Montana Fish, Wildlife & Parks

MEMORANDUM

TO: Karen Zackheim,

FROM: Pat Byorth

DATE: August 1, 2001

RE: AFA Report for the Madison-Gallatin District.

Attached is a brief summary report for the Madison-Gallatin District. I merely used the cover sheet and inserted an abstract as you recommended. I also included summary data in an appendix, which I had prepared for a more detailed report. I hope to have a more detailed analysis and report written this winter. Thanks for your assistance.

C: Bruce Rich

F-113-R-1
Region 3

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Montana Fish, Wildlife & Parks

Fisheries Division
Federal Aid Job Progress Report

Date: August 1, 2001

Montana Statewide Fisheries Management

Federal Grant: F-113-R1
Fiscal Year: 2001 (July 2000 – June 2001)

Project Title: Madison – Gallatin Drainages Fisheries Surveys

SABHRS Project Number: 3340

Project Reporting Period: July 1, 1999 – June 30, 2001

Abstract/Overview:

Coldwater fisheries in the Madison and Gallatin River drainages provided an estimated 328,611 angler days in 1999 (McFarland and Meredith 2000). In order to monitor, maintain, and protect these high quality fisheries, we conducted surveys on a number of waters. In major rivers, we electrofished survey sections using a driftboat mounted, mobile-anode system to conduct population estimates. We sampled: the Norris, Varney, Snoball, and Pine Butte sections on the Madison River; the Porcupine, Jack Smith, and Williams Bridge sections on the West Gallatin River; the Upper and Lower Hoffman and the Thompson sections on the East Gallatin River; the Logan Section on the Gallatin River; and a number of smaller tributary streams. On lakes and reservoirs, we used gill nets and/or electrofishing to assess population structure and relative abundance. We sampled Hebgen Reservoir, Wade and Cliff Lakes, and several mountain lakes and urban ponds.

A key component of the fisheries program is habitat protection by conducting permitting inspections related to the 124 Streambank Protection Act, 310 Natural Streambed and Land Preservation Act, and for licensing of private ponds.

Summary data of major trend surveys is provided for major waters in Appendix A. More detailed analysis will be provided in future reports.

Appendix A. Summary tables of trout population censuses during the reporting period.

West Gallatin River

Table 1. Rainbow trout population summary in the Porcupine Section of the West Gallatin River, Fall 1984 – 2000. Values are number per river mile by length category.

Year	Number > 8 inches	Number > 10 inches	Number > 13 inches
1984	915	329	29
1987	1250	412	25
1995	819	386	100
1996	558	333	87
1998	1355	702	162
2000	1221	629	143

Table 2. Estimated population of rainbow trout in the Jack Smith section of the Gallatin River obtained during the late summer or early fall of 1981-1984, 1989, 1995-1996, 1998, and 2000. Estimates are presented as number per river mile.

Year	Number > 8 inches	Number > 10 inches	Number > 13 inches
1981	2819	1169	167
1982	2308	910	99
1983	2596	1217	108
1984	2490	1149	123
1989	3449	1413	131
1995	1460	896	181
1996	1505	936	237
1998	1464	749	167
2000	4946	2381	402

Table 3. Estimated rainbow trout abundance in the Jack Smith Section of the West Gallatin River by age class, fall 1981 – 2000. Abundance estimates are in number per river mile. The estimates for 1995 –2000 are based on previously documented length-at-age ratios. The others are based on actual scale samples.

Year	Age 2	Age 3	Age 4	Age 5
1981	1784	1300	431	123
1982	2087	1017	279	80
1983	1784	1300	431	123
1984	936	1324	614	387
1989	2231	1453	763	270
1995	603	595	448	181
1996	1226	457	502	237
1998	1037	506	360	184
2000	3255	2100	1125	402

Table 4. Summary of Fall population estimates on rainbow and brown trout in the Williams Bridge Section of the West Gallatin River, 1977, 1990, 1997, and 1999. Estimates are in number per river mile.

