levels within this range may be the result of a positive heterograde, in which photosynthesizing organisms are concentrated at these depths, thus resulting in higher oxygen levels (Goldman and Horne 1983). Sampling should be repeated to determine if this condition reoccurs.

Riverside Pond

Sampling was conducted on August 9. Pond depth at the point of sampling was 4.6 m. Water temperatures ranged from 18.5 - 21.9°C, with a decrease in temperature observed as water depth increased (Figure 16). Dissolved oxygen readings ranged from 9.89 - 3.19 mg/l, decreasing with depth (Figure 16). Given the relatively cool temperatures and high DO levels Riverside Pond may be capable of providing trout fishing opportunity through the summer months.

Veteran's Pond

Sampling was conducted on August 9. Pond depth at the point of sampling was 6.4 m. Water temperatures ranged from 16.0 - 25.1°C, with a decrease in temperature observed as water depth increased (Figure 17). Dissolved oxygen readings ranged from 5.70 - 0.16 mg/l, decreasing with depth (Figure 17). The data collected for DO at 5.5 m is an assumed outlier, likely the result of a foreign artifact being drawn into the meter sensor housing.

Sagehen Reservoir Rainbow Trout Evaluation

Gill net effort in 2005 caught a total of 273 rainbow trout consisting of 79% hatchery rainbow trout (n=217) and 21% wild redband trout (n=56). Most hatchery rainbow trout (94%) were adipose fin-clipped and 6% fish were identified as hatchery origin based on fin wear. These results differ from gill net efforts 1994 and 2001 when gill net sampling in 1994 (1 unit of effort) caught 69% wild redband trout (Allen et al. 2000) and sampling in 2001 (2 units of effort) caught 56% wild redband trout (n=83; Flatter et al. 2003). The wild to hatchery proportional differences observed between studies is partly due to not adipose fin clipping of hatchery rainbow trout prior to 2004. It is very probable that fin clips have increased observer efficiency in identifying wild from hatchery fish, thus reducing misidentification rates of hatchery fish in 2004.

Total gill net CPUE for both wild redband trout and hatchery rainbow trout in 2005 was 68.2, with hatchery rainbow trout CPUE= 54 and wild redband trout CPUE=14 (Figure 18). Gill net CPUE in 2005 for wild redband trout was slightly lower than in 2001 and 1994 (Figure 18). The increase in CPUE of hatchery fish observed in 2005 is likely the result of changes in fish stocking practices and timing of gill net sampling relative to stocking. Beginning in 2004 stocking was changed from two or three times per year to once per year. Gill net sampling in 2005 occurred in June after stocking, while sampling in 1994 and 2001 occurred before stocking in April and May, respectively. Length frequencies indicate recruitment of wild redband trout continues to occur and wild redband trout and hatchery rainbow trout are reaching similar sizes (Figure 19).

The 2005 sampling indicates that wild fish continue to be an important component of the fishery in Sagehen Reservoir. Differences between sampling times and having hatchery fish marked in 2004 and 2005 complicate between year comparisons, but overall objectives of the study were met. Changing the stocking to a single early season plant may impact harvest of wild fish later in the season depending on survival of hatchery trout throughout the summer.

Crane Creek Reservoir Standard Lowland Lake Survey

The IDFG Lowland Lake Survey program was started in 1992 to provide a standardized multi-gear fish community survey approach. Three sampling methods are used in the standard survey methods; gill netting, trap netting and electrofishing. Crane Creek Reservoir was surveyed using the Lowland Lake methods on June 13 - 14.

Crane Creek Reservoir was surveyed five times from 1995 to 2005 (Table 5). Not all gears were used in all surveys. The 2005 lowland lake survey on Crane Creek Reservoir captured 1,083 fish. White crappie were the dominant fish by number followed in descending order of representation by brown bullhead *Ameiurus nebulosus*, channel catfish, common carp *Cyprinus carpio* and black crappie *P. nigromaculatus,* bridgelip sucker *Catastomous columbianus*, bluegill *Lepomis macrochirus*, with largemouth bass *Micropterus salmoides* least abundant by number (Figure 20). Species composition observed in 2005 represents a change from the 1995 survey when white crappie were 67% and common carp were 27% by number and no other species was greater than 5% of the fish population (Figure 21). Carp were the dominant fish by weight although biomass of carp appeared to decline over the last 10 years, while white crappie biomass remained constant (Figure 21). Numbers and weight of all species other than carp increased from 1995 to 2005.

Fish species are differentially susceptible to different gear types so aggregate trends should be examined by gear type. Between 1995 and the 2005 surveys, brown bullhead and channel catfish showed increased CPUE for all gear types (Figures 22, 23), while common carp showed a universal decline (Figure 24). Black crappie showed recent declines, but increased relative to 1995 surveys (Figure 25). White crappie showed declines in trap net and gill net CPUE but increased in electrofishing CPUE (Figure 26).

Crane Creek Reservoir has three fish species that have developed into consistent fishing opportunities in the last 10 years. White crappie continued to maintain reasonable numbers, with consistent recruitment and size appearing to increase (Figure 27). Channel catfish have been the major success story in Crane Creek Reservoir. Starting with an initial introduction in 1990 of 16,000 catfish, natural reproduction now supports the population with many over 400 mm (Figure 28). Brown bullheads are available in consistent numbers with reasonable sizes (Figure 29).

Lake Lowell Bass Tournament Monitoring

Bass tournaments held on any water in Idaho managed under quality regulations for bass are considered conservation tournaments and are subject to fish data reporting requirements by tournament participants and fish may be inspected by fisheries management personnel.

One hundred and fifty bass were measured for total length and 50 bass were weighed. The majority of bass caught in the tournament were largemouth bass (96%) with smallmouth bass comprising only 4% of the catch. Largemouth bass over 400 mm in total length comprised 60% of the fish measured (Figure 30). For smallmouth bass 33% were over 400 mm (Figure 30). Angler's reported estimated lengths for 266 largemouth bass and 11 smallmouth bass (Figure 31).

The sizes of bass checked at the tournament indicate that the size structure of bass in Lake Lowell is sufficient to provide a quality fishery. The majority of the fish checked would have been legal to harvest under the current slot limit regulations (none between 300 and 400 mm). No bass less than 300 mm were checked at the official weigh-in, but 13 were reported as caught and released on returned angler questionnaires. Although tournament caught bass do not provide a "random" look at the bass population in a lake monitoring tournaments provides a good snapshot of the fish that are available to anglers. Data from tournament caught bass have provided information on changes in growth rates in Minnesota (Pereira et al. 2002) and life history characteristics of bass populations in Nova Scotia (MacMillan et al. 2002).

Little Blue Creek Reservoir

Gill net sampling on Little Blue Creek Reservoir captured 73 bridgelip suckers, 18 Lahontan cutthroat trout, and one redside shiner (*Richardsonius balteatus*). Sizes of Lahontan cutthroat trout captured were similar to those caught in 2002 and 2004 (Flatter et al. in press) (Figure 32). Lahontan cutthroat trout as percent of total gill net catch and CPUE declined from 2004 levels, but it appears to have stabilized at current levels (Figure 33).

Deadwood Kokanee Monitoring

Over the last 10 years the kokanee population in Deadwood Reservoir has cycled drastically. Because kokanee exhibit density dependent growth, increases in population result in decreases in adult fish length. Mean female kokanee length observed at the kokanee spawning trap on the Deadwood River has varied from a low of 208 mm in 1992 to a high of 421 mm in 2003 with mean size decreasing since 2003. Deadwood Reservoir provides sport fishing for kokanee, rainbow trout and cutthroat trout and in the past supported fisheries for Atlantic *Salmo salar* and chinook salmon *O. tshawytshwa*. The salmon populations in the reservoir were maintained primarily by stocking and were major predators on kokanee and likely contributed to the fluctuations in population numbers. Deadwood Reservoir also functions as one of Idaho's primary egg sources providing early spawn kokanee for stocking throughout the state.

To estimate kokanee abundance, density, and biomass, in Deadwood Reservoir midwater trawling was conducted at night during the dark (new) moon on July 5, 2005. Trawling was performed in a stepped-oblique fashion as described by Rieman (1992) and Kline (1994) with the exception that the otter-boards were replaced by a fixed frame at the net mouth. Six transects were sampled and density and biomass were estimated using the single section MS Excel® Spreadsheet developed by IDFG's Lake Pend O'reille Fish Recovery Project (Maiolie 2004). The net had a 4.5 m^2 mouth which was towed at 1.5 m/second with a boat 7.3 m in length. Abundance estimates generated by the program are based on total lake surface area at full pool. Six transects were trawled as described in Figure 34.

Deadwood Reservoir Kokanee Spawner Escapement

Southwest Region fisheries personnel assisted Nampa Fish Hatchery personnel with installation of a picket weir on the Deadwood River just upstream from the mouth of Basin Creek to collect adult kokanee migrating upstream in the Deadwood River on August 3, 2005. A weir was also installed at the mouth of Basin Creek on August 3 to prevent kokanee from accessing the creek for spawning. The Deadwood weir served multiple purposes; 1) collect early spawning kokanee eggs for statewide kokanee management needs; 2) control escapement during most of the spawning run on the main Deadwood River and Wild Buck Creek and 3) provide a capture point for evaluating population characteristics of the kokanee spawning population. Length and fecundity data were collected throughout the period during egg take operations. A subset of females spawned for hatchery production had eggs counted to estimate length fecundity relationships. The escapement goal for 2005 on the Deadwood River and tributaries upstream of the trap is 0 kokanee. The mainstem and tributaries upstream of the weir were surveyed for adult kokanee immediately following weir installation.

IDFG records indicates that kokanee spawn in numerous tributaries of Deadwood Reservoir. Spawning surveys are generally conducted by foot and have been single and multiple pass efforts. Survey information indicates that Trail Creek is the largest kokanee spawning area not currently controlled by the weir on the Deadwood River. Beaver Creek, Middle Fork of Beaver, South Fork of Beaver Creek and Habit Creek are known kokanee spawning streams. Beaver Creek and S. Fork Beaver have had notable kokanee escapements in the 1980s and early 1990s.

Regional fisheries personnel performed tributary spawning surveys to estimate kokanee escapement between August 4 and September 27, 2005. Previous surveys have found Trail Creek to have the largest kokanee escapement other than the Deadwood River. Surveys

conducted in 2003 and 2004 found no use of kokanee in Moulding, S. Fork Beaver or Beaver Creek and only negligible numbers of kokanee spawning in Habit Creek (2003 and 2004). Based on previous survey information efforts were focused on Trail Creek in 2005, with Habit Creek and South Fork Beaver Creek surveyed once and Beaver Creek surveyed twice. Tributaries were surveyed by walking from the mouth upstream with one or two observers counting and recording number of adult kokanee. Transect boundaries for stream surveys are described in the 2004 Southwest Region Fishery Management Report (Flatter et al. in review).

Salmon spawning escapement is commonly estimated using the Area Under the Curve (AUC) methodology. The AUC estimate is determined by plotting fish numbers over time and dividing by residence time (Irvine et al. 1992). Fish numbers are determined by multiple surveys enumerating adult spawners conducted over the spawning season. Three types of data are critical for this technique, fish counts, an estimate of residence time, and an estimate of observer efficiency (Hilborn et al. 1999). The AUC method is sensitive to residence time of adults in the spawning area and to the efficiency of observers in viewing adults. The Trapezoidal approximation method (equation one in Hilborn et al. 1999) was used to calculate AUC. Because adults were present during our final survey the final survey period was adjusted using equation three in Hilborn et al. 1999.

Estimating kokanee spawner abundance and ultimately egg deposition in Trail Creek is important to balance our kokanee stocking efforts with natural reproduction. The AUC method was used to estimate spawner escapement to Trail Creek. We estimated residence time of adult kokanee spawning in Trail Creek by tagging adult kokanee. A trap net was set overnight on August 17 and 24 in a pool 100 m upstream from the mouth of the creek with the mouth opening downstream centered in the thalweg and the trap end stretched and anchored upstream. The lead was stretched across the right side of the channel. The mouth and the lead blocked most (>98%) of the stream width. Adult kokanee were removed from the trap and tagged using 2.54 cm individually numbered Petersen disk tags and released 50 m upstream of the trap. Two colors of disk tags were used to differentiate first (yellow) and second (green) tagging efforts. Length and sex of kokanee were recorded prior to release. Subsequent surveys on Trail Creek recorded the tag number and color and enumerated untagged kokanee observed. Residence time and escapement was calculated using methods described in Hillborn et al. (1999). Survey life (residence time) for individual fish was calculated as the number of days from release to the median date between the last observation of a tag and the first survey effort where the tag was not observed. Observer efficiency was estimated on tag observations one day post release excluding tags which were never observed during the survey period.

Midwater Trawling

Extreme caution must be used when trawling Deadwood Reservoir as rapid changes in water depth present a hazard of hanging the net on the reservoir bottom. Two hundred and seventy-four kokanee, two westslope cutthroat trout and one dace *Rhinichthys spp.* (unidentified species) were captured in midwater trawling on Deadwood Reservoir (Figure 35). Total kokanee population was estimated at 469,672 (± 220,122) fish with an estimated biomass of 6,521 kg. Age-0 kokanee were most abundant by number, with age-2 kokanee contributing the most to the biomass estimate (Figure 36). No external marks were present to identify the origin (hatchery vs. wild) of individual fish so population estimates reflect wild and hatchery kokanee for groups greater than 80 mm TL. Kokanee less than 80 mm TL are assumed to be wild age-0 kokanee. Fifty percent of the kokanee released in July 2005 (prior to trawling) were marked with calcein immersion prior to release. Data verifying the presence of calcein on known marked fish is pending.

Kokanee Spawner Escapement

The fish weir and trap on the Deadwood River was operated from August 3 to September 21, 2005. Average kokanee lengths were 280 mm for males (n=469) and 271 mm for females (n=454; Figure 37). We trapped 27,793 adult kokanee at the Deadwood River trap with the peak emigration occurring September 1 (Figure 38). Eggs from 50 kokanee spawned at Deadwood Trap were counted to establish a length fecundity relationship (Figure 39).

