

I. Project Title: **Upper Basin Database**

II. Principal Investigator(s):

Travis Francis, Fish Biologist  
Dale Ryden, Assistant Project Leader  
764 Horizon Drive, Building B  
Grand Junction, Colorado 81506  
(970) 245-9319; FAX 245-6933  
[travis\\_francis@fws.gov](mailto:travis_francis@fws.gov)  
[dale\\_ryden@fws.gov](mailto:dale_ryden@fws.gov)

III. Project Summary:

Development of a centralized database was a requirement of the Recovery Program when it was formed in 1986. All researchers and hatcheries who receive funding through the Recovery Program are required to submit all fishery data to the central database at the completion of their study or rearing season. This mandates that all researchers are required to submit a complete list of all endangered, native and non-native fish handled each year to the central database. Guidelines for the annual tagging list are circulated to researchers each year when requested. A consolidated tagging list is compiled and distributed after tagging data are received from all researchers.

Most of the UCRB database consists of ‘all fish’ data collected during the different investigations funded by the Recovery Program. These data relate to species, number of individuals collected, collection date, site, gear, effort expended, habitat and any other parameter associated with collection or stocking of that fish. Field fish collection data, radiotelemetry data, stationary PIT tag antennae data, and program funded propagation data are required to be submitted. The Recovery Program does not require submitting data from invertebrate, geomorphology, hatchery or laboratory studies. All fishery data associated with a study are due to the database when the final report is approved by the Recovery Program.

The database manager checks each file to ensure that the data conform to the required format. Future users will be referred to the reports for a complete description of the study design and conclusions of the original researchers. While an online GIS database has been developed for researchers to query the dataset, many researchers find the program to be not particularly user friendly and still query the database manager. This past year the database has been queried by recovery program researchers over fifty times.

The database manager also distributes PIT tags to researchers as they request them and maintains a list of all tags and who they are distributed to. PIT tag lists submitted

by researchers are compared with this database to identify transcription errors. All errors can't be corrected, but at least a few errors can be eliminated before they are included in the basin-wide tagging list. Other errors are corrected when they are identified.

The database manager is also tasked with collecting and reporting all data associated with a PIT tag antennae that was installed (8/13/2010) in the Colorado River at the Price Stub instream diversion dam within the fish passage structure at river mile 188.3. All these data will be reported in this annual report.

- IV. Study Schedule: Scheduled to continue for the length of the Recovery Program.
- V. Relationship to RIPRAP: General Recovery Program Support Action Plan.
  - V.A.2. Conduct interagency data management program to compile, manage, and maintain, all research and monitoring data collected by the Recovery Program.
- VI. Accomplishment of FY 11 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

#### Database Management

PIT tags have been distributed as researchers and hatchery managers have requested them. An Access database is maintained documenting distribution of all PIT tags that are sent to investigators in both the Upper Basin and San Juan Recovery Programs. With the new RFP in place and new tagging products available to the programs, we found that most researchers and hatchery personnel were interested in the new 'gun' style implanter and pre-loaded needles in trays. Considering the interest, we used FY 2011 tag funds to acquire 55,000 pre-loaded needles in trays and 50,000 loose tags. The trays are bulky and are going to require extra funds for distribution (shipping charges). It is estimated that shipping charges could cost an additional \$1,200 (or slightly higher) per year.

All tagging databases (stocking and river) are up to date through 2009. PIT tagging data from 2011 should be coming in during the next month or so. Tagging data from 2010 and 2011 will be updated over the coming winter. All tagging and stocking databases have been converted to Access. We worked with Karen Holt to provide data for an online database that is available to researchers looking for information on specific PIT tag numbers or general information of distribution of rare fish.

Efforts have continued to start bringing the 'other fish' data into consolidated Access files. They currently reside in a variety of Excel, Dbase, and Quattro Pro files. This will be a more complicated process because of the wide variety of data types that fall into this broad category. Access is a more complicated program than the spread sheets currently used, but will ultimately be much more useful for the Recovery Program.

Efforts in 2009 and 2010 concentrated on providing a consolidated database of all the nonnative fish data that has been accumulated since 2000. These consolidated data will play an important role in ongoing efforts to synthesize this important program in all rivers of the upper basin. This data has been updated through 2010 and have been handed over to CSU, the contract holder for the basin-wide synthesis. Additionally, efforts were made to consolidate the YOY Colorado pikeminnow monitoring data for a long term analysis. Data from the now terminated adult monitoring program were also consolidated into an Access file.

Investigators are not nearly as diligent about submitting the ‘other fish’ data as they are about submitting rare fish data, so we will need to update that information as it is received. We have been working with researchers to incorporate the more recent data. In addition, we need to update the list of studies that have data included in the database. Work on updating the database is continually ongoing.

