

F- 78-K-1 through 5  
3302  
Region 3  
#86475

MONTANA FISH, WILDLIFE, & PARKS  
COLDWATER LAKES FISHERIES INVESTIGATIONS

MADISON/GALLATIN DISTRICT

7/1/94 - 6/31/99  
0

JOB OBJECTIVES

1. Collect necessary information to properly manage high mountain lake fisheries as time and funding allows.

A total of 12 high mountain lakes on the Gallatin and Beaverhead National Forests were surveyed using gill nets, angling, visual observation, and/or creel census. Data collected was used to either maintain or adjust current management and stocking plans. No lakes in the Gallatin drainage were surveyed during this period.

2. Maintain catch rates of McBride Lake (Yellowstone) cutthroat trout at an acceptable level.

McBride Lake cutthroat trout were stocked in Madison/Gallatin drainage high mountain lakes at prescribed intervals during 1994-1998.

PROCEDURES

High mountain lakes were sampled using sinking monofilament nets and hook and line. Sampling gear was backpacked to site. Nets were set either for short intervals during the day (to avoid excessive mortality) or for a period of 12 to 16 hours overnight. Hook and line sampling took place during daylight hours when opportunity presented itself or during short interval net sets. Fish captured were measured to the nearest 0.1 inch and, when possible, weighed to the nearest 0.01 pound. Scale samples were taken and age analysis using annulus information will be conducted. Lake shorelines and inlet/outlets were observed to assess potential spawning habitat. Lakes not sampled were assessed via observation of sighted fish, angling evidence, invertebrate and amphibian abundance, and observation of lakes' physical features. All lakes were sampled during August, 1998.

Anglers were interviewed at Upper Twin Lake (Tobacco Root Mtns.). Species, catch rates, and angler satisfaction information was collected.

Surface area, elevation, depth, and location of sampled lakes were obtained from "Beaverhead-Deerlodge National Forest Lake and Fish Directory" (revised June, 1997).

Table 1      Summary of physical descriptions, sampling methods, & species and number caught for high mountain lakes on the Gallatin and Beaverhead National Forests, 1998.

1998 MOUNTAIN LAKE SURVEY

<u>LAKE</u>	<u>LOCATION</u>	<u>AREA</u>	<u>DEPTH</u>	<u>ELEVATION</u>	<u>METHOD</u>	<u>SPP.*</u>	<u>NO.</u>
BLUE DANUBE	T10SR2ESEC14	12a	UNK	9080	GILLNET	YCT	10
						GT	5
						YCTXGT	3
AVALANCHE	T10SR2ESEC11	9a	80ft	9040	H&L, GILLNET	YCT	12
HIGH HOPE	T10SR2ESEC14	2a	15ft	9200	GILLNET	YCT	19
TRIPLE (MID)	T10SR2ESEC14	3a	12ft	8960	VISUAL	FISHLESS	
TRIPLE (NORTH)	T10SR2ESEC14	1.5a	8ft	8960	VISUAL	FISHLESS	
CLIFF	T4SR3WSEC10	10a	30ft	8940	H&L	NONE	

ALPINE (MINE)	T4SR3WSEC11	15a	UNK	8995	VISUAL	YCT	
LILLY (MCKELVEY)	T4SR3WSEC11	7a	20ft	8780	H&L	YCT	7
U. SURESHOT	T3SR3WSEC25	8a	15ft	7290	GILLNET	EB	5
L. SURESHOT	T3SR2WSEC30	6a	15ft	7180	VISUAL	YCT	
U. TWIN	T4SR3WSEC2	32a	UNK	8270	H&L	EB	1
						YCT	2
						YCTXRB	1
L. TWIN	T4SR3WSEC2	11a	43ft	8100	H&L	EB	2

\* YCT=Mcbride Yellowstone Cutthroat Trout GT=Golden Trout EB=Eastern Brook Trout  
YCTXGT=Mcbride Yellowstone Cutthroat Trout/Golden Trout hybrid

## FINDINGS

### West Fork of Beaver Creek, South end of Madison Range

#### Blue Danube Lake

Location – This lake sits near the Beaver Cr./Madison River divide three air miles north of the USFS Earthquake Memorial Visitors Center. It is situated at the head of the south fork of the west fork of Beaver Cr.

