Middle Rio Grande Endangered Species Collaborative Program
Annual Report
Prepared by the Program Management Team

Contents

Executive Summary

The Middle Rio Grande Endangered Species Collaborative Program (Collaborative Program) brings diverse groups together to address serious environmental issues along the Middle Rio Grande (MRG). These groups include federal, state, and local governmental entities, Indian Tribes and Pueblos, and non-governmental organizations. Through this collaborative effort, these entities simultaneously protect and improve the status of listed endangered species along the MRG, protect existing and future regional water uses, and comply with state and federal laws, including Rio Grande Compact delivery obligations.

The Collaborative Program was established in April 2002 under a Memorandum of Understanding (MOU), and continued through a Memorandum of Agreement (MOA) signed on May 15, 2008. The intent of Collaborative Program participants is two-fold:

- First, to prevent extinction, preserve reproductive integrity, improve habitat, support scientific analysis, and promote recovery of the listed species within the Collaborative Program area in a manner that benefits the ecological integrity, where feasible, of the MRG riverine and riparian ecosystem; and,

- Second, to exercise creative and flexible options so that existing water uses continue and future water development proceeds in compliance with applicable federal and state laws.

As of July 7, 2010, the signatories to the Collaborative Program MOA include:

- Bureau of Reclamation (Reclamation)
- U.S. Fish and Wildlife Service (Service)
- U.S. Army Corps of Engineers (USACE)
- New Mexico Interstate Stream Commission (NMISC)
- New Mexico Department of Game and Fish (NMGF)
- New Mexico Attorney General's Office (NMAGO)
- Santo Domingo Tribe
- Pueblo of Sandia
- Pueblo of Isleta
- Pueblo of Santa Ana
- Middle Rio Grande Conservancy District (MRGCD)
- City of Albuquerque (COA)
- Albuquerque Bernalillo County Water Utility Authority (ABCWUA)
- Assessment Payers Association of the Middle Rio Grande Conservancy District (APA)
- New Mexico Department of Agriculture (NMDA)
- University of New Mexico (UNM)

This report describes the Collaborative Program, summarizes the Collaborative Program's expenditures in Fiscal Year (FY) 2012 and highlights accomplishments using funds allocated during FY 2012.

Collaborative Program Contacts

Program Management

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Yvette McKenna served as the Program Manager for the Collaborative Program since 2009. Yvette has 18 years of federal government experience including positions with the U.S. Environmental Protection Agency, the Department of Defense, the International Boundary and Water Commission, and Western Area Power Administration. Yvette has a Bachelor of Science degree in Microbiology from New Mexico State University.

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Alighieri (Ali) Saenz is the Collaborative Program Assistant and joined Reclamation in March 2011 from the City of Albuquerque's (COA) Economic Development Department. Formerly, Ali served for 8 years in the United States Army Reserve as a specialist during Operation Enduring Freedom, which included a tour in Kandahar, Afghanistan. Ali has completed her Bachelor's degree in Business Administration and Management.

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Program Management Team

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Michelle Mann is a Biologist with the U.S. Army Corps of Engineers (USACE), and has been involved with the Program Management Team (PMT) since 2011. Michelle started working with USACE in 2008 as a Stay-in-School for Civil Project Management. In 2011, she moved to the Planning Department to work specifically with the Collaborative Program. Michelle received her Bachelor's degree in Biology with a minor in Spanish through the School of Arts and Sciences at the University of New Mexico (UNM) in December 2011, and is currently working toward a Master's degree in Public Administration.

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Stacey Stanford is a Biologist with the U.S. Fish and Wildlife Service's (Service) New Mexico Ecological Services Field Office (NMESFO). She began her career with the Service over 10 years ago as a Wildlife Inspector (Law Enforcement) at the port of New York, and she has been in her current position with the NMESFO since February 2010. Prior to her employment with the Service, Stacey worked for the National Park Service as a Biological Science Technician at the Fire Island National Seashore. Stacey has a Bachelor's degree in Biology from the University of Richmond and a Master's degree in Ecology from Fordham University.

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Introduction

The Collaborative Program, consisting of governmental entities, Indian Tribes and Pueblos, and non-governmental organizations, focuses on improving the status of the listed endangered species in the Middle Rio Grande (MRG) region. These species include the Rio Grande silvery minnow (Hybognathus amarus) (RGSM) and the Southwestern willow flycatcher (Empidonax traillii extimus) (SWFL). The MRG encompasses an area that includes the headwaters of the Rio Chama watershed, and the Rio Grande and all of its tributaries from the Colorado/New Mexico state line downstream to the headwaters of Elephant Butte Reservoir (Figure 1.1).

The Collaborative Program receives funding through Congressional appropriations to implement projects designed to benefit the federally listed endangered RGSM and the SWFL. The Collaborative Program implements activities required by the 2003 Biological Opinion (BiOp) issued by the U.S. Fish and Wildlife Service (Service) titled, "Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, Albuquerque, New Mexico" (Service 2003). The BiOp, as amended, provides requirements for alleviating jeopardy to listed species and adverse modification of designated critical habitat. The BiOp is a product of Endangered Species Act (ESA) Section 7 consultation. When its requirements are implemented, it serves as a tool to conserve listed species, assist with species recovery, and help protect critical habitat. Compliance with the 2003 BiOp provides ESA coverage for the two action agencies, the Bureau of Reclamation (Reclamation) and the U.S. Army Corps of Engineers (USACE) to carry out specific actions as described, and broad coverage for participating non-federal entities.

To help identify and guide species' recovery needs, Section 4(f) of the ESA directs the Secretary of the Interior to develop and implement recovery plans for listed species or populations. Recovery plans developed by the Service for the RGSM and SWFL include: 1) a description of management actions necessary to conserve the species or population; 2) objective, measurable criteria that, when met, will allow the species or population to be removed from the List of Endangered and Threatened Wildlife; and, 3) estimates of the time and funding needed to achieve the plan's goals and intermediate steps. Recovery recommendations identified in these plans are advisories aimed at lessening or alleviating the threats to the species and ensuring self-sustaining populations in the wild.

