

Project 01

Project 1: Initiate removal of nonnative fishes in the Little Colorado River (lower 17.5 km)

Objective: Targeted removal of nonnative fishes, including carp, fathead minnow, channel catfish, yellow/black bullhead and red shiner from the lower 17.5 km of the Little Colorado River.

Location: Little Colorado River

Project Leaders: US Fish and Wildlife Service, Arizona Game and Fish Department, Navajo Nation

Period: 2002-2006

Performance Measures:

1. In cooperation with concurrent studies to identify methods to effectively capture nonnative cyprinids and ictalurids, use species-specific methods to reduce nonnative predator loads in lower 17.5 km of the Little Colorado River
2. Determine habitat overlap between natives and nonnatives
3. Monitor changes in biomass and reproductive potential of nonnatives in response to removal efforts
4. Work at the watershed level to identify upstream sources of nonnative fish that may be potential sources during high flow events
5. Work with local landowners on conservation agreements to manage upstream habitats to remain free of nonnative fish

Budget: FY 2003-2003: \$100,000-150,000 (BOR, USGS)

Project 02

Project 2: **Development of Emergency Response/Contingency Plan for Protection of Downstream Species from Spills into the Little Colorado River at Highway 89 and Cameron Bridge.**

Objective: Develop a well-designed Contingency Plan providing details about each step involved in preparing for, and responding to, spills of materials into the Little Colorado River channel at Cameron Bridge on Highway 89 or Holbrook Bridge on Highway 40 for the express purpose of protecting fish species in the Little Colorado River.

Location: Little Colorado River channel from Holbrook and Cameron Bridges to Grand Canyon (hereinafter referred to as Protected Corridor).

Project Leaders: Bill Davis, EcoPlan Associates, Inc.
Christine Christmas, EcoPlan Associates, Inc.
Coordination with: Navajo Nation and Arizona Department of Public Safety

Period: May 2003 to May 2004

Performance Measures:

1. Identification of Background Information

- a. Description of highway corridor, including types and volume of traffic, specific destinations, links to other highways.
- b. Description of natural setting of Protected Corridor, including biology, habitat, specific species of concern.
- c. Description of Protected Corridor including dimensions of the channel, surface water flow rates, seasonal variations, occurrence of groundwater, soil types, geology.
- d. Identification of access points along Protected Corridor.
- e. Listing of response personnel including names and phone numbers of individuals who work with tribal, state, and federal agencies, plus local people and private companies who can help with the response.
- f. Description and location of response equipment available in the area.
- g. Description of communications systems that will be used to coordinate the various personnel and agencies involved in the control and cleanup effort.

2. Identification of Spill Scenarios

- a. Description of hazardous materials transportation practice affecting bridge including types/volume of hazardous materials crossing bridge, any posted restrictions on hazardous materials.

- b. Description of non-hazardous materials that may also adversely impact sensitive species and their occurrence at bridge crossing.
- c. Development of potential spill scenarios including, but not limited to, the kind of spill that is “most likely” to occur, and the “worst case” scenario.
- d. Identification of physical, chemical, and biological techniques that can be used to contain or clean up a spill.
- e. Description of potential necessary response time for protection of species, based on developed scenarios (i.e. higher risk to lower risk).

3. Identify Response Actions

- a. Notification procedures to tribal and government authorities and agencies, and private companies responsible for cleanup efforts.
- b. Procedures for getting trained personnel and equipment to site, establishing communications.
- c. Procedures for establishing protection of personnel health and safety.
- d. Delegation of responsibilities for identifying the type of spill, potential fate and transport scenario, potential for impacting sensitive species.
- e. Directions for spill containment, removal, and disposal of hazardous material.
- f. Description of follow up reporting and communication requirements.

Budget

Estimated \$100,000 over 12 months to complete tasks 1-3.

Project 03

Project 3: Develop pollution control plan for watershed that includes capability.

Objective: Review potential threats to the humpback chub population that may arise from activities in the watershed and suggest potential actions to ameliorate these threats.

Location: Principally in the Little Colorado River watershed as little to no buffer exists between humpback chub habitats and sources of potential pollutants; however, other potential pollutant sources in other areas tributary to humpback chub habitats would be included in the plan depending on the perceived risk.