Fisheries - This lake was historically one of the few golden trout lakes in southwest Montana. In 1989 an accidental plant of Mcbride strain Yellowstone cutthroat trout took place (FWP Files, Fredenberg, 8/89). The result was hybridization of planted cutthroats with the standing stock of golden trout. This survey found what appeared to be both pure species and hybrids, although individuals for genetic testing were not collected. One gill net set overnight caught 10 YCT ( $r=13.8-15.9''$ , avg.=14.8"), five GT ( $r=8.3-17.6''$ , avg.=12.1"), and three hybrids ( $r=6.5-16.4''$ , avg.=12.8"). One YCT, approximately 14", escaped from the net upon retrieval. All fish appeared healthy and individuals of both sexes in spawning condition were observed. Scale samples were taken and age analysis is pending. Natural reproduction is possible in the outlet. Non-native gravel was placed at the head of the outlet (source unknown), and eggs were visible scattered throughout. One 2-3" and one 4-6" individual, each, was observed along the shoreline.

Recommendations – This lake appears to be a self- sustaining fishery. The 1989 plant of YCT effectively (and unfortunately) genetically polluted the pure golden trout strain. The resultant population is producing what appears to be a healthy population with variable age structure and desirable size. No supplementation is needed and we recommend Blue Danube Lake be left as self sustaining.

#### High Hope Lake

Location – This lake is approximately 0.5 miles north of and 150 ft. higher in elevation than Blue Danube Lake.

Fisheries – This lake was planted with 500 yoy(young- of-year) YCT in 1997. Many 3-5" rising fish were observed, probably 1997's plant. One gill net was set for 0.5 hrs caught 19 YCT ( $r=6.1-7.4''$ , avg.= 6.6"). Two fish escaped from the net upon retrieval. All fish appeared to be same age class. Scale samples were taken and age analysis is pending. The outlet is a wetland seep incapable of supporting natural reproduction.

Recommendations – This lake should be left on a four- year YCT stocking schedule.

#### Triple Lakes

Location – These lakes are on the south fork of the west fork of Beaver Cr. approximately 0.3 miles below Blue Danube lake. The southernmost lake was not surveyed.

Fisheries – Both the middle and northern lakes are shallow (8-12'). No fish were observed in either lake and both contained a great diversity of invertebrates and frogs (adult & larvae), suggesting zero predation.

Recommendations – These lakes probably cannot sustain fish year round and should not be managed as fisheries.

#### Avalanche Lake

Location – This lake sits approximately four air miles north of the USFS Earthquake Memorial Visitors Center. It is at the head of the north fork of the west fork of Beaver Cr.

Fisheries – This lake is on a four year YCT plant schedule. 1000 yoy were stocked in 1997. Eight YCT were captured with hook & line sampling and a one hour net set produced four YCT ( $r=4.1-11.4$ ",  $avg=7.6$ "). Scale samples were taken and age analysis is pending. In addition, high numbers of 2-12" fish were observed, suggesting natural reproduction is occurring. The outlet contains spawning habitat and there are upwelling springs along the lake's northeast shore.

Recommendations – Avalanche Lake appears to be overpopulated. Planting 1000 yoy YCT every four years (on top of natural reproduction) may be excessive. Pending scale age's and the planting contribution to population analysis may suggest either lengthening the stocking interval or decreasing number stocked. Another possibility is to cease stocking altogether and let natural reproduction support the fishery.

### North Fork of Meadow Creek, Tobacco Root Range

#### Cliff Lake

Location – This lake is situated approximately 7 air miles northeast of McAllister, MT. It sits at the head North Meadow Cr.

Fisheries – This lake is on a four year YCT plant schedule, with 1000 yoy stocked in 1996. Hook & line sampling yielded no fish, however, eight rises were observed. Limited spawning potential exists at the outlet. Cliff, as well as all other lakes in this basin, is accessible by ORV's.

Recommendations – Continue on four year cycle.

#### Alpine (Mine) Lake

Location – This lake lies at the head of a separate fork of N. Meadow Cr., approximately 0.5 miles north of Cliff Lake.

Fisheries – This lake is on a four year YCT plant schedule, with 1000 yoy stocked in 1998. No sampling was conducted, but several angler harvested carcasses (approx. 12-16") were observed. Also, many rises were observed. No spawning potential exists here.