Surveys to count spawning kokanee in Trail Creek were initiated immediately after the Deadwood River weir was installed. Trail Creek was surveyed 10 times between August 4 and September 27 (Table 6). Peak counts on Trail Creek exceeded 10,000 kokanee on August 24. Following this count a weir was installed on the lower end of Trail Creek to prevent additional kokanee escapement. Residence time of tagged adult kokanee in trail creek was estimated at 11 days. The total escapement estimate for the counted area was 38,211 kokanee. The escapement estimate was adjusted for 88% observer efficiency. The portion of the stream that was routinely surveyed accounted for 77% of the total spawning area used by kokanee and the total escapement estimate was expanded to include the unsampled area. Over 5,000 kokanee were removed from below the Trail Creek weir in a control action to prevent additional spawning and were not included in the total escapement estimate.

Kokanee spawner surveys from 2003 and 2004 had failed to find kokanee spawning in South Fork Beaver Creek, Beaver Creek or Habit Creek and therefore these streams were eliminated from initial work plans in 2005. However, the large number of adult kokanee spawning indicated a population much larger than previous years. Spawner counts were initiated on the above tributaries to coincide with the peak of the observed kokanee run on Trail Creek and Deadwood River (Table 7). Over 5,000 kokanee were counted on the three tributaries combined.

Natural egg deposition in tributary streams of Deadwood Reservoir was estimated at over 8 million eggs. Using fecundity of females trapped and spawned at the Deadwood kokanee weir and mean female length we estimated an average female (271 mm) would produce approximately 410 eggs. Using our escapement estimate of 38,000 adults and an estimated 50% female run composition, over 7,800,000 kokanee eggs were deposited in Trail Creek. Escapement above the weir on the Deadwood River was negligible (assumed to be less than 500 fish). Kokanee were observed spawning in South Fork Beaver and Beaver Creek. Using the actual numbers of fish observed in these two creeks we estimate a minimum of 536,000 eggs were deposited into Beaver and South Fork Beaver Creek.

MANAGEMENT RECOMMENDATIONS

1. Maintain current stocking schedules for kokanee and rainbow trout in Lucky Peak Reservoir.

2. Maintain current trout stocking schedules for surveyed Treasure Valley urban ponds.

3. Resample Veteran's Pond to determine if the DO profile was an artifact of sampling methods.

4. Sample Riverside Pond monthly during the summer to determine the window of suitable conditions for trout.

5. Continue periodic efforts to monitor the wild redband and hatchery rainbow trout composition in Sagehen Reservoir.

6. Compare proportions of wild redband and hatchery rainbow trout between early summer and late summer to address concerns of increased harvest on wild redband trout later in the fishing season in Sagehen Reservoir.

7. Continue tournament monitoring in conjunction with standardized sampling of Lake Lowell to determine the role that tournament monitoring could fulfill in the sampling program.

8. Determine if declines in CPUE for Lahontan cutthroat trout is related to environmental variables or competition from bridgelip suckers.

9. Continue Deadwood Reservoir midwater trawling and spawner escapement counts to develop a stock recruitment curve and escapement goals for naturally spawning kokanee.

10. Regulate Deadwood Reservoir escapement of kokanee as needed to reduce kokanee densities and increase mean adult size.

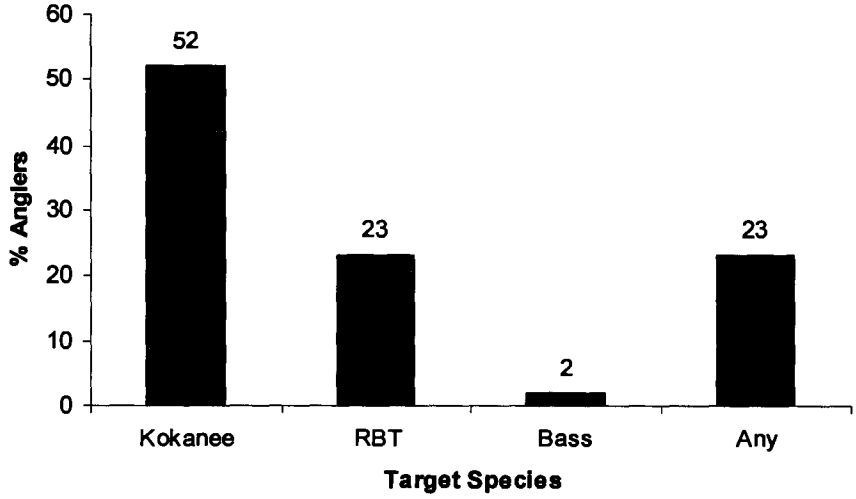

Figure 7. Target fish species by percentage of anglers for Lucky Peak Reservoir. Percentage of anglers targeting kokanee, rainbow trout (RBT), bass or Any (no specific target species) is shown above bars.

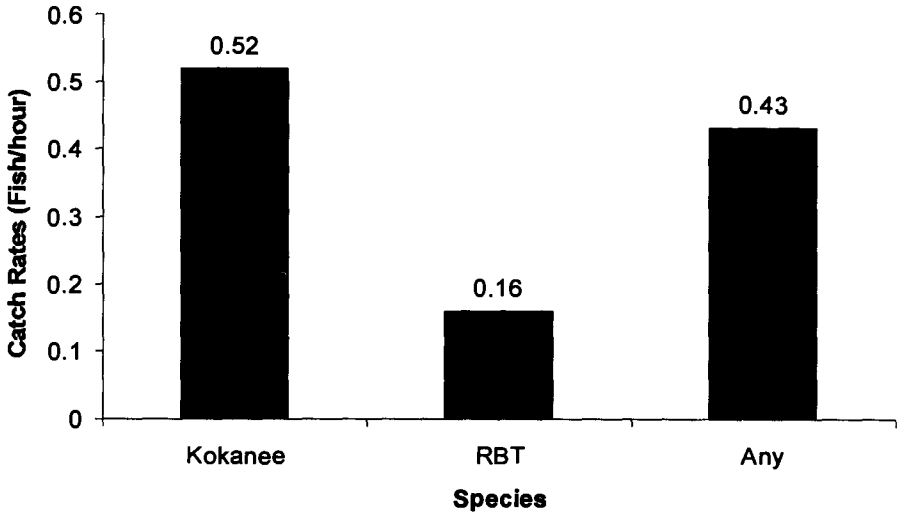

Figure 8. Mean catch rates for kokanee and rainbow trout (RBT) by anglers targeting those species at Lucky Peak Reservoir. Catch rates for anglers with no species preference (Any) includes catch rates for kokanee, rainbow trout and smallmouth bass combined.

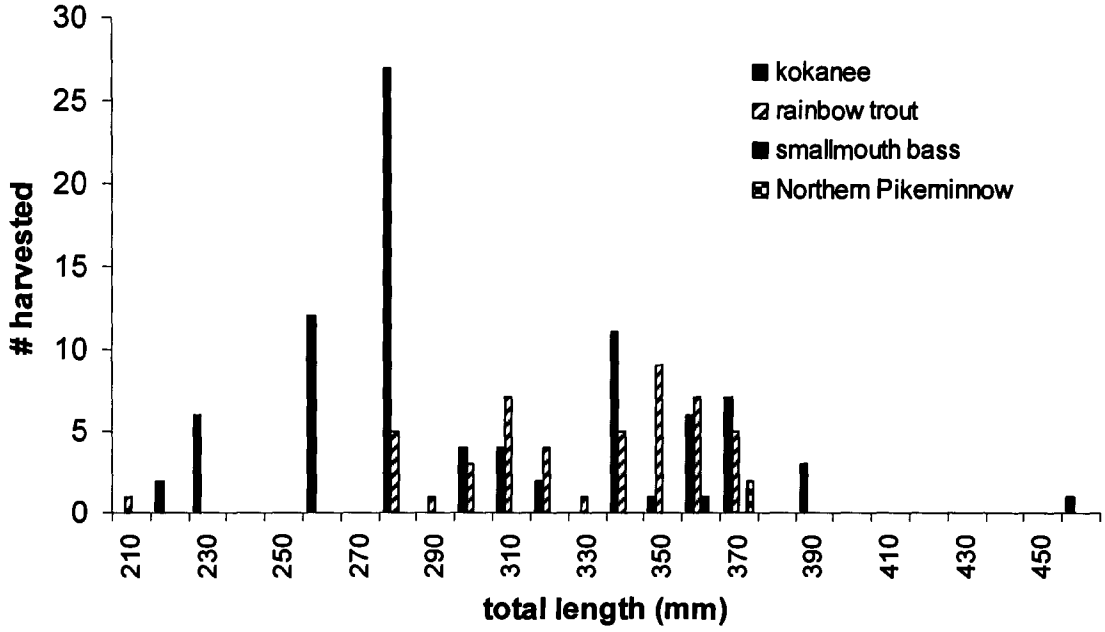

Figure 9. Length frequencies for kokanee, rainbow trout, smallmouth bass and northern pikeminnow harvested by anglers contacted during Lucky Peak Reservoir creel surveys in 2005. Lengths were a mixture of reported by anglers and technician measurements.

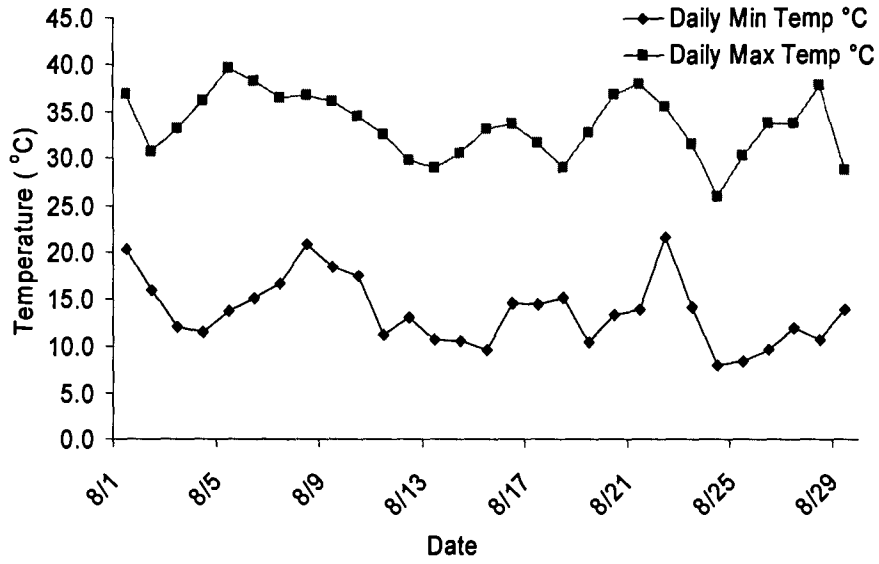

Figure 10. Daily minimum and maximum air temperatures for Boise, ID for the month of August 2005. As reported by U.S. Bureau of Reclamation http://www.usbr.gov/pn/agrimet/webarcread.html.

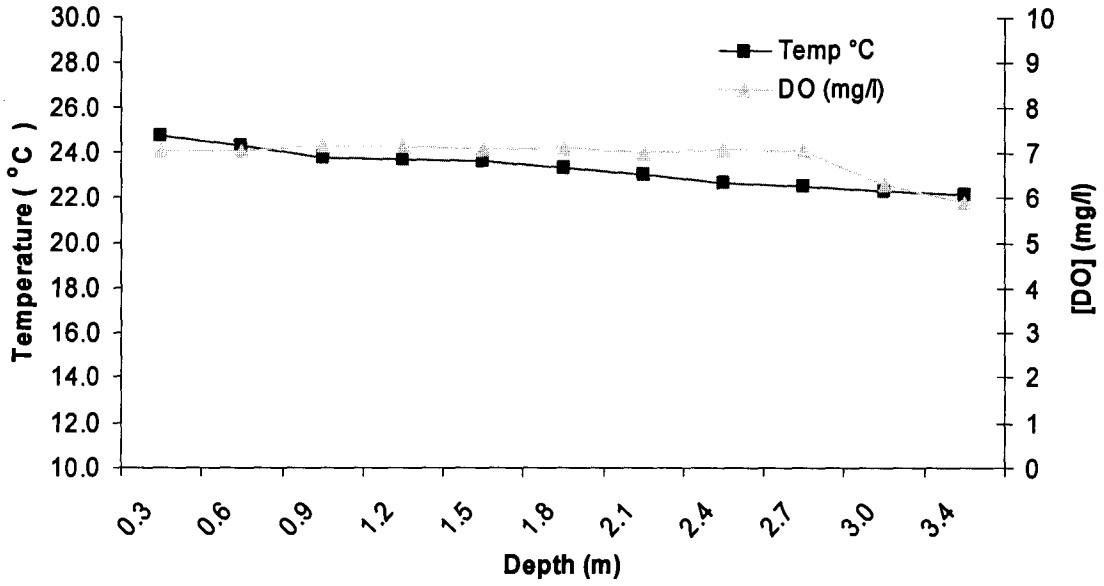

Figure 11. McDevitt Pond temperature, depth and dissolved oxygen.

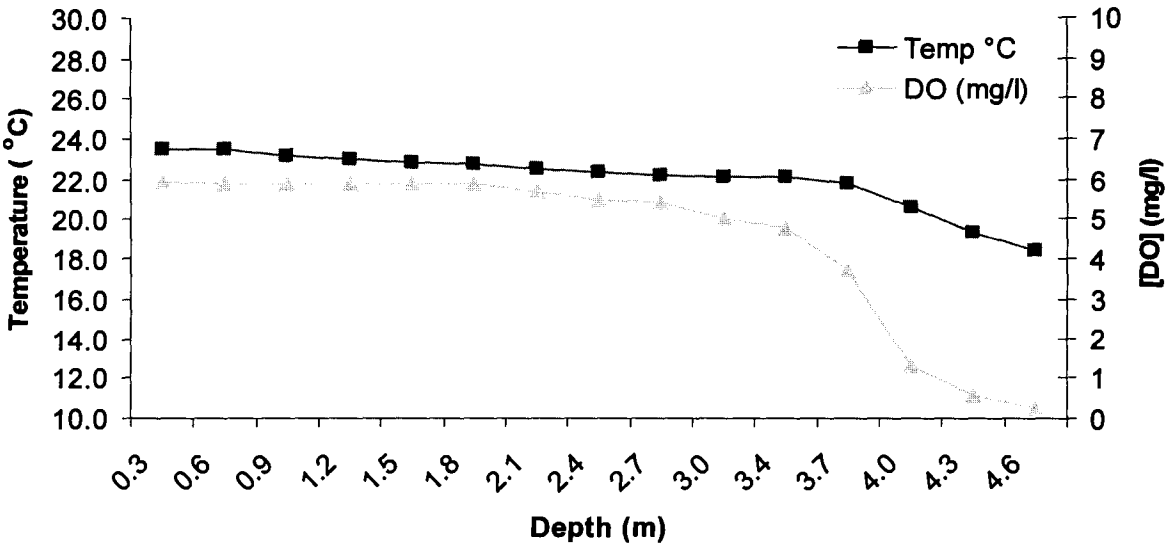

Figure 12. Merrill Pond (North end) temperature, depth and dissolved oxygen.