Project Leaders: Bill Davis, EcoPlan Associates, Inc.
Coordination with: Environmental Protection Agency, various tribal entities and Arizona Department of Environmental Quality

Period: October 1, 2003 to September 30, 2005

Performance Measures:

1. Identification of Background Information

- f. Description of state and federal water quality standards, water quality control plans and pollutant sources.
- g. Description of natural setting of watershed, including biology, habitat, and specific species of concern.
- h. Description of watershed, including surface water flow rates, seasonal variations, occurrence of groundwater, soil types, and geology.
- i. Identification of nonpoint pollutant sources in the watershed.
- j. Listing of responsible entities, including names and phone numbers of individuals who work with tribal, state, and federal agencies, plus local people and private companies.
- k. Description and location of response equipment available in the area in the event of a spill, upset or other unauthorized discharge of pollutants.
- l. Description of communications systems that will be used to coordinate the various personnel and agencies involved in control and cleanup efforts.

2. Identification of Pollution Scenarios

- m. Description of pollution control practices affecting water quality including types/volume of pollutants, locations, and treatment methods.
- n. Development of potential spill scenarios including, but not limited to, the kind of spill that is “most likely” to occur, and the “worst case” scenario.

- o. Identification of physical, chemical, and biological techniques that can be used to contain or clean up a spill, upset or other unauthorized discharge of pollutants.
- p. Description of potential necessary response time for protection of species, based on developed scenarios (i.e. higher risk to lower risk).

3. Identify Response Actions

- q. Notification procedures to tribal and government authorities and agencies, and private companies responsible for cleanup efforts.
- r. Procedures for getting trained personnel and equipment to site, establishing communications.
- s. Procedures for establishing protection of personnel health and safety.
- t. Delegation of responsibilities for identifying the type of spill, potential fate and transport scenario, potential for impacting sensitive species.
- u. Directions for spill containment, removal, and disposal of pollutants.
- v. Description of follow up reporting and communication requirements

Budget:

Depending on the availability of existing watershed pollution control plans, this could take up to \$100,000 over 24 months to complete.

Project 05

Project: Development of a Comprehensive Action Plan for Actions Necessary to Conserve, Protect, and Enhance Humpback Chub Populations in Grand Canyon.

Objective: Develop a plan of attack that will identify, coordinate, and eventually foster the completion of actions to benefit humpback chub in Grand Canyon.

Location: Actions identified in plan would cover areas in the Colorado River from Glen Canyon Dam to Lake Mead, including tributaries therein.

Project Leaders: To be determined, but might include: GCMRC, USFWS, AGFD, SWCA, Valdez, and others

Period: April 2003 - December 2003

Performance Measures:

1. Develop list of necessary actions.
2. Develop study plans (or at least detailed outlines) for each project. Must be detailed enough to develop accurate time line and budget.
3. Compile individual study plans into a comprehensive action plan that coordinates all projects (i.e., identifies the required course of actions needed to complete the projects) and includes annual budget requirements. This action plan would be evaluated and updated annually to acknowledge progress and to accommodate new information.

Budget: FY03-04: \$100,000-150,000

If feasible, I suggest that one individual coordinate/oversee the effort and a group of experts (paid) be convened to develop study plans.

Project 06

Project 6: Complete feasibility study of selective withdrawal on Glen Canyon Dam and, if feasible, finish compliance, construct, and test the device.

Objective: Determine whether a selective withdrawal on Glen Canyon Dam can be used effectively to improve native fish habitat in the Colorado River and increase population size and distribution of the endangered humpback chub.

Location: Glen Canyon Dam

Project Leaders: Dennis Kubly
Bureau of Reclamation

Period: March 2003 – December 2009

Performance Measures:

1. Complete risk assessment (July 2003).
2. Obtain motion from AMWG on completion of compliance and feasibility evaluation (July 2003).
3. Complete draft environmental assessment (September 2003).
4. Obtain AMWG recommendation for Secretary of the Interior (October 2003).
5. Complete environmental compliance and science plan (March 2004).
6. Issue contract for construction (July 2004).
7. Complete construction and initiate testing (May 2007).

Budget/Source:

FY 2003: \$50,000 / BOR (feasibility/compliance).
 FY 2004: \$50,000/ BOR (compliance) \$? / BOR (construction, if decided).
 FY 2005: \$? / BOR (construction, if decided).
 FY 2006: \$? / BOR (construction, if decided).
 Construction costs dependent upon design.

Testing of the selective withdrawal will be accomplished as part of the GCDAMP using a science plan developed by GCMRC in cooperation with the Science Advisors and the Technical Work Group. Funding for monitoring will be from a combination of GCDAMP funds and Section 8 CRSP funds. The latter funding will be available for 3 years following completion of construction. Costs for research and monitoring are dependent upon the scope of the science plan.

