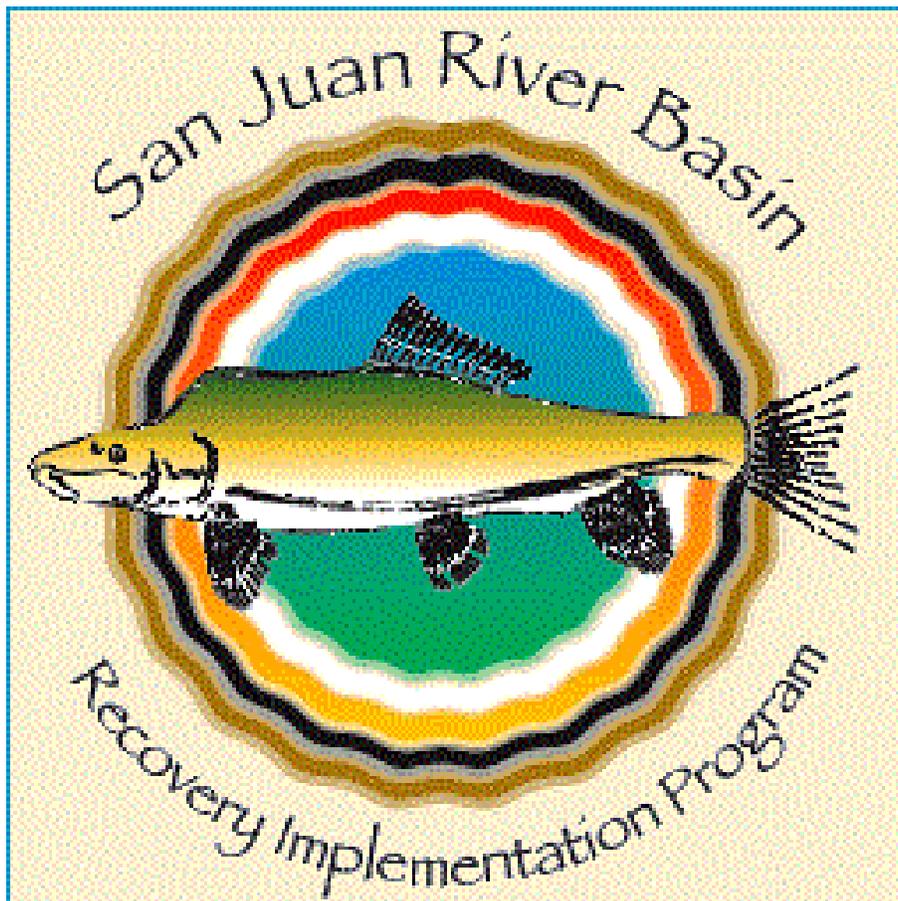


**Colorado Pikeminnow and
Razorback Sucker Augmentation
in the San Juan River Basin:
Fiscal Year 2021 Project Proposal**

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Background

Colorado Pikeminnow (*Ptychocheilus lucius*) and Razorback Sucker (*Xyrauchen texanus*) are federally-listed endangered fishes found in the San Juan River. The San Juan River Recovery Implementation Program (SJRIP) was initiated in 1992 to protect and recover populations of both species in the San Juan River Basin (Basin) while water development proceeds in compliance with all applicable federal, state, and tribal laws (SJRIP 2014). Delisting of Colorado Pikeminnow, as described in the recovery goals, is dependent on the maintenance of a wild population of at least 2,600 adults in the Green River sub-basin and at least 700 adults in the Upper Colorado River sub-basin, as well as a target of 1,000 age 5+ (>300 mm TL) in the San Juan River sub-basin. Delisting criteria include a self-sustaining population that either exceeds 1,000 adults in the Upper Colorado River sub-basin or a self-sustaining population of at least 700 adults in the Upper Colorado River sub-basin and one of at least 800 adults in the San Juan River sub-basin. Razorback Sucker recovery criteria are dependent on the establishment of four self-sustaining populations of 5,800 adult fish each: two populations in the Upper Colorado River Basin (one population in the Green River sub-basin, the other in either the Colorado River or San Juan River sub-basins) and two populations in the Lower Colorado River Basin (SJRIP 2014).

Fish community monitoring during the SJRIP's seven-year research period, 1991-1997, collected few wild Colorado Pikeminnow. This prompted investigations into augmenting the population with hatchery-reared fish. Based on their results, Utah Department of Wildlife Resources experimentally stocked Colorado Pikeminnow in 1996 with the purposes of evaluating dispersal and retention of stocked Colorado Pikeminnow (Ryden 2008). This experimental stocking, along with subsequent stockings of larval, sub-adult, and adult fish, resulted in the recapture of hatchery-reared fish. In 2003, *An Augmentation Plan for Colorado Pikeminnow in the San Juan River* was finalized (Ryden 2003). This plan, and later amendments, called for the annual stocking of $\geq 300,000$ age-0 and $\geq 3,000$ age 1+ fish in the San Juan River until 2009. In early 2010 a revised plan, *Augmentation of Colorado Pikeminnow (Ptychocheilus lucius) in the San Juan River: Phase II, 2010-2020* (Furr 2010), was developed to direct the continuation of stockings through 2020. The Phase II augmentation plan reflected changes requested by the SJRIP Biology Committee that discontinued the stocking of Passive Integrated Transponder (PIT) tagged age-1+ Colorado Pikeminnow in exchange for stocking increased numbers of age-0 fish ($n \geq 400,000$). In 2020, the SJRIP Biology Committee recommended changing the Colorado Pikeminnow stocking strategy. Beginning in 2021, the SJRIP will release annually PIT tagged ($n = 20,000$) Colorado Pikeminnow. These fish will allow for researchers to identify wild vs hatchery produced Colorado Pikeminnow, and allow other augmentation related research questions to be addressed.

