

Population Monitoring Work Group Meeting
March 14, 2019

Meeting Materials:

Meeting Agenda

Meeting Minutes

Middle Rio Grande Endangered Species Collaborative Program Executive Committee Charge to the Population Monitoring Work Group December 2018 [draft]



Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Population Monitoring Work Group (PMWG)

March 14, 2019
1:00 PM – 4:00 PM

City of Albuquerque Open Space Visitor's Center
6500 Coors Blvd NW, Albuquerque, NM 87120

Call-In Information: 712-451-0011; Code 141544#

Meeting Agenda

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|-------------|---|-------------------------------|
| 1:00 – 1:10 | Welcome, Introductions, and Agenda Review | <i>Dave Wegner</i> |
| 1:10 – 1:25 | Review of December 12, 2018 PMWG Meeting <ul style="list-style-type: none">• Review Action Items• Updates to meeting minutes➤ Decision: Approval of December 12, 2018 meeting minutes□ Read-aheads:<ul style="list-style-type: none">○ December 12, 2018 draft meeting minutes | <i>Dave Wegner</i> |
| 1:30-1:45 | Work Group Direction <ul style="list-style-type: none">• Work group name• Work group charge➤ Action Item: Submit a Work Group charge for EC review and approval | <i>Facilitated Discussion</i> |
| 1:45-2:30 | 2019 Work Plan <ul style="list-style-type: none">➤ Action Item: Submit 2019 Work Plan for EC review and approval□ Read-aheads:<ul style="list-style-type: none">○ 2019 Work Group Work Plan○ Comments from USFWS | <i>Facilitated Discussion</i> |
| 2:30 – 2:45 | Break | |
| 2:45 – 3:15 | Update on Adaptive Management Work Group Progress <ul style="list-style-type: none">• Questions and discussion• Potential role for PMWG | <i>Dave Wegner</i> |

3:15 – 3:50	Science Process Discussion <ul style="list-style-type: none">• Role of peer review as outlined in AMWG plan• The role of models	<i>Facilitated Discussion</i>
3:50 - 4:00	Summary and Next Steps <ul style="list-style-type: none">• Action Items review <p>➤ Next meeting: April 16, 2019</p>	<i>Dave Wegner</i>
4:00	Adjourn	



Middle Rio Grande Endangered Species Collaborative Program

Est. 2000

Population Monitoring Work Group (PMWG) Meeting Minutes

March 14, 2019, 1:00 PM – 4:00 PM

**Location: City of Albuquerque Open Space Visitor's Center
6500 Coors Blvd NW, Albuquerque, NM 87120**

Decisions:

- ✓ The March 14, 2019 PMWG meeting agenda was approved, with the addition of discussion of a project description from the Science/Habitat Restoration Work Group (ScW/HR).
- ✓ The December 12, 2018 meeting minutes were approved with no changes.

Actions Items:

WHO	ACTION ITEM	BY WHEN
Grace H., Debbie L., and Brian H.	Schedule meeting between Charles Yackulic and Reclamation to discuss Bui data	April 16
WEST	Prepare 2019 Work Plan and distribute to PMWG for "cannot live with this" comments	March 18
PMWG	Provide any comments to 2019 Work Plan	March 19

Next Meeting: April 16, 2019

Meeting Minutes

Welcome, Introductions, and Agenda Review

Dave Wegner, Science Coordinator for Western Ecosystems Technology, Inc. (WEST), opened the meeting, outlined the agenda, and asked for updates.

- The ScW/HR is seeking input from the PMWG regarding a project description discussed at the last ScW/HR meeting. They had specific questions for the PMWG, which were added to the PMWG meeting agenda.
- Grace Haggerty, New Mexico Interstate Stream Commission (NMISC), provided a brief report out from the Minnow Action Team (MAT) meeting. She noted that moderate to high runoff is expected; an El Vado modification will probably not be needed; stream runoff looks promising for the Rio Grande silvery minnow (RGSM).

Review of December 12, 2018 PMWG Meeting

- The eleven action items from the December 12, 2018 meeting were reviewed.
 - Set up a Google Drive and send out a request to PMWG members for emails to access a shared drive.