Project 07

Project: Assess Humpback Chub Currently at Willow Beach NFH as Potential Broodstock.

Objective: Determine if humpback chub currently on station at Willow Beach NFH would be suitable as a potential broodstock.

Location: Willow Beach NFH.

Project Leaders: To be determined, but might include: USFWS

Period: June 2003 - December 2004

Performance Measures:

1. Collect tissues from fish at Willow Beach NFH and any other available archived tissues (approx. 120 from Willow Beach NFH plus 40-50 reference samples).
2. Perform microsatellite analysis using existing loci.
3. Perform statistical analysis and report.
4. Using genetic information, develop captive broodstock management plan.

Budget: FY03-04: \$120,000

Project 08

PROJECT: FEASIBILITY OF DEVELOPING A PROGRAM TO AUGMENT THE POPULATION OF HUMPBAC CHUB (*Gila cypha*) IN GRAND CANYON

OBJECTIVES:

- 1) Examine the feasibility of establishing a supplemental stocking program for humpback chub in Grand Canyon using wild caught young of year (YOY) humpback chub removed from the Little Colorado River (LCR) and grown out to a large size in captivity
- 2) Examine the feasibility of developing a captive broodstock to be used for a captive breeding program for humpback chub
- 3) Examine the feasibility of establishing a second spawning (or expand the current) population of humpback chub in Grand Canyon

LOCATION: Colorado River Basin

PROJECT LEADERS: Arizona Fishery Resources Office-Flagstaff, GCMRC

PERFORMANCE MEASURES:

1. For the feasibility of supplemental stocking using growout facilities, the project will answer the following questions:
 1. Where could the supplemental fish be grown?
What size fish should be collected, how, from where, and when?
 2. What is the best size to grow out captive fish before release?
 3. How many fish will need to be released into the wild in order sufficiently supplement the population of humpback chub in Grand Canyon?
 4. Where and when will fish be released back into the wild?
2. For the feasibility of establishing a supplemental population using broodstock, the project will answer the following questions:
 1. Is a captive adult broodstock needed at this point in time, and what will it contribute?
 2. Identification of components necessary to develop a broodstock management plan.
 3. Where to hold broodstock, where to raise fish, what size to raise fish, how many, where/when to release?
3. For the feasibility of establishing a second population, the project will focus on
 1. Transplanting fish above Chute Falls
 2. Refugia population in Havasu Creek
4. Report and evaluation of each objective, including recommendations for future action.

BUDGET: FY 2003: \$23,000

Project 09

Project : Removal of humpback chub from mainstem at 30 mile to maintain genetic stock in refugia.

Objective: Remove adult humpback chub from the 30 mile aggregation for use as a refugia population.

Location: Mainstem Colorado River 30 miles downstream from Lees Ferry.
Undetermined hatchery/broodstock refugia.

Project Leaders: GCMRC and Cooperators, USFWS, AGFD, NPS

Period: 2002 - 2006

Performance Measures:

1. Develop refugia plan and secure necessary permits for removing fish from the wild and holding them in a refugia.
 - a. Development of refugia plan may include examination of genetic samples to evaluate uniqueness of 30 mile aggregation of chub.
2. Collect x number of adult humpback chub from the 30 mile aggregation.
 - a. Number to be determined as part of planning process.
3. Prepare annual progress report and final report.

Budget and timeline:

FY 2003-2004	Develop plan and secure permits.	\$25 – 50,000
FY 2004-2005	Evaluate and select refugia location.	\$???
FY 2004-2005	Capture and move adult fish from Colorado River to refugia location.	
FY2005-2006	Maintain adult fish.	\$\$\$?

Project 10

Project 5: Monitoring fish parasites and diseases, CRE

Objective: Monitor fish parasites and diseases in the Colorado River ecosystem. Inventory parasites and diseases present in the mainstem Colorado River and larger tributaries. Examine distribution and abundance of parasites and diseases in relation to water temperature and river location.

Location: Mainstem Colorado River from Glen Canyon Dam to Lake Mead, Little Colorado River near confluence with Colorado River, other tributaries where fish can be collected.

Project Leaders: National Wildlife Health Center, Arizona Game and Fish Department, other cooperators

Period: 2002 - 2006

Performance Measures:

4. Inventory and monitor fish parasites and diseases during 2004. This will require one river trip of approximately 15 days.
5. Collect parasite and disease information from all exotic and native fish species.
6. Prepare annual progress report and final report.

