

## RECOVERY PROGRAM DIRECTOR'S UPDATE

September 2003

### **Status of the Endangered Fishes**

Table 1 presents the most current estimates of the mean number of wild adults in populations of Colorado pikeminnow and humpback chub, and provides a general overview of efforts to augment or reestablish razorback sucker and bonytail populations in the Upper Colorado River Basin (see Table 2 for 2003 stocking summary). Wild populations of Colorado pikeminnow and humpback chub have been studied since the 1960s, and population dynamics and responses to management actions have been evaluated since the early 1980s. It is anticipated that self-sustaining populations of razorback sucker and bonytail will be reestablished over the next 15 years, during which time population dynamics and responses to management actions will be evaluated. Regions 6 and 2 of the U.S. Fish and Wildlife Service (Service) are collaborating to ensure a coordinated effort to achieve the recovery goals in both the upper (including the San Juan River) and lower basins.

As stated in the recovery goals for the four endangered fishes, the Service considers a reliable population estimate as one that is based on a multiple mark-recapture model. Monitoring must be designed to determine if the demographic criteria of the recovery goals (see attachment) are being met. Accordingly, in the Upper Colorado River Basin, closed-population, multiple mark-recapture estimators are being used to derive population point estimates for Colorado pikeminnow and humpback chub (see section V). Population and demographic data collected through monitoring will be used to track progress toward achieving the recovery goals. The accuracy and precision of each point estimate will be assessed by the Service in cooperation with the Recovery Program and in consultation with investigators developing the point estimates and with qualified statisticians and population ecologists. Such an assessment will occur in 2004. In addition to the demographic criteria, the recovery goals identify site-specific management actions/tasks ("recovery factor criteria") to minimize or remove threats (see attachment). Details of these and other management actions/tasks that contribute to recovery in the upper basin are identified in the Recovery Program's Recovery Implementation Program Recovery Action Plan (RIPRAP).

Table 1.—Summary of species status.

SPECIES	RIVER SYSTEM		
	MIDDLE GREEN	LOWER GREEN	UPPER COLORADO
<b>Colorado pikeminnow</b>	About 3,500 adults (based on 2000 data); report on 2000–2003 estimates due March 2004.	Estimates initiated in 2001; report on 2001–2003 estimates due March 2004.	About 700 adults (based on 2000 data); estimates continued in 2003.
	SAN JUAN: Estimate of about 20 wild adults based on data collected in the early to mid-1990's; stocking young-of-year fish is currently underway.		
<b>Humpback chub</b>	<u>Yampa Canyon</u> : Population small, about 400 adults, based on model using 1998–2000 data. Effort expanded in 2003 to develop a more precise estimate.	<u>Desolation/Gray Canyon</u> : Estimates for 2001 and 2002 were 1,500 and 1,700 adults, respectively; estimates continuing with expanded effort in 2003.	<u>Black Rocks Canyon</u> : About 1,000 adults; estimates continuing in 2003. <u>Westwater Canyon</u> : 2,200–4,700 adults based on 3 sampling sites in 1998–2000; effort expanded in 2003. <u>Cataract Canyon</u> : About 500 adults; a mark-recapture will be investigated in 2003 (this effort was scheduled to begin in 2002 but was postponed due to low flows).
	LOWER COLORADO, GRAND CANYON: 2,000–4,000 adults (not including the mainstem); methods being reviewed to improve estimate.		
<b>Razorback sucker</b>	<100 wild adults; population being augmented through stocking, which is being expanded with excess fish stocked into selected floodplain depressions; stocked fish are returning to spawning bar; monitoring and evaluation of stocked fish in 2003–2004 being accomplished through sampling conducted for other population estimates and nonnative fish control.	Few wild adults; population being augmented through stocking; monitoring and evaluation of stocked fish in 2003–2004 being accomplished through sampling conducted for other population estimates and nonnative fish control.	Few wild adults; population being augmented through stocking; monitoring and evaluation of stocked fish in 2003–2004 being accomplished through sampling conducted for other population estimates and nonnative fish control.
	SAN JUAN: No estimate of adults is available; stocking 1-year-old-plus fish (greater than 300 mm total length) is currently underway.		

<b>Bonytail</b>	Populations are currently being re-introduced in Colorado, lower Green, middle Green and Yampa rivers; augmentation is being with excess fish stocked into selected floodplain depressions; survival of stocked fish observed; monitoring and evaluation of 2003–2004 being accomplished through sampling conducted for other population estimates and nonnative fish control.
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## Status of Recovery Actions by Program Element

### I. Instream Flow Identification and Protection

Goal: To protect sufficient instream flows to support self-sustaining populations of the endangered fishes.

Status:

- The Service revised the report entitled *Flow Recommendations to Benefit Endangered Fishes in the Colorado and Gunnison Rivers* based on Biology Committee recommendations. The Service sent the revised report back to the Biology Committee for review on April 1, 2003. It was approved by the Biology Committee during a conference call on May 15, 2003. The document currently is available on the Recovery Program participants' website at <http://www.r6.fws.gov/crrp/doc/GunnCoflowrec.pdf>. Printed and bound copies should be available by the end of August. Reclamation has begun modeling operations of the Aspinall Unit to try to meet these flow recommendations, for which it will prepare an EIS. The Service and Reclamation will initiate discussions in September 2003 to develop an approach for addressing ESA compliance for Aspinall reoperations, as well as other Gunnison Basin projects.
- No Coordinated Reservoir Operations (CROS) were undertaken in 2003 because reservoirs began the year at record lows and operators used all available water to refill reservoirs. In April, Xcel Energy, Denver Water and West Slope water users reached an agreement to relax the Shoshone call from 1200 cfs to 700 cfs so that reservoirs in the upper basin could store additional water to recover from the 2002 drought. This landmark agreement resulted in additional reservoir storage upstream from the Shoshone powerplant totaling nearly 24,000 af, and helped Green Mountain, Williams Fork, and Dillon reservoirs fill by early July. Because Green Mountain Reservoir filled, surplus water should be available in late summer to supplement fish flows in the 15-Mile Reach. Unexpected snowfall in late spring built snowpack to about average conditions and a warm spell in late May and early June resulted in an instantaneous peak of near 20,000 cfs at Cameo. This peak was short-lived and may have caused an earlier onset of below-average flow conditions beginning in early July.
- The Coordinated Facilities Operations Study (CFOPS) was initiated in 1999 to investigate alternatives for supplying up to an additional average annual 20,000 af of water to the 15-Mile Reach. Phase I of this project examined a wide range of possible alternatives that were subjected to a preliminary screening process to arrive at a short list of alternatives to be intensely studied in Phase II. The final report on Phase I was completed in September 2000. The Phase II Draft Report has been completed and an Executive Summary has been prepared by the CFOPS Executive

