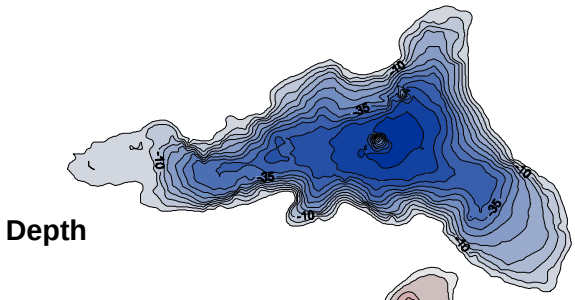
FISHERY RESEARCH

JOB PERFORMANCE REPORT

Grant F-73-R-23

Report Period July 1, 2000 to June 30, 2001



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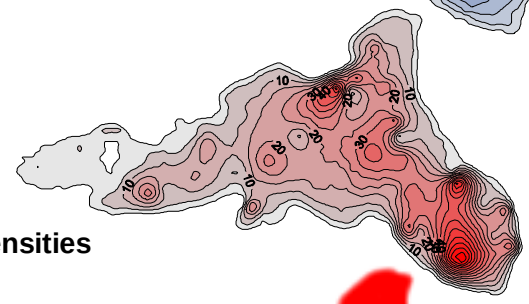

Densities

Fish Size

Project 5—Lake and Reservoir Research

David Teuscher
Senior Fishery Research Biologist

IDFG Report Number 01-40
June 2001

Job Performance Report

July 1, 2000 to June 30, 2001

Grant F-73-R-23

Project 5—Lake and Reservoir Research

By

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JOB PERFORMANCE REPORT

State of: Idaho Grant No.: F-73-R-23, Fishery Research

Project No.: 5 Title: Lake and Reservoir Research

Contract Period: July 1, 2000 to June 30, 2001

ABSTRACT

In 1999, the resident fish research subsection initiated a new statewide lake and reservoir research project. The project goal was to improve flatwater fisheries management by completing quantitative estimates of fish abundance and habitat selection using hydroacoustic technology. The necessary equipment to begin hydroacoustic surveys was purchased by the Bureau of Reclamation (BOR). Initial equipment testing and data collection began May 2000. The specific tasks for the 2000 field season were to test the equipment in a variety of waters, expose regional management staff to hydroacoustic capability by completing at least two surveys in each region, survey three of the top 10 BOR priority waters, and determine the best time of day to survey trout populations. The last task was completed to provide guidance for future survey designs and to help develop standard sampling protocols.

In 2000, 21 surveys were completed on 14 lakes and reservoirs in Idaho. Trout population abundance was estimated in five waters. Most of the trout surveys were completed in small systems (<200 ha) that required less than eight hours of survey time. In Williams and Fish lakes, day surveys produced significantly greater population estimates than replicate surveys completed at night. Kokanee population estimates were completed on six waters. Abundance of large predators (lake trout and chinook) was estimated in Coeur d'Alene and Payette lakes using minimum target strength criteria. Bathymetric maps were built for Williams and Fish lakes.

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INTRODUCTION

Sonar applications in fisheries science are diverse. Estimating the abundance of juvenile salmon in lakes is one of the most common uses (Beauchamp et al. 1997; Burczynski and Johnson 1986; Thorne 1979; Thorne and Dawson 1974; Thorne 1971). Other applications include describing the initial survival and spatial distribution of introduced species (Teuscher 1997), locating lake trout spawning beds (Edsall et al. 1992), estimating forage fish abundance (Burczynski et al. 1987), monitoring adult fish movement in rivers (Banneheka et al. 1995), and estimating entrainment loss at hydroelectric facilities (Maiolie and Elam 1996).

In addition to estimating fish abundance, scientific sonar can be used to monitor fish behavior. Examples include describing fish distribution and schooling behavior under varying moon phases (Luecke and Wurtsbaugh 1993), observing avoidance behavior of kokanee to strobe lights (Maiolie and Elam, in progress), and monitoring fish response to hypolimnetic oxygenation (Aku et al. 1997). Hydroacoustic technology is also used to map benthic habitat (Edsall et al. 1992), estimate lake volume, and generate bathymetric or depth contour maps.

The application with the greatest potential to benefit fisheries management in Idaho is the recent development of horizontal or sidelooking sonar. Sidelooking methods were developed to monitor fish in shallow waters. To date, sidelooking sonar has been used to assess brown trout (Kubecka et al. 1994; Kubecka et al. 1992), cutthroat trout (McClain and Thorne 1991), and rainbow trout populations (Yule 2000; Johnston 1981). Johnston (1981) used sidelooking sonar to estimate rainbow trout abundance in five shallow lakes in Washington. The effort was unique in that the lakes were rotenoned and stocked with rainbow trout prior to completing the survey. In three of the five lakes, survey estimates were within 7% of the stocked number. In Wyoming, sidelooking sonar was compared to purse seine estimate of fish abundance. Yule (2000) reported a significant correlation ($r^2 = 0.89$, df = 11, $P < 0.001$, slope = 0.987) between seine and hydroacoustics abundance of rainbow trout in 11 Wyoming waters. Additionally, hydroacoustic estimates of trout size were within 50 mm of the mean sizes of fish caught in purse seines (Yule 2000). Development of techniques similar to those may be used to substantially increase our understanding of population dynamics of rainbow trout, cutthroat trout, and other game species in Idaho.

MANAGEMENT GOAL

1. Improve flatwater fisheries management by completing quantitative estimates of fish abundance and habitat selection using hydroacoustic technology.

OBJECTIVES

1. Provide a method for rapid assessment of trout populations
2. Estimate over-winter survival of hatchery rainbow trout
3. Improve population monitoring for kokanee, perch, bass, and other sport fishes
4. Estimate entrainment loss of fish during reservoir drawdown or spring spill
5. Introduce hydroacoustic technology to Idaho fish managers
6. Provide depth contour and lake volume estimates

METHODS

In March 2000, a Model 241-2 split-beam digital echo sounder was purchased from Hydroacoustic Technology, Inc. (HTI). The 200 kHz sounder was equipped with fast multiplexing capability. Fast multiplexing allows for simultaneous monitoring of fish in shallow and deep water. The multiplexing requires two transducers (sidelooking and downlooking). The sidelooking transducer (6°) assessed fish densities in the top 8 m of the water column. The downlooking transducer (15°) surveyed the remainder of the water column. Both transducers were suspended from the side of a boat using a retractable pole mount. The sidelooking transducer was set at an angle of 6° below the surface and collected data at a maximum range of 50 m from the boat.

Sounder settings and analysis methods are described at length in Yule (2000). A transmit pulse width of 0.2 ms was used for both transducers. Sampling rate ranged from 3.0 to 6.7 pings per second. For multiplexing, the sampling rate was divided equally between the two transducers (3.35 pings per second for each transducer). Boat speed during data collection ranged from 1 to 1.5 m/s.

Fish population estimates were made using a target tracking method. The method combines individual echoes that meet specific criteria and records them as a single tracked fish. Fish tracking criteria included: 1) a minimum of three echoes spaced less than 0.2 m apart in three-dimensional space, 2) a maximum difference in returning echo strength of 10 decibels (dB), 3) maximum swimming velocity of 3 m/sec, and 4) the mean target strength for a tracked fish must fall between a size range of –20 and –60 dB. In the field, HTI's signal processing software (DEP) tracks and records fish numbers. However, initial data files were reviewed further using EchoScape software. The EchoScape program allows for visual inspection of each tracked fish. Occasionally, the default tracking parameters record the lake bottom or complex substrate as tracked fish. Those errors are reduced by visual inspection using the EchoScape software.

For the downlooking transducer, tracked fish were converted to fish densities using a range weighting technique. Yule (2000) describes the method in detail. The method weights each tracked fish back to a 1 m swath at the surface. The method accounts for expanding sample volume with increasing range using the following equation:

$$F_w = 1/(2 \text{ X } R \text{ X } \tan(7.5°))$$

where F_w equals weighted fish, R equals range or the distance the fish is away from the transducer, and 7.5° equals half the nominal transducer beam width. A fish tracked at a range of 3.8 m with the 15° transducer equals one weighted fish. At a range of 20 m, the weighted fish value drops to 0.19. To obtain estimates of fish/m^2, weighted fish values were summed for each transect and divided by transect length. Double counting was avoided by removing fish from the downlooking transducer file that were in the top 8 m of the water column.

For the sidelooking transducer (top 8 m), fish densities were estimated by dividing the number of fish detected by the volume of water sampled. The volume of water sampled was estimated by multiplying the transect distance (m) by the average sample range (m) by the average height of the cone (m). Because of the narrow beam width of the sidelooking transducer (6°), the first 10 m of range (near field) was not included in the sample volume

estimate. See Yule (2000) for a detailed explanation of near field corrections for the sidelooking and downlooking transducers.

Total fish abundance was estimated by summing fish density estimates collected by the sidelooking and downlooking transducers and multiplying the mean fish density (fish/ha) by surface area. For most waters surveyed in 2000, the Bureau of Reclamation (BOR) provided surface area and lake volume data. If those data were not available from BOR, All Topo Maps software was used to estimate surface area and *Surfer* software version #7 was used to make bathymetric maps and estimate total lake volume. Confidence intervals (90%) for each population estimate were calculated using the methods described in Brown and Austen (1996). Regardless of transect length, each transect was considered a sample unit.

Echoes from fish are recorded in decibels (-dB) and referred to as target strength. The DEP software records mean target strengths for each tracked fish. Target strength data (dB) were converted to fish lengths (mm) using Love (1977) for dorsal-aspect and Kubecka and Dunken (1998) for side-aspect.

Gillnets were used to partition hydroacoustic estimates by species. In most waters, floating and vertical gillnets were set overnight in at least two different areas. Variations in netting methods are described in a short narrative provided for each survey. The narratives also describe specific survey objectives. In waters where one species dominated the open-water habitat, no netting was completed (i.e., trout estimates in Williams and Fish lakes). Trawl surveys were completed in conjunction with hydroacoustic surveys on Anderson Ranch Reservoir and Coeur d'Alene Lake. The trawl surveys were completed as independent estimate of fish abundance and size class strengths. Abundance of large fish predators was estimated using minimum length criteria in Coeur d'Alene and Payette lakes. The specific details of the length criteria are described in the narrative for each survey section.

There are two independent sources of variation or uncertainty that are important to the analyses reported here. The two sources are transect variation from hydroacoustic data and gillnet results completed to partition the hydroacoustic targets by species. The confidence intervals generated using hydroacoustics data incorporate spatial variation present in the fish communities. Partitioning hydroacoustic data using gillnet catch proportions introduces a second source of error. The 90% CI applied to species proportions are inversely proportional to sample size. The two sources of error (uncertainty) cannot be combined using additive variation. Therefore, the CI for hydroacoustic and netting data are reported separately. All CI are reported at the 90% level.

SURVEY RESULTS

Anderson Ranch Reservoir

The objective of the Anderson Ranch survey was to estimate kokanee abundance. The survey was completed on July 24, 2000. A total of 28 transect were completed and are shown in Appendix A. Trawling was completed in conjunction with the sonar estimate. The trawling survey was completed using the standard procedures described in Rieman and Myers (1991). Kokanee population estimates for the two techniques were compared.

The sonar estimate of total kokanee abundance was 2,887,000. The survey showed two very strong cohorts of fish (YOY and age-1). Their abundance was 1,542,000 $\pm$ 29% and

1,298,000 ± 23%, respectively. Age-2 and older kokanee (fish >230 mm) contributed 46,000 ± 22% fish to the total population estimate. Table 1 shows fish densities for each transect. Kokanee densities were greatest near the Fall Creek Arm (Figure 1). The peak near the Fall Creek Arm resulted from a concentration of YOY fish (3,300 YOY kokanee/ha). That density was an outlier compared to any other location in the reservoir (Table 1). Densities of fish greater than 250 mm peaked near the dam (Figure 1).

Depth selection of kokanee ranged from 15 to 55 m with a mean of 28.3 m (Figure 2). Unfortunately, due to equipment failure, the maximum depth sampled with the trawl boat was 30 m. Failure to sample the entire kokanee layer resulted in an underestimate using the trawl gear. The trawl estimate of kokanee abundance in the top 30 m of the water column was 700,000. We did not take the time to reanalyze the sonar data excluding all targets greater than 30 m. Therefore, no direct comparisons were made between trawl and hydroacoustics.

Figure 3 shows to dominate cohorts of fish in Anderson Ranch Reservoir. The cohorts are shown in both trawl and sonar data and correspond to YOY and age-1 kokanee.

Table 1. Kokanee densities by transect and age class in Anderson Ranch Reservoir. Transects 1-3 were too shallow (<3 m) to safely sample using the hydroacoustic boat.

		Kokanee Densities (number/ha)			
Transect	**Transect Length (m)**	**YOY**	**Age-1**	**Age-2+**	**Total**
4	1,074	417	88	0	505
5	269	266	124	0	390
6	1,035	7	40	4	52
7	1,626	38	55	1	95
8	1,485	466	631	36	1,133
9	783	352	685	29	1,066
10	766	398	640	23	1,062
11	603	345	711	22	1,078
12	1,061	289	641	40	970
13	807	241	615	41	897
14	1,229	121	344	33	498
15	1,303	343	470	25	838
16	1,487	1,098	605	43	1,746
17	768	1,489	911	18	2,418
18	755	1,924	1,166	52	3,142
19	223	1,629	595	20	2,244
20	1,488	3,327	1,253	43	4,623
21	1,660	1,390	772	35	2,197
22	1,055	988	1,210	26	2,225
23	512	1,401	996	34	2,431
24	852	947	1,095	20	2,062
25	592	955	741	25	1,721
26	1,056	1,297	656	25	1,978
27	779	1,280	1,861	7	3,148
28	1,086	1,616	2,144	73	3,833
	Mean	**905**	**762**	**27**	**1,694**
	Abundance	**1,542,000**	**1,298,000**	**46,000**	**2,887,000**
	90% CI	**29%**	**23%**	**22%**	**24%**

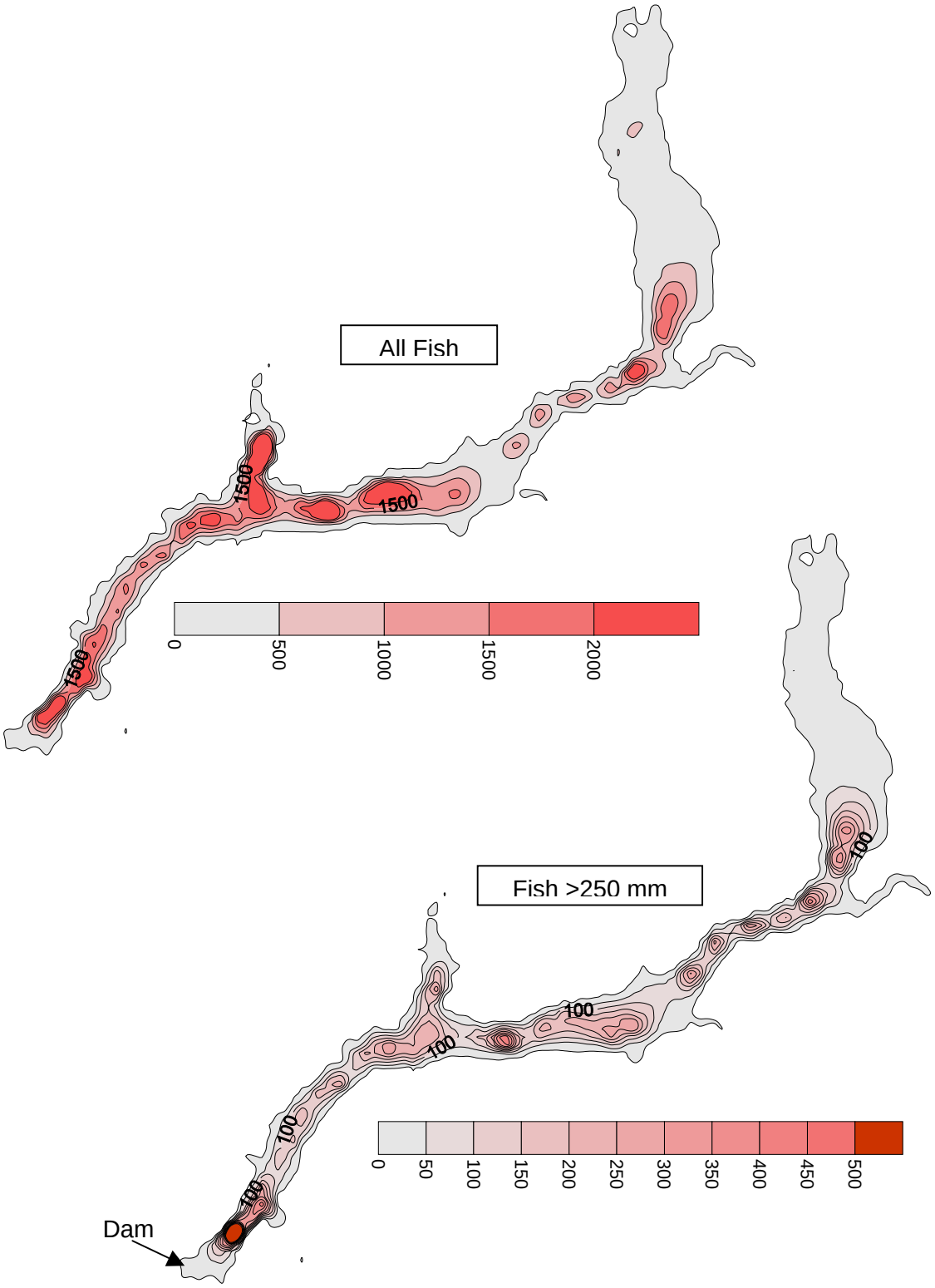

Figure 1. Spatial distributions of kokanee in Anderson Ranch Reservoir. Shading scales for the top and bottom figure are in fish/ha. The top graph shows densities for all size classes of fish and the bottom graph shows densities of fish greater than 250 mm in length.

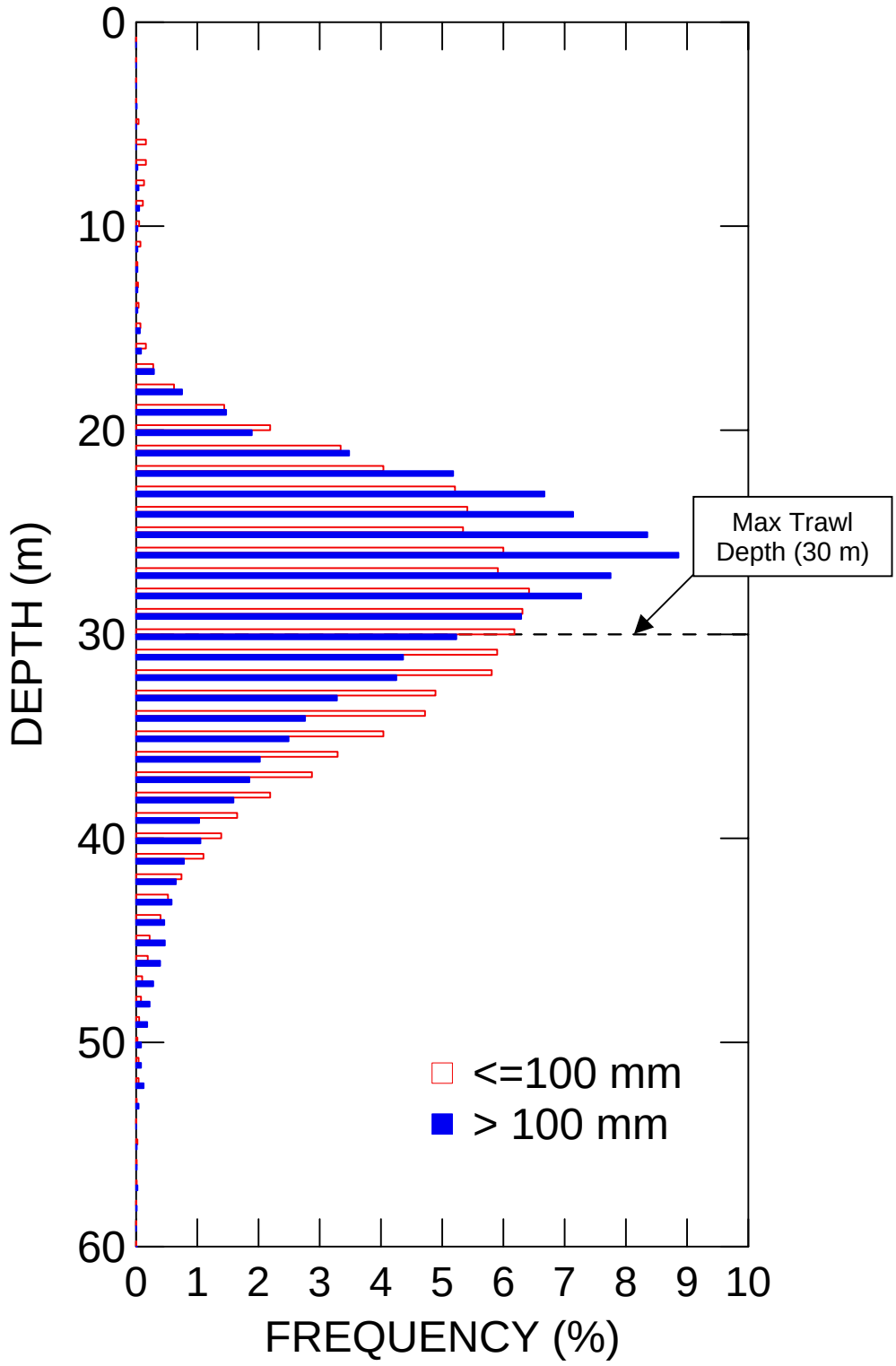

Figure 2. Depth distribution of kokanee in Anderson Ranch Reservoir. Two size groups of fish are plotted.

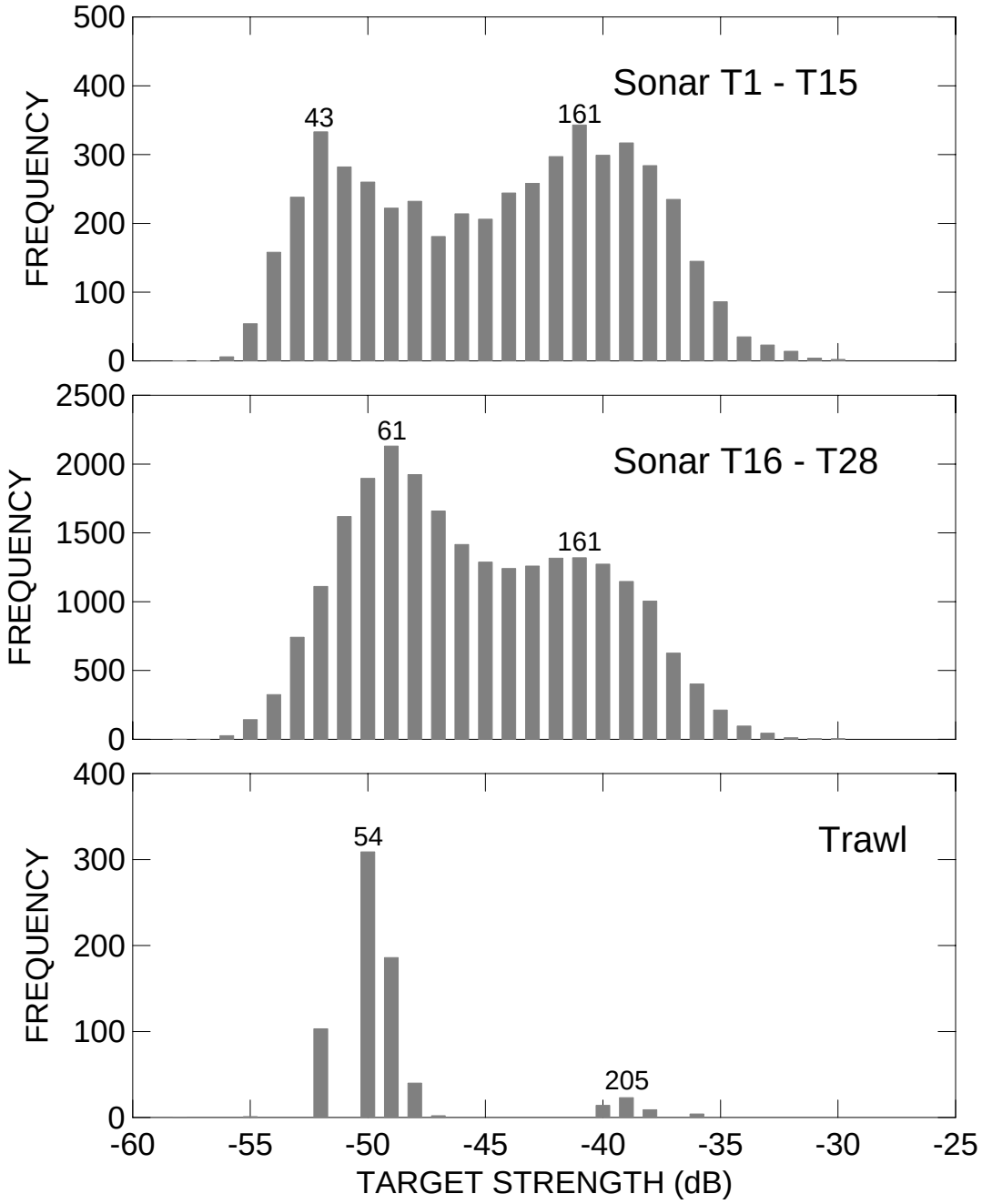

Figure 3. Length frequency distributions for fish sampled in Anderson Ranch Reservoir. Sonar and trawl data are included. The numbers above the bars represent fish length (mm). Sonar data was split by the upper (T1 – T15) and lower half of the reservoir (T16 – T28). Fish lengths collected with the trawl boat were converted using Love (1977).

American Falls Reservoir

The objective of the American Falls Reservoir (AFR) survey was to estimate the change in fish abundance in the reservoir between July and November 2000. During that time, the reservoir dropped from approximately 1,062,289 acre feet of storage to only 353,717 acre feet (33%). Reservoir storage dropped below 353,717 acre feet, but began refilling prior to our November sample. During the same period, surface area declined from 18,000 ha to about 9,500 ha. Survey effort was four days in July and one day in November. Day and night transects were completed during the July survey. The diel work provided an evaluation for determining the best time to sample rainbow trout. Because changes in the rainbow trout fishery were the focus of the July-November comparison and trout monitoring in other waters showed greater densities during the day, we chose to replicate only the daytime portion of the June survey when we returned in November. Survey transects for both sample periods are shown in Appendix B. Gillnet catches during daytime sampling failed to produce enough fish to partition hydroacoustic targets. Therefore, population estimates were not partitioned by species.

Daytime estimates of pelagic fish abundance declined from 230,000 (± 71%) in July to 46,000 (± 53%) in November. Most of the difference resulted from a reduction in fish below 8 m (Figure 4). Mean densities of fish below 8 m declined from 49 fish/ha in July to about 3 fish/ha in November. The decline was largely due to a lack of small fish (Figure 5). Figure 5 shows that very few targets in the November survey were less than 250 mm in length. Conversely, the densities of fish tracked near the surface were very similar between the July (11.2 fish/ha) and November (12.4 fish/ha) surveys. Table 2 shows fish densities by depth and transect. Due to the lack of catch in vertical gill nets, we could not determine the relative contribution that rainbow trout made to either population estimate.

The day versus night comparison showed significant differences in densities and vertical distribution of fish. Densities near the surface (<8 m deep) were greater during the day. The mean density near the surface was 11 fish/ha during the day and 4.1 fish/ha at night. That trend was similar to results found in waters with predominantly trout species (see Williams and Fish lakes results). Fish density below 8 m, however, was greater at night. The mean density below 8 m was 205 fish/ha at night and only 49 fish/ha during the day (Table 2).

The limitations of the July survey were significant. Some of the limitations included a small sample size (number of transects) and inadequate netting data to determine species composition. The limitations can be remedied by prioritizing daytime transects, using a purse seine to partition pelagic fish species, and increasing the number of transects by standardizing transect length.

Table 2. Fish densities (number/ha) in American Falls Reservoir for the July and November 2000 surveys. Densities for sidelooking (<8 m) and downlooking (>8 m) transducers are shown.

July				November			
Transect	**<8 m**	**>8 m**	**Total**	**Transect**	**<8 m**	**>8 m**	**Total**
1-day	7.3	36.5	43.8	1-day	53.8	0.0	50.4
3-day	2.9	51.2	54.1	2-day	13.8	0.0	13.8
5-day	31.6	80.1	111.6	3-day	17.6	22.4	40.0
1b-day	2.9	27.1	30.0	4-day	19.8	8.2	27.9
Mean	**11.2**	**48.7**	**59.9**	5-day	3.3	0.0	3.3
				6-day	5.0	0.0	5.0
1-night	1	86.1	87.1	7-day	7.2	0.0	7.2
3-night	2.2	40.8	43	8-day	4.5	0.0	4.5
5-night	2.6	57.5	60.1	9-day	0.0	0.0	0.0
7-night	6.6	656.7	663.3	10-day	4.8	0.0	4.8
9-night	8.3	181.9	190.2	11-day	5.5	0.0	5.5
Mean	**4.1**	**204.6**	**208.7**	12-day	6.0	2.7	8.7
				13-day	19.3	4.6	24.0
				Mean	**12.4**	**2.9**	**15.0**

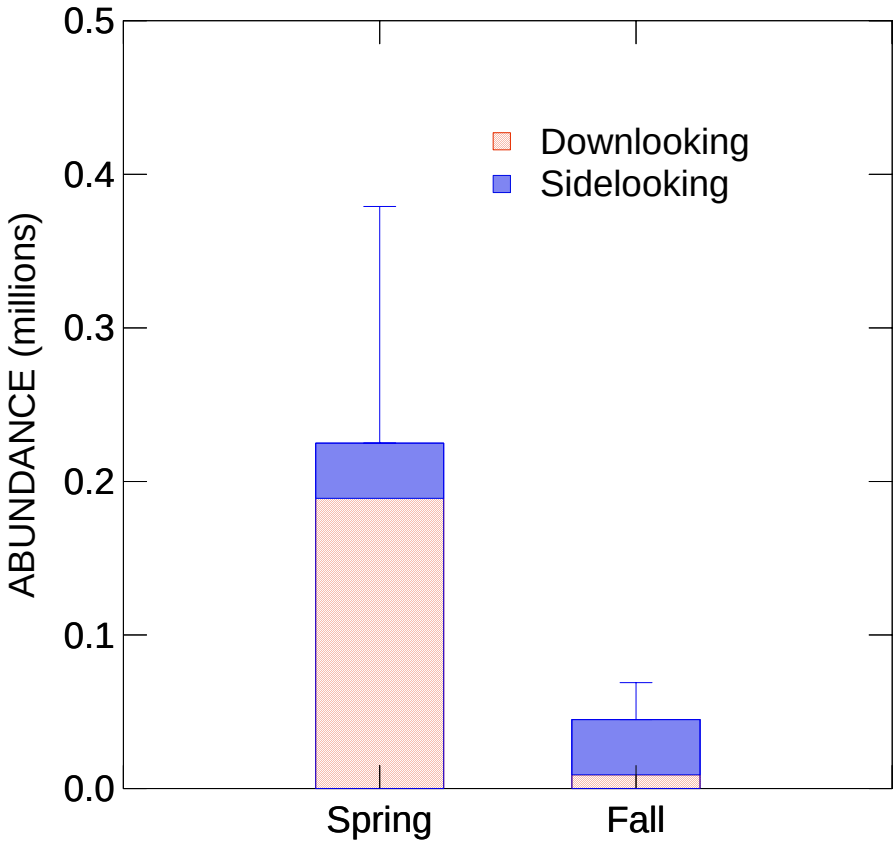

Figure 4. Daytime estimates of pelagic fish abundance in American Falls Reservoir. The legend refers to the proportion of fish tracked by the sidelooking (<8 m) and downlooking (>8 m) transducers. The abundance results are from an incomplete survey of American Falls reservoir. See Appendix D for area of the reservoir sampled.

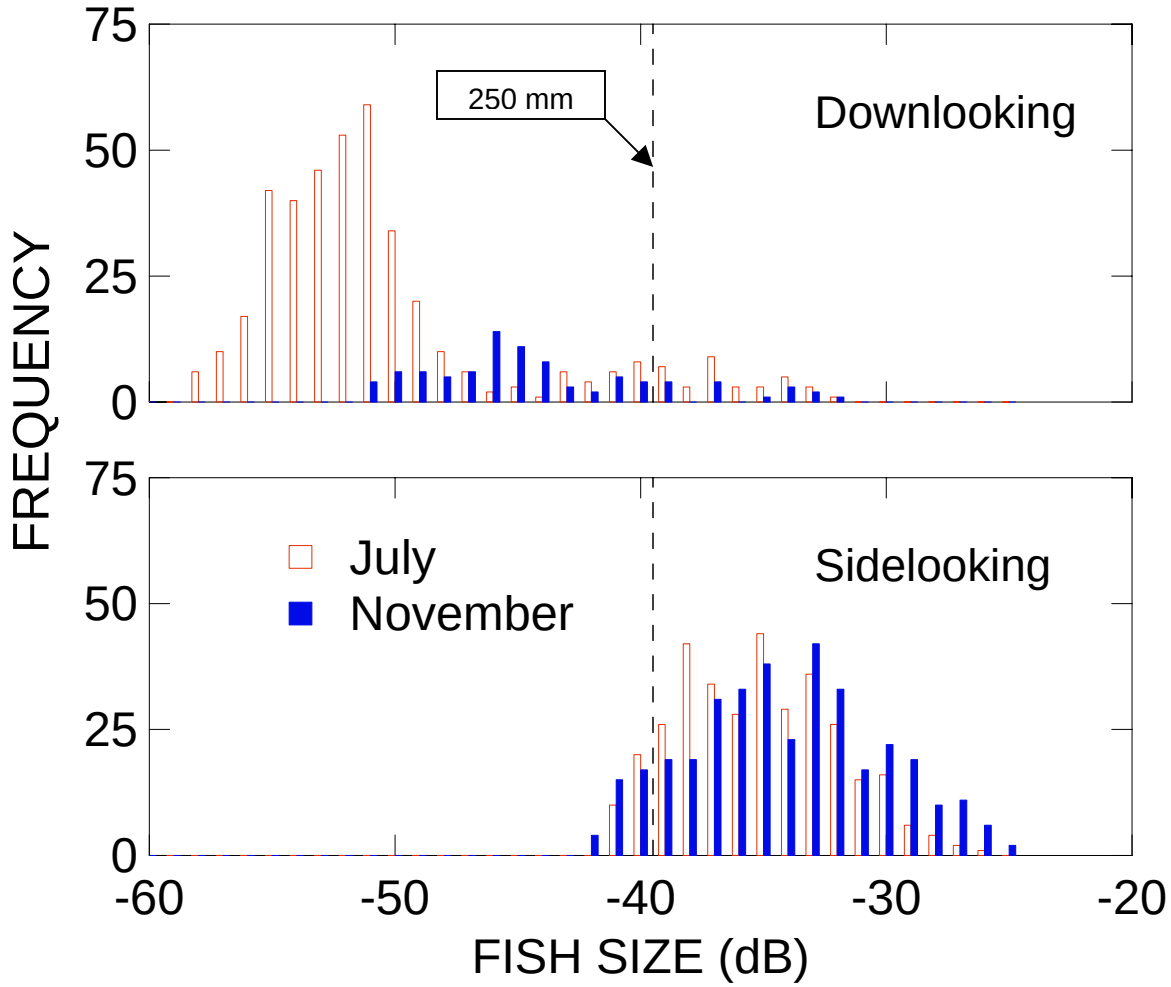

Figure 5. Length frequency distributions for fish tracked by the sidelooking (<8 m) and downlooking (>8 m) transducers in American Falls Reservoir, Idaho.

Arrowrock Reservoir

The objective of this sonar survey was to collect baseline fish abundance data in Arrowrock Reservoir. The data will help assess fisheries losses resulting from the proposed modifications planned for Arrowrock Dam. The proposed modifications may require that the reservoir be lowered to 1% of full pool (Dale Allen, southwest regional fish manager, personal communication). The baseline sonar estimates of pelagic fish abundance will be compared to estimates completed after, and possibly during, the modification process.