Budget:

FY 2003-2004 \$100,000-150,000 ? (BOR, AGFD)

Project 11

Project 2: Transport of HBC above Chute Falls

Objective: The short-term objective of this project would address the question of whether or not transplanted fish would remain above Chute Falls in the Little Colorado River (LCR). Geomorphology of this section of the LCR includes narrow, canyon bound stretches subject to scouring flows. Small life history stages of HBC may not be able to maintain position in high flows and be washed downstream. However, if lower volume flows and baseflow conditions occur over the 2003 and 2004 seasons, HBC may be able to exploit available habitat and remain in this upstream section until they reach larger sizes. The second objective of this project is a direct management action to try and prevent the large-scale loss of HBC in the 30-60mm size class. Data suggest that once smaller life history stages enter the Colorado River either through high flows or downstream drift, that a combination of cold temperatures and predation significantly reduce recruitment. It appears that once HBC exceed the 150-200 size range that survival significantly increases. If HBC can remain in the LCR longer to reach these larger size classes, they may have an increased chance of survival once they enter the mainstem Colorado. The longer-term objective of this project is the establishment of a spawning population above Chute Falls.

Location: Little Colorado River

Project Leaders: US Fish and Wildlife Service

Period: Summer 2003-Summer 2005

Performance Measures:

1. June 2003: Reconnaissance survey to collect water quality, nonnative fish densities and helicopter staging areas, 5 days
2. July 2003: Translocation trip at confluence of LCR and mainstem Colorado, 3-5 days
3. November 2003: Post monsoon monitoring trip, 5 days
4. December 31, 2003: Interim 2003 Report due
5. Spring 2004: Post winter flow monitoring (snorkeling surveys), 5 days
6. June/July 2004: Translocation trip at confluence of LCR and mainstem Colorado, 2-5 days
7. November 2004: Post monsoon monitoring, 5 days
8. December 31, 2004: Interim 2004 Report Due
9. Spring 2005: Post winter flow monitoring (snorkeling surveys), 5 days
10. June 2005: Final report due

Budget:

FY2003: \$24,000

FY 2004: \$30,000

FY 2005: \$26,000

Project 12

Project 2: Mechanical removal of non-native fishes (primarily salmonids) from the Colorado River near the confluence with the Little Colorado River.

Objective: Evaluate mechanical removal of non-native fishes.

Location: Colorado River near confluence of Little Colorado River (River Mile 56.2 – 65.7)

Project Leader: Dr. Steven P. Gloss
Grand Canyon Monitoring and Research Center

Period: 2002 - 2006

Performance Measures:

1. Evaluate effectiveness of mechanical removal of rainbow and brown trout by electrofishing.
2. Evaluate impact of mechanical removal on humpback chub recruitment.
3. Prepare an annual progress report and final report.

Budget:

FY 2002-2003 GCMRC Est. \$600,000-650,000 / year

Project 13

Project 12: Use dam operations to benefit HBC – use dam operations to reduce non-native fish, increase daily fluctuations, spring high flows/summer low flows.

Objective: Conduct experimental flows from Glen Canyon Dam to test specific hypotheses to benefit HBC, in conjunction with other variables such as temperature warming, non-native control, parasite control, and turbidity enhancement.

Location: Glen Canyon Dam

Project Leaders: Bureau of Reclamation

Period: September 2003 and following

Potential Dam Release Experiments, Research Costs, and Timeframes:

1 – Determine habitat requirements (thresholds and optima) and timing for each life stage of HBC in both the LCR / Grand Canyon tributaries and the mainstem Colorado River that can be affected by dam operations (e.g. spawning, incubation, emigration from tributaries). Primarily literature survey and lab experiments.
Cost - \$50,000 Timeframe – 2003- 2004

2 – Determine spawning cues for HBC and evaluate impact of dam operations on HBC spawning. (1) Literature survey and (2) field experiment using the TCD.
Cost – (1) \$50,000 Timeframe – 2003 – 2004, (2) \$100,000 Timeframe – 2007+

3 – Conduct fall steady / minor fluctuating flow regime as part of the Autumn Sediment Input Scenario of the 2003 – 2004 experiment now in progress. If this scenario does not occur in 2003, test effect of a similar fall flow regime in 2003. Identify specific hypotheses related to habitat condition and HBC recruitment. Identify sampling protocols and analyses to evaluate results sooner than would be obtained from age 4+ adult HBC population estimates. Cost - \$150,000
Timeframe - 2003

4 – Evaluate the effects of LCR-ponding spring flows of 2000 LSSF. Identify sensitivity of mainstem flow levels on LCR confluence velocity and temperature and recommend a spring experiment to test specific HBC habitat and recruitment hypotheses. Cost – GCMRC staff Timeframe - 2003