Committee. Numerous alternatives were considered in the Phase II Study and summarized in the Executive Summary. In the Executive Summary, the Executive Committee recommended the following two alternatives for spring peak-flow augmentation: 1) maximize Coordinated Reservoir Operations (CROPS) as the primary means of augmenting the spring peak (i.e., bypass storable inflows at participating reservoirs in a way that does not impact a reservoir's water-supply yield) and encourage increased participation in the CROPS process; 2) augment the spring peak by using up to 20,000 af of stored water in addition to CROPS (the amount of water released from storage would depend on the size of an "insurance pool" of water designated by the Service from existing "environmental pools" for the purpose of ensuring that releases of stored water would not jeopardize a reservoir's water-supply yield). In addition to these two recommendations, the Executive Committee recognized that the CFOPS study identified a mainstem reservoir alternative just downstream from Rifle, Colorado (i.e., Webster Hill Reservoir) that could have multiple benefits and provide greater certainty of instream flow augmentation (both peak-flow and base-flow augmentation). Options for such a multi-purpose reservoir may be evaluated through a feasibility study conducted by the water users independent (funded outside) of the Recovery Program. Dan Luecke has emphasized that we should not lose sight of the fact that all this replaces the instream flow water rights that were to have been part of Colorado's contribution to the Recovery Program. Luecke has called the recommendations "an exquisite compromise" and said the environmental groups support, but still have issues with, two of the options: 1) the environmental pool as insurance; and 2) the Webster Hill site which would involve construction within the upper ~5 miles of critical habitat (consequently they have insisted that the Service provide a set of environmental questions and criteria to be addressed in such a feasibility study). At its July 2003 meeting, the Management Committee approved the Executive Committee's recommendations. The final report and appendices should be out by early September 2003.

- The Recovery Program, Bureau of Reclamation, and the Colorado Water Conservation Board (Board) completed negotiations in June 2003 and signed an agreement on June 24, 2003, to enter into an interim, long-term contract for the unsold portion of the regulatory capacity remaining in Ruedi Reservoir following Round II water sales. This Recovery Program action is a component of the reasonable and prudent alternative identified by the Service in the amended Ruedi Round II water sales Biological Opinion dated January 6, 1999. Pursuant to the Final Programmatic Biological Opinion for the Upper Colorado River, dated December 1999, the 21,650 af from Ruedi may be reduced by one-half when water users provide the other 10,825 af from other sources. The water users (Denver Water and Colorado River Water Conservation District) approved interim agreements with the Service and the Board in April 2000 to provide that 10,825 af. Thus, Ruedi water contracts between Reclamation and the Service were reduced by

10,825 af for endangered fish in 2000, 2001 and 2002 as provisions of the Colorado PBO were implemented.

The contract will run for 10 years, from 2003 through 2012. Reclamation has agreed to absorb the capital costs of the water provided pursuant to this agreement – \$735,000 per year plus interest – (see letter to the Recovery Program dated December 20, 2002). Pursuant to John Shields' letter of April 24, 2003, the Recovery Program will acknowledge that contribution by Reclamation (which is in addition to the other commitments that Reclamation has made) in its annual reports. The Recovery Program subsequently agreed to pay the annual O&M costs associated with providing this water, currently about \$62,000 annually.

- Due to continued dry conditions in 2003, a drought-management target flow of 250 cfs for the 15-Mile Reach was initially established by the Service, beginning July 23. As the summer progressed, stream flows held up better than expected and on August 6 the target was increased to 450 cfs. A total of 27,579 af of water was available for late-summer augmentation in 2003. This total included: 20,825 af from Ruedi, 2,966 af from Wolford, and 3,788 af from Williams Fork reservoirs. As of August 27, 2003, an HUP surplus was declared and water was made available for fish releases out of Green Mountain Reservoir to support target flows in the 15-Mile Reach.
- Manual operation of the Grand Valley Water Management (GVWM) canal checks enabled Grand Valley Project water managers to reduce direct river diversions and conserve up to 1,400 af per day during the 2002 irrigation season. Reclamation technicians have now completed individual check automation, and by the end of the 2003 irrigation season all the checks will be connected to a SCADA system that will allow them to operate automatically or manually by remote control. In average water years, the improved efficiency is expected to provide about 28,000 af of additional water for endangered fish. Construction on the Highline Lake pump station is expected to be completed by early summer of 2004. This will complete the last component of GVWM, which will allow optimum use of Grand Valley Project water.
- The Flaming Gorge EIS Interdisciplinary Team is preparing a draft EIS, which it expects to publish in October 2003. The comment period will end December 2003. The target date for publication of the final EIS is July 2004, and for the Record of Decision, August 2004.
- A Notice of Availability for a draft *Management Plan for Endangered Fishes in the Yampa River Basin* (Plan) was published in the *Federal Register* on July 30, 2003. The Plan also incorporates an environmental assessment (EA), for which public comments are sought. Comments will be accepted through August 31, after

which the Plan and EA will be finalized. The final Plan and EA are expected by the end of September, with a draft PBO by the end of October and final PBO by the end of November. A Cooperative Agreement to implement the Plan should be signed before the end of the calendar year.