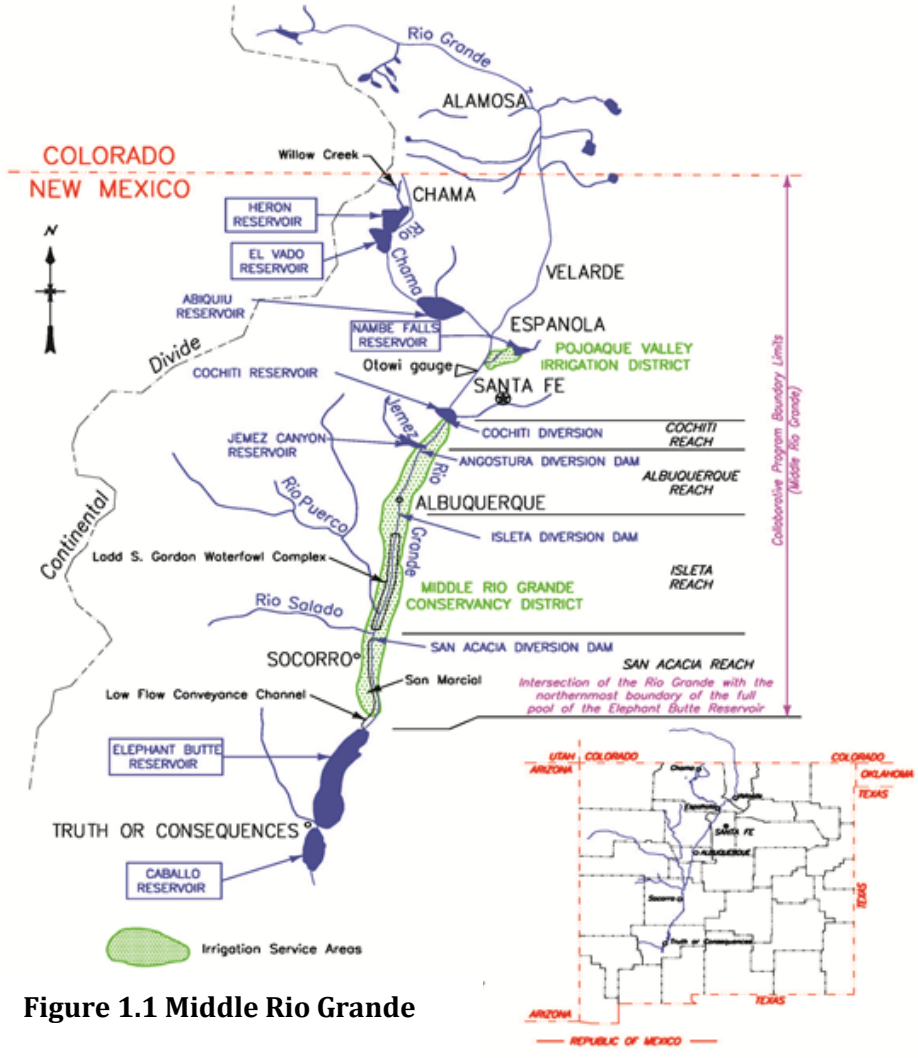

Figure 1.1 Middle Rio Grande

As defined in recovery plans for the RGSM and SWFL (Service 2010 and 2002, respectively), species recovery criteria aim to support the goals of the ESA and provide a measurable, supportable basis for determination of ESA compliance by the Service. The general Collaborative Program goals consistent with these recovery plan recommendations are:

- Alleviate jeopardy to the listed species within the scope of the Collaborative Program;

- Conserve and contribute to the recovery of the listed species:
  - o Stabilize existing populations; and,
  - o Develop self-sustaining populations.

- Protect existing and future water uses; and,

- Provide public outreach and education to communities within the scope of the Collaborative Program.

In November 2006, the Collaborative Program adopted a Long Term Plan (LTP) (MRGESCP 2006) with the following objectives:

- To serve as a road map for implementing activities within the scope of the Collaborative Program;

- To provide accountability through measurable objectives and an annual Collaborative Program assessment process; and,

- To help integrate federal and non-federal budget processes for providing funding for future activities.

In August of 2009, the Executive Committee (EC) of the Collaborative Program decided to try to move beyond "alleviating jeopardy" and transition into a recovery program. One of the first tasks was to begin drafting a new LTP to include activities that are linked to the RGSM and SWFL recovery plans and that are within the scope of the Collaborative Program. In the new draft LTP, the Collaborative Program's activities and projects will be organized by LTP elements, linking specific efforts to recommended recovery activities.

The following sections describe the Collaborative Program associated responsibilities for species recovery.

1.1. Collaborative Program Governance

Reclamation is the lead agency for ensuring that Collaborative Program activities comply with federal and state environmental laws, improve the status of the species, and attain and maintain ESA compliance. This responsibility includes compliance for existing, ongoing, and future activities associated with the Collaborative Program.

The Collaborative Program's By-Laws, adopted in October 2006, describe the governance structure, decision-making processes, and roles and responsibilities. The Collaborative Program By-Laws were amended three times (July 2008, January 2009, September 2009) to update or clarify roles, responsibilities, and/or protocol. Documents related to governance, by-laws, authorities, charters, and code-of-conduct are maintained on the Collaborative Program's website at http://www.middleriogrande.com.

1.2 Collaborative Program Organization

The organizational structure of the Collaborative Program consists of: the EC, the Coordination Committee (CC), technical work groups (there is currently a combination of 7 standing and ad hoc work groups), and the Program Management Team (PMT). This section provides general information about these groups; more specific information, including work group documents, is available on the Collaborative Program website.

Executive Committee

The EC is the governing body of the Collaborative Program.

The EC is comprised of representatives of the signatories listed in the Executive Summary of this report. The EC provides policy, budget oversight, and decision-making on all issues, unless specifically delegated to the PMT, CC, or work groups.

The EC is responsible for:

- Setting Collaborative Program priorities;

- Providing direction, assigning tasks to, and overseeing the work of the PMT, CC, and work groups;

• Ensuring development and implementation of the LTP to achieve the purposes of the Collaborative Program;

• Coordinating Collaborative Program activities with other federal and non-federal activities in the Collaborative Program area to achieve the greatest effect and limit unnecessary duplication of other efforts;

• Authorizing work groups;

• Developing multi-year budget recommendations to USACE, Reclamation, Service, other federal agencies, Tribes and Pueblos, and non-federal entities;

• Reviewing and approving annual reports and work plans, budgets, and policy or position papers on behalf of the Collaborative Program;

• Establishing operating procedures for the Collaborative Program;

• Representing the Collaborative Program to executive agencies, legislative bodies, and other third parties;

• Monitoring progress in achieving Collaborative Program goals;

• Ensuring implementation of a quality assurance/quality control program;

• Coordinating requests for funding and resources to Congress, the New Mexico State Legislature, and other sources;

• Ensuring sound financial management of Collaborative Program resources and timely reporting of the financial status of the Collaborative Program;

• Ensuring coordination among participants in carrying out Collaborative Program actions and policies;

• Providing periodic reports to Congress, the New Mexico State Legislature, interest groups, and the public regarding the Collaborative Program; and,

• Conducting other activities necessary or advisable to achieving the goals of the Collaborative Program.

Coordination Committee

Each member of the EC appoints one member to the CC and may appoint one or more alternate members. The CC was established for the purpose of identifying concerns associated with Collaborative Program activities, working to resolve those concerns, and developing consensus recommendations to and information for the EC. More specifically, the CC is responsible for:

• Carrying out the directives of the EC;

• Reviewing and providing comments and recommendations on the formation of work groups, the LTP, annual reports, work plans, budgets, operating procedures, congressional reports, work group deliverables, and other documents prior to submittal to the EC by the PMT;

• Working to achieve consensus recommendations for the EC on unresolved issues;

• Consulting regularly with EC representatives on issues of concern to ensure that recommendations reflect the viewpoints of organizations participating in the EC and of EC members; and,

• Ensuring that EC members are informed on matters coming before the EC.