Recommendations – Continue on four year cycle.

#### Lilly (McElvey) Lake

Location – This lake lies downstream and 0.5 miles east of Cliff Lake.

Fisheries – This lake is on a four year YCT plant schedule, with 500 yoy stocked in 1998. Hook & line sampling yielded seven YCT ( $r=8.7-11.5$ ",  $avg.=9.3$ "). Scales were collected and age analysis is pending.

Observed 2" planters and 10 angler harvested carcasses (up to 14"). About 50 yards of spawning habitat exists at inlet. Between Cliff and Lilly Lakes, the creek supports 6-14" YCT. May be spillover from Cliff Lake. Lilly Lake's outlet goes subterranean 100 yds. below the lake and re-emerges. Below it's re-emergence, we observed an isolated population of brook trout.

Recommendations – Continue on four year cycle.

#### Upper Twin Lake

Location – This lake is approximately one mile north of Alpine Lake, at the head of a separate fork of N. Meadow Cr.

Fisheries – This lake was last stocked with YCT in 1994. A scheduled 1998 plant was canceled. Hook and line sampling yielded one 9" EB and three YCT ( $r=10.5-11"$ ,  $avg.=10.8"$ ), one of which appeared to be an RBxYCT. Scales were taken and age analysis is pending. Two anglers were interviewed. They had fished four hours (total) catching six EB and 10 YCT (1.5 EB/hr. and 2.5 YCT/hr). Both fished this lake often and expressed high satisfaction with the fishery. The inlet supports spawning, containing 300 yds. of suitable gravels. The outlet contains 20 yds. of spawning habitat.

Recommendations – This lake is scheduled for 500 YCT in 2002. We recommend this plant takes place.

#### Lower Twin Lake

Location – This lake lies 0.25 miles east and downstream of Upper Twin Lake.

Fisheries – This self-sustaining fishery supports brook and rainbow trout. Hook and line sampling yielded two 8.6" EB. Observed one 11" RB. Also observed 1" post emergent RB fry and 2-3" EB fry. The inlet and outlet have 50 and 15 yds. of spawning habitat, respectively.

Recommendations – Leave as self-sustaining EB and RB fishery. No is supplementation necessary.

#### Upper Sureshot Lake

Location – This lake, reachable by gravel road, lies 2.5 miles northeast of Twin Lakes.

Fisheries – This lake contains an apparently stunted population of EB. A 1.5 hour net set yielded six EB ( $r=5.6-8.2"$ ,  $avg.=6.7"$ ). Two had hook scars. Observed numerous 2-3" and 6-10" EB. Saw no YCT.

Recommendations – The Stocking schedule does not differentiate between upper and lower lakes. Judging from net results, no YCT have been placed in upper lake. Recommend this lake be left as brook trout fishery.

#### Lower Sureshot Lake

Location – This lake, reachable by same above-mentioned gravel road, lies 0.5 miles east of Upper Sureshot Lake.

Fisheries – This lake has a past reputation as a trophy YCT fishery. This capability was supported by the discovery of one dead 24.6" YCT along the shoreline. No formal sampling occurred. Although last stocked with YCT in 1996, no evidence of live fish was observed. Abundant aquatic invertebrates and a hatch of 1000's of western toads was observed. Lake appeared quite eutrophic with high probability of winterkill.

Recommendations – Although trophy potential exists, the high probability of winterkill and abundance of amphibians leads to recommendation of planting cessation. This may be a good area to let amphibians prosper.

#### LITERATURE CITED

Anonymous. 1997. Lake and Fish Directory, Beaverhead-Deerlodge National Forest. Revised June, 1997. Beaverhead-Deerlodge National Forest, Dillon, MT.

Fredenberg. 1989. FWP files, department memo. August 18, 1989. MFWP, Bozeman, MT.