The Plan addresses impacts of water depletions in the Yampa River Basin, while maintaining instream flows and other habitat components necessary to recover the endangered fishes. The Plan describes alternatives to augment base flows and contemplates enlarging Elkhead Reservoir for this purpose.

- Design and permitting for Elkhead Reservoir enlargement are on schedule, and the Colorado River Water Conservation District (River District) plans to award a construction contract next January. The River District contracted with URS to complete project plans and specifications. The River District is expected to submit a 404 permit application to the Corps of Engineers early in September. The Corps will process the application in 90–120 days, during which time an environmental assessment (EA) will be completed. Previously, Owen Ayres Associates and its subcontractor, Pioneer Environmental Services, had completed site-specific environmental studies for this purpose.
- The Biology Committee tentatively approved a report entitled *Flow Recommendations for the Duchesne River* pending incorporation and final review of technical comments submitted by the Committee.
- The report entitled *Flow Recommendations for the White River* has been on hold pending completion of the Duchesne River report. Significant peer review comments required that this report be revised and submitted for peer review again. A revised review schedule will be developed.
- The report entitled *Evaluation of Effects of Stage Fluctuations Induced by Hydropower Operations on Overwinter Survival of Young Colorado Pikeminnow* was submitted to the Coordinator on April 21, 2003, who returned the document to the authors on May 21 for revision. The revised report was resubmitted to the Coordinator on July 31 and is expected to be submitted to peer reviewers and the Biology Committee by mid-August for its consideration at its September meeting.
- The Recovery Program contracted Argonne National Laboratory (Argonne) to develop a strategic plan to prioritize and direct future habitat research and monitoring activities to direct future research toward meeting the recovery goals of the fishes. Argonne conducted two meetings of biologists and geomorphologists in December 2002 to assess the state of our knowledge, both in terms of physical processes and biological requirements, and to identify data gaps. Argonne submitted a draft strategic plan to the Recovery Program Director for review on March 31, 2003. The draft plan was sent out for Biology Committee and peer review on April 14, and peer review comments were provided to the Biology Committee on June 13. The Biology Committee discussed the report during its July 2003 meeting, requesting additional time to submit comments. Argonne provided its



responses to peer reviewer comments to the Biology Committee on July 18. Biology Committee comments were due to Argonne by August 8. In the meantime, the Program Director's staff is preparing recommendations for studies beginning in FY 04 to address the primary research needs identified in the Argonne report.

- From the Recovery Program's inception in 1988 through June 30, 2003, the Service has consulted on 150 projects with a potential to deplete a total of 1,718,890 af in the Upper Colorado River Basin, of which 1,495,167 af are historic depletions. Three of these "projects" are blanket consultations for depletions under 100 af, up to 7,500 af total. Thus far, these three consultations have covered 448 actual projects depleting a total of 6,579 af (4,690 af in Colorado, 1,050 in Utah, and 839 af in Wyoming). Another of these 150 "projects" is the 15-Mile Reach PBO which covers an average depletion of up to 1 million acre-feet per year of existing depletions (through September 30, 1995) and up to 120,000 acre-feet of new depletions (since September 30, 1995) in the Colorado River above the confluence with the Gunnison River. Thus far, the 15-Mile Reach PBO has covered 134 actual projects. In total, then, since January 1988, the Service has consulted on 728 projects depleting water from the upper Colorado River basin.

## II. Habitat Restoration

Goal: To provide or enhance habitat for the rare fishes through habitat development or management measures such as:

- fish passageways
- screens to prevent fish entrainment into diversion canals
- restoration of floodplain and instream habitats.

Status:

- The fish ladder at the Redlands Diversion Dam on the Gunnison River has been operational since June 1996. As of mid-August 2003, the ladder has been used by 53,000 native fishes (versus 7,600 nonnative fishes), including 60 Colorado pikeminnow, six previously-stocked razorback suckers, and one previously-stocked bonytail. Six of the Colorado pikeminnow have used the ladder twice; one has used it three times. Native fishes that were marked and released above the dam dispersed upstream, some as far as 57 river miles to the base of the Hartland Diversion Dam. A fish screen will be installed at Redlands during FY05 to prevent entrainment of endangered fishes into the diversion canal. Discussions are underway to conduct an intra-Service consultation to provide incidental take coverage for Redlands operations.
- A fish passage structure was constructed at the Grand Valley Irrigation Company Diversion Dam on the Colorado River in January 1998. Ten adult Colorado pikeminnow were captured above the GVIC dam between August 19 and

September 24, 1998. Providing fish passage at this structure, Price-Stubb, and the Grand Valley Project Diversion Dam will restore 56 miles of historically-occupied habitat for endangered fishes. A fish screen on the canal was completed in March 2002 and operated through early June when drought-year flows became too low to effectively operate the screen facility. Improvements to the fish screen are being made, and in FY04 a deflector wall will be constructed in the canal to correct flow distribution problems along the face of the fish screen.

- Construction to restore fish passage at the Price-Stubb Diversion Dam was tentatively scheduled to begin in the fall of 1998. However, complex issues (e.g., potential effects of passage restoration on railroad, highway, Reclamation's siphon, and Ute pumping; ownership of property and FERC license) have caused delays. Construction is now scheduled for the winter of 2004–2005. A fish screen will not be necessary because water has not been diverted at this site since 1919.
- Preconstruction activities are ongoing through FY 2003 to restore fish passage and construct a fish screen at the Grand Valley Project Diversion Dam. Construction is scheduled for FY04–05. The need for acceleration and deceleration lanes for site access from I-70 will increase costs by ~\$250K.
- Design options have been developed for a fish screen at the Tusher Wash Diversion canal on the Green River in Utah. Screen construction cannot begin until a water-rights dispute is settled; but settlement appears imminent. Construction has been postponed until FY07.
- Restoration of passage and installation of a fish screen at the Hartland Diversion Dam on the Gunnison River is on hold pending reassessment of the need for passage this far up the Gunnison River and assessment of the feasibility of warming releases from the Aspinall Unit. If passage and screen are deemed warranted, passage is tentatively scheduled for FY07 and screen for FY06.
- The Recovery Program sponsored a workshop in November 2001 to review the habitat restoration program. Subsequently, the Recovery Program contracted Richard A. Valdez and Associates to develop subbasin and site-specific floodplain management plans to provide clear objectives, costs, and measures of success. Drafts of these plans will be available by fall 2003. Adjunct to this effort, a razorback sucker habitat model to estimate the quantity of habitat needed for recovery was recently completed by Richard A. Valdez and Associates. This model has already proven valuable for assessing habitats, research, and management priorities.
- Floodplain habitat has been restored at five Bureau of Land Management sites on the Green River, three sites at Ouray National Wildlife Refuge, two sites on the

Colorado River near Grand Junction, and the Escalante State Wildlife Area on the Gunnison River. The Recovery Program has acquired 967.3 acres of floodplain/wetland habitat along the Green, Colorado, and Gunnison rivers.

- As of August 29, Reclamation Realty (on behalf of the Recovery Program) has a signed Contract and Grant of Easement from Thunder Ranch, LLC for the Thunder Ranch wetlands located 6 miles downstream from the Green River razorback spawning bar. As soon as it has been determined that pre-existing easements/encumbrances on the property will not be affected by Recovery Program construction and management activities, then the transaction will be finalized. Installation of manifolds and pipelines to divert selenium-laden waters to the river and breaching of levees is tentatively scheduled for FY 2004.
- Razorback sucker survival and growth in floodplain wetlands – Razorback sucker and bonytail larvae were stocked into the Stirrup wetland in April 2002, with nonnative fish species composition/abundance representative of a recently reset (dried up) and newly inundated wetland. By August 13, 2002, larval survival ranged from 0.4% to 1.9%, average length ranged from 2 inches to 3.7 inches. Research in this area of investigation is continuing in 2003.

### III. Nonnative Fishes and Sportfishing

Goal: Minimize the impacts of nonnative fishes and incidental take associated with sport fishing on the endangered fishes.

Status:

- New control efforts began in FY 03 to remove channel catfish and smallmouth bass from the Yampa and Duchesne rivers; and channel catfish from the Colorado, White, and Green rivers. FY 03 work follows a treatment/control research approach to evaluate effectiveness in depleting the target nonnative fishes. Evaluation of response of the native fish community to nonnative fish control activities will begin in FY 04.
- Efforts to remove northern pike from the Yampa River and translocate these fish to off-channel ponds to provide sportfishing opportunities continue to be successful. In 2002, 538 northern pike were removed from the Yampa, and most were transferred to nearby public fishing areas. Biologists also removed 42 northern pike from the Green River in Utah.
- In late November or early December, biologists will meet to discuss their research findings from 2003 nonnative fish management activities. At that time, the Recovery Program will determine what future directions these projects will take.

- As of April 2003, the Utah Division of Wildlife Resources, Colorado Division of Wildlife, and the Fish and Wildlife Service have removed more than 27,300 channel catfish; 23,800 nonnative centrarchids; and 319,500 nonnative cyprinids from rivers in the Upper Colorado River Basin.
- Construction of Elders Pond was completed on September 19, 2002. The pond was filled during spring 2003. Because of low flows and logistical constraints, only a few channel catfish from the White and Duchesne rivers were stocked into the pond during 2003.
- The Ute Indian Tribe, Uintah and Ouray Agency, has verbally agreed to the Nonnative Fish Stocking Procedures.

#### IV. Propagation Activities

- Goal:
- Produce a sufficient supply of hatchery-reared fish to support research and recovery activities.
  - Conserve the genetic diversity present in the wild.

Status:

- Table 2 identifies the species, numbers, and sizes of fish expected to be stocked during 2003 into various river reaches to meet requirements of the integrated stocking plan for the Recovery Program.
- The Recovery Program is considering moving to a new passive integrated transponder (PIT) tag with a lower frequency. This has been proposed for all fish stocked beginning in 2004. Advantages of the new tag include remote sensing antennae that can be used at narrow inlets to floodplains, which would accurately document use of floodplain areas by razorback sucker and bonytail. Disadvantages include new readers, which do not always pick up the presence of an old tag, requiring researchers to use both readers on captured fish.

Table 2.—Species, numbers, and sizes of fish already stocked or expected to be stocked during 2003 to meet the integrated stocking plan.

Species	River Section	Number Time (Hatchery)	Size (inches)
Bonytail	Green (Middle)	~12,000 Fall (Mumma) ~2,700 Summer–Fall (Wahweap)	> 8
	Green (Lower)	~5,300 Summer–Fall (Wahweap)	> 8
	Colorado (Colorado)	885 Spring (Mumma) ~12,000 Fall (Mumma)	> 8
	Colorado (Utah)	~2,700 Summer–Fall (Wahweap)	> 8

Razorback sucker	Green (Middle)	7,830 Spring (Ouray) ~1,900 Summer–Fall (Ouray)	~ 12
	Green (Lower)	~4,900 Fall (Ouray) ~4,900 Summer–Fall (Grand Junction)	> 12
	Colorado (Colorado)	~9,900 Summer–Fall (Grand Junction)	> 12
Colorado pikeminnow	Colorado (Colorado)	~2,250 Summer–Fall (Grand Junction)	> 6

## V. Research, Monitoring, and Data Management

**Goal:** To support recovery activity, monitor endangered fish status and trends, and maintain Recovery Program data archives.