Work Groups

The EC establishes work groups, as needed, to provide assistance and expertise to address specific Collaborative Program tasks. Members of a work group may consist of professionals, signatories, contractors, and other parties who have expertise related to the assignment given to the work group. Work groups provide technical assistance, expertise, leadership, technical review, and coordination to address specific tasks to accomplish the goals of the Collaborative Program, and primarily for implementation of the LTP. Work groups meet regularly, providing a forum for discussing Collaborative Program-related topics and contributing to consistency in technical planning efforts over the duration of the Collaborative Program.

Habitat Restoration Work Group

The Habitat Restoration Work Group (HRW) helps to restore habitat in the MRG to contribute to accomplishing BiOp Reasonable and Prudent Alternative (RPA) elements R and S for the benefit of the listed species. Some of the key HRW objectives include:

• Coordination of long-term, MRG-wide, habitat restoration (HR) plans that actively integrate hydrology, river function, and riparian communities, resulting in improved ecological conditions and habitats for endangered species that support the BiOp;

• Successful integration of HRW activities with other MRG projects, including other Collaborative Program work groups and restoration efforts outside of the Collaborative Program;

• A regular forum for meeting and discussion of Collaborative Program-related HR topics;

• Consistency in technical planning efforts, based on sound science, over the duration of the Collaborative Program;

• Technical assistance to others wanting to implement HR projects in the MRG; and,

• A scientific framework for monitoring and assessing restoration projects.

Public Information Outreach Work Group

The Public Information Outreach Work Group (PIO) assists the EC in educating and informing the general public, stakeholders, and state and federal legislators about Collaborative Program activities and accomplishments. These information and outreach efforts supported:

1) Requests for long-term non-federal cost share funding;

2) Understanding by the general public regarding the potential role of the Collaborative Program in MRG water management and endangered species recovery issues; and,

3) increased awareness by the general public and decision-makers regarding the collaborative problem-
solving approach and funding requirements of the Collaborative Program. Some of the key PIO objectives are to:

• Streamline the process to successfully get the word out about the Collaborative Program;

• Ensure that entities affected by the actions of the Collaborative Program fully understand the issues and participate in a meaningful way with the Collaborative Program and other decision-makers. These entities include land owners, water rights holders, and water users;

• Ensure that the Governor, Congressional Delegation, Pueblo and Tribal Leaders, advocacy groups, and New Mexico State Legislators, along with city and county leaders directly affected by the water management and/or associated endangered species compliance issues on the MRG, are aware of the role of the Collaborative Program regarding these issues and the need for funding from both the federal side and the non-federal cost share;

• Establish an effective communication strategy for all leaders within the Collaborative Program; and,

• Evaluate the role of the Collaborative Program in informing stakeholders and the general public about plans for future water operations, ESA compliance, and Collaborative Program activities.

Science Work Group

The Science Work Group (ScW) provides scientific recommendations, technical assistance, and expertise to the Collaborative Program for the benefit of listed species in the MRG. Some of the key ScW objectives are to:

• Provide recommendations for research and monitoring priorities;

• Provide technical review and coordination of science projects;

• Provide coordination and integration of long-term research and monitoring activities, including other Collaborative Program work groups and activities outside of the Collaborative Program;

• Provide a regular forum for meeting and discussing Collaborative Program-related research and monitoring;

• Provide consistency in technical planning efforts over the duration of the Collaborative Program;

• Provide technical assistance to others wanting to implement research and monitoring projects; and,

• Provide a framework for exchanging scientific information.

Species Water Management Work Group

The purpose of the Species Water Management Work Group (SWM) is to provide assistance and expertise to address specific Collaborative Program tasks included in the LTP relating to the development and implementation of improved water management strategies. More specifically, SWM:

• Works with Reclamation to secure potential supplies of water and storage space and implement management strategies to meet Collaborative Program goals;

• Seeks to identify and analyze the relative merits of potential water management alternatives to meet water supply and acquisition goals; and,

• Assists with implementation of selected alternatives, including facilitating stakeholder interaction and supporting regulatory compliance activities.

ad Hoc Work Groups

Temporary ad hoc work groups may be formed from existing primary Collaborative Program work groups. Ad hoc work groups consist of individuals with expertise and/or interest in the specialized subject necessary to implement LTP tasks. The primary work group oversees each formed ad hoc work group and is responsible for ensuring that ad hoc work groups meet objectives and schedules. The primary work group disbands the ad hoc work group upon completion of the pre-determined objectives. The EC may appoint additional members to the ad hoc work groups.

Population Viability Assessment Work Group

The PVA ad hoc work group identifies and articulates ideas and input into two different Population Viability Assessment (PVA) models, and provides biological information needed for the Biological Assessment (BA) and BiOp. Work group members formulate biological and ecological relationships and define them for analysis in the PVAs.

MPT

The Monitoring Plan Team ad hoc work group (MPT) was established to lead the development of a 2-year pilot monitoring plan to measure the effectiveness of completed Habitat Restoration (HR) projects funded by the Collaborative Program. The purpose of the 2-year monitoring plan is to contribute to meeting the 2003 BiOp Reasonable and Prudent Alternative (RPA) element S, which requires 10 years of annual monitoring for each HR project.

Database Management System

The DBMS ad hoc work group ensures successful implementation of the Collaborative Program's Database Management System (DBMS) with full involvement and participation of Collaborative Program signatories and work groups.

Program Management Team

The Program Manager and PMT provide management and technical support to the EC, CC, and work groups. The PMT consists of a Program Manager and management staff employed by Reclamation, the Service, USACE, and New Mexico Interstate Stream Commission (NMISC), and contracting, administrative, and clerical staff (federal employees or contractors). The Program Manager provides direction for PMT activities and reports to the EC regularly on Collaborative Program activities. The Program Manager is responsible for determining the most expeditious and reasonable manner to carry out assignments as directed by the EC, whether through a work group, assignment to the PMT, or outsourcing. The PMT is also responsible for overall administration, coordination, and dissemination of information about Collaborative Program activities.

Signatories

Signatories (listed in the Executive Summary) are entities who have signed the Collaborative Program Memorandum of Agreement (MOA), agreeing to participate in and support the Collaborative Program. Any organization having a demonstrated interest in the success of the Collaborative Program may apply to become a signatory. To qualify for consideration, the applicant organization submits a letter of interest to the EC supporting the goals and success of the Collaborative Program and expressing its intent to sign the MOA if the application is accepted. The number of signatories to the Collaborative Program is limited to 20.

Financial Summary

As the fiscal agent for the Collaborative Program, Reclamation manages the federal funding allocated by Congress to the Collaborative Program. As the contracting agency, Reclamation administers interagency agreements, financial assistance, and contracts for Collaborative Program projects.