5 – Following completion of 2003 – 2004 experiment, review results of non-native fish suppression releases and make recommendations for future flow experiments to limit non-native fish populations in the Grand Canyon. Cost - \$50,000 Timeframe - 2005

6 – Include high spring flows and low summer flows as part of the program of experimental flows currently being developed by GCMRC. Such flows would be implemented following the construction of the Temperature Control Device (GCMRC, 2002) and in conjunction with non-native control actions (Valdez et

al., 1999). Cost – Several million in research costs annually Timeframe – 2005 and following

During low release years 2000 – 2003, the Adaptive Management Program has tested the effect of (1) steady high spring and low summer flows and (2) ROD operations in response to recommendations by the FWS (1995) and Valdez et al. (1999). Measurement of the effects of these flows generally has been limited to population estimates of adult HBC, which may present difficulty in determining the actual effect of the flows due to the intervening time period between marking, spawning and age 4+ estimates. The economic impacts to the public from such experiments could vary between several million to over \$100 million annually. As a result, the Adaptive Management Program should apply careful scientific design to the research program to enable clear hypothesis testing.

Project 14

Project 14: Understand the effect and identify the threats of scientific work on humpback chub populations in the Grand Canyon area (review Upper Basin Recovery Program, etc.).

Problem Statement: The Humpback Chub (HBC) populations of the Grand Canyon, particularly the Little Colorado River population, have endured significant environmental manipulation and individual physical handling for the last 20 years. Sediment, flow, and (soon) temperature studies, among others, affect mainstem populations to some degree through habitat disruption and invasion. Targeted studies affect HBC directly; other studies targeting other species affect HBC indirectly as an unintended consequence. Repetitive disturbance, recapture, and handling are continual sources of stress, health risk, and potential injury for individuals and the population as a whole. One handling estimate indicates adult HBC may suffer a one in ten chance of mortality after handling (Walters, personal communication). Upper basin managers and investigators have similar concerns, but have not initiated studies to directly quantify the effect. In trying to learn more and more about a very limited resource, the threat exists that the same activities intended to help the species, may in fact have a detrimental effect. This effect is on-going for the foreseeable future and may have immediate consequences for HBC as long as intensive scientific effort is focused on this species and their habitat.

Objective: Evaluate the impacts of repetitive recapture, handling, and habitat disturbance on Grand Canyon humpback chub populations

Location: CRE below Lees Ferry and the Little Colorado River

Project Leader: Dr. Steven P. Gloss
Grand Canyon Monitoring and Research Center

Performance Measures:

4. Quantify recapture and handling induced mortality (existing data, lab, or field).
5. Evaluate habitat disturbance effects on displaced HBC (bioenergetics modeling, stable isotope, or stock assessment approach?).
6. Evaluate gear limitations and experimental (sampling) protocols to reduce effects of scientific efforts on HBC.
7. Prepare annual progress reports and final report.

Period: FY2004 – 2005 FY2004 - 2009

Budget (by Perf. Meas.): ????????????????

1.	\$ 10,000	\$ 10,000 (1yr)
2.	\$ 30,000 (/yr)	\$ 90,000 (3 yrs)
3.	\$ 45,000 (/yr)	\$ 90,000 (2 yrs)

4.	$\frac{\$ 1,000 \text{ (/yr)}}{\$ 86,000}$	$\frac{\$ 5,000 \text{ (5 yrs)}}{\$195,000}$
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Project 15

HUMPBACK CHUB COMPREHENSIVE ACTION PLAN (DRAFT)

Action Item 15. Conduct concurrent estimates of HBC in LCR and mainstem to develop/confirm population estimates. Evaluate the reproductive success and age group survivability for all age classes, including recruitment.

Prepared by Steven P. Gloss, Program Manager for Biological Resources, Grand Canyon Monitoring and Research Center, USGS SBSC, Flagstaff, AZ

Background:

Currently population estimates for HBC are conducted in the LCR in the fall of each year to estimate abundance of smaller chub and to get a 'first' signal about the survival and potential recruitment of a given year class. Sampling is also conducted in the spring primarily aimed at marking as large a number of chub as feasible to provide information through capture and subsequent recapture for stock assessment models. Depending on the quality of data with respect to meeting assumptions of mark-recapture population estimation models, these spring data may also be used to generate a point estimate of the population size. There has and continues to be uncertainty regarding how well point estimates derived solely from LCR sampling may represent the status and trends of the 'LCR population' individuals from which are known to spend time in both the LCR and mainstem-with movement in and out associated primarily with spawning activity in the adult population. There is also concern about adopting consistent population estimation procedures for populations of HBC in the Upper and Lower Basin vis-à-vis Recovery Goals.