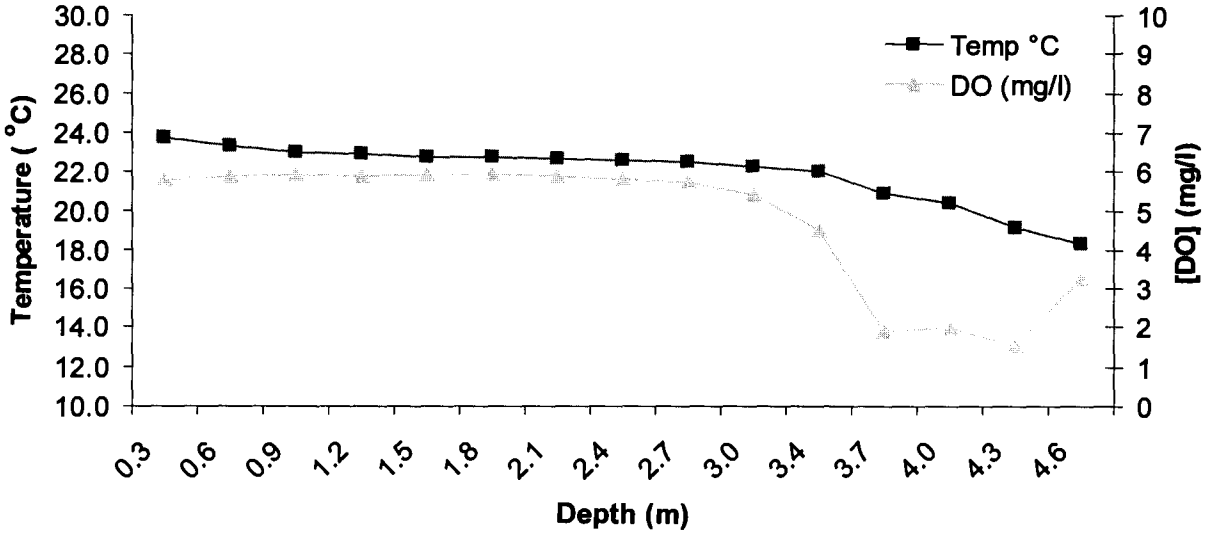

Figure 13. Merrill Pond (south end) temperature, depth and dissolved oxygen. Dissolved oxygen value at 4.6 meters is an assumed outlier.

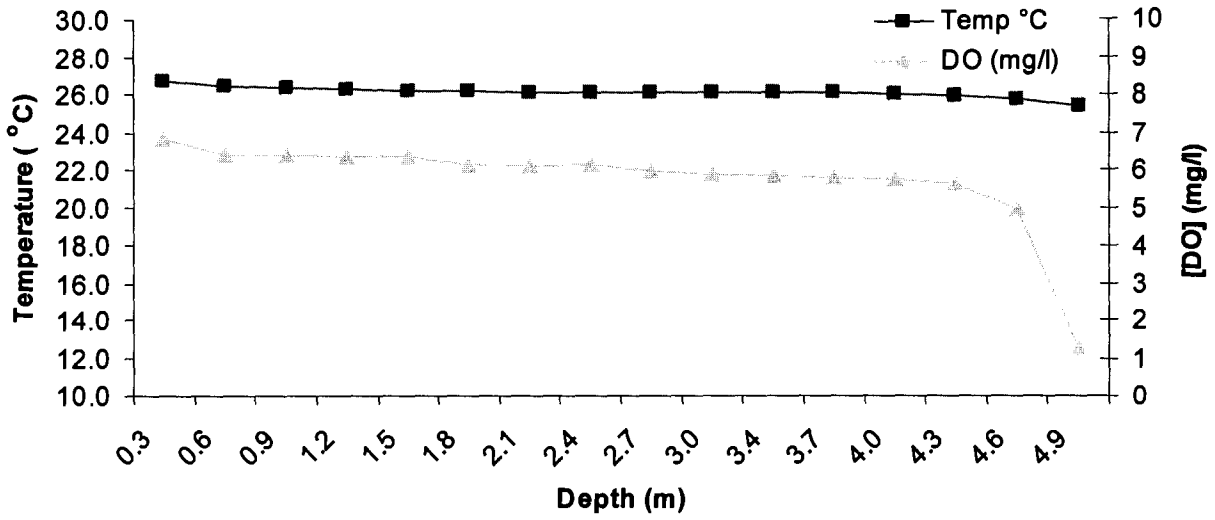

Figure 14. Park Center Pond temperature, depth and dissolved oxygen.

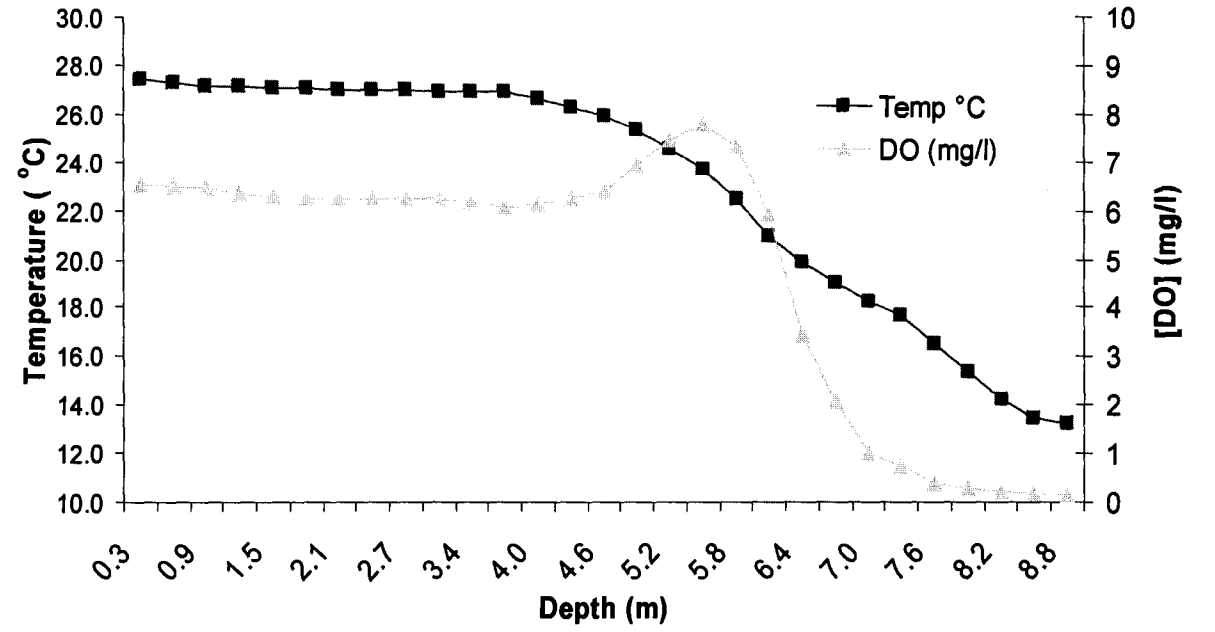

Figure 15. Quinn's Pond temperature, depth and dissolved oxygen. Data points within ~ 5.2 – 6.1 meters indicate suitable conditions for trout. Dissolved oxygen trend may be a result of a positive heterograde.

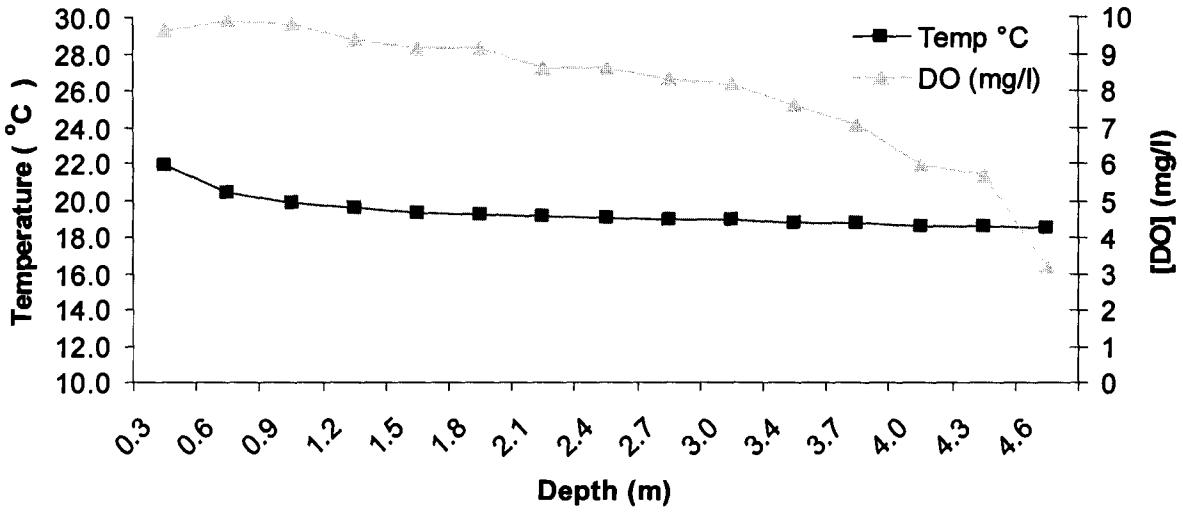

Figure 16. Riverside Pond temperature, depth and dissolved oxygen. Data values show conditions that are suitable for trout.

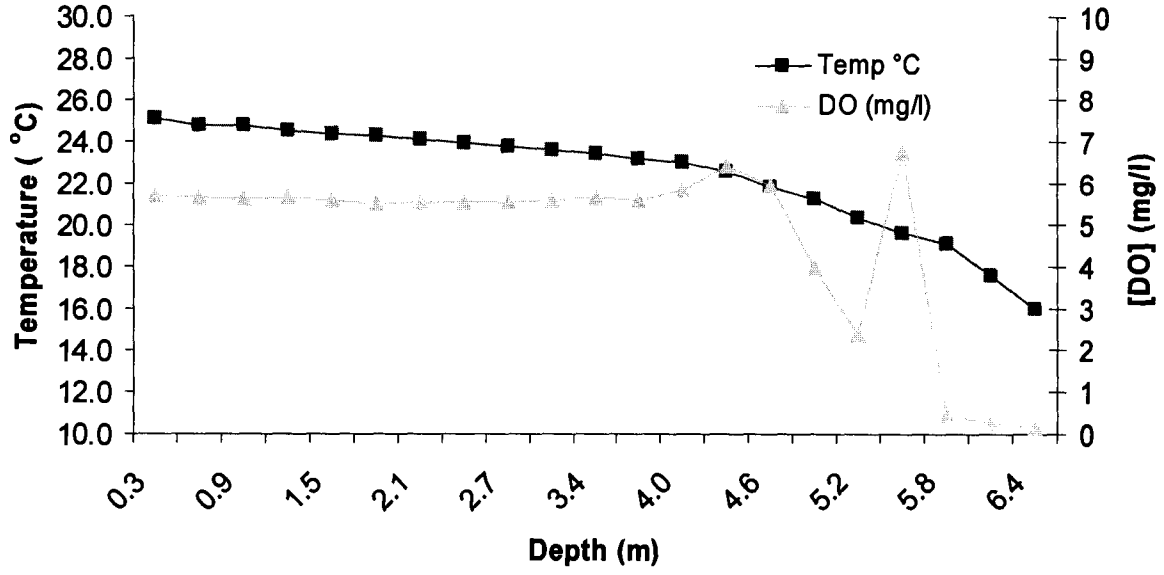

Figure 17. Veteran's Pond temperature, depth and dissolved oxygen. Dissolved oxygen value at 5.5 meters is an assumed outlier.

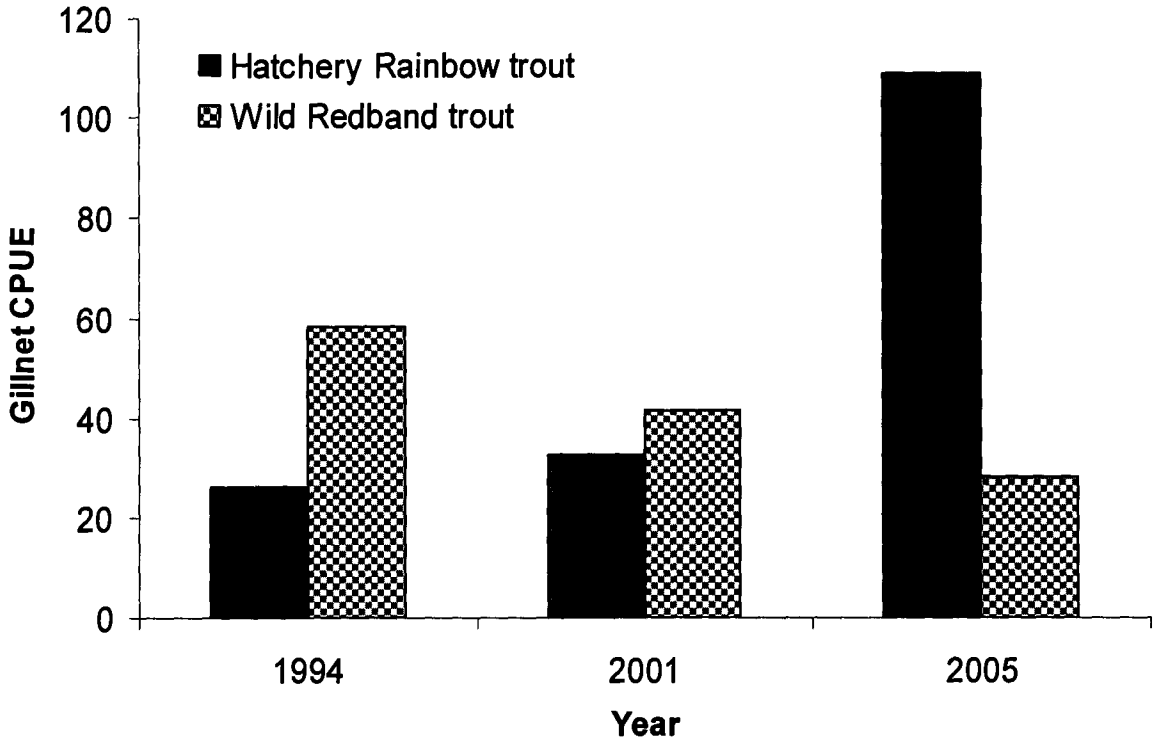

Figure 18. Sagehen Reservoir wild redband trout and hatchery rainbow trout gill net Catch Per Unit Effort for 1994, 2001 and 2005.

