

COLORADO RIVER RECOVERY PROGRAM
FY 2013 ANNUAL PROJECT REPORT

RECOVERY PROGRAM
PROJECT NUMBER: 128

I. Project Title: Abundance Estimates for Colorado pikeminnow in the Green River Basin, Utah and Colorado

II. Bureau of Reclamation Agreement Number(s): R09AP40861 / 09-FG-40-2861

Project/Grant Period: Start date (Mo/Day/Yr): 1 October 2010
End date: (Mo/Day/Yr): 30 Sept. 2014
Reporting period end date: 30 Sept. 2013
Is this the final report? Yes _____ No X

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IV. Abstract: Sampling conducted during this project is designed to obtain capture-recapture data needed to estimate abundance of Colorado pikeminnow *Ptychocheilus lucius* in the lower Yampa and lower White rivers and the Green River downstream of Whirlpool Canyon exclusive of Split Mountain Canyon. Abundance estimates of endangered Colorado pikeminnow are needed to better monitor population status and provide benchmarks against which progress toward recovery can be measured. This project is designed to have three years (2011–2013) of sampling followed by a year of data analysis and report writing. The design is essentially the same as that employed for sampling conducted from 2000–2003 and 2006–2008 in the same area (Bestgen et al. 2005, Bestgen et al. 2010). Sampling during this study began in spring 2011, and continued through this year, 2013, with the Colorado Parks and Wildlife (CPW) and the Larval Fish Laboratory (LFL) responsible for sampling the Yampa River, the U. S. Fish and Wildlife Service, Vernal, Utah, and Grand Junction, Colorado, responsible for the reach of the Green River from the White River downstream to Tusher Diversion and the lower White River, and the Utah Division of Wildlife Resources responsible for the Green River reaches from lower Whirlpool Canyon to the White River confluence and from Tusher Diversion downstream to the Colorado River. The Larval Fish Laboratory will provide coordination, data checking, and data analysis. Our primary goal was to capture, mark, and recapture as many Colorado pikeminnow as possible on at least three different sampling occasions in each river reach. Sampling occurred during spring runoff and mostly ended before Colorado pikeminnow spawning migration. Electrofishing was the primary sampling gear. Captured Colorado pikeminnow were scanned for the presence of a PIT tag, and unmarked fish were marked. These data were used to obtain abundance estimates for each river reach. A report detailing results of sampling and parameter estimation for 2006–2008 data was submitted and approved in April 2010; a summary of data collected in 2013 is provided below and more comprehensive estimates of Colorado pikeminnow abundance and survival will be completed after data collection in 2013.

V. Study Schedule: Initial Year 2011
Final year 2014

VI. Relationship to RIPRAP:

Monitor populations and habitat and conduct research to support recovery actions (research, monitoring, and data management)
V.B. Conduct research to acquire needed life history information
V.B.2. Conduct appropriate studies to provide needed life history information.

VII. Accomplishment of FY 2013 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Because of the complexity and short duration of the sampling design, and the need to use five relatively autonomous units to complete this work, we developed and used a Standard Operating Procedure for field personnel to ensure a consistent sampling approach and timely completion of tasks. We also developed spreadsheets for data entry that should streamline that process somewhat. We also had a conference call with team members and field crews to discuss issues and problems as well as several other calls to individual investigators through the field season. This also provided an opportunity for each group to report on progress in completing preparations for field sampling. The Larval Fish Laboratory will be responsible for routine coordination of the study.

We completed a minimum of three sampling passes through the five Green River Basin reaches listed below to capture sub-adult and adult Colorado pikeminnow:

- a) Green River between the confluence of the White River upstream to the lower end of Whirlpool Canyon (i.e., upper Rainbow Park, but not Split Mtn. Canyon).
- b) White River between the confluence of the Green River upstream to Taylor Draw Dam,
- c) Yampa River between Deerlodge Park and Craig, excluding Cross Mountain Canyon,
- d) Green River from the White River confluence downstream to near Green River, Utah, and,
- e) Green River from downstream of Green River, Utah, to the confluence with the Colorado River.

The LFL and CPW attempted up to eight sampling passes in portions of the Yampa River, in part associated with bass and northern pike removal projects, in order to obtain a more precise and accurate Colorado pikeminnow abundance estimate and the USFWS completed four sampling passes in the Desolation-Grey Canyon reach of the Green River. Data were grouped under three passes for all reaches to accommodate the need for symmetrical capture histories among reaches. Specific responsibilities and reaches are outlined below (Table 1).