- Debbie Lee, WEST, set up a shared Google Drive but has run into security issues. She will continue exploring alternative file sharing tools for the PMWG.
- Send Ara Winter, Bosque Ecosystem Monitoring Program (BEMP), data for incorporation into his Bayesian modeling efforts.
 - This task is ongoing; only the Angostura data set is included at this time.
- Joel Lusk, U.S. Fish and Wildlife Service (USFWS) will send Brian Hobbs, U.S. Bureau of Reclamation (Reclamation), a request for Bui data.
 - The request was sent, but the data still has not been delivered.
 - A discussion highlighted the need for other data (e.g. cross section data, habitat model, catch per unit effort [CPUE], etc.).
 - Efforts will be made to secure any data collected for habitat assessment utilizing the USFWS Incremental Methodology (as it pertains to the Middle Rio Grande; i.e. Ken Boyee data).
 - **Action item:** Coordinate a meeting between Charles Y., U.S. Geological Survey (USGS) and Reclamation.
- Send water management spreadsheet to WEST for distribution to the PMWG and/or inclusion in the file sharing tool.
 - Grace H. has not yet found the water management spreadsheet, but will continue looking.
- Revise the PMWG charge to reflect the conversation at the PMWG meeting, specifically with management in mind.
 - The revising of the PMWG charge will be covered in a separate discussion on the agenda.
- Provide any RGSM habitat availability information to Charles Y. utilizing the file sharing tool, when available.
 - There was a discussion regarding RGSM habitat data that will be available for Charles Y. once a file sharing tool is operational; it was suggested that Charles Y. be contacted to clarify the type of habitat data needed.
- Provide any RGSM survival resources to Rich Valdez, SWCA Environmental Consultants, Inc. (SWCA), when a new file sharing tool is available.
 - This task is ongoing; Thomas Archdeacon, USFWS, has a master database that is updated monthly.
- Review revised PMWG charge.
 - This task is discussed later on the agenda.
- Report on 2018 PMWG activities to the Executive Committee (EC)
 - The January 2018 EC was cancelled, and this item is on the March EC agenda.
- Rich V. will continue modeling efforts and prepare a presentation to update PMWG members at the next meeting.
 - This task is ongoing.
- Charles Y. will continue to refine the RGSM population model with consideration for RGSM age classes and habitat availability, and prepare a presentation to update PMWG members at the next meeting
 - This task is ongoing; habitat categories can be discussed at the next meeting in April; no physical metrics are associated with mesohabitat (which can be subjective).
- **Decision:** Approval of December 12, 2018 meeting minutes

Work Group Direction

- There was discussion on the revised PMWG charge proposed by Joel L. which focused on developing and using modeling to support monitoring.
- The group decided to focus on the development of a 2019 Work Plan for now, and to revisit the work group charge once the models have been completed.

2019 Work Plan

The group revised their Work Plan to the following:

Task	Subtasks	Target Completion Date
1. Integrate and prioritize recommendations from the science panels	a) Evaluate recent modifications to RGSM population monitoring program	August 2019
	b) Gear selectivity study	December 2019
	c) Track progress in addressing panel recommendations	Ongoing
2. Review and integrate RGSM population monitoring data	a) Incorporate the 2018 finalized data	May 2019
3. Gather other RGSM and RGSM habitat datasets	a) Provide consolidated data sets and metadata	December 2019
4. Analyze RGSM data to support modeling efforts	a) Survival, age composition, recruitment, and other analyses as identified	December 2019
5. Develop and review RGSM population models	a) RGSM population assessment model (USGS)	December 2019
	b) RGSM population simulation model (New Mexico State University [NMSU])	December 2019
	c) RGSM data variability modeling (BEMP)	December 2019
6. Give a progress update to the EC		December 2019/January 2020

The group agreed that the work, as laid out in the 2019 Work Plan, falls under Task 2 in the original charge. As the PMWG charge has not been changed, the original three tasks in the charge still stand.

- **Action Item:** Draft the 2019 Work Plan based on comments from the group, and distribute to PMWG for “cannot live with this” comments, prior to sending out as a read-ahead for the March 27 EC meeting.

Update on Adaptive Management Work Group Progress

Dave W. gave a brief update from that morning’s Adaptive Management (AM) Work Group meeting regarding documents in progress.