**Status:**

- The Larval Fish Laboratory verified eight larval razorback sucker from samples collected in spring 2002 in the Gunnison River. Since razorback sucker have been extirpated from the Gunnison, and stocking efforts there have occurred since 1996, these larval razorback sucker are the product of hatchery-reared fish. This study was expanded in 2003 to include locating spawning sites.
- Mark-recapture population estimates are underway to determine progress toward achieving the recovery goals. This past spring was the last in a 4-year sampling effort to obtain population estimates for Colorado pikeminnow in the middle Green River and an expanded 3-year sampling effort for Colorado pikeminnow in the lower Green River. A draft report on these annual population estimates is due in March 2004. A 3-year sampling effort for annual Colorado pikeminnow population estimates in the Colorado River was initiated this past spring.
- Expanded sampling efforts for humpback chub population estimates are to begin this fall in Yampa, Westwater, and Desolation/Gray canyons. The Black Rocks humpback chub population also is being sampled. The Cataract Canyon humpback chub population estimate may again have to be postponed if sufficient flows are not available.

## VI. Public Involvement, Information, and Education

**Goal:** To promote public understanding, appreciation, and support for efforts to recover the endangered fish.

**Status:**

- News Media: A proactive effort to promote this year’s nonnative fish management work and public meetings resulted in good news media coverage. This effort will be ongoing. Other news media stories have addressed students releasing razorback

sucker into the river after raising them in classrooms and the Draft Environmental Assessment for the Yampa River Management. News clips are distributed routinely to the I&E Committee, interested Management Committee members, and anyone else upon request.

- Implementation of a comprehensive communications strategy for expanded nonnative fish management actions is ongoing and requires active participation and cooperation by the States of Colorado and Utah, the Fish and Wildlife Service and Colorado State University. Other program partners should also be familiar with this effort and provide support and assistance as appropriate.
- As part of this communications strategy, public meetings were held in April in Grand Junction, Steamboat Springs and Craig, Colorado, and in Vernal and Green River, Utah. Fact sheets and questions/answers were developed and distributed and are available on the Recovery Program's public website. Communication with target audiences is/will be ongoing as the nonnative fish management project continues.
- Public meetings were held in August in Baggs, Wyoming, and in Steamboat Springs and Craig, Colorado, to obtain public comment as part of NEPA on the Draft Environmental Assessment for the Yampa River Management Plan. Questions/answers were developed and distributed and are available on the Recovery Program's public website.
- Interpretive Exhibits: Interpretive Designs of Durango, Colorado, was selected to produce six interpretive signs for the Colorado Riverfront Trail in Grand Junction. The signs should be completed and installed by year's end. A memorandum of understanding is being prepared between the Recovery Program and the City of Grand Junction to address maintenance of the site.
- The Recovery Program is working with Dinosaur National Monument to establish an aquarium at the quarry that will feature razorback sucker and bonytail. The Colorado Division of Wildlife included bonytail and razorback sucker in its exhibit at the Colorado State Fair.
- The Swimming Upstream newsletter is slated for completion and distribution in early November.
- The Recovery Program will exhibit at the joint meeting of the Wyoming Water Association's and the Upper Missouri River Water Association's annual meeting October 22-23, in Casper and at the Colorado River Water Users Association's annual meeting December 10-13, in Las Vegas.

## VII. Recovery Program Management

Goal: To ensure effective implementation and coordination of the Recovery Program.

Status:

- Dan Luecke is once again representing the environmental groups on the Implementation Committee. Dan is a consultant for Western Resource Advocates (formerly the Land and Water Fund of the Rockies). The Nature Conservancy and the Land and Water Fund submitted resolutions of support for the Recovery Program in March 2003.
- The National Fish and Wildlife Foundation closed its Rocky Mountain office and transferred administration of its Colorado River program work to its Southwest Regional Office in San Francisco.
- The Recovery Program's electronic listserver has 191 subscribers and is one of two key components of the Recovery Program's electronic communication. All Program participants are strongly urged to subscribe. The Recovery Program participants' web site (<http://www.r6.fws.gov/crrip/>) has detailed Recovery Program information such as upcoming meeting dates and times; meeting agendas and summaries; a bibliography of the Recovery Program library; the RIPRAP; and numerous other Recovery Program documents. The site is regularly updated and expanded.
- Development of the Recovery Program's FY 2004/2005 work plan has been underway since January. The draft plan will be considered for approval by the Implementation Committee on September 4, 2003. A significant change that was made to the Recovery Program's work planning and reporting schedule is submission of annual reports by mid-November (previously annual reports were due in early to mid-December).