Similarly, after the failure to collect any wild Razorback Sucker in the San Juan River during three years of intensive studies (1991-1993), the SJRIP Biology Committee initiated an experimental stocking program for Razorback Sucker (Ryden and Pfeifer 1994). Subsequently, Critical Habitat for Razorback Sucker and Colorado Pikeminnow was designated between the Hogback Diversion structure (RM 158.6) downstream to Neskahai Canyon (RM -35.0) in Lake Powell; approximately 35 river miles below the waterfall which demarcates RM 0.0 on the San Juan River (USFWS 1994). In 1996, 942 Razorback Sucker were stocked at four stocking sites. Based on the successes of the experimental stocking study, a full-scale augmentation effort for Razorback Sucker was initiated in 1997 following the *Five-Year augmentation plan for razorback sucker in the San Juan River* (Ryden 1997). In February 2003, the SJRIP Biology Committee extended the augmentation effort for Razorback Sucker with *An augmentation plan for razorback sucker in the San Juan River: An addendum to the five-year augmentation plan for razorback sucker in the San Juan River* (Ryden 2003). However, due to changes in

augmentation protocols and difficulties in producing requested numbers of fish, initiation of the eight-year addendum to the original plan was delayed until 2009. That augmentation plan, in effect from 2009-2016, called for the stocking of 91,200 Razorback Sucker over an eight-year period, or $\geq 11,400$ fish per year, from a combination of sources including the Ouray National Fish Hatchery – Grand Valley Unit (Ouray NFH-GVU), the Southwestern Native Aquatic Resources and Recovery Center (Southwestern Native ARRC) and grow-out ponds on Navajo Agricultural Products Industry (NAPI) land stocked with fish from Southwestern Native ARRC. A *Final Augmentation Plan for Razorback Sucker in the San Juan River Basin* was submitted to the SJRIP Biology Committee in 2020. This plan recommends that the Program continue to stock all available Razorback Sucker into the San Juan River with a goal of stocking $\geq 4,800$ fish (≥ 300 mm TL) at all sites previously stocked, both in and outside of critical habitat.

The augmentation programs for the Colorado Pikeminnow and Razorback Sucker populations in the San Juan River are specifically addressed in the following Elements, Goals, Actions, and Tasks of the 2016 SJRIP Long Range Plan (LRP).

Element 1. Management and Augmentation of Populations of Colorado Pikeminnow and Razorback Sucker

- **Goal 1.1 - Establish a Genetically and Demographically Viable, Self-Sustaining CPM and RBS Populations.**
 - **Action 1.1.1** Develop plans for rearing and stocking CPM and RBS.
 - **Task 1.1.1.1** Review and update augmentation plan for CPM and adjust stocking goals as needed.
 - **Task 1.1.1.2** Review and update augmentation plan for RBS and adjust stocking goals as needed.
 - **Action 1.1.2** Produce, rear, and stock sufficient numbers of CPM to meet stocking goals of augmentation plan.
 - **Task 1.1.2.2** Stock at least 400,000 age-0 CPM annually into the San Juan River . (Change in 2021 to 12,000 Age-1 CPM.
 - **Task 1.1.2.3** Opportunistically stock available CPM in excess of those described above.
 - **Action 1.1.3** Produce, rear, and stock sufficient numbers of RBS to meet stocking goals of augmentation plan.
 - **Task 1.1.3.2** Produce RBS in three Navajo Nation Agricultural Products (NAPI) grow-out ponds (3,000-3,500 fish per pond, > 200 mm TL) and stock into the San Juan River.
 - **Task 1.1.3.4** Stock at least 91,200 RBS (> 300 mm TL) during eight year stocking period or 11,400 per year.
 - **Task 1.1.3.5** Opportunistically stock available RBS in excess of the 11,400 described above.

The USFWS's Fish and Wildlife Conservation Offices is the primary office for satisfaction of policy requirements and to ensure compliance with needs relative to fish health, stocking requests and priorities, deviation from approved stocking requests, pre-stocking treatments (e.g. nonnative fish removal from stocking sites), and applicable environmental regulation. New Mexico Fish and Wildlife Conservation Office is the pertinent field office for processing of SJRIP stocking requests.

