

I. Project Title: **Interagency Standardized Monitoring - Utah**

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III. Project Summary:

This project monitors populations of endangered fishes in Utah. The following objectives have been outlined for young-of-the-year (YOY) Colorado pikeminnow:

1. Develop annual indices of relative abundance of YOY Colorado pikeminnow.
2. Determine trend(s) in these indices.
3. Determine relationships between these indices and stream flow, water temperature, abundance of sympatric fishes, and physical characteristics of backwaters.

The annual Interagency Standardized Monitoring Program (ISMP) activities for the 2002 field season included fall seining for young-of-the-year Colorado pikeminnow. The late-juvenile/adult Colorado pikeminnow monitoring portion of ISMP ended with sampling in 2000. Efforts are now being directed toward developing abundance estimates as a means of monitoring populations and tracking progress toward recovery.

Middle Green River

Fall seining for young-of-year failed to produce any Colorado pikeminnow in 2002. This is the first year that no YOY Colorado pikeminnow were collected in the middle Green River since ISMP monitoring began in 1986. The previous year (2001) was also a poor year for encountering YOY Colorado pikeminnow. Only 11 YOY Colorado pikeminnow were collected during 2001 sampling activities. This was the lowest catch of young-of-year pikeminnow ever recorded for ISMP in the middle Green River until 2002.

The collection of native species in general was extremely low. Native YOY species collected include flannelmouth sucker (n = 9), bluehead sucker (n = 2), and *Gila* spp. (n = 3).

Lower Green River/ Colorado River

Fall YOY seining produced a total of 47 Colorado pikeminnow between the Colorado and lower Green river reaches. They ranged in size from 22–90 mm and were captured in 21 of 56 backwaters sampled. Pikeminnow were distributed primarily in the upper 60 miles of each reach. This years catch rate represents a slight increase over 2001, however, it is the second lowest since 1993.

IV. Study Schedule:

- a. Initial year: 1986
- b. Final year: ongoing

V. Relationship to RIPRAP

General Recovery Program Support Action Plan
V.A.1. Conduct monitoring for YOY Colorado pikeminnow.

VI. Accomplishments of FY 2002 Tasks and Deliverables, Discussion of Initial Finding and Shortcomings:

Collection and database entry of YOY sampling as described in the ISMP handbook.

Task 1 Baseline ISMP efforts (current sampling protocols).

Middle Green River

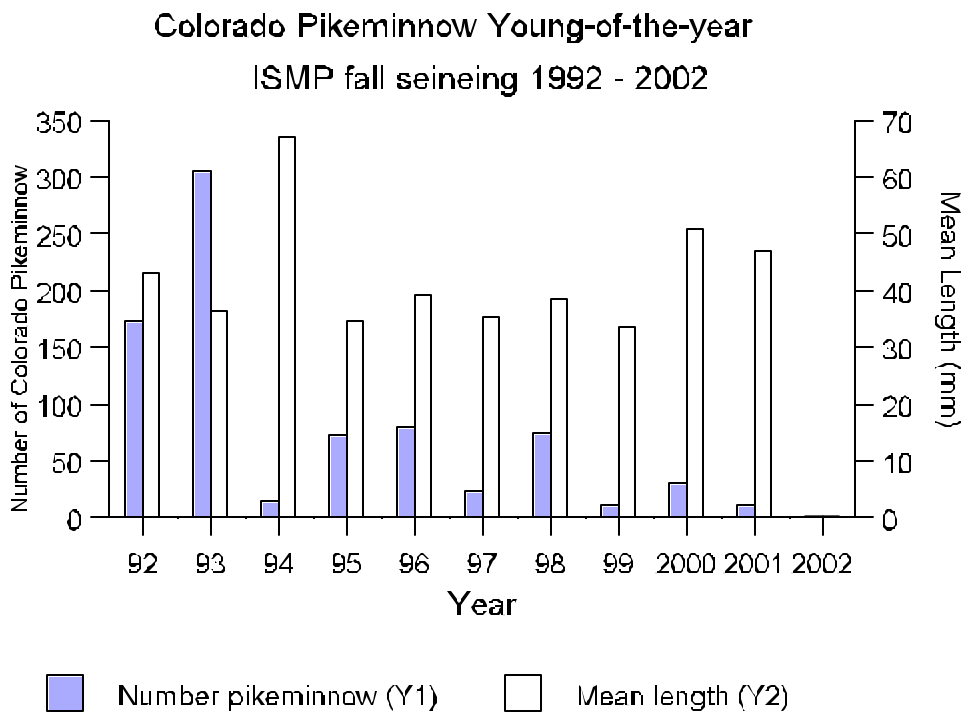
2002 annual fall sampling for YOY Colorado Pikeminnow was conducted from September 23 - 26. Although river flows were at record low levels during 2002 fall sampling, backwaters meeting sampling protocol for size and maximum depth were found in all subreaches for a total of 42

backwaters sampled. The weather was warm and dry with mostly sunny conditions throughout the sampling period. Main channel temperatures ranged from 14°C to 19°C. Backwater temperatures ranged from 15°C to 24°C. Twelve different species were collected from backwaters in this reach of the middle Green River.