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Date: June 26, 2000

Waters Referred To:	Blue Danube Lake	13-6960
	Avalanche Lake	13-6880
	High Hope Lake	13-7805
	Triple Lakes	No Code
	Cliff Lake	13-7360
	Alpine (Mine) Lake	13-7960
	Lilly (McKelvey) Lake	13-7840
	Sureshot Lakes (upper and lower)	13-8560
	Twin Lakes (upper and lower)	13-8720

Key Words	Lakes
	High Mountain Lakes
	McBride Yellowstone Cutthroat Trout
	Golden Trout
	Eastern Brook Trout
	Rainbow Trout

This is a detailed topographic map of the Hebgen Lake area in Idaho, centered around the Hebgen Dam and the 1980 earthquake zone. The map features a grid system with numbers 1-36 along the top and bottom edges, and letters A-C along the right edge. Key geographical features include:

- Lakes:** Hebgen Lake, Cabin Creek, Beaver Creek, Clark Springs, and several smaller lakes like Clear Lake, Dutchman Lake, and Painted Lake.
- Dam and Earthquake Zone:** The Hebgen Dam is prominently marked, along with the 'EARTHQUAKE MEMORIAL' and the '1980 EARTHQUAKE' zone, which is outlined in a thick black line.
- Wildlife Management Area:** A large area to the north and east of the dam is designated as the 'WILDLIFE MANAGEMENT AREA'.
- Other Landmarks:** The 'MADISON BEAVER CREEK REFUGE PT.', 'CABIN CREEK SCARP AREA', 'KIRKWOOD CANYON', and 'RAYNOLDS PASS' are labeled.
- Roads and Infrastructure:** Various roads are shown, including Highway 287, Highway 6905, and Highway 2540. A 'BUILDING DESTRUCTION' area is also indicated near the dam.
- Scale and Orientation:** A scale bar at the bottom left indicates distances in miles (0 to 10). A north arrow is located in the bottom right corner.

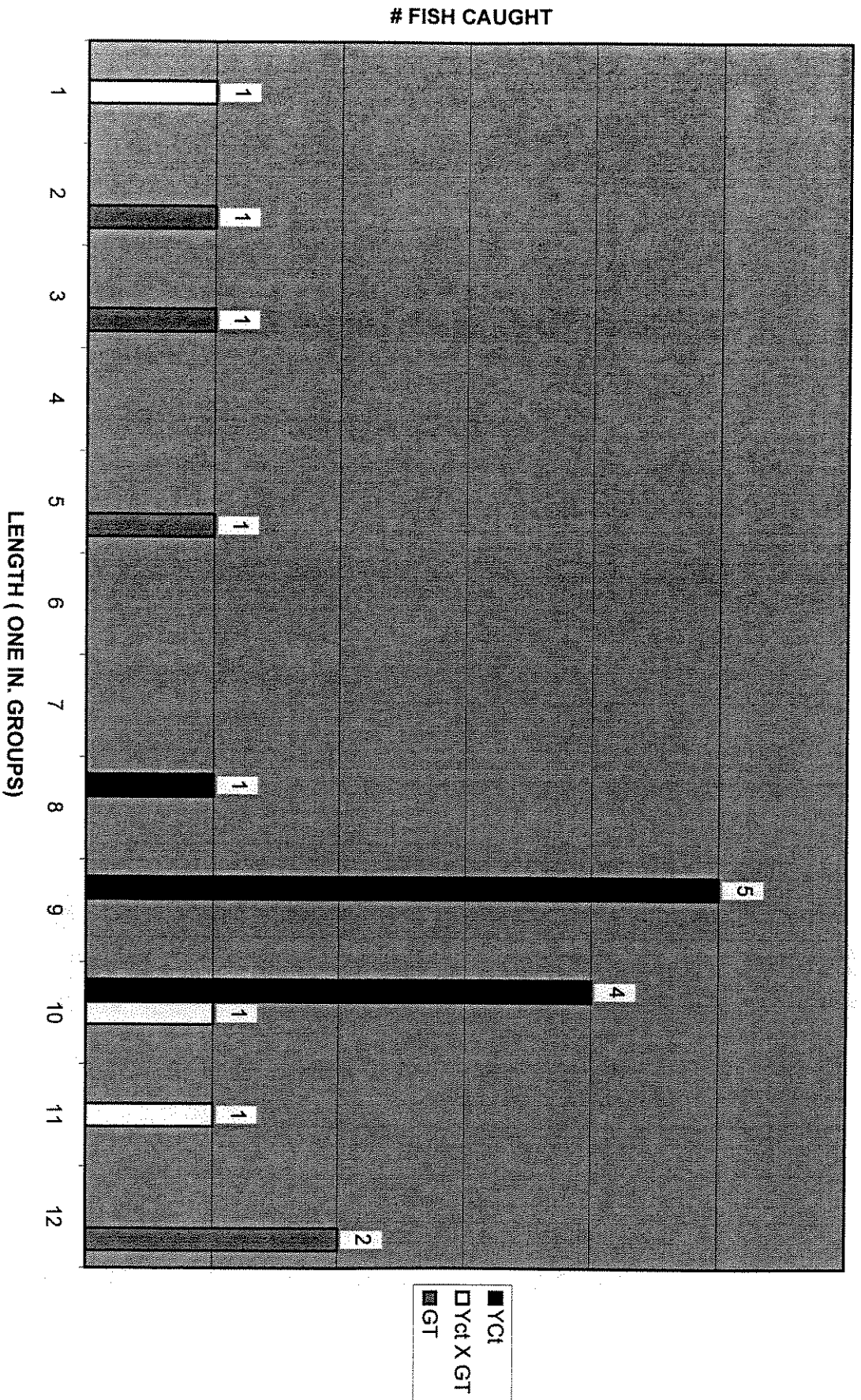
This is a detailed topographic map of the Potosi area in Idaho. The map features a grid system with numbers 1 through 36 along the edges. Key locations and features include:

- Towns and Settlements:** Potosi, Wallace, Sugar Loaf Mountain, and Ennis Lake.
- Geographical Features:** Sugar Loaf Mountain (7121'), Wallace Peak (6571'), and Ennis Lake.
- Water Bodies:** Potosi Lake, Sugar Loaf Lake, Wallace Lake, and Ennis Lake.
- Infrastructure:** Roads, trails, and a railroad line.
- Other Landmarks:** Maltbys Mound, Pony Gulch, and various creeks and lakes.

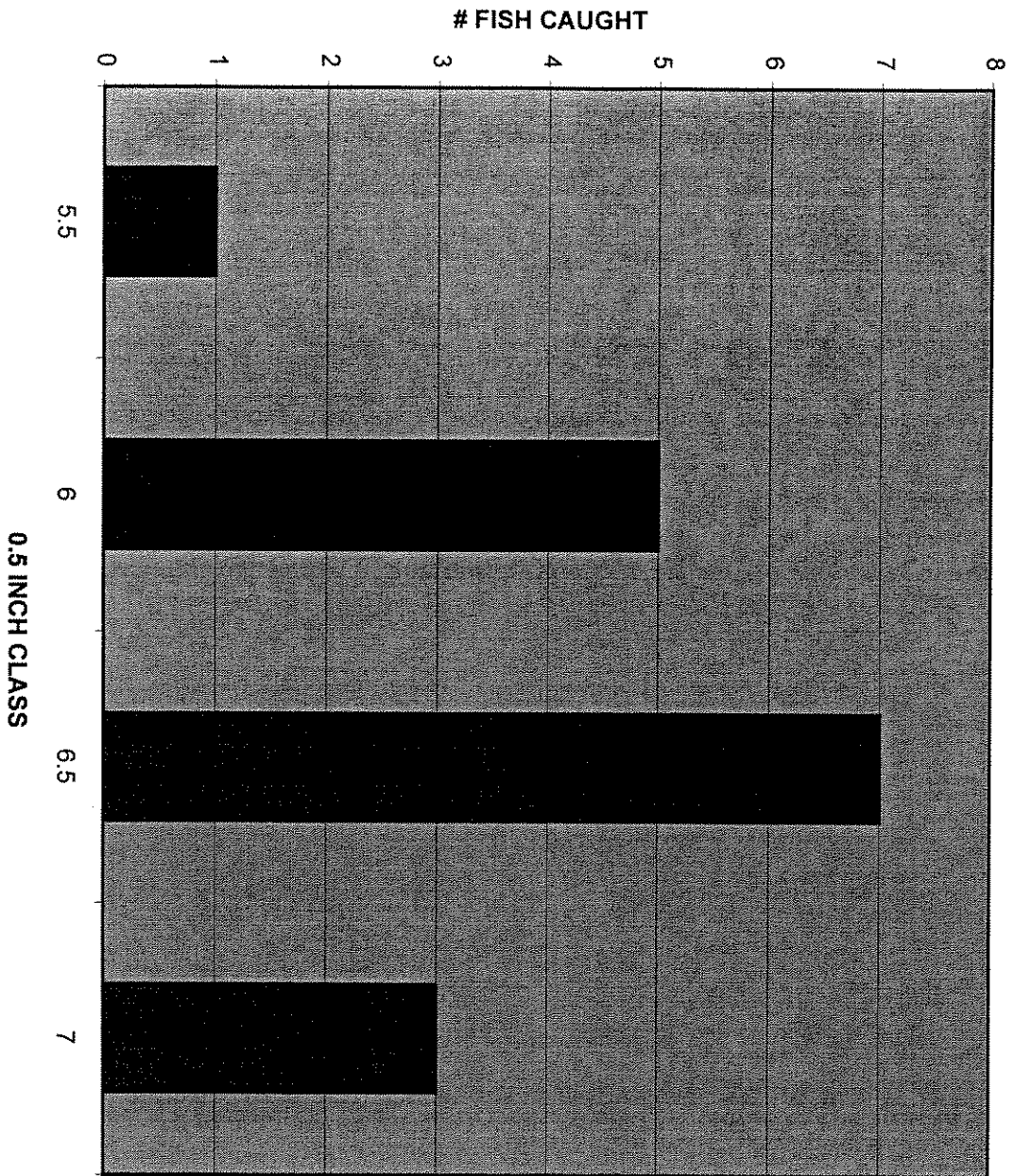
The map is labeled "POTOSI NATIONAL FOREST" and "ENNIS LAKE".