These federal appropriations were supplemented by non-federal Collaborative Program signatories in the form of financial contributions and in-kind services (e.g., personnel time, equipment, land access). FY 2012 Congressional appropriations provided funding for the categories depicted in Figures 2.1 and Table 2.1. These activities meet Biological Opinion (BiOp) requirements or address long-term recovery needs.

In addition, USACE, through the Corps' congressional authority, began receiving appropriations in the fourth quarter of 2009. In fiscal year 2012, the Corps provided $ 2,353,230.00 to the efforts of the Program through workgroup participation and projects. The breakout of this funding is available through the Corps report for fiscal years 2009 through 2013.

Figure 2.1 Fund Summary for FY 2012

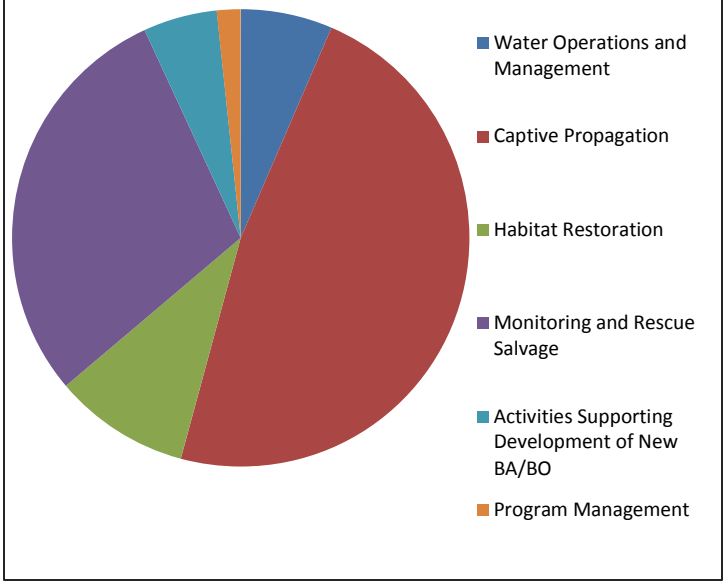

Table 2.1 Breakdown for FY 2012

Water Operations and Management	$ 96,165
Captive Propagation	$ 707,464
Habitat Restoration	$ 142,306
Monitoring and Rescue Salvage	$ 434,090
Activities Supporting Development of New BA/BO	$ 77,200
Program Management	$ 24,928
Total	$ 1,482,153

Total FY12 Allocation: $1,600,000. Difference of $117,847 resulted after distribution of funds

Program Accomplishments

Throughout FY 2012, the Collaborative Program continued to restore RGSM and SWFL habitat, acquire and manage supplemental water, augment and propagate RGSM, support scientific analysis and adaptive management, improve public outreach and program management, and promote recovery of the listed species.

Noteworthy Collaborative Program accomplishments include:

- Implementing U.S. Army Corps of Engineers (USACE) habitat restoration (HR) projects at the Rio Grande Nature Center and for RGSM perennial refugia at drain outfalls;

- Continued support of the development of a 2-year pilot HR effectiveness monitoring plan to collect standardized data to determine whether Collaborative Program projects are supporting improvements in the RGSM and SWFL populations. A draft report will be reviewed in FY 14;

- 1,445 acres of habitat restoration to date (through Collaborative Program and non- Collaborative Program efforts) to date, or 90% of the 1,600 acre 2003 Biological Opinion (BiOp) requirement. An additional 119.6 acres of habitat are expected to be completed in FY13.

- Acquiring and releasing a total of 56,144 acre-feet (AF) of supplemental water during 2012. Of the total, 18,602 ac-ft were Emergency Drought Water (EDW) stored in 2011;

- Augmenting and propagating RGSM in the Middle Rio Grande (MRG). Since 2000, over 1,667,000 RGSM have been released into the MRG through augmentation activities. Since 1996, approximately 7,659,000 RGSM have been salvaged and relocated to wet reaches of the Rio Grande.

- Several activities in 2012 were conducted in an effort to improve the status of the RGSM:

    - The Southwest Native Aquatic Resources and Recovery Center (SNARRC) (formerly Dexter National Fish Hatchery and Technology Center) continued to contribute directly to the enhancement and stabilization of existing and re-introduced RGSM populations within its historic range. In 2012, SNARRC produced over 366,000 age-0 fish, and released approximately 246,000 RGSM into the MRG and approximately 120,000 RGSM into the Big Bend Reach of the Rio Grande, Texas.

        o A total of 18,958 RGSM eggs were collected in 2012 by Albuquerque BioPark staff. Approximately 9,000 of these eggs were provided to SNARRC to maintain their broodstock.

        o In 2012, over 228,000 eggs were produced from captive spawning at the Albuquerque BioPark propagation facility and approximately 51,000 of the resulting young-of-year were provided for augmentation in to the MRG;

        o In 2012, RGSM tissue samples and specimens were provided to the University of New Mexico (UNM) for genetic analysis and monitoring of the MRG captive propagation program and the repatriated population at Big Bend;

        o In 2012, the Service's RGSM fish passage study using PIT tags was completed, which documented successful ascension of RGSM through the fishway channel located at the Albuquerque Bernalillo County Water Utility Authority's diversion structure.

- Releasing the Database Management System (DBMS), a comprehensive web-accessible, GIS-based database management system to enable Collaborative Program participants and the general public to readily access data associated with Collaborative Program activities regarding HR, water management, and other scientific investigations that support Middle Rio Grande Basin management;

- Restructure the Collaborative Program and transition from activities focused on avoiding jeopardy, to working toward those of a Recovery Implementation Program (RIP) with the endorsement of the RIP Document and Action Plan.

Numerous Collaborative Program projects were conducted in 2012 that contributed to meeting the goals specified in this report and summarized in the following sections.

Table 2.2 COLLABORATIVE PROGRAM PROJECTS for FY 2012

Contractual Nos.	Main Funding Categories	Amount Appropriated
	Water Operations and Management	**96,165**
R12PG40018	USGS MRG River Gage O&M	96,165
	Captive Propagation	**707,464**
R12PG40051	Rearing/Breeding O&M - FWS	300,000
R12AP40034	COA Rearing/Breeding O&M	137,273
R12AP40035	ISC Naturalized Refugia O&M	270,191
	Habitat Restoration (Const., Planning, Monitoring)	**142,306**
08FG402819	Santa Ana Rio Grande/Rio Jemez Biological Habitat Survey	142,306
	Monitoring and Research and Rescue Salvage	**434,090**
R12AP40048	RGSM Rescue Efforts - FWS	150,000
R09PC40005	RGSM Population Monitoring - ASIR	186,076
R12PX43023	RGSM Reproductive Monitoring - ASIR	98,014
	Activities Supporting Development of New BA/BO	**77,200**
R09PC40009	RGSM Spawning and Recruitment Study - ISC	77,200
	Program Management, Assessment and Outreach	**24,928**
R12PX43056	Annual Report 2010-2011 - GenQuest	24,928
TOTALS		**1,482,153**[1]

[1]*Total FY12 allocation: $1,600,000. Difference of $117,847 resulted after distribution of funds.*

3.1 Physical Habitat Restoration and Management

Habitat restoration (HR) and improvement activities include physical manipulations of the Rio Grande channel (riverine restoration) and adjacent bosque (riparian restoration) to benefit the listed species. HR priorities in 2012 included planning, designing, constructing, and monitoring of projects to benefit the RGSM and SWFL in various locations throughout the Middle Rio Grande (MRG). The projects are described below.