On June 27, 2000, a nighttime sonar survey was completed in conjunction with fish collections using gillnets. The netting results were used to partition sonar estimates by species. A series of vertical (n = 15), sinking (n = 8) and floating (n = 6) gillnets was set overnight. Because of the habitat sampled by the sonar gear, sinking gillnet data was not included for partitioning sonar data. Sonar transects and gillnetting locations are shown in Appendix C.

The sonar estimate of pelagic fish abundance was 62,000. The 90% CI was $\pm$ 49%, which is a range of 32,000 to 93,000 fish. The netting results are shown in Table 3. Fish density estimates are shown in Table 4. Based on the netting results, northern pikeminnow made up 65% (90% CI = 48% – 86%) of the pelagic fish community. The large range in the 90% CI was due to the small sample of fish caught in floating and vertical gillnets (only 26 total fish). Therefore, these estimates should be considered very crude approximations of limnetic species abundance. Another limitation is the exclusion of bottom dwelling species (i.e., sucker sp.). The hydroacoustics system can be used to estimate suspended fish abundance pre- and post-repair of Arrowrock Dam, but bottom dwelling species will not be accounted for using the methods described here.

Table 3. Netting results from Arrowrock Reservoir. Floating (n = 6) and vertical nets (n = 15) were used to partition the sonar estimate by species. Sinking (n = 8) net results were not used because the sonar gear does not sample fish within 1 m of the substrates, which is where the sinking nets sample.

	Net Type			
Species	**Floating**	**Sinking**	**Vertical**	**Grand Total**
Bridgelip Sucker		20		20
Bull Trout		1		1
Hatchery Rainbow Trout			3	3
Largescale Sucker	1	176	1	178
Northern Pikeminnow	5	45	12	62
Smallmouth Bass	3	29		32
Wild Rainbow Trout	1	1		2
Total	**10**	**272**	**16**	**298**

Table 4. Fish density estimates for the sidelooking (top 8 m) and downlooking (below 8 m) transducers in Arrowrock Reservoir.

		Fish Densities (number/ha)		
Transect	**Transect Length (m)**	**Sidelooking**	**Downlooking**	**Total**
1	925	8.2	83.0	91.1
2	478	1.7	25.5	27.3
3	897	0.0	112.8	112.8
4	1,276	2.2	133.1	135.3
5	1,354	2.7	53.1	55.8
6	851	0.8	57.4	58.2
7	790	0.0	31.4	31.4
8	661	0.0	5.9	5.9
9	812	0.8	20.3	21.0
10	1,012	1.9	10.4	12.2
11	657	0.0	0.0	0.0
12	358	0.0	2.8	2.8
13	520	0.0	2.0	2.0
14	1,042	4.1	2.4	6.5
15	906	0.0	20.6	20.6
16	825	0.0	23.1	23.1
17	928	0.7	31.0	31.7
18	409	1.6	20.4	21.9
19	462	0.0	30.7	30.7
s1	807	0.8	7.0	7.8
s2	1,404	0.0	72.3	72.3
s3	228	0.0	285.6	285.6
	Means	**1.2**	**46.9**	**48.0**
	S.E.	**0.4**	**13.8**	**13.8**

Cascade Reservoir

In 2000, two sonar surveys were completed on Cascade Reservoir. The objective of the Cascade work was to estimate the abundance of adult northern pikeminnow. The first survey was completed on June 6 and 7, 2000. During the June survey, we assumed that most of the adult northern pikeminnow were spawning in the tributaries and would not be counted in the reservoir sample. A second survey was completed in August after the adult pikeminnow should have returned to the reservoir. We used the difference in population estimates between the sample periods as an indirect method of estimating the spawning population of northern pikeminnow. During the June survey, nine floating and 11 sinking nets were set. In August, nine floating, 16 verticals, and three sinking nets were set. Fish caught in the vertical and floating nets was used to partition the sonar estimate of total fish by species. Nets set on the bottom of the reservoir (sinking) were not used. The sinking nets sample water not included in the hydroacoustic estimate. Survey transect and netting locations are shown in Appendix D.

Table 5 shows gillnet results and expanded fish numbers using the sonar population estimate. In June, the total pelagic fish estimate was 125,000 $\pm$ 62%. Based on netting data, the relative proportion of that estimate attributed to northern pikeminnow was 19%. Largescale suckers and rainbow trout made up a large percentage of the June gillnet catch (65%). In August, total pelagic fish abundance was estimates at 431,000 $\pm$ 78%. For floating and vertical nets, pikeminnow proportions increased from 19% in June to 56% in August. Based on the gillnet proportions, the August estimate of total pikeminnow abundance was 242,000 fish. The difference between the June and August pikeminnow estimate was 218,000.

It is important to note that the above hydroacoustics estimates do not include fish near the bottom (<1 m deep) or in the littoral zone. That limitation results in underestimating the total abundance of some species (i.e., northern pikeminnow and especially sucker sp.). In August, northern pikeminnow were caught in sinking, floating, and vertical nets. Presence in all of the nets indicates that northern pikeminnow occupied the entire water column and contributed significantly to the hydroacoustics data. Therefore, monitoring trends in pikeminnow abundance using hydroacoustics seems reasonable, but determining their absolute abundance remains problematic.

Fish densities were extremely variable (Table 6). The 90% confidence intervals of the hydroacoustic estimates were 62% for June and 78% in August. Because there was no clear spatial trend in fish abundance (Table 6), stratifying the survey may not have significantly improved the precision of the estimates. In the future, limiting transects to 20 min intervals will increase the total number of transects and improve survey precision.

Table 5. Gillnet data from Cascade Reservoir during the June and August sonar surveys. Data represent the number of fish caught, proportions, and 90%CI for the proportion data. Only vertical and floating gillnet data was used. Sinking gillnets were not used because they sample water not surveyed by hydroacoustics. The species category "other" includes yellow perch, whitefish, and coho salmon.

	June			August		
Species	**Number**	**%**	**90% CI**	**Number**	**%**	**90% CI**
Northern Pikeminnow	16	19%	12-27%	48	56%	48-67%
Rainbow Trout	19	23%	13-27%	23	28%	17-31%
Largescale Suckers	35	41%	31-51%	12	14%	7-19%
Other	14	17%	9-21%	2	2%	0-8%
Totals	85	100%		84	100%	

Table 6. Pelagic fish densities in Cascade Reservoir during the June and August sonar surveys.

June			August		
Transect	**Sidelooking**	**Downlooking**	**Transect**	**Sidelooking**	**Downlooking**
1	4.5	0.0	A	127.3	0.0
2	0.0	0.0	B	19.9	0.0
3	11.2	0.0	C	4.0	15.2
4	6.7	3.6	D	3.0	4.6
5	2.2	0.0	E	6.4	12.3
6	54.9	2.8	F	1.1	3.4
7	34.6	0.0	G	38.1	5.7
8	3.4	0.0	H	147.5	4.5
9	4.2	0.0	I	5.9	0
10	27.8	0.0			
11	22.0	0.0			
12	0.0	0.0			
13	3.1	0.0			
14	5.0	0.0			
15	0.0	0.0			
16	0.0	0.0			
17	0.0	0.0			
Mean	**10.6**	**0.4**	**Mean**	**39.3**	**5.1**
S.E.	**3.8**	**0.3**	**S.E.**	**19.0**	**1.8**

Coeur d'Alene Lake

Coeur d'Alene Lake (CDA) was sampled July 31 through August 2, 2000. The objective of the survey was to estimate chinook abundance and to compare kokanee densities between the north Idaho trawl boat and HTI sonar gear. The sonar and trawl comparison was limited to the northern section of the lake. See Appendix E for trawl and sonar transect locations. A total of six transects were completed for the comparison. Appendix E also shows transects used to estimate chinook abundance. A total of 13 transects (7 day and 6 night) were conducted to estimate chinook abundance. The day and night transects were necessary to ensure that diel movements of chinook did not bias the population estimate. Because we assumed that chinook densities would be low, long transects were used to maximize the probability of sampling at least one fish per transect. Transect lengths ranged from 2,212 to 6,028 m. Sampling time for transects ranged from 45 min to 120 min. We used a size cutoff criterion to differentiate chinook from other fish species. We assumed that all of the tracked fish over 500 mm (–31.6 dB) were chinook. There are other fish species in CDA Lake that reach or exceed 500 mm (i.e., northern pikeminnow). However, their use of the offshore habitat that we sampled with hydroacoustics is considered negligible compared to chinook (Jim Fredericks, personal communication).

Densities of fish greater than 500 mm were similar for day and night transects. Because time of day was not statistically ($P = 0.74$) significant, data from all 13 transects were pooled. A total of 52 (mean of four per transect) tracked fish met the chinook minimum size criteria, and densities ranged from 0.0 to 5.7 fish/ha with a mean of 2.7 chinook/ha. The greatest densities occurred between transect 20 and 30 (Table 7). Expanded densities resulted in a total chinook estimate of 18,000 $\pm$ 36%. Given that level of precision, our methods seemed reasonable for estimating the abundance of fish over 500 mm. However, due to the relatively small sample size, the estimate could not be refined to identify specific chinook age class strength.

The sonar estimate of kokanee abundance in the northern section of the lake was 2,580,000. Young of the year kokanee (fish <75 mm) made up the largest proportion of the population at 2,021,000 $\pm$ 45%. Abundance of age-1 kokanee (75 mm – 150 mm) was 472,000 $\pm$ 38%. Fish larger than 150 mm contributed 92,000 $\pm$ 43%. In the same area of the lake, the trawl boat estimated a total of 1,460,000. The mean density of YOY kokanee was 684 fish/ha for the trawl and 722 fish/ha using the sonar gear (Figure 6). Due to trawl avoidance of larger kokanee, the comparison between gear types varied markedly for age-2 and older kokanee (Figure 6). The differences observed between gear types, however, does not invalidate either technique. Trawl or acoustic sampling can be used to describe trends in kokanee abundance.

Figure 7 shows length frequency and depth distributions of fish sampled in CDA Lake. Age-1 and older kokanee (fish between 75 - 375 mm) selected deeper water than YOY kokanee (<75 mm). Fish over 375 mm (-34 dB) in length were concentrated above the dominant kokanee cohorts.

Table 7. Transect identification, lengths, and fish densities in Coeur d'Alene Lake, July 31 – August 2, 2000. Transect locations are shown in Appendix E.

Species	Time	Identification	Transect Length (m)	Density (# / Ha)
Kokanee	Night	3-4	1,908	214
	Night	4-5	2,079	1,458
	Night	5-6	3,053	1,274
	Night	6-7	3,011	1,129
	Night	7-8	1,895	748
	Night	8-9	2,369	714
			Mean	**923**
			Abundance	**2,580,000**
			90% CI	**40%**
Chinook	Night	15-20	2,461	1.1
	Night	20-23	3,892	2.2
	Night	24-27	4,724	5.7
	Night	27-30	4,608	5.6
	Night	30-37	3,147	3.2
	Night	37-40	3,348	0.0
	Day	12-15	3,149	1.0
	Day	15-20	2,583	0.0
	Day	20-23	3,831	5.4
	Day	23-24	3,086	4.3
	Day	24-27	5,341	2.1
	Day	27-28	2,212	2.4
	Day	28-32	6,028	2.6
			Mean	**2.7**
			Abundance	**18,000**
			90% CI	**36%**

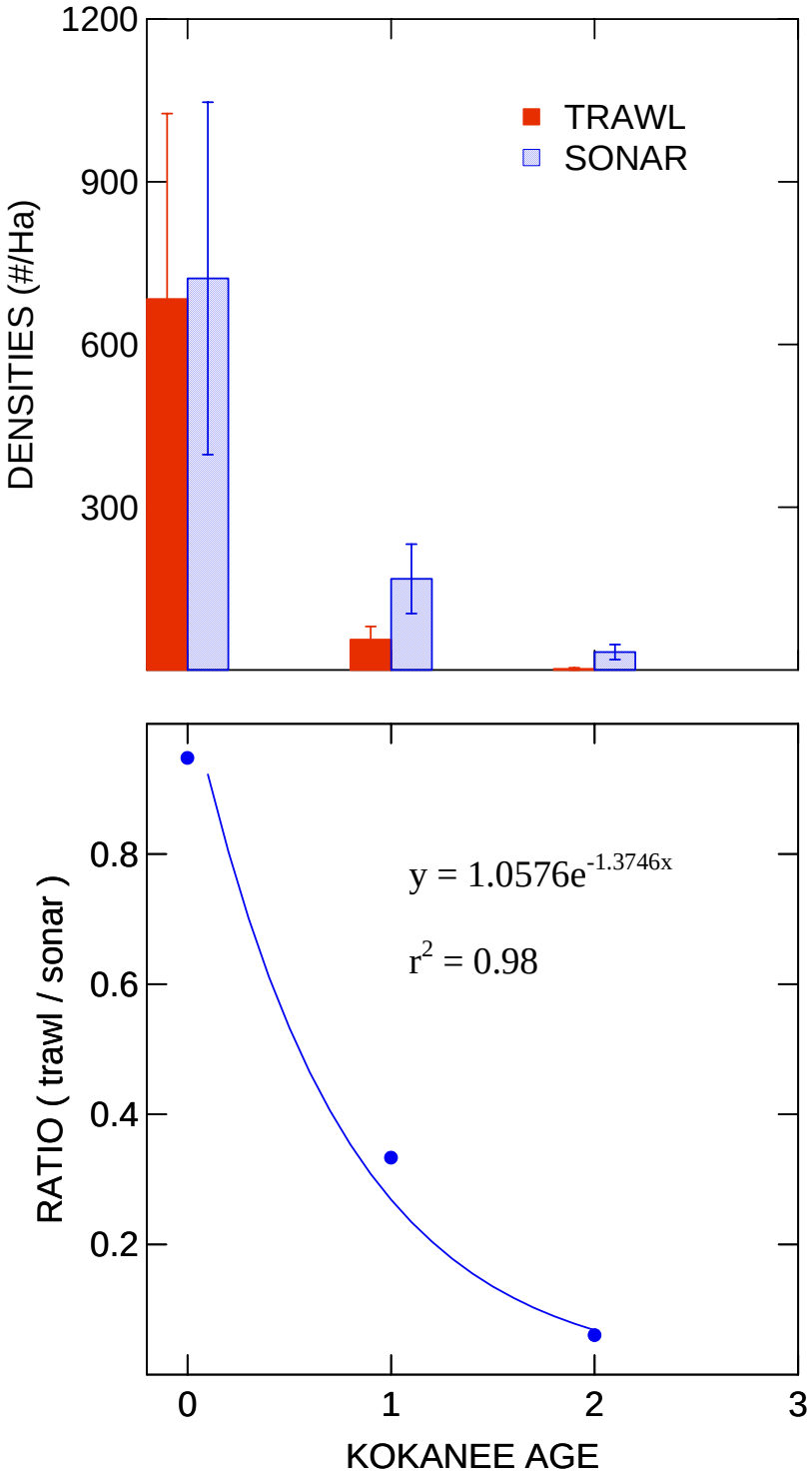

Figure 6. Trawl and sonar estimates of Kokanee densities (top) in the northern section of Coeur d'Alene Lake. The bottom figure shows the trawl:sonar ratio for three age classes of kokanee.

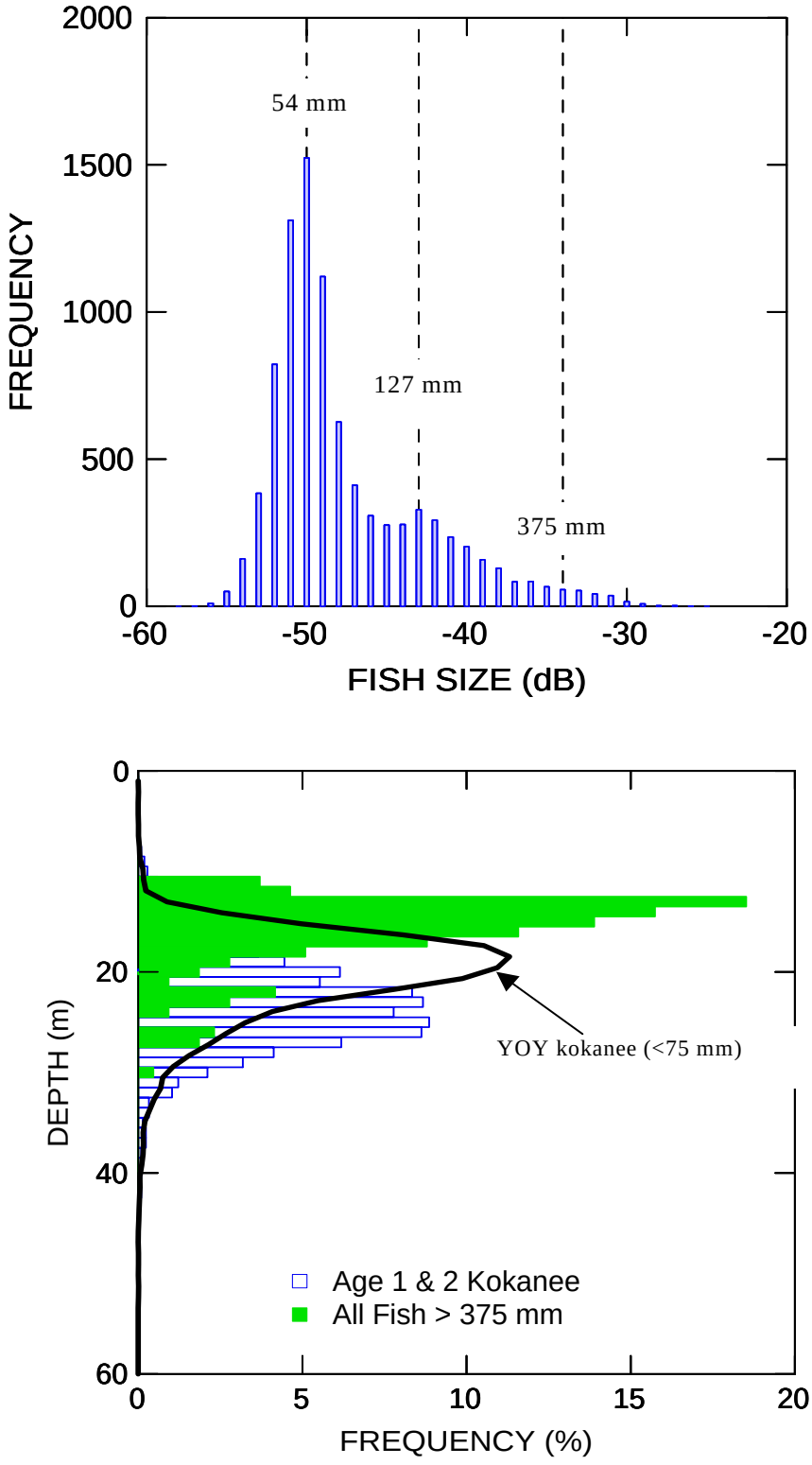

Figure 7. Length frequency (top) and depth distributions (bottom) of fish sampled with hydroacoustics in Coeur d'Alene Lake. The bottom graph shows depth selection of different size classes of kokanee and all fish >375 mm.

Daniels Reservoir

The objective of the Daniels survey was to estimate total trout abundance using hydroacoustics. All of the fish tracked with the hydroacoustic equipment were assumed to be trout. Spring gillnetting in 1996 and spring and fall electrofishing surveys completed in 1997 through 2000 show a mix of rainbow trout, cutthroat trout, and hybrid cutthroat X rainbow trout in Daniels Reservoir (David Teuscher, unpublished data). The sonar survey was completed during the day on June 1, 2000. Nine transects were completed and are shown in Appendix F. Total survey time was about two hours. All Topo Maps software was used to estimate the surface area (59 ha) and volume (7,818 acre-feet).

Fish density in the reservoir ranged from 47 to 87 fish/ha, with a mean of 68 fish/ha. Trout densities were very consistent across transects (Table 8). The total trout population estimate was 4,000 ± 16%. The mean size of fish tracked in Daniels Reservoir was 410 mm and 270 mm for the sidelooking (top 8 m) and downlooking (>8 m depth) transducers, respectively. Target strength frequencies of sonar targets indicated that most (82%) of the fish were greater than 200 mm in length (Figure 8). Fish less than 200 mm were either low in abundance or they were occupying shoreline or bottom habitat not sampled with hydroacoustics equipment.

Table 8. Trout densities (number/ha) in Daniels Reservoir.

		Trout Density (number/ha)		
Transect	**Transect Length**	**Downlooking**	**Sidelooking**	**Total**
1	203	51.9	20.2	72.1
2	354	29.3	17.7	47.0
3	326	50.9	24.2	75.0
4	551	16.1	36.4	52.5
5	357	24.9	62.0	86.9
6	516	Too shallow	44.0	NA
7	425	Too shallow	Too Shallow	NA
8	1,235	38.7	42.1	80.7
9	1,035	29.1	28.9	58.0
	Means	**34.4**	**34.4**	**67.5**
	SE	**5.1**	**5.8**	**5.7**

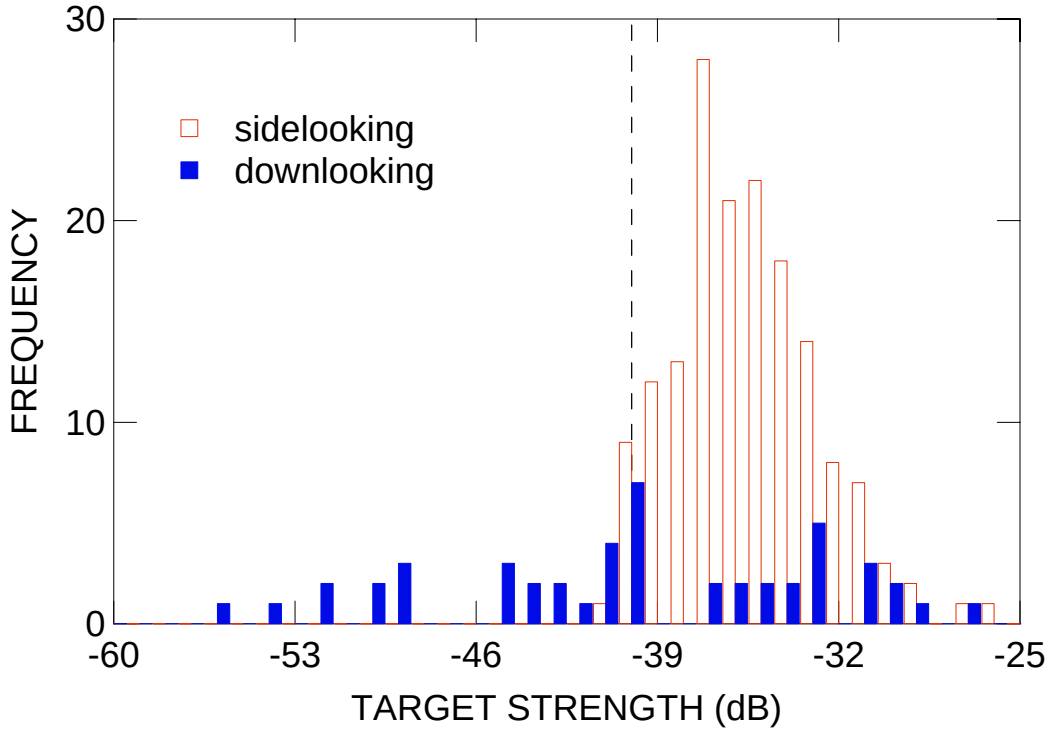

Figure 8. Length frequency distribution of sonar-tracked fish in Daniels Reservoir. The vertical line drawn at –40 dB is equivalent to a fish length of about 240 mm in the sidelooking and 180 mm for the downlooking transducer. About 82% of the fish recorded by sonar were greater than 200 mm in length. Distributions for the sidelooking (open) and downlooking (filled) transducers are shown.

Deadwood Reservoir

The objective of the Deadwood sonar survey was to estimate the abundance of kokanee. The survey involved 10 transects and was completed after dusk on September 13, 2000 (Appendix G). Due to steep shorelines, protruding islands, and the concentration of fish near the bottom, transects were derived based on depth criteria. The echograms from Deadwood Reservoir showed a very strong depth selection by fish below 15 m (Figure 9). Because very few fish were observed above 15 m, mean fish densities below 15 m were calculated and expanded to a total population estimate using the reservoir area at the 15 m depth contour. Bureau of Reclamations provided the area estimate at the 15 m depth contour. Because the majority of fish caught in past vertical gillnetting were kokanee (Brian Flatter, personal communication), we assumed that all tracked fish were kokanee. In future years, species composition should be validated using vertical gillnets. Target strength ranges used for kokanee age classes were <-45 dB (<100 mm) for YOY, –45 to –41.6 dB (100 to 150 mm) for age-1, and –41.5 to –37.4 (150 to 250 mm) for age-2 kokanee. All fish over –37.4 dB were combined and not classified as any particular kokanee age group.

The sonar estimate of kokanee abundance in Deadwood Reservoir was 266,000 ± 30%. Fish less than 100 mm (YOY) made up 93% of the population (Table 9). The abundance of age-1 and age-2 kokanee was 10,000 and 7,000, respectively. The population estimate assumes that all of the tracked fish were kokanee. If other species made up a significant proportion of the pelagic fish community, we overestimated kokanee abundance.

Table 9. Transect lengths, densities, and total abundance of kokanee in Deadwood Reservoir. The estimates assume all tracked fish were kokanee.

Transect		Fish Densities (number/ha)				
Number	Length (m)	YOY	Age-1	Age-2	Fish >250 mm	Total
1	225	275.7	0.0	58.6	0.0	334.3
2	1,616	784.9	48.6	35.3	14.8	883.6
3	229	463.7	8.5	0.0	8.7	481.0
4	297	1,030.4	40.9	13.9	13.7	1,098.8
5	155	882.2	65.4	0.0	0.0	947.7
6	421	1,591.6	39.2	24.3	14.2	1,669.3
7	115	1,165.0	48.5	33.8	0.0	1,247.3
8	271	470.1	0.0	8.7	0.0	478.8
9	183	434.9	19.4	24.7	0.0	479.0
10	1,204	539.2	29.1	23.2	8.4	599.8
	Mean	**763.8**	**30.0**	**22.2**	**6.0**	**822.0**
	Abundance	**247,000**	**10,000**	**7,000**	**2,000**	**266,000**
	SE	**129.3**	**7.1**	**5.7**	**2.1**	**134.7**

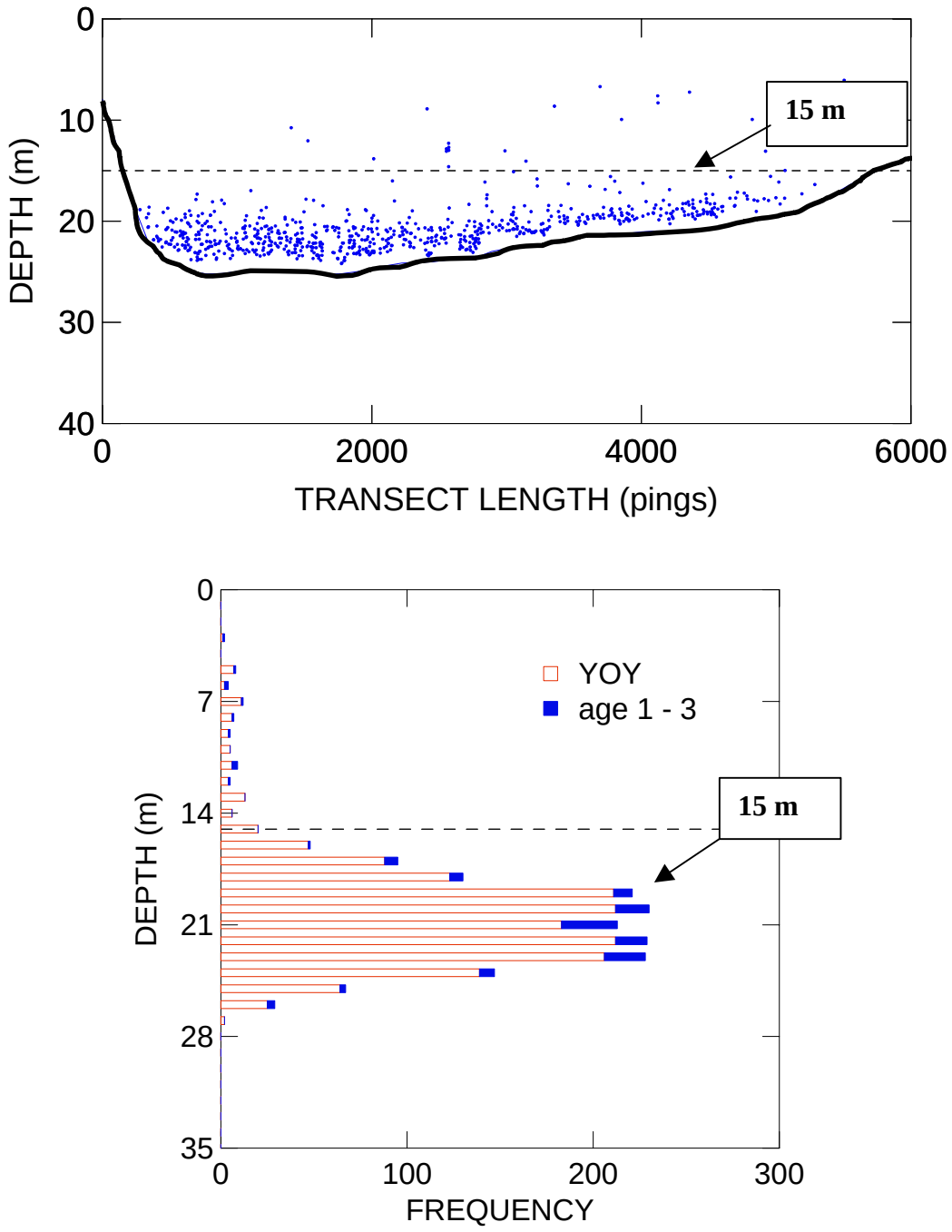

Figure 9. The top figure shows the depth of fish from transect 6. Fish were concentrated below 15 m. The bottom figure shows the depth distribution of fish from all transects. Two age groups of fish were plotted.

Fish Lake

There were two objectives of the Fish Lake sonar survey. First, the regional fisheries staff was interested in knowing if large bull trout were migrating upstream from the North Fork Clearwater River and using Fish Lake for spawning or rearing habitat. Bull trout and cutthroat trout have been sampled in Fish Lake using trap and gill nets. No other species of fish were collected during concurrent sampling with the hydroacoustic surveys (Ed Schriever, personal communication). Secondly, one of the objectives of the 2000 field season was to quantify the differences in offshore densities of trout between day and night surveys. The best time of day to survey trout with hydroacoustics has not been evaluated. Results from the day vs. night comparison will help guide future statewide trout evaluations.

Both the day and night surveys were completed on July 18, 2000. Survey transects are shown in Appendix H. To expand fish densities to total fish abundance, a bathymetric map was generated using *Surfer* 7 software (Figure 10).

Trout densities are shown in Table 10. Fish densities were about three times higher during the day compared to the night survey. During the day, trout densities ranged from 0 to 53 fish/ha. Mean densities were 35 fish/ha during the day and 12.8 fish/ha at night. Total fish abundance estimates were 1,700 $\pm$ 21% for the day and 600 $\pm$ 48% at night (Figure 11).

Results from our July survey indicate that large bull trout from the North Fork of the Clearwater were either not present in Fish Lake or at very low numbers. The largest fish tracked by the hydroacoustics equipment was 380 mm. If bull trout from the North Fork Clearwater are using Fish Lake, their densities are too low to detect with hydroacoustics, they occupy the lake at different times of the year, or they do not use the pelagic habitat in the lake.

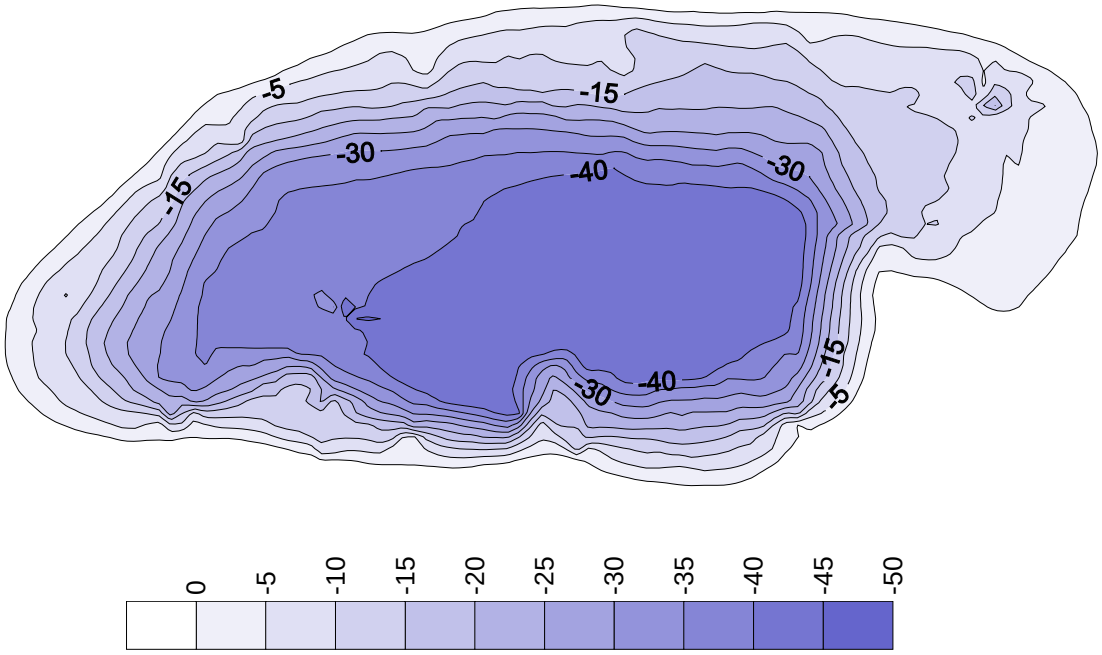

Figure 10. Bathymetric map of Fish Lake. The shaded legend bar refers to water depth (m).

Table 10. Fish densities (number/ha) in Fish Lake for the day and night surveys. See Appendix H for transect locations for the day and night surveys.

	Day			Night		
Transect	**Downlooking**	**Sidelooking**	**Total**	**Downlooking**	**Sidelooking**	**Total**
1	0.0	11.8	11.8	4.2	0.0	4.2
2	14.2	6.9	21.0	11.2	26.8	38.0
3	12.3	9.2	21.5	7.6	3.8	11.4
4	13.9	9.8	23.8	7.2	0.0	7.2
5	51.0	8.7	59.8	20.6	0.0	20.6
6	10.2	6.7	16.8	19.4	0.0	19.4
7	24.2	10.8	35.0	3.7	0.0	3.7
8	38.7	15.2	53.9	0.0	5.7	5.7
9	13.7	29.1	42.8	11.9	0.0	11.9
10	0.0	27.3	27.3	5.9	0.0	5.9
11	0.0	53.1	53.1			
12	0.0	31.2	31.2			
13	22.2	28.0	50.2			
14	10.3	34.7	45.0			
Mean	**15.0**	**20.2**	**35.2**	**9.2**	**3.6**	**12.8**
SE	**4.0**	**3.7**	**4.1**	**2.1**	**2.6**	**3.4**

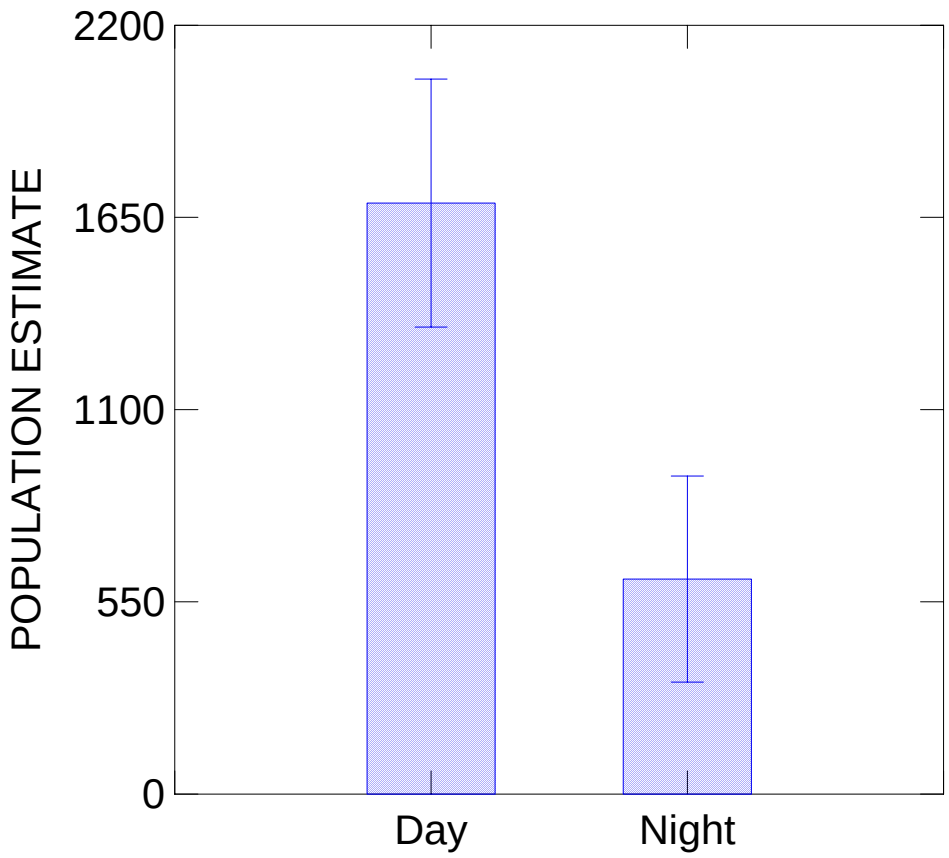

Figure 11. Comparison between day and night population estimates of trout (bull and cutthroat trout combined) in Fish Lake on July 18, 2000.