Approach:

This action item would expand sampling effort in the spring and/or fall to include the mainstem Colorado River near the LCR confluence from RM 56-65. Sampling would be done with a combination of hoop nets and trammel nets. HBC would be marked with either a temporary mark or PIT tag depending on size. Sampling could involve a single marking and recapture trip or a three trip approach which would provide opportunities to analyze sample data in additional and alternative ways, e.g. depletion estimates. In any event these data would also be used as input data for the annual stock assessment model runs.

An additional option being considered in conjunction with this proposed action and the 'routine' LCR sampling is the implantation of sonic tags in adult HBC to yield additional information regarding the frequency and extent of movement of fish in and out of the LCR, as well as to try and determine the proportion of LCR fish which may not spawn every year, i.e. skip spawners.

Considerations- Movement and distribution of HBC seasonally complicate finding the ideal sampling schedule for this effort. It is assumed that 'most' of the population goes into the LCR for spawning and may or may not remain there during part or all of the mark-recapture sampling there, i.e. the timing of movement in and out varies from year to year and we have not good predictors of when it will occur between about March and June. Sampling in the spring would add information about the distribution of fish and their movement but could violate model assumptions for simple mark-recapture population estimation. Sampling in the fall presumably has the advantage of the population being more sedentary and resident in a combination of the LCR and mainstem, with a higher likelihood that assumptions would be met. Sampling both times would yield more information but also may result in unnecessary handling stress and mortality. Three pass estimates may improve the confidence limits for population estimates, but also result in more handling. Some of the confidence in two vs. three pass designs could be estimated through computer simulation based on previous catch rate information.

Implementation Schedule:

This action item, if adopted, would be implemented in the near term, beginning in the fall of 2003 or spring of 2004, and pursued for at least two years.

Estimated Costs:

Annual budgets for this proposed action are estimated as follows:

<u>Option</u>	<u>Cost</u>
2-trip spring or fall only	\$ 220,000
3 trip spring or fall only	330,000
2 trip spring & fall	440,000
3 trip spring & fall	660,000
Sonic tags and detectors (50-100; one time cost)	50,000

Project 16

Development of an Adaptive Management Work Group Outreach Program.

Problem: AMWG has been established to develop consensus recommendations to the Secretary of the Interior on the operations of Glen Canyon Dam. Direction for AMWG can be found in the Grand Canyon EIS and the Grand Canyon Protection Act. Without an active outreach plan and program AMWG has suffered from “Agency Writers Cramp”, with very little information getting to the public and what does reach the public is, normally, only from a single agencies perspective and not AMWG. For example, when the decision was made to reduce the population of trout near the LCR there was not a coordinated press release. The press ran with information from one source or another and most of us were left picking up the pieces. Rumors abounded about elimination of trout from the entire river, fluctuating flows scouring the riverbed, and attempts to break the backs of angling guides. Of course none of the rumors were true. In addition, because we do not have a coordinated outreach program, some AMWG members are being accused of using the press and their AMWG connection to their own best ends.

Solution: AMWG needs to develop a single, consistent, and coordinated outreach program. AMWG needs to develop a process by which it can agree on the intent and content of all press releases and other outreach mechanisms. We suggest that the following actions take place:

1. An AMWG Outreach Committee will be developed, consisting of, at a minimum a representative of each governmental agency that is member of AMWG. Participation on the Outreach Committee will be limited to AMWG members.
2. The committee will develop an outreach plan to guide AMWG’s outreach process for the next 10 years.
3. Each AMWG governmental agency will assign a Public Information Officer (PIO) to be a member of a team for coordination of all press releases. The PIO’s will develop a mechanism of having input to each press release before it is presented.
4. AN AMWG Outreach Team (consisting of the AMWG Outreach Committee and the PIO’s) will meet twice each year prior to each AMWG meeting.
5. A representative from the AMWG Outreach Team will brief AMWG on its activities each AMWG meeting.

Budget: A budget for this project is difficult to determine. Most of the Outreach Committee members will come from AMWG and only need \$ for travel to meetings. The 6 PIO’s will be in addition to the AMWG members and will need pickoff and travel \$. A ballpark figure is \$85,000 each year.

Project 17

Project 17: Develop a monitoring program for the Colorado River downstream of Diamond Creek to detect changes in habitat resulting from operation of Lake Mead.