3.1.1 Pueblo of Santa Ana: Rio Grande and Rio Jemez biological and habitat survey

The objective of this project was to develop monitoring protocols that can be used to develop and sustain HR projects within the Pueblo of Santa Ana. Project activities include the performance of a variety of surveys, including icthyofauna, macroinvertebrate, RGSM population and habitat, SWFL population and habitat, soil salinity/texture, and micro-climate measurements. Collected data will be used to evaluate trends in the populations of RGSM and SWFL, evaluate population utilization of restored sites, and correlate patterns of use/non-use to measureable habitat features, such as vegetation characteristics and micro-climate measurements.

Benefits to Species: The intensive monitoring specified in this project provides the ability to assess ecosystem changes within the six-mile Rio Grande corridor through the Pueblo of Santa Ana. This assessment will not only provide input on how the RGSM and SWFL populations are faring within this reach, but also provide data on habitat characteristics preferred by these species, which will help in future HR efforts.

3.2 Water Management

The Collaborative Program seeks to develop and implement creative water use and development alternatives that will satisfy water needs for threatened and endangered species while protecting existing uses. Language in the FY 2006 Energy and Water Appropriations Act (Public Law 109-275) assigned responsibility for water acquisition, administration, and management to Reclamation, to be conducted at full federal expense.

Water management includes acquisition of water and/or manipulation of flows, reservoirs, and Low-Flow Conveyance Channel (LFCC) pumping to meet compliance requirements and activity objectives on the ground. The purpose of other Collaborative Program-funded water management activities is to provide assistance and expertise to accomplish Collaborative Program goals. Reclamation works to secure potential supplies of water and storage space and implement management strategies to meet Biological Opinion (BiOp) requirements and Collaborative Program goals.

3.2.1 USGS Middle Rio Grande river gage operation and maintenance

The U.S. Geological Survey (USGS) operates and maintains a network of 24 streamflow gages in the Middle Rio Grande (MRG), including 12 in the mainstream of the Rio Grande and 12 in tributaries or distribution features. The Collaborative Program has funded four of these gages. The USGS performs manual streamflow measurements regularly at each gage. The manual measurements are used for calibration and generation of ratings curves for each station. The ratings curves convert gage height into stream discharge and allow the USGS to update their webpage with information on flows and provide accurate up-to-date information for water management.

Benefits to Species: The collection of MRG stream flow information helps ensure that required Water Operations elements of the Biological Opinion (BiOp) are met. The data from these gages are critical for efficient management of flows in the MRG, helping MRG water management agencies meet the needs of water users, fulfilling the requirements of the Rio Grande Compact, maintaining sufficient water in storage for future needs, and maintaining adequate water in the river to support the RGSM.

3.2.2 Bureau of Reclamation – supplemental Water Program

Water acquisition funding in 2012 made possible releases of supplemental water to meet the flow requirements of the 2003 BiOp and benefited the RGSM and SWFL. Funds in the amount of $1,871,149 were used to secure leases of San Juan-Chama Project water from willing lessors to provide for releases of supplemental water into the Rio Grande. Shown in Table 3.2.1 is a summary of water leases for 2012.

The 2012 Supplemental Water Program was used to assist in achieving the targeted flows as described in the 2003 BO. A total of 56,144 ac-ft of supplemental water was released by Reclamation in 2012. Of this total, 18,602 ac-ft were Emergency Drought Water (EDW) stored in 2011. The remainder, 37,542 ac-ft, was leased SJ-C water. Releases began in mid-May and continued until the end of the irrigation season. The Middle Rio Grande Conservancy District reverted to run of the river in mid-August. After that time, supplemental releases made up the majority of flow at Otowi due to extremely low natural flows as a result of the ongoing drought.

Table 3.2.1 FY 2012 Funding for the San Juan-Chama Project Supplemental Water Lease Agreements

SJCP Contractor	2012 Leased Acre-Feet	2012 Funding
Aamodt Reserve	369	$8,694
ABCWUA	10,000	$1,000,000
Jicarilla Apache Nation	5,400	$410,400
Taos Pueblo	2,215	$221,500
Ohkay Owingeh	2,000	$96,000
County of Los Alamos	1,200	$57,600
City of Española	0	$0
City of Belen	400	$19,200
Town of Bernalillo	350	$16,800
Town of Taos	400	$19,200
Town of Taos Settlement	366	$11,291
Town of Taos (original + settlement allocations)	0	$0
Village of Los Lunas	150	$7,200
Town of Red River	60	$2,880
Village of Taos Ski Valley	8	$384
TOTAL	22,918	$1,871,149

3.2.1 Upper Rio Grande water operations model to support new biological assessment/biological opinion

The Upper Rio Grande Water Operations Model (URGWOM) evaluate various water management scenarios: (1) to estimate the amount of supplemental water that would be needed to meet the flow targets in an alternate water management scenario; (2) as inputs for the PVA models; and, (3) to help analyze the effects the water management scenarios would have on the species and its habitat.

Updates and modification to the URGWOM concerning supplemental water usage, groundwater/surface-water interactions, and river drying calibration allowed for more effective projection of supplemental water needs. URGWOM

was also used to test a wide variety of alternate water management alternatives. Eleven water management scenarios were developed and run through updated URGWOM for five hydrologic sequences, culminating in an initial screening of alternatives.

Benefits to Species: URGWOM assists water managers in better determining the hydrologic effects of alternate water management scenarios, evaluating the amount of supplemental water needed to meet modified flow targets, and supporting other modeling to evaluate the effects of possible water management alternatives on listed species.

3.3 Population Augmentation/Propagation (Silvery Minnow Only)

The Collaborative Program has partially funded the construction, operation, and maintenance of three rearing and breeding facilities for the RGSM in the Middle Rio Grande (MRG): the City of Albuquerque's (COA) Aquatic Conservation Facility (formerly the Rio Grande Silvery Minnow Rearing and Breeding Facility), the New Mexico Interstate Stream Commission's (NMISC) Los Lunas Silvery Minnow Refugium, and the U.S. Fish and Wildlife Service's (Service) Southwestern Native Aquatic Resources and Recovery Center (SNARRC; formerly Dexter National Fish Hatchery and Technology Center). SNARRC is also utilized to conduct research for fish health assessments and to assist in preservation of genetic diversity. These facilities serve to provide sufficient populations for reestablishing and augmenting the RGSM within its historic range of the Rio Grande Basin. Table 3.3 summarizes the captive propagation and population augmentation projects funded by the Collaborative Program in FY 2012.