Lucky Peak Reservoir

The objective of the Lucky Peak sonar survey was to complete a general survey of pelagic fish abundance. The survey was completed at night on June 26, 2000. A total of 23 transects were completed. Transect locations are shown in Appendix I. The sonar survey was completed in conjunction with vertical and horizontal gillnetting. Horizontal floating nets (n = 4) were used to partition fish abundance tracked with the sidelooking transducer (top 8 m of the water column). Vertical gillnets (n = 15) were used to partition fish densities tracked with the downlooking transducer. All nets were set overnight. Personnel from the Southwest regional office completed all of the gillnetting work.

The estimate of pelagic fish abundance in Lucky Peak reservoir was 95,000 $\pm$ 12%. The mean density of fish in the reservoir was 86 fish/ha. Densities ranged from 14 to 132 fish/ha (Table 11). Table 12 shows gillnet proportions of fish caught in vertical and horizontal gillnets. Similar to Arrowrock Reservoir, northern pikeminnow dominated the pelagic fish community. Hatchery rainbow trout, largescale suckers, and kokanee were other common species found in gillnets (Table 12).

Depth distribution of fish ranged from the surface to a depth of 55 m. Figure 12 shows the depth distribution of fish in the reservoir. Depth selection was similar for all size groups of fish plotted (Figure 12). The mode of the depth selection was 23 m.

Table 11. Transect lengths and fish densities in Lucky Peak Reservoir on June 26, 2000. See Appendix I for transect locations.

		Fish Densities (number / ha)		
Transect	**Transect length (m)**	**Downlooking**	**Sidelooking**	**Total**
1	1,242	10.6	3.4	14.0
2	1,338	53.3	10.4	63.7
3	1,164	90.4	9.1	99.5
4	539	65.9	0.0	65.9
5	547	51.4	7.9	59.3
6	885	54.6	2.5	57.1
7	638	106.3	3.7	110.0
8	796	95.8	1.9	97.7
9	753	116.4	1.8	118.2
10	980	82.5	1.5	84.0
11	1,284	128.9	0.5	129.4
12	774	127.2	5.1	132.3
13	426	110.1	0.9	111.0
14	1,496	102.2	0.0	102.2
15	830	76.0	1.6	77.6
16	821	115.7	6.6	122.3
17	681	61.7	1.6	63.3
18	959	122.8	0.0	122.8
19	906	74.7	0.8	75.5
20	1,023	79.4	0.0	79.4
21	784	73.3	1.3	74.6
22	526	49.8	0.0	49.8
23	679	67.3	0.0	67.3
	Mean	**83.3**	**2.6**	**86.0**
	90% CI	**13%**	**42%**	**12%**
	Abundance	**92,000**	**3,000**	**95,000**

Table 12. Gillnet catch (% and 90%CI) by species collected in floating and vertical gillnets. The other category in the species list is the cumulative catch of wild rainbow trout, smallmouth bass, bridgelip sucker, and mountain whitefish.

	Floating			Vertical		
Species	**Number**	**%**	**90% CI**	**Number**	**%**	**90% CI**
Northern Pikeminnow	73	60%	52-67%	8	31%	14-48%
Hatchery Rainbow	12	10%	6-16%	6	23%	11-41%
Largescale Sucker	11	9%	5-15%	6	23%	11-41%
Kokanee	0	0%	0%	3	11%	4-28%
CSL	21	17%	12-24%	1	4%	0-18%
Other	5	4%	2-9%	2	8%	2-23%
Totals	**122**	**100%**		**26**	**100%**	

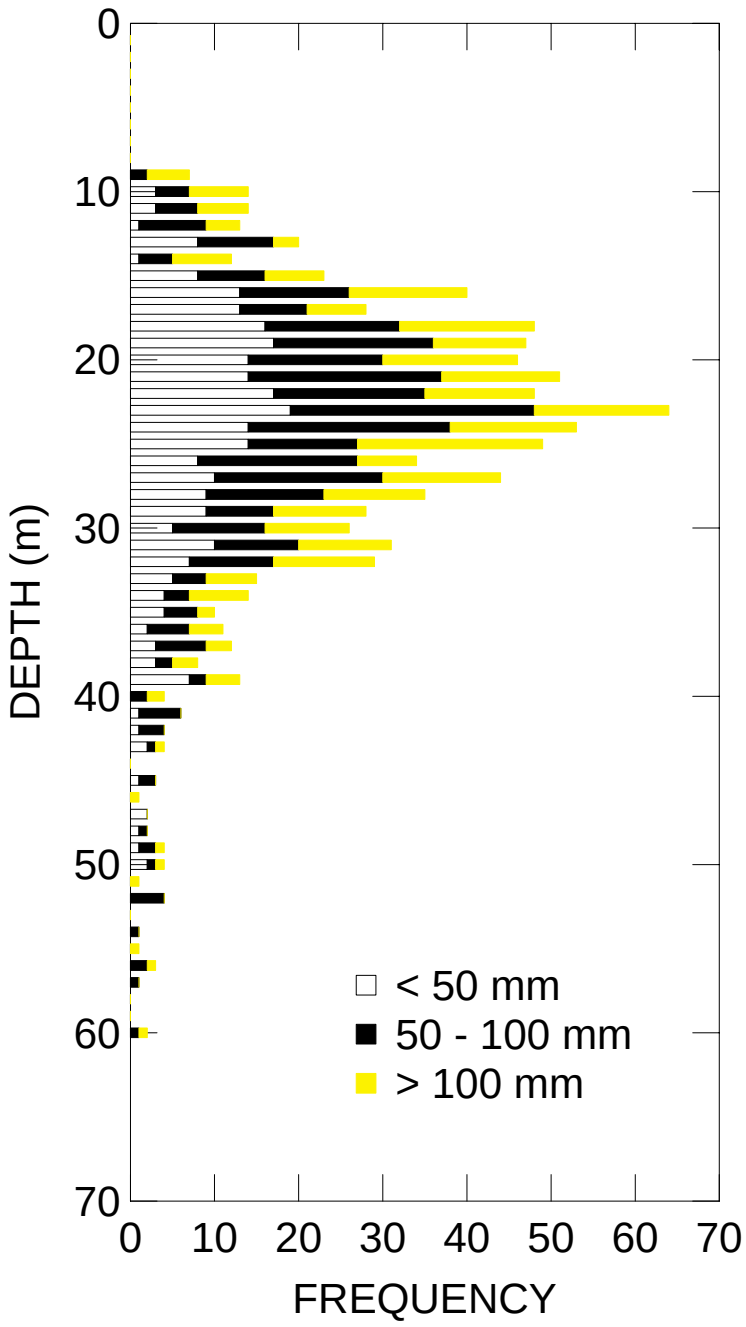

Figure 12. Depth distribution of fish tracked by the downlooking transducer. Three size groups of fish are shown. The mode of distribution is 23 m.

Palisades Reservoir

The objective of the Palisades sonar survey was to estimate the abundance of Yellowstone cutthroat trout (YCT). The survey was completed during the day on September 6, 2000. A total of nine transects were completed and are shown in Appendix J. Due to low water conditions, the survey was limited to the northern section of the reservoir (Appendix J).

Floating (n = 4), sinking (n = 1), and vertical (n = 9) gillnets were set on September 9 and 20, 2000. Yellowstone cutthroat trout were caught only in the floating nets. A total of 126 fish were caught in the floating nets, 37 (29%; 90%CI = 22-36%) of which were YCT. Because of depth selection shown in gillnets, only data in the sidelooking transducer (top 8 m of the water column) was used to estimate YCT abundance.

The total pelagic fish estimate in Palisades Reservoir was 274,000 ± 51%. The mean fish density was 72.3 fish/ha, with a range of 19 to 207 fish/ha (Table 13). Gillnet data indicated the YCT made up 29% of the pelagic fish community. Applying that proportion to the total lake fish abundance estimates yields a YCT estimate of 79,000. Utah chub made up 37% of the catch in floating gillnets. Other species caught in the floating gillnets included suckers (22%) and brown trout (11%).

The mean size of fish caught in floating gillnets and fish tracked with sonar were similar. The mean size of fish caught in floating gillnets was 371 mm (SE = 6.3). The mean target strength of fish tracked with sonar was –36.2 dB, which converts to about 390 mm (Figure 13).

Table 13. Transect lengths and fish densities in Palisades Reservoir. Densities include only fish in the top 8 m of the water column.

Transect	Transect Length (m)	Fish Density (number / ha)
1	2,543	22.2
2	2,023	51.1
3	1,479	19.3
4	2,206	23.1
5	3,206	44.8
6	2,906	87.3
7	2,593	88.7
8	1,769	206.8
9	1,884	107.9
	Mean	**72.3**
	90% CI	**51%**

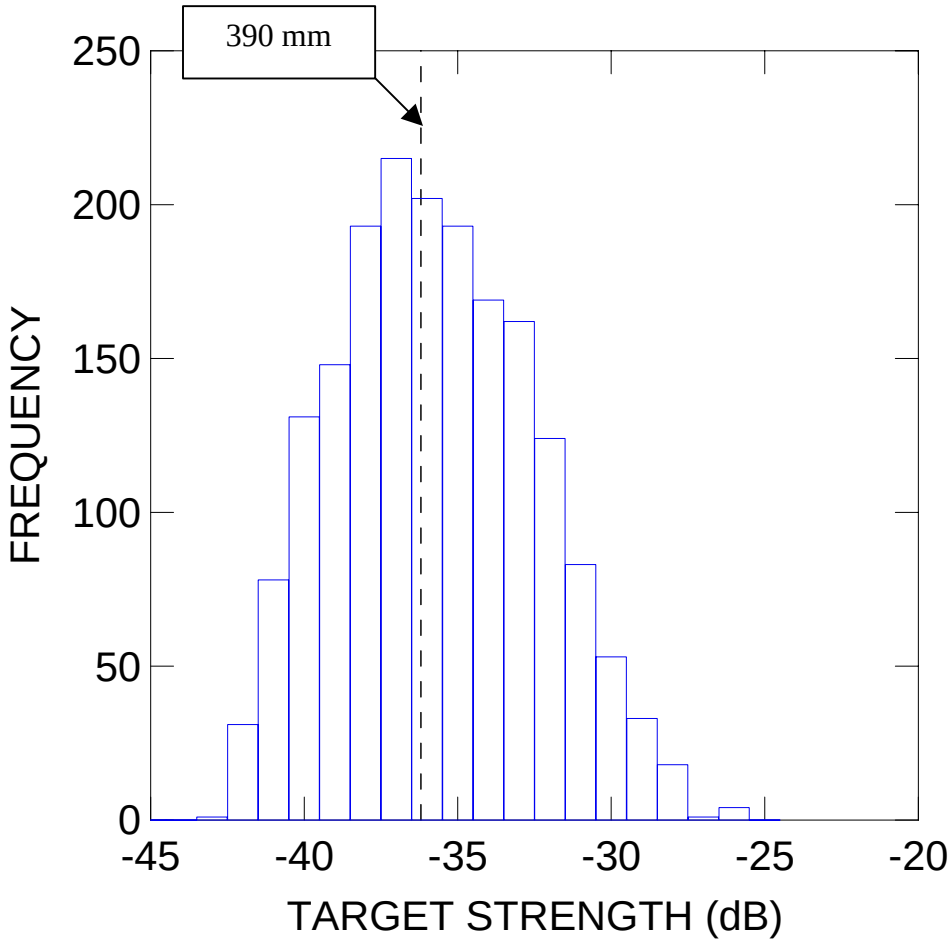

Figure 13. Target strength frequencies in the top 8 m of the water column. The mean size of fish caught in floating gillnets was 371 mm. The mean target strength of fish tracked with sonar was –36.2 dB, which converts to about 390 mm.

Payette Lake

The objective of the sonar survey was to estimate the abundance of kokanee and lake trout in Payette Lake. The survey was completed at night on August 15, 2000. Transect locations are shown in Appendix K. For lake trout, only targets larger than –31.5 dB (500 mm) were included in the estimate. Very few (n = 4) fish greater than 500 mm were tracked between transects 1 through 6. Therefore, for lake trout, the area of the lake and mean density covered by transect 8 through 14 were used to estimate abundance. All transects were included in the kokanee estimate. The kokanee age classes were identified using the following target strength criteria: YOY (<-49 dB), age-1 (-49 to –42 dB), and age-2 and older kokanee (-41 to –33 dB). Fish with mean target strengths between –33 dB and –31.5 dB (425 – 500 mm) were not included in the kokanee or lake trout estimate.

The total abundance of kokanee in Payette Lake was 626,000. Age class contributions included: 238,000 ± 51% YOY, 226,000 ± 42% age-1, and 162,000 ± 29% fish in the combined age-2 and older group. Table 14 shows densities for each transect by kokanee year class. Figure 14 compares the kokanee estimate from August 2000 with an earlier sonar estimate made in 1996 (Melo Maiolie, IDFG unpublished data). Fish densities were similar for age-1 and older kokanee but varied for YOY. The difference between the 1996 and 2000 estimates in YOY abundance was about 200,000 fish. The population estimate for lake trout was 2,800 ± 59% (1,100 – 4,400). In 1996, the 90% confidence interval for lake trout was 100 to 2,500 fish. Both estimates should be considered conservative because the hydroacoustic gear cannot detect lake trout within 1 m of the lake bottom.

Fish selected depths from 10 m to 55 m. Figure 15 shows a peak in depth selection by fish at 33 m. The depth selection graph also shows a curious break in the concentration at 27 m. That kind of bimodal distribution is common for systems with multiple species (i.e., cyprinids in the top layer and kokanee in the deeper water). In the future, vertical gillnets should be set to verify species composition.

Spatial distribution of kokanee varied by age class. Figure 16 shows the spatial distribution of all fish as well as a plot showing only fish over 250 mm. Fish greater than 250 mm were evenly distributed in the lake, while smaller fish concentrated in the northeast basin (Figure 16).

Table 14. Fish densities in Payette Lake on August 15, 2000.

		Kokanee (number/ha)				
Transect	**Length (m)**	**YOY**	**Age-1**	**Age-2-3**	**>33 dB**	**Total**
1	1,839	20.7	49.9	73.5	0.0	144.2
2	2,293	144.7	102.5	75.5	6.6	329.3
3	2,116	16.7	34.1	22.1	1.5	74.4
4	1,788	18.1	34.1	54.3	2.2	108.7
5	1,602	13.7	15.2	31.2	2.7	62.7
6	1,564	5.5	15.9	21.9	3.6	46.9
8	1,786	107.3	155.8	116.8	0.0	379.9
9	2,084	14.4	40.8	44.3	6.1	105.6
10	1,945	102.6	35.8	27.7	1.1	167.2
11	711	283.8	257.8	147.6	5.9	695.1
12	874	177.7	164.6	116.3	5.9	464.5
13	1,218	141.6	159.7	97.1	3.7	402.1
14	1,197	388.7	291.4	146.1	5.6	831.8
	Mean	**110.4**	**104.4**	**74.9**	**3.5**	**293.3**
	SE	**32.9**	**26.0**	**12.8**	**0.7**	**70.3**

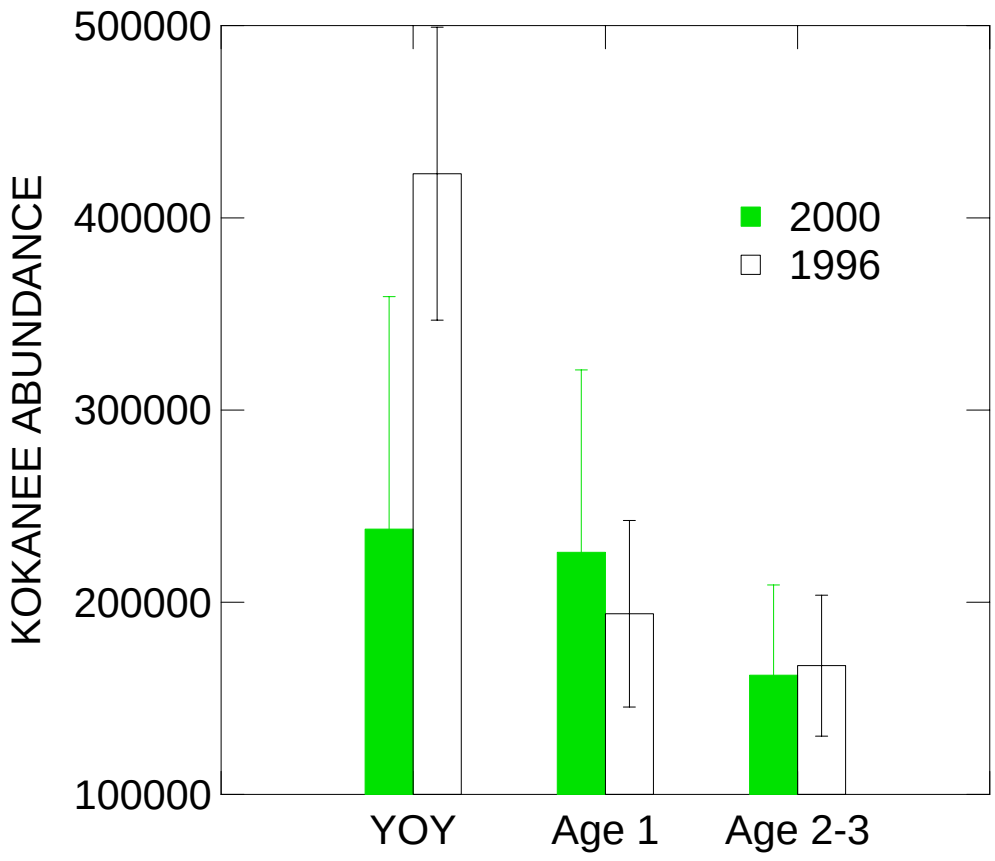

Figure 14. Comparison between sonar kokanee estimates made in 1996 and 2000.

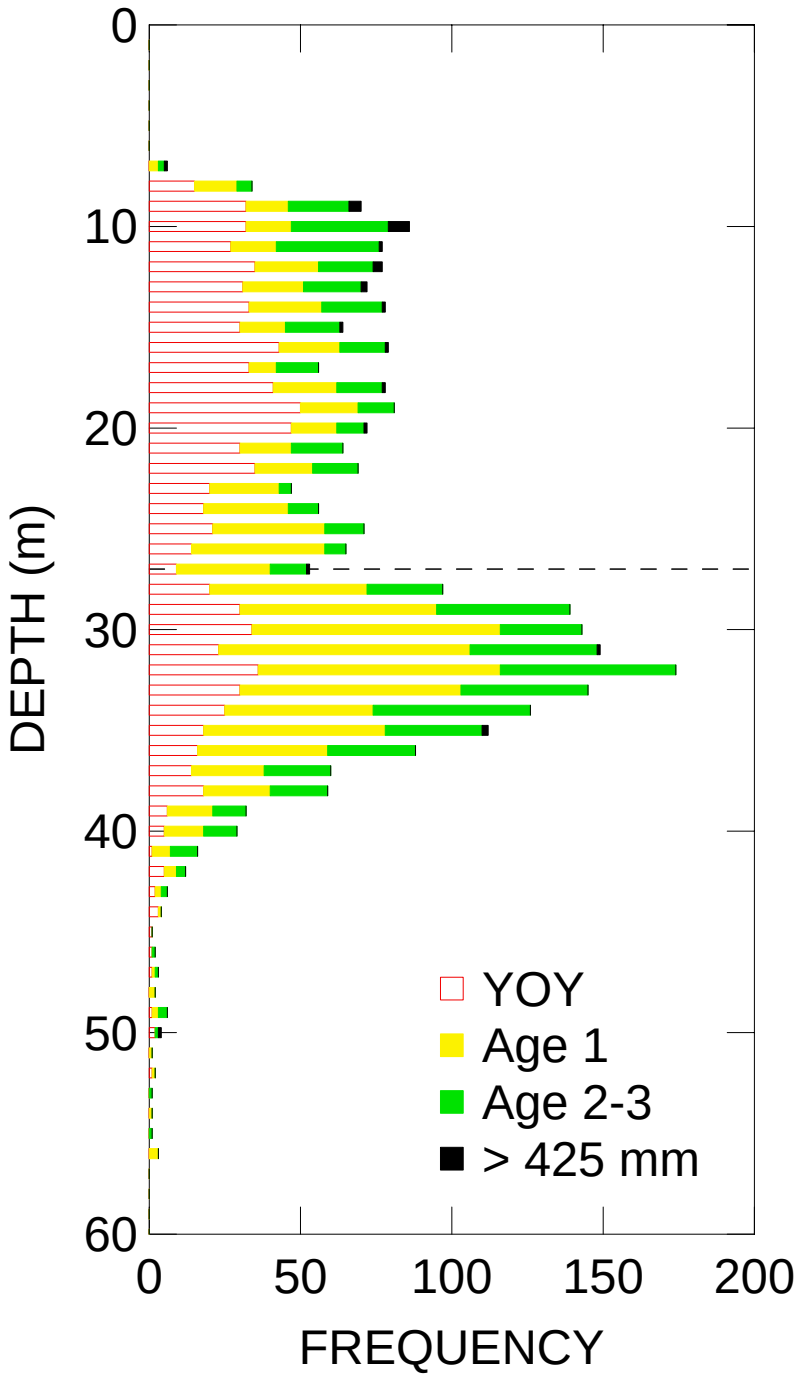

Figure 15. Depth distribution of fish in Payette Lake. Three age classes of kokanee are shown. All of the fish larger than the maximum kokanee size cutoff (425 mm) were plotted in aggregate (darkest shaded bars). That category includes lake trout (fish >500 mm).

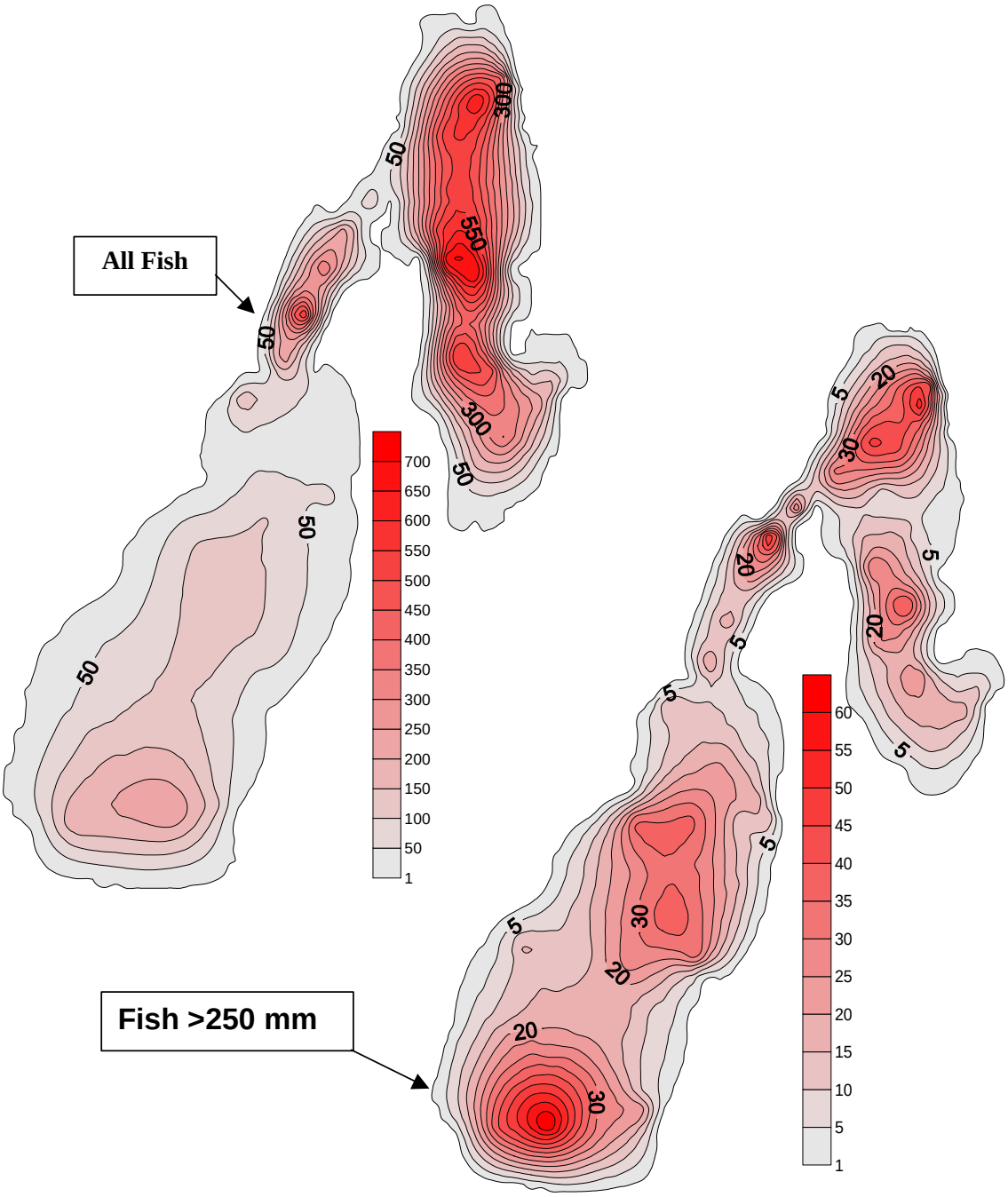

Figure 16. Spatial distribution of all fish (top) and fish greater than 250 mm (bottom). Shaded contours refer to fish densities (number/ha).

Ririe Reservoir

The objective of the Ririe Reservoir survey was to complete a general fisheries stock assessment. The survey was completed at night on September 5, 2000. A total of 10 transects were completed. Due to the meandering nature of Ririe Reservoir, straight line transects could not be accomplished. Alternatively, we began the survey near the dam and traversed the reservoir moving upstream. We maintained a mid-channel location throughout the survey. Each transect was limited to a 20 min time period. Appendix L shows a subsample of waypoints from each transect. Horizontal floating and vertical gillnets were set in conjunction with the sonar survey. The gillnet results were used to partition the sonar estimate of pelagic fish abundance by fish species. Due to small sample size, results from floating (n = 2) and vertical nets (n = 10) were combined. Combining the net samples was supported because the dominant sport fish (kokanee) was caught in both types of nets.

The sonar estimate of pelagic fish abundance was 256,000 ± 16%. The mean density of pelagic fish was 468 fish/ha. Densities were more variable near the surface (sidelooking transducer) than at depth (downlooking transducer; Table 15). Shallow fish abundance peaked in transect 10 near the inlet. Conversely, transect 1 showed the greatest number fish deep in the water column. That difference is likely due to spatial separation of kokanee near the dam and Utah chub and suckers near the inlet.

Gillnet results showed that Utah chub dominated the pelagic fish community (Table 16). Utah chub made up 55% of all fish caught in floating and vertical gillnets. The next most common species sampled in gillnets was kokanee. Kokanee made up 36% of the gillnet catch. Due to the diverse fish community, the kokanee estimate could not be partitioned by year class. All other species combined for 9% of the gillnet catch (Table 16).

Depth selection of fish demonstrated three distinct peaks at 14, 26, and 38 m (Figure 17). The upper peak was dominated by fish over 80 mm. Small fish (<80 mm) contributed the most to the deepest mode.

Table 15. Fish density estimates from the downlooking (below 8 m) and sidelooking (top 8 m) transducers in Ririe Reservoir. See Appendix L for transect locations.

Transects	Length (m)	Downlooking	Sidelooking	Total
1	837	647.9	4.85	652.8
2	651	457.7	7.75	465.4
3	743	287.3	25.59	312.9
4	596	362.3	44.38	406.6
5	792	251.8	36.31	288.1
6	773	370.5	30.37	400.9
7	849	594.4	21.65	616.1
8	890	556.0	46.77	602.8
9	675	291.1	179.28	470.4
10	534	455.8	498.89[a]	—
			Mean	**468.4**
			90% CI	**16%**
			Abundance	**256,000**

[a] Outlier and not used in estimate of total pelagic fish abundance.

Table 16. Species composition (number, proportions, and 90% CI of the combined catch proportions) of fish caught in floating and vertical gillnets. The combined gillnet catch from both net types was used to partition the sonar estimate. The combined species category (other) includes cutthroat trout, rainbow trout, sucker sp., and yellow perch.

	Gillnet Proportions						
	Floating		Vertical		Combined		
Species	#	%	#	%	#	%	90% CI
Utah Chub	59	69%	0	0%	59	55%	47-64
Kokanee	21	24%	17	85%	38	36%	28-44
other	6	7%	3	15%	9	9%	5-15
Totals	86	100%	20	100%	106	100%	

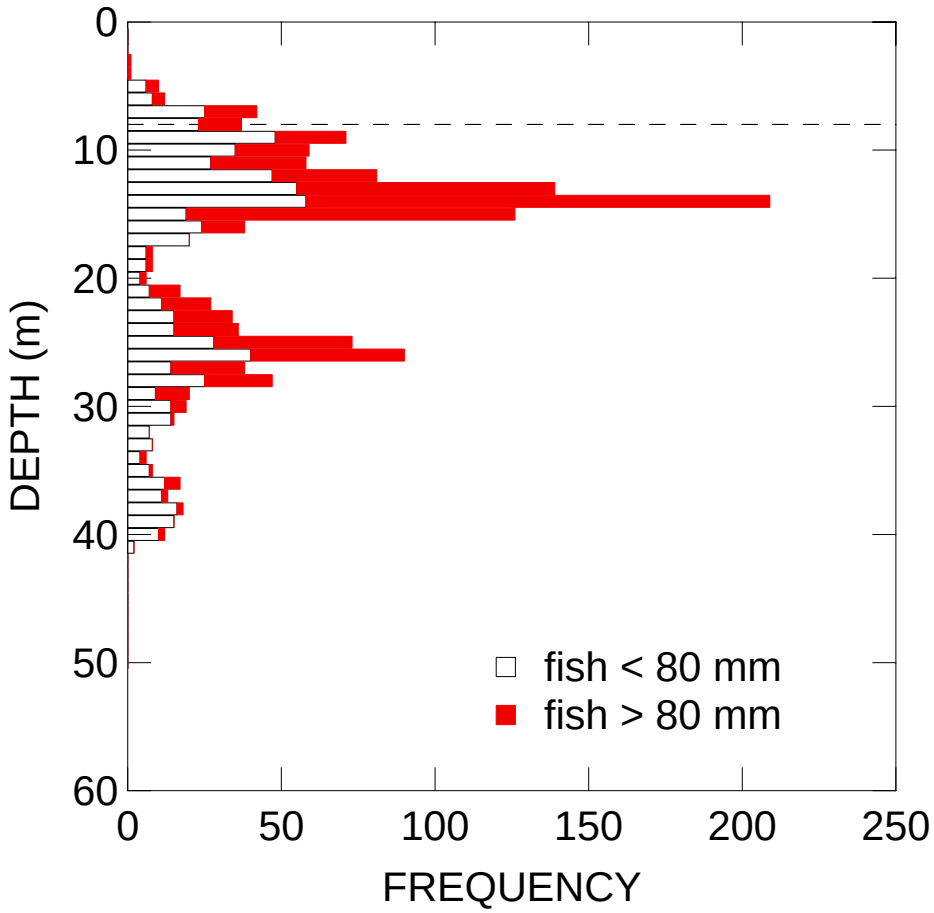

Figure 17. Depth selection of fish tracked with the downlooking transducer in Ririe Reservoir. Two size classes of fish were plotted.

Salmon Falls Creek Reservoir

The objective of the Salmon Falls Creek Reservoir survey was to complete a general fish stock assessment. The survey was completed at night on August 7, 2000. Due to the meandering nature of the reservoir, straight line transects could not be accomplished. Instead of the zigzag pattern used on most waters, transects were established based on time. Transects ran for about 20 min each. Appendix M shows a subsample of waypoints from each transect. To expand fish densities to the portion of the lake sampled, a crude bathymetric map was generated. The bathymetric map covered the surface area of the lake with water depths greater than 2 m. We were limited by that depth restriction because of the potential risk of damaging one of the transducers by colliding with the bottom substrate. Due to the depth restriction, the bathymetric map should not be interpreted for water storage purposes (Appendix M).

The total fish abundance estimate was 258,000 ± 46%. Densities were much higher below 8 m compared to the top 8 m of the water column (Table 17). Fish densities ranged from 22 to 971 fish/ha with a mean of 446. Target strength distributions indicated that most of those fish were less than 100 mm (Figure 18).

Depth selection by fish in Salmon Falls Creek was bimodal. Figure 19 shows the two concentrations of fish. The concentration occurred at 10 and 20 m. Additionally, most of the fish were in open water. Figure 20 compares the echograms from a pelagic transect (t5) to one that paralleled the shoreline (t6). Densities near shore were significantly lower than the pelagic numbers. Because gillnetting was not completed, the sonar estimate of pelagic fish abundance was not partitioned by fish species.

Table 17. Transect lengths and fish densities for Salmon Falls Creek Reservoir.

		Fish Densities (number/ha)		
Transect	**Transect Length (m)**	**Downlooking**	**Sidelooking**	**Total**
1	981	NA	22	22
2	1,577	17	11	29
3	1,296	113	19	133
4	1,102	609	15	625
5	1,166	963	8	971
6	1,983	71	6	77
7	1,340	538	8	546
8	1,541	526	2	528
9	460	568	NA[a]	568
10	815	166	NA	166
			Mean	**446**
			90% CI	**46%**
			Abundance	**258,000**

[a] NA = no data collected for that transducer (i.e., the sidelooking transducer was turned off because of no fish near the surface and to maximize the efficiency of the downlooking transducer).

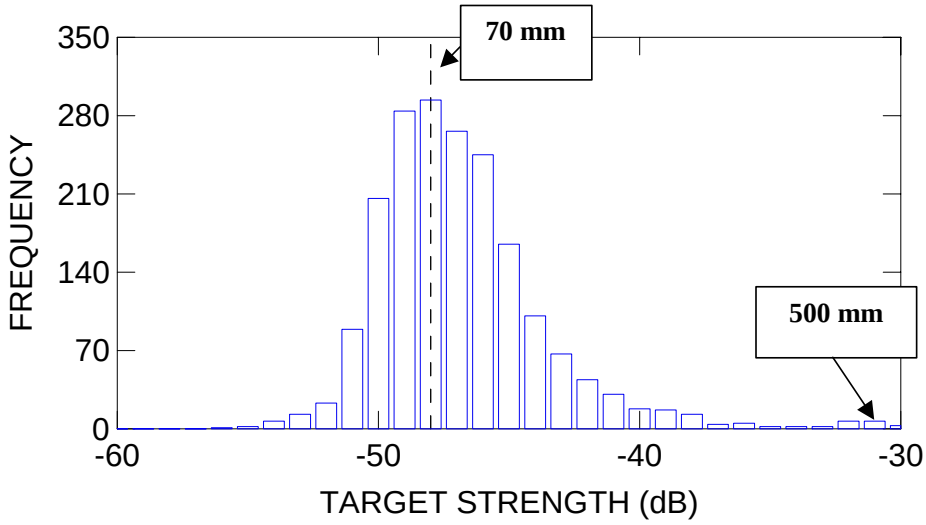

Figure 18. Target strength (dB) frequency distribution of fish tracked in Salmon Falls Creek Reservoir.