Objective: To detect variations in aquatic habitat conditions resulting from adjustments in Glen Canyon Dam releases as well as Lake Mead elevations that result in alternating lotic and lentic conditions within the CRE and relate these to fish community changes.

Location: Colorado River downstream of Diamond Creek including portions of the river from Separation Canyon (uppermost influence of Lake Mead) downstream to Grand Wash Cliffs (western boundary of Grand Canyon National Park and the AMP).

Project Leaders: Dr. Steven P. Gloss
Grand Canyon Monitoring and Research Center
Coordination with: Hualapai Tribe, Grand Canyon National Park, Lake Mead National Recreation Area and Lower Colorado River Multi-Species Conservation Program

Period: Ongoing monitoring (Initiate 2003)

Performance Measures:

1. Define parameters unique to lentic and lotic environments, e.g., flow, food sources, shelter, temperature, turbidity, predation, etc.
2. Inventory past data sets and assess usefulness.
3. Establish acceptable monitoring program including parameters, locations, frequency, etc.
4. Implement monitoring program.
5. Assess fish community indices relationship to habitat values.
6. Prepare annual progress report.

Budget:

Estimated \$50,000 in the first year and \$25,000 in subsequent years.

Project 18

Project 1: Feasibility Study to determine the efficacy of using a weir in Bright Angel Creek to capture brown trout.

Objective: Evaluate the use of a temporary weir in Bright Angel Creek to remove non-native salmonids from the Colorado River Ecosystem during 2002 and 2003.

Location: Bright Angel Creek

Project Leaders: Dr. Jeffrey Cross
Grand Canyon National Park
Bill Leibfried and Helene Johnstone, SWCA Environmental Consultants

Period: November 2002 – February 2003

Performance Measures:

8. Evaluate the use of a temporary weir in Bright Angel Creek to remove non-native salmonids.
9. Remove brown trout (*Salmo trutta*) from the Creek.
10. Examine size, stage of sexual condition and diet of brown trout.
11. Examine all brown trout and native fish for presence of PIT tags.
12. Mark and release all rainbow trout (*Oncorhynchus mykiss*)
13. Prepare an annual progress report and final report.

Budget:

FY 2002-2003:	\$30,000 BOR, Contract with SWCA.
FY 2003-2006	\$562,000, National Park Service for implementation if feasible and after NEPA compliance

This project should move to the management phase (rather than evaluation) after NEPA compliance in 2003 and may include removal of all exotic species and evaluation of removal at Clear Creek and Tapeats Creek. Project may also expand to include collection and tagging of native fishes during the spring (primarily flannelmouth and bluehead suckers).

Project 19

Project 19: Consider sediment augmentation to benefit native fish (e.g. sediment pipeline from San Juan River), both long-term feasibility and short term experiment.

Objective: Determine the feasibility of augmenting sediment inflow to the Colorado River at or below the Paria River confluence. Need to address the water and sediment chemistry and quality issues as well as any biologic impacts or interactions (e.g. foodbase and aquatic food chain). Also investigate the potential for a test to document the effects of augmenting sediment and increasing turbidity.

Location: Mainstem Colorado River below Lees Ferry, AZ

Project Leaders: Bureau of Reclamation (augmentation feasibility study)
Technical Service Center, Denver CO

GCMRC (turbidity experiment)

Period: 2003 - 2004

Performance Measures:

14. Develop feasibility estimates for various sediment augmentation alternatives.
15. Determine preferred alternative and complete environmental compliance (if action or construction is desired).
16. Develop science plan for evaluating the effects of increasing sediment inputs into the mainstem Colorado River.

Budget:

FY 2003 - 2004:	\$100,000 AMP funds for feasibility study
FY 2005	\$250,000 AMP funds for turbidity experiment
FY 2005+	\$?? for environmental compliance

Project 21

Project #3: Develop an invasive species management plan for the Colorado River Ecosystem (CRE)

Objectives: Develop a response plan to detect and quickly act should additional nonnative species become established in the CRE as well as development of additional measures to prevent further introductions. The focus should be to prevent further introductions, yet with potential temperature modification, a coordinated response that acts quickly to contain the nonnative introduction and prevent further spread is necessary.

Location: Lower Basin Colorado River and tributaries

Project Leaders: USGS, BOR, AGFD, USFWS

Period:

2003: Develop plan, and implement immediately and indefinitely

2004-?: Modify plan as necessary

Performance Measures:

1. Evaluate effective ways to detect new species within CRE
2. Designate interagency response team to respond to new introductions. Participant time should be funded by project monies
3. Develop a response plan that would go into effect if new introductions were detected, including necessary NEPA compliance
4. Report and evaluation of response, including recommendations for future action

Budget: 2003: \$50,000 for development of plan and response team

2004-2006: \$100,000-\$200,000 if response action is needed to address new nonnative introduction into the CRE, will depend on extent of introduction and how quickly team members can initiate action.