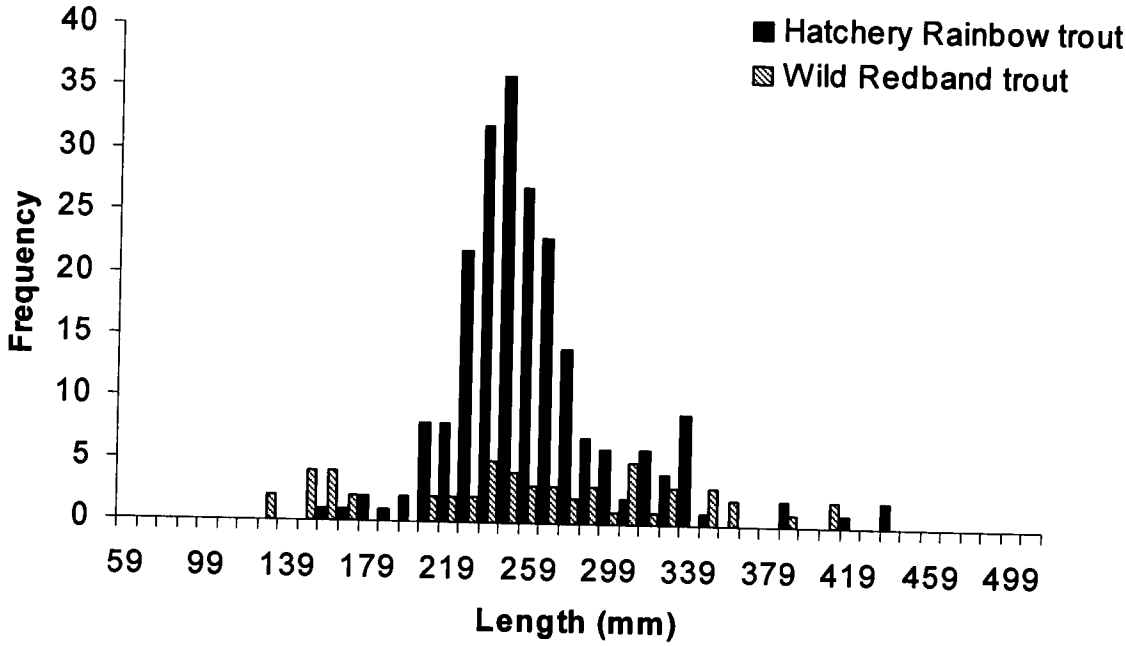

Figure 19. Length frequencies for wild redband and hatchery rainbow trout captured in gill nets in Sagehen Reservoir in 2005.

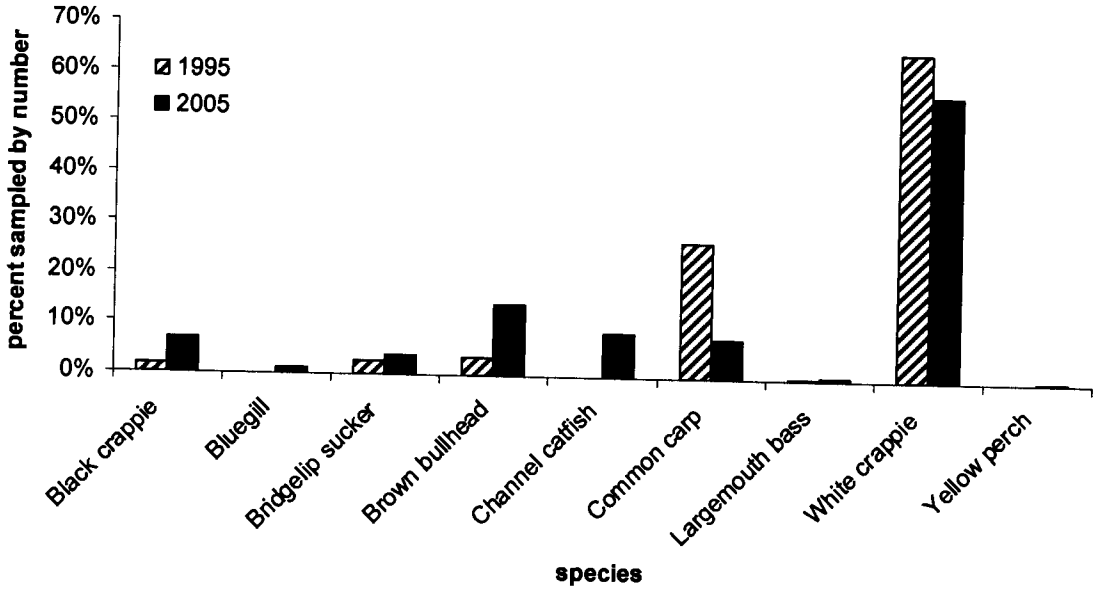

Figure 20. Fish species composition of Crane Creek Reservoir from electrofishing, gill net and trap net sampling in 1995 and 2005.

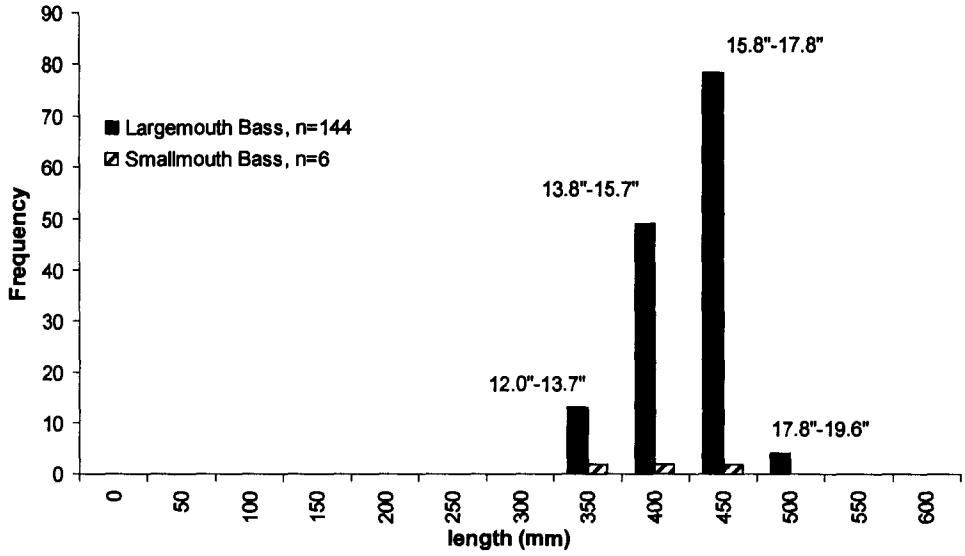

Figure 30. Measured lengths of a subset of angler caught bass from the April 16, 2005 tournament fishery held on Lake Lowell.

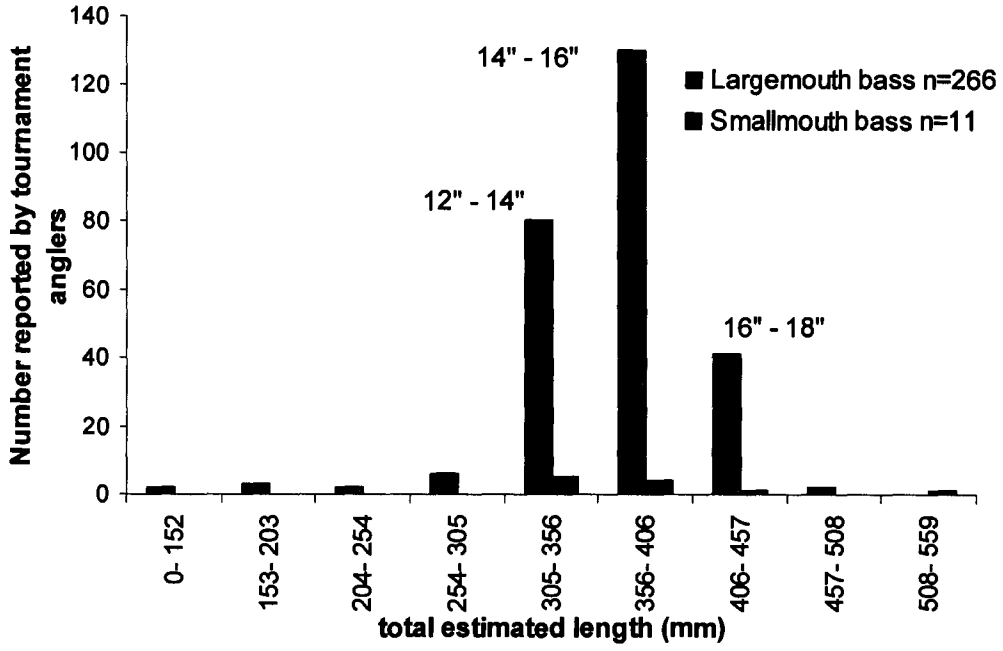

Figure 31. Lengths of angler caught bass as reported by anglers from April 16, 2005 tournament report to IDFG.

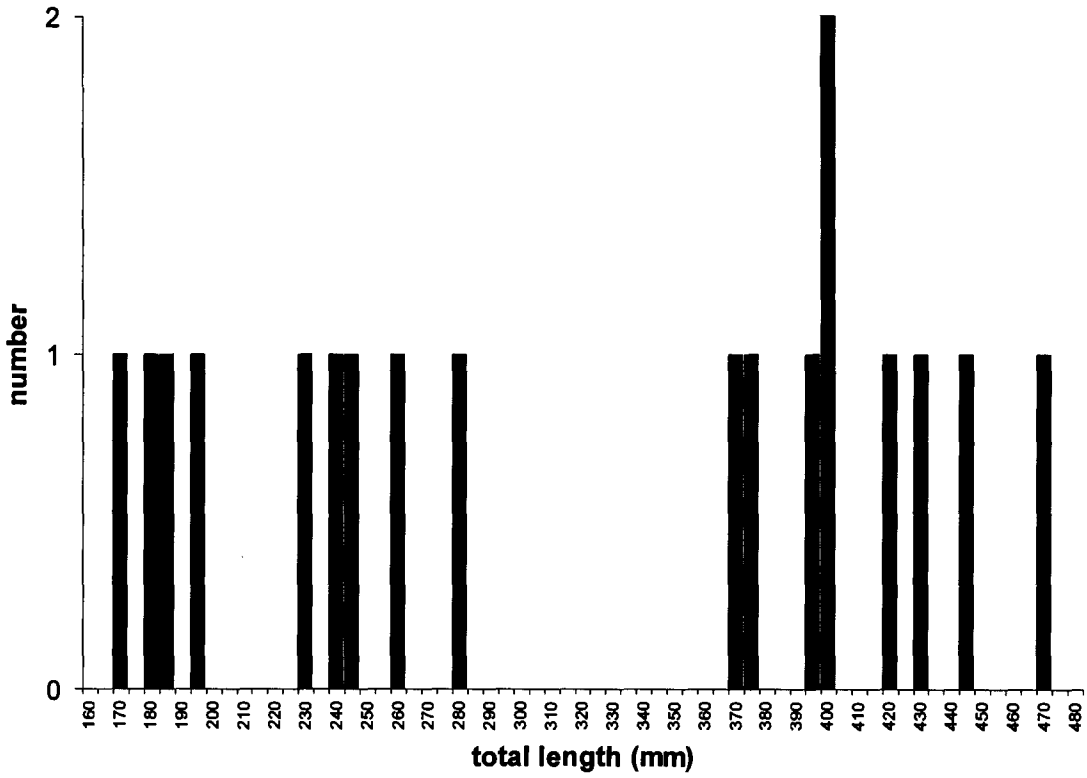

Figure 32. Length frequency distribution of Lahontan cutthroat trout (n= 18) captured in gill nets on Little Blue Creek Reservoir in 2005.

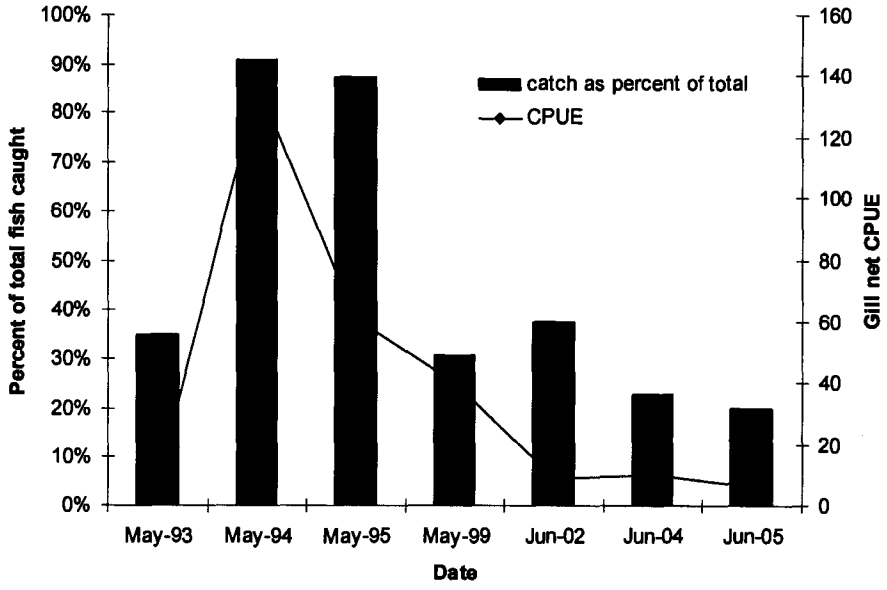

Figure 33. Catch per unit effort (CPUE) and relative abundance of Lahontan cutthroat trout captured in gill nets on Little Blue Creek Reservoir from 1993 to 2005.

Figure 34. Transects sampled by midwater trawl in 2005 on Deadwood Reservoir. Transects arrows are not drawn to scale.