# 1998 BLUE DANUBE LAKE GILL NET CATCH LENGTH / FREQUENCIES



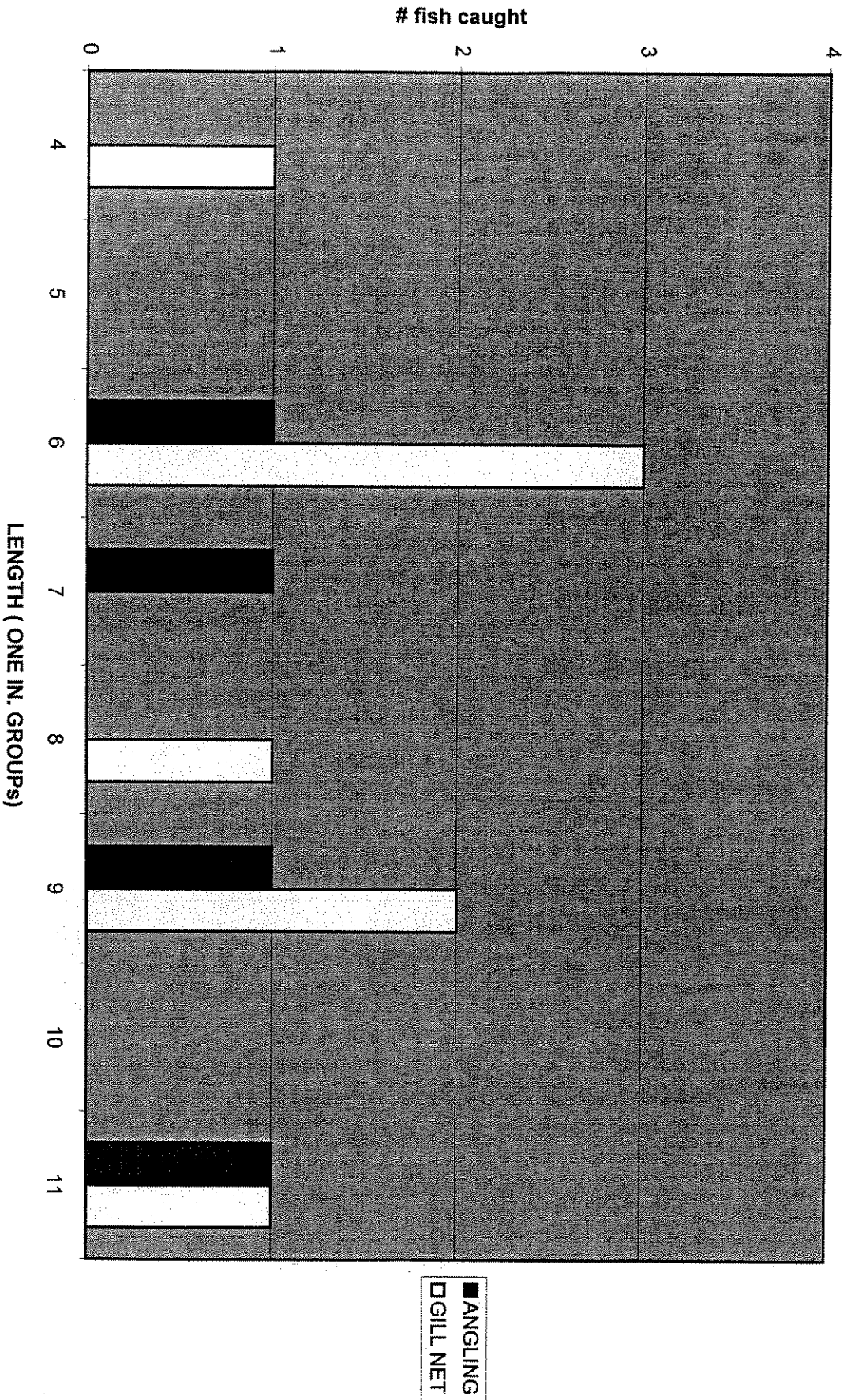
1998 HIGH HOPE LAKE GILL NETTING RESULTS