Year	Rainbow Trout			Brown Trout		
	>8.0"	>10.0"	>13.0"	>8.0"	>10.0"	>13.0"
1977	673	443	146	604	483	338
1990	1316	638	131	484	435	330
1997	1125	585	218	609	510	261
1999	1224	568	198	562	505	360

Table5. Length-at-age (inches) estimates for rainbow and brown trout in the Hoffman sections of the East Gallatin River based on scale samples 1985 – 1987.

Species	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6
Rainbow Trout	7.3	9.3	10.7	11.9	13.2	13.7
Brown Trout	8.1	10.5	12.6	14.0	15.0	16.0

East Gallatin River

Table 6. Rainbow and brown trout population summary for the upper and lower Hoffman sections of the East Gallatin River, 1994 - 2000. Population estimates are listed as number per mile by length group.

Upper Hoffman Section (1.2 miles)						
Year (Fall)	rainbow trout per mile			brown trout per mile		
	≥ 6.0 inches	≥ 10.0 inches	≥ 13.0 inches	≥ 6.0 inches	≥10.0 inches	≥ 13.0 inches
1994	2550	600	110	847	645	271
1995	2157	450	141	1103	669	453
1996	2397	628	68	384	310	229
1997	1701	697	125	290	155	99
1998	3108	668	152	522	266	137
1999	4877	1712	213	663	427	208
2000	3408	1083	188	1053	724	358
Lower Hoffman Section (0.88 miles)						
Year (Fall)	≥ 6.0 inches	≥10.0 inches	≥ 13.0 inches	≥ 6.0 inches	≥10.0 inches	≥ 13.0 inches
1994	2089	748	219	556	397	226
1995	3498	1108	320	501	363	225
1996	2557	1234	277	646	550	464
1997	1915	982	405	359	316	149
1998	3376	1237	329	647	355	283
1999	4801	2288	653	757	539	198
2000	4633	3164	647	765	408	205

Gallatin River

Table 7. Population estimates for rainbow and brown trout in the Logan Section of the Gallatin River, 1999 – 2001. Estimates are listed as number per mile.

Brown Trout

Year	≥ 6.0 inches	≥ 10.0 inches	≥ 13.0 inches
1999	473	390	208
2000	350	307	128
2001	304	274	184

Rainbow Trout

Year	≥ 6.0 inches	≥ 10.0 inches	≥ 13.0 inches
1999	353	270	107
2000	321	281	103
2001	487	454	344

Madison River

Table 8. Trout population estimates in the Pine Butte Section (3.0 Miles above Lyons Bridge) Fall 1994-2000.

Rainbow Trout

Year	Age 1 Per Mile	Age 2 and older Per Mile	Total Age 1 and older Per Mile
1994	94	236	330
1995	510	175	685
1996	735	447	1182
1997	454	267	809
1998	847	305	1152
1999	2729	656	3385
2000	2100	1659	3759

Brown Trout

Year	Age 1 Per Mile	Age 2 and older Per Mile	Total Age 1 and older Per Mile
1994	282	919	1201
1995	620	509	1129
1996	1158	446	1604
1997	831	929	1760
1998	1018	794	1812
1999	1419	1373	2792
2000	962	1171	2133

Table 9. Trout population estimates in the Snoball Section, (below Squaw Creek to Windy Point, 4.0 miles) Fall 1994 – 1999.

Rainbow Trout

Year	Age 1 Per Mile	Age 2 and older Per Mile	Total Age 1 and older Per Mile
1994	232	289	521
1995	384	208	592
1996	348	406	754
1997	227	190	417
1999	1050	374	1424

Brown Trout

Year	Age 1 Per Mile	Age 2 and older Per Mile	Total Age 1 and older Per Mile
1994	360	559	919
1995	566	612	1178
1996	855	1182	2037
1997	633	604	1237
1999	874	954	1828

Table 10. Trout population estimates in the Varney Section (Varney Bridge to Eight-mile Ford, 4.0 miles) Fall 1994 – 2000.