The projects are described in the following sections.

Table 3.3 Collaborative Program FY 2012 Funded Projects: Population Augmentation/Propagation (Silvery Minnow Only)

Funded Projects	Entity Performing Work	Continuing Activity or Distinct Project	BiOp Requirement	Grant/Contract #	Amount Appropriated	Year of Allocation
SNARCC	FWS	On-going	RPM01.2, 2.2	R12PG40051	$300,000	2012
Bio Park	COA	On-going		R12AP40034	$137,273	2012
Naturalized Refugia	ISC	On-going		R12AP40035	$270,191	2012
Total					$ 707,464	

3.3.1 Fund minnow sanctuary operation and maintenance – U.S. Fish and Wildlife Service

This cooperative project will provide a naturalized system for rearing of RGSM for augmentation efforts. The off-channel sanctuary is located one mile south of Bridge Street in Albuquerque, NM. Once fully operational, the facility will mimic wild conditions which may increase survival of RGSM released into the river, and will also serve as one of the additional refugia required by the BiOp. The facility may beis currently being used as an outreach and educational tool pending the repair of water pumps.

Benefits to Species: This project will aid in developing and refining methods for rearing of the RGSM for augmentation efforts.

3.3.2 U.S. Fish and Wildlife Service rearing/breeding operation and maintenance – SNARRC

This cooperative project at the Service's SNARRC in Dexter, NM utilizes the joint expertise of federal, state, and educational institutions to significantly aid in reestablishing, stabilizing, and enhancing populations of the RGSM within its historic range of the Rio Grande Basin. SNARRC produces 250,000 - 400,000 RGSM annually for river augmentation. The facility holds an additional 80,000-100,000 RGSM over winter and 16,000 - 20,000 captive broodstock year-round. The primary purpose of this activity is to propagate RGSM for augmentation efforts.

In 2012, SNARRC maintained a captive broodstock of 24,000 wild-caught adult fish. SNARRC produced approximately 366,000 RGSM in the calendar year, providing 246,000 for augmentation in the MRG and 120,000 for reintroduction at the Big Bend Reach, TX.

Benefits to Species: The facility is utilized to conduct research for fish health assessments, maintain captive broodstocks, assist in preservation of genetic makeup, and rear and maintain larvae and adults. The propagation program began in 2001, and has made significant advances in developing appropriate and consistent propagation and culture methods.

3.3.3 City of Albuquerque rearing/breeding operation and maintenance

The Aquatic Conservation Facility is designed as a practical breeding and rearing center, as well as a research center. The facility includes indoor culture systems, outdoor culture systems, and the Naturalized Refugium. The indoor systems are used for quarantine, breeding, egg hatching, and rearing larvae. The outdoor systems are used for raising larvae to sub-adult age as well as holding large numbers of broodstock. The Naturalized Refugium is an outdoor system that creates a river-like environment with controllable flow, variable depth, variable habitat, and natural substrate.

Staff from the ABQ BioPark Aquarium's Aquatic Conservation Facility (Facility) spent over 160 man-hours monitoring for, and collecting, Rio Grande silvery minnow (RGSM) eggs in the middle Rio Grande River. A total of 18,958 eggs were collected, of which approximately 9,000 were sent to the Southwestern Native Aquatic Resource and Recovery Center (SNARRC). Over 141,000 additional RGSM eggs were produced at the BioPark via hormone-induced captive spawning.

A total of 27,241 RGSM were tagged and later released into the San Acacia reach of the middle Rio Grande River. Fin clips were taken from 50 of these fish and were delivered to the University of New Mexico for genetic analysis.

There were an estimated 5,360 RGSM on station at the BioPark in March 2012. These fish are being held for brood-stock and/or future release.

Benefits to Species: The continued operation of this facility will help promote recovery of the RGSM and increase its numbers in the wild through captive propagation and augmentation. The propagation techniques used by the facility staff have produced fish, eggs, and substantive information for other fish culturists. The COA's facility significantly aids reestablishing, stabilizing, and enhancing populations of the RGSM within its historic range of the Rio Grande Basin.

3.3.4 *New Mexico Interstate Stream Commission naturalized refugium rearing/breeding operation and maintenance*

The Los Lunas Silvery Minnow Refugium, built and managed by the NMISC, opened for operation in May 2009. It is designed to provide a naturalized environment for captive RGSM. The outdoor refugium is 0.5 acres and provides a range of RGSM habitat including backwaters and overbank areas. The refugium has a 1,500 ft2 indoor holding facility.

Benefits to Species: The naturalized refugium is intended to provide conditions for RGSM that are more similar to natural river conditions. The facility is intended to be used for:

- Spawning and propagation of RGSM to augment existing populations in the MRG, as well as other stretches of the Rio Grande;

- Conducting research for use in management of RGSM;

- Housing of a refugial population, for species protection against extinction in the case of river disasters; and,

- Housing of an additional "insurance" captive population in case of a disease affecting other RGSM breeding and propagation facilities.

3.4 Water Quality Management **(Silvery Minnow Only)**

The Collaborative Program is interested in furthering the understanding of water quality as an environmental indicator for the RGSM. Several research and monitoring studies have been conducted to evaluate water quality impacts and whether these are affecting reproduction and survival of existing and reintroduced populations of RGSM. Information could assist the management of flows, especially during low-flow conditions and storm events. The overall goal would be to gather information on water quality within occupied areas and reintroduction sites to assist with interpretation of recruitment and survival rates. Although water quality activities did not receive funds in FY 2012, these efforts have continued.

Reclamation funded New Mexico Environment Department for water quality monitoring with a final report received by Reclamation in 2009. The report was provided to the Service for use with their on-going work on fish/silvery minnow health monitoring.

In 2008, the Program entered into an Inter-Agency Agreement with the United States Geological Service to assess the subchronic toxicity and estrogenicity of selected wastewater treatment effluents to the minnow. The first phase was completed in 2009. Phase II has been delayed and an interim report is expected in 2013.

The administrative report on a Program funded projected that studied toxicity of adverse water quality conditions of low dissolved oxygen, high temperatures, and pulses of high ammonia concentrations to different life stages of the minnow is finalized and available on the on the Program website.

3.5 Monitoring and Rescue Salvage

The Collaborative Program pursues scientifically based solutions to address the needs of the listed species and the ecosystems upon which they depend. Monitoring and Rescue Salvage are used to ensure that Collaborative Program activities achieve the desired objectives. The science and monitoring priorities included: 1) assessing key habitat requirements of the RGSM and SWFL essential to alleviate jeopardy and promote recovery; 2) assessing hydrologic and geomorphic impacts on habitat qualities; and, 3) monitoring and assessing the population status of the RGSM and SWFL. Table 3.5 summarizes the projects funded by the Collaborative Program for FY 2012. The projects are described in the following sections.