Science Process Discussion

Dave W. encouraged a more rigorous approach to scientific review, such as the format followed by USGS, to be embraced among Program work groups such as AMWG and PMWG.

Project Idea: Assess the Persistence of Stocked RGSM

At the March 12, 2019 ScW/HR meeting, a project idea was discussed that the group decided needed input from the PMWG. Ashley Tanner, WEST, presented the project description, and asked for the PMWG's expertise to help determine if (1) there was adequate existing data to address this question, (2) if there was not adequate data, could this question be addressed with more intensive monitoring, and (3) if this project should be pursued, what were some targeted objectives for the study?

- Responses indicated there is not adequate existing data, and that a study would be better informed by the RGSM population model currently in development.
- Ashley T. proposed the SOW be revisited after December 2019, after consulting with Charles Y. and including what his RGSM population model reveals regarding augmentation.

Next Steps

- Next meeting: April 16, 2019
 - Rich V. will be presenting on mesohabitats and/or recruitment
 - Grace H. will check if Charles Y. will be participating at the next meeting
 - Debbie L. will check with Ara W. for additional items
 - Discussion on modifying the name of the PMWG to better reflect the role that it will assume under the AM process.

Meeting Participants

Participant

Organization

Eric Gonzales	U.S. Bureau of Reclamation
Grace Haggerty	New Mexico Interstate Stream Commission
Mo Hobbs	Albuquerque Bernalillo County Water Utility Authority
Joel Lusk	U.S. Fish & Wildlife Service
Mike Marcus	Assessment Payers Association of the Middle Rio Grande Conservancy District
Kate Mendoza	Albuquerque Bernalillo County Water Utility Authority
Michael Porter	U.S. Army Corps of Engineers
Rich Valdez	SWCA Environmental Consultants
Janet Armstead	Western Ecosystems Technology, Inc.
Shay Howlin	Western Ecosystems Technology, Inc.
Debbie Lee	Western Ecosystems Technology, Inc.
Ashley Tanner	Western Ecosystems Technology, Inc.
Dave Wegner	Western Ecosystems Technology, Inc.

**Middle Rio Grande Endangered Species Collaborative Program
Executive Committee Charge to the
Population Monitoring Work Group
December 2018**

1.0 Purpose and Need

The primary goal of this Middle Rio Grande Endangered Species Collaborative Program (MGRESCP) Executive Committee (EC)-lead charge is to evaluate and recommend modifications, as appropriate, to the MRGESCP's current fish population monitoring program's plan (PopMon Plan). A fish population monitoring program is important to the MRGESCP to:

- Follow the status and trends of the Rio Grande Silvery Minnow (RGSM).
- Determine, with confidence, changes in the RGSM population with management of flow and habitat.
- Monitor the RGSM and other fish species of the MRG to better understand RGSM life history and species interactions.

The MRGESCP needs of a fish population monitoring program may not be fully met with the current plan and an evaluation of the long-term fish population monitoring program began in 2015. The Population Monitoring Work Group (PMW) was formed to conduct the evaluation of the PopMon Plan and provide their recommendations to the EC.

2.0 Background

The Population Monitoring Work Group (PMW) was initially established in 2012 by the EC to provide technical review and focused assessment related to historic, current, and future monitoring of the federally listed endangered Rio Grande Silvery Minnow (RGSM) in the Middle Rio Grande (MRG), New Mexico. This document updates the charge to the PMW with EC approved activities in 2018 and 2019. The EC tasked the group with evaluating and recommending refinement of the MRG Fish Population Monitoring Plan by implementing the following three major tasks¹:

- Task 1. Conduct a Workshop on Catch-per-Unit-Effort (CPUE) Methodology used by the Current Rio Grande Silvery Minnow (RGSM) Population Monitoring Program;
- Task 2. Review the Middle Rio Grande Fish Population Monitoring Plan (Fish PopMon Plan); and,
- Task 3. Update the Collaborative Program Middle Rio Grande Fish Monitoring Plan².

¹ Approval of the 1st Task for Review of the Collaborative Program Fish Monitoring Program for the Rio Grande Silvery Minnow: A Proposal for a CPUE Metrics and Methodologies Workshop. Submitted to the Executive Committee of the Middle Rio Grande Endangered Species Collaborative Program. July 13, 2012.