■ YELLOWSTONE CUTTHROAT TROUT



1998 AVALANCHE LAKE SAMPLING LENGTH / FREQUENCIES



## Fish Planting Report

**GALLATIN DRAINAGE MTN. LAKES**

Query:

Start Date: 07/01/1994 End Date: 06/30/1999

Water Types: 80, 30, 20, 09, 03

Drainages: 09

Regions: 3

Date	Water	Species	Strn	Number	Length	Weight	Marks	Tmp R	County	Location
08/09/94	BEEHIVE LAKE	CUTTHROAT YLST	M	500	2.5	2.59	NONE	00 3	GALLATIN	05S02E36
07/20/95	SPANISH LAKES	CUTTHROAT YLST	M	400	1.9	0.87	NONE	0 3	MADISON	05S02E36
07/20/95	NORTH SPANISH LAKE	CUTTHROAT YLST	M	400	1.9	0.87	NONE	0 3	MADISON	05S02E25
07/20/95	MARGO LAKE	CUTTHROAT YLST	M	300	1.9	0.66	NONE	0 3	MADISON	05S02E14C
07/20/95	DIAMOND LAKE	CUTTHROAT YLST	M	2000	1.9	4.37	NONE	0 3	MADISON	05S03E16C
07/20/95	CHILLED LAKES	CUTTHROAT YLST	M	300	1.9	0.66	NONE	0 3	MADISON	05S03E29AC
08/11/97	BEAR LAKES	CUTTHROAT YLST	M	700	2.2	1.53	NONE	0 3	GALLATIN	03S07E28
08/11/97	BEAR LAKES	CUTTHROAT YLST	M	300	2.2	1.03	NONE	0 3	GALLATIN	03S07E28
08/11/97	PIONEER LAKE	CUTTHROAT YLST	M	300	2.2	1.03	NONE	0 3	GALLATIN	05S04E14
08/11/97	HEATHER LAKE	CUTTHROAT YLST	M	2000	2.2	6.84	NONE	0 3	GALLATIN	05S10E20
08/11/98	BEEHIVE LAKE	CUTTHROAT YLST	M	500	1.8	0.89	NONE	0 3	MADISON	05S02E36

Report Total:				7700	21.34					
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Cold Water Summaries:	Fry(0-2")	Fingerling(2-8")	Catchables(8"+)	Total Fish	Weight	Distribution Cost
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CUTTHROAT YLST :	3900	3800	0	7700	21	87.24
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## Fish Planting Report