Rainbow Trout

Year	Age 1 Per Mile	Age 2 and older Per Mile	Total Age 1 and older Per Mile
1994	33	166	199
1995	351	132	483
1996	145	304	449
1997	106	113	282
1998	192	139	331
1999	740	236	976
2000	1366	409	1775

Brown Trout

Year	Age 1 Per Mile	Age 2 and older Per Mile	Total Age 1 and older Per Mile
1994	1278	631	1909
1995	770	704	1474
1996	1558	515	2073
1997	1122	949	2071
1998	2180	1061	3241
1999	1674	1378	3052
2000	1706	1076	2782

Table 11. Trout population estimates in the Norris Section (Warm Springs Creek to Cherry Creek, 4.0 miles) Spring 1995 – 2001.

Rainbow Trout

Year	Age 2 Per Mile	Age 3 and older Per Mile	Total Age 2 and older Per Mile
1995	273	531	804
1996	184	535	719
1997	552	220	772
1998	555	736	1291
1999	343	1258	1601
2000	330	937	1267
2001(preliminary)	643	1422	2065

Brown Trout

Year	Age 2 Per Mile	Age 3 and older Per Mile	Total Age 2 and older Per Mile
1995	435	706	1141
1996	696	510	1206
1997	294	613	882
1998	601	507	1108
1999	980	1052	2032
2000	968	686	1654
2001 (preliminary)	1085	1154	2239

Hebgen Reservoir

Table 12. Summary of gill net catches on Hebgen Reservoir, Spring 1994 - 2001

Floating Nets

YEAR	NO. OF NETS	RB/NET	LL/NET	MWF/NET	UC/NET
1994	15	5	4.5	0.1	20.9
1995	12	15.3	8.4	1.1	18.9
1996	14	5.9	4.3	0.7	54.6
1997	14	5.6	3.9	0.1	89.2
1998	14	9.4	2.6	1.1	41.1
1999	13	7.2	13.3	1.5	143.2
2000	14	6	3.7	0.2	960
2001	14	2.5	2.4	0.29	62.5

Sinking Nets

YEAR	NO. OF NETS	RB/NET	LL/NET	MWF/NET	UC/NET
1994	14	0.7	8.6	12	20.4
1995	12	0.8	7.1	18.5	13.4
1996	13	0.9	7.5	16.8	55.5
1997	11	0.8	8.5	16.3	24.5
1998	10	1.1	6.5	12	60.2
1999	11	0.8	11.7	19.4	26.6
2000	11	0.7	9.5	11.7	33.3
2001	11	0.5	11.1	18.1	69.2

Table 13. Summary of gill net surveys on Cliff Lake, Fall 1991 - 2000.

YEAR	NUMBER & TYPE OF NETS	RB CATCH/NET	MWF CATCH/NET	Wsu CATCH/NET
1991	4 SURFACE, 2 BOTTOM	7.7 , n=46	25.3 , n=152	14.2 , n=85
1993	4 SURFACE, 1 BOTTOM	4.2 , n=21	0	0.2 , n=1
1994	4 SURFACE, 1 BOTTOM	1.8 , n=9	0.4 , n=2	0
1998	4 SURFACE, 1 BOTTOM	6.2 , n=31	0.8 , n=4	0
1999	4 SURFACE, 1 BOTTOM	5.2, n=26	0	0
2000	4 SURFACE, 1 BOTTOM	9.8, n=49	0	0

Table 14. Summary of gill net surveys on Wade Lake, Fall 1993-2000. (4 surface and 1 bottom net)

YEAR	RB/NET	YEAR	LL/NET	YEAR	Wsu/NET
1993	6	1993	0.2	1993	5
1994	3.8	1994	0.6	1994	11.4
1998	4.2	1998	0.4	1998	16
1999	10	1999	0.2	1999	6.4