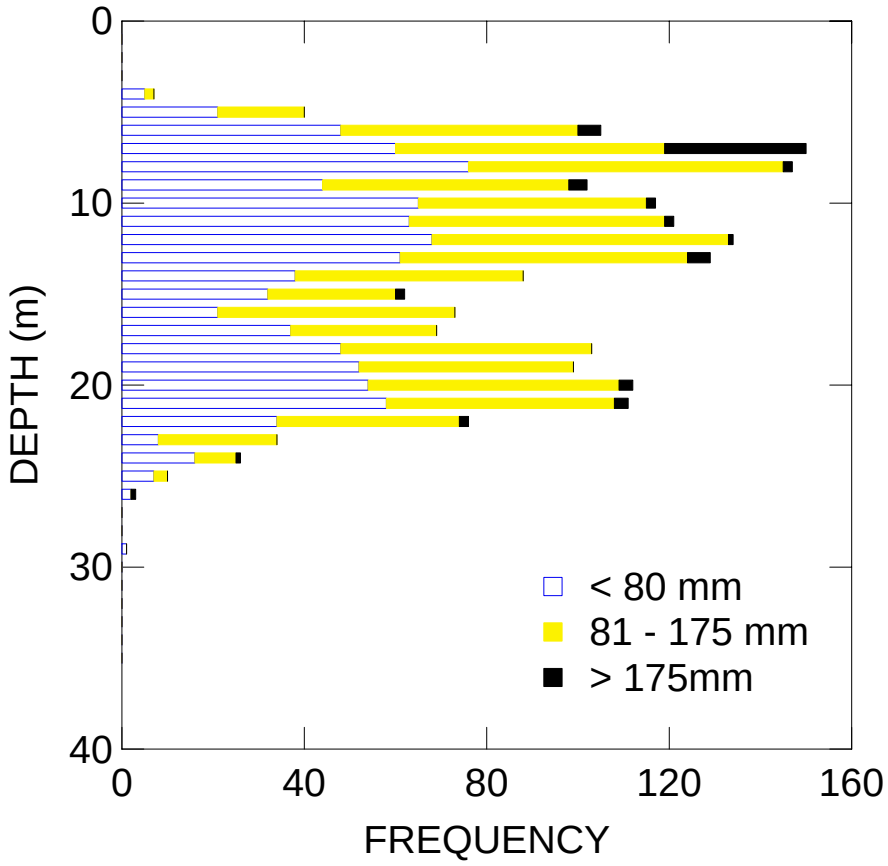

Figure 19. Depth selection of fish in Salmon Falls Creek Reservoir. Three size classes of fish are plotted.

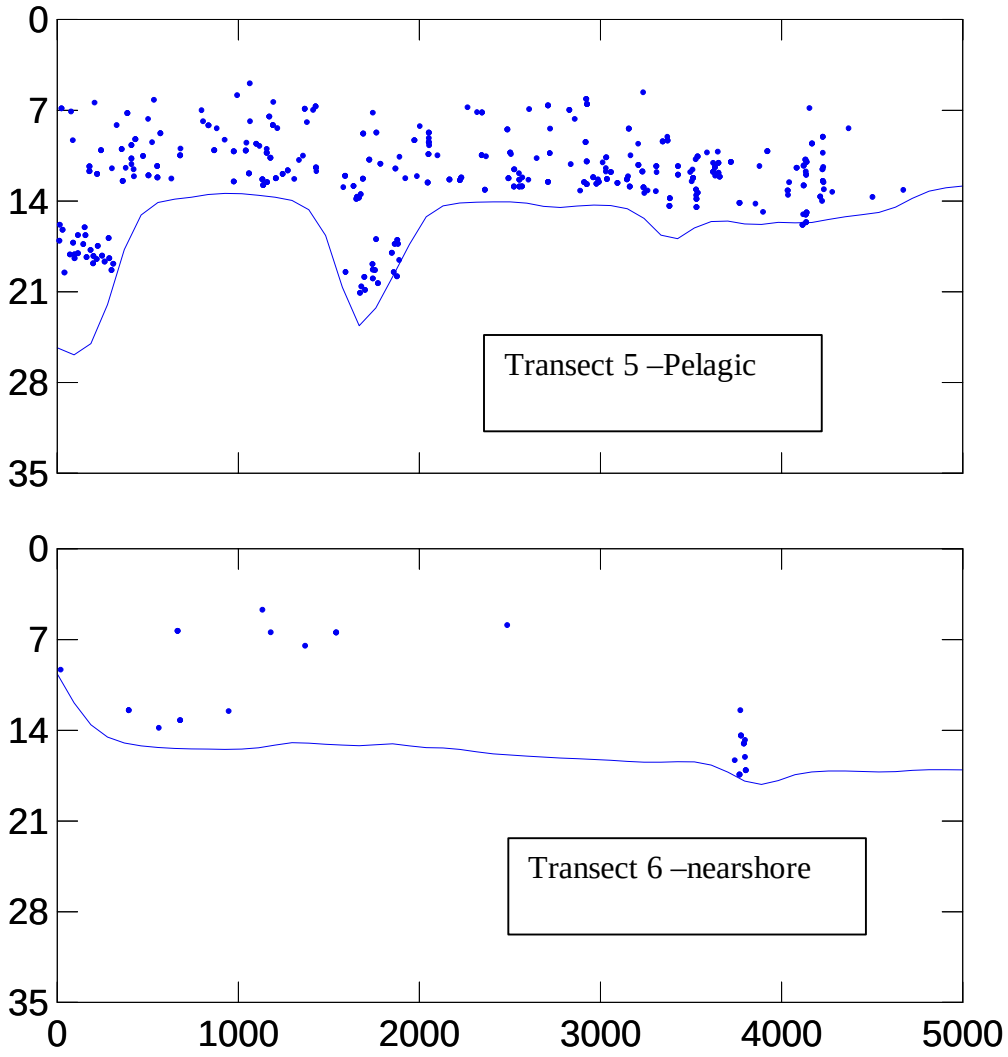

Figure 20. Echogram of transect 5 and 6 in Salmon Falls Creek Reservoir. Transect 6 parallels the shoreline and transect 5 crossed the pelagic zone of the reservoir.

Williams Lake

The objectives of the Williams Lake sonar survey were to estimate the abundance of trout in the lake, determine the best time to survey trout using sonar gear, and build a bathymetric map. To accomplish those goals we surveyed Williams Lake on three separate dates (June 20 and 21, and August 21). The June 20 survey was completed at night. The June 21 and August 21 surveys were daytime. Appendix N shows the transects for each survey. To build a bathymetric map of Williams Lake, depth and associated GPS coordinates were saved to a computer file at one-second intervals. *Surfer* version #7 software was used to plot depth contours. All fish tracked using the hydroacoustic system were assumed to be trout.

Transect densities and population estimates for all three surveys are shown in Table 18. In June, the daytime estimate of total fish abundance was 1,800 (25 fish/ha). At night, that value declined to about 300 (4 fish/ha). The difference between day and night population estimates was significant (ANOVA, $F = 12.7$, $P < 0.01$; Figure 21). In August, the total population estimate was 5,500 (77 fish/ha). The increase from the June estimates was due to an influx of small fish (<200 mm). The influx may reflect natural recruitment or different habitat selection of small fish between the survey periods. In general, fish using littoral habitat are not sampled.

Figure 22 shows the target strengths of fish tracked during the June and August surveys. The August survey showed a bimodal distribution. The modes occurred at 50 mm and 420 mm. For the sidelooking transducer, mean target strengths for the August and June survey were very similar (-35 dB, 400 mm). The mean depth of fish declined from 4.4 m in June to 7.3 m in August (Figure 23). No fish were tracked below a depth of 13 m.

During the surveys, a total of 12,674 depth measurements and associated GPS coordinates were recorded. The resulting bathymetric map is shown in Figure 24. The total lake volume estimate was 18,852,338 m^3 (15,277 acre-feet). Figure 25 shows the depth-volume curve for Williams Lake.

Table 18. Fish densities and total abundance estimates for three surveys completed in Williams Lake during June and August 2000.

	Fish Densities (number/ha)		
Transect	**June Day**	**June Night**	**August**
1	—		—
2	0	0	15
3	17	8	14
4	7	6	0
5	16	0	18
6	20	1	34
7	21	12	45
8	18	2	39
9	35	6	36
10	21	0	83
11	70		79
12	57		129
13	—		89
14	36		151
15	32		346
16	34		
17	29		
18	6		
19	18		
20	—		
21	14		
Mean Fish/ha	**25**	**4**	**77**
Total Abundance	**1,800**	**300**	**5,500**
90% CI	**28%**	**67%**	**57%**

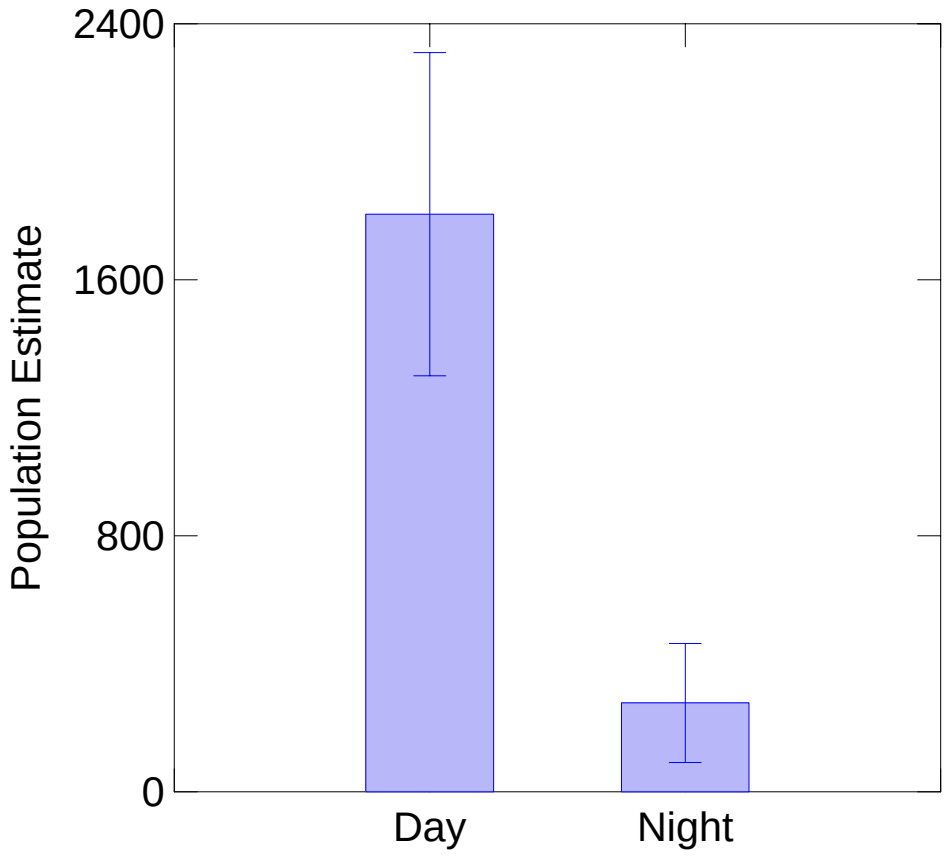

Figure 21. Comparison of population estimates for Williams Lake completed at night and during the day. The difference in estimates was significant (ANOVA, F = 12.7, P <0.01).

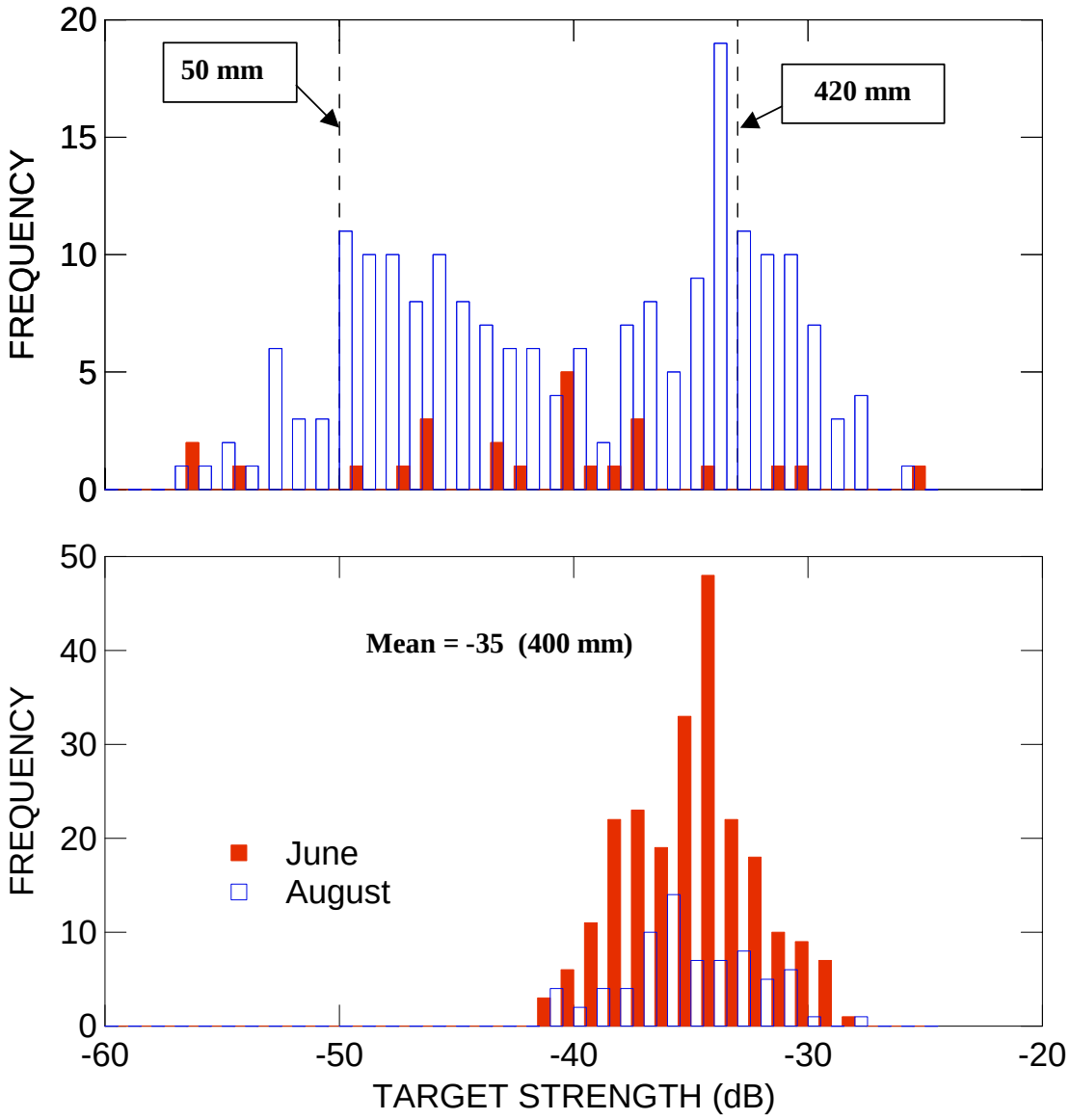

Figure 22. Target strength frequency distribution of fish tracked with the downlooking (top) and sidelooking (bottom) transducers. The mean target strength for fish tracked with the sidelooking transducer was –35 dB (400 mm) for both the June and August surveys.

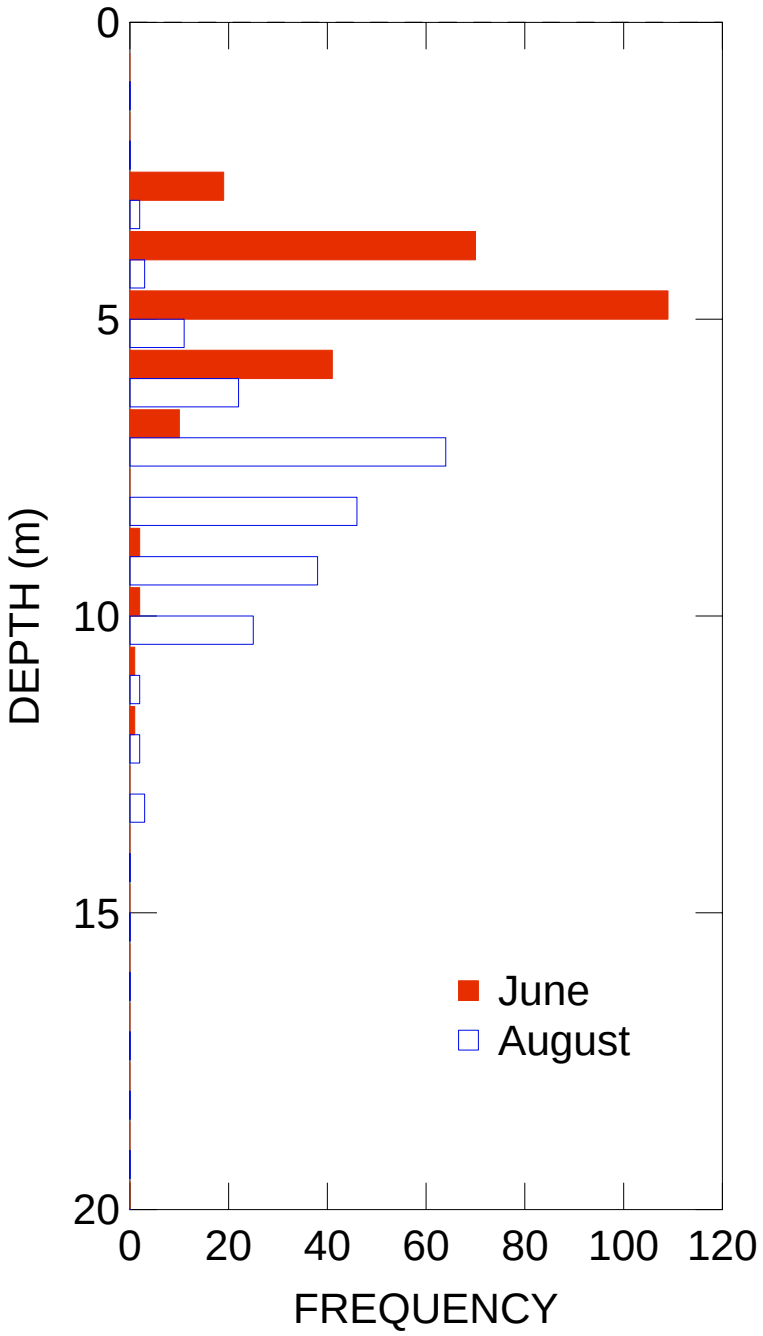

Figure 23. Depth selection by trout in Williams Lake. Mean depth dropped from 4.4 m in June to 7.3 m in August.

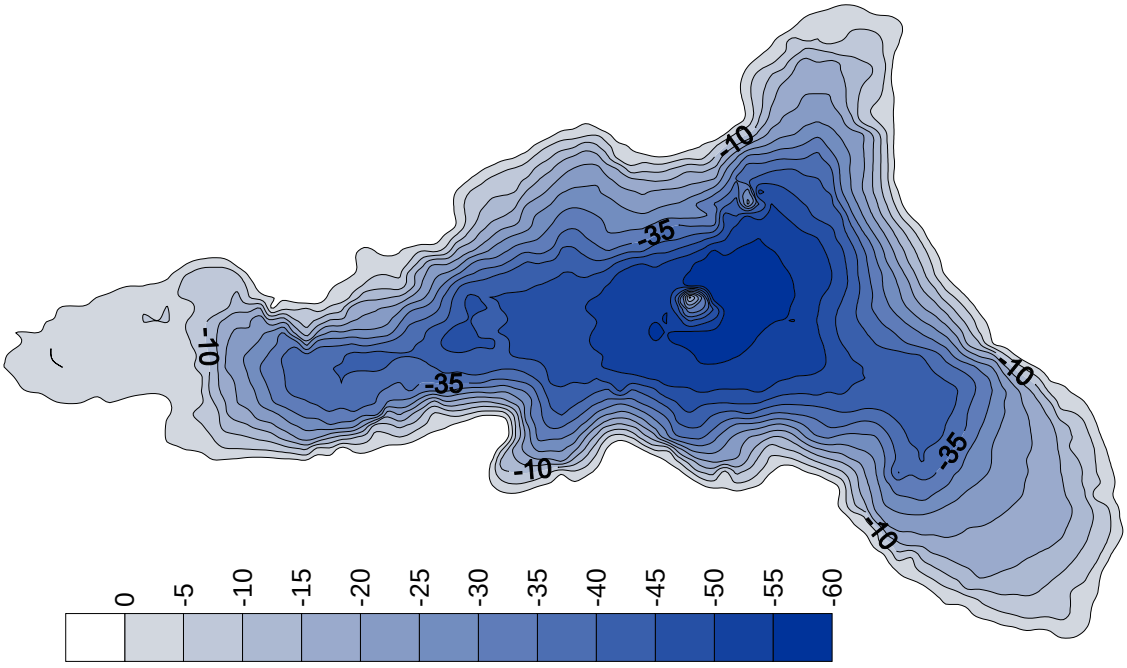

Figure 24. Bathymetric map of Williams Lake. The shaded scale refers to water depth (m). At total of 12,674 waypoints were used. Depth data was recorded every second.

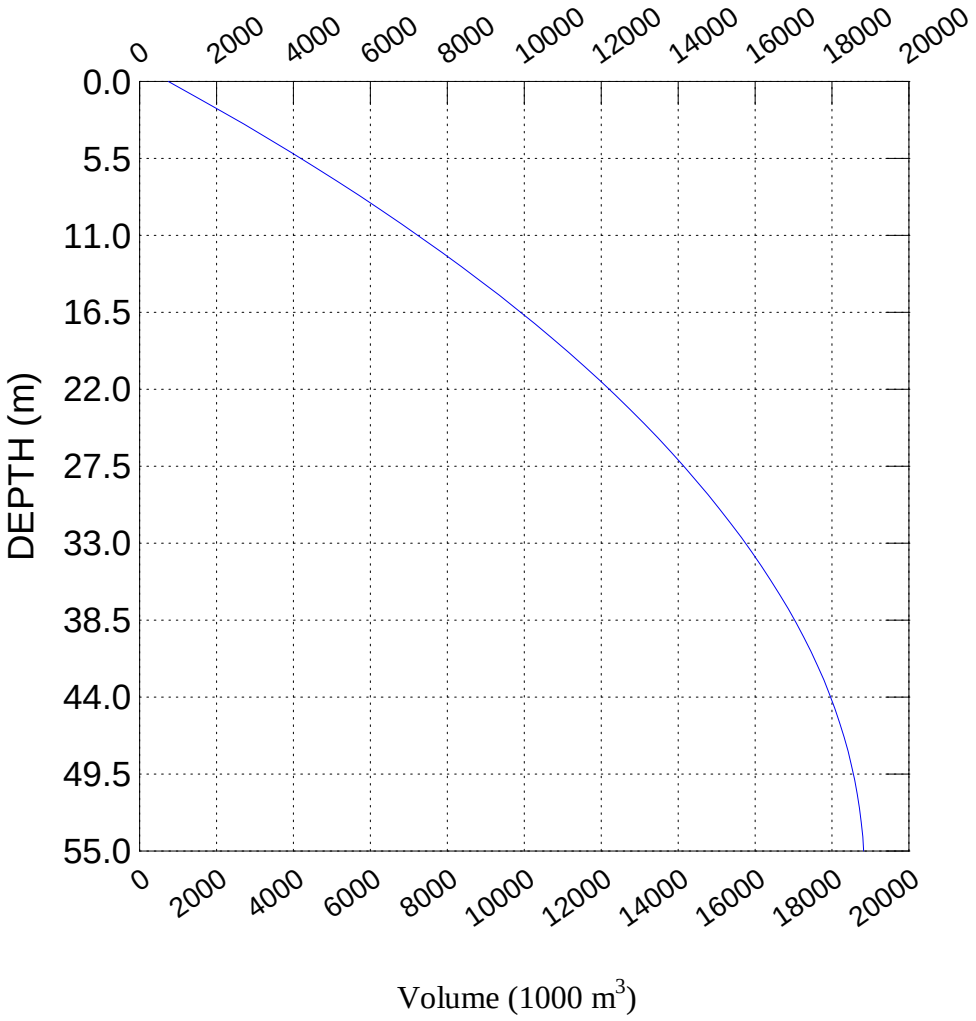

Figure 25. Depth-volume curve of Williams Lake. The total volume of Williams Lake was estimated at 18,852,338 m^3.

GENERAL CONCLUSIONS

The HTI model 241-2 sonar system appears to be a very efficient tool for assessing Idaho's flatwater fisheries. First-year results provided quantitative estimates of trout abundance in five waters. Most of the trout surveys were in small systems that required a couple of hours of survey time and about the same effort for data analysis. In addition to the trout evaluations, kokanee population abundance was estimated in six waters. The system also proved valuable for estimating the abundance of non-game species. The Cascade estimate of northern pikeminnow provided predator abundance data necessary to assess predation impacts on a declining perch population. The automated GPS data logger simplified and improved the accuracy of developing bathymetric maps.

Several limitations of the sonar system need to be addressed. Similar to Yule (2000), the sidelooking transducer provided reasonable estimates of mean fish size, but cohort differentiation was lacking. For example, mean fish size in floating nets from Palisades Reservoir was 371 mm compared to 390 mm from hydroacoustic target strength estimates. Secondly, some of the confidence intervals were higher than expected. To improve the design of future sonar surveys, we plotted the percent of lake volume sampled against the associated population estimate's 90% CI. The plot indicates that a sampling effort of 10% of a lake's volume provides 90% confidence intervals close to or below 30% (Figure 26). In small lakes or reservoirs with homogeneous fish distribution, lower CI may be obtained (i.e., 16% for Daniels Reservoir). Conversely, in the larger reservoirs with complex fish communities, it seems unreasonable to expect to achieve CI lower than 30%. In addition to this 10% sampling guideline, experimenting with survey design may be warranted. For example, standardizing transect length will increase sample size (number of transects). Increasing sample size will usually reduce the confidence intervals. That design is suggested for very large reservoir like Cascade where transect times exceed 2 hours. The 20 min interval approach was used on Ririe Reservoir and the resulting 90% CI was 16%.

A third limitation of the sonar system is species identification. Sampling with gillnets, seines, or a trawl is usually necessary to partition sonar targets by fish species. Netting requirements depend on the complexity of the fish community and the questions being asked. In complex fisheries, several nights of vertical and horizontal gillnets may be needed. During our first year, many of the regions set gillnets and the sonar results were partitioned by species. In addition to those efforts, collecting fish using a purse seine would help partition pelagic fish densities that are tracked during daylight hours when fish avoid gillnets (i.e., trout surveys). Lastly, the sonar estimates do not include the abundance of fish resting on or near (1 m) the bottom. The above limitations do not preclude sonar from being one of the most powerful tools available to Idaho fisheries management. The limitations, however, need to be understood and incorporated in survey design and question development.

RECOMMENDATIONS

1. Complete trout surveys during daylight hours.

2. When possible, design surveys that incorporate enough transects or survey time to sample about 10% of a lake's total volume.

3. Develop standard netting and purse seining procedures for partition fish species.

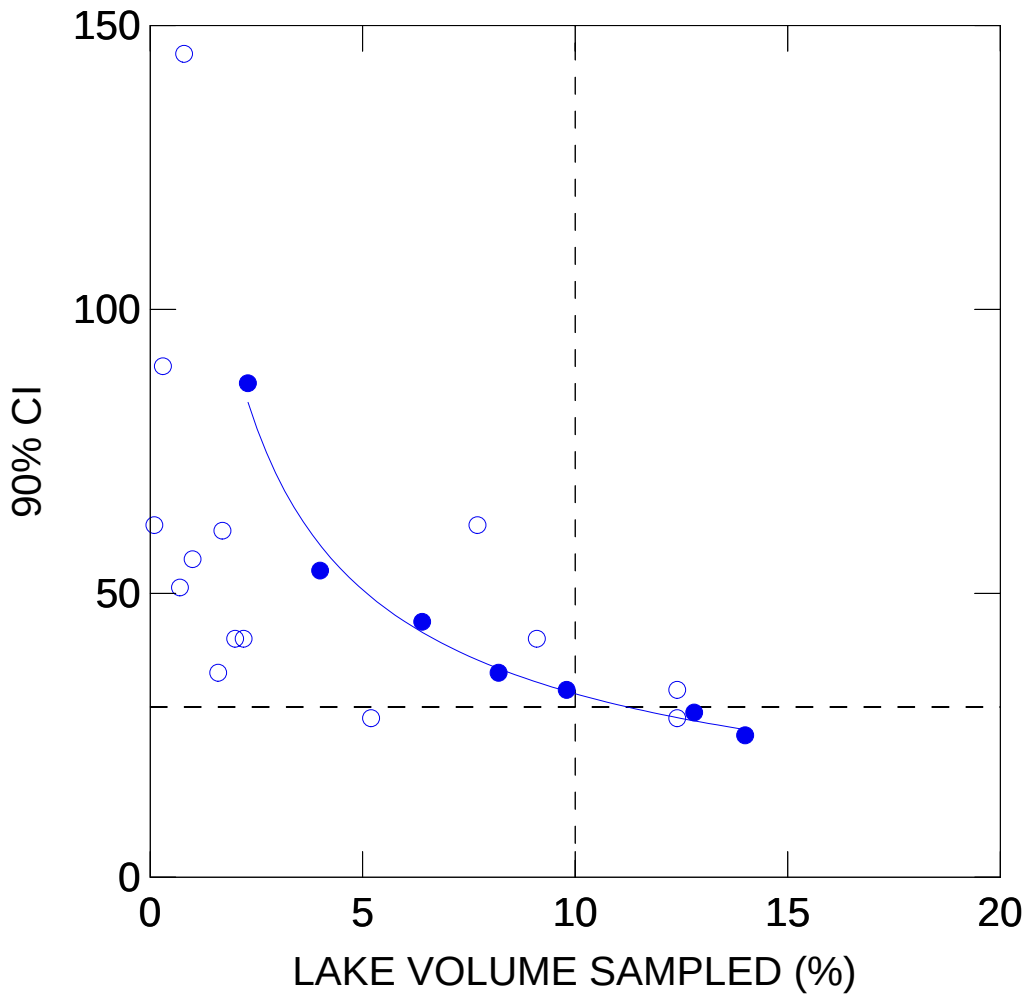

Figure 26. Relationship between the percent of the lake volume sampled and the 90% CI for the sidelooking transducer. The horizontal and vertical line intersect at a sampling volume of 10% and the 90% CI of 30%. The solid line is a model using exclusively Williams Lake data. The model represents seven different levels of sampling effort and the associated 90% CI.

ACKNOWLEDGMENTS

I would like to thank Ryan Hillyard for his excellent work ethic and ability to stay awake during long nights. Ryan helped retrofit an old electrofishing boat with the sonar gear and operated the GPS and radar systems while driving the sonar boat. Ryan deserves a great amount of credit for the quantity of work completed during the 2000 field season. Doug Megargle assisted with the Deadwood Reservoir survey. Ryan Hedrick, a Bureau of Reclamation biologist, provided surface area and lake volume estimates for most of the waters surveyed. Personnel from nearly every IDFG region participated in sonar sampling or setting gillnets that accompanied the surveys. Bureau of Reclamation provided funding for the sonar system.