One significant challenge that was not overcome in spring 2012 was a permit from the Ute Indian Tribe to sample the lower White River. A permit was obtained in 2013, but only after passes 1 and 2 were completed in the upper reaches of the river.

Preliminary analysis of 2011 Colorado pikeminnow capture data suggested fewer fish captured and recaptured than in the past. A total of 774 fish were captured and recaptured during 2011, which included Colorado pikeminnow of all sizes that were tagged. A correspondingly lower range of preliminary abundance estimates was produced (1,500 to 2,000 adult Colorado pikeminnow, final estimates await addition of data from 2012 and 2013), suggesting a marked

decline in abundance of the Green River population of Colorado pikeminnow since 2008. Length frequency histograms for Colorado pikeminnow captured in 2011 (Figure 1) suggested that some smaller Colorado pikeminnow occurred in the study area, particularly the lower Green River. It is postulated that those relatively small fish recruited from year-classes produced in 2009 and 2010.

Even lower numbers of Colorado pikeminnow were captured in 2012, compared to 2011, when only 425 Colorado pikeminnow of all sizes were captured or recaptured. Captures were particularly low in the Yampa River, where only six Colorado pikeminnow were captured, in spite of high effort associated with northern pike and smallmouth bass removal sampling, as well as regular Colorado pikeminnow sampling passes (up to eight sampling passes). No Colorado pikeminnow were recaptured among the sampling passes completed this year for either the Yampa River or middle Green River. Relatively low water levels in all study reaches were thought to limit access to flooded shorelines and tributary mouths by sampling crews, which may have limited capture numbers.

Even lower numbers yet of Colorado pikeminnow were captured in 2013, compared to 2012, when only 204 Colorado pikeminnow of all sizes were captured or recaptured. This represents a nearly 75% reduction from 2011 numbers. Captures were particularly low in the Yampa River, where only eight Colorado pikeminnow were captured, in spite of high effort associated with northern pike and smallmouth bass removal sampling, as well as regular Colorado pikeminnow sampling passes (up to eight sampling passes). No Colorado pikeminnow were recaptured among the sampling passes completed this year for either the Yampa River or lower Green River, and few recaptures were noted in all reaches, which suggests that population abundance estimates will be relatively imprecise for 2013. Relatively low water levels in all study reaches were thought to limit access to flooded shorelines and tributary mouths by sampling crews, which may have limited capture numbers. Drastic declines of Colorado pikeminnow should be addressed immediately.

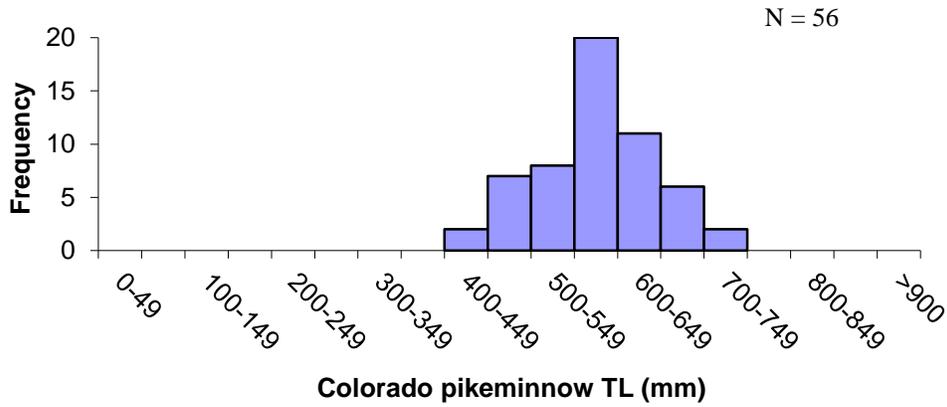
- VIII. Recommendations: Complete analysis of 2011–2013 data.
- IX. Project Status: On track and ongoing.
- X. FY 2013 Budget Status
 - A. Funds Provided: 391,165
 - B. Funds Expended: about 280,000
 - C. Difference: About 110,000
 - D. Work completed, 90%, LFL needs to proof data sheets and prepare data for analysis, and conduct analysis. The large surplus is due to cost saving associated with reductions in personnel. Much analysis work remains.

E. Recovery Program funds spent for publication charges: None

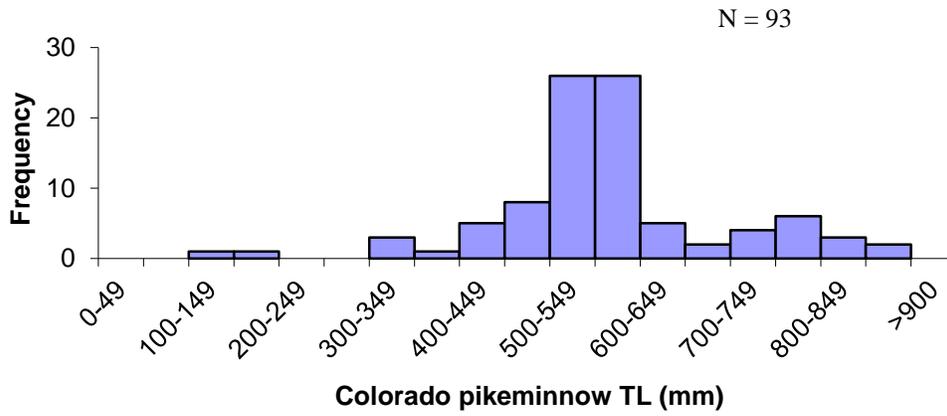
XI. Status of Data Submission: Each agency submits data independently and to the Larval Fish Laboratory, for analysis. This has occurred.

XII. Signed: Kevin Bestgen 14 December 2013
Principal Investigator Date

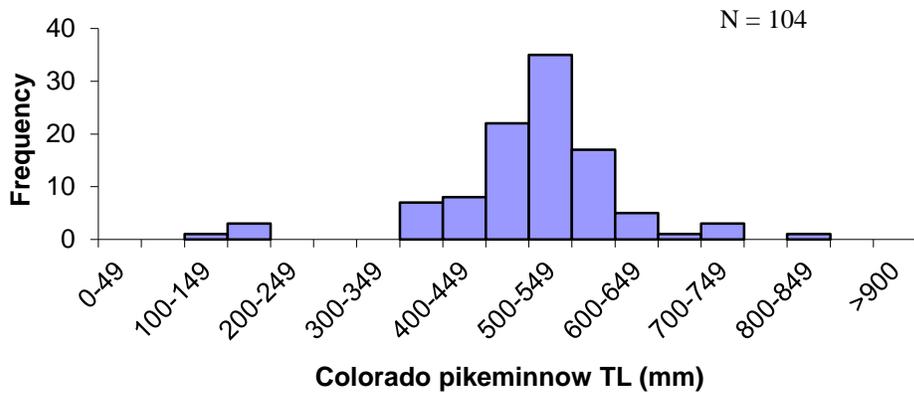
Yampa River, 2011



White River, 2011

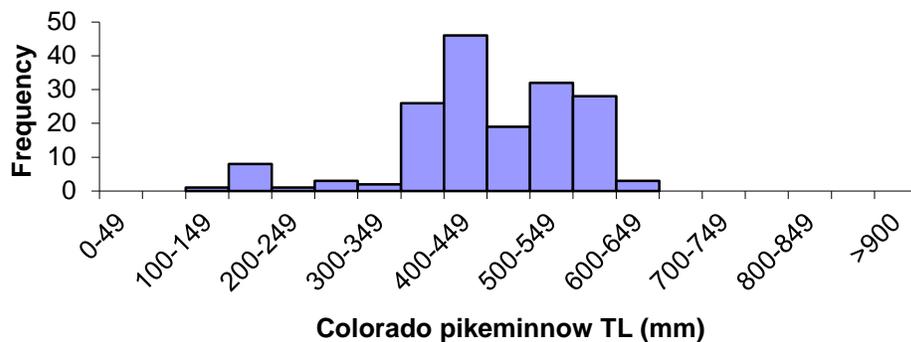


Middle Green River, 2011



Desolation-Gray Canyon, 2011

N = 169



Lower Green River, 2011

N = 352

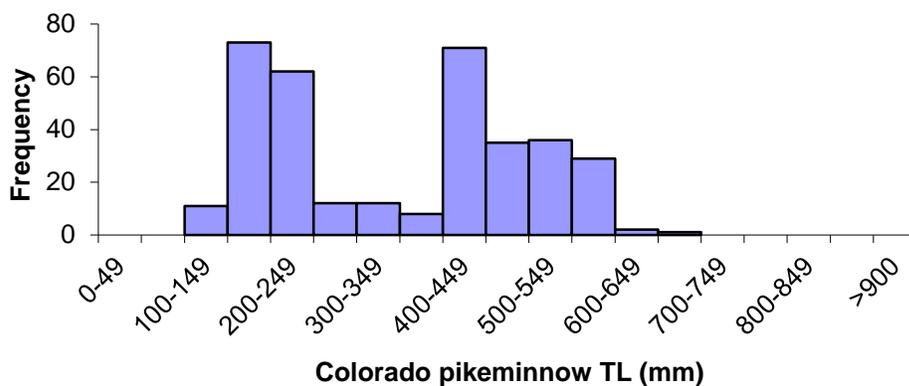


Figure 1. Length frequency histograms for Colorado pikeminnow captured in five reaches of the Green River Basin, Utah and Colorado, 2011.

ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R09AP40861 / 09-FG-40-2861

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 128

Project Title: Abundance Estimates for Colorado pikeminnow in the Green River Basin, Utah and Colorado

Principal Investigator: Kevin Bestgen (Lead)/ John Hawkins/ Gary White/Cameron Walford
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Project/Grant Period: Start date (Mo/Day/Yr): 1 October 2010
End date: (Mo/Day/Yr): 30 Sept. 2014
Reporting period end date: 30 Sept. 2013
Is this the final report? Yes _____ No X

Performance: Sampling passes were completed in the Yampa River portion of the Green River Basin study area by the Larval Fish Laboratory. We tagged and released Colorado pikeminnow in accordance with specified protocols which will contribute to abundance estimates for pikeminnow of three life stages in the Green River Basin from 2011-2013. We also summarized data from the four other entities that contributed capture information for this sampling effort (see attached report).

ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R09AP40849

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 128

Project Title: Abundance Estimates of Colorado pikeminnow in the Green River Basin, Utah and Colorado

Principal Investigator: Julie Howard
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Project/Grant Period: Start date: October 1, 2008
End date: April 30, 2015
Reporting period end date: September 30, 2013
Is this the final report? Yes _____ No X

Performance: Three sampling passes were successfully completed on the lower Green River section from Green River, UT (RM 120.0) to the confluence with the Colorado River (RM 0.0). Tasks 1-3 were completed. Sampling data are detailed in the attached report (Appendix II). Data were formatted and sent to PI in 2013.

ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R09AP40849

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 128

Project Title: Abundance Estimates of Colorado pikeminnow in the Green River Basin, Utah and Colorado

Principal Investigator: Joseph A. Skorupski Jr., Matthew J. Breen

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Project/Grant Period: Start date: October 1, 2008
 End date: April 30, 2015
 Reporting period end date: September 30, 2013
 Is this the final report? Yes _____ No X

Performance: Three sampling passes were successfully completed on the middle Green River section from the lower end of Whirlpool Canyon (RM 334.0) to the confluence with the White River (RM 246.1). Tasks 1-3 were completed. Preliminary results of data are presented in Appendix II. Data were formatted and sent to PI in October of 2013.

ANNUAL PERFORMANCE PROGRESS REPORT (PPR)

BUREAU OF RECLAMATION AGREEMENT NUMBER: R13PG40020

UPPER COLORADO RIVER RECOVERY PROGRAM PROJECT NUMBER: 128

Project Title: Abundance Estimates for Colorado pikeminnow in the Green River Basin, Utah and Colorado

Principal Investigator: M. Tildon Jones and Aaron Webber
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Project/Grant Period: Start date (Mo/Day/Yr): 10/01/2012
End date: (Mo/Day/Yr): 09/30/2017
Reporting period end date (Mo/Day/Yr): 09/30/2013
Is this the final report? Yes _____ No X

Performance: USFWS Vernal conducted 3 passes from the White River confluence to Tusher Diversion between 10 April 2013 and 13 May 2013. We captured 26 Colorado pikeminnow on pass 1, 22 on pass 2, and 28 on pass 3. We also captured 484 razorback sucker and 17 humpback chub during all sampling, and removed 68 walleye, 295 smallmouth bass, 17 white sucker, 1 gizzard shad, 2 northern pike, and 4 black crappie.

Our crews also performed 3 passes on the White River from Taylor Draw Dam in Rangely, CO to the confluence with the Green River between 8 April and 31 May 2013. In those 3 passes we collected 50 Colorado pikeminnow, 113 razorback sucker, 237 smallmouth bass, and 7 white sucker.

All data have been sent to the Larval Fish Lab for analysis and population estimation. LFL will submit finalized data to the database coordinator.

Appendix I. Sampling dates, capture data, and effort for middle Green River, Yampa River, and White River abundance estimation sampling for Colorado pikeminnow, 2012. Electrofishing effort includes main channel and backwater sampling associated with trammel nets. Sampling passes greater in number than three were grouped for analysis purposes; greater than three sampling passes occurred in the Yampa River and the Desolation-Gray Canyon reach of the Green River.

	Dates	Days Sampled	River km Sampled	Electrofishing Effort (hours) ¹	Fyke net (hours)	Pikeminnow Captured ²	Pikeminnow Recaptured ³
Middle Green River							
Pass 1	March 5 - April 26	31	538-396	89	1545	23	0
2	April 30 - May 7	5	538-396	45	0	15	0
3	May 8 - 17	5	538-396	46	0	14	0
Total		41		180	1545	52	0
Yampa River							
Pass 1	April 17 - May 8	12	216-77	114	0	2	0
2	May 7 - May 20	12	216-78	134	0	1	0
3	May 15 - June 7	14	216-77	151	0	3	0
Total		38		399	0	6	0
White River							
Pass 1	April 9 - 20	6	166-40	51	0	22	0
2	April 23 - 26	4	167-40	54	0	24	3
3	April 27 - June 7	18	167-40	189	0	50	10
Total		28		294		96	13

¹ Some reaches had additional effort and/or passes that were combined with one of the three standard sampling passes.

² All PIT tagged Colorado pikeminnow.

³ Recaptured fish are those handled on previous sampling passes in 2012.

Appendix I continued.

	Dates	Days Sampled	River km Sampled	Electrofishing Effort (hours) ¹	Fyke net (hours)	Pikeminnow Captured ²	Pikeminnow Recaptured ³
Desolation-Gray							
Pass 1	March 27 - April 10	8	396-207	68	0	39	0
2	April 10 - May 14	16	396-207	134	0	68	1
3	May 17 - May 27	7	396-207	57	0	47	2
Total		31		259	0	154	3
Lower Green River							
Pass 1	May 6 - 14	9	193-0	66	0	58	0
2	May 22 - 30	9	193-0	70	0	37	3
3	June 6 - 14	9	193-0	76	0	22	3
Total		27		212	0	117	6

¹ Some reaches had additional effort and/or passes that were combined with one of the three standard sampling passes.

² All PIT tagged Colorado pikeminnow.

³ Recaptured fish are those handled on previous sampling passes in 2012.

Appendix II. Sampling dates, capture data, and effort for middle Green River, Yampa River, and White River abundance estimation sampling for Colorado pikeminnow, 2013. Electrofishing effort includes main channel and backwater sampling associated with trammel nets.

	Dates	Days Sampled	River km Sampled	Electrofishing Effort (hours) ¹	Fyke net (hours)	Pikeminnow Captured ²	Pikeminnow Recaptured ³
Middle Green River							
Pass 1	April 16 - 23	6	536-395	43	0	6	0
2	April 29 - May 10	6	536-396	51	0	7	0
3	May 13 - 21	6	537-396	56	0	30	1
Total		41		150	0	43	1
Yampa River							
Pass 1	April 17 - May 15	22	216-76	69	0	4	0
2	May 6 - 21	14	216-76	50	0	1	0
3	May 27 - June 12	14	216-76	63	0	3	0
Total		50		182	0	8	0
White River							
Pass 1	April 8 - 17	6	167-40	57	0	12	0
2	April 23 - May 15	6	167-40	53	0	10	0
3	May 16 - May 31	9	167-0	94	0	28	2
Total		21		204	0	50	2

¹ Some reaches had additional effort and/or passes that were combined with one of the three standard sampling passes.

² All PIT tagged Colorado pikeminnow.

³ Recaptured fish are those handled on previous sampling passes in 2013.

Appendix II continued.

	Dates	Days Sampled	River km Sampled	Electrofishing Effort (hours) ¹	Fyke net (hours)	Pikeminnow Captured ²	Pikeminnow Recaptured ³
Desolation-Gray							
Pass 1	April 11 - 19	9	396-207	68	0	26	0
2	April 23 - 29	9	396-207	80	0	19	1
3	May 7 - 13	8	396-207	75	0	28	3
Total		26		223	0	73	4
Lower Green River							
Pass 1	April 20 - 28	9	193-0	86	0	5	0
2	May 7 - 15	9	193-0	56	0	11	0
3	May 23 - 31	9	193-0	86	0	14	0
Total		27		212	0	30	0

¹ Some reaches had additional effort and/or passes that were combined with one of the three standard sampling passes.

² All PIT tagged Colorado pikeminnow.

³ Recaptured fish are those handled on previous sampling passes in 2013.