3.5.1 Rio Grande silvery minnow population monitoring

Population monitoring of RGSM and the associated Middle Rio Grande (MRG) fish community has been systematically conducted at multiple sites from Algodones, NM to Elephant Butte Reservoir since 1993, and has been continuously funded by the Collaborative Program from 2002 to present. This long-term sampling program allows for documentation of RGSM population trends, and provides a measure of the success of habitat restoration (HR) efforts.

The consistent monitoring protocol implemented for this project has yielded a nearly seamless long-term ecological data set to:

- Determine long-term (multiple years) and short-term (seasonal) trends in fish populations of the MRG using statistical approaches that discern spatiotemporal differences in the abundance of native and non-native study taxa with a focus on RGSM;

- Evaluate the influence of discharge timing, magnitude, and duration on population fluctuations of both native and non-native fish species in the MRG over time and space, with a focus on RGSM;

- Compare changes in RGSM absolute and rank abundance to that of other native and non-native fish species;

- Determine site-specific sampling variation; and,

- Examine spatial correlation of RGSM population dynamics over time.

Silvery minnow densities during 2012 population monitoring efforts were amongst the lowest ever recorded since comprehensive monitoring began. During standard monitoring conducted in October 2012, no silvery minnow were detected at any of the 20 population monitoring sites (Dudley et al. 2012).

Benefits to Species: Monitoring data have provided the foundation necessary to assess changes in the MRG ichthyofaunal community over the long-term. Specifically, these data have been used to document temporal and spatial trends in native and non-native fish populations and to assess the influence of environmental variability (i.e., timing, magnitude, and duration of discharge) on species abundance and community structure. Monitoring fish communities at selected study sites provides information on the RGSM and associated fish fauna, including population trends in response to water management practices and whether increased sampling frequency provides better population data.

Table 3.5 Collaborative Program FY 2012 Funded Projects: Monitoring and Rescue Salvage

Funded Projects	Entity Performing Work	Continuing Activity or Distinct Project	BiOp Requirement	Grant/Contract #	Amount Appropriated	Year of Allocation
RGSM Population Monitoring	Contracted	On-going	RPM 1.2.2, 2.2	R09PC40005	186,076	2012
RGSM Reproductive Monitoring	Contracted	On-going		R12PX43023	98,014	2012
RGSM Rescue Efforts	FWS	On-going		R12AP40048	150,000	2012

3.5.2 Rio Grande silvery minnow spawning and reproductive effort monitoring

This monitoring project acquires important (daily) information on the reproductive output of RGSM in the MRG at multiple sites between Albuquerque and Elephant Butte, along the length of the river. The sampling survey protocol is designed to estimate the number of in-river RGSM eggs produced during major spawning events and over the duration of the principal spawning season. Systematic monitoring of the reproductive output of RGSM at several sites in the MRG was first conducted in 1999 and has continued annually (except 2005) since 2001. Previous studies demonstrated that May and June is the primary period of RGSM reproductive activity.

In 2012, the study monitored the spatial and temporal reproductive output of RGSM in the downstream-most river reach (San Acacia). A cumulative total of 12,398 RGSM eggs were collected at the San Marcial site (Dudley et al. 2012). Silvery minnow appeared to have had a reasonable spawn in 2012, however poor recruitment and persistent low summer flows likely influenced the low densities seen in summer and fall 2012.

Benefits to Species: Selected samples of wild eggs are provided to research personnel for ongoing population viability and genetic studies. Long-term monitoring of the reproductive effort of RGSM remains necessary for recovery efforts and to facilitate effective management decisions. Each yearly effort is also designed, in part, to provide insight to the success of recent stocking efforts. The future conservation status of RGSM appears dependent on ensuring adequate flow conditions during the spawning and early recruitment phases of this species.

3.5.3 Rio Grande silvery minnow rescue and salvage

The RGSM is restricted to a variably perennial reach of the Rio Grande in New Mexico, from the vicinity of Bernalillo downstream to the headwaters of Elephant Butte Reservoir. This distance fluctuates as the level of water in Elephant Butte Reservoir changes, but is approximately 150 river miles. The intent of this project by the U.S. Fish and Wildlife Service (Service) is to reduce mortality of post-larval RGSM when flow in the MRG becomes intermittent. The project also determines the amount of incidental take as defined in the Biological Opinion (BiOp) due to water operations and drying. Rescue and salvage operations were performed each year from 2001 through 2011, except in 2008 when the river did not dry.

In 2012, a total of 5,014 RGSM were salvaged from isolated pools. Of these, 4,251 were transported to flowing sections within the same reach and released alive (Archdeacon et al. 2013). Compared to 2011, salvage operations in 2012 were conducted over more miles and for more days, however the number of fish observed was lower. This trend has been observed each year from 2007-2012 (Archdeacon et al. 2013).

Benefits to Species: The MRG rescue and salvage program seeks to salvage RGSM from intermittent reaches of the Rio Grande between Isleta Dam and Elephant Butte Reservoir that, without management intervention, would likely result in substantial RGSM mortality. The RGSM are rescued from isolated pools, transported, and released alive at locations which are perennially wet.

Photos courtesy of USACE

3.5.4 Southwestern Willow Flycatcher surveys – Bureau of Reclamation

In 2012, flycatcher nest monitoring was conducted at all sites where nesting pairs were detected. Nests were monitored for success rates, productivity, and Brown-headed cowbird (Molothrus ater) parasitism. In 2012, total of 282 nests were found, 263 of which had known outcomes with a 33% success rate, a parasitism rate of 16%, and a depredation rate of 50%. Average historic success rates since 2002 has been in the range of approximately 33% to 57% (the low in 2012, high in 2006). Since 2002, parasitism rates range from 5% to 22% (the low in 2008, the high in 2011). The approximate total of fledglings observed while nest monitoring was 201. The most productive area was within the Elephant Butte Reservoir pool with a total of 223 nests and fledging 153 young.

Other studies were continued in 2012. These include: 1) flycatcher nesting hydrology and habitat variable study, 2) river maintenance impact monitoring, 3) photo monitoring of habitat development in the Elephant Butte delta, 4) flycatcher habitat mapping, and 5) depredation monitoring via trail cameras. These studies are designed to provide further insight into potential threats to and habitat requirements of flycatcher populations.

Benefits to Species: This project is an essential component of tracking the status of the species.

3.6 Public Outreach

The Collaborative Program has a responsibility to educate and inform the general public, stakeholders, and state and federal legislators about Collaborative Program activities and accomplishments. Collaborative Program outreach efforts support: 1) requests for long-term, non-federal cost share funding; 2) understanding by the general public regarding the role of the Collaborative Program in Middle Rio Grande (MRG) water management and endangered species recovery issues; and, 3) increased awareness by the general public and decision-makers regarding the collaborative problem-solving approach and funding requirements of the Collaborative Program.

3.6.1 Collaborative Program Public outreach

The Public Information Outreach work group (PIO) is tasked with attending events and creating opportunities for public awareness to the Collaborative Program.

Benefits to Species: In 2012, the PIO provided information about Collaborative Program accomplishments and MRG endangered species issues by (1) producing brochures to inform state and federal legislators; (2) developing children's coloring pages with species information for the RGSM and SWFL; (3) participating in New Mexico State Game and Fish (NMGF) exhibits and the New Mexico State Fair; (4) participating in the Pueblo of Santa Ana and Pueblo of Sandia Environment Fairs in 2013; and, (5) assisting the Program Management Team (PMT) in designing and maintaining a publicly accessible website containing project reports, event calendars, and a variety of information about the Collaborative Program.

3.6.2 Collaborative Program Webpage Hosting and Maintenance

The Collaborative Program website, www.mrgesa.com or www.middleriogrande.com, provides updated information about the Collaborative Program, such as History, Goals, Calendar of Events, and press releases. It also provides links to Collaborative Program-produced documents, such as quarterly updates, annual accomplishment reports, the Long Term Plan (LTP), final project deliverables, financial reports, data sets, surveys, final meeting notes, and other related background information such as the 2003 Biological Opinion (BiOp) and information about the listed species. The website also contains links to signatory websites.

Benefits to Species: The website educates Collaborative Program participants, legislative bodies, and the general public on the issues and rationale for regulatory and management actions, provides access to project reports, and may garner support for RGSM and SWFL recovery actions, including habitat restoration (HR) and water conservation projects.

3.7 Program Management

The Collaborative Program requires management and administrative support to accomplish its goals and objectives. Collaborative Program By-Laws state that Reclamation will employ a Program Manager and management staff. Program management and support activities are required to assist in the implementation of the Biological Opinion (BiOp) RPA and RPMs. Program management involves setting and reviewing objectives, coordinating activities across projects and work groups, and overseeing the integration of interim work products and results. Specific tasks include: contract administration; budget administration and financial management; serving as a Program Management Team (PMT) liaison to technical work groups; reporting to the Executive Committee (EC), Coordination Committee (CC), PMT, and other groups or agencies as appropriate; supporting Collaborative Program activities such as meeting coordination, website administration, and outreach activities arranged by the Public Information and Outreach work group (PIO); and, performing other Collaborative Program-related management functions.

Table 3.7 Collaborative Program FY 2012 Funded Projects: Program Management

Funded Projects	Entity Performing Work	Continuing Activity or Distinct Project	BiOp Requirement	Grant/Contract #	Amount Appropriated	Year of Allocation
Annual Report 2010-2011	Contract	Annual	RPA FF	R12PX43056	$ 24,928	2012

3.7.1 Bureau of Reclamation Program management and support

Reclamation has provided contracting and financial management support for the Collaborative Program since 2001. Reclamation also provides representatives as EC members, PMT members, CC members, representatives for various technical work groups, and contracting to participate in and support Collaborative Program committees. In 2012, Reclamation provided an Interim Program Manager and full-time management staff responsible for overall Collaborative Program administration, coordination, and dissemination of information about Collaborative Program activities.

Benefits to Species: Program management and support activities are required to implement all aspects of the 2003 BiOp RPA and RPMs. Reclamation serves: (1) as the fiscal agent for the Collaborative Program, by managing the federal funding allocated by Congress to the Collaborative Program; and, (2) as the contracting agency, by administering agency agreements, financial assistance, and contracts for Collaborative Program projects. Reclamation conducts water operations and management of supplemental water in compliance with federal and state law. Reclamation also provides technical support to: assist with the evaluation of proposed projects; review project deliverables; develop scopes of work and independent government cost estimates; and, develop monitoring and program assessment plans.

3.7.2 U.S. Fish and Wildlife Service Program management and Technical support

The Service provides personnel to support program management activities and to facilitate ESA compliance. Specific program management provided by the Service included assisting in the coordination, planning, and management of work groups staffed by Collaborative Program participants, in order to fulfill Collaborative Program By-Laws and the Long Term

Plan (LTP). Specific ESA compliance tasks included facilitating section 7 consultations under the ESA for the Collaborative Program and to manage section 10 endangered species permits for Collaborative Program signatories. The Service also provided a Middle Rio Grande ESA Coordinator to serve on the CC.

Benefit to Species: Benefits to the silvery minnow and flycatcher include managerial and on-the-ground support for activities that advance the species' recovery, and the facilitation of ESA compliance to minimize adverse effects of actions in the Middle Rio Grande on listed species and their critical habitat.

3.7.3 U.S. Army Corps of Engineers Program management and support

The U.S. Army Corps of Engineers (USACE) receives its own appropriation which supports Collaborative Program management, such as to the PMT, and other activities. USACE also provides contracting support for the Collaborative Program Database Management System (DBMS), Albuquerque Reach Analysis & Recommendations (A&R), and Adaptive Management.

Benefits to Species: Program coordination is required to implement all aspects of the 2003 BiOp RPA and RPMs. USACE is either directly or indirectly fulfilling these BiOp requirements through use of USACE employees, contractors, or contracts.

3.7.4 Collaborative Program technical and administrative support – Contracted

In 2012, staffing was contracted to perform general and administrative tasks in furtherance of the Collaborative Program's mission. Contracted support duties included: (1) technical note-taking at various Collaborative Program meetings; (2) preparation and distribution of meeting summaries and time-sensitive action items; and (3) providing technical support for workshops and working meetings.

3.7.5 Collaborative Program database development

USACE awarded an indefinite delivery contract in September 2008 for development of a Database Management System (DBMS). When completed, the database will serve many different Collaborative Program needs, including: integration and spatial correlation of disparate data types generated by numerous research and monitoring projects; analysis of monitoring data to determine the effectiveness of Collaborative Program activities in meeting its goals; access to project information via spatial and non-spatial queries; and, project tracking. The database will be a key component in implementing Adaptive Management (AM).

Benefits to Species: The database will assist in analyzing the effectiveness of Collaborative Program activities toward meeting recovery plan goals and ensuring that BiOp requirements are being met. This activity allows synthesis and analysis of historical and current data sets to determine trends, analyze effectiveness of Collaborative Program activities, and report results.

Summary

The Collaborative Program is actively involved in long- term planning toward a goal of becoming a Recovery Implementation Program (RIP). Completion and implementation of a Long Term Plan (LTP) will help to meet this goal as the new LTP is tied to species recovery plans and will include future activities identified for 2011 through 2020. The work groups, the Project Management Team (PMT), the Coordination Committee (CC), and the Executive Committee (EC) are working to determine and prioritize the future activities needed for Biological Opinion (BiOp) compliance and recovery plan implementation. Additionally, past activities have been summarized and compiled to be included as an appendix to the new LTP. Continued involvement and support for beneficial activities by all signatories to improve the status of the listed species is critical to Collaborative Program success and maintaining compliance with the Endangered Species Act (ESA).

Photo courtesy of Ariane Pinson

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