# ATTACHMENT

## SUMMARY OF RECOVERY GOALS FOR COLORADO PIKEMINNOW, HUMPBACK CHUB, RAZORBACK SUCKER, AND BONYTAIL

<b>COLORADO PIKEMINNOW</b> (Green River, Upper Colorado River, and San Juan River Subbasins)	
<b>DOWNLISTING</b>	<b>DELISTING</b>
<p><b>DEMOGRAPHIC CRITERIA</b> (*self-sustaining with natural recruitment)</p> <p>Over a 5-year monitoring period:</p> <ul style="list-style-type: none"> <li>• Maintain the upper basin metapopulation</li> <li>• Maintain populations in Green and upper Colorado River subbasins (“no net loss”)</li> <li>• Green River subbasin population &gt; 2,600 adults*</li> <li>• Upper Colorado River subbasin population &gt; 700 adults*</li> <li>• Establish 1,000 age-5+ subadults in San Juan River</li> </ul>	<p><b>DEMOGRAPHIC CRITERIA</b> (*self-sustaining with natural recruitment)</p> <p>For 7 years beyond downlisting:</p> <ul style="list-style-type: none"> <li>• Maintain the upper basin metapopulation</li> <li>• Maintain populations in Green and upper Colorado River subbasins (“no net loss”)</li> <li>• Green River subbasin population &gt; 2,600 adults*</li> <li>• Upper Colorado River subbasin population &gt; 1,000 adults* <b>OR</b> Upper Colorado River subbasin population &gt; 700 adults* and San Juan River population &gt; 800 adults*</li> </ul>
<p><b>RECOVERY FACTOR CRITERIA</b></p> <ol style="list-style-type: none"> <li>1. Beneficial flow regimes identified, implemented, evaluated, and revised</li> <li>2. Passage over Redlands and Grand Valley diversions continued</li> <li>3. Modification of Price-Stubb and Government Highline dams to allow passage initiated</li> <li>4. Barriers on San Juan River identified, evaluated, and modifications to allow passage initiated</li> <li>5. Investigations initiated on modifying Aspinall Unit releases to increase water temperatures</li> <li>6. Measures identified to minimize entrainment of subadults and adults at diversion structures</li> <li>7. Overutilization reevaluated and, if necessary, actions identified to ensure adequate protection</li> <li>8. Effects of diseases and parasites reevaluated and, if necessary, actions identified to ensure adequate protection</li> <li>9. Nonnative fish stocking procedures developed, implemented, evaluated, and revised</li> <li>10. Control programs for small-bodied nonnative fishes in nursery backwaters developed and implemented to identify necessary control levels</li> <li>11. Channel catfish control programs developed and implemented to identify necessary control levels</li> <li>12. Northern pike control programs developed and implemented to identify necessary control levels</li> <li>13. Mechanisms determined for legal protection of habitat</li> <li>14. Elements of conservation plans identified</li> <li>15. Hazardous-materials spills emergency-response plans reviewed and modified as necessary</li> <li>16. Locations of petroleum pipelines in 100-year floodplain of critical habitat identified and need for emergency shut-off valves assessed</li> <li>17. Actions identified for remediation of groundwater contamination at Atlas Mills tailings pile</li> <li>18. Effects of selenium reevaluated and, if necessary, actions identified to reduce deleterious levels</li> </ol>	<p><b>RECOVERY FACTOR CRITERIA</b></p> <ol style="list-style-type: none"> <li>1. Necessary flow regimes provided</li> <li>2. Passage over Redlands and Grand Valley diversions continued</li> <li>3. Modification of Price-Stubb and Government Highline dams to allow passage completed</li> <li>4. Barriers on San Juan River modified to allow passage</li> <li>5. Aspinall Unit releases modified, if determined feasible and necessary</li> <li>6. Devices installed and/or measures implemented at diversion structures to minimize entrainment of subadults and adults</li> <li>7. Adequate protection from overutilization attained</li> <li>8. Adequate protection from diseases and parasites attained</li> <li>9. Nonnative fish stocking procedures finalized and implemented</li> <li>10. Identified levels of nonnative fish control in nursery backwaters attained</li> <li>11. Identified levels of channel catfish control attained</li> <li>12. Identified levels of northern pike control attained</li> <li>13. Necessary habitat legally protected in perpetuity</li> <li>14. Conservation plans developed and implemented, and necessary agreements executed</li> <li>15. Emergency-response plans for hazardous-materials spills implemented</li> <li>16. Emergency shut-off valves installed on problematic petroleum pipelines</li> <li>17. Groundwater contamination remediated at Atlas Mills tailings pile</li> <li>18. Deleterious levels of selenium contamination reduced</li> </ol>



**HUMPBACK CHUB (Upper Basin and Lower Basin Recovery Units)**

**DOWNLISTING**

**DELISTING**

**DEMOGRAPHIC CRITERIA (\*self-sustaining with natural recruitment)**

Over a 5-year monitoring period:

- Maintain the six populations (“no net loss”\*)
- One core population in upper basin > 2,100 adults\*
- One core population in lower basin > 2,100 adults\*

**DEMOGRAPHIC CRITERIA (\*self-sustaining with natural recruitment)**

For 3 years beyond downlisting:

- Maintain the six populations (“no net loss”\*)
- Two core population in upper basin; each > 2,100 adults\*
- One core population in lower basin > 2,100 adults\*

**RECOVERY FACTOR CRITERIA**

**Upper Basin Recovery Unit**

1. Beneficial flow regimes identified, implemented, evaluated, and revised
2. Overutilization reevaluated and, if necessary, actions identified to ensure adequate protection
3. Effects of diseases and parasites reevaluated and, if necessary, actions identified to ensure adequate protection
4. Nonnative fish stocking procedures developed, implemented, evaluated, and revised
5. Channel catfish control programs developed and implemented to identify necessary control levels
6. Mechanisms determined for legal protection of habitat
7. Elements of conservation plans identified
8. Hazardous-materials spills emergency-response plans reviewed and modified as necessary
9. Measures identified to minimize risk of hazardous-materials spills in Black Rocks and Westwater Canyon from transport of materials along adjacent railway
10. Locations of petroleum pipelines in 100-year floodplain of critical habitat identified and need for emergency shut-off valves assessed

**Lower Basin Recovery Unit**

1. Life stages and habitats in mainstem identified and relationships between mainstem and Little Colorado River (LCR) determined
2. Beneficial operations of Glen Canyon Dam and flow regimes in LCR identified, implemented, evaluated, and revised
3. Effects and feasibility of TCD for Glen Canyon Dam determined
4. Overutilization reevaluated and, if necessary, actions identified to ensure adequate protection
5. Asian tapeworm control program developed and implemented in LCR to identify necessary control levels
6. Nonnative fish stocking procedures developed, implemented, evaluated, and revised for mainstem and tributaries in Grand Canyon
7. Rainbow trout, channel catfish, black bullhead, and common carp control programs developed and implemented to identify necessary control levels in LCR
8. Brown trout and rainbow trout control programs developed and implemented to identify necessary control levels in mainstem in Grand Canyon
9. Mechanisms determined for legal protection of habitat in mainstem and LCR
10. Elements of conservation plans identified
11. Hazardous-materials spills emergency-response plans reviewed and modified as necessary
12. Measures identified to minimize risk of hazardous-materials spills from transport of materials along U.S. Highway 89 and near the two Cameron bridges spanning the LCR