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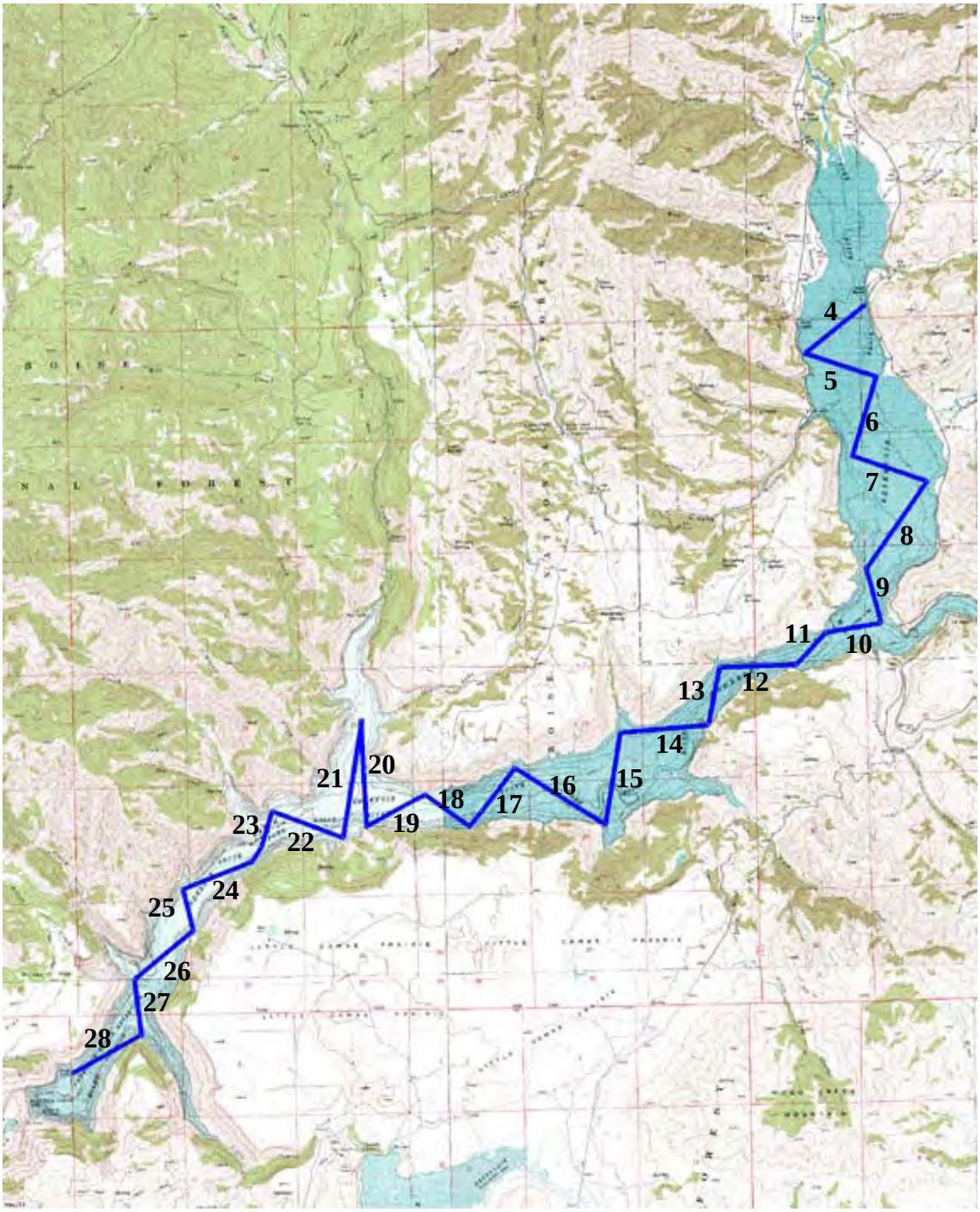
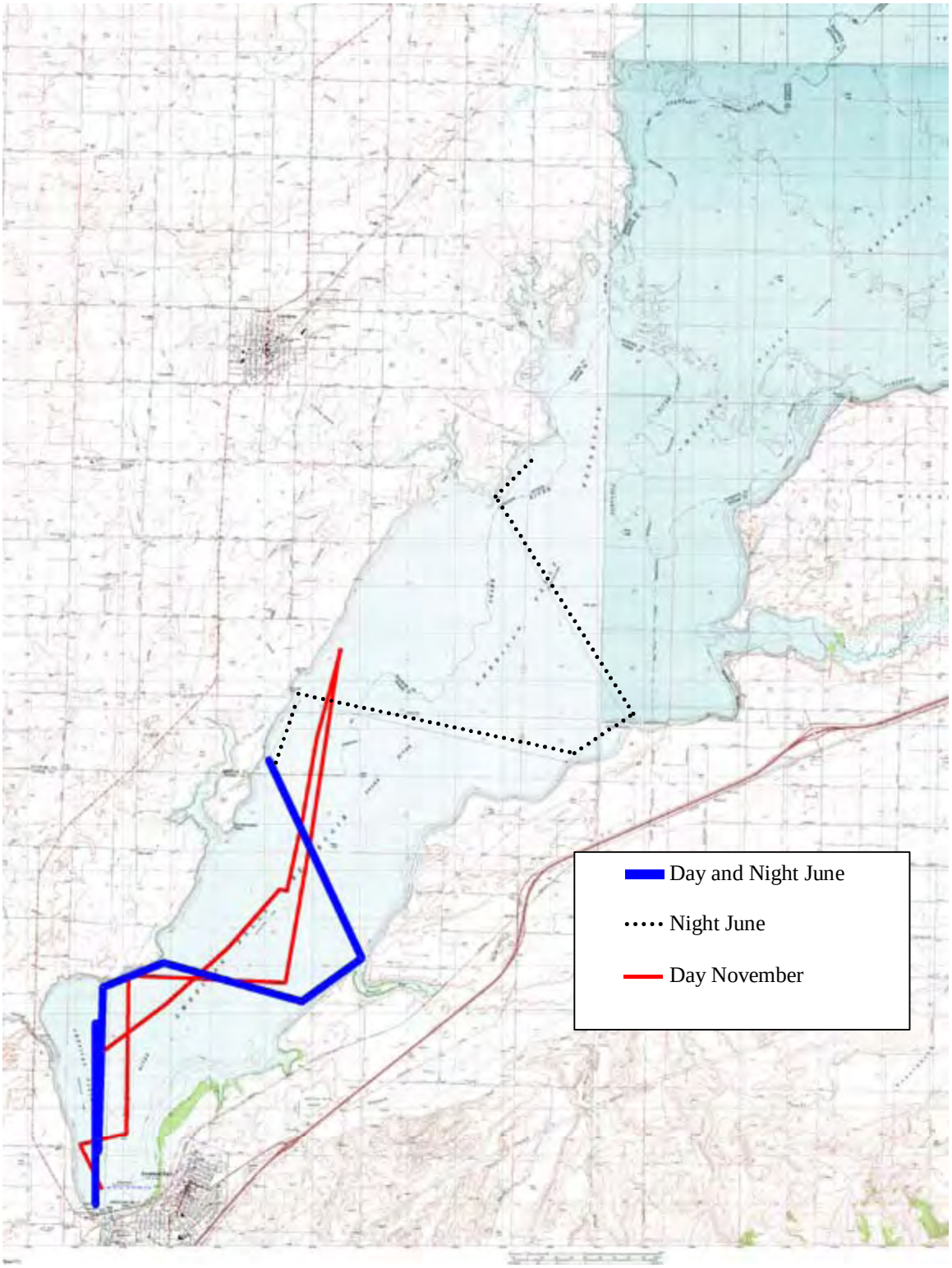
APPENDICES

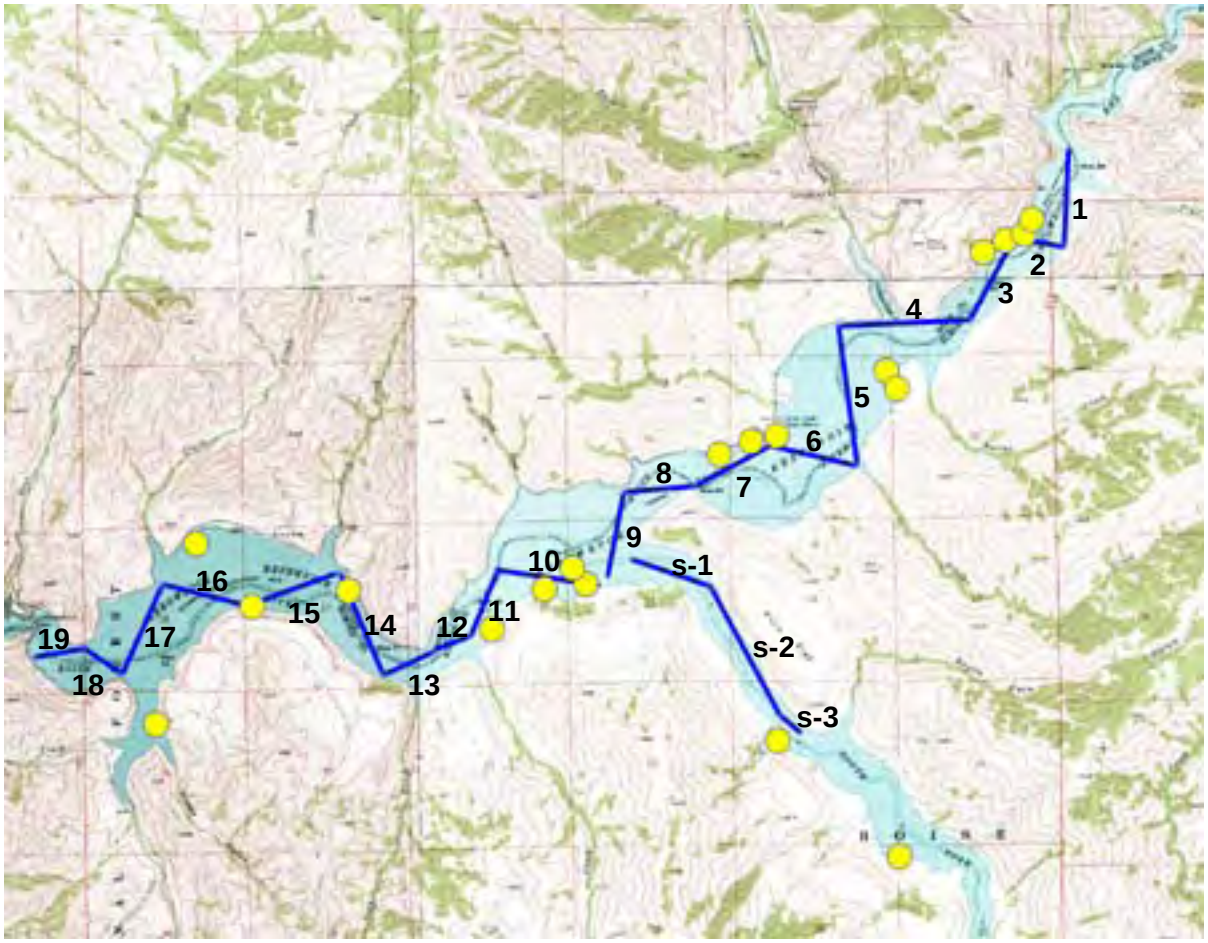
Appendix A. Transects for sonar survey of Anderson Ranch Reservoir.



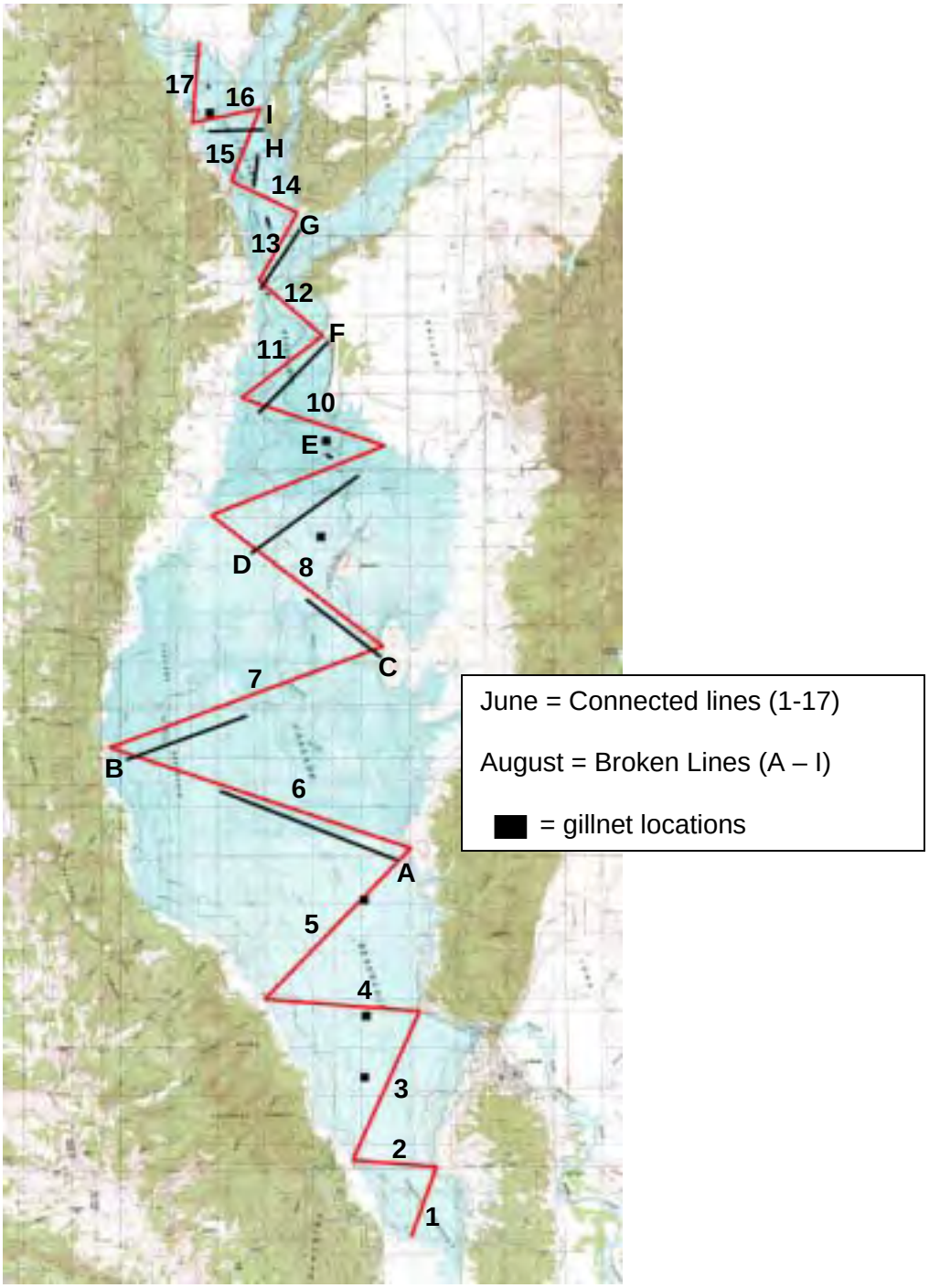
Appendix B. Sonar transects for American Falls Reservoir.



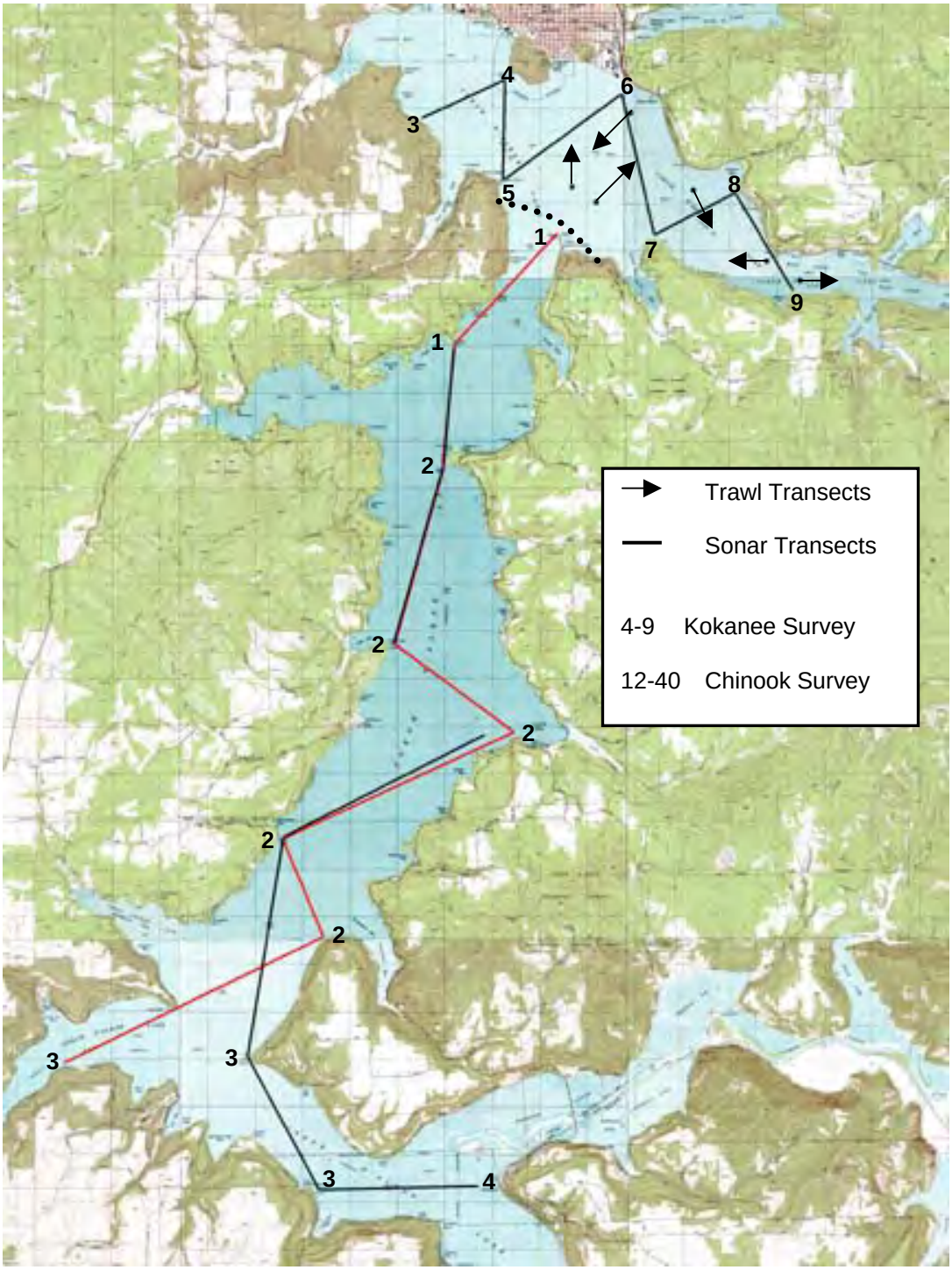
Appendix C. Sonar transects and gillnet locations (circles) for Arrowrock Reservoir.



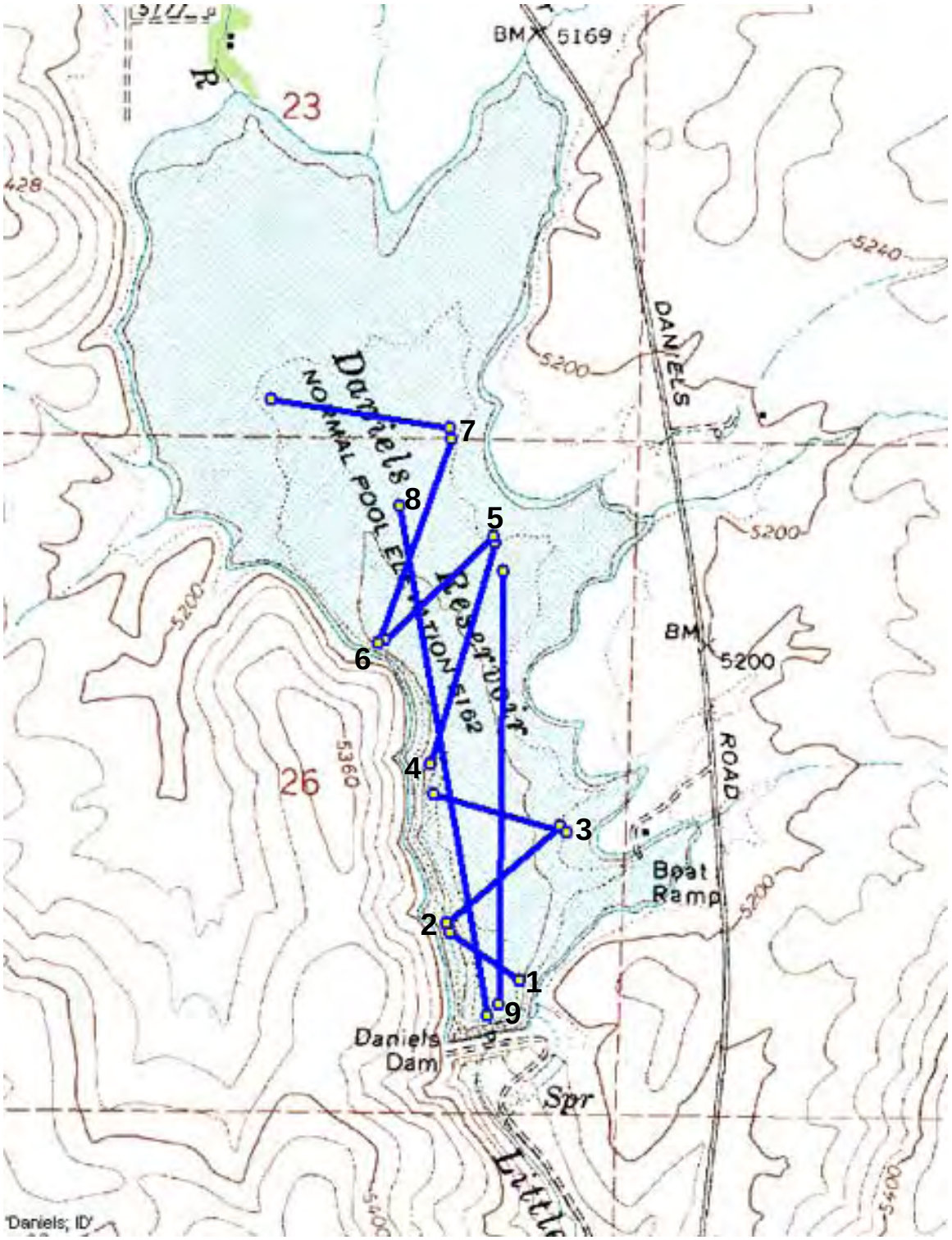
Appendix D. Sonar transects from the June (connected lines) and August (broken lines) sample periods.



Appendix E. Transect map of Coeur d'Alene Lake. Transects used to compare kokanee densities between the sonar and trawl boat. See Appendix O for GPS locations for each transect. Due to obstructions in the water, transect 3 was not completed. The transects are not in consecutive order, because many were combined to increase the likelihood of sampling at least one chinook per transect (target size >500 mm or >-36.1 dB).

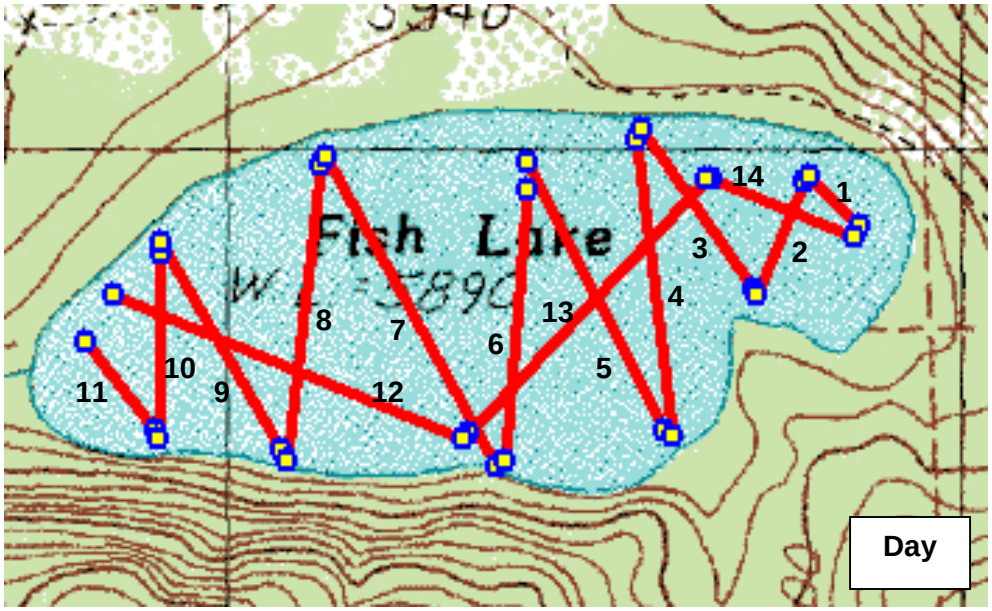


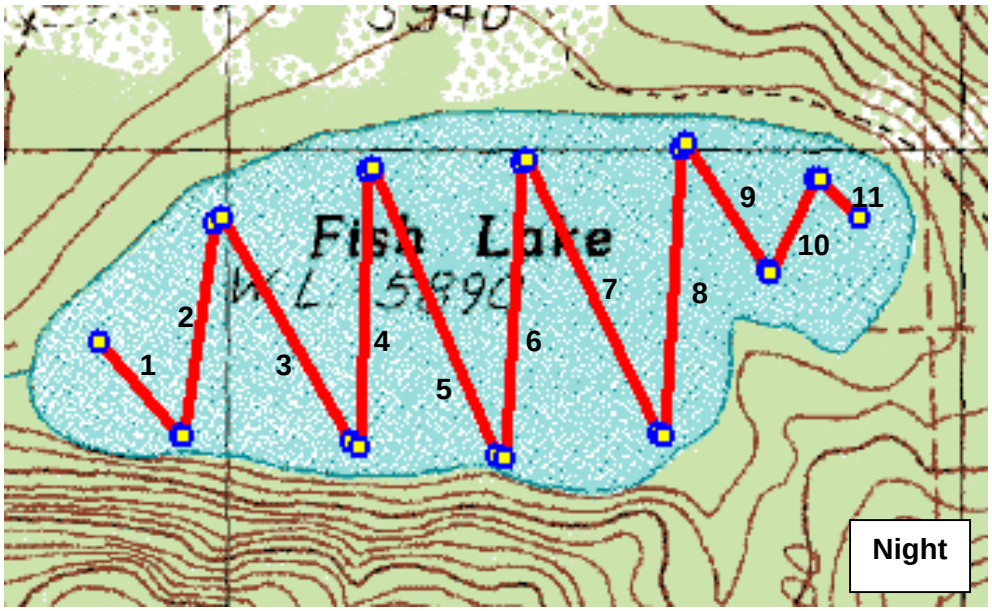
Appendix F. Sonar transects for Daniels Reservoir.



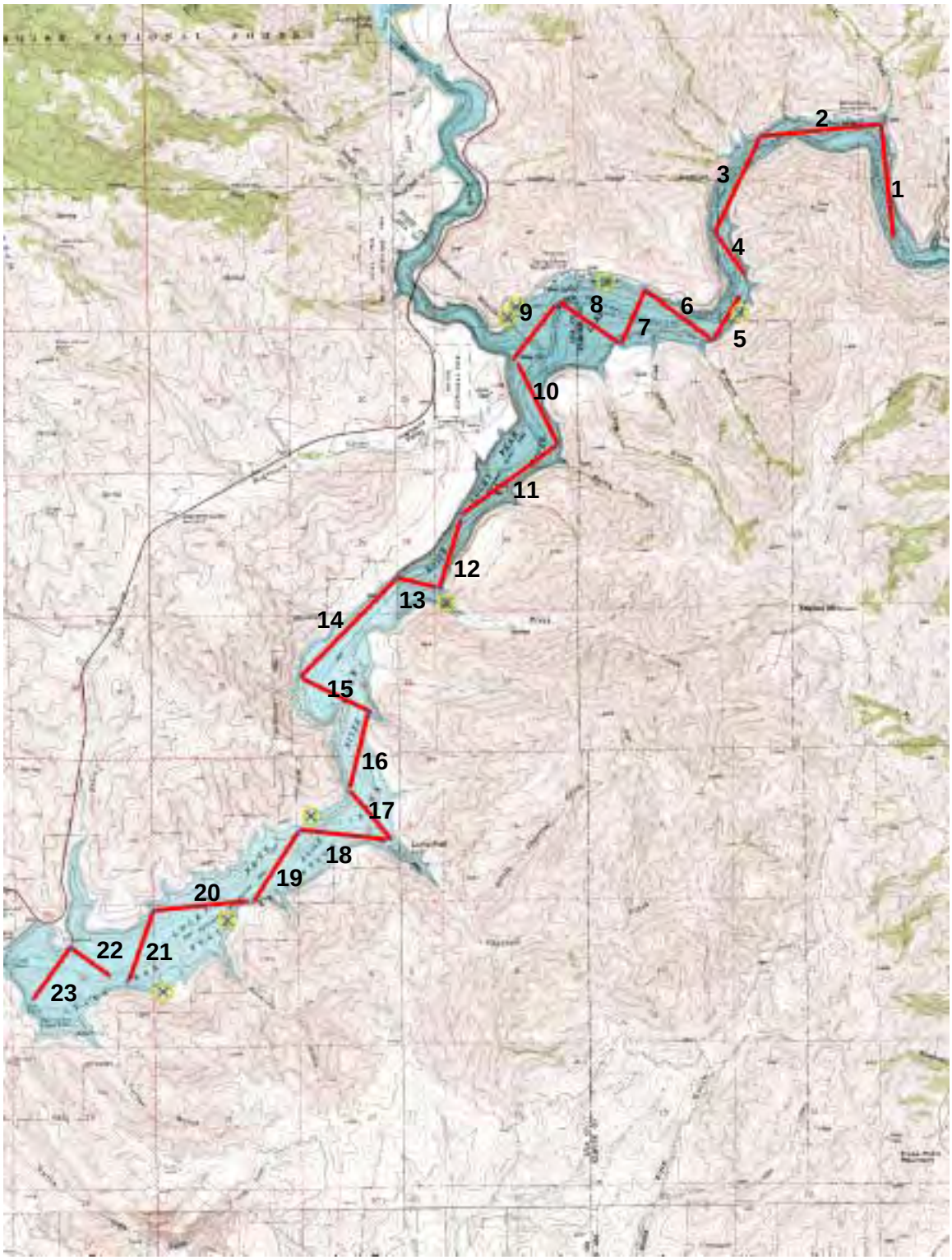
Appendix G. Sonar transects in Deadwood Reservoir. The survey was completed on September 13, 2000. The broken pattern was caused by shallow water conditions.

Appendix H. Sonar transect for Fish Lake. Day (top) and night (bottom) surveys were completed.

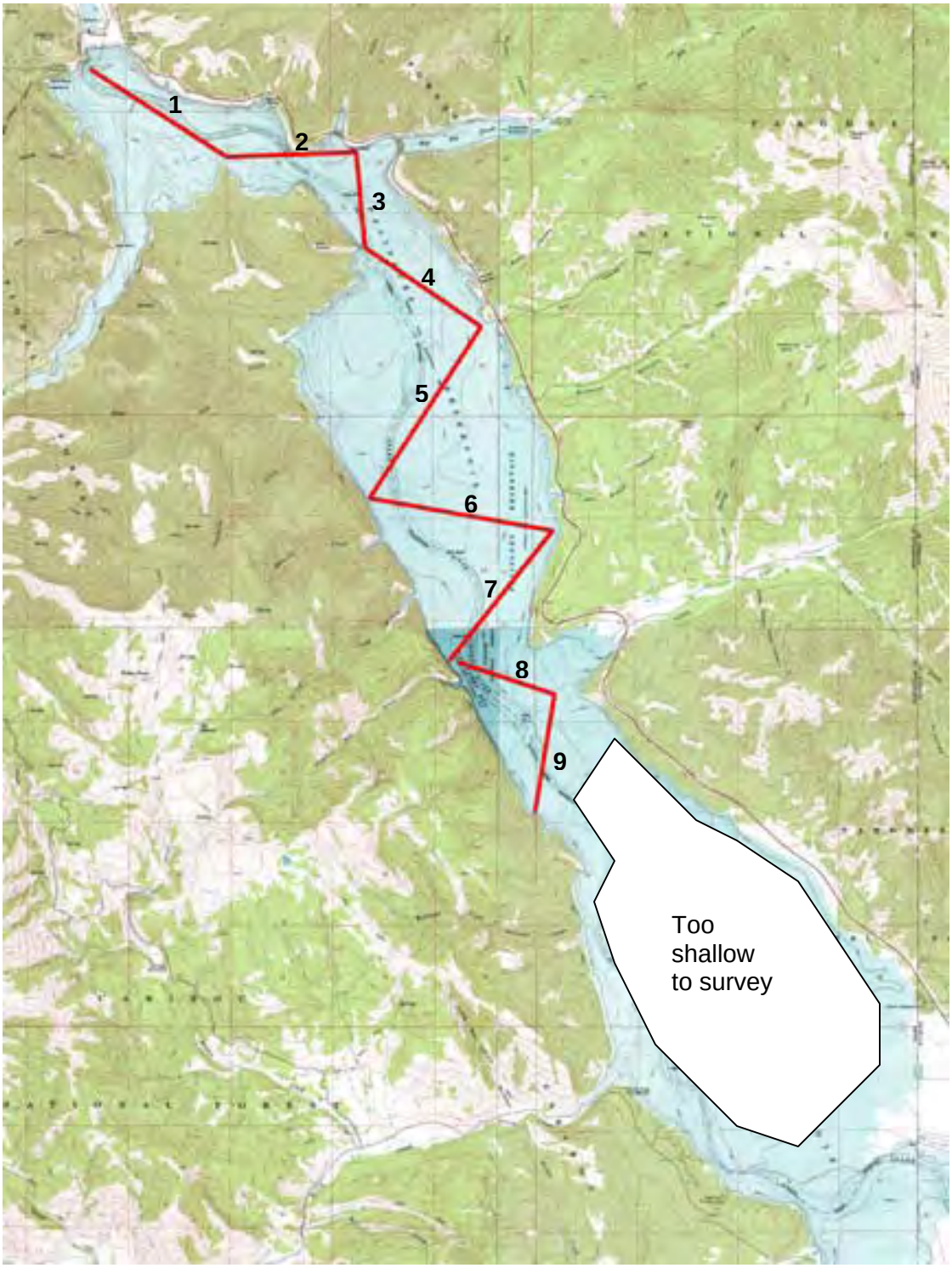




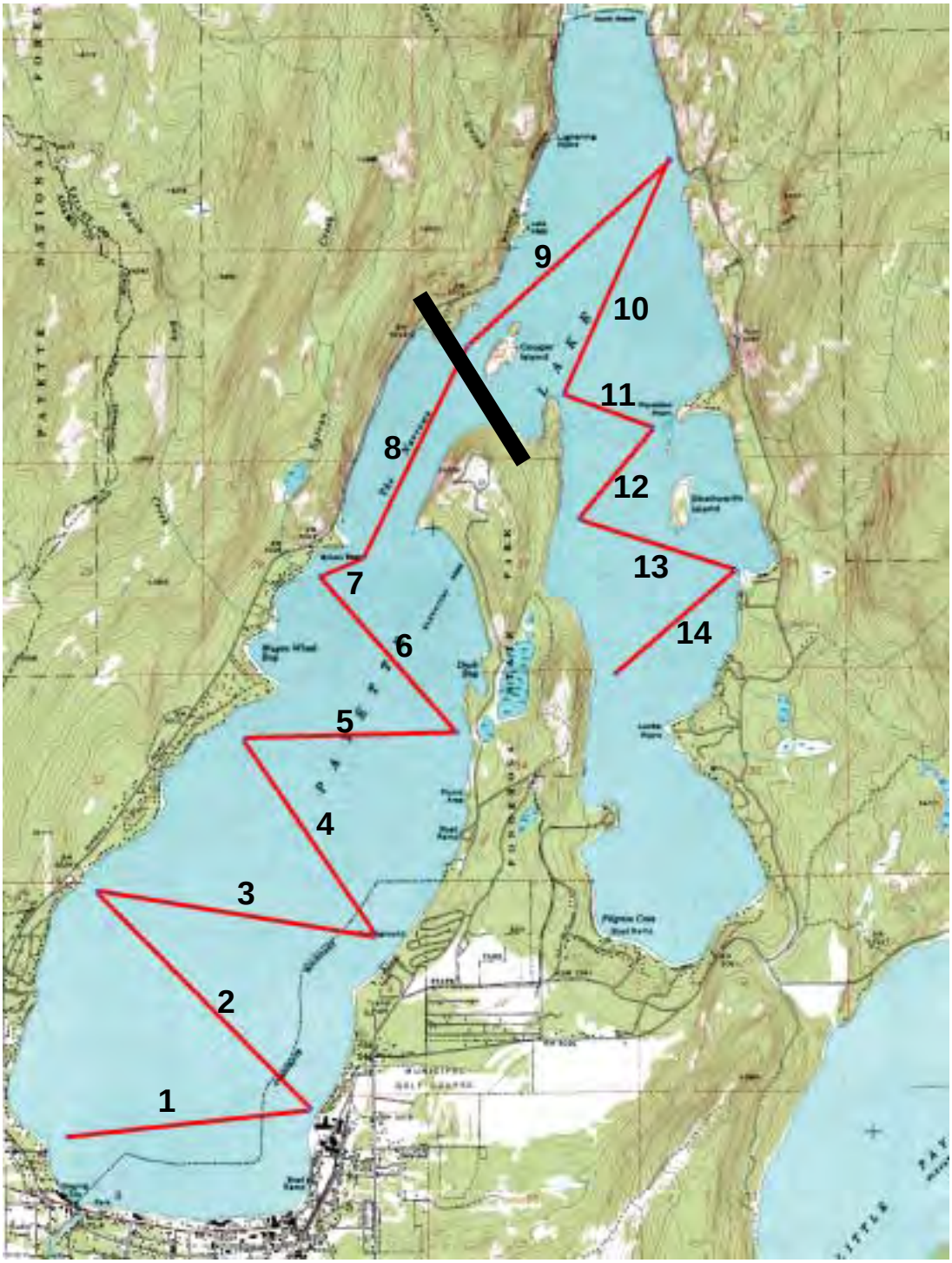
Appendix I. Sonar transects for Lucky Peak Reservoir. The X symbols indicate gillnet locations.



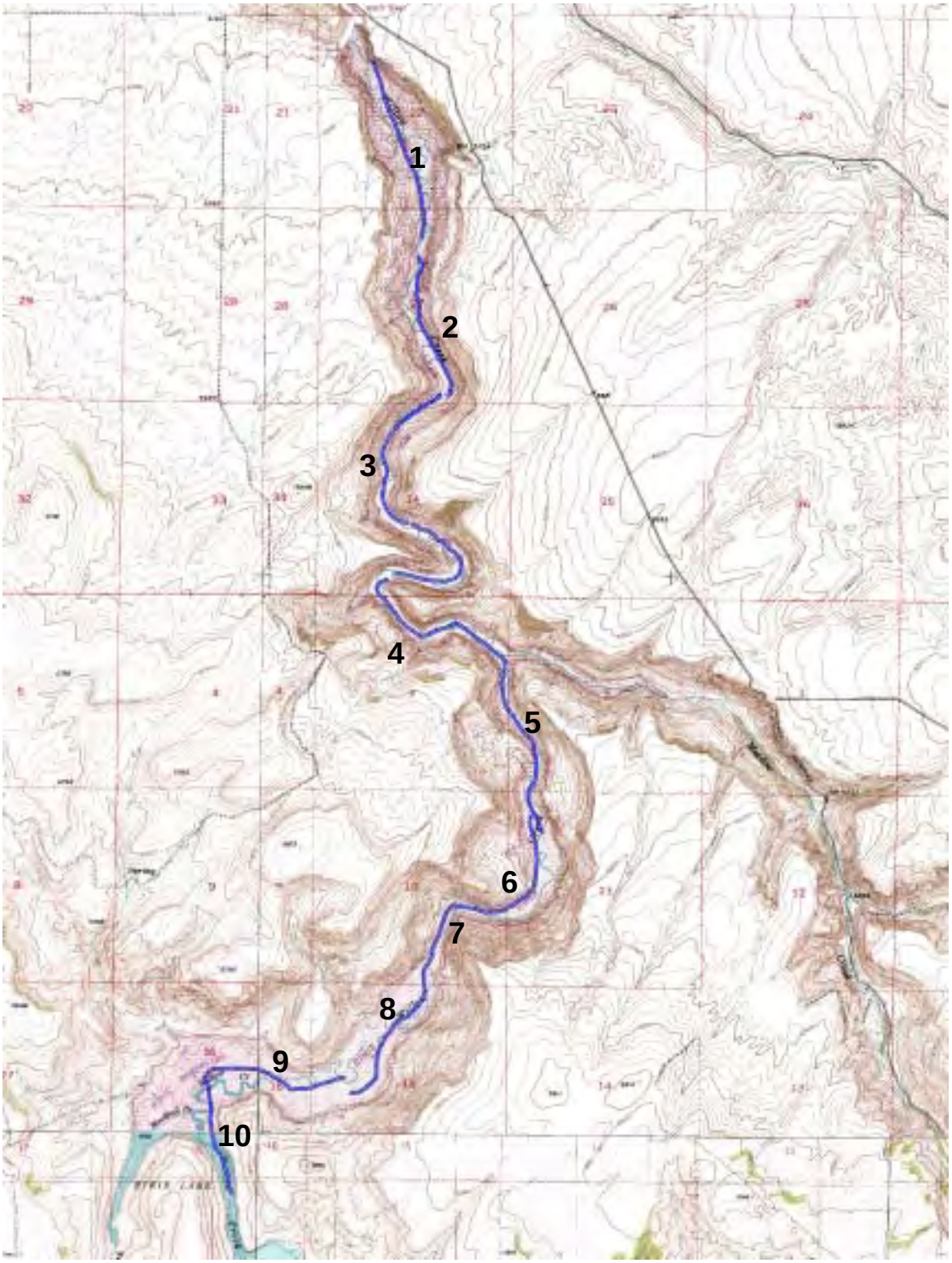
Appendix J. Sonar transects for Palisades Reservoir. The area not sampled was dry during the sonar survey.



