COLORADO RIVER RECOVERY PROGRAM
FY 2000 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: 22b

I. Project Title: Interagency Standardized Monitoring Program (ISMP) on the Colorado, White, and Yampa Rivers in Colorado

II. Principal Investigator:

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III. Project Summary:

The purpose of this project is to use standardized data collection techniques to assess trends in populations of endangered Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and sympatric fish species in Colorado. Sampling is conducted annually for late-juvenile/adult Colorado pikeminnow and sympatric fishes in the Colorado, White, and Yampa rivers; annually for post-larval/Age 0 Colorado pikeminnow in the Colorado River; and every third year for adult humpback chub in the Blackrocks area of the Colorado River. Length, weight, and tag data are collected for all late-juvenile/adult Colorado pikeminnows and humpback chubs handled. All sympatric fishes are identified and measured for length, and weight is taken from a sample of each species. All sampling scheduled for FY 2000 was successfully completed. This is the final year for this project.

IV. Study Schedule:

A. Initial year: 1986
B. Final year: 2000

V. Relationship to RIPRAP: General Recovery Program Support Action Plan, V.A.1. Conduct standardized monitoring program.

VI. Accomplishment of FY 2000 Tasks and Deliverables, Findings and Shortcomings:

A. Tasks and Deliverables:

1. Conduct late-juvenile/adult Colorado pikeminnow monitoring on the Colorado (River mile (RM) 170 - 132), White (RM 104.3 - 95), and Yampa (RM 105 - 95, 80 - 70, 54 -49) rivers by electrofishing. Record data from all Colorado pikeminnows and PIT tag new fish.

2. Conduct sympatric fish population monitoring on the Colorado, White, and Yampa rivers by electrofishing. Sample two miles in each five mile reach of the river reaches described in VI.A.1. above. Develop information on the structure (relative abundance and sizes by species) of the fish community in the three rivers.

3. Conduct post-larval/Age 0 Colorado pikeminnow monitoring on the Colorado River by seining. Sample 18 backwaters between RM 185 - 140. Record habitat data for backwaters and obtain fish samples for identification in the laboratory.

4. Enter field data into the ISMP Database Management Program and submit it to the database manager by January 15, 2001.

B. Accomplishments (reference to VI.A. above):

1. Late-juvenile/adult captures:

a. Colorado River - 8 Colorado pikeminnows, 3 humpback chubs, and 4 razorback suckers captured; 8 Colorado pikeminnows and 3 humpback chubs observed. Sampled May 3, 4, 5, 9, 10, and 11, 2000.

b. White River - 33 Colorado pikeminnows captured, 6 Colorado pikeminnows observed. Sampled May 25 and 26, 2000.

c. Yampa River - 16 Colorado pikeminnows captured, 1 Colorado pikeminnow observed. Sampled May 16, 17, 18, 19, and 23, 2000.

2. Sampled the first mile (one mile along each bank) in each five mile ISMP reach on the Colorado River and RM 105-95, 80-70 on the Yampa River to collect data on sympatric fish species. Sampled the first mile on the right bank and the second mile on the left bank of RM 54-49 on the Yampa River to target different habitats. Sympatric species sampling is conducted at the same time as late-juvenile/adult Colorado pikeminnow sampling on the Colorado and Yampa rivers. It is conducted on a separate trip on the White River because of the large numbers of Colorado pikeminnows and other fish species encountered. On the White River, the first mile is sampled on the right bank and the second mile on the left bank of each five mile ISMP reach. As the electrofishing boat moves downstream along the shoreline two dipnetters collect as many fish as possible without regard for species except if an endangered fish was spotted. All captured fish were identified and measured for total length. At least 20 fish of each species from each five mile reach were weighed. A total of 878 fish were collected on the Colorado River, 662 fish

including nine Colorado pikeminnows were collected on the White River, and 224 fish were collected on the Yampa River. The Colorado and Yampa rivers were sampled the same dates as in VI.B.1.a. and c. above. The White River was sampled June 6.

3. Eighteen backwaters were sampled, resulting in 35 collections of larval fish. No Colorado pikeminnows were identified in the field. Fish samples were given to the Colorado State University Larval Fish Lab. Sampling was conducted September 20, 21, and 22, 1999.

4. ISMP field data will be in database format by December 31, 2000.

C. Findings:

Table 1. Late-juvenile/adult Colorado pikeminnow catch, catch/effort, and lengths for ISMP sampling on the White River in Colorado.

Year	Captured	Observed	C/E[a]	Lengths[b]
1986	2	2	0.43	652-685
1987	0	2	0.22	-
1988	3	0	0.32	547-740
1989	11	6	1.83	480-739
1990	14	3	1.83	446-810
1991	5	1	0.64	532-636
1992	11	3	1.50	527-765
1993	7	1	0.86	561-847
1994	13	6	2.04	443-788
1995	15	4	2.04	480-752
1996	13	3	1.72	441-646
1997	27	6	3.55	456-779
1998	18	5	2.47	407-763
1999	38	8	4.95	435-789
2000	33	6	4.19	455-808

[a]C/E = total fish captured and observed/9.3 total miles sampled
[b]Lengths = mm total length

Late-juvenile/adult:

The catch per effort (C/E) for Colorado pikeminnow in the White River continued a strong increasing trend that began about 1994 (Table 1.). The catch per effort on the Colorado River (Table 2.) and the Yampa River (Table 3.) continue stable, and possibly slightly increasing trends.

Table 2. Late-juvenile/adult Colorado pikeminnow catch, catch/effort, and lengths for ISMP sampling on the Colorado River in Colorado.

Year	Captured	Observed	C/E[a]	Lengths[b]
1986	0	0	0	-
1987	1	2	0.16	782
1988	1	1	0.10	478
1989	1	2	0.16	741
1990	1	2	0.16	736
1991	7	1	0.42	448-903
1992	3	2	0.26	425-635
1993	7	2	0.47	467-695
1994	5	1	0.32	473-580
1995	11	6	0.89	501-662
1996	7	1	0.42	482-636
1997	6	3	0.47	480-675
1998	7	1	0.42	551-860
1999	10	2	0.63	426-841
2000	5	5	0.53	508-697

[a]C/E = total fish captured and observed/19 total miles sampled
[b]Length = mm total length

When the catch per effort on the White River began increasing in 1994, it was speculated that some of these fish were the Colorado pikeminnows that had been stocked in, and disappeared from, Kenney Reservoir in 1988-1990. However, none of the marks on those stocked fish -- pelvic fin clips, spray paint, or internal tetracycline, were seen until 1997 when five fish were observed with asymmetric numbers of pelvic fin rays, possibly indicating regenerated fin clips. They were 18% of the catch in 1997. There were three

such fish and one with a complete fin clip in 1998, for 22% of the catch. Seven fish had asymmetric numbers of pelvic fin rays in 1999, for 18% of the catch. In 2000, eight fish had asymmetric numbers of pelvic fin rays for 24% of the catch. No Colorado pikeminnows with asymmetric numbers of pelvic fin rays have been seen on the Colorado or Yampa rivers.

Table 3. Late-juvenile/adult Colorado pikeminnow catch, catch/effort, and lengths for ISMP sampling on the Yampa River in Colorado.

Year	Captured	Observed	C/E[a]	Lengths[b]
1986	17	-	0.68	438-683
1987	5	3	0.32	480-638
1988	6	7	0.52	512-763
1989	5	5	0.4	460-580
1990	5	6	0.44	535-663
1991	13	4	0.68	463-674
1992	15	1	0.64	548-635
1993	14	5	0.76	441-784
1994	14	2	0.64	468-680
1995	14	6	0.8	488-757
1996	15	9	0.96	552-774
1997	18	5	0.92	446-777
1998	19	4	0.92	506-754
1999	21	2	0.92	455-733
2000	16	1	0.68	475-692

[a]C/E = total fish captured and observed/25 total miles sampled
[b]Lengths = mm total length

The numbers of small Colorado pikeminnows (< 500 mm TL) in the White River catch decreased in 2000 from recent years. There were none in 1991-93. They averaged 22% of the catch in 1994-97, 44% in 1998, 50% in 1999, but dropped to 18% in 2000. None of these fish were recaptures in 1997, two were recaptures in 1998, one was a recapture in 1999, and none were recaptures in 2000. This indicates that a number of new, smaller fish are moving into the upper White River each year. Twenty-five percent of the fish

shorter than 500 mm had asymmetric pelvic fins in 1997, 1998, and 1999, suggesting that a substantial number of these new fish had origins to Kenney Reservoir plants. However, none of the smaller fish had asymmetric pelvic fins in 2000. This could mean that the Kenney Reservoir fish have finally grown larger than 500 mm. If this is true, then in the future, the smaller fish moving into the upper White River will all have wild origins.

Sympatric species:

The relative abundance of native and nonnative fish species from ISMP reaches for 2000 are shown as a percent of the total catch in Table 4. Three year results from sampling in 1995, 1996, and 1997 are combined and averaged to provide a background relative abundance by species. The table also shows the relative abundance of overall fish populations as the number of fish caught per hour.

Results from 2000 are similar to the three year averages. Catches in the Colorado River, the White River, and the Yampa River below Cross Mountain (Lily Park area) are predominately native fish. Nonnative fish are more abundant than natives in the Yampa River above Cross Mountain (Juniper Springs and Maybell areas), where white suckers and white/flannelmouth hybrid suckers were the majority of the catch. Fish densities are highest in the White River below Kenney Reservoir, and lowest in the Yampa River above Cross Mountain.

Post-larval/Age 0 Colorado pikeminnow:

No post-larval/Age 0 Colorado pikeminnows were identified in the field during sampling again in 1999. The last time a Colorado pikeminnow was identified during this effort in the field or in fish collections was 1992. Eight percent of the total fish in the 1999 larval collections were native species, with the majority of those being *Gila* species. Of the nonnative fish species in the collections, 42% were red shiners, 29% were fathead minnows, and 18% were sand shiners. Other fish species found in the collections were flannelmouth sucker, bluehead sucker, green sunfish, and largemouth bass.

VII. Recommendations:

The ISMP is being discontinued in 2001 to direct effort at getting population estimates for Colorado pikeminnow on the three rivers. Once population estimates have been obtained, the ISMP would be a useful tool to restart for following population trends in the future.

VIII. Project Status:

This project is on track and will be completed soon.

IX. FY 2000 Budget:

A.	Funds Provided:	$34,200
B.	Funds Expended:	$24,250
C.	Difference:	$ 9,950
D.	Percent of FY 2000 work completed:	100%
E.	Recovery Program funds spent on publication charges:	$ 0

The budget difference is the result of Indirect costs ($2,230) which I cannot spend, not purchasing a new outboard motor ($4,100), and not hiring a second seasonal employee as was included in the scope of work budget.

X. Status of Data Submission: Data will be submitted to the ISMP database manager - FWS, Grand Junction, by January 15, 2001.

XI. Signed: William R. Elmblad December 7, 2000
Principal Investigator Date

Table 4. Percent of total catch by fish species from 2000 sympatric sampling reaches, and compared to three year (1995-97) background averages.

Species	River and Reach							
	Colo. Ruby Canyon	3 year average	White Below Kenney Res.	3 year average	Yampa Above Cross Mtn	3 year average	Yampa Below Cross Mtn	3 year average
Native	**94%**	**88%**	**92%**	**92%**	**28%**	**31%**	**84%**	**91%**
FMS	67.3%	55%	65.9%	66%	8%	11%	58.1%	69%
BHS	20.6%	28%	23.3%	20%	13%	13%	24.2%	20%
RTC	6%	4%		0.9%	4%	5%	0.8%	2%
WFH			1.0%	4%				
SQF		0.1%	1.4%	1%	3%	2%	0.8%	0.2%
HBC		0.04%						
Nonnative	**6%**	**12%**	**8%**	**8%**	**72%**	**69%**	**15%**	**9%**
WHS	0.7%	2%			11%	20%	0.8%	0.7%
WHS/FMS	0.4%	0.4%		0.06%	38%	34%		0.2%
WHS/BHS	0.7%	0.5%			1%	1%		
CPP	3.1%	7%	4.7%	5%	6%	4%	8.1%	5%
CCF		1%	1.5%	0.5%	3%	0.8%	4%	1%
RBT			1.8%	2%				
LOC	0.2%	0.3%						
NPK				0.06%	10%	2%	1.6%	1%
SMB					2%	6%	0.8%	0.7%
LMB		0.6%						
SNF	0.4%	0.2%						
BCR		0.04%			1%	0.2%		
BBH		0.04%						
Total No.	447	2477	662	1677	100	496	124	408
Fish/hour	200	318	581	393	31	50	155	179

Fish Codes: FMS - flannelmouth sucker, BHS - bluehead sucker, RTC - roundtail chub, SPD - speckled dace, WFH - mountain whitefish, SQF - Colorado pikeminnow, HBC - humpback chub, WHS - white sucker, WHS/FMS - white/flannelmouth hybrid sucker, WHS/BHS - white/bluehead hybrid sucker, CPP - common carp, CCF - channel catfish, RBT - rainbow trout, LOC - brown trout, NPK - northern pike, SMB - smallmouth bass, LMB - largemouth bass, SNF - green sunfish, BCR - black crappie, BBH - black bullhead.