There were no YOY Colorado pikeminnow captured during the 2002 field sampling activities. This is the first year that YOY Colorado pikeminnow were not collected during fall ISMP monitoring activities since ISMP began in 1986 (Figure 1).

The number of native species in the 2002 collection, in general, was extremely low. Native YOY

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incidence of black crappie was observed in the 2002 collections with the first appearance of crappie near river-mile 252.8 (Ouray National Wildlife Refuge) and continued down river through the remainder of the sampling reach (RM 226). A total of 14 samples were preserved for later identification and enumeration in the UDWR laboratory.

Figure 1. Number and mean length of YOY Colorado pikeminnow collected during fall ISMP seining in the middle Green River: 1992–2002.

Colorado Pikeminnow

Young-of-the-year Lengths and Distribution: 1997 - 2002

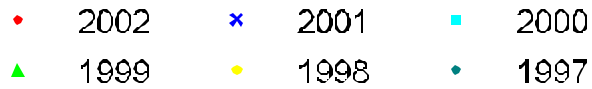
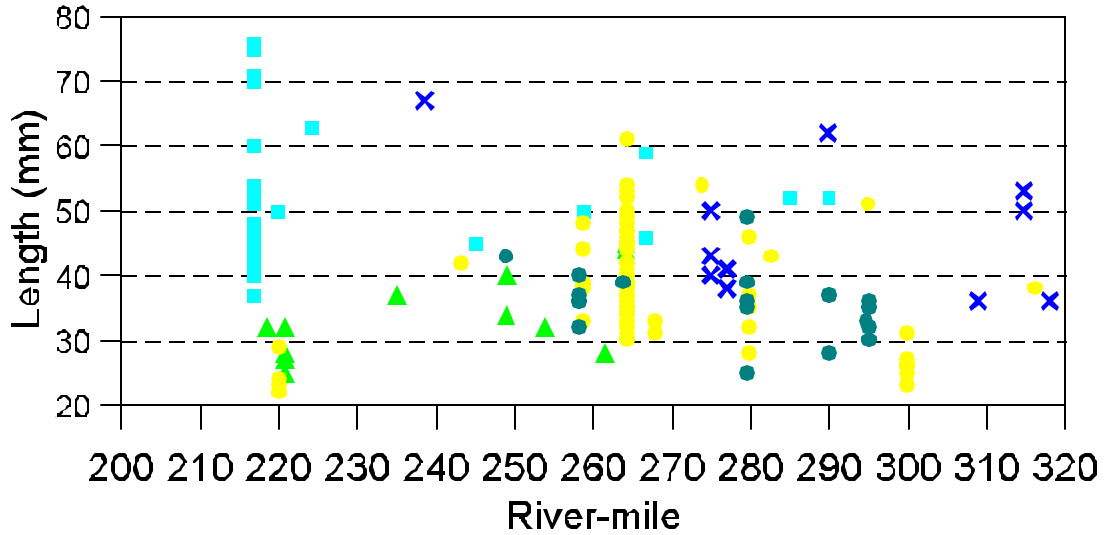


Figure 2. Length and distribution by year of YOY Colorado pikeminnow caught during fall seining activities: 1997 - 2002.

Lower Green River/ Colorado River

The annual ISMP sampling for YOY Colorado pikeminnow was completed during September 15–30, 2002. One group of three researchers sampled RM 110-0 of the Colorado River (reach 1) and RM 120-0 of the lower Green River (reach 3). Backwaters were sampled in 21 of 24 sub-reaches in the lower Green River and 17 of 22 sub-reaches in the Colorado River. The Sampling followed two large storm events which increased flows and sediment loads. A number of backwaters were not sampled due to large amounts of both deposited and suspended silts. This condition also effected the seining efficiency in many of the backwaters which were sampled. In the Colorado River, water temperatures ranged from 14 to 22° C in the main channel and 14 to 27° C in backwaters. In the Green River, water temperatures ranged from 19 to 22° C in the main channel and 14 to 28° C in backwaters.