**RECOVERY FACTOR CRITERIA**

**Upper Basin Recovery Unit**

1. Necessary flow regimes provided
2. Adequate protection from overutilization attained
3. Adequate protection from diseases and parasites attained
4. Nonnative fish stocking procedures finalized and implemented
5. Identified levels of channel catfish control attained
6. Necessary habitat legally protected in perpetuity
7. Conservation plans developed and implemented, and necessary agreements executed
8. Flow regimes provided that reflect inter-annual variability in hydrologic conditions to maintain natural proportions of *Gila* species and intergrades
9. Emergency-response plans for hazardous-materials spills implemented
10. Measures finalized and implemented to minimize risk of hazardous-materials spills in Black Rocks and Westwater Canyon from transport of materials along adjacent railway
11. Emergency shut-off valves installed on problematic petroleum pipelines

**Lower Basin Recovery Unit**

1. Appropriate habitats in mainstem provided
2. Necessary flow regimes provided in mainstem and LCR
3. TCD for Glen Canyon Dam implemented, if determined feasible and necessary
4. Adequate protection from overutilization attained
5. Identified levels of Asian tapeworm control in LCR attained
6. Nonnative fish stocking procedures finalized and implemented
7. Identified levels of rainbow trout, channel catfish, black bullhead, and common carp control attained in LCR
8. Identified levels of brown trout and rainbow trout control attained in mainstem in Grand Canyon
9. Necessary habitat legally protected in perpetuity
10. Conservation plans developed and implemented, and necessary agreements executed
11. Emergency-response plans for hazardous-materials spills implemented
12. Measures finalized and implemented to minimize risk of hazardous-materials spills from transport of materials along U.S. Highway 89 and near the two Cameron bridges spanning the LCR

**RAZORBACK SUCKER** (Upper Basin and Lower Basin Recovery Units)

**DOWNLISTING**

**DELISTING**

**DEMOGRAPHIC CRITERIA** (\*self-sustaining with recruitment)

Over a 5-year monitoring period:

- Maintain reestablished populations in Green River subbasin and **EITHER** in upper Colorado River subbasin or in San Juan River subbasin, each > 5,800 adults\*
- Maintain established genetic refuge of adults in Lake Mohave
- Maintain two reestablished populations in lower basin, each > 5,800 adults\*

**DEMOGRAPHIC CRITERIA** (\*self-sustaining with recruitment)

For 3 years beyond downlisting:

- Maintain populations in Green River subbasin and **EITHER** in upper Colorado River subbasin or in San Juan River subbasin, each > 5,800 adults\*
- Maintain genetic refuge of adults in Lake Mohave
- Maintain two populations in lower basin, each > 5,800 adults\*

**RECOVERY FACTOR CRITERIA****Upper Basin Recovery Unit**

1. Beneficial flow regimes identified, implemented, evaluated, and revised
2. Passage over Redlands and Grand Valley diversions continued
3. Modification of Price-Stubb and Government Highline dams to allow passage initiated
4. Barriers on San Juan River identified, evaluated, and modifications to allow passage initiated
5. Investigations initiated on modifying Aspinall Unit releases to increase water temperatures
6. Measures identified to minimize entrainment of subadults and adults at diversion structures
7. Appropriate bottomland sites identified and opportunities for land acquisition assessed
8. Overutilization reevaluated and, if necessary, actions identified to ensure adequate protection
9. Effects of diseases and parasites reevaluated and, if necessary, actions identified to ensure adequate protection
10. Nonnative fish stocking procedures developed, implemented, evaluated, and revised
11. Control programs for small-bodied nonnative fishes in backwater and flooded off-channel nursery habitats developed and implemented to identify necessary control levels
12. Channel catfish control programs developed and implemented to identify necessary control levels
13. Northern pike control programs developed and implemented to identify necessary control levels
14. Mechanisms determined for legal protection of habitat
15. Elements of conservation plans identified
16. Levels of hybridization with white sucker reevaluated, effects assessed, and, if necessary, white sucker control programs developed and implemented to identify necessary control levels
17. Hazardous-materials spills emergency-response plans reviewed and modified as necessary
18. Locations of petroleum pipelines in 100-year floodplain of critical habitat identified and need for emergency shut-off valves assessed
19. Actions identified for remediation of groundwater contamination at Atlas Mills tailings pile
20. Effects of selenium reevaluated and, if necessary, actions identified to reduce deleterious levels

**Lower Basin Recovery Unit**

1. Beneficial flow regimes identified, implemented, evaluated, and revised
2. Measures identified to minimize entrainment of subadults and adults at diversion and/or out-take structures
3. Appropriate riverside sites identified and opportunities for land acquisition assessed
4. Overutilization reevaluated and, if necessary, actions identified to ensure adequate protection
5. Effects of diseases and parasites reevaluated and, if necessary, actions identified to ensure adequate protection
6. Nonnative fish stocking procedures developed, implemented, evaluated, and revised
7. Control programs for nonnative fishes in the mainstem, floodplain, and tributaries developed and implemented to identify necessary control levels
8. Mechanisms determined for legal protection of habitat
9. Elements of conservation plans identified

