

I. Project Title: Potential For Hybridization Between *Gila* spp. Following Reintroduction of Bonytail

II. Principal Investigators:

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III. Project Summary

The reintroduction plan for bonytail in the Upper Colorado River identified the potential impact of hybridization as a primary concern (Lentsch et al. 1996). This potential impact, however, remains unresolved. The reintroduction plan called for evaluating the potential impact of hybridization by 1) genetic monitoring of existing populations of *Gila* spp. in the basin to determine if hybridization was occurring, and 2) quantification of the viability of laboratory-produced hybrid crosses relative to laboratory-produced pure crosses. The purpose of this study is to investigate the viability of hybrid crosses as a measure of the potential impacts of reintroduced bonytail on humpback chub and roundtail chub.

Working hypothesis:

Hybridization is common in fish, particularly between those that 1) do not exhibit parental care 2) fertilize eggs externally and 3) have limited habitat relative to that available historically. It has been demonstrated that *Gila* spp. hybrids exist in the Colorado River. If hybrids (F₁, F₂ and backcrosses) have a significantly lower relative fitness than any pure *Gila* then it is unlikely that hybridization among *Gila* will increase significantly following reintroduction of pure *Gila* spp.

Goal: The goal is to determine the potential risk for *Gila* species to hybridize following the reintroduction of bonytail in the Upper Colorado River Basin.

Objectives:

- 1) quantify the viability of laboratory-produced hybrid *Gila* crosses relative to laboratory-produced pure *Gila* crosses

- 2) determine the relative fitness of F₁ backcrosses.

This project was delayed in FY98 because the transfer of fish from Colorado to Utah was not possible under existing Utah Department of Agriculture disease protocol. At that time, we reported that the project would begin in 1999 with carryover funds and fish collected within Utah state waters.

This project was delayed further in FY99 due to space limitations resulting partly from delay of construction of an additional 12 ponds at Wahweap State Fish Hatchery. Adult humpback chub and roundtail chub were not collected in FY99. Since the end of the fiscal year, these ponds have been completed.

IV. Study Schedule:

- a. Initial Year: 1998
- b. Final Year: 2002 (project delays will move final year of project to 2005)

V. Relationship to RIPRAP:

General Recovery Program Support:

- IV. Manage genetic integrity and augment or restore populations
- IV.A.5. Develop and Implement basinwide bonytail restoration plan
- IV.A.5.a. Implement bonytail chub restoration plan
- IV.A.5.a.(1) Conduct high-priority lab/field studies identified in bonytail reintroduction plan

VI. Accomplishment of FY99 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

The initial year of this project was delayed due to disease control protocol established by the Utah Department of Agriculture regarding interstate transfers of fish. *Gila* spp. (humpback and roundtail) were originally to be brought from Colorado. This issue has been resolved by planning to collect *Gila* spp. from Utah waters. At this time, bonytail broodstock is being developed with offspring from Dexter National Fish Hatchery.

This project was delayed further in FY99 due to space limitations partly due to delay of construction of an additional 12 ponds at Wahweap State Fish Hatchery. Adult humpback chub and roundtail chub were not collected in FY99.

Project will begin in FY2000 and continue through FY2005.

VII. Recommendations:

FY99 funds will be carried over to FY2000. Adult humpback chub, roundtail chub, and bonytail will be held at the facility until completion of the hatchery building covered under CAP-7 funds. At that time, the remainder of this project will proceed.

VIII. Project Status: This project is not currently on track due to disease control protocol established by the Utah Department of Agriculture regarding interstate transfer of fish. In addition, construction delays that have limited the space available have pushed back the timeline for this project. Initial year of project will now be FY2000 and continue through FY2005.

IX. FY99 Budget Status:

A. Funds budgeted:	\$32,000 ^{1,2}
B. Funds expended/obligated:	\$ -0-
C. Difference:	\$32,000
D. Percent of the FY99 ² work completed:	10%
E. Recovery Program funds spent for publication charges:	\$0.00

¹ \$16,800 was UDWR General Funds.

² FY99 work carried over from FY98.

X. Status of Data Submission: N/A

XI. Signed: Matthew Andersen, December 10, 1999

Matthew Andersen