In the Colorado River, 25 Colorado pikeminnow were captured, measured and released. In the Green River, 22 YOY Colorado pikeminnow were captured, measured and released. All fish were sorted, identified and enumerated in the field. Pikeminnow were distributed primarily in the upper 60 miles of both reaches (Figure 3). In the Colorado River, this marks a very different distribution pattern from 2001, where pikeminnow were found exclusively in the *lower* 55 miles of reach 1.

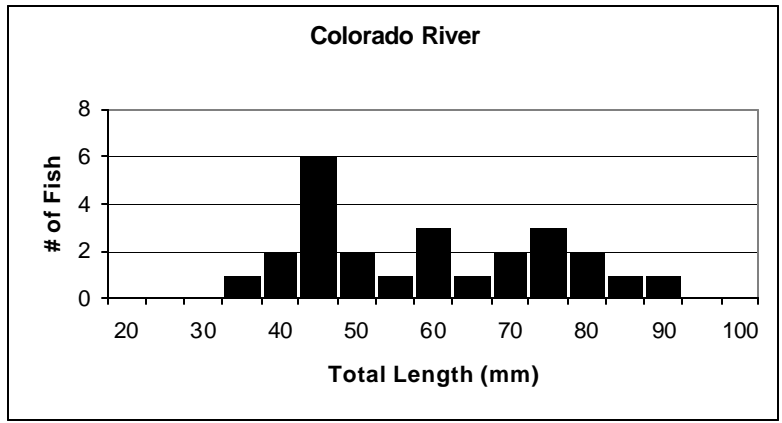
The average length of Colorado pikeminnow was 57.2 mm in the Colorado River, and 64.9 mm in the Green River. These lengths represent a 10-20 mm increase in average length from that seen in 2001, and are the largest reported since 1993 for either reach (Figure 4, Table 1).

Other YOY native species captured included *Gila* spp., flannelmouth suckers, bluehead suckers, and speckled dace (Table 1). The 35 *Gila* spp. captured in the Colorado River represents an appreciable increase over the one captured in 2001 (Table 1). Ray counts were recorded for *Gila* spp. captured if they were large enough to allow for accurate counts. Although there was potential for capturing wild bonytail (reproduction from hatchery-reared fish) to appear in these samples, all chubs were identified as *Gila* spp., as species identification of chubs this size in the field is difficult at best.

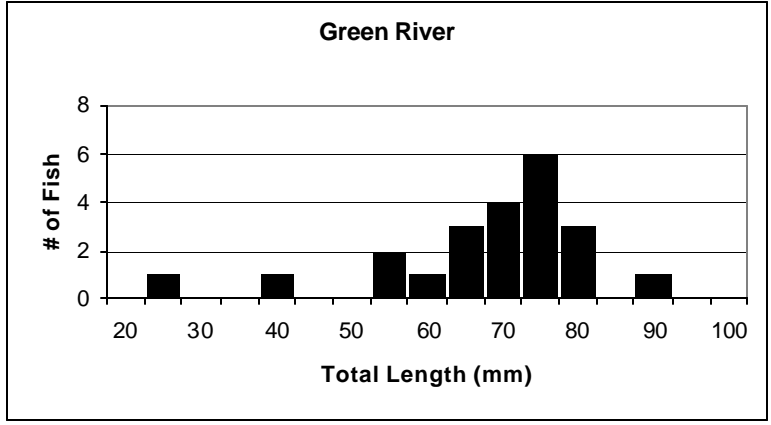
Total catches in both reaches were again dominated by nonnative cyprinids (Table 1). In the Colorado River, 12 nonnative species were captured. These included red shiners (20,091), sand shiners(4,145), fathead minnows (10,095), common carp, channel catfish, yellow bullheads, black bullheads, largemouth bass, green sunfish, white sucker, plains killifish, and Gambusia. In the Green River, seven nonnative species were captured. These included red shiners (43,606), sand shiners (2,600), fathead minnows (17,404), common carp, channel catfish, yellow bullheads, and green sunfish. The number of nonnative cyprinids captured in 2002 was extremely high compared to previous years with 34,331 found in the Colorado River and 63,610 in the Green River

Table 1. Total numbers, lengths and mean catch-per-unit-effort (CPUE; fish/100m²), by year, for Colorado pikeminnow caught during young-of-year monitoring on the Colorado and lower Green rivers, 1993-2002.