² Descriptions of the current fish population monitoring methodologies are contained in Dudley et al. 2018.

Under Task 1, a Population Monitoring Workshop was convened December 8-10, 2015 and scientists representing MRGESCP signatories and three (3) contracted independent scientists (Wayne Hubert, Mary Fabrizio, and Robert Hughes) met to discuss technical questions regarding the current population monitoring program's methodologies. The independent scientists were tasked with preparing an External Expert Panelists summary of findings report (Hubert et al. 2016).

Additional opportunity to obtain expert scientific review on the Rio Grande Silvery Minnow, including species monitoring, occurred during an Independent Science Panel that was convened February 1-2, 2017 (Noon et al. 2017), as part of U.S. Army Corps of Engineers project to develop an adaptive management framework for the MRG.

The recommendations from the two science panel reports (Hubert et al. 2016 and Noon et al. 2017) that apply to the fish population monitoring program are being used as guidance for evaluating and refining the current PopMon Plan.

This EC charge to the PMW focuses on Task 2 of the original EC direction to this workgroup for 2018 and 2019 and on analyses that will inform activities in Task 3. Additional EC direction is expected once the PMW provides their findings to the EC.

2.0 Approach

The following are the objectives and actions associated with each of the three major tasks:

2.1 Task 1. Conduct a Workshop on Catch-per-Unit-Effort (CPUE) Methodology used by the Current Rio Grande Silvery Minnow (RGSM) Population Monitoring Program

The July 2012 approved charge includes details on the workshop. This task was completed and the external scientists presented their report to the EC in 2016 (Hubert et al. 2016)

2.2 Task 2: Review Fish Population Monitoring Program

The EC has determined that the approach to Task 2 approved in 2012 remains valid, with corrections, modifications, and additions as noted. Task 2 activities are approved for the PMW over the next year.

July 2012 Objectives:

- Evaluate and refine sampling design, including statistical properties of spatial aspects (longitudinal locations of sampling sites, habitat in which samples are taken) and temporal aspects (frequency of sampling, times of year when samples are taken).
- Evaluate and refine sampling methods, including gear types, sampling strategies, etc.
- Evaluate and refine data collection protocols, including types of data collected, recording methods, quality control, electronic storage, and data custody.

- Evaluate and refine data analyses.
- Identify other data needs for concurrent sampling during fish monitoring to support other studies (e.g., augmentation, fish movement, drying, genetics, adaptive management) as part of a programmatic monitoring program.
- Evaluate how PVA may assist in refining monitoring.

The following 2018 corrections, additions and/or modifications are to be included in the Task 2 Objectives:

- 1. The two science panel recommendations (Hubert et al., 2016; Noon, 2017), additional data submittals and data analyses by contractors, and other current and relevant information will be used to conduct a thorough evaluation of the fish population monitoring plan review.*
- 2. Focus review in Task 2 to address MRGESCP or other specific management needs for a comprehensive fish monitoring program.*

July 2012 Task 2 Actions:

- Retain two or three external scientists with expertise in sampling design to participate in the workshop, evaluate and revise the fish monitoring plan, and prepare the workshop report.
- Conduct workshops and work sessions that address elements necessary for long-term fish population monitoring program development, including what other monitoring is needed that can be performed in conjunction with fish monitoring. Prepare and present a report to the EC as guidance to update the Fish Monitoring Plan for the Middle Rio Grande.

The following corrections, additions and/or modifications to be included in the Task 2 Actions:

- 1. External and MRGESCP scientists will be engaged in the PMW meetings and, as needed, focused workshops. PMW scientists will conduct statistical analyses and modeling exercises using available datasets to evaluate state and rate functions for the RGSM, such as survival, age distribution, spatial variability, and habitat use.*
- 2. Integrate and prioritize the two science panel recommendations.*
- 3. Identify specific management needs for focused assessment of current datasets and data gaps and sampling designs.*
- 4. Complete review of the 1993-2018 fish population monitoring data and incorporate additional data as provided annually.*
- 5. Gather and analyze other fish monitoring and research data (e.g., fish augmentation, fish salvage, floodplain monitoring, egg monitoring, water quality monitoring, etc.) as needed.*
- 6. Provide a report to the EC at the completion of Task 2 with recommendations on next*

steps.

2.3 Task 3: Update the Collaborative Program Middle Rio Grande Fish Monitoring Plan

Task 3, as described in the July 2012 EC charge, was written to address the transition of the MRGESCP to a Recovery Implementation Program (RIP) over a time frame agreed to by the EC and the Service of 3 years:

July 13, 2012 Objectives:

- An updated draft RGSM Population Monitoring Plan will be vetted through the federal agencies and RIP so that it can be funded and implemented in FY2014.
- It is assumed that the current monitoring program will continue until a new or revised program is implemented, evaluated, and refined.
- Update the current Fish Monitoring Plan with revisions that may include sampling design, data collection, quality control, storage, and custody; cost estimates; and responsibilities.
- Define the metrics of interest for the initial phase of the Monitoring Plan (3 yrs), define how they will be calculated from the monitoring data, and document data precision and accuracy for the desired performance (such as precision and correlation with some ‘ground truth’).
- Implement the updated Fish Monitoring Plan for a 3-year period for evaluation and refinement.
- Ensure that the needs of the Collaborative Program and the RIP are met with a monitoring program for RGSM sufficiently sensitive to:
 - a. Detect changes in RGSM abundance with management actions;
 - b. Provide reliable demographic recovery criteria for RGSM; and
 - c. Provide reliable metrics for sufficient progress for the RIP;
 - d. Utilize past data and analyses to be comparable to any proposed changes.

A RIP was not implemented for the MRGESCP, and a Biological Opinion (BiOp) was issued in 2016, and an Adaptive Management Framework is being developed. The following corrections, additions and/or modifications to be included in the Task 3 Objectives:

1. *Redefine, and obtain EC approval of the objectives for the design and implementation of a MRG Fish PopMon Plan that would provide feedback to the MRGESCP adaptive management program and the 2016 BiOp. Changes to Task 3 objectives will be accomplished in conjunction with implementation of the Task 2 objectives and activities.*

July 2012 Actions:

Integrate the findings of Tasks 1 and 2 and update the Fish Monitoring Plan with emphasis on the RGSM.

Implement and evaluate the Fish Monitoring Plan for meeting needs of the EC and the Service for monitoring species response(s) to specific management actions; demographic recovery criteria; and sufficient progress metrics.

The following corrections, additions and/or modifications to be included in the Task 3 Actions:

1. *Activities or actions for Task 3 will be identified as Task 2 provides new information and insight into the PopMon Plan. Development of Task 3 Actions will occur in 2019.*

3.0 Schedule and Cost

3.1 Tentative Schedule

An updated time schedule for the PMW Charge is provided in Table 1. The following summarizes the schedule for each task and action:

Table 1. Updated time schedule for Tasks 2 and 3

Action	Progress	Target Completion Date
Task 1: CPUE Workshop	<ul style="list-style-type: none"> • Completed 	April 2016
Task 2: Evaluate Current Fish Population Monitoring Plan		
2.1 Integrate and prioritize science panel recommendations	<ul style="list-style-type: none"> • Ongoing 	<ul style="list-style-type: none"> • TBD
2.2 Review data	<ul style="list-style-type: none"> • Population data available through 2017 in EXCEL and ACCESS 	<ul style="list-style-type: none"> • Ongoing
2.3 Gather other fish datasets	<ul style="list-style-type: none"> • Ongoing 	<ul style="list-style-type: none"> • Ongoing
2.4. Analyze data with assistance from external scientists	<ul style="list-style-type: none"> • Survival, age composition, demographics and other analyses are being conducted by Dr. Rich Valdez and others • Dr. Charles Yackulic (USGS) is proposing a model for review • Shay Howlin (WEST) is reviewing survival data 	<ul style="list-style-type: none"> • June 2019
2.5 Prepare and provide report to Executive Committee	<ul style="list-style-type: none"> • Begin assembling draft report for MRGЕСP review in May 2019; incorporate changes August 2019 	<ul style="list-style-type: none"> • October 2019
Task 3: Develop Fish Population Monitoring Plan		
3.1 Review and analyze alternative fish monitoring sample designs and methodologies	<ul style="list-style-type: none"> • Not begun 	<ul style="list-style-type: none"> • TBD
3.2 Prepare optional plans and rank them according to EC approved performance criteria (TBD) and cost-effectiveness.	<ul style="list-style-type: none"> • Not begun 	<ul style="list-style-type: none"> • TBD

3.2 Estimated Costs

Task 2 and initiation of Task 3 will include costs for contracting additional scientific/statistical expertise, WEST services, and in-kind services of the MRGЕСP signatories. Federal contracts

DRAFT for PMW review

or grants may be requested for support to the PMWG efforts but are not in place currently. A total estimated cost for the tasks described in this EC charge is expected to range from \$200,000 to \$300,000 including contractual and in-kind services through October 2019.