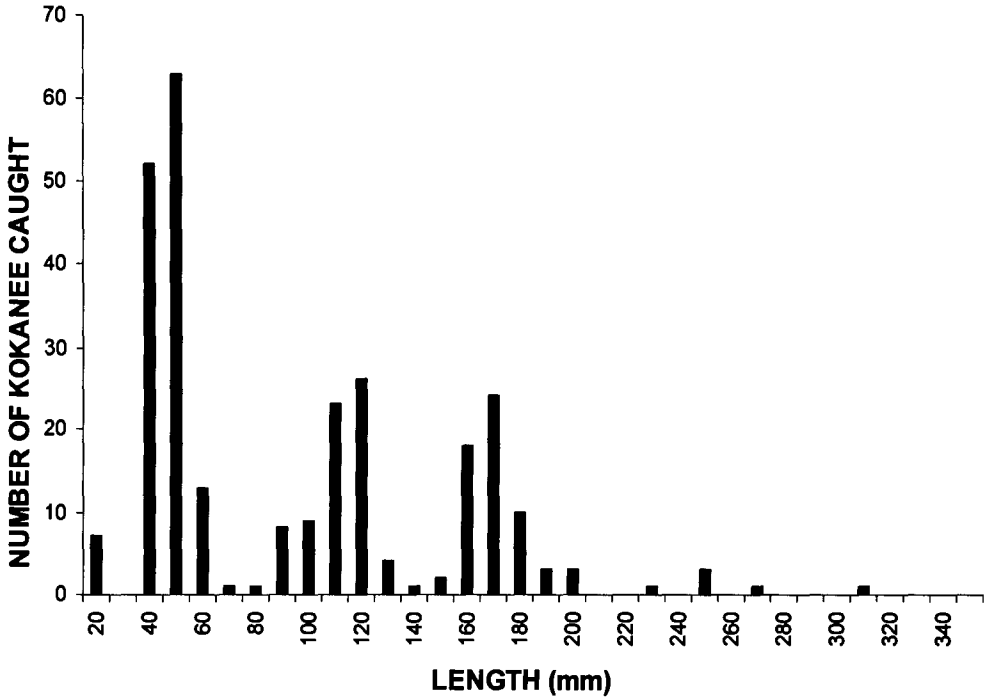

Figure 35. Length frequency of 274 kokanee captured during July 2005 midwater trawl sampling. Fish assigned to the less than 30mm length group were age-0 fish that were not possible to accurately measure for total length.

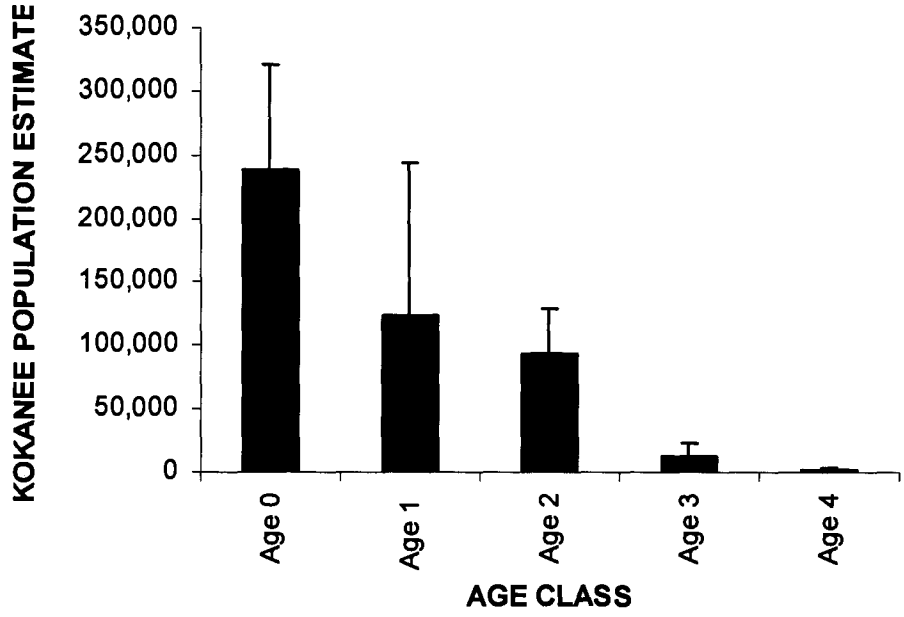

Figure 36. Numbers of kokanee by age class estimated from midwater trawling in 2005 on Deadwood Reservoir. Bars represent 90% CI.

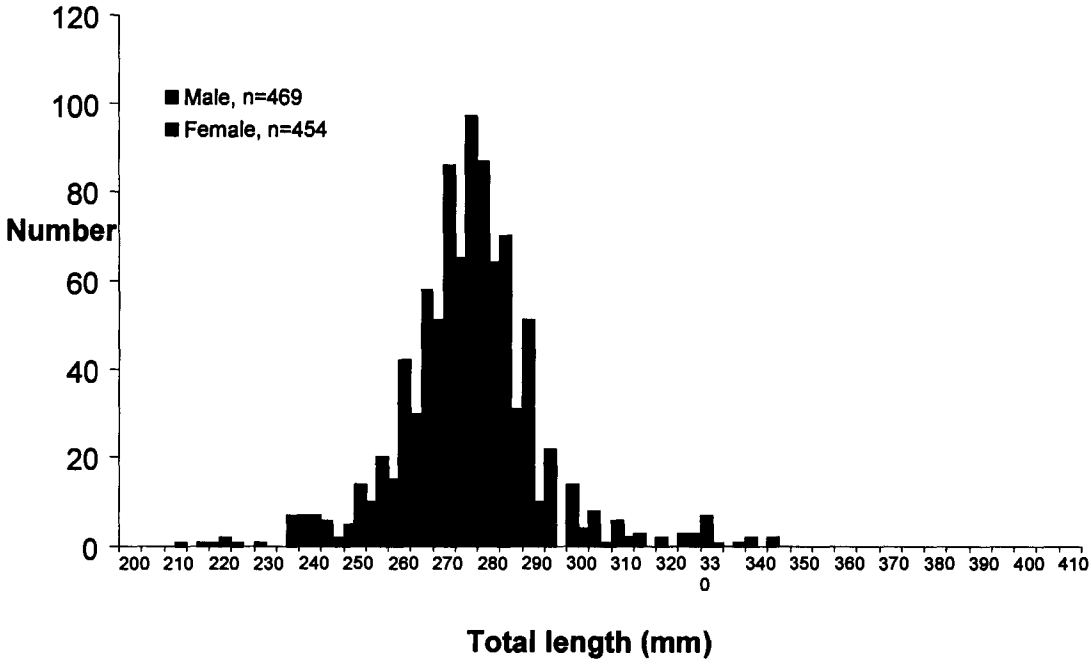

Figure 37. Length frequency of kokanee captured at the Deadwood River kokanee trap during 2005.

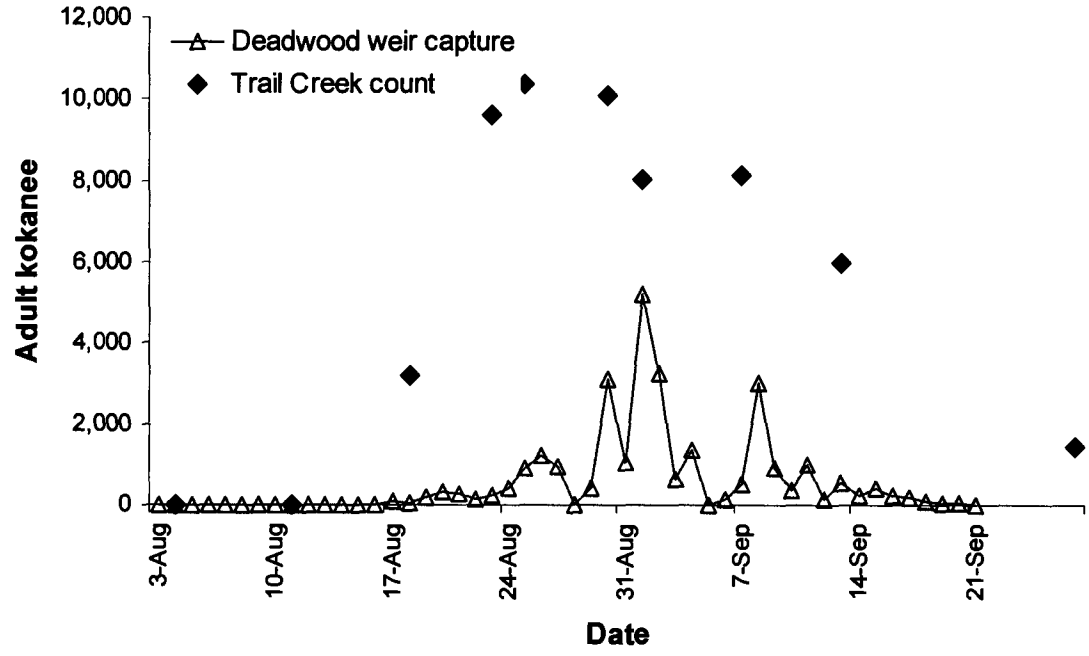

Figure 38. Capture of adult kokanee at the Deadwood River weir for 2005 and count of adult kokanee observed in Trail Creek during kokanee spawner surveys.

Figure 39. Length fecundity relationship for kokanee (n=50) captured and spawned at Deadwood River trap in 2005.

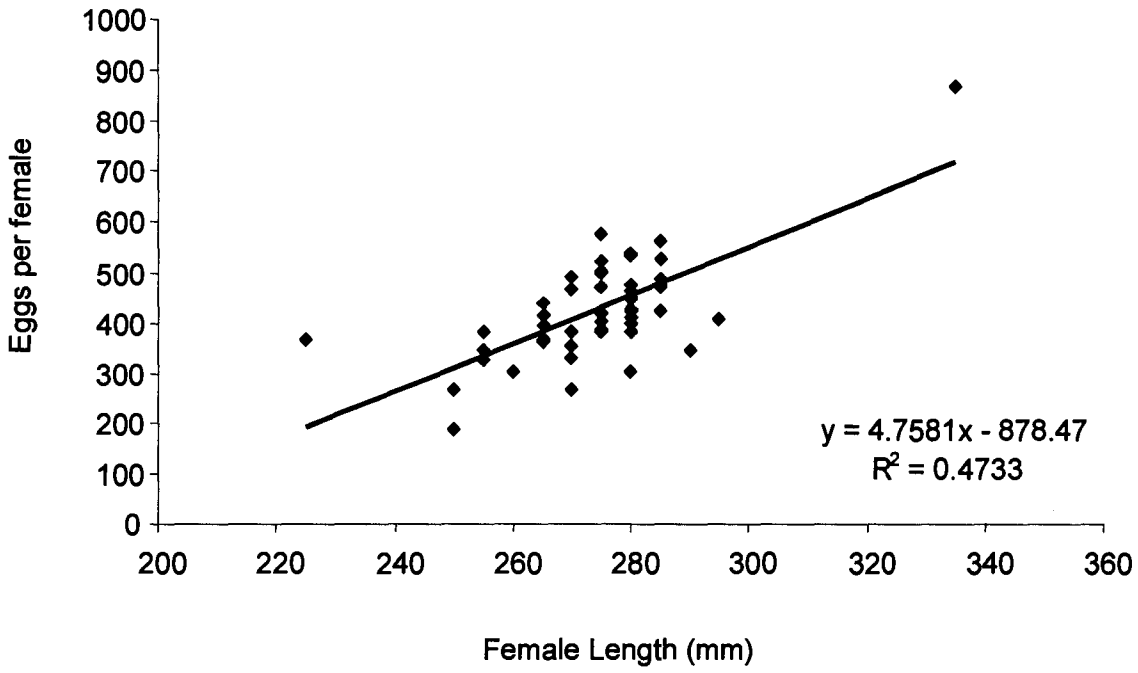

Table 4. Fish harvest and release numbers for anglers contacted at Lucky Peak Reservoir in 2005. Harvest probability is number of fish harvested divided by total number caught.

Fish species	Harvested	Released	Harvest probability
kokanee	86	2	0.98
rainbow trout	48	9	0.84
northern pikeminnow	2	3	0.40
smallmouth bass	1	6	0.14
mountain whitefish	0	2	0.00
bridgelip sucker	0	1	0.00
bull trout	0	1	0.00

Table 5. Fish survey dates, gear types, and effort for Crane Creek Reservoir for 1995 to 2005.

date	gear	effort
6/13/1995	electrofishing	1
6/13/1995	gill net	2
6/13/1995	trap net	4
6/25/1998	gill net	2
6/25/1998	trap net	2
5/20/1999	trap net	3
7/13/2001	gill net	2
7/13/2001	trap net	6
6/13/2005	electrofishing	0.79
6/14/2005	gill net	2
6/14/2005	trap net	6

Table 6. Adult kokanee counts in spawning tributaries to Deadwood Reservoir during 2005. Numbers are actual counts of adults observed for spawning tributaries and adults trapped at Deadwood Trap.

Date	Deadwood	Trail	S. Fork Beaver	Beaver	Habit
3-Aug	0				
4-Aug	0	0			
5-Aug	0				
6-Aug	0				
7-Aug	1				
8-Aug	0				
9-Aug	0				
10-Aug	0				
11-Aug	4	0			
12-Aug	4				
13-Aug	2				
14-Aug	9				
15-Aug	11				
16-Aug	12				
17-Aug	89				
18-Aug	60	3,197			
19-Aug	188				
20-Aug	324				
21-Aug	278				
22-Aug	128				
23-Aug	223	9,580			
24-Aug	406				
25-Aug	935	10,372			
26-Aug	1247				
27-Aug	975				
28-Aug	0				
29-Aug	400				3059
30-Aug	3100	10,079			
31-Aug	1070		854	1,763	
1-Sep	5215	8,026			
2-Sep	3246				
3-Sep	650				
4-Sep	1350				
5-Sep	0				
6-Sep	150				
7-Sep	501	8,121			
8-Sep	3010				
9-Sep	923				
10-Sep	360				
11-Sep	1017				

Table 6. (cont.)

Date	Deadwood	Trail	S. Fk. Beaver	Beaver	Habit
12-Sep	118				
13-Sep	538	5,958		1,509	
14-Sep	210				
15-Sep	400				
16-Sep	250				
17-Sep	160				
18-Sep	105				
19-Sep	65				
20-Sep	59				
21-Sep	0				
22-Sep					
23-Sep					
24-Sep					
25-Sep					
26-Sep					
27-Sep		1,481			

Table 7. Adult kokanee counts for Trail Creek in 2005 by survey date and section. NC=no count. Total is sum from section one, two and three only.