Year	Colorado Pikeminnow Caught	Mean Length (mm)*	Length Range (mm)*	Total Area Sampled (m ²)	CPUE (Fish/100m ²)
1993					
Total	1355	36.83	14-74	7479	18.11
Reach 3	1211	37.36	14-74	4574	26.47
Reach 1	142	32.28	22-47	2905	4.88
1994					
Total	453	54.26	23-99	7030	6.44
Reach 3	315	49.98	23-99	3844	8.19
Reach 1	138	64.07	32-96	3186	4.33
1995					
Total	141	22.11	11-45	5612	2.51
Reach 3	57	24.94	13-45	2722	2.09
Reach 1	84	20.46	11-35	2890	2.90
1996					
Total	1276	42.7	19-75	7269	17.55
Reach 3	410	41.4	19-75	2981	13.75
Reach 1	866	39.6	20-81	4160	20.81
1997					
Total	52	29.8	13-40	5581	0.93
Reach 3	40	33.1	19-40	2821	1.41
Reach 1	12	18.3	13-34	2760	0.43
1998					
Total	340	32.4	18-68	7945	4.28
Reach 3	250	32.1	18-68	3235	7.79
Reach 1	88	34.5	20-60	4710	1.87
1999					
Total	312	26.7	15-43	8892	3.51
Reach 3	304	26.8	15-38	4102	7.41
Reach 1	8	25.0	19-43	4790	0.17
2000					
Total	789	39.7	21-88	10421	7.57
Reach 3	619	37.9	21-88	3704	16.71
Reach 1	170	45.7	25-82	6717	2.53
2001					
Total	29	42.7	23-68	9842	0.29
Reach 3	14	43.2	30-68	6015	0.23
Reach 1	15	42.3	23-65	3832	0.39
2002					
Total	47	60.8	22-90	7732	0.61
Reach 3	22	64.9	22-90	4662	0.47



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Reach 3: Green River, RM 120 to RM 0 (Confluence with the Colorado River)
 Reach 1: Colorado River, RM 110 to RM 0 (Confluence with the Green River)
 *Does not include fish over 100 mm. (Or 1@92 mm in 1999)

Figure 3. Length frequency distribution of YOY Colorado pikeminnow in the Colorado and lower Green rivers during ISMP sampling 2002.

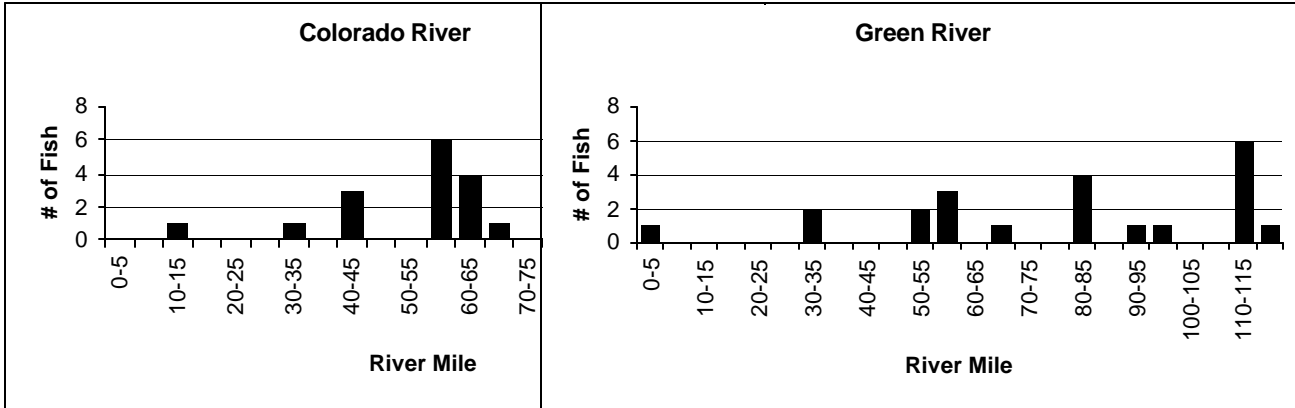


Figure 3.

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VII. Recommendations:

- a. Continue to monitor annual relative abundance of post-larval Colorado pikeminnow in the middle Green River to develop indices and determine the relationships between these indices and stream flow, water temperature, abundance of sympatric fishes, and physical characteristics of backwaters.
- b. Results of fall seining illustrate the continued effects of our ongoing drought conditions.

Currently, the back and mouth of backwaters along with backwaters of maximum depth of less than .3 meters are not sampled. In many instances, it has been observed that these habitats contain many pikeminnow. Including these areas and shallow habitats would increase the detection of pikeminnow.

With the adult portion of ISMP eliminated, there is a need for improved monitoring of YOY Colorado pikeminnow. An increase in effort involving a more thorough sampling of available backwaters could improve the validity of the data collected.

- c. Protocols for species identification of captured YOY *Gila* spp. need to be developed in order to detect successful reproduction by hatchery-reared stocked bonytail. This may include preserving a sub-sample of captured YOY *Gila* spp. for laboratory identification.

VIII. Project Status:

