

I. Project Title: Bonytail Reintroduction

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III. Project Summary:

Bonytail *Gila elegans* is thought to be functionally extirpated from the Upper Colorado River Basin. The goal of this project is to reestablish bonytail in the Upper Colorado River Basin.

The methods we are using to accomplish reestablishment are stocking of juvenile bonytail and monitoring of radio-tagged adult bonytail to provide insight into habitat use by stocked fish and overlap with roundtail chub.

In 1999, 20,000 bonytail were received from Wahweap Hatchery in Page, Arizona and stocked equally (10,000/10,000) into the Green River at Green River, Utah (RK 193.2) and the Colorado River at Dewey bridge (RK 152.2). Bonytail averaged 93 mm TL and 6 g when stocked and all had been implanted with coded wire tags. Monitoring of stocked juvenile bonytail was accomplished through electrofishing, fyke netting, and seining.

Fifteen radio-tagged adult bonytail were stocked into the Colorado River at Dewey bridge on 24 March 1999. These fish were monitored by vehicle and by boat beginning 6 April and approximately each week until all contacts were lost. In addition, two roundtail chub *Gila robusta* were similarly radio-tagged to determine if habitat overlap occurred between

the two species.

IV. Study Schedule:

- a. Initial year: 1996
- b. Final year: 2000

V. Relationship to the RIPRAP:

General Recovery Program Support

- IV. Manage genetic integrity and augment or restore populations
- IV.A.5. Implement basinwide bonytail restoration plan

VI. Accomplishments of FY 99 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Objective 1

To date, 20,381 bonytail between 80 and 130 mm TL have been stocked into the Colorado River and 13,000 similar sized fish have been stocked into the Green River. In spring 1999, Dexter National Fish Hatchery transferred 100,000 larvae in two separate shipments to Wahweap Hatchery for spring 2000 stocking. All fish arrived in good condition and made it through the summer in good stead (pers. comm. Quent Bradwisch). Table 1 describes the stocking efforts planned for this project.

Bonytail from a similar transfer of 1998 cohort raised at Wahweap hatchery were stocked into the Green River and Colorado River in the spring of 1999. The stocking of age-1 fish was recommended in this annual report last year. Approximately 10,000 individuals were stocked at each site (town of Green River, Utah and at Dewey Bridge). Individuals averaged 93 mm TL and 6 g at the time of stocking on 23 April 1999. Monitoring of these stocked fishes was accomplished through electrofishing, fyke nets, and seining. In addition to sampling directed at bonytail, other Moab Field Station projects captured bonytail from 1999 stockings as well as fish from earlier stockings. Table 2 indicates bonytail captures by gear type.

On the Green River, electrofishing as part of ISMP and razorback sucker monitoring captured five bonytail, three stocked in 1999 and two stocked prior. Fyke nets set in the Green River collected an additional 14 bonytail including 3 released last year. During seining conducted for nonnative cyprinid removal, 62 stocked bonytail were captured. Captures of stocked bonytail ranged from RK 179.0 to 73.2, indicating movement of up to 120 km from the stocking point at RK 193.2. The largest single capture of 18 bonytail

occurred in Trin-Alcove (Three Canyon) at RK 144.9, on 11 May 1999. These captures occurred following a drop in flow of about 4,000 cfs from the previous week, and the fish were in the remaining deep pools (~ 1 m deep).

The largest number of captures of bonytail on the Colorado River was 17 as part of ISMP electrofishing. Of the 17 fish captured, 11 were 1999 cohort and 6 were stocked prior to 1999. Seining beginning at Potash (RK 75.6) was conducted down to the Colorado - Green confluence. During this trip 2, 960m² was seined capturing four individuals stocked in 1999. Fyke nets on the Colorado River accounted for one other specimen on 17 May. Nonnative cyprinid removal sampling on the Colorado River resulted in five 1999 stock captures. Captures of fish stocked in 1999 occurred as far downstream as RK 48.1 indicating a movement of 108.0 km from the stocking site at Dewey Bridge (RK 152.1).

Table 1. Summary of stocking to date and projected reintroduction efforts. Figures in table indicate number of bonytail with specific cohort in parentheses.

			1998		1999		2000		2001		2002		2003	
Stock Site	1996	1997	Fall '97	Spr '98	Fall '98	Spr '99	Fall '99	Spr '00	Fall '00	Spr '01	Fall '01	Spr '02	Fall '02	Spr '03
Colo RM 94.3	2000 ('96)	2165 ('97) 10 ('96)		114 ('96) 2812 ('97)	2232 ('97) 1048 ('98)	15 ('96) 10,000 ('98)		8,000 ('98) 24,000 ('99) 0 ('99)	10,000 ('99) 0 ('00)			12,000 ('01) 0 ('01)	12,000 ('02) 0 ('02)	
Gr. RM 120.0					3000 ('97)	10,000 ('98)		8,000 ('98) 24,000 ('99) 0 ('99)	10,000 ('99) 0 ('00)			12,000 ('01) 0 ('01)	12,000 ('02) 0 ('02)	
Green Riv., Island Pk												10,000 ('00) 22,000 ('01)	10,000 ('01) 22,000 ('02)	
Sac fry needed from Dexter*				40,000 of 1998 cohort		100,000 of the 1999 cohort		80,000 of the 2000 cohort		80,000 of the 2001 cohort		80,000 of the 2002 cohort		

* factoring a 70% survival rate

Table 2. Captures of bonytail *Gila elegans* on the Green and Colorado rivers, Utah following stocking on 23 April 1999.

GREEN RIVER		
GEAR TYPE	NUMBER CAPTURED	TOTAL LENGTH
Electrofishing	5	250, 185, 101, 88, 86
Fyke nets	14	193, 187, 175, 101, 103, 90, 91, 96, 130, 116, 87, 100, 113, not measured
Seining	62	113, 92, 92, 95, 104, 101, 111, 86, 90, 88, 86, 91, 86, 82, 103, 95, 86, 84, 86, 84, 90, 89, 92, 97, 95, 105, 99, 107, 120, 98, 95, 110, 93, 94, others not measured
TOTAL	81	
COLORADO RIVER		
Electrofishing	17	231, 226, 195, 175, 154, 133, 118, 110, 108, 111, 86, 103, 128, 96, 113, 123, 105
Fyke nets	1	117
Seining	4	106, 100, 119, 80
TOTAL	22	

Objective 2

Task 1: Monitoring of bonytail from previous stockings (1996, 1997, 1998) combined with monitoring of 1999 stocking, using electrofishing, fyke nets, and seining. Results are included above.

Task 2: Final report will be completed in May 2000.

Objective 3 - Radio Telemetry

Task 1: Movement and habitat use of 15 stocked bonytail was accomplished through repeated contacts with fish stocked 24 March 1999. Radio tags used were 6 g, ATS 40 Hz tags with a battery life of 90 days and were implanted on 11 March 1999. In addition to the 15 bonytail, two roundtail chubs were tagged following capture during ISMP sampling. Tracking consisted of moving downstream along the river corridor and triangulating once a signal was received. Tracking trips generally consisted of 2-3 days beginning at Dewey Bridge (RK 152.1) and ending at Potash (RK 75.7). On a few occasions trips began at Cisco (RK 177.9) or extended to the confluence of the Colorado and Green rivers. One 24 h intensive tracking

session was completed on fish 841. All 15 bonytail had at least three contacts, many considerably more depending

on availability of signal. Table 3 details fish information, movement, number of contacts, and date of last contact.

Initially, all 15 bonytail moved upstream to a deep eddy/pool habitat above the old Dewey Bridge; similar to fish stocked in previous years. This pool (RK 152.5) appears to be a preferred habitat by many of the stocked fish. The first fish left this area on 12 April and the last moved out on 14 May.

Movement of fish ranged between 0.0 km and 88.2 km. The majority of the movement was downstream, although upstream mobility was not uncommon, as some fish after moving considerably downstream, returned upstream. To illustrate the draw of the pool habitat above Dewey Bridge, four fish ranged between 4.3 and 36.5 km downstream before returning to the bridge pool. Four fish at some point moved upstream of the bridge pool, the greatest movement 2.9 km to the confluence with the Dolores River. Fish 641 was the only fish that remained upstream of the bridge, with the last contact 1.8 km above the bridge.

Only twice were two fish contacted in the same habitat at the same time outside of the Dewey Bridge pool. Various habitats were used by more than one individual and eleven were determined to be frequently used by fish ranging from Dewey Bridge to Big Bend (RK 115.1).

Movements of individual fish varied greatly and will be addressed more completely in the final report due May 2000.

Task 2: Results of 1999 radio-telemetry efforts will be included in May 2000 report, yet to be completed.

Objective 4: Responsibility of Utah State University

Table 3. Results of radio-telemetry efforts on the Colorado River for 15 bonytail and 2 roundtail chub. Fish were stocked at RK 152.1 24 March 1999. All movements downstream unless indicated by +.

Fish Number	TL (mm)	Wt (g)	No. of Contacts	Final Displacement (km)	Greatest Movement (km)	Last Contact
121	412	717	6	81.8	88.2	990511
131 (RT)	334	273	0	??	??	
141	421	691	13	3.5	28.3	990809
601	415	661	5	76.0	76.0	990625
621	391	559	8	2.4	36.5	990809
631* (RT)	350	490	2	22.5+	22.9+	990809
641	401	687	10	1.8+	4.3	990622
651	383	551	5	7.9	7.9	990622
661	376	522	9	52.0	62.3	990811
681	377	529	13	0.1	3.5	990622
701	357	411	3	26.2	26.2	990610
721	383	572	8	26.9	28.3	990526
741	388	596	14	5.1	17.9	990622
760	358	421	3	0	0	990413
801	402	590	5	47.5	47.5	990628
821	403	548	16	0.8	0.8	990824
841	378	492	10	8	8	990622

*Roundtail chub captured and implanted during 1999 ISMP efforts.

VII. Recommendations:

From results of sampling on the Green River as part of nonnative cyprinid removal, the use of seines for capture of bonytail stocked at age-1 appears viable. Increased use of seines to capture these fish may be beneficial, especially in the period of time immediately following stocking. Immediately after stocking, flooded tributary habitats are present and portions can be seined for presence of bonytail.

Stocking under this SOW ends in FY2000. The projected stocking efforts identified in Table 1 will not be covered under this project. However, stocking needs for bonytail have

been identified in the State of Utah Stocking Plan for Endangered Fish Species of the Upper Colorado River Basin (Hudson et al. 1999). The projected stocking numbers do not reflect the needs identified in the Utah stocking plan, but reflect what the available facilities can currently produce.

VIII. Project Status: On-track and ongoing

IX. FY 99 Budget

- A. Funds budgeted: \$82,800 (BOR)
\$13,200 (UDWR)
- B. Funds expended/obligated: \$96,000
- C. Difference: \$ -0-
- D. Percent FY 99 work completed: 100%
- E. Recovery Program funds spent for publication charges: \$0.00

X. Status of Data Submission: Submission pending, expected 15 January 2000

XI. Signed: Matthew Andersen, December 7, 1999

Matthew Andersen