	Section				
date	one	two	three	total	sec4
8/18/2005	1	10	3,186	3,197	NC
8/23/2005	4	23	9,553	9,580	NC
8/25/2005	21	31	10320	10,372	NC
8/30/2005	15	55	10009	10,079	NC
8/31/2005	NC	NC	NC	NC	3,139
9/1/2005	15	61	7,950	8,026	NC
9/7/2005	19	49	8,053	8,121	NC
9/13/2005	8	27	5,923	5,958	NC
9/27/2005	22	39	1,420	1,481	NC

2005 Southwest Region (Nampa) Fishery Management Report

River and Stream Surveys

ABSTRACT

Regional Fisheries crews surveyed sites on the Middle Fork Payette River, Silver Creek and the Snake River using IDFG Standard Stream Survey methodologies to obtain current information on fish populations. Redband trout density in the Middle Fork Payette River varied from 0.1 – 1.6 fish/100 m^2. Redband trout density in Silver Creek varied from 4.5 – 7.4 fish/100 m^2. On the Snake River downstream from C.J. Strike Dam, carp were the dominant fish species captured while smallmouth bass were the dominant fish species downstream of Swan Falls Dam. Sediment and aquatic macrophytes influenced results and both sections should be surveyed again in 2006.

The Kirby Dam fish trap was operated in 2005 in accordance with the agreement with Atlanta Power to evaluate bull trout movements during August. Five bull trout were captured during trapping operations. This was the final year of the five year monitoring agreement.

Chinook salmon parr monitoring and redd counts were conducted on Bear Valley, Elk, and Sulphur creeks. Redd counts were similar to 2004 counts and down from peaks observed in 2002 and 2003.

OBJECTIVES

Obtain current information for fishery management decisions on rivers and streams, including angler use and success, fish population characteristics, spawning potential, stocking success and develop appropriate management recommendations.

Obtain current information on fish populations in the Middle Fork Payette River and Silver Creek.

Obtain current information on fish populations in the Snake River between C.J. Strike Dam and the Highway 45 Bridge at Walters Ferry.

Conduct general maintenance on the Kirby Dam fish ladder and complete the final year of monitoring fish movement through fish ladder during the month of August. Determine timing and species of fish using the ladder to compare with previous years information.

Obtain information to continue long term chinook salmon population trend monitoring for Bear Valley, Elk Creek and Sulphur Creek.

METHODS

Snorkel survey methods were used to enumerate fish species at seven sites on the Middle Fork Payette River (MFPR) and three sites on Silver Creek (SC), a tributary to the Middle Fork Payette River in September 2004 (MFPR sections 1, 1A) and July 2005 (MFPR sections 2-7, SC sections 1-3) (Table 8). Two divers worked up-stream counting and identifying fish. A third person walked the shoreline recording data relayed by the divers. The length, wetted width at four locations, and substrate types were recorded for each site. Fish densities were calculated by dividing number of fish by the area snorkeled (calculated by multiplying length of section snorkeled by mean width). Data are archived in the IDFG Standard Stream Survey Database.

A boat mounted electrofishing unit was used to survey fish in the Snake River from C.J. Strike Dam downstream to the Highway 45 Bridge at Walters Ferry. Eighteen sites were surveyed in July 2005 (Table 9). Attempts were made to net all fish observed. Fish were identified to species and measured for total lengths. Section lengths were recorded in m and activated electrode times were recorded for each section. Catch per unit effort was calculated as number of fish/hour of activated electrode time. Data were summarized by river section with sites between C.J. Strike Dam and Swan Falls Reservoir pooled (C.J. Strike Reach)and sites between Swan Falls Dam and Walters Ferry Bridge pooled (Swan Falls Reach). Data are stored in regional files.

The fish ladder at Kirby Dam was opened on June 29, 2005 to allow passage of fish into the upper Middle Fork Boise River. The fish trap was installed on the ladder on August 1, 2005 and operated through September 1, 2005. The trap was checked twice a week during operation by IDFG regional fisheries staff. Trapped fish were identified to species and measured for total length and weight. Gauge height of water in the ladder was recorded and level of water in the attraction pipe was recorded as percent of full.

Chinook salmon parr monitoring was conducted using snorkel survey methods on August 10 – 13, 2005 in five established sections of Elk Creek and three in Sulphur Creek. Two snorkelers moved upstream through the trend sections identifying fish species and sizes while a third individual recorded information from the shore. Physical habitat measurements recorded include habitat type, substrate particle size, width, length, depth, and water temperature. Data are stored in the IDFG Standard Stream Survey Database. The snorkel site descriptions can be found in Appendix C.

Chinook salmon redd counts were conducted on Bear Valley Creek, Elk Creek and Sulphur Creek on August 24 and 25, 2005. Redd counts were conducted from the ground with two observers walking the stream (see methods in Hassemer 1993).

RESULTS AND DISCUSSION

Middle Fork Payette River Snorkel Survey

Surveys on the Middle Fork Payette River (MFPR) showed densities (fish/100m^2) of redband trout of all sizes ranged from 0.1 to 1.6, while mountain whitefish *Prosopium williamsonii* densities ranged from 0.5 to 2.1 (Table 10). Densities of redband trout greater than 152 mm averaged 0.4 and ranged from 0.1 and 1.1 while mountain whitefish greater than 152 mm had average densities of 0.6 and ranged from 0.0 to 1.2 (Table 11). Bull trout are in the Payette River drainage but none were observed during the surveys. Hatchery rainbow trout were only observed at one location.

Silver Creek had higher total redband trout densities (fish/100m^2) than the MFPR. Redband trout densities ranged from 4.5 to 7.4 (Table 12). Brook trout *S. fontinalis* were observed at densities from 0.3 to 2.8 fish/100m^2. Brook trout densities were consistently lower than redband trout densities. Densities of redband trout greater than 152 mm averaged 2.8 and ranged from 1.2 to 4.2, while brook trout greater than 152 mm were observed at only two sites and ranged from 0.1 to 0.7 (Table 13). No bull trout were observed during the surveys. Hatchery rainbow trout were observed in all sites on Silver Creek.

Snake River Electrofishing

The dominant fish species captured were carp, largescale suckers *C. macrocheilus* and smallmouth bass in the C.J. Strike reach (Figure 40). In the Swan Falls reach smallmouth bass, largescale sucker and carp were the dominant fish (Figure 41). Abundance (measured by CPUE) of these three species in the C.J. Strike reach was similar to that observed in 1995 (Allen et al. 1998). In the Swan Falls reach smallmouth bass abundance increased over 1995 levels (Allen et al. 1998).

Sediment and macrophyte abundance in the river limited our ability to effectively sample many sites (Table 14). The sampling limitations should cause this data to be viewed cautiously in making comparisons to previous surveys.

Middle Fork Boise River - Kirby Dam Trap Operations

Five bull trout were captured in the trap on the Kirby Dam fish ladder in August 2005 (Table 15). The ladder was briefly dewatered on August 24, 2005 for an inspection by Federal

Energy Regulatory Commission personnel. Observations indicated that fish screens were not installed on the penstocks until sometime between August 24 and August 29, 2005.

The 2005 monitoring effort represents the final year of monitoring operations of the Kirby Dam Fish ladder undertaken by IDFG in fulfillment of the agreement entered into with Atlanta Power Company. The future operations and maintenance obligations of the fish ladder are currently in negotiation.

Chinook Parr Monitoring and Redd Counts – Bear Valley, Elk, and Sulphur Creeks

Chinook salmon parr were observed in all eight sites snorkeled in 2005 (Appendix C). Average parr densities were higher in Elk Creek at 3.0 parr/100m^2 than Sulphur Creek with 0.7 parr/100m^2 (Table 16).

Chinook salmon redds observed in 2005 were similar to numbers observed in 2004, but lower than counts in 2002 and 2003 (Figure 42). Trends in redd counts over time were compared using data queried from the Streamnet database. Data are archived in IDFG files and in the Streamnet database. Redd count transect descriptions are found in Appendix D.

MANAGEMENT RECOMMENDATIONS

1. Repeat Snake River electrofishing surveys in 2006 if sampling conditions improve.

2. Continue parr monitoring and redd counts within the Southwest Region Middle Fork Salmon River drainage to compliment the current trend data set.

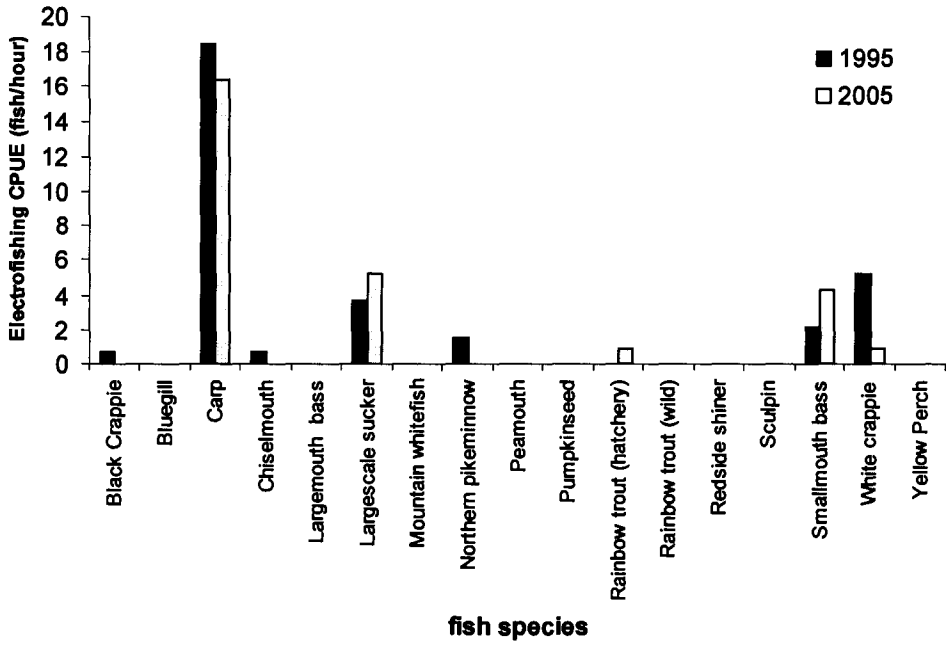

Figure 40. Electrofishing catch per unit effort (CPUE fish / hour) for 1995 and 2005 in the CJ Strike reach of the Snake River from CJ Strike Dam downstream to Swan Falls Reservoir.

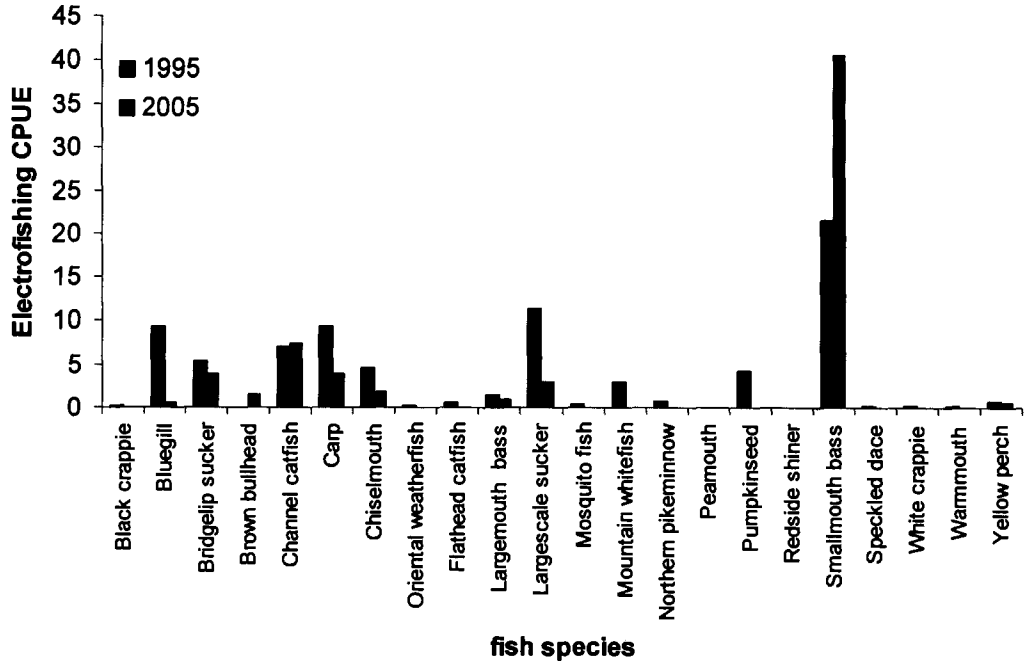

Figure 41. Electrofishing catch per unit effort (CPUE) in number of fish/hour for 1995 and 2005 in the Swan Falls Reach of the Snake River (Swan Falls Dam downstream to Walters Ferry).

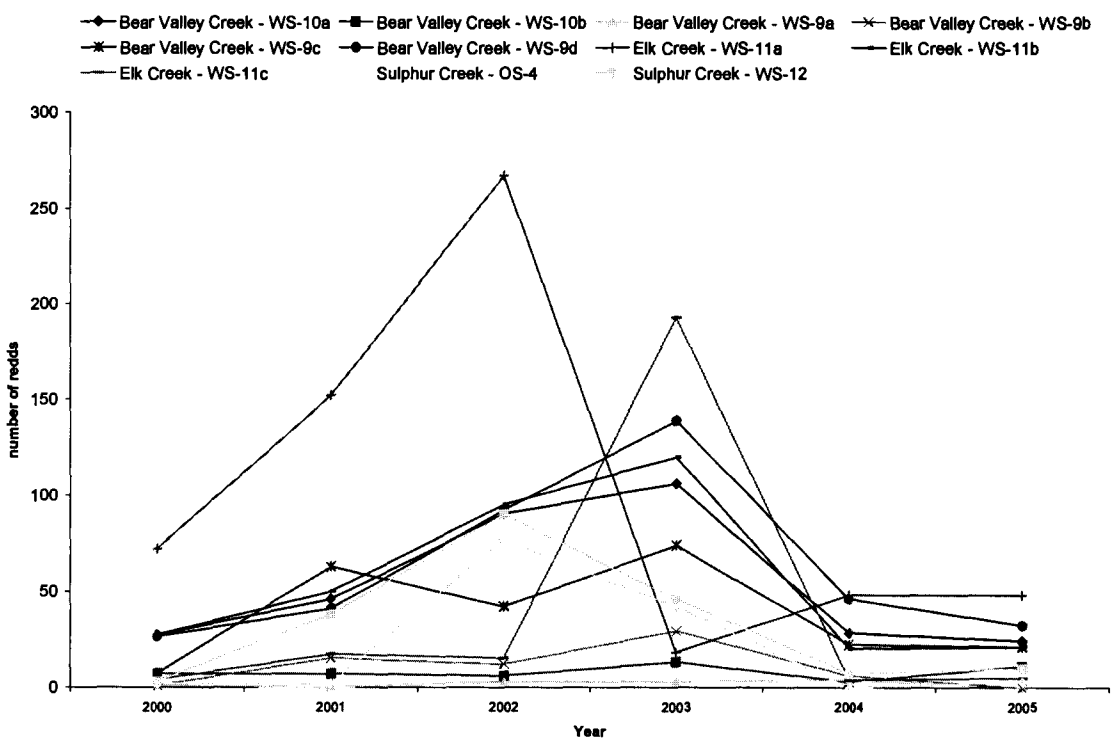

Figure 42. Chinook salmon redd count trends from 2000 to 2005 for index areas in Bear Valley Creek, Elk Creek and Sulphur Creek.

Table 8. Middle Fork Payette River and Silver Creek snorkeling sites, 2004 and 2005.

Site Name	Length(m)	UTM	Description
1	97.6	11T 0591834 4914166	Boiling Springs Guard Station
1A	69.5	11T 0592438 4915554	Walk stream up from BSGS
2	81.4	11T 0590455 4906083	No description
3	88.1	11T 0590733 4910263	2.2 miles below Boiling Springs
4	74.0	11T 0590733 4910262	No description
5	65.0	11T 0588619 4900303	20 m. below drainage
6	98.0	11T 0588057 4897834	2.5 miles above Tie Creek Campground
7	74.0	11T 0587852 4897615	2.3 miles above Tie Creek Campground
Silver Creek 1	93.4	11T 0594135 4908111	No description
Silver Creek 2	57.7	11T 0597951 4912891	Above junction of FS Rd. 671,671E
Silver Creek 3	59.5	11T 0598694 4914846	At end of FS Rd. 671 E

Table 9. Density (fish / 100 m^2) observed by snorkeling on Middle Fork Payette River in 2004 and 2005. Total is combined densities for mountain whitefish, redband trout and hatchery rainbow trout.

Mountain whitefish	Redband trout	Hatchery rainbow	Total
2004 Region 3 site, section 1			
0.9	0.7	0.0	1.6
2004 Region 3 site, section 1A			
1.3	0.3	0.0	1.7
2005 Region 3 site, Section 2			
0.4	0.1	0.8	1.3
2005 Region 3 site, section 3			
2.1	1.6	0.0	3.7
2005 Region 3 site, section 4			
1.2	1.1	0.0	2.3
2005 Region 3site, section 5			
0.6	0.7	0.0	1.4
2005 Region 3 site, section 6			
0.5	0.5	0.0	1.1
2005 Region 3 site, section 7			
1.7	0.1	0.0	1.8

Table 10. Density (fish/100m^2) by species and length group for Middle Fork Payette River snorkeling sites.

Length group (mm)	Mountain whitefish	Rainbow trout (hatchery)	Redband trout
2004 Region 3 site, section 1			
25<50			0.2
50<76	0.4		0.1
102<127	0.5		0.1
152<178			0.2
203<229			0.1
2004 Region 3 site, section 1A			
50<76			0.1
127<152	0.8		
152<178			0.1
178<203	0.1		
203<229			0.1
229<254	0.4		
2005 Reg. 3 site, Section 2			
76<102			0.1
102<127			0.3
127<152			0.1
178<203	0.1		
203<229	0.1		
229<254			0.1
254<279			0.1
305<330	0.2	0.1	
330<356			0.1
2005 Region 3 site, section 3			
25<50			0.2
50<76	1.1		
76<102			0.2
102<127			0.1
127<152			0.1
152<178	0.2		0.5
178<203			0.1
203<229	0.1		0.1
229<254	0.2		
254<279	0.2		
279<305			0.2
305<330			0.2
330<356	0.3		
381<406	0.1		

Table 10. continued.

Length group (mm)	Mountain whitefish	Rainbow trout (hatchery)	Redband trout
	2005 Region 3 site, section 4		
50<76			0.3
76<102			0.1
102<127			0.1
152<178			0.1
203<229			0.1
229<254			0.4
254<279	0.2		
330<356	0.4		
356<381	0.6		
	2005 Region 3site, section 5		
50<76			0.1
76<102			0.1
102<127			0.1
127<152			0.1
152<178			0.1
178<203			0.1
229<254			0.1
279<305	0.1		
305<330	0.1		0.1
330<356	0.3		
508<533	0.1		
	2005 Region 3 site, section 6		
152<178	0.0		
203<229	0.0		
254<279	0.1		0.4
279<305	0.0		
305<330	0.1		0.0
330<356	0.1		
356<381	0.0		0.0
432<457	0.0		
	2005 Region 3 site, section 7		
50<76	0.8		
152<178	0.1		0.1
305<330	0.4		
330<356	0.1		
356<381	0.3		
381<406	0.1		

Table 11. Density of (fish / 100 m^2) observed by snorkeling on Silver Creek in 2004 and 2005. Total is combined densities for brook trout, redband trout and hatchery rainbow trout.

Brook trout	Rainbow trout (hatchery)	Redband trout	Total
	2005 Region 3 site, section 1		
0.3	0.4	4.5	5.1
	2005 Region 3 site, section 2		
2.8	0.9	5.2	8.9
	2005 Region 3 site, section 3		
0.3	3.5	7.4	11.2

Table 12. Density (fish/100m^2) by species and length group for Silver Creek snorkeling sites.

Length group (mm)	Brook trout	Rainbow trout (hatchery)	Redband trout
	2005 Region 3 site, section 1		
50< 76			0.1
76<102			0.3
102<127			0.5
127<152	0.1		0.5
152<178	0.1	0.4	1.5
203<229			0.4
229<254			0.3
254<279			0.4
279<305			0.1
330<356			0.3
356<381			0.1
	2005 Region 3 site, section 2		
76<102	0.2		0.9
102<127	0.7	0.9	0.9
127<152	1.2		2.1
152<178	0.5		0.2
178<203			0.5
254<279	0.2		0.5
	2005 Region 3 site, section 3		
76<102			2.9
102<127			0.3
127<152	0.3		
152<178			1.9
178<203			0.3
203<229			1.0
229<254			0.3
254<279			0.3
279<305			0.3
no data		3.5	

Table 13. Snake River electrofishing sites surveyed in 2005.

Section length (m)	UTM coordinates	Location
	Swan Falls reach	
360	11T 0539710 4793278	Second island upstream from Celebration Park
210	11T 0534542 4794493	Powerline at Noble Island
270	11T 0536777 4794076	½ mile below Guffy Bridge
300	11T 0538182 4793840	Guffy Bridge
210	11T 0532444 4798445	100 m upstream of old bridge at Walters Ferry
335	11T 0533728 4796064	1 mile upstream of Walters Ferry
140	11T 0550238 4787865	Swan Falls, South Bank
300	11T 0549578 4788954	½ mile below Swan Falls south bank
670	11T 0548596 4789759	Above Dedication Point south bank
375	11T 0548054 4792150	Priest Rapids
370	11T 0540138 4792522	Below Conshea Rapid, N. Bank
	CJ Strike reach	
350	No waypoint	DS from Parkinson's place. S. bank
695	11T 0559615 4773888	Below Bigfoot bar
395	11T 0582907 4755386	Below CJ Dam @ bridge
500	11T 0579035 4756888	Foleys Blind Section
270	11T 0578413 4758241	Across from Mark Frost farm
395	No waypoint	Gold Island
198	11T 056461847 68390	Rapid near BLM ramp in Birds of Prey Area

Table 14. Data from 2005 Kirby Dam fish ladder operations. Gauge height is water level (m) and attraction pipe level is percent of full. BLT= bull trout.

Date	Gauge height (m)	Attraction pipe level	Fish	Length	Weight	Comments
8/1/2005	0.8	0.5				Installed trap
8/3/2005	0.8	0.5				two small fish escaped
8/7/2005	0.8	0.5	BLT	182	55	
8/7/2005	0.8	0.5	BLT	183	40	
8/9/2005	0.8	0.5				
8/13/2005	0.6	<0.5				
8/16/2005	0.6	<0.5				
8/19/2005	0.65	0.5	BLT	163	25	
8/24/2005	0.75	0.5				Ladder drained, FERC inspection
8/29/2005	0.7	0.5	BLT	127		Escaped
9/1/2005	0.7	0.5	BLT	203	60	Trap removed

Table 15. Chinook salmon parr densities on Elk Creek and Sulphur Creek from snorkel surveys conducted in 2005.

Strata and section	chinook observed	Area sampled (m^2)	Density (fish/100 m^2)
		Elk Creek	
1-A	116	1044	11.1
1-B	5	707	0.7
2-A	12	2090	0.6
2-B	47	2272	2.1
2-C	11	1605	0.7
		Sulphur Creek	
2-3A	1	722	0.1
2-4A	16	838	1.9
2-4B	4	1829	0.2

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APPENDICES

Appendix A. Fish captured in gill nets on Cat, Clear and Red Mountain lakes in 2005 by regional fishery personnel. Species names are abbreviated as follows; rainbow cutthroat hybrids (hct), wild rainbow (wrb), rainbow trout, (rbt), westslope cutthroat trout (wct).

CAT #1	7/27/2005	1	hct	1	131	24	
CAT #1	7/27/2005	1	hct	1	132	22	
CAT #1	7/27/2005	1	hct	1	172	58	
CAT #1	7/27/2005	1	hct	1	455	1200	
CAT #1	7/27/2005	2	hct	1	157	36	
CAT #1	7/27/2005	2	hct	1	140	31	otolith 1
CAT #1	7/27/2005	2	wrb	1	118	14	
CAT #1	7/27/2005	2	hct	1	264	206	
CAT #1	7/27/2005	1	hct	1			no length, weight
CAT #2	7/26/2005	1		0			no fish, shallow lake lots of frog eggs
CAT #3	7/26/2005	1	wct	1	327	390	
CAT #4	7/27/2005	1	wct	1	304	300	
CAT #4	7/27/2005	1	wct	1	304	251	
CAT #4	7/27/2005	1	wct	1	279	230	
CAT #4	7/27/2005	1	wct	1	331	351	suspected rbtxct
CAT #4	7/27/2005	1	wct	1	276	200	scale 1
CAT #4	7/27/2005	1	wct	1	287	251	scale 2
CAT #4	7/27/2005	1	wct	1	283	220	suspected rbtxct
CAT #4	7/27/2005	1	wct	1	284	201	scale 3, suspected hybrid rbtxct
CAT #4	7/27/2005	1	wct	1	293	250	scale 4
CAT #4	7/27/2005	1	wct	1	283	252	
CAT #4	7/27/2005	1	wct	1	302	230	scale 5
CAT #4	7/27/2005	1	wct	1	292	240	
CAT #4	7/27/2005	1	wct	1	294	240	scale 6
CAT #4	7/27/2005	1	wct	1	288	250	
CAT #4	7/27/2005	1	wct	1	284	230	
CAT #4	7/27/2005	1	wct	1	133	29	
CAT #4	7/27/2005	1	wrb	1	105	12	
CAT #4	7/27/2005	1	wrb	1	100	10	
CAT #6	7/27/2005	1	rbt	1	157	41	
CAT #6	7/27/2005	1	rbt	1	148	39	
CAT #6	7/27/2005	1	rbt	1	151	50	
CAT #6	7/27/2005	1	rbt	1	205	99	
CAT #6	7/27/2005	2	rbt	1	181	71	
CAT #6	7/27/2005	2	rbt	1	163	46	
CAT #6	7/27/2005	2	rbt	1	194	72	
CAT #6	7/27/2005	2	rbt	1	205	102	
CAT #6	7/27/2005	2	rbt	1	145	39	
CAT #6	7/27/2005	1	wct	1	398	610	female, oto 1, reabsorbing eggs
CAT #6	7/27/2005	2	wct	1	415	640	released
CAT #6	7/27/2005	2	wct	1	431	1044	oto 2, reabsorbed eggs

Appendix A. (cont.)

CAT #9	7/26/2005	1	wct	1	415	722	otolith 1
CAT #9	7/26/2005	1	rbt	1	168	50	
CAT #9	7/26/2005	1	rbt	1	162	48	
CAT #9	7/26/2005	1	rbt	1	152	31	
CLEAR CREEK #1	7/25/2005	0					more of an elk wallow than lake
CLEAR CREEK #5	7/28/2005	1		0			no fish
CLEAR CREEK #5	7/28/2005	2		0			no fish
RED MOUNTAIN #1	7/25/2005	1	hct	1	245	151	
RED MOUNTAIN #1	7/25/2005	1	hct	1	276	165	
RED MOUNTAIN #1	7/25/2005	1	hct	1	264	172	
RED MOUNTAIN #1	7/25/2005	1	hct	1	298	261	
RED MOUNTAIN #1	7/25/2005	1	hct	1	286	198	
RED MOUNTAIN #1	7/25/2005	1	hct	1	245	132	
RED MOUNTAIN #1	7/25/2005	1	hct	1	246	147	
RED MOUNTAIN #1	7/25/2005	1	wct	1	271	162	
RED MOUNTAIN #2	7/25/2005	1	wct	1	368	590	spawning/mature female
RED MOUNTAIN #2	7/25/2005	1	wrb	1	156	47	
RED MOUNTAIN #2	7/25/2005	1	wrb	1	102	13	
RED MOUNTAIN #2	7/25/2005	1	wrb	1	161	50	
RED MOUNTAIN #2	7/25/2005	1	wrb	1	160	39	
RED MOUNTAIN #2	7/25/2005	1	wrb	1	146	37	
RED MOUNTAIN #2	7/25/2005	1	wrb	1	160	41	
RED MOUNTAIN #2	7/25/2005	1	wrb	1	395	540	mature male
RED MOUNTAIN #2	7/25/2005	1	wrb	1	131	32	
RED MOUNTAIN #3	7/25/2005	1	hct	1	330	365	female
RED MOUNTAIN #3	7/25/2005	1	rbt	1	165	50	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	180	75	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	151	35	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	190	85	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	192	75	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	180	65	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	120	15	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	145	40	
RED MOUNTAIN #3	7/25/2005	1	rbt	1	149	35	
RED MOUNTAIN #3	7/25/2005	2	rbt	1	189	80	
RED MOUNTAIN #3	7/27/2005	0	rbt	1			
RED MOUNTAIN #3	7/25/2005	1	wct	1	245	150	male
RED MOUNTAIN #3	7/25/2005	2	wct	1	231	120	
RED MOUNTAIN #3	7/25/2005	2	wct	1	82	3	
RED MOUNTAIN #4	7/25/2005	1	rbt	1	440	980	
RED MOUNTAIN #4	7/25/2005	1	wct	1	152	40	
RED MOUNTAIN #4	7/25/2005	1	wct	1	221	139	
RED MOUNTAIN #4	7/25/2005	1	wct	1	175	60	

Appendix B. Fish captured in gill nets on Regan, Trail and Trailer lakes in 2005 by regional fishery personnel. Species names are abbreviated as follows; rainbow cutthroat hybrids (hct), wild rainbow (wrb), rainbow trout, (rbt), westslope cutthroat trout (wct).

REGAN	7/20/2005	1	wct	1	270	204	
REGAN	7/20/2005	2	wct	1	340	410	
TRAIL CK #1	7/18/2005			1	0	0	no fish captured
TRAIL CK #2	7/19/2005	2	rbt	1	320	258	
TRAIL CK #2	7/19/2005	2	rbt	1	245	154	
TRAIL CK #2	7/19/2005	2	rbt	1	255	160	
TRAIL CK #2	7/19/2005	2	rbt	1	155	40	
TRAIL CK #2	7/19/2005	2	rbt	1	157	39	
TRAIL CK #2	7/19/2005	2	wct	1	285	212	
TRAIL CK #2	7/19/2005	2	wct	1	200	85	
TRAIL CK #2	7/19/2005	2	wct	1	178	47	
TRAIL CK #2	7/19/2005	2	wct	1	168	49	
TRAIL CK #2	7/19/2005	1	rbt	1	150	38	
TRAIL CK #2	7/19/2005	1	rbt	1	212	99	
TRAIL CK #2	7/19/2005	1	rbt	1	300	225	
TRAIL CK #2	7/19/2005	1	rbt	1	156	40	
TRAIL CK #2	7/19/2005	1	rbt	1	163	43	
TRAIL CK #2	7/19/2005	1	wct	1	285	206	
TRAIL CK #2	7/19/2005	1	wct	1	265	170	
TRAIL CK #3	7/19/2005	1	wct	1	126	19	
TRAIL CK #3	7/19/2005	1	wct	1	100	9	
TRAIL CK #3	7/19/2005	1	wct	1	440	900	
TRAIL CK #3	7/19/2005	1	wct	1	400	810	
TRAIL CK #3	7/19/2005	2	wct	1	442	930	
TRAIL CK #3	7/19/2005	2	wct	1	451	1000	
TRAILER #1	7/20/2005	2	wct	1	158	31	
TRAILER #1	7/20/2005	2	wct	1	185	49	
TRAILER #1	7/20/2005	2	wct	1	226	111	
TRAILER #1	7/20/2005	2	wct	1	225	96	
TRAILER #1	7/20/2005	2	wct	1	205	86	
TRAILER #1	7/20/2005	2	wct	1	195	54	
TRAILER #1	7/20/2005	2	wct	1	355		
TRAILER #1	7/20/2005	2	wct	1	180	50	
TRAILER #1	7/20/2005	2	wct	1	320	280	
TRAILER #1	7/20/2005	2	wct	1	327	299	
TRAILER #1	7/20/2005	2	wct	1	340	340	
TRAILER #1	7/20/2005	2	wct	1	325	286	
TRAILER #1	7/20/2005	2	wct	1	283	212	
TRAILER #1	7/20/2005	2	wct	1	235	132	
TRAILER #1	7/20/2005	2	wct	1	325	300	
TRAILER #1	7/20/2005	2	wct	1	280	232	

Appendix B. (cont.)

TRAILER #1	7/20/2005	2	wct	1	315	253	
TRAILER #1	7/20/2005	2	wct	1	295	222	
TRAILER #1	7/20/2005	2	wct	1	300	222	
TRAILER #1	7/20/2005	2	wct	1	235	126	
TRAILER #1	7/20/2005	2	wct	1	315	260	
TRAILER #1	7/20/2005	2	wct	1	330	330	
TRAILER #1	7/20/2005	2	wct	1	315	214	
TRAILER #1	7/20/2005	2	wct	1	183	65	
TRAILER #1	7/20/2005	2	wct	1	215	104	
TRAILER #1	7/20/2005	2	wct	1	245	129	
TRAILER #1	7/20/2005	2	wct	1	304	260	
TRAILER #1	7/20/2005	2	wct	1	282	210	
TRAILER #1	7/20/2005	2	wct	1	240	132	
TRAILER #1	7/20/2005	1	wct	1	265	184	
TRAILER #1	7/20/2005	1	wct		215	100	
TRAILER #1	7/20/2005	1	wct		150	36	
TRAILER #1	7/20/2005	1	wct		221	104	
TRAILER #1	7/20/2005	1	wct		215	100	
TRAILER #1	7/20/2005	1	wct		195	74	
TRAILER #1	7/20/2005	1	wct		175	50	
TRAILER #1	7/20/2005	1	wct		167	48	
TRAILER #1	7/20/2005	1	wct		155	32	
TRAILER #1	7/20/2005	1	wct		320	278	deformed maxillary hook scar
TRAILER #1	7/20/2005	1	wct		360	334	deformed maxillary hook scar
TRAILER #1	7/20/2005	1	wct		320	254	
TRAILER #1	7/20/2005	1	wct		314		
TRAILER #1	7/20/2005	1	wct		216	95	
TRAILER #1	7/20/2005	1	wct		212	90	
TRAILER #1	7/20/2005	1	wct		173	44	
TRAILER #1	7/20/2005	1	wct		206	52	
TRAILER #1	7/20/2005	1	wct		175	54	
TRAILER #1	7/20/2005	1	wct		175	46	
TRAILER #1	7/20/2005	1	wct		175	44	
TRAILER #1	7/20/2005	1	wct		170	44	
TRAILER #1	7/20/2005	1	wct		221	104	
TRAILER #1	7/20/2005	1	wct		202	48	
TRAILER #1	7/20/2005	1	wct		302	222	
TRAILER #1	7/20/2005	1	wct		232	112	
TRAILER #1	7/20/2005	1	wct		330	296	
TRAILER #1	7/20/2005	1	wct		320	260	
TRAILER #1	7/20/2005	1	wct		240	130	
TRAILER #1	7/20/2005	1	wct		317	305	
TRAILER #1	7/20/2005	1	wct		325	278	
TRAILER #1	7/20/2005	1	wct		314	304	
TRAILER #1	7/20/2005	1	wct		250	134	
TRAILER #1	7/20/2005	1	wct		292	222	

Appendix B. (cont.)

TRAILER #1	7/20/2005	1	wct		305	230	
TRAILER #1	7/20/2005	1	wct		341	402	
TRAILER #1	7/20/2005	1	wct		304	219	
TRAILER #1	7/20/2005	1	wct		348	378	
TRAILER #1	7/20/2005	1	wct	3			
TRAILER #3	7/20/2005	1			0		no fish captured

Appendix C. Descriptions of Chinook parr monitoring snorkel sites in Sulphur and Elk creeks.

Sulphur Creek - Section: 2-3A

Vehicle Access - Turn off of Idaho 21 onto USFS 082 (this road turns into USFS 579), and stay on USFS 579 past the landing strip in Bruce Meadows. Turn north on USFS 568. Stay on USFS 568 until it reaches the first Boundary Creek parking lot. Park the vehicle near the restroom facilities. The trailhead begins at the parking lot.

Site Description - Stay on the pack trail approximately .75 miles, the trail splits, one fork goes towards lower Sulphur Creek on the right, the other fork goes up a short hill and will lead to upper Sulphur Creek. Take the left fork and follow it for another .75 miles through several small meadows to a point where the trail crosses Sulphur Creek. The beginning of the site is downstream of the trail crossing on Sulphur Creek. The GPS coordinates at the start of the site are UTM 11T 0633110E, 4933267N. The site begins downstream of the trail crossing and ends 70 m upstream on the upper end of the pool. Alternate name for this site is "Footbridge."

Sulphur Creek - Section: 2-4A

Vehicle Access - Turn off of Idaho 21 onto USFS 082 (this road turns into USFS 579), and stay on USFS 579 past the landing strip in Bruce Meadows. Turn north on USFS 568. Stay on USFS 568 until it reaches the first Boundary Creek parking lot. Park the vehicle near the restroom facilities. The trailhead begins at the parking lot.

Site Description - Continue on the trail upstream past the 2-3A (a.k.a. "Footbridge") approximately 1 mile. At the large rockslide paralleling the trail, turn south off the trail and walk through the meadow towards Sulphur Creek. The GPS coordinates for the start of the site are UTM 11T 0631871E, 4933269N. The total length of the section is 107.5 m. Alternate name for this site is "Rockslide."

Sulphur Creek - Section: 2-4B

Vehicle Access - Turn off of Idaho 21 onto USFS 082 (this road turns into USFS 579), and stay on USFS 579 past the landing strip in Bruce Meadows. Turn north on USFS 568. Stay on USFS 568 until it reaches the first Boundary Creek parking lot. Park the vehicle near the restroom facilities. The trailhead begins at the parking lot.

Site Description - From the large rockslide mentioned near section 2-4A, continue on the trail 1.5 miles to the Sulphur Creek Wilderness Ranch. Directly past the ranch, walk south past the horse pastures towards Sulphur Creek. The GPS coordinates for the start of the site are UTM 11T 0629513E, 4932214N. The total length of the section is 136 m. Alternate name for this site is "Ranch."

Elk Creek- Section: 1-A

Vehicle Access - From Lowman towards Stanley on Idaho 21, drive over Banner Summit and turn left onto USFS 082 (this road turns into USFS 579). Drive upstream along Elk Creek towards the intersection of USFS 563 and USFS 579, towards the Twin Bridges. The parking

spot is located 0.6 miles downstream from the bridges. Park the vehicle in a pullout on the right side of the road.

Site Description - Walk across the road and down the embankment to the creek alongside the road. The GPS coordinates at the start of the site are UTM 11T 0622907E, 4919438N. The old tree that used to mark the lower boundary is now lying in the creek just below the riffle at the start of the section. The total length of the section is 119.4 m.

Elk Creek - Section: 1-B

Vehicle Access - From Lowman towards Stanley on Idaho 21, drive over Banner Summit and turn left onto USFS 082 (this road turns into USFS 579). Drive upstream along Elk Creek towards the intersection of USFS 563, and USFS 579, towards the Twin bridges. The parking spot is located 0.4 miles downstream from the bridges. Park the vehicle in a pullout on the right side of the road.

Site Description - Walk across the road and down the embankment through a small grove of trees into the meadow. Hike approximately 0.2 miles across the meadow in a slight southwest direction, to the creek. The GPS coordinates at the start of the site are UTM 11T 0622672E, 4919057N. The total length of the section is 78.9 m.

Elk Creek - Section: 2-A

Vehicle Access - From the intersection of USFS 563 and USFS 579, drive east on USFS 579 over the Twin bridges over Elk Creek, and pull into the Elk Creek Trail road. Elk Creek Trail road is located off the north side of USFS 579. Park the vehicle by road-closed gate and walk to Elk Creek.

Site Description - From the road-closed gate, hike through a meadow, past a wilderness registration box, up over a hill, down into the Elk Creek drainage. The total hike is about 2.5 miles one-way. The GPS coordinates of the site are UTM 11T 0623264E, 4923611N. The total length of the section is 149 m. The upper end of this section is at the mouth of Porter Creek.

Elk Creek - Section: 2-B

Vehicle Access - Take the Elk Creek access road off of USFS 579, 0.1 miles west of the Twin bridges, turn right onto an access road at the top of the hill. Drive to the end of this access road and park near the wilderness boundary sign.

Site Description - Hike from where you park the vehicle upstream approximately 0.5 miles. The GPS coordinates at the start of the site are UTM 11T 0621611E, 4920476N. The total length of the section is 216 m.

Elk Creek - Section: 2-C

Vehicle Access - From the intersection of USFS 563 and USFS 579, drive east on USFS 579 over the Twin Bridges over Elk Creek, and pull into the Elk Creek Trail road. Elk Creek Trail road is on the north side of USFS 579 2.7 miles upstream of Twin Bridges. Park the vehicle by the road-closed gate and walk to Elk Creek.

Site Description - Hike across the large meadow, up and over the hill into upper Elk Creek drainage, past site 2-A, on the trail past Porter Creek to a section where there is a small finger of trees that extends toward the creek. The section is located just off of this finger of trees. The GPS coordinates at the start of the site are UTM 11T 06223641E, 4924076N. The total length of the section is 206 m.

Appendix D. Chinook Salmon redd count transects on Bear Valley Creek, Sulphur Creek and Elk Creek. Mfrom = distance (m) from the mouth of the stream to the lower bound of the transect, MTo = distance (m) from mouth of stream to upper bound of transect. Distances were measured on a 1:100k topographic map.

Transect	Count Date	M From	Lower boundary	M To	Upper boundary
			Bear Valley Creek		
WS-10a	8/24/2005	11850	Poker Meadows Bridge (FS 568)	18087	Elk Creek
WS-10b	8/24/2005	7113	Fir Creek Pack Bridge	11850	Poker Meadows Bridge (FS 568)
WS-9a	8/24/2005	37490	Bottom of Mine Exclosure	43839	Top of mine exclosure (Porter Brothers Dredges)
WS-9b	8/24/2005	36443	Cub Creek	37490	Bottom of Mine Exclosure
WS-9c	8/24/2005	27453	Sack Creek	36443	Cub Creek
WS-9d	8/24/2005	18087	Elk Creek	27453	Sack Creek
			Sulphur Creek		
OS-4	8/25/2005	10600	Sulphur Creek Ranch (where trail crosses creek)	13498	1.5 miles US of Ranch (Trail and creek convergence)
WS-12	8/25/2005	4340	Morehead Creek	10600	Sulphur Creek Ranch (where trail crosses creek),(aka Parker Ranch)
			Elk Creek		
WS-11a	8/25/2005	13104	Twin Bridges	24465	West Fork Elk Creek
WS-11b	8/25/2005	5227	Elk Creek G.S.	13104	Twin Bridges
WS-11c	8/24/2005	0	Mouth	5227	Elk Creek G.S.

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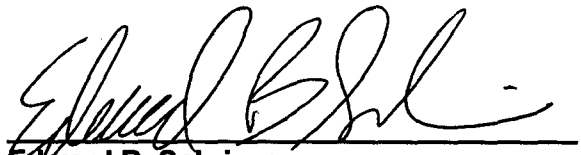

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