Project 22

Project 21: Reclamation will lead a review of LCR watershed management plan.

Objective: Determine the extent to which humpback chub in Grand Canyon is affected by activities occurring in the LCR watershed and, if deemed necessary, work cooperatively with agencies, tribes, local governments, and organizations, including watershed groups, within and outside of the GCDAMP to develop a watershed based management plan to address these threats.

Location: Little Colorado River Basin

Project Leaders: GCDAMP and LCR-MOM members

Period: March 2003 – ?

Performance Measures:

17. Identify agencies, tribes, local governments, and organizations, including watershed groups, who have authority, responsibility, or interest in future of endangered humpback chub in Grand Canyon.
18. Identify threats to endangered humpback chub in Grand Canyon that arise in the LCR basin, both within and external to the Colorado River ecosystem.
19. Convene one or more workshops to identify actions that should be taken to address these threats, to identify authorities for addressing these threats, and to lay the foundation for a watershed-based management plan to integrate authorities, threats, and actions.
20. Cooperatively develop a watershed-based management plan to provide a strategy for protecting the endangered humpback chub and other federally listed species while at the same time continuing with necessary water and resource development, prioritize necessary actions to achieve these goals, identify funding sources, construct management objectives and targets for measuring success, develop the framework for cooperative agreements, and identify a timeline for completion of tasks and measurement of successes.

Budget/Source:

FY 2003:	\$ Unknown
FY 2004:	\$ Unknown
FY 2005:	\$ Unknown
FY 2006:	\$ Unknown

Reclamation has identified that as a federal agency it does not have the legal authority or jurisdiction to implement a management plan for the Little Colorado River. To support development of such a plan, Reclamation has worked cooperatively with the Navajo Nation to produce a data summary for the LCR Basin and a report summarizing available

information by SWCA, Inc. The LCR-MOM has indicated an interest in serving as a coordinating organization for development of the LCR management plan. Many of the agencies, tribes, and organizations that would likely be participants in the development of this plan, and in its implementation, are members of either the GCDAMP or the LCR-MOM. Therefore, it seems appropriate that these two groups should work cooperatively in this effort.

Project 23

I don't remember being assigned this task. Seems like we decided to not do this one.

Nick Carrillo

03/06/03 02:38 PM

To:

Simmonds/R2/FWS/DOI@FWS, ibr4dm10.4ucro:RPETERSON@FWS, Steven P Gloss/BRD/USGS/DOI@USGS, btaubert@gf.state.a

cc:

ibr4dm10.4ucro:DKUBLY@BORGrouppwise, ibr4dm10.4ucro:L

Subject:

Action Items

Pam Sp

Sam Spi

Status o

ALL: We have not received your write-ups as of this time for the following:

- #1 Received, From Pam Sponholtz
- #2 Not Received, Assigned to Bill Davis
- #3 Not Received, Assigned to Bill Davis
- #4 Unassigned, Will Discuss 3/12/03
- #5 Received, From Rob Simmonds
- #6 Received, From Randy Peterson
- #7 Received, From Rob Simmonds
- #8 Not Received, Assigned to Rob Simmonds
- #9 Not Received, Assigned to Bill Persons
- #10 Not Received, Assigned to Bill Persons
- #11 Received, From Pam Sponholtz
- #12 Not Received, Assigned to Bill Persons
- #13 Received, From Randy Peterson
- #14 Received, From Gary Burton
- #15 Not Received, Assigned to Steve Gloss
- #16 Not Received, Assigned to Bruce Taubert
- #17 Not Received, Assigned to Bill Davis
- #18 Not Received, Assigned to Bill Persons & Jeff C.
- #19 Received, From Randy Peterson
- #20 Unassigned, Will Discuss 3/12/03
- #21 Received, From Pam Sponholtz
- #22 Received, From Randy Peterson
- #23 Not Received, Assigned to Don Metz

Attached is the HBC Comprehensive Plan - Action Item List.

Linda: In addition to the email from Sam Spiller earlier today, please email and add to the website.

Thanks,

Nick Carrillo
 Lower Colorado River Coordination Office
 Phone: 602/841-5009
 Cellphone: 602/708-0061



Action_ItemsA.pdf