The Southwest Regional Policy for Stocking of Fish and Other Aquatic Species specifies regional policy for these actions. Stocking of fish reared at USFWS hatcheries in the Southwest Region are subject to Regional Policy No. 03-06, “Stocking of fish and other aquatic species”. This policy applies to production, transport, and stocking for USFWS hatchery production and incorporates guidance and requirements from USFWS Fish Health Policy (713 FWM 1-5). Specifically, the policy’s main objectives are to 1) recover fish and other aquatic resources population protected under the Endangered Species Act, 2) restore declining fish and other aquatic resource populations before they require listing under the Endangered Species Act and 3) Maintain healthy, diverse fish and other aquatic resource populations.

Objectives for Fiscal Year 2021

1. Annually stock a minimum of 12,000 PIT tagged age 1 Colorado Pikeminnow. *The time estimate to meet this objective is ten days. We anticipate travel to Southwest Native ARRC and to the San Juan River to meet objective goals.*
2. Stock all available Razorback Sucker (≥ 300 mm TL), with the intent to stock $\geq 4,800^*$ fish per year until the population reaches the minimum population size of 5,800 adult RBS. (No RBS < 300 mm TL will be stocked to help identify wild recruiting juvenile fish). *The time estimate to meet this objective is 15 days. We anticipate travel to Southwest Native ARRC and to the San Juan River to meet objective goals.*
3. Collect and analyze Razorback Sucker and Colorado Pikeminnow recapture data to calculate both survival and population estimates. We will use these analysis to modify or update plans for both as needed (see methods for details). *The time estimate to meet this objective is one month.*
4. Coordinate with the San Juan Program Office to quantify success of augmentation (see methods for details). *The time estimate to meet this objective is five days.*

*The target number of Colorado Pikeminnow and Razorback Sucker to be stocked can be adjusted (increased or decreased as appropriate) in response to known population changes (e.g., a known level of recruitment, observed changes to apparent survival, increased retention and distribution, etc.). We will only make changes to augmentation numbers after discussion and agreement with the Biology Committee.

Methods and Approach

- Objective 1. Coordinate with Southwestern Native ARRC to procure and stock Colorado Pikeminnow according to guidelines set forth in *Augmentation of Colorado Pikeminnow (Ptychocheilus lucius) in the San Juan River 2020-2025. (New Mexico FWCO in preparation).*

The SJRIP Biology Committee has recommended that starting in 2021 Southwestern Native ARRC will shift production from 400,000 Age-0 Colorado Pikeminnow to Age-1 PIT tagged Colorado Pikeminnow. The Program has requested a minimum stocking target of 12,000 fish; this target number will likely increase. New Mexico FWCO will assist with PIT tagging all Colorado Pikeminnow at Southwest Native ARRC, and assist with stocking fish into the San Juan River.

Fish will be released in the post irrigation season, to reduce the risk of entrainment into irrigation canals. Stocked age-1 Colorado Pikeminnow will be acclimatized to the physical water chemistry of the river at the time of stocking. We will monitor a small subset of stocked fish for stocking related stress-induced mortality within an *in situ* enclosure (aka, soft release) for up to 48 hours prior to release into the San Juan River Basin.

- Objective 2. Coordinate with Southwestern Native ARRC, Navajo Nation Department of Fish and Wildlife (NNDFW), and Ouray NFH-GVU to procure and stock Razorback Sucker according to guidelines set forth in *Augmentation Plan for Razorback Sucker in the San Juan River Basin* (Furr 2020).
 - Southwestern Native ARRC will continue with a production target of 10,500 Razorback Sucker (150-250 mm TL) into the NAPI ponds (3,500 fish/pond). Navajo Nation DFW will receive, grow out and stock all fish annually. The New Mexico FWCO will assist with fish harvest and stocking from NAPI, and these activities are covered in this SOW. The Ouray NFH-GVU will provide the SJRIP Augmentation Program with ~2,000-4,000 Razorback Sucker (≥ 300 mm TL) annually. We assist Ouray with pre-stocking water quality readings, as well as timing and location of stocking. New Mexico FWCO will assist with stocking Razorback Sucker into the San Juan River. All fish will be stocked into existing sites to eliminate the risk of fish entrainment in irrigation canals. Stocking sites may be adjusted upon request by the Program Office. Furthermore, actively-harvested NAPI fish ≤ 299 mm TL will be held until they reach ≥ 300 mm TL, and then stocked into the San Juan River, or used for other purposes. Therefore, only ≥ 300 mm TL PIT tagged Razorback Sucker will be stocked into the San Juan River. This will help distinguish wild recruiting Razorback Sucker as any untagged fish captured that is < 300 mm TL will be considered as a wild produced fish. Any opportunistically-acquired Razorback Sucker available to the SJRIP will be tagged and stocked on a case-by-case basis. Finally, New Mexico FWCO maintains a database of all PIT tag numbers from each stocking. This database is supplied to the Program Office.
 - We will continue to work to finalize construction and begin testing a flow conditioning on-site recirculating holding tank at NAPI ponds. Once constructed, the tank will be used to run all passively harvested fish that are **< 300 