**RECOVERY FACTOR CRITERIA****Upper Basin Recovery Unit**

1. Necessary flow regimes provided
2. Passage over Redlands and Grand Valley diversions continued
3. Modification of Price-Stubb and Government Highline dams to allow passage completed
4. Barriers on San Juan River modified to allow passage
5. Aspinall Unit releases modified, if determined feasible and necessary
6. Devices installed and/or measures implemented at diversion structures to minimize entrainment of subadults and adults
7. Bottomland sites acquired
8. Adequate protection from overutilization attained
9. Adequate protection from diseases and parasites attained
10. Nonnative fish stocking procedures finalized and implemented
11. Identified levels of nonnative fish control in backwaters and flooded off-channel nursery habitats attained
12. Identified levels of channel catfish control attained
13. Identified levels of northern pike control attained
14. Necessary habitat legally protected in perpetuity
15. Conservation plans developed and implemented, and necessary agreements executed
16. Identified levels of white sucker control attained
17. Emergency-response plans for hazardous-materials spills implemented
18. Emergency shut-off valves installed on problematic petroleum pipelines
19. Groundwater contamination remediated at Atlas Mills tailings pile
20. Deleterious levels of selenium contamination reduced

**Lower Basin Recovery Unit**

1. Necessary flow regimes provided
2. Devices installed and/or measures implemented at diversion and/or out-take structures to minimize entrainment of subadults and adults
3. Riverside sites acquired
4. Adequate protection from overutilization attained
5. Adequate protection from diseases and parasites attained
6. Nonnative fish stocking procedures finalized and implemented
7. Identified levels of nonnative fish control in the mainstem, floodplain, and tributaries attained
8. Necessary habitat legally protected in perpetuity
9. Conservation plans developed and implemented, and necessary agreements executed

**BONYTAIL** (Upper Basin and Lower Basin Recovery Units)

**DOWNLISTING**

**DELISTING**

**DEMOGRAPHIC CRITERIA** (\*self-sustaining with recruitment)

Over a 5-year monitoring period:

- Maintain reestablished populations in Green River and upper Colorado River subbasins, each > 4,400 adults\*
- Maintain established genetic refuge of adults in lower basin
- Maintain two reestablished populations in lower basin, each > 4,400 adults\*

**DEMOGRAPHIC CRITERIA** (\*self-sustaining with recruitment)

For 3 years beyond downlisting:

- Maintain populations in Green River and upper Colorado River subbasins, each > 4,400 adults\*
- Maintain genetic refuge of adults in lower basin
- Maintain two populations in lower basin, each > 4,400 adults\*

**RECOVERY FACTOR CRITERIA****Upper Basin Recovery Unit**

1. Beneficial flow regimes identified, implemented, evaluated, and revised
2. Passage over Redlands and Grand Valley diversions continued
3. Modification of Price-Stubb and Government Highline dams to allow passage initiated
4. Investigations initiated on modifying Aspinall Unit releases to increase water temperatures
5. Measures identified to minimize entrainment of subadults and adults at diversion structures
6. Necessary habitats identified
7. Overutilization reevaluated and, if necessary, actions identified to ensure adequate protection
8. Effects of diseases and parasites reevaluated and, if necessary, actions identified to ensure adequate protection
9. Nonnative fish stocking procedures developed, implemented, evaluated, and revised
10. Control programs for small-bodied nonnative fishes in nursery habitats developed and implemented to identify necessary control levels
11. Channel catfish control programs developed and implemented to identify necessary control levels
12. Northern pike control programs developed and implemented to identify necessary control levels
13. Mechanisms determined for legal protection of habitat
14. Elements of conservation plans identified
15. Risk of hybridization evaluated and, if necessary, actions identified to minimize risk
16. Hazardous-materials spills emergency-response plans reviewed and modified as necessary
17. Locations of petroleum pipelines in 100-year floodplain of critical habitat identified and need for emergency shut-off valves assessed
18. Actions identified for remediation of groundwater contamination at Atlas Mills tailings pile

**Lower Basin Recovery Unit**

1. Beneficial flow regimes identified, implemented, evaluated, and revised
2. Measures identified to minimize entrainment of subadults and adults at diversion and/or out-take structures
3. Necessary habitats identified
4. Overutilization reevaluated and, if necessary, actions identified to ensure adequate protection
5. Effects of diseases and parasites reevaluated and, if necessary, actions identified to ensure adequate protection
6. Nonnative fish stocking procedures developed, implemented, evaluated, and revised
7. Control programs for nonnative fishes in the mainstem, floodplain, and tributaries developed and implemented to identify necessary control levels
8. Mechanisms determined for legal protection of habitat
9. Elements of conservation plans identified
10. Risk of hybridization evaluated and, if necessary, actions identified to minimize risk

**RECOVERY FACTOR CRITERIA****Upper Basin Recovery Unit**

1. Necessary flow regimes provided
2. Passage over Redlands and Grand Valley diversions continued
3. Modification of Price-Stubb and Government Highline dams to allow passage completed
4. Aspinall Unit releases modified, if determined feasible and necessary
5. Devices installed and/or measures implemented at diversion structures to minimize entrainment of subadults and adults
6. Necessary habitats provided
7. Adequate protection from overutilization attained
8. Adequate protection from diseases and parasites attained
9. Nonnative fish stocking procedures finalized and implemented
10. Identified levels of nonnative fish control in nursery habitats attained
11. Identified levels of channel catfish control attained
12. Identified levels of northern pike control attained
13. Necessary habitat legally protected in perpetuity
14. Conservation plans developed and implemented, and necessary agreements executed
15. Adequate protection from hybridization attained
16. Emergency-response plans for hazardous-materials spills implemented
17. Emergency shut-off valves installed on problematic petroleum pipelines
18. Groundwater contamination remediated at Atlas Mills tailings pile

**Lower Basin Recovery Unit**

1. Necessary flow regimes provided
2. Devices installed and/or measures implemented at diversion and/or out-take structures to minimize entrainment of subadults and adults
3. Necessary habitats provided
4. Adequate protection from overutilization attained
5. Adequate protection from diseases and parasites attained
6. Nonnative fish stocking procedures finalized and implemented
7. Identified levels of nonnative fish control in the mainstem, floodplain, and tributaries attained
8. Necessary habitat legally protected in perpetuity
9. Conservation plans developed and implemented, and necessary agreements executed
10. Adequate protection from hybridization attained