Query: **MADISON DRAINAGE MTN. LAKES**

Start Date: 07/01/1994 End Date: 06/30/1999

Water Types: 80, 30, 20, 09, 03

Drainages: 13

Regions: 3

Date	Water	Species	Strn	Number	Length	Weight	Marks	Trmp R	County	Location
08/09/94	LILLY LAKE	CUTTHROAT YLST	M	500	2.5	2.59	NONE	00 3	MADISON	04S03W14
08/09/94	LADY OF THE LAKE	CUTTHROAT YLST	M	500	2.5	2.59	NONE	00 3	MADISON	04S03W03
08/09/94	ALPINE LAKE	CUTTHROAT YLST	M	1000	2.5	5.19	NONE	00 3	MADISON	04S03W11
08/09/94	AXOLOTL LAKE #2	CUTTHROAT YLST	M	1500	2.5	7.78	NONE	00 3	MADISON	07S02W08DC
08/09/94	AXOLOTL LAKE #1	CUTTHROAT YLST	M	3000	2.5	15.56	NONE	00 3	MADISON	07S02W08
07/20/95	LAKE CAMERON	CUTTHROAT YLST	M	500	1.9	1.09	NONE	0 3	MADISON	07S01E24B
07/20/95	UPPER DUTCHMAN LAKE	CUTTHROAT YLST	M	500	1.9	1.09	NONE	0 3	MADISON	10S02E34BA
08/13/96	SURESHOT LAKES	CUTTHROAT YLST	M	1000	2.3	4.19	NONE	0 3	MADISON	03S02W30
08/13/96	RAMONA LAKE	CUTTHROAT YLST	M	1000	2.3	4.19	NONE	0 3	MADISON	11S03336B
08/13/96	RAINBOW LAKE	CUTTHROAT YLST	M	500	2.3	2.10	NONE	0 3	MADISON	09S02E07AD
08/13/96	CLIFF LAKE	CUTTHROAT YLST	M	1000	2.3	4.19	NONE	0 3	MADISON	04S03W15
08/13/96	LUPINE LAKE	CUTTHROAT YLST	M	500	2.3	2.10	NONE	0 3	MADISON	04S03W14
08/13/96	SAWLOG LAKE	CUTTHROAT YLST	M	500	2.3	2.10	NONE	0 3	MADISON	04S02W17
08/19/97	HILGARD LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	10S02E26CD
08/19/97	GNOME LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	10S02E26DA
08/19/97	LOWER DUTCHMAN LAKE	CUTTHROAT YLST	M	1200	2.2	4.10	NONE	0 3	MADISON	10S02E34B
08/19/97	PAINTED LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	10S02E35
08/19/97	AVALANCHE LAKE	CUTTHROAT YLST	M	1000	2.2	3.42	NONE	0 3	MADISON	11S02E11AD
08/19/97	SUNSET LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	10S02E22AD
08/19/97	HIGH HOPE LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	11S02E14AA
08/19/97	ECHO LAKE	CUTTHROAT YLST	M	1000	2.2	3.42	NONE	0 3	MADISON	10S02E21BA
08/19/97	EXPEDITION LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	10S02E14CA
08/19/97	RAINBOW LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	09S02E07AD
08/19/97	FINGER LAKE	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	10S02E08
08/19/97	LAKE HA HAND	CUTTHROAT YLST	M	500	2.2	1.71	NONE	0 3	MADISON	10S02E23BA
08/19/97	CEDAR LAKE	CUTTHROAT YLST	M	2500	2.2	8.55	NONE	0 3	MADISON	07S02E07
08/19/97	NO MAN LAKE	CUTTHROAT YLST	M	1000	2.2	3.42	NONE	0 3	MADISON	09S02E09B
09/24/97	AXOLOTL LAKE #1	ARCTIC GRAYLING	X	1760	1.9	4.00		65 3	MADISON	07S02W08
08/11/98	ALPINE LAKE	CUTTHROAT YLST	M	1000	1.8	1.79	NONE	0 3	MADISON	04S03W11
08/11/98	LADY OF THE LAKE	CUTTHROAT YLST	M	500	1.8	0.89	NONE	0 3	MADISON	04S03W03
08/11/98	LILLY LAKE	CUTTHROAT YLST	M	500	1.8	0.89	NONE	0 3	MADISON	04S03W14

Report Total: 26960 100.63

Cold Water Summaries: Fry(0-2") Fingerling(2-8") Catchables(8"+) Total Fish Weight Distribution Cost

ARCTIC GRAYLING :	1760	0	0	1760	4	130.19
CUTTHROAT YLST :	3000	22200	0	25200	97	134.34