4.0 References

Dudley, R.K., S.P. Platania, and G.C. White. 2018. Rio Grande Silvery Minnow Population Monitoring During 2017: Draft Annual Report. A Middle Rio Grande Endangered Species Collaborative Program Funded Research Project. U.S. Bureau of Reclamation, Albuquerque, NM.

Hubert, W.A., M.C. Fabrizio, and R. Hughes. 2016. Summary of Findings by the External Expert Panelists: Rio Grande silvery minnow population monitoring workshop Isleta Casino and Resort, 8-10 December 2015. U.S. Bureau of Reclamation, Albuquerque, NM.

Noon, B., D. Hankin, T. Dunne, and G. Grossman. 2017. Independent Science Panel Findings Report: Rio Grande Silvery Minnow Key Scientific Uncertainties and Study Recommendations. Prepared for the U.S. Army Corps of Engineers, Albuquerque District on Behalf of the Middle Rio Grande Endangered Species Collaborative Program. Prepared by GeoSystems Analysis, Inc. Albuquerque, NM. June 2017. Contract No. W912PP-15-C-0008.

Middle Rio Grande Endangered Species Collaborative Program Executive Committee Population Modeling Workgroup Charge December 2018

1.0 Background

During 2012, the Middle Rio Grande Endangered Species Collaborative Program (MGRESCP) Executive Committee (EC) was considering forming into a Recovery Implementation Program (RIP) to address compliance issues with the management of water and Rio Grande Silvery Minnow (RGSM) in the Middle Rio Grande Valley (MRG) described in a 2003 Biological Opinion (US Fish and Wildlife Service [USFWS] 2003). The EC had concerns about the RGSM demographic criteria that were proposed to be used as metrics of sufficient progress for the RIP. Therefore the EC charged the ad hoc, Population Monitoring Workgroup with evaluating and updating the fish monitoring plan for the MRG (A Proposal for a CPUE Metrics and Methodologies Workshop, July 13, 2012).

The focus on this fish monitoring plan was the development of RGSM population parameters that would best meet the needs of the EC and the RIP. During 2015-2016, the EC conducted a Fish Population Monitoring Workshop resulting in a summary report from three external experts (Hubert et al. 2016). In 2016, the use of a RIP for Endangered Species Act (ESA) compliance was subsequently abandoned (USFWS 2016). Instead, the USFWS continued to use the results of RGSM Population Monitoring Program for ESA compliance (in an Incidental Take Statement) for those activities of the US Bureau of Reclamation (and other water management agencies) described in its 2016 Biological Opinion (USFWS 2016). In 2018, the EC requested that the Population Monitoring Workgroup refresh its charge. This document proposes a revised charge for the Population *Modeling* Workgroup for consideration and approval by the EC.

2.0 Purpose and Need

Stakeholder agencies of the MRGESCP may have additional needs for modeling or monitoring of the RGSM in the MRG. Individual RGSM or population modeling or monitoring can be used to predict the outcomes of management and associated uncertainty. RGSM Population Modeling can also be used to evaluate multiple competing hypotheses and determine monitoring and research programs to reduce uncertainty and discriminate amongst competing hypotheses. We proposed that the Population Monitoring Workgroup be renamed the RGSM Population Modeling Workgroup (PMW). The PMW should be charged with developing and operationalizing multiple competing hypotheses of RGSM population models to increase transparency and minimize unintended assumptions. The PMW would: 1) develop and fit a general model structure for RGSM in the MRG, 2) identify and operationalize a set of competing hypotheses, and 3) identify additional research or monitoring that can discriminate among hypotheses. The PMW would also continue to be used to review, evaluate, design, and model RGSM monitoring programs for specific MRGESCP stakeholder management actions.