Price-Stub Antennae

The Price Stub PIT tag antennae produced multiple hits during FY 2011. We reported in 2010 that the close placement of each of the four antennae (~10 inches) complicated determining directionality (upstream vs. downstream). After cleaning the passageway, in late June, of all of the debris from spring high water, Audrey Hopkins of Biomark adjusted some of the settings at the unit. She changed the antenna sequence (AS) from 1,2,3,4,0,0,0,0,0,0,0 to 1,3,1,3,1,3,2,4,2,4,2,4 and adjusted the delay time from 100mS to 45mS. These adjustments have provided more resolution for determining directionality from detections. There are still some unknowns; however, not as many as were previously encountered. Prior to the cleanout and reader adjustment in June; 16.66% of the fish passed the antennae heading upstream, 51.19% in an undetermined direction, and 32.15% in a downstream direction. After the adjustments the ratios shifted drastically; 40.54% of the fish passed the antennae heading upstream, only 16.21% in an undetermined direction, and 43.25% in a downstream direction. The following table gives a detailed breakdown of the fish that were detected by the antennae:

Date of Detection	Direction	Species	Number of Fish	History
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Oct. 2010	Upstream	RZ	3	Stocked in 2010 at Hoagland Conservation Easement RMI 227.6
	Unknown		20	
	Downstream		8	
Nov. 2010	Upstream	RZ	2	Stocked in 2010 at Hoagland Conservation Easement RMI 227.6
	Unknown		19	
	Downstream		12	
Dec. 2010	Upstream	RZ	0	Stocked in 2010 at Hoagland Conservation Easement RMI 227.6
	Unknown		0	
	Downstream		2	
Feb. 2011	Upstream	RZ	0	Stocked in 2010 at Hoagland Conservation Easement RMI 227.6
	Unknown		0	
	Downstream		1	
Apr. 2011	Upstream	RZ	0	Stocked in 2010 at Hoagland Conservation Easement RMI 227.6
	Unknown		1	
	Downstream		0	
	Upstream	RZ	3	Stocked in 2008 at RMI 185.1
	Unknown		1	
	Downstream		0	
	Upstream	RZ	1	Stocked in 2006 at RMI 184.3
	Unknown		0	
	Downstream		0	
	Upstream	RT	1	Tagged in 2008 in Black Rocks at RMI 136.0
	Unknown		0	
	Downstream		0	
May. 2011	Upstream	RZ	0	Stocked in 2010 at Hoagland Conservation Easement RMI 227.6
	Unknown		1	
	Downstream		3	
	Upstream	RZ	1	Stocked in 2000 at RMI 177.4
	Unknown		0	
	Downstream		0	
	Upstream	FM	1	Tagged in 2003 at RMI 153.2
	Unknown		0	
	Downstream		0	
	Upstream	RT	2	Tagged in 2008 in Black Rocks at RMI 136.0
	Unknown		1	
	Downstream		1	
Jul. 2011	Upstream	RT	3	Tagged in 2008 in Westwater Canyon at RMI ~120's
	Unknown		0	
	Downstream		3	
	Upstream	RT	1	Tagged in 2007 in Westwater Canyon at RMI ~120's
	Unknown		0	
	Downstream		2	

	Upstream	RT	1	Tagged in 2008 in Black Rocks at RMI 136.0
	Unknown		0	
	Downstream		3	
	Upstream	RT	1	Tagged in 2007 in Black Rocks at RMI 136.0
	Unknown		0	
	Downstream		0	
Aug. 2011	Upstream	BT	1	Most Likely stocked in 2011, data hasn't been submitted...
	Unknown		0	
	Downstream		2	
	Upstream	CS	0	First tagged in 1999 at RMI 187.7 has been handled many times since...
	Unknown		1	
	Downstream		0	
Sep. 2011	Upstream	RZ	0	Most Likely stocked in 2011, data hasn't been submitted...
	Unknown		1	
	Downstream		1	
	Upstream	RZ	1	Stocked in 2010 at Hoagland Conservation Easement RMI 227.6
	Unknown		0	
	Downstream		0	
	Upstream	RT	0	Tagged in 2008 in Black Rocks at RMI 136.0
	Unknown		1	
	Downstream		2	
	Upstream	BT	7	Most Likely stocked in 2011, data hasn't been submitted...
	Unknown		3	
	Downstream		3	

At present, there is no funding available for handling either operation or maintenance issues associated with the Price Stub PIT tag antennae. It would seem prudent for the Recovery Program to consider setting up some kind of fund (~ \$5,000) that could roll over from year to year if not used, that would cover costs associated with the O&M of this PIT tag array. As it stands now, if the Price Stub PIT tag antennae become unusable, there is no identified funding to deal with site visits, troubleshooting, and equipment repair and/or replacement.

- VII. Recommendations: Continue the transition to Access. Continue to identify and acquire data sets that belong in the centralized database. Continue collecting data from Price-Stub antennae. Consider additional budgeting for Operation and Maintenance charges associated with the Price-Stub antennae (~\$5,000 safety net). Consider providing additional funds for distributing (shipping) the trays with pre-loaded needles (~\$1,200) to hatcheries and researchers.
  
- VIII. Project Status: Project is currently behind schedule, but is catching up. Scheduled to continue through the length of the Recovery Program.
  
- IX. FY 11 Budget
  - A. Funds Provided: 60,846
  - B. Funds Expended: 60,846
  - C. Difference: 0
  - D. Publication Charges: 0
  
- X. Status of Data Submission: Tagging data from 2011 should be coming in soon.
  
- XI. Signed: T.A. Francis 11/01/2011