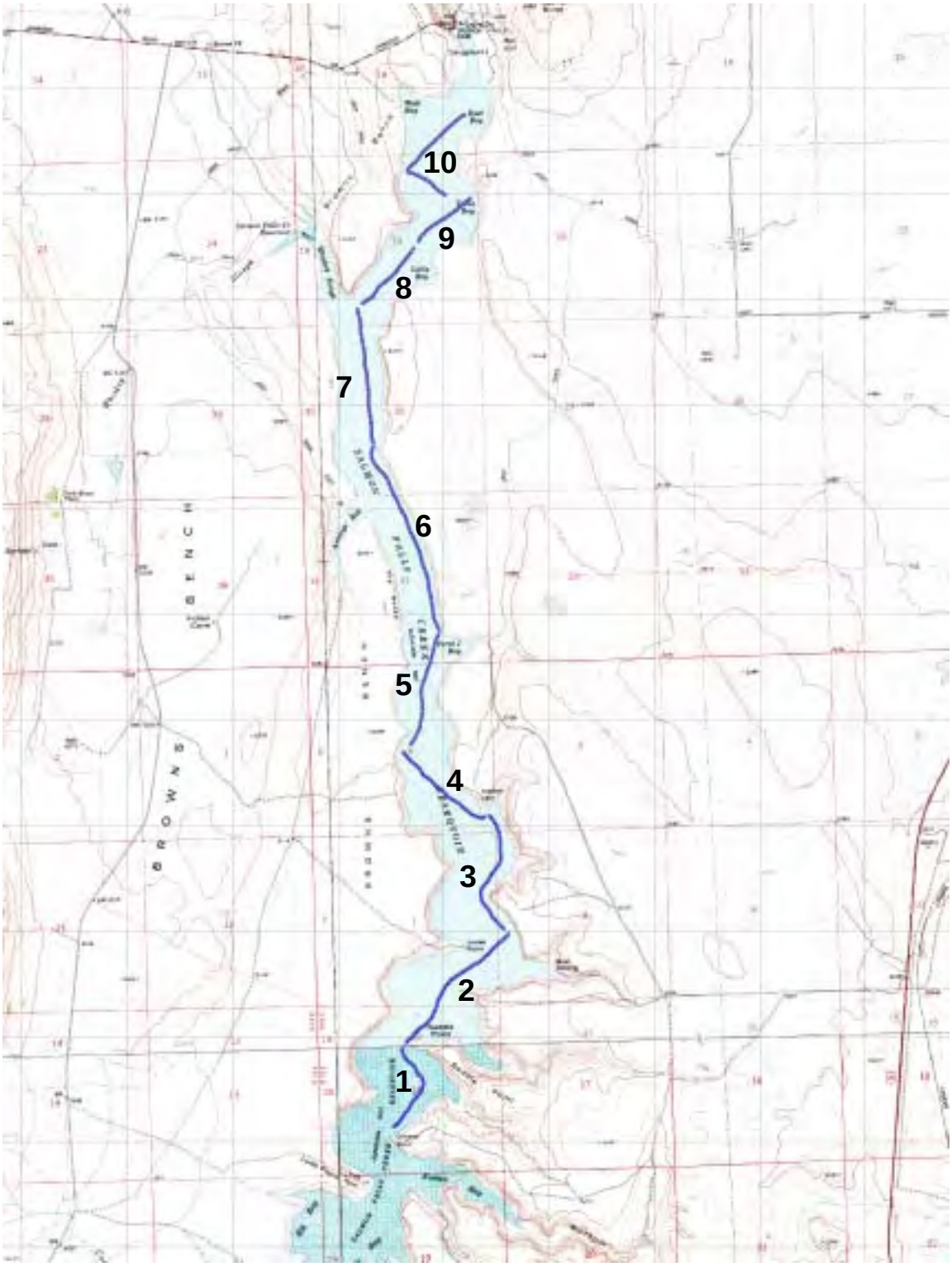
Appendix K. Sonar transects for Payette Lake. The thick black line shows the cutoff area used for the lake trout population estimate.



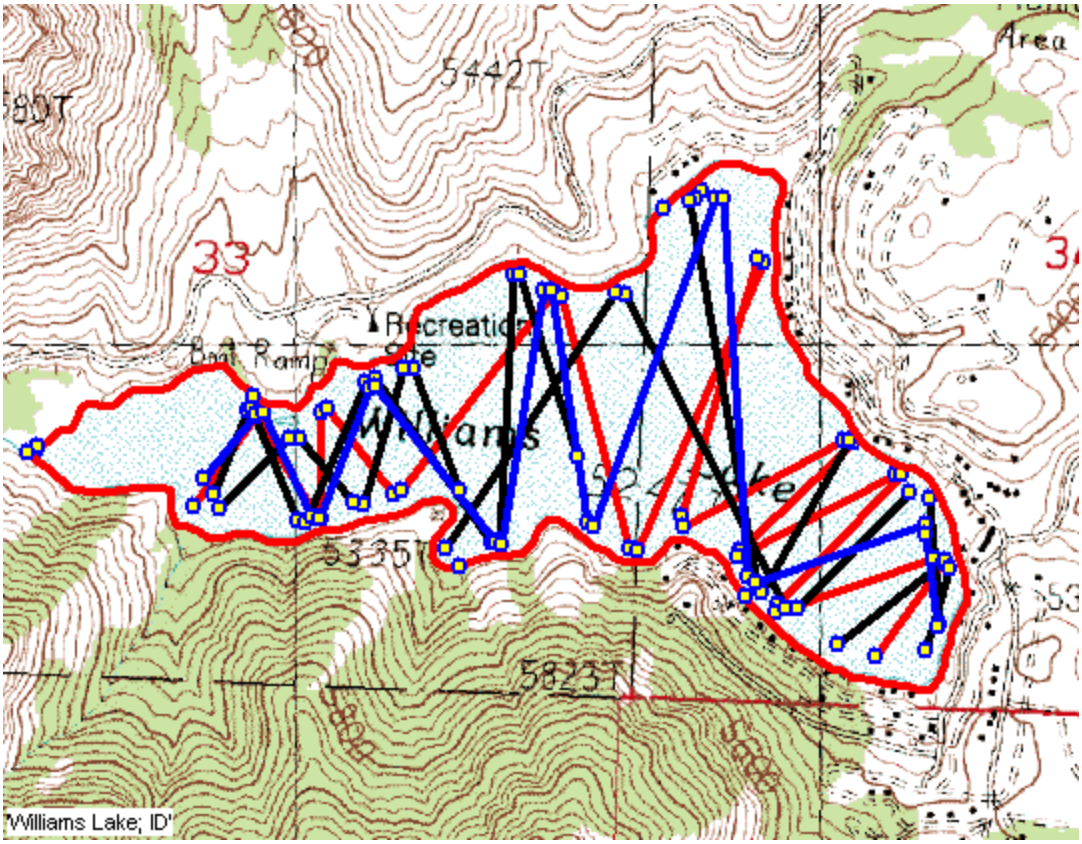
Appendix L. Transects of Ririe Reservoir. Mid-channel method was employed for all transects. Transects were set for a 20 min maximum time.



Appendix M. Sonar transects for Salmon Falls Creek Reservoir and the bathymetric map used to expand mean densities to estimate total pelagic fish abundance. The shaded bar legend refers to depth in meters.



Appendix N. Transect locations for all the surveys completed in Williams Lake. All transect data was pooled to build the bathymetric map.



Appendix O. GPS locations for sonar transects. The # symbol refers to the transect number.

Water	Date	Type	#	GPS Locations								Length (m)
				Begin				End				
American Fall Res.	7/11/00	Day	1	N 42	47.460 W	112	52.618	N 42	49.329 W	112	52.601	3,460
American Fall Res.	7/11/00	Day	2	N 42	49.334 W	112	52.598	N 42	49.618 W	112	51.682	1,355
American Fall Res.	7/11/00	Day	3	N 42	49.624 W	112	51.672	N 42	49.219 W	112	49.542	2,998
American Fall Res.	7/11/00	Day	4	N 42	49.219 W	112	49.522	N 42	49.717 W	112	48.620	1,537
American Fall Res.	7/11/00	Day	5	N 42	49.733 W	112	48.615	N 42	51.952 W	112	50.113	4,587
American Fall Res.	7/11/00	Day	1,b	N 42	48.917 W	112	52.702	N 42	46.861 W	112	52.641	3,807
American Fall Res.	7/11/00	Night	1	N 42	49.335 W	112	52.630	N 42	46.853 W	112	52.639	4,595
American Fall Res.	7/11/00	Night	2	N 42	49.596 W	112	51.624	N 42	49.336 W	112	52.612	1,430
American Fall Res.	7/11/00	Night	3	N 42	49.224 W	112	49.544	N 42	49.602 W	112	51.603	2,892
American Fall Res.	7/11/00	Night	4	N 42	49.743 W	112	48.648	N 42	49.229 W	112	49.537	1,540
American Fall Res.	7/11/00	Night	5	N 42	51.971 W	112	50.058	N 42	49.754 W	112	48.646	4,533
American Fall Res.	7/12/00	Night	6	N 42	51.975 W	112	50.114	N 42	52.638 W	112	49.654	1,378
American Fall Res.	7/12/00	Night	7	N 42	52.582 W	112	49.324	N 42	52.004 W	112	45.513	5,299
American Fall Res.	7/12/00	Night	8	N 42	52.006 W	112	45.501	N 42	52.492 W	112	44.614	1,506
American Fall Res.	7/12/00	Night	9	N 42	52.514 W	112	44.602	N 42	54.877 W	112	46.619	5,165
American Fall Res.	7/12/00	Night	10	N 42	54.891 W	112	46.619	N 42	55.544 W	112	46.119	1,387
American Fall Res.	11/7/00	Day	1	N 42	47.273 W	112	52.741	N 42	47.514 W	112	52.895	897
American Fall Res.	11/8/00	Day	2	N 42	47.527 W	112	52.901	N 42	47.668 W	112	52.189	1,005
American Fall Res.	11/9/00	Day	3	N 42	47.684 W	112	52.186	N 42	49.469 W	112	52.210	3,305
American Fall Res.	11/10/00	Day	4	N 42	49.471 W	112	52.196	N 42	49.425 W	112	49.797	3,270
American Fall Res.	11/11/00	Day	5	N 42	49.433 W	112	49.781	N 42	50.990 W	112	49.456	2,916
American Fall Res.	11/12/00	Day	6	N 42	51.001 W	112	49.453	N 42	53.228 W	112	49.054	4,158
American Fall Res.	11/13/00	Day	7	N 42	53.225 W	112	49.034	N 42	52.258 W	112	49.368	1,847
American Fall Res.	11/14/00	Day	8	N 42	52.252 W	112	49.369	N 42	51.339 W	112	49.561	1,710
American Fall Res.	11/15/00	Day	9	N 42	51.333 W	112	49.562	N 42	50.472 W	112	49.789	1,624
American Fall Res.	11/16/00	Day	10	N 42	50.489 W	112	49.904	N 42	49.811 W	112	50.675	1,637
American Fall Res.	11/17/00	Day	11	N 42	49.804 W	112	50.684	N 42	49.176 W	112	51.589	1,695
American Fall Res.	11/18/00	Day	12	N 42	49.173 W	112	51.593	N 42	48.606 W	112	52.563	1,688
American Fall Res.	11/19/00	Day	13	N 42	48.599 W	112	52.579	N 42	47.581 W	112	52.629	1,886
Anderson Ranch Res.	7/24/00	Night	4	N 43	27.545 W	115	17.990	N 43	27.188 W	115	18.618	1,074
Anderson Ranch Res.	7/24/00	Night	5	N 43	27.050 W	115	17.983	N 43	27.098 W	115	18.171	269
Anderson Ranch Res.	7/24/00	Night	6	N 43	26.998 W	115	17.882	N 43	26.998 W	115	17.881	1,035
Anderson Ranch Res.	7/24/00	Night	7	N 43	26.998 W	115	17.881	N 43	26.199 W	115	17.381	1,626
Anderson Ranch Res.	7/24/00	Night	8	N 43	26.190 W	115	17.372	N 43	25.540 W	115	18.017	1,485
Anderson Ranch Res.	7/24/00	Night	9	N 43	25.535 W	115	18.023	N 43	25.125 W	115	17.880	783
Anderson Ranch Res.	7/24/00	Night	10	N 43	25.119 W	115	17.892	N 43	25.055 W	115	18.453	766
Anderson Ranch Res.	7/24/00	Night	11	N 43	25.053 W	115	18.462	N 43	24.817 W	115	18.770	603
Anderson Ranch Res.	7/24/00	Night	12	N 43	24.814 W	115	18.784	N 43	24.807 W	115	19.570	1,061
Anderson Ranch Res.	7/24/00	Night	13	N 43	24.803 W	115	19.582	N 43	24.377 W	115	19.709	807
Anderson Ranch Res.	7/24/00	Night	14	N 43	24.368 W	115	19.722	N 43	24.321 W	115	20.630	1,229
Anderson Ranch Res.	7/24/00	Night	15	N 43	24.321 W	115	20.637	N 43	23.628 W	115	20.806	1,303
Anderson Ranch Res.	7/24/00	Night	16	N 43	23.625 W	115	20.818	N 43	24.063 W	115	21.741	1,487
Anderson Ranch Res.	7/24/00	Night	17	N 43	24.066 W	115	21.749	N 43	23.741 W	115	22.103	768
Anderson Ranch Res.	7/24/00	Night	18	N 43	23.628 W	115	22.238	N 43	23.874 W	115	22.684	755
Anderson Ranch Res.	7/24/00	Night	19	N 43	23.876 W	115	22.698	N 43	23.825 W	115	22.848	223
Anderson Ranch Res.	7/24/00	Night	20	N 43	23.646 W	115	23.312	N 43	24.449 W	115	23.352	1,488
Anderson Ranch Res.	7/24/00	Night	21	N 43	24.451 W	115	23.341	N 43	23.568 W	115	23.557	1,660
Anderson Ranch Res.	7/24/00	Night	22	N 43	23.560 W	115	23.562	N 43	23.769 W	115	24.289	1,055
Anderson Ranch Res.	7/24/00	Night	23	N 43	23.769 W	115	24.305	N 43	23.505 W	115	24.418	512
Anderson Ranch Res.	7/24/00	Night	24	N 43	23.390 W	115	24.524	N 43	23.231 W	115	25.116	852
Anderson Ranch Res.	7/24/00	Night	25	N 43	23.191 W	115	25.250	N 43	22.880 W	115	25.149	592
Anderson Ranch Res.	7/24/00	Night	26	N 43	22.872 W	115	25.158	N 43	22.515 W	115	25.768	1,056
Anderson Ranch Res.	7/24/00	Night	27	N 43	22.504 W	115	25.778	N 43	22.086 W	115	25.712	779
Anderson Ranch Res.	7/24/00	Night	28	N 43	22.083 W	115	25.721	N 43	21.805 W	115	26.429	1,086

Appendix O. (Continued.)

Water	Date	Type	#	GPS Locations Begin				GPS Locations End				Length (m)
Arrowrock Res.	6/27/00	Night	1	N 43	38.177 W	115	47.689	N 43	37.678 W	115	47.729	925
Arrowrock Res.	6/27/00	Night	2	N 43	37.666 W	115	47.740	N 43	37.716 W	115	48.089	478
Arrowrock Res.	6/27/00	Night	3	N 43	37.715 W	115	48.093	N 43	37.292 W	115	48.418	897
Arrowrock Res.	6/27/00	Night	4	N 43	37.284 W	115	48.427	N 43	37.262 W	115	49.375	1,276
Arrowrock Res.	6/27/00	Night	5	N 43	37.257 W	115	49.389	N 43	36.531 W	115	49.267	1,354
Arrowrock Res.	6/27/00	Night	6	N 43	36.522 W	115	49.283	N 43	36.630 W	115	49.898	851
Arrowrock Res.	6/27/00	Night	7	N 43	36.622 W	115	49.925	N 43	36.425 W	115	50.446	790
Arrowrock Res.	6/27/00	Night	8	N 43	36.422 W	115	50.471	N 43	36.396 W	115	50.961	661
Arrowrock Res.	6/27/00	Night	9	N 43	36.383 W	115	50.982	N 43	35.953 W	115	51.102	812
Arrowrock Res.	6/27/00	Night	10	N 43	35.904 W	115	51.174	N 43	35.993 W	115	51.915	1,012
Arrowrock Res.	6/27/00	Night	11	N 43	35.975 W	115	51.915	N 43	35.649 W	115	52.107	657
Arrowrock Res.	6/27/00	Night	12	N 43	35.639 W	115	52.129	N 43	35.573 W	115	52.379	358
Arrowrock Res.	6/27/00	Night	13	N 43	35.558 W	115	52.392	N 43	35.445 W	115	52.746	520
Arrowrock Res.	6/27/00	Night	14	N 43	35.457 W	115	52.763	N 43	35.978 W	115	53.056	1,042
Arrowrock Res.	6/27/00	Night	15	N 43	35.983 W	115	53.096	N 43	35.822 W	115	53.732	906
Arrowrock Res.	6/27/00	Night	16	N 43	35.822 W	115	53.759	N 43	35.938 W	115	54.351	825
Arrowrock Res.	6/27/00	Night	17	N 43	35.925 W	115	54.368	N 43	35.471 W	115	54.660	928
Arrowrock Res.	6/27/00	Night	18	N 43	35.474 W	115	54.683	N 43	35.601 W	115	54.932	409
Arrowrock Res.	6/27/00	Night	19	N 43	35.601 W	115	54.955	N 43	35.562 W	115	55.294	462
Arrowrock Res.	6/27/00	Night	s1	N 43	36.035 W	115	50.920	N 43	35.891 W	115	50.354	807
Arrowrock Res.	6/27/00	Night	s2	N 43	35.874 W	115	50.341	N 43	35.202 W	115	49.858	1,404
Arrowrock Res.	6/27/00	Night	s3	N 43	35.190 W	115	49.841	N 43	35.109 W	115	49.713	228
Cascade Res.	6/7/00	Night	1	N 44	29.179 W	116	4.128	N 44	29.949 W	116	3.727	1,521
Cascade Res.	6/7/00	Night	2	N 44	29.949 W	116	3.727	N 44	30.036 W	116	5.036	1,742
Cascade Res.	6/7/00	Night	3	N 44	30.036 W	116	5.036	N 44	31.696 W	116	3.963	3,386
Cascade Res.	6/7/00	Night	4	N 44	31.696 W	116	3.963	N 44	31.849 W	116	6.386	3,223
Cascade Res.	6/7/00	Night	5	N 44	31.849 W	116	6.386	N 44	33.524 W	116	4.072	4,360
Cascade Res.	6/7/00	Night	6	N 44	33.524 W	116	4.072	N 44	34.689 W	116	8.776	6,586
Cascade Res.	6/7/00	Night	7	N 44	34.689 W	116	8.776	N 44	35.791 W	116	4.473	6,045
Cascade Res.	6/7/00	Night	8	N 44	35.791 W	116	4.473	N 44	37.279 W	116	7.144	4,481
Cascade Res.	6/7/00	Night	9	N 44	37.279 W	116	7.144	N 44	38.039 W	116	4.413	3,876
Cascade Res.	6/7/00	Night	10	N 44	38.039 W	116	4.413	N 44	38.591 W	116	6.651	3,131
Cascade Res.	6/7/00	Night	11	N 44	38.591 W	116	6.651	N 44	39.281 W	116	5.363	2,129
Cascade Res.	6/7/00	Night	12	N 44	39.281 W	116	5.363	N 44	39.906 W	116	6.354	1,749
Cascade Res.	6/7/00	Night	13	N 44	39.906 W	116	6.354	N 44	40.661 W	116	5.739	1,617
Cascade Res.	6/7/00	Night	14	N 44	40.661 W	116	5.739	N 44	41.024 W	116	6.769	1,517
Cascade Res.	6/7/00	Night	15	N 44	41.024 W	116	6.769	N 44	41.834 W	116	6.309	1,618
Cascade Res.	6/7/00	Night	16	N 44	41.834 W	116	6.309	N 44	41.684 W	116	7.374	1,434
Cascade Res.	6/7/00	Night	17	N 44	41.684 W	116	7.374	N 44	42.571 W	116	7.255	1,650
Cascade Res.	8/14/00	Night	1	N 44	29.534 W	116	3.831	N 44	29.863 W	116	3.736	622
Cascade Res.	8/14/00	Night	2	N 44	29.864 W	116	3.755	N 44	30.031 W	116	4.912	1,564
Cascade Res.	8/14/00	Night	3	N 44	30.039 W	116	4.921	N 44	31.683 W	116	3.915	3,323
Cascade Res.	8/14/00	Night	4	N 44	31.689 W	116	4.161	N 44	31.829 W	116	5.987	2,432
Cascade Res.	8/14/00	Night	5	N 44	31.859 W	116	5.973	N 44	33.428 W	116	4.141	3,784
Cascade Res.	8/14/00	Night	6	N 44	33.435 W	116	4.139	N 44	34.541 W	116	8.078	5,599
Cascade Res.	8/14/00	Night	7	N 44	34.551 W	116	8.081	N 44	35.752 W	116	4.560	5,160
Cascade Res.	8/14/00	Night	8	N 44	35.772 W	116	4.562	N 44	36.776 W	116	6.231	2,886
Cascade Res.	8/14/00	Night	10	N 44	38.139 W	116	5.541	N 44	38.535 W	116	6.384	1,334
Cascade Res.	8/14/00	Night	11	N 44	38.550 W	116	6.309	N 44	38.725 W	116	6.151	386
Coeur d'Alene Lake	7/31/00	Night	3	N 47	39.324 W	116	48.405	N 47	39.750 W	116	47.017	1,908
Coeur d'Alene Lake	7/31/00	Night	4	N 47	39.745 W	116	47.006	N 47	38.623 W	116	47.047	2,079
Coeur d'Alene Lake	7/31/00	Night	5	N 47	38.615 W	116	47.036	N 47	39.583 W	116	45.062	3,053
Coeur d'Alene Lake	7/31/00	Night	6	N 47	39.583 W	116	45.045	N 47	37.998 W	116	44.510	3,011
Coeur d'Alene Lake	7/31/00	Night	7	N 47	37.990 W	116	44.497	N 47	38.458 W	116	43.151	1,895
Coeur d'Alene Lake	7/31/00	Night	8	N 47	38.457 W	116	43.138	N 47	37.353 W	116	42.183	2,369

Appendix O. (Continued.)

Water	Date	Type	#	GPS Locations Begin				GPS Locations End				Length (m)
Coeur d'Alene Lake	7/31/00	Day	12	N 47	38.006 W	116	46.137	N 47	36.765 W	116	47.856	3,149
Coeur d'Alene Lake	7/31/00	Day	15	N 47	36.757 W	116	47.864	N 47	35.370 W	116	48.076	2,583
Coeur d'Alene Lake	7/31/00	Day	20	N 47	35.353 W	116	48.059	N 47	33.361 W	116	48.882	3,831
Coeur d'Alene Lake	7/31/00	Day	23	N 47	33.346 W	116	48.883	N 47	32.355 W	116	46.905	3,086
Coeur d'Alene Lake	7/31/00	Day	24	N 47	32.341 W	116	46.901	N 47	31.145 W	116	50.775	5,341
Coeur d'Alene Lake	7/31/00	Day	27	N 47	31.135 W	116	50.778	N 47	30.033 W	116	50.099	2,212
Coeur d'Alene Lake	7/31/00	Day	28	N 47	30.019 W	116	50.123	N 47	28.599 W	116	54.443	6,028
Coeur d'Alene Lake	7/31/00	Night	15	N 47	35.384 W	116	48.062	N 47	36.707 W	116	47.884	2,461
Coeur d'Alene Lake	7/31/00	Night	20	N 47	33.351 W	116	48.907	N 47	35.373 W	116	48.063	3,892
Coeur d'Alene Lake	7/31/00	Night	24	N 47	32.314 W	116	47.386	N 47	31.166 W	116	50.748	4,724
Coeur d'Alene Lake	7/31/00	Night	27	N 47	31.146 W	116	50.766	N 47	28.692 W	116	51.371	4,608
Coeur d'Alene Lake	7/31/00	Night	30	N 47	28.668 W	116	51.377	N 47	27.171 W	116	50.192	3,147
Coeur d'Alene Lake	7/31/00	Night	37	N 47	27.157 W	116	50.185	N 47	27.193 W	116	47.521	3,348
Daniels Res.	6/9/00	Day	1	N 42	20.807 W	112	26.494	N 42	20.868 W	112	26.617	203
Daniels Res.	6/9/00	Day	2	N 42	20.879 W	112	26.622	N 42	21.007 W	112	26.430	354
Daniels Res.	6/9/00	Day	3	N 42	21. 0 W	112	26.419	N 42	21.047 W	112	26.648	326
Daniels Res.	6/9/00	Day	4	N 42	21.086 W	112	26.655	N 42	21.373 W	112	26.549	551
Daniels Res.	6/9/00	Day	5	N 42	21.381 W	112	26.552	N 42	21.245 W	112	26.736	357
Daniels Res.	6/9/00	Day	6	N 42	21.241 W	112	26.748	N 42	21.505 W	112	26.627	516
Daniels Res.	6/9/00	Day	7	N 42	21.519 W	112	26.630	N 42	21.554 W	112	26.936	425
Daniels Res.	6/9/00	Day	8	N 42	21.418 W	112	26.715	N 42	20.762 W	112	26.549	1,235
Daniels Res.	6/9/00	Day	9	N 42	20.776 W	112	26.532	N 42	21.335 W	112	26.536	1,035
Deadwood Res.	9/13/00	Night	5	N 44	18.840 W	115	39.629	N 44	18.896 W	115	39.479	225
Deadwood Res.	9/13/00	Night	6	N 44	18.116 W	115	38.880	N 44	18.807 W	115	39.623	1,616
Deadwood Res.	9/13/00	Night	7a	N 44	18.171 W	115	40.041	N 44	18.241 W	115	39.899	229
Deadwood Res.	9/13/00	Night	7b	N 44	18.138 W	115	39.609	N 44	18.088 W	115	39.397	297
Deadwood Res.	9/13/00	Night	7c	N 44	17.630 W	115	39.227	N 44	17.668 W	115	39.295	115
Deadwood Res.	9/13/00	Night	7d	N 44	18.050 W	115	39.204	N 44	18.071 W	115	38.889	421
Deadwood Res.	9/13/00	Night	8a	N 44	17.630 W	115	39.227	N 44	17.668 W	115	39.295	115
Deadwood Res.	9/13/00	Night	8b	N 44	17.789 W	115	39.491	N 44	17.847 W	115	39.678	271
Deadwood Res.	9/13/00	Night	8c	N 44	17.916 W	115	39.868	N 44	17.984 W	115	39.968	183
Deadwood Res.	9/13/00	Night	9	N 44	18.544 W	115	39.016	N 44	17.898 W	115	38.910	1,204
Fish Lake	7/18/00	Day	1	N 46	49.030 W	114	55.099	N 46	48.962 W	114	55.025	157
Fish Lake	7/18/00	Day	2	N 46	48.956 W	114	55.022	N 46	49.095 W	114	55.015	258
Fish Lake	7/18/00	Day	3	N 46	49.103 W	114	55.014	N 46	48.946 W	114	54.890	331
Fish Lake	7/18/00	Day	4	N 46	48.937 W	114	54.886	N 46	49.158 W	114	54.841	413
Fish Lake	7/18/00	Day	5	N 46	49.164 W	114	54.836	N 46	48.930 W	114	54.662	487
Fish Lake	7/18/00	Day	6	N 46	48.934 W	114	54.652	N 46	49.134 W	114	54.620	373
Fish Lake	7/18/00	Day	7	N 46	49.154 W	114	54.619	N 46	48.952 W	114	54.481	413
Fish Lake	7/18/00	Day	8	N 46	48.949 W	114	54.470	N 46	49.170 W	114	54.502	411
Fish Lake	7/18/00	Day	9	N 46	49.177 W	114	54.497	N 46	49.055 W	114	54.381	270
Fish Lake	7/18/00	Day	10	N 46	49.051 W	114	54.378	N 46	49.135 W	114	54.322	171
Fish Lake	7/18/00	Day	11	N 46	49.139 W	114	54.317	N 46	49.101 W	114	54.266	96
Fish Lake	7/18/00	Day	12	N 46	49.094 W	114	54.272	N 46	49.139 W	114	54.423	209
Fish Lake	7/18/00	Day	13	N 46	49.140 W	114	54.427	N 46	48.954 W	114	54.690	480
Fish Lake	7/18/00	Day	14	N 46	48.951 W	114	54.697	N 46	49.065 W	114	55.067	516
Fish Lake	7/18/00	Night	1	N 46	49.030 W	114	55.084	N 46	48.958 W	114	55.000	171
Fish Lake	7/18/00	Night	2	N 46	48.958 W	114	54.995	N 46	49.116 W	114	54.955	297
Fish Lake	7/18/00	Night	3	N 46	49.119 W	114	54.948	N 46	48.950 W	114	54.816	355
Fish Lake	7/18/00	Night	4	N 46	48.947 W	114	54.807	N 46	49.152 W	114	54.791	380
Fish Lake	7/18/00	Night	5	N 46	49.154 W	114	54.785	N 46	48.937 W	114	54.660	432
Fish Lake	7/18/00	Night	6	N 46	48.936 W	114	54.653	N 46	49.156 W	114	54.625	409
Fish Lake	7/18/00	Night	7	N 46	49.157 W	114	54.619	N 46	48.951 W	114	54.487	417
Fish Lake	7/18/00	Night	8	N 46	48.949 W	114	54.480	N 46	49.163 W	114	54.453	398
Fish Lake	7/18/00	Night	9	N 46	49.167 W	114	54.447	N 46	49.070 W	114	54.364	208

Appendix O. (Continued.)

Water	Date	Type	#	GPS Locations Begin				End				Length (m)
Fish Lake	7/18/00	Night	10	N 46	49.068 W	114	54.361	N 46	49.137 W	114	54.310	143
Fish Lake	7/18/00	Night	11	N 46	49.137 W	114	54.304	N 46	49.108 W	114	54.265	73
Lucky Peak Res.	6/26/00	Night	1	N 43	35.862 W	115	55.848	N 43	36.530 W	115	55.935	1,242
Lucky Peak Res.	6/26/00	Night	2	N 43	36.548 W	115	55.951	N 43	36.483 W	115	56.942	1,338
Lucky Peak Res.	6/26/00	Night	3	N 43	36.473 W	115	56.946	N 43	35.907 W	115	57.323	1,164
Lucky Peak Res.	6/26/00	Night	4	N 43	35.891 W	115	57.313	N 43	35.650 W	115	57.088	539
Lucky Peak Res.	6/26/00	Night	5	N 43	35.512 W	115	57.133	N 43	35.259 W	115	57.343	547
Lucky Peak Res.	6/26/00	Night	6	N 43	35.258 W	115	57.373	N 43	35.551 W	115	57.893	885
Lucky Peak Res.	6/26/00	Night	7	N 43	35.559 W	115	57.911	N 43	35.246 W	115	58.110	638
Lucky Peak Res.	6/26/00	Night	8	N 43	35.243 W	115	58.137	N 43	35.491 W	115	58.620	796
Lucky Peak Res.	6/26/00	Night	9	N 43	35.471 W	115	58.659	N 43	35.153 W	115	59.008	753
Lucky Peak Res.	6/26/00	Night	10	N 43	35.117 W	115	58.972	N 43	34.640 W	115	58.656	980
Lucky Peak Res.	6/26/00	Night	11	N 43	34.620 W	115	58.670	N 43	34.217 W	115	59.446	1,284
Lucky Peak Res.	6/26/00	Night	12	N 43	34.169 W	115	59.468	N 43	33.771 W	115	59.645	774
Lucky Peak Res.	6/26/00	Night	13	N 43	33.774 W	115	59.685	N 43	33.829 W	115	59.992	426
Lucky Peak Res.	6/26/00	Night	14	N 43	33.814 W	116	0.018	N 43	33.241 W	116	0.802	1,496
Lucky Peak Res.	6/26/00	Night	15	N 43	33.224 W	116	0.786	N 43	33.022 W	116	0.236	830
Lucky Peak Res.	6/26/00	Night	16	N 43	32.997 W	116	0.259	N 43	32.567 W	116	0.407	821
Lucky Peak Res.	6/26/00	Night	17	N 43	32.535 W	116	0.401	N 43	32.251 W	116	0.079	681
Lucky Peak Res.	6/26/00	Night	18	N 43	32.243 W	116	0.111	N 43	32.307 W	116	0.818	959
Lucky Peak Res.	6/26/00	Night	19	N 43	32.291 W	116	0.843	N 43	31.883 W	116	1.214	906
Lucky Peak Res.	6/26/00	Night	20	N 43	31.879 W	116	1.279	N 43	31.828 W	116	2.035	1,023
Lucky Peak Res.	6/26/00	Night	21	N 43	31.811 W	116	2.058	N 43	31.413 W	116	2.257	784
Lucky Peak Res.	6/26/00	Night	22	N 43	31.438 W	116	2.423	N 43	31.607 W	116	2.737	526
Lucky Peak Res.	6/26/00	Night	23	N 43	31.599 W	116	2.752	N 43	31.303 W	116	3.050	679
Palisades Res.	9/6/00	Day	1	N 43	19.011 W	111	10.674	N 43	19.750 W	111	12.260	2,543
Palisades Res.	9/6/00	Day	2	N 43	19.054 W	111	9.163	N 43	19.011 W	111	10.659	2,023
Palisades Res.	9/6/00	Day	3	N 43	18.252 W	111	9.063	N 43	19.048 W	111	9.160	1,479
Palisades Res.	9/6/00	Day	4	N 43	17.571 W	111	7.706	N 43	18.241 W	111	9.056	2,206
Palisades Res.	9/6/00	Day	5	N 43	16.109 W	111	8.997	N 43	17.562 W	111	7.706	3,206
Palisades Res.	9/6/00	Day	6	N 43	15.832 W	111	6.870	N 43	16.103 W	111	8.986	2,906
Palisades Res.	9/6/00	Day	7	N 43	14.730 W	111	8.057	N 43	15.828 W	111	6.867	2,593
Palisades Res.	9/6/00	Day	8	N 43	14.424 W	111	7.370	est.				1,769
Palisades Res.	9/6/00	Day	9	N 43	30.183 W	111	43.552	est.				1,884
Payette Lake	8/15/00	Night	1	N 44	55.016 W	116	7.140	N 44	55.114 W	116	5.749	1,839
Payette Lake	8/15/00	Night	2	N 44	55.122 W	116	5.736	N 44	56.013 W	116	6.947	2,293
Payette Lake	8/15/00	Night	3	N 44	56.025 W	116	6.945	N 44	55.825 W	116	5.361	2,116
Payette Lake	8/15/00	Night	4	N 44	55.828 W	116	5.347	N 44	56.634 W	116	6.096	1,788
Payette Lake	8/15/00	Night	5	N 44	56.648 W	116	6.086	N 44	56.661 W	116	4.868	1,602
Payette Lake	8/15/00	Night	6	N 44	56.662 W	116	4.876	N 44	57.305 W	116	5.648	1,564
Payette Lake	8/15/00	Night	8	N 44	57.378 W	116	5.398	N 44	58.240 W	116	4.789	1,786
Payette Lake	8/15/00	Night	9	N 44	58.249 W	116	4.779	N 44	59.001 W	116	3.599	2,084
Payette Lake	8/15/00	Night	10	N 44	59.004 W	116	3.609	N 44	58.050 W	116	4.228	1,945
Payette Lake	8/15/00	Night	11	N 44	58.042 W	116	4.230	N 44	57.904 W	116	3.725	711
Payette Lake	8/15/00	Night	12	N 44	57.896 W	116	3.719	N 44	57.535 W	116	4.148	874
Payette Lake	8/15/00	Night	13	N 44	57.525 W	116	4.136	N 44	57.317 W	116	3.257	1,218
Payette Lake	8/15/00	Night	14	N 44	57.311 W	116	3.258	N 44	56.894 W	116	3.954	1,197
Ririe Res.	9/5/00	Night	1	N 43	34.799 W	111	44.344	N 43	34.001 W	111	44.048	837
Ririe Res.	9/5/00	Night	2	N 43	33.927 W	111	44.060	N 43	33.304 W	111	43.867	651
Ririe Res.	9/5/00	Night	3	N 43	33.309 W	111	43.916	N 43	32.727 W	111	44.103	743
Ririe Res.	9/5/00	Night	4	N 43	32.725 W	111	44.088	N 43	32.508 W	111	44.185	596
Ririe Res.	9/5/00	Night	5	N 43	32.482 W	111	44.227	N 43	32.101 W	111	43.503	792
Ririe Res.	9/5/00	Night	6	N 43	32.087 W	111	43.508	N 43	31.350 W	111	43.269	773
Ririe Res.	9/5/00	Night	7	N 43	31.426 W	111	43.338	N 43	30.897 W	111	43.895	849
Ririe Res.	9/5/00	Night	8	N 43	30.892 W	111	43.898	N 43	30.180 W	111	44.427	890

Appendix O. (Continued.)

Water	Date	Type	#	GPS Locations Begin				End				Length (m)
Ririe Res.	9/5/00	Night	9	N 43	30.244 W	111	44.468	N 43	30.254 W	111	45.318	675
Ririe Res.	9/5/00	Night	10	N 43	30.250 W	111	45.323	N 43	29.729 W	111	45.160	534
Salmon Falls Cr. Res.	8/7/00	Night	1	N 42	7.086 W	114	44.626	N 42	7.493 W	114	44.540	981
Salmon Falls Cr. Res.	8/7/00	Night	2	N 42	7.515 W	114	44.522	N 42	8.068 W	114	43.786	1,577
Salmon Falls Cr. Res.	8/7/00	Night	3	N 42	8.087 W	114	43.825	N 42	8.671 W	114	43.905	1,296
Salmon Falls Cr. Res.	8/7/00	Night	4	N 42	8.670 W	114	43.928	N 42	9.007 W	114	44.487	1,102
Salmon Falls Cr. Res.	8/7/00	Night	5	N 42	9.044 W	114	44.437	N 42	9.613 W	114	44.216	1,166
Salmon Falls Cr. Res.	8/7/00	Night	6	N 42	9.627 W	114	44.216	N 42	10.580 W	114	44.635	1,983
Salmon Falls Cr. Res.	8/7/00	Night	7	N 42	10.589 W	114	44.630	N 42	11.288 W	114	44.721	1,340
Salmon Falls Cr. Res.	8/7/00	Night	8	N 42	11.310 W	114	44.691	N 42	11.840 W	114	43.916	1,541
Salmon Falls Cr. Res.	8/7/00	Night	9	N 42	11.857 W	114	44.089	N 42	11.981 W	114	44.351	460
Salmon Falls Cr. Res.	8/7/00	Night	10	N 42	11.987 W	114	44.352	N 42	12.268 W	114	43.944	815
Williams Lake	6/21/00	Day	2	N 45	.892 W	113	59.059	N 45	.979 W	113	59.014	172
Williams Lake	6/21/00	Day	3	N 45	.983 W	113	59.006	N 45	.868 W	113	58.934	233
Williams Lake	6/21/00	Day	4	N 45	.868 W	113	58.922	N 45	1.013 W	113	58.843	288
Williams Lake	6/21/00	Day	5	N 45	1.017 W	113	58.828	N 45	.854 W	113	58.652	380
Williams Lake	6/21/00	Day	6	N 45	.855 W	113	58.642	N 45	1.129 W	113	58.636	508
Williams Lake	6/21/00	Day	7	N 45	1.131 W	113	58.627	N 45	.945 W	113	58.532	366
Williams Lake	6/21/00	Day	8	N 45	1.223 W	113	58.366	N 45	1.214 W	113	58.375	1,059
Williams Lake	6/21/00	Day	9	N 45	1.213 W	113	58.383	N 45	.819 W	113	58.266	746
Williams Lake	6/21/00	Day	10	N 45	.812 W	113	58.258	N 45	.972 W	113	58.140	335
Williams Lake	6/21/00	Day	11	N 45	.762 W	113	58.147	N 45	.852 W	113	57.995	260
Williams Lake	6/21/00	Day	12	N 45	.844 W	113	57.988	N 45	.760 W	113	58.017	160
Williams Lake	6/21/00	Day	14	N 45	.787 W	113	57.999	N 45	.916 W	113	58.021	241
Williams Lake	6/21/00	Day	15	N 45	.920 W	113	58.051	N 45	.798 W	113	58.207	305
Williams Lake	6/21/00	Day	16	N 45	.796 W	113	58.222	N 45	1.113 W	113	58.471	672
Williams Lake	6/21/00	Day	17	N 45	1.116 W	113	58.487	N 45	.846 W	113	58.718	585
Williams Lake	6/21/00	Day	18	N 45	.905 W	113	58.701	N 45	1.030 W	113	58.775	251
Williams Lake	6/21/00	Day	19	N 45	1.029 W	113	58.790	N 45	.887 W	113	58.839	271
Williams Lake	6/21/00	Day	21	N 45	.890 W	113	58.855	N 45	.953 W	113	58.936	158
Williams Lake	6/21/00	Day	22	N 45	.953 W	113	58.951	N 45	.879 W	113	59.049	188
Williams Lake	6/20/00	Night	2	N 45	.909 W	113	59.072	N 45	.977 W	113	59.002	156
Williams Lake	6/20/00	Night	3	N 45	.979 W	113	58.989	N 45	.874 W	113	58.914	218
Williams Lake	6/20/00	Night	4	N 45	.871 W	113	58.903	N 45	1.007 W	113	58.837	266
Williams Lake	6/20/00	Night	5	N 45	1.009 W	113	58.828	N 45	.854 W	113	58.647	373
Williams Lake	6/20/00	Night	6	N 45	.853 W	113	58.637	N 45	1.115 W	113	58.592	489
Williams Lake	6/20/00	Night	7	N 45	1.115 W	113	58.580	N 45	.877 W	113	58.514	449
Williams Lake	6/20/00	Night	8	N 45	.874 W	113	58.507	N 45	1.216 W	113	58.346	668
Williams Lake	6/20/00	Night	9	N 45	1.215 W	113	58.336	N 45	.828 W	113	58.281	721
Williams Lake	6/20/00	Night	10	N 45	.823 W	113	58.269	N 45	.888 W	113	58.025	343
Williams Lake	6/20/00	Night	11	N 45	.879 W	113	58.025	N 45	.785 W	113	58.002	177
Williams Lake	8/21/00	Day	2	N 45	.880 W	113	59.087	N 45	.979 W	113	58.998	218
Williams Lake	8/21/00	Day	3	N 45	.974 W	113	59.002	N 45	.871 W	113	58.905	229
Williams Lake	8/21/00	Day	4	N 45	.872 W	113	58.900	N 45	.980 W	113	58.905	200
Williams Lake	8/21/00	Day	5	N 45	.986 W	113	58.897	N 45	.899 W	113	58.798	207
Williams Lake	8/21/00	Day	6	N 45	.904 W	113	58.786	N 45	1.113 W	113	58.577	475
Williams Lake	8/21/00	Day	7	N 45	1.110 W	113	58.563	N 45	.852 W	113	58.453	499
Williams Lake	8/21/00	Day	8	N 45	.851 W	113	58.442	N 45	1.152 W	113	58.274	600
Williams Lake	8/21/00	Day	9	N 45	1.155 W	113	58.283	N 45	.888 W	113	58.379	510
Williams Lake	8/21/00	Day	10	N 45	.877 W	113	58.376	N 45	.971 W	113	58.149	345
Williams Lake	8/21/00	Day	11	N 45	.971 W	113	58.134	N 45	.855 W	113	58.294	301
Williams Lake	8/21/00	Day	12	N 45	.848 W	113	58.296	N 45	.939 W	113	58.070	341
Williams Lake	8/21/00	Day	13	N 45	.939 W	113	58.061	N 45	.801 W	113	58.234	342
Williams Lake	8/21/00	Day	14	N 45	.793 W	113	58.238	N 45	.853 W	113	58.012	317
Williams Lake	8/21/00	Day	15	N 45	.850 W	113	57.998	N 45	.751 W	113	58.089	219

Appendix P. Netting data collected to partition hydroacoustic targets in 2000.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Palisades	9/20/00	Near Dam	Floater			UTC	280	
Palisades	9/20/00	Near Dam	Floater			UTC	295	
Palisades	9/20/00	Near Dam	Floater			UTC	300	
Palisades	9/20/00	Near Dam	Floater			UTC	335	
Palisades	9/20/00	Near Dam	Floater			UTC	295	
Palisades	9/20/00	Near Dam	Floater			UTC	285	
Palisades	9/20/00	Near Dam	Floater			BRN	370	
Palisades	9/20/00	Near Dam	Floater			BRN	394	
Palisades	9/20/00	Near Dam	Floater			BRN	400	
Palisades	9/20/00	Near Dam	Floater			BRN	320	
Palisades	9/20/00	Near Dam	Floater			BRN	410	
Palisades	9/20/00	Near Dam	Floater			BRN	422	
Palisades	9/20/00	Near Dam	Floater			YCT	412	
Palisades	9/20/00	Near Dam	Floater			YCT	326	
Palisades	9/20/00	Near Dam	Floater			YCT	267	
Palisades	9/20/00	Near Dam	Floater			YCT	350	
Palisades	9/20/00	Near Dam	Floater			SUC	460	
Palisades	9/20/00	Near Dam	Floater			SUC	430	
Palisades	9/20/00	Near Dam	Floater			SUC	470	
Palisades	9/20/00	Near Dam	Floater			SUC	454	
Palisades	9/20/00	Near Dam	Floater			SUC	450	
Palisades	9/20/00	Near Dam	Floater			SUC	445	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	315	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	295	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	277	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	360	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	312	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	308	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	300	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	290	
Palisades	9/20/00	Mile Below Blowout	Floater			UTC	380	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	430	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	450	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	472	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	445	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	397	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	430	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	412	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	354	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	364	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	406	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	360	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	316	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	423	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	238	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	292	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	390	
Palisades	9/20/00	Mile Below Blowout	Floater			YCT	362	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	490	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	443	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	458	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	530	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	420	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	497	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	484	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	400	
Palisades	9/20/00	Mile Below Blowout	Floater			SUC	463	
Palisades	9/20/00	Near Dam	Floater			BRN	430	
Palisades	9/20/00	Near Dam	Floater			BRN	450	
Palisades	9/20/00	Near Dam	Floater			BRN	405	
Palisades	9/20/00	Near Dam	Floater			BRN	447	
Palisades	9/20/00	Near Dam	Floater			BRN	362	
Palisades	9/20/00	Near Dam	Floater			SUC	380	
Palisades	9/20/00	Near Dam	Floater			SUC	430	
Palisades	9/20/00	Near Dam	Floater			SUC	480	
Palisades	9/20/00	Near Dam	Floater			SUC	436	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Palisades	9/20/00	Near Dam	Floater			SUC	400	
Palisades	9/20/00	Near Dam	Floater			SUC	416	
Palisades	9/20/00	Near Dam	Floater			SUC	350	
Palisades	9/20/00	Near Dam	Floater			SUC	230	
Palisades	9/20/00	Near Dam	Floater			SUC	380	
Palisades	9/20/00	Near Dam	Floater			UTC	310	
Palisades	9/20/00	Near Dam	Floater			UTC	240	
Palisades	9/20/00	Near Dam	Floater			UTC	180	
Palisades	9/20/00	Near Dam	Floater			UTC	324	
Palisades	9/20/00	Near Dam	Floater			UTC	170	
Palisades	9/20/00	Near Dam	Floater			YCT	455	
Palisades	9/20/00	Near Dam	Floater			YCT	360	
Palisades	9/20/00	Near Dam	Floater			YCT	340	
Palisades	9/20/00	Near Dam	Floater			YCT	360	
Palisades	9/20/00	Near Dam	Floater			YCT	385	
Palisades	9/20/00	Near Dam	Floater			YCT	373	
Palisades	9/20/00	Near Dam	Floater			YCT	270	
Palisades	9/11/00		Vert.Net	1.5"	0	Rb	380	
Palisades	9/11/00		Vert.Net	1.5"	1	UTC	348	
Palisades	9/11/00		Vert.Net	1.5"	15	UTC	321	
Palisades	9/11/00		Vert.Net	2.0"	0	SUC	453	
Palisades	9/11/00		Vert.Net	2.0"	14	UTC	354	
Palisades	9/11/00		Vert.Net	0.75"	8	UTC	152	
Palisades	9/11/00		Vert.Net	0.75"	14	UTC	165	
Palisades	9/11/00		Vert.Net	0.75"	16	UTC	175	
Palisades	9/11/00		Vert.Net	0.75"	17	UTC	279	
Palisades	9/11/00		Sinker		85'	SUC	385	
Palisades	9/11/00		Sinker		85'	SUC	495	
Palisades	9/11/00		Sinker		85'	SUC	490	
Palisades	9/11/00		Sinker		85'	SUC	475	
Palisades	9/11/00		Sinker		85'	SUC	320	
Palisades	9/11/00		Sinker		85'	SUC	300	
Palisades	9/11/00		Sinker		85'	SUC	440	
Palisades	9/11/00		Sinker		85'	SUC	390	
Palisades	9/11/00		Sinker		85'	SUC	450	
Palisades	9/11/00		Sinker		85'	SUC	484	
Palisades	9/11/00		Sinker		85'	SUC	315	
Palisades	9/11/00		Sinker		85'	SUC	402	
Palisades	9/11/00		Sinker		85'	SUC	395	
Palisades	9/11/00		Sinker		85'	SUC	342	
Palisades	9/11/00		Sinker		85'	SUC	485	
Palisades	9/11/00		Sinker		85'	SUC	449	
Palisades	9/11/00		Sinker		85'	SUC	333	
Palisades	9/11/00		Sinker		85'	SUC	339	
Palisades	9/11/00		Sinker		85'	SUC	315	
Palisades	9/11/00		Sinker		85'	SUC	320	
Palisades	9/11/00		Sinker		85'	SUC	294	
Palisades	9/11/00		Sinker		85'	SUC	332	
Palisades	9/11/00		Sinker		85'	SUC	294	
Palisades	9/11/00		Sinker		85'	SUC	380	
Palisades	9/11/00		Sinker		85'	SUC	232	
Palisades	9/11/00		Sinker		85'	SUC	244	
Palisades	9/11/00		Sinker		85'	BRN	449	
Palisades	9/11/00		Sinker		85'	UTC	214	
Palisades	9/11/00		Sinker		85'	UTC	156	
Palisades	9/11/00		Sinker		85'	UTC	163	
Palisades	9/11/00		Sinker		85'	UTC	180	
Palisades	9/11/00		Sinker		85'	UTC	174	
Palisades	9/11/00		Sinker		85'	UTC	158	
Palisades	9/11/00		Sinker		85'	UTC	168	
Palisades	9/11/00		Sinker		85'	UTC	172	
Palisades	9/11/00		Sinker		85'	UTC	150	
Palisades	9/11/00		Floater			UTC	333	
Palisades	9/11/00		Floater			UTC	360	
Palisades	9/11/00		Floater			UTC	314	
Palisades	9/11/00		Floater			UTC	317	
Palisades	9/11/00		Floater			UTC	305	
Palisades	9/11/00		Floater			UTC	367	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Palisades	9/11/00		Floater			UTC	365	
Palisades	9/11/00		Floater			UTC	366	
Palisades	9/11/00		Floater			UTC	325	
Palisades	9/11/00		Floater			UTC	320	
Palisades	9/11/00		Floater			UTC	354	
Palisades	9/11/00		Floater			UTC	358	
Palisades	9/11/00		Floater			UTC	380	
Palisades	9/11/00		Floater			UTC	332	
Palisades	9/11/00		Floater			UTC	289	
Palisades	9/11/00		Floater			UTC	308	
Palisades	9/11/00		Floater			UTC	310	
Palisades	9/11/00		Floater			UTC	309	
Palisades	9/11/00		Floater			UTC	325	
Palisades	9/11/00		Floater			UTC	320	
Palisades	9/11/00		Floater			UTC	306	
Palisades	9/11/00		Floater			UTC	291	
Palisades	9/11/00		Floater			UTC	310	
Palisades	9/11/00		Floater			UTC	303	
Palisades	9/11/00		Floater			UTC	276	
Palisades	9/11/00		Floater			UTC	285	
Palisades	9/11/00		Floater			UTC	300	
Palisades	9/11/00		Floater			BRN	426	
Palisades	9/11/00		Floater			BRN	425	
Palisades	9/11/00		Floater			BRN	385	
Palisades	9/11/00		Floater			YCT	366	
Palisades	9/11/00		Floater			YCT	365	
Palisades	9/11/00		Floater			YCT	382	
Palisades	9/11/00		Floater			YCT	425	
Palisades	9/11/00		Floater			YCT	460	
Palisades	9/11/00		Floater			YCT	407	
Palisades	9/11/00		Floater			YCT	440	
Palisades	9/11/00		Floater			YCT	440	
Palisades	9/11/00		Floater			YCT	424	
Palisades	9/11/00		Floater			SUC	495	
Palisades	9/11/00		Floater			SUC	380	
Palisades	9/11/00		Floater			SUC	502	
Palisades	9/11/00		Floater			SUC	473	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	2"	8	KOK	367	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	2"	11	KOK	265	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	1	KOK	167	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	1	KOK	200	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	2	KOK	175	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	2	KOK	329	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	4	KOK	168	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	6	KOK	167	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	6	KOK	180	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	8	KOK	170	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	8	YEP	194	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	13	KOK	166	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	18	WKT	323	
Ririe	9/7/00	Near Meadow Cr.	Vert.Net	0.75"	18	YEP	163	
Ririe	9/6/00	Near Meadow Cr.	Floater			Rb	345	
Ririe	9/6/00	Near Meadow Cr.	Floater			Rb	305	
Ririe	9/6/00	Near Meadow Cr.	Floater			KOK	347	
Ririe	9/6/00	Near Meadow Cr.	Floater			KOK	380	
Ririe	9/6/00	Near Meadow Cr.	Floater			KOK	320	
Ririe	9/6/00	Near Meadow Cr.	Floater			KOK	360	
Ririe	9/6/00	Near Meadow Cr.	Floater			SUC	383	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	240	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	247	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	253	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	235	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	228	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	257	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	240	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	220	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	236	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	230	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	225	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	242	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	221	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	232	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	245	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	226	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	240	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	227	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	237	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	222	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	237	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	260	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	209	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	238	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	246	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	232	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	232	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	270	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	249	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	238	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	234	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	228	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	219	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	251	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	256	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	247	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	245	
Ririe	9/6/00	Near Meadow Cr.	Floater			UTC	252	
Ririe	9/6/00	Near Meadow Cr.	Sinker			KOK	303	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	303	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	302	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	354	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	365	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	362	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	377	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	370	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	375	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	395	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	340	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	365	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	351	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	402	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	346	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	368	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	308	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	318	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	390	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	347	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	353	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	324	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	368	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	357	
Ririe	9/6/00	Near Meadow Cr.	Sinker			SUC	303	
Ririe	9/6/00	Near Meadow Cr.	Sinker			UTC	262	
Ririe	9/6/00	Near Meadow Cr.	Sinker			UTC	249	
Ririe	9/6/00	Near Meadow Cr.	Sinker			UTC	240	
Ririe	9/6/00	Near Meadow Cr.	Sinker			UTC	240	
Ririe	9/6/00	Near Meadow Cr.	Sinker			YEP	200	
Ririe	9/5/00	Near Dam	Sinker			KOK	347	
Ririe	9/5/00	Near Dam	Sinker			KOK	425	
Ririe	9/5/00	Near Dam	Sinker			KOK	308	
Ririe	9/5/00	Near Dam	Sinker			KOK	326	
Ririe	9/5/00	Near Dam	Sinker			KOK	309	
Ririe	9/5/00	Near Dam	Sinker			KOK	332	
Ririe	9/5/00	Near Dam	Sinker			KOK	350	
Ririe	9/5/00	Near Dam	Sinker			KOK	335	
Ririe	9/5/00	Near Dam	Sinker			KOK	315	
Ririe	9/5/00	Near Dam	Sinker			KOK	395	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Ririe	9/5/00	Near Dam	Sinker			KOK	405	
Ririe	9/5/00	Near Dam	Sinker			KOK	334	
Ririe	9/5/00	Near Dam	Sinker			KOK	315	
Ririe	9/5/00	Near Dam	Sinker			KOK	313	
Ririe	9/5/00	Near Dam	Sinker			KOK	315	
Ririe	9/5/00	Near Dam	Sinker			KOK	395	
Ririe	9/5/00	Near Dam	Sinker			KOK	327	
Ririe	9/5/00	Near Dam	Sinker			KOK	200	
Ririe	9/5/00	Near Dam	Sinker			UTC	253	
Ririe	9/5/00	Near Dam	Sinker			UTC	270	
Ririe	9/5/00	Near Dam	Sinker			UTC	240	
Ririe	9/5/00	Near Dam	Sinker			UTC	260	
Ririe	9/5/00	Near Dam	Sinker			UTC	232	
Ririe	9/5/00	Near Dam	Sinker			UTC	252	
Ririe	9/5/00	Near Dam	Sinker			UTC	235	
Ririe	9/5/00	Near Dam	Sinker			UTC	216	
Ririe	9/5/00	Near Dam	Sinker			UTC	250	
Ririe	9/5/00	Near Dam	Sinker			UTC	248	
Ririe	9/5/00	Near Dam	Sinker			UTC	235	
Ririe	9/5/00	Near Dam	Sinker			UTC	230	
Ririe	9/5/00	Near Dam	Sinker			SUC	420	
Ririe	9/5/00	Near Dam	Sinker			SUC	398	
Ririe	9/5/00	Near Dam	Sinker			SUC	310	
Ririe	9/5/00	Near Dam	Sinker			SUC	345	
Ririe	9/5/00	Near Dam	Sinker			SUC	425	
Ririe	9/5/00	Near Dam	Sinker			SUC	325	
Ririe	9/5/00	Near Dam	Sinker			SUC	345	
Ririe	9/5/00	Near Dam	Sinker			SUC	335	
Ririe	9/5/00	Near Dam	Sinker			SUC	332	
Ririe	9/5/00	Near Dam	Sinker			SUC	210	
Ririe	9/6/00	Near Dam	Floater			KOK	411	
Ririe	9/6/00	Near Dam	Floater			KOK	324	
Ririe	9/6/00	Near Dam	Floater			KOK	325	
Ririe	9/6/00	Near Dam	Floater			KOK	310	
Ririe	9/6/00	Near Dam	Floater			KOK	309	
Ririe	9/6/00	Near Dam	Floater			KOK	295	
Ririe	9/6/00	Near Dam	Floater			KOK	366	
Ririe	9/6/00	Near Dam	Floater			KOK	340	
Ririe	9/6/00	Near Dam	Floater			KOK	334	
Ririe	9/6/00	Near Dam	Floater			KOK	328	
Ririe	9/6/00	Near Dam	Floater			KOK	311	
Ririe	9/6/00	Near Dam	Floater			KOK	278	
Ririe	9/6/00	Near Dam	Floater			KOK	364	
Ririe	9/6/00	Near Dam	Floater			KOK	310	
Ririe	9/6/00	Near Dam	Floater			KOK	336	
Ririe	9/6/00	Near Dam	Floater			KOK	330	
Ririe	9/6/00	Near Dam	Floater			KOK	301	
Ririe	9/6/00	Near Dam	Floater			Rb	387	
Ririe	9/6/00	Near Dam	Floater			Rb	338	
Ririe	9/6/00	Near Dam	Floater			UTC	240	
Ririe	9/6/00	Near Dam	Floater			UTC	225	
Ririe	9/6/00	Near Dam	Floater			UTC	230	
Ririe	9/6/00	Near Dam	Floater			UTC	248	
Ririe	9/6/00	Near Dam	Floater			UTC	218	
Ririe	9/6/00	Near Dam	Floater			UTC	260	
Ririe	9/6/00	Near Dam	Floater			UTC	250	
Ririe	9/6/00	Near Dam	Floater			UTC	246	
Ririe	9/6/00	Near Dam	Floater			UTC	238	
Ririe	9/6/00	Near Dam	Floater			UTC	247	
Ririe	9/6/00	Near Dam	Floater			UTC	250	
Ririe	9/6/00	Near Dam	Floater			UTC	250	
Ririe	9/6/00	Near Dam	Floater			UTC	261	
Ririe	9/6/00	Near Dam	Floater			UTC	250	
Ririe	9/6/00	Near Dam	Floater			UTC	235	
Ririe	9/6/00	Near Dam	Floater			UTC	248	
Ririe	9/6/00	Near Dam	Floater			UTC	237	
Ririe	9/6/00	Near Dam	Floater			UTC	221	
Ririe	9/6/00	Near Dam	Floater			UTC	242	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Ririe	9/6/00	Near Dam	Floater			UTC	240	
Ririe	9/6/00	Near Dam	Floater			UTC	254	
Ririe	9/6/00	Near Dam	Floater			SUC	308	
Ririe	9/6/00	Near Dam	Vert.Net	2"	22	KOK	392	
Ririe	9/6/00	Near Dam	Vert.Net	2"	22	KOK	320	
Ririe	9/6/00	Near Dam	Vert.Net	2"	24	KOK	422	
Ririe	9/6/00	Near Dam	Vert.Net	0.75"	4	KOK	185	
Ririe	9/6/00	Near Dam	Vert.Net	0.75"	8	KOK	164	
Ririe	9/6/00	Near Dam	Vert.Net	0.75"	14	KOK	166	
Cascade	8/10/00	E. Shore	Floater			LSS	503	1320
Cascade	8/10/00	E. Shore	Floater			RBT	421	780
Cascade	8/10/00	E. Shore	Floater			RBT	408	810
Cascade	8/10/00	E. Shore	Floater			RBT	326	350
Cascade	8/10/00	E. Shore	Floater			RBT	415	680
Cascade	8/10/00	E. Shore	Floater			RBT	291	290
Cascade	8/10/00	E. Shore	Floater			NPM	591	1290
Cascade	8/10/00	E. Shore	Floater			NPM	429	680
Cascade	8/10/00	E. Shore	Floater			NPM	568	1940
Cascade	8/10/00	E. Shore	Floater			NPM	460	990
Cascade	8/10/00	E. Shore	Floater			NPM	504	1460
Cascade	8/10/00	E. Shore	Floater			NPM	322	330
Cascade	8/10/00	E. Shore	Floater			NPM	325	320
Cascade	8/10/00	E. Shore	Floater			NPM	282	190
Cascade	8/10/00	E. Shore	Floater			NPM	268	180
Cascade	8/10/00	E. Shore	Floater			NPM	267	190
Cascade	8/10/00	E. Shore	Floater			NPM	254	130
Cascade	8/10/00	E. Shore	Floater			NPM	278	180
Cascade	8/10/00	E. Shore	Bottom			SMB	313	390
Cascade	8/10/00	E. Shore	Bottom			SMB	288	280
Cascade	8/10/00	E. Shore	Bottom			NPM	482	1150
Cascade	8/10/00	E. Shore	Bottom			NPM	294	240
Cascade	8/10/00	E. Shore	Bottom			NPM	241	110
Cascade	8/10/00	E. Shore	Bottom			NPM	225	100
Cascade	8/10/00	E. Shore	Bottom			NPM	428	750
Cascade	8/10/00	E. Shore	Bottom			NPM	505	1050
Cascade	8/10/00	E. Shore	Bottom			NPM	356	390
Cascade	8/10/00	E. Shore	Bottom			NPM	243	140
Cascade	8/10/00	E. Shore	Bottom			NPM	327	300
Cascade	8/10/00	E. Shore	Bottom			NPM	180	60
Cascade	8/10/00	E. Shore	Bottom			NPM	435	820
Cascade	8/10/00	E. Shore	Bottom			NPM	447	870
Cascade	8/10/00	E. Shore	Bottom			NPM	412	690
Cascade	8/10/00	E. Shore	Bottom			NPM	423	820
Cascade	8/10/00	E. Shore	Bottom			NPM	375	470
Cascade	8/10/00	E. Shore	Bottom			NPM	278	210
Cascade	8/10/00	E. Shore	Bottom			NPM	330	305
Cascade	8/10/00	E. Shore	Bottom			NPM	410	620
Cascade	8/10/00	E. Shore	Bottom			NPM	200	80
Cascade	8/10/00	E. Shore	Bottom			NPM	294	250
Cascade	8/10/00	E. Shore	Bottom			NPM	515	1420
Cascade	8/10/00	E. Shore	Bottom			NPM	442	750
Cascade	8/10/00	E. Shore	Bottom			NPM	441	815
Cascade	8/10/00	E. Shore	Bottom			NPM	221	100
Cascade	8/10/00	E. Shore	Bottom			NPM	282	180
Cascade	8/10/00	E. Shore	Bottom			LSS	509	
Cascade	8/10/00	E. Shore	Bottom			LSS	515	
Cascade	8/10/00	E. Shore	Bottom			LSS	515	
Cascade	8/10/00	E. Shore	Bottom			LSS	470	
Cascade	8/10/00	E. Shore	Bottom			LSS	526	
Cascade	8/10/00	E. Shore	Bottom			LSS	535	
Cascade	8/10/00	E. Shore	Bottom			LSS	537	
Cascade	8/10/00	E. Shore	Bottom			LSS	539	
Cascade	8/10/00	E. Shore	Bottom			LSS	543	
Cascade	8/10/00	E. Shore	Bottom			LSS	498	
Cascade	8/10/00	E. Shore	Bottom			LSS	486	
Cascade	8/10/00	E. Shore	Bottom			LSS	512	
Cascade	8/10/00	E. Shore	Bottom			LSS	576	
Cascade	8/10/00	E. Shore	Bottom			LSS	627	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Cascade	8/10/00	E. Shore	Bottom			LSS	550	
Cascade	8/10/00	E. Shore	Bottom			LSS	644	
Cascade	8/10/00	E. Shore	Bottom			LSS	527	
Cascade	8/10/00	E. Shore	Bottom			MWF	222	
Cascade	8/10/00	E. Shore	Bottom			NPM	172	20
Cascade	8/10/00	E. Shore	Bottom			YP	148	40
Cascade	8/10/00	W. Shore	Bottom			RBT	338	440
Cascade	8/10/00	W. Shore	Bottom			LSS	602	
Cascade	8/10/00	W. Shore	Bottom			LSS	580	
Cascade	8/10/00	W. Shore	Bottom			LSS	522	
Cascade	8/10/00	W. Shore	Bottom			LSS	593	
Cascade	8/10/00	W. Shore	Bottom			LSS	565	
Cascade	8/10/00	W. Shore	Bottom			LSS	585	
Cascade	8/10/00	W. Shore	Bottom			LSS	562	
Cascade	8/10/00	W. Shore	Bottom			LSS	493	
Cascade	8/10/00	W. Shore	Bottom			LSS	515	
Cascade	8/10/00	W. Shore	Bottom			LSS	464	
Cascade	8/10/00	W. Shore	Bottom			LSS	513	
Cascade	8/10/00	W. Shore	Bottom			LSS	478	
Cascade	8/10/00	W. Shore	Bottom			LSS	512	
Cascade	8/10/00	W. Shore	Bottom			LSS	542	
Cascade	8/10/00	W. Shore	Bottom			LSS	541	
Cascade	8/10/00	W. Shore	Bottom			LSS	574	
Cascade	8/10/00	W. Shore	Bottom			LSS	603	
Cascade	8/10/00	W. Shore	Bottom			LSS	552	
Cascade	8/10/00	W. Shore	Bottom			LSS	531	
Cascade	8/10/00	W. Shore	Bottom			LSS	502	
Cascade	8/10/00	W. Shore	Bottom			LSS	583	
Cascade	8/10/00	W. Shore	Bottom			LSS	590	
Cascade	8/10/00	W. Shore	Bottom			LSS	504	
Cascade	8/10/00	W. Shore	Bottom			LSS	506	
Cascade	8/10/00	W. Shore	Bottom			LSS	530	
Cascade	8/10/00	W. Shore	Bottom			LSS	515	
Cascade	8/10/00	W. Shore	Bottom			LSS	478	
Cascade	8/10/00	W. Shore	Bottom			LSS	463	
Cascade	8/10/00	W. Shore	Bottom			LSS	503	
Cascade	8/10/00	W. Shore	Bottom			LSS	493	
Cascade	8/10/00	W. Shore	Bottom			NPM	502	910
Cascade	8/10/00	W. Shore	Bottom			NPM	416	900
Cascade	8/10/00	W. Shore	Bottom			NPM	378	530
Cascade	8/10/00	W. Shore	Bottom			NPM	492	940
Cascade	8/10/00	W. Shore	Bottom			NPM	223	100
Cascade	8/10/00	W. Shore	Floater			RBT	398	480
Cascade	8/10/00	W. Shore	Floater			RBT	330	350
Cascade	8/10/00	W. Shore	Floater			RBT	304	280
Cascade	8/10/00	W. Shore	Floater			RBT	325	340
Cascade	8/10/00	W. Shore	Floater			RBT	412	870
Cascade	8/10/00	W. Shore	Floater			RBT	355	450
Cascade	8/10/00	W. Shore	Floater			LSS	486	
Cascade	8/10/00	W. Shore	Floater			LSS	507	
Cascade	8/10/00	W. Shore	Floater			LSS	515	
Cascade	8/10/00	W. Shore	Floater			LSS	602	
Cascade	8/10/00	W. Shore	Floater			LSS	551	
Cascade	8/10/00	W. Shore	Floater			LSS	616	
Cascade	8/10/00	W. Shore	Floater			LSS	508	
Cascade	8/10/00	W. Shore	Floater			LSS	545	
Cascade	8/10/00	W. Shore	Floater			LSS	490	
Cascade	8/10/00	W. Shore	Floater			NPM	482	1140
Cascade	8/10/00	Midlake	Floater			RBT	334	300
Cascade	8/10/00	Midlake	Floater			RBT	330	290
Cascade	8/10/00	Midlake	Floater			RBT	346	280
Cascade	8/10/00	Midlake	Floater			RBT	294	280
Cascade	8/10/00	Midlake	Floater			RBT	275	240
Cascade	8/10/00	Midlake	Floater			RBT	410	800
Cascade	8/10/00	Midlake	Floater			YP	184	80
Cascade	8/10/00	Midlake	Bottom			LSS	553	
Cascade	8/10/00	Midlake	Bottom			LSS	486	
Cascade	8/10/00	Midlake	Bottom			LSS	494	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Cascade	8/10/00	Midlake	Bottom			LSS	572	
Cascade	8/10/00	Midlake	Bottom			LSS	594	
Cascade	8/10/00	Midlake	Bottom			LSS	511	
Cascade	8/10/00	Midlake	Bottom			LSS	563	
Cascade	8/10/00	Midlake	Bottom			LSS	524	
Cascade	8/10/00	Midlake	Bottom			LSS	509	
Cascade	8/10/00	Midlake	Bottom			LSS	525	
Cascade	8/10/00	Midlake	Bottom			LSS	522	
Cascade	8/10/00	Midlake	Bottom			LSS	508	
Cascade	8/10/00	Midlake	Bottom			LSS	498	
Cascade	8/10/00	Midlake	Bottom			LSS	535	
Cascade	8/10/00	Midlake	Bottom			LSS	535	1670
Cascade	8/10/00	Midlake	Bottom			MWF	268	180
Cascade	8/10/00	Midlake	Floater			RBT	295	270
Cascade	8/10/00	Midlake	Floater			RBT	286	160
Cascade	8/10/00	Midlake	Floater			NPM	456	930
Cascade	8/10/00	Midlake	Bottom			LSS	540	1580
Cascade	8/10/00	Midlake	Bottom			LSS	475	1180
Cascade	8/10/00	Midlake	Bottom			NPM	520	1180
Cascade	8/10/00	Midlake	Bottom			NPM	465	900
Cascade	8/10/00	Midlake	Bottom			NPM	525	1320
Cascade	8/10/00	Midlake	Floater			NPM	450	830
Cascade	8/10/00	Midlake	Floater			NPM	487	1010
Cascade	8/10/00	Midlake	Floater			NPM	478	1005
Cascade	8/10/00	Midlake	Floater			NPM	518	1310
Cascade	8/10/00	Midlake	Floater			NPM	542	1510
Cascade	8/10/00	Midlake	Floater			NPM	537	1400
Cascade	8/10/00	Midlake	Floater			NPM	510	1315
Cascade	8/10/00	Midlake	Floater			NPM	510	1050
Cascade	8/10/00	Midlake	Floater			NPM	442	880
Cascade	8/10/00	Midlake	Floater			NPM	413	670
Cascade	8/10/00	Midlake	Floater			NPM	497	1060
Cascade	8/10/00	Midlake	Floater			NPM	424	730
Cascade	8/10/00	Midlake	Floater			NPM	415	660
Cascade	8/10/00	Midlake	Floater			NPM	406	705
Cascade	8/10/00	Midlake	Bottom			NPM	422	710
Cascade	8/10/00	Midlake	Bottom			NPM	435	870
Cascade	8/10/00	Midlake	Bottom			NPM	454	710
Cascade	8/10/00	Midlake	Bottom			NPM	523	395
Cascade	8/10/00	Midlake	Bottom			NPM	416	610
Cascade	8/10/00	Midlake	Bottom			NPM	439	870
Cascade	8/10/00	Midlake	Bottom			NPM	467	810
Cascade	8/10/00	Midlake	Bottom			NPM	415	730
Cascade	8/10/00	Midlake	Bottom			NPM	437	815
Cascade	8/10/00	Midlake	Bottom			NPM	507	1120
Cascade	8/10/00	Midlake	Bottom			NPM	474	1040
Cascade	8/10/00	Midlake	Bottom			NPM	432	840
Cascade	8/10/00	Midlake	Bottom			NPM	514	1250
Cascade	8/10/00	Midlake	Bottom			NPM	408	670
Cascade	8/10/00	Midlake	Bottom			NPM	440	670
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	587	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	518	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	619	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	562	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	540	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	562	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	565	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	562	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	554	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	552	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	508	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	498	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	516	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	485	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	498	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	528	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	533	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	474	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	498	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	463	
Cascade	8/10/00	Midlake	Suspended		15'-21'	LSS	487	
Cascade	8/10/00	Midlake	Suspended		15'-21'	RBT	347	380
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	478	1040
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	458	980
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	453	880
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	400	660
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	408	640
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	439	840
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	457	880
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	424	750
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	446	720
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	418	820
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	389	690
Cascade	8/10/00	Midlake	Suspended		15'-21'	NPM	320	370
Cascade	8/10/00	Midlake	Floater			NPM	456	750
Cascade	8/10/00	Midlake	Floater			RBT	343	440
Cascade	8/10/00	Midlake	Floater			RBT	260	200
Cascade	8/10/00	Midlake	Floater			NPM	430	780
Cascade	8/10/00	Midlake	Suspended			LSS	462	1100
Cascade	8/10/00	Midlake	Suspended			LSS	515	1550
Cascade	8/10/00	Midlake	Suspended			NPM	498	1240
Cascade	8/10/00	Midlake	Suspended			NPM	400	620
Cascade	8/10/00	Midlake	Suspended			NPM	516	1200
Cascade	8/10/00	Midlake	Suspended			NPM	433	780
Cascade	8/10/00	Midlake	Suspended			NPM	383	580
Cascade	8/10/00	Midlake	Suspended			NPM	447	880
Cascade	8/10/00	Midlake	Suspended			NPM	440	820
Cascade	8/10/00	Midlake	Suspended			NPM	414	680
Cascade	8/10/00	Midlake	Suspended			NPM	418	785
Cascade	8/10/00	Midlake	Suspended			NPM	462	920
Cascade	8/10/00	Midlake	Suspended			NPM	411	625
Cascade	8/10/00	Midlake	Suspended			NPM	427	785
Cascade	8/10/00	Midlake	Suspended			NPM	418	685
Cascade	8/10/00	Midlake	Suspended			NPM	435	770
Cascade	8/10/00	Midlake	Suspended			RBT	347	430
Cascade	8/10/00	Midlake	Suspended			BLHD	185	115
Cascade	8/10/00	N. of Sugarloaf Is.	Vertical	1"	9	Squaw	~15"	
Cascade	8/10/00	GPS, Lower	Vertical	2"	6	RBT		492
Cascade	8/10/00	Church Camp	Vertical	1"	8.5	Squaw		488
Cascade	8/10/00	Church Camp	Vertical	1"	10.5	Squaw		460
Cascade	8/10/00	Church Camp	Vertical	1"	10.5	Squaw		480
Cascade	8/10/00	Church Camp	Vertical	1.25"	8.5	Squaw		422
Cascade	8/10/00	Church Camp	Vertical	1.25"	9	Coho		339
Cascade	6/9/00	S. of N. area	Bottom			LSS	555	1740
Cascade	6/9/00	S. of N. area	Bottom			LSS	528	1590
Cascade	6/9/00	S. of N. area	Bottom			LSS	494	1470
Cascade	6/9/00	S. of N. area	Bottom			NSF	493	1020
Cascade	6/9/00	S. of N. area	Bottom			NSF	324	910
Cascade	6/9/00	S. of N. area	Bottom			MWF	424	930
Cascade	6/9/00	S. of N. area	Bottom			MWF	390	700
Cascade	6/9/00	S. of N. area	Bottom			MWF	372	610
Cascade	6/9/00	S. of N. area	Bottom			MWF	387	610
Cascade	6/9/00	S. of N. area	Bottom			MWF	374	580
Cascade	6/9/00	S. of N. area	Bottom			MWF	364	550
Cascade	6/9/00	S. of N. area	Bottom			MWF	313	330
Cascade	6/9/00	S. of N. area	Floater			LSS	508	1380
Cascade	6/9/00	S. of N. area	Floater			LSS	578	1900
Cascade	6/9/00	S. of N. area	Floater			LSS	573	2200
Cascade	6/9/00	S. of N. area	Floater			LSS	441	990
Cascade	6/9/00	S. of N. area	Floater			LSS	513	500
Cascade	6/9/00	S. of N. area	Floater			LSS	508	1290
Cascade	6/9/00	S. of N. area	Floater			LSS	518	1610
Cascade	6/9/00	S. of N. area	Floater			MWF	438	
Cascade	6/9/00	S. of N. area	Floater			NSF	423	710
Cascade	6/9/00	S. of N. area	Floater			RBT	413	880
Cascade	6/9/00	S. of N. area	Floater			RBT	395	810

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Cascade	6/9/00	Mid of N. area	Bottom			MWF	404	
Cascade	6/9/00	Mid of N. area	Bottom			MWF	397	
Cascade	6/9/00	Mid of N. area	Bottom			MWF	420	
Cascade	6/9/00	Mid of N. area	Bottom			MWF	398	
Cascade	6/9/00	Mid of N. area	Bottom			MWF	391	
Cascade	6/9/00	Mid of N. area	Bottom			MWF	338	
Cascade	6/9/00	Mid of N. area	Bottom			MWF	341	
Cascade	6/9/00	Mid of N. area	Bottom			MWF	244	
Cascade	6/9/00	Mid of N. area	Bottom			LSS	511	
Cascade	6/9/00	Mid of N. area	Bottom			NSF	520	
Cascade	6/9/00	Mid of N. area	Bottom			NSF	518	
Cascade	6/9/00	Mid of N. area	Bottom			NSF	485	
Cascade	6/9/00	Mid of N. area	Floater			NSF	484	
Cascade	6/9/00	Mid of N. area	Floater			LSS	478	
Cascade	6/9/00	Mid of N. area	Floater			LSS	474	
Cascade	6/9/00	Mid of N. area	Floater			Coho	288	250
Cascade	6/9/00	Mid of N. area	Floater			Coho	492	1250
Cascade	6/9/00	Mid of N. area	Floater			RBT	414	960
Cascade	6/9/00	Mid of N. area	Floater			RBT	543	1410
Cascade	6/9/00	N. end of N. area	Floater			LSS	587	2000
Cascade	6/9/00	N. end of N. area	Floater			LSS	507	1370
Cascade	6/9/00	N. end of N. area	Floater			LSS	496	1380
Cascade	6/9/00	N. end of N. area	Floater			LSS	489	1340
Cascade	6/9/00	N. end of N. area	Floater			LSS	470	1400
Cascade	6/9/00	N. end of N. area	Floater			LSS	453	1140
Cascade	6/9/00	N. end of N. area	Floater			LSS	472	1170
Cascade	6/9/00	N. end of N. area	Floater			LSS	490	1210
Cascade	6/9/00	N. end of N. area	Floater			LSS	490	1620
Cascade	6/9/00	N. end of N. area	Floater			LSS	571	1650
Cascade	6/9/00	N. end of N. area	Floater			NSF	589	1860
Cascade	6/9/00	N. end of N. area	Floater			MWF	374	610
Cascade	6/9/00	N. end of N. area	Floater			MWF	312	
Cascade	6/9/00	N. end of N. area	Floater			MWF	180	
Cascade	6/9/00	N. end of N. area	Floater			MWF	352	
Cascade	6/9/00	N. end of N. area	Floater			MWF	360	
Cascade	6/9/00	N. end of N. area	Floater			MWF	337	
Cascade	6/9/00	N. end of N. area	Floater			MWF	353	
Cascade	6/9/00	N. end of N. area	Floater			MWF	213	
Cascade	6/9/00	N. end of N. area	Floater			MWF	183	
Cascade	6/9/00	N. end of N. area	Floater			MWF	206	
Cascade	6/9/00	N. end of N. area	Floater			RBT	274	
Cascade	6/9/00	N. end of N. area	Bottom			NSF	480	1070
Cascade	6/9/00	N. end of N. area	Bottom			NSF	451	780
Cascade	6/9/00	N. end of N. area	Bottom			LSS	477	1180
Cascade	6/9/00	N. end of N. area	Bottom			LSS	478	1210
Cascade	6/9/00	N. end of N. area	Bottom			LSS	502	1240
Cascade	6/9/00	N. end of N. area	Bottom			LSS	504	1410
Cascade	6/9/00	N. end of N. area	Bottom			LSS	454	1130
Cascade	6/9/00	N. end of N. area	Bottom			RBT	305	300
Cascade	6/9/00	N. end of N. area	Bottom			RBT	296	310
Cascade	6/7/00	E. Lake of S. area	Floater			Squaw	500	
Cascade	6/7/00	E. Lake of S. area	Floater			Squaw	465	
Cascade	6/7/00	E. Lake of S. area	Floater			Squaw	500	
Cascade	6/7/00	E. Lake of S. area	Floater			Suc	560	
Cascade	6/7/00	E. Lake of S. area	Floater			Squaw	470	1020
Cascade	6/7/00	E. Lake of S. area	Floater			Coho	280	225
Cascade	6/7/00	E. Lake of S. area	Floater			Coho	375	478
Cascade	6/7/00	E. Lake of S. area	Bottom			Squaw	460	1020
Cascade	6/7/00	E. Lake of S. area	Bottom			Squaw	455	815
Cascade	6/7/00	E. Lake of S. area	Bottom			Squaw	515	1320
Cascade	6/7/00	E. Lake of S. area	Bottom			Squaw	480	1100
Cascade	6/7/00	E. Lake of S. area	Bottom			LSS	575	
Cascade	6/7/00	E. Lake of S. area	Bottom			NSF	500	1360
Cascade	6/7/00	E. Lake of S. area	Bottom			NSF	525	1410
Cascade	6/7/00	E. Lake of S. area	Bottom			NSF	550	1410
Cascade	6/7/00	E. Lake of S. area	Bottom			Coho	315	275
Cascade	6/7/00	E. Lake of S. area	Bottom			NSF	475	1140
Cascade	6/7/00	E. Lake of S. area	Bottom			MWF	390	600

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Cascade	6/7/00	Mid Lake of S. area	Floater			RBT	530	450
Cascade	6/7/00	Mid Lake of S. area	Floater			NSF	470	980
Cascade	6/7/00	Mid Lake of S. area	Floater			RBT	295	215
Cascade	6/7/00	Mid Lake of S. area	Bottom			LSS		1910
Cascade	6/7/00	Mid Lake of S. area	Bottom			NSF	480	1200
Cascade	6/7/00	Mid Lake of S. area	Bottom			NSF	455	1015
Cascade	6/7/00	Mid Lake of S. area	Bottom			LSS	540	
Cascade	6/7/00	Mid Lake of S. area	Bottom			LSS	565	
Cascade	6/7/00	Mid Lake of S. area	Bottom			LSS	530	
Cascade	6/7/00	Mid Lake of S. area	Bottom			NSF	460	1020
Cascade	6/7/00	Mid Lake of S. area	Bottom			NSF	480	1110
Cascade	6/7/00	Mid Lake of S. area	Bottom			NSF	500	1310
Cascade	6/8/00	W. Shore of S. area	Floater			RBT	450	
Cascade	6/8/00	W. Shore of S. area	Floater			RBT	470	1320
Cascade	6/8/00	W. Shore of S. area	Floater			RBT	515	1390
Cascade	6/8/00	W. Shore of S. area	Floater			RBT	480	1190
Cascade	6/8/00	W. Shore of S. area	Floater			RBT	390	580
Cascade	6/8/00	W. Shore of S. area	Floater			RBT	375	680
Cascade	6/8/00	W. Shore of S. area	Floater			Coho	265	170
Cascade	6/8/00	W. Shore of S. area	Floater			NSF	490	1220
Cascade	6/8/00	W. Shore of S. area	Floater			NSF	470	1110
Cascade	6/8/00	W. Shore of S. area	Floater			NSF	518	1330
Cascade	6/8/00	W. Shore of S. area	Floater			NSF	513	1430
Cascade	6/8/00	W. Shore of S. area	Floater			LSS	596	
Cascade	6/8/00	W. Shore of S. area	Floater			LSS	517	1540
Cascade	6/8/00	W. Shore of S. area	Floater			NSF	304	260
Cascade	6/8/00	W. Shore of S. area	Bottom			BLHD	328	
Cascade	6/8/00	W. Shore of S. area	Bottom			NSF	547	1740
Cascade	6/8/00	W. Shore of S. area	Bottom			LSS	535	1520
Cascade	6/8/00	W. Shore of S. area	Bottom			LSS	528	1640
Cascade	6/8/00	W. Shore of S. area	Bottom			NSF	590	2200
Cascade	6/8/00	W. Shore of S. area	Bottom			NSF	475	860
Cascade	6/8/00	W. Shore of S. area	Bottom			Coho	302	265
Cascade	6/8/00	W. Shore of S. area	Bottom			Coho	331	350
Cascade	6/8/00	W. Shore of S. area	Bottom			Coho	325	330
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	340	420
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	300	262
Cascade	6/8/00	W. Shore of S. area	Bottom			YP	260	240
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	392	690
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	369	520
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	380	630
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	328	350
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	346	430
Cascade	6/8/00	W. Shore of S. area	Bottom			MWF	358	480
Cascade	6/8/00	W. Shore of Mid Area	Floater			LSS	580	2100
Cascade	6/8/00	W. Shore of Mid Area	Floater			LSS	555	1800
Cascade	6/8/00	W. Shore of Mid Area	Floater			LSS	480	1360
Cascade	6/8/00	W. Shore of Mid Area	Floater			LSS	488	1310
Cascade	6/8/00	W. Shore of Mid Area	Floater			RBT	296	216
Cascade	6/8/00	W. Shore of Mid Area	Floater			RBT	509	1320
Cascade	6/8/00	W. Shore of Mid Area	Floater			NSF	503	1250
Cascade	6/8/00	W. Shore of Mid Area	Floater			NSF	480	1180
Cascade	6/8/00	W. Shore of Mid Area	Floater			NSF	513	1400
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	523	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	505	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	517	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	466	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	508	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	493	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	497	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	472	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	482	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	496	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	473	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	497	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	512	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	464	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	523	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	585	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	530	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	502	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	531	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	476	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	579	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			LSS	553	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	527	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	530	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	482	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	538	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			NSF	529	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			MWF	363	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			MWF	337	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			MWF	334	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			MWF	329	
Cascade	6/8/00	W. Shore of Mid Area	Bottom			RBT	236	
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			RBT	476	
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			RBT	520	1580
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			RBT	283	250
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			RBT	279	190
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			LSS	505	1440
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			LSS	501	1425
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			LSS	479	1040
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			LSS	463	1110
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			MWF	432	
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			NSF	520	1240
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			NSF	521	1580
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			NSF	527	1190
Cascade	6/8/00	Mid Lake of Mid Area	Bottom			NSF	489	1070
Cascade	6/8/00	Mid Lake of Mid Area	Floater			LSS	587	2700
Cascade	6/8/00	Mid Lake of Mid Area	Floater			LSS	566	2050
Cascade	6/8/00	Mid Lake of Mid Area	Floater			RBT	498	1240
Cascade	6/8/00	Mid Lake of Mid Area	Floater			RBT	486	1310
Cascade	6/8/00	Mid Lake of Mid Area	Floater			RBT	342	520
Cascade	6/8/00	Mid Lake of Mid Area	Floater			RBT	288	220
Cascade	6/8/00	Mid Lake of Mid Area	Floater			RBT	284	200
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	518	1380
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	583	1970
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	562	1890
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	486	
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	558	
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	554	
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	504	1500
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	502	1530
Cascade	6/8/00	E. Shore of Mid Area	Floater			LSS	546	2000
Cascade	6/8/00	E. Shore of Mid Area	Floater			RBT	421	940
Cascade	6/8/00	E. Shore of Mid Area	Floater			RBT	281	225
Cascade	6/8/00	E. Shore of Mid Area	Floater			NSF	494	
Cascade	6/8/00	E. Shore of Mid Area	Bottom			MWF	395	
Cascade	6/8/00	E. Shore of Mid Area	Bottom			MWF	326	430
Cascade	6/8/00	E. Shore of Mid Area	Bottom			MWF	399	780
Cascade	6/8/00	E. Shore of Mid Area	Bottom			MWF	334	390
Cascade	6/8/00	E. Shore of Mid Area	Bottom			MWF	314	360
Cascade	6/8/00	E. Shore of Mid Area	Bottom			MWF	423	880
Cascade	6/8/00	E. Shore of Mid Area	Bottom			LSS	446	1020
Cascade	6/8/00	E. Shore of Mid Area	Bottom			LSS	533	1760
Cascade	6/8/00	E. Shore of Mid Area	Bottom			NSF	507	1140
Cascade	6/8/00	E. Shore of Mid Area	Bottom			NSF	542	1490
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			SMB	320	500
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			NSF	450	800
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	490	1050
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	440	720
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	370	530
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	430	660
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	420	700
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			BLS	320	300
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	270	200

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			BLS	270	200
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			SMB	190	75
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	410	680
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	480	640
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			BLS	315	310
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			BLS	300	290
Arrowrock	6/27/00	Lower south side near the SF Boise R	FGN			LSS	520	1350
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			NSF	420	550
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	425	700
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	415	650
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	285	230
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			NSF	370	400
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	370	450
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	255	150
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	425	650
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	370	450
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			BLS	260	150
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			NSF	235	75
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			LSS	240	120
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			SMB	150	50
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			SMB	150	50
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			SMB	155	50
Arrowrock	6/27/00	Lower south side near the SF Boise R	SGN			SMB	155	50
Arrowrock	6/27/00	Upper north side Floating net	FGN			NSF	335	300
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	415	620
Arrowrock	6/27/00	Upper north side Sinking net	SGN			BLS	390	650
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	415	720
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	385	580
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	375	530
Arrowrock	6/27/00	Upper north side Sinking net	SGN			BLS	315	300
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	375	580
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	365	480
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	410	700
Arrowrock	6/27/00	Upper north side Sinking net	SGN			BLS	340	400
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	370	500
Arrowrock	6/27/00	Upper north side Sinking net	SGN			SMB	300	400
Arrowrock	6/27/00	Upper north side Sinking net	SGN			WRB	210	100
Arrowrock	6/27/00	Upper north side Sinking net	SGN			LSS	435	800
Arrowrock	6/27/00	Upper north side Sinking net	SGN			BLT	495	1050
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	430	700
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	520	1200
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	450	825
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	390	590
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	430	850
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	420	825
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			NSF	420	510
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			BLS	360	400
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			SMB	270	210
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			SMB	235	150
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	355	480
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	470	1000
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	445	870
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	440	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	350	550
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			NSF	365	400
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			BLS	375	480
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	345	490
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	370	450
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	425	700
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	380	550
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			BLS	395	610
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	375	550
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			LSS	360	500
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			BLS	345	360
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			SMB	150	50
Arrowrock	6/27/00	Sinking net Lower south side near SF Boise R	SGN			SMB	200	100
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	450	900
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	460	850
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	490	1150
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	550	1400
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	375	450
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	405	750
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			BLS	410	720
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			BLS	390	590
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	420	700
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	410	550
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	360	450
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	430	800
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	415	750
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			SMB	290	310
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			SMB	280	320
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			SMB	320	500
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			NSF	440	640
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			NSF	390	480
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			NSF	360	400
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			SMB	320	480
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	420	700

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	420	710
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	435	750
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	425	800
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			BLS	300	300
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			BLS	380	680
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			NSF	470	700
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	415	700
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			BLS	370	510
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			LSS	365	530
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			NSF	355	450
Arrowrock	6/27/00	Sinking net upper north side, no fish in Floating net	SGN			NSF	380	500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	165	50
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	285	200
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	255	200
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	230	150
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	250	200
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	240	150
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	415	700
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	345	500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	425	800
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	390	800
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	410	700
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	410	750
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	410	650
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	320	300
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	530	1500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	240	150
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	190	50
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	300	
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	400	650
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	465	950
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	405	750
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	410	550
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	230	150

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	390	500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	410	725
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	380	450
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	390	700
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	295	275
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	435	700
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	410	625
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	390	650
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	260	200
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	255	175
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	245	150
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	270	250
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	210	75
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	215	100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	175	75
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	205	100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	185	100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	380	550
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	360	500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	240	100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	385	600
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	335	425
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	400	570
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	415	675
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	470	1000
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	360	450
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	420	600
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	380	450
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	380	
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	380	500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	250	175
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	400	700
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	450	950
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	390	550

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	365	400
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	155	100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	165	100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	160	100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	420	850
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	310	400
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	390	500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			NSF	420	600
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	365	500
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	370	600
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			LSS	495	1100
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	SGN			SMB	315	450
Arrowrock	6/27/00	Upstream from Grouse Creek, South bank	FGN			NSF	340	350
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	465	900
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	440	1000
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	445	950
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	400	800
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	430	900
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	430	700
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	360	500
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	405	700
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	390	600
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	375	550
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	395	600
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			NSF	395	555
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			NSF	370	550
Arrowrock	6/28/00	South Fork Boise R arm, west bank	FGN			SMB	275	300
Arrowrock	6/28/00	South Fork Boise R arm, west bank	FGN			SMB	215	175
Arrowrock	6/28/00	South Fork Boise R arm, west bank	FGN			SMB	205	150
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	390	600
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	470	900
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	400	650
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	375	575
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	450	900
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	480	1100
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	400	625
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	365	500
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	510	1200
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			SMB	255	200
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			SMB	260	200
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			NSF	250	100
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			NSF	350	400
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	440	825
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	430	800
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	355	500
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	270	250
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	390	700
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	375	625
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	270	275
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			BLS	290	300
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	390	650
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			BLS	290	200
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	270	175
Arrowrock	6/28/00	South Fork Boise R arm, west bank	SGN			LSS	255	150

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	380	500
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	400	580
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	415	690
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	520	1220
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	400	550
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	420	700
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	430	710
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			NSF	370	450
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			NSF	355	360
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	475	1000
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	FGN			NSF	305	390
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	480	1070
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	445	750
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	450	950
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	445	800
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	370	500
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	415	680
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	390	520
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	510	1050
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	440	825
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			NSF	335	320
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	450	750
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	400	600
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	445	875
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	440	875
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	450	900
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			NSF	375	450
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	420	680
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	435	750
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			NSF	335	340
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			LSS	405	675
Arrowrock	6/28/00	Upper south side across from Cottonwood Creek	SGN			BLS	245	210
Arrowrock	6/28/00	Upper north side near Trail Creek	FGN			NSF	380	450
Arrowrock	6/28/00	Upper north side near Trail Creek	FGN			NSF	320	300
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	550	1300
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	445	950

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	360	500
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	370	620
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	435	825
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	400	600
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	375	500
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			NSF	350	380
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	410	650
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			NSF	345	380
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	470	1000
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	510	1450
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	520	1300
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	380	510
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	415	600
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	380	510
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	385	500
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	390	600
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			NSF	375	300
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			NSF	325	300
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			NSF	395	500
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			NSF	395	480
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	490	1000
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	510	1200
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	425	850
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	410	600
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	410	675
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			LSS	415	725
Arrowrock	6/28/00	Upper north side near Trail Creek	SGN			NSF	370	460
Arrowrock	6/28/00	Upper north side near Trail Creek	FGN			WRB	470	875
Arrowrock	6/30/00		VGN		7 yd, 1"	NSF	335	275
Arrowrock	6/30/00		VGN		11.5 yd, 1"	NSF	250	100
Arrowrock	6/30/00		VGN		14 yd, 1"	HRB	290	200
Arrowrock	6/30/00		VGN		17 yd, 1"	NSF	330	200
Arrowrock	6/30/00		VGN		4 yd, 3/4"	NSF	350	300
Arrowrock	6/30/00		VGN		5 yd, 3/4"	NSF	240	100
Arrowrock	6/30/00		VGN		6 yd, 3/4"	NSF	345	300
Arrowrock	6/30/00		VGN		6 yd, 3/4"	NSF	230	75
Arrowrock	7/7/00		VGN		8 yds, 3/4"	NSF	350	350
Arrowrock	7/7/00		VGN		3 yds, 3/4"	NSF	235	100
Arrowrock	7/7/00		VGN		14 yds, 3/4"	HRB	290	205
Arrowrock	7/7/00		VGN		16 yds, 1"	NSF	250	125
Arrowrock	7/7/00		VGN		4 yds, 1"	NSF	260	170
Arrowrock	7/7/00		VGN		5 yds, 1"	NSF	240	140
Arrowrock	7/6/00		VGN		7 yds, 3/4"	HRB	270	160
Arrowrock	7/6/00		VGN		16 yds, 3/4"	LSS	405	575
Lucky Peak	6/29/00	Vertical net lower reservoir east bank off the rock wall	VGN		7 yd, 1"	BLS	272	120
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		12', 1"	CSL	285	200
Lucky Peak	6/28/00	Vertical net mid reservoir east bank in a cove	VGN		14 yd, 3/4"	HRB	145	20
Lucky Peak	6/28/00	Vertical net mid reservoir east bank in a cove	VGN		9.5 yd, 3/4"	HRB	155	25
Lucky Peak	6/28/00	Vertical net mid reservoir east bank in a cove	VGN		14 yd, 3/4"	HRB	155	20
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		5.5' dn, 3/4"	HRB	165	50
Lucky Peak	6/29/00	Vertical net lower reservoir east bank off the rock wall	VGN		9 yd, 3/4"	HRB	220	100
Lucky Peak	6/29/00	Vertical net lower reservoir east bank off the rock wall	VGN		5 yd, 3/4"	HRB	350	400
Lucky Peak	6/29/00	Vertical net lower reservoir east bank off the rock wall	VGN		10 yd, 3/4"	KOK	160	25
Lucky Peak	6/29/00	Vertical net lower reservoir east bank off the rock wall	VGN		13 yd, 1"	KOK	270	160
Lucky Peak	6/29/00	Vertical net lower reservoir east bank off the rock wall	VGN		12 yd, 3/4"	KOK	281	240
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		63', 1"	LSS	320	

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		11', 3/4"	LSS	380	600
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		7' dn, 3/4"	LSS	390	500
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		16', 3/4"	LSS	390	450
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		12', 3/4"	LSS	395	550
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		51', 3/4"	LSS	410	700
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		58', 1"	MWF	225	150
Lucky Peak	6/28/00	Vertical net mid reservoir east bank in a cove	VGN		3.75 yd, 3/4"	NSF	190	30
Lucky Peak	6/28/00	Vertical net mid reservoir east bank in a cove	VGN		2.5 yd, 1"	NSF	285	250
Lucky Peak	6/29/00	Vertical net lower reservoir east bank off the rock wall	VGN		19.5 yd, 3/4"	NSF	295	240
Lucky Peak	6/28/00	Vertical net mid reservoir east bank in a cove	VGN		6 yd, 1"	NSF	300	250
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		12' dn, 1" net	NSF	320	350
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		12', 1"	NSF	340	400
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		35', 1"	NSF	345	400
Lucky Peak	6/27/00	Vertical net upper reservoir near Macks Creek	VGN		15', 1"	NSF	370	500
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			CSL	195	50
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	260	200
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	275	200
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	275	150
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	285	225
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	285	250
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	290	250
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	300	250
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	300	250
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			CSL	320	300
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	320	350
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			CSL	325	300
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	330	350
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	335	350
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	335	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	340	350
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	345	375
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	345	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			CSL	350	450
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	360	450
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			CSL	405	750
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			HRB	160	50
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			HRB	160	60
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			HRB	160	75
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			HRB	165	50
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			HRB	165	75
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			HRB	165	60

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			HRB	170	60
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			HRB	170	50
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			HRB	175	100
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			HRB	335	350
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			HRB	405	600
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			HRB	405	750
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			LSS	150	25
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			LSS	240	150
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			LSS	300	750
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			LSS	340	450
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			LSS	385	600
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			LSS	405	600
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			LSS	420	750
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			LSS	430	750
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			LSS	485	1200
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			LSS	510	1300
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			LSS	515	1450
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			MWF	290	250
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	165	25
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	165	25
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	170	25
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	175	25
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	175	25
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	185	100
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	190	100
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	190	50
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	190	50
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	190	50
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	195	50
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	265	150
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	305	250
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	310	250
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	310	250
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	315	300
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	325	300
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	325	300
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	325	300
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	330	350
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	330	300

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	330	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	335	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	335	325
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	340	375
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	340	350
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	340	350
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	340	350
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	345	325
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	345	450
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	345	400
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	345	400
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	345	350
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	345	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	350	450
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	350	425
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	350	400
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	350	450
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	350	450
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	355	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	355	400
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	355	450
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	360	500
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	360	350
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	360	400
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	360	400
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	360	400
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	360	475
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	365	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	365	450
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	365	400
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	365	
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	365	400
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	365	400
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			NSF	365	450
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	370	350
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	370	500
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	370	425
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	370	450
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	370	550
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	370	600
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	370	500
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			NSF	370	550
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	375	500
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	375	550
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	375	500

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	380	500
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	380	600
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	380	550
Lucky Peak	6/27/00	At Spring Shores West bank	FGN			NSF	385	575
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	385	700
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	385	650
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			NSF	400	600
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			RBT	410	650
Lucky Peak	6/28/00	Floating gill net north bank Turner Gulch	FGN			RBT	425	750
Lucky Peak	6/27/00	Floating gill net downstream of Spring Shores, mid reservoir set	FGN			SMB	200	150
Lucky Peak	6/28/00	Lower reservoir near Turner Gulch S. bank	FGN			SMB	335	600
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			BLS	210	100
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	210	100
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	225	140
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	230	120
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	230	100
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			BLS	240	110
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	260	140
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	270	220
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			BLS	300	250
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			BLS	315	300
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	320	400
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			BLS	325	275
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			BLS	330	340
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			CSL	185	60
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	205	80
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			CSL	245	160
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			CSL	245	140
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	255	200
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			CSL	270	200
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			CSL	275	200
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	280	200
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	280	200
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	285	250
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	285	210
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			CSL	290	200
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	295	220
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			CSL	300	250
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			CSL	300	300
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	305	250
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			CSL	340	320

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			CSL	340	300
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			HRB	155	30
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			HRB	155	25
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			HRB	155	25
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			HRB	155	40
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			HRB	160	40
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			HRB	160	50
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			HRB	160	25
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			HRB	160	40
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			HRB	165	50
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			HRB	170	50
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			HRB	170	50
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			HRB	175	50
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			HRB	175	60
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			HRB	180	50
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			HRB	180	60
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			HRB	180	80
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			HRB	180	60
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			HRB	355	420
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			HRB	375	490
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			HRB	400	700
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			HRB	415	750
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			HRB	430	650
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	180	60
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	210	100
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	215	100
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	220	100
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	220	120
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	230	110
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	235	100
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	240	110
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	240	150
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	240	160
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	245	100
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	245	160
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	260	200

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	260	200
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	275	200
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	290	250
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	295	300
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	305	300
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	310	300
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	310	300
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	330	400
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	340	400
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	340	450
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	340	450
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	340	500
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	345	450
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	345	400
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	350	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	355	500
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	360	550
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	360	500
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	365	500
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	365	510
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	365	390
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	365	500
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	365	490
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	365	500
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	370	525
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	370	425
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	370	550
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	370	550
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	375	550
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	375	540
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	375	600
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	380	480
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	380	600
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	380	500
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	385	525
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	385	600
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	385	550
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	385	620

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	390	600
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	390	450
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	390	550
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	390	600
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	395	600
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	395	600
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	395	600
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	400	700
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	400	660
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	400	700
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	405	620
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	405	680
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	405	700
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	405	800
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	410	725
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	410	570
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	410	790
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	410	700
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	410	700
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	410	700
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	410	680
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	410	700
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	420	710
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	430	750
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	430	780
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	430	800
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	435	900
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	435	850
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	435	790
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	440	900
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			LSS	440	800
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	445	700
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	450	1000
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	455	850
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	455	950
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	455	1100
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	460	950
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	460	1000
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	465	1000
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	475	1000

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	480	1150
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			LSS	490	1125
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			LSS	510	1200
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			LSS	510	1200
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	280	220
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	285	200
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	290	180
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	290	250
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	305	250
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	335	380
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	345	410
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	345	400
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	350	350
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	350	425
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	350	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			MWF	350	450
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	355	450
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	355	450
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	355	450
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	360	480
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	360	400
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	370	450
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	375	525
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			MWF	380	550
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			MWF	390	550
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	175	50
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	180	25
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	180	60
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	180	50
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	220	100
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	225	100
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	235	110
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	235	140
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	295	250
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	310	225
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	310	250
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	330	275
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	330	310
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	330	300
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	330	350
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	330	400

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	335	300
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	335	320
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	335	300
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	340	350
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	340	360
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	340	370
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	340	350
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	340	300
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	345	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	345	440
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	350	380
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	350	350
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	350	400
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	350	350
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	350	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	350	450
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	350	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	350	400
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	355	400
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	355	350
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	355	500
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	355	460
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	355	440
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	360	450
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	360	420
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	360	390
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	360	500
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	360	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	360	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	360	480
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	365	375
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	365	475
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	365	500
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	365	400
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	365	400
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	370	425
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	370	410
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	370	495
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	370	450

Appendix P. Continued.

Water	Date	Location	Net Type	Mesh	Depth	Species	Length	Weight
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	370	500
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	375	450
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	375	480
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	375	460
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	375	450
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	375	600
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	375	500
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	380	500
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	380	510
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	380	500
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	380	550
Lucky Peak	6/27/00	Sinking gill net, Spring Shores east bank	SGN			NSF	390	600
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	390	500
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			NSF	400	550
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	400	700
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	405	690
Lucky Peak	6/27/00	Sinking gill net mid reservoir	SGN			NSF	405	650
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	410	800
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	460	900
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			NSF	550	1600
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			SMB	180	100
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			SMB	195	100
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			SMB	275	300
Lucky Peak	6/28/00	Sinking gill net north bank Turner Gulch	SGN			SMB	290	350
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			SMB	310	400
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			SMB	320	450
Lucky Peak	6/28/00	Sinking net, south bank close to Turner Gulch	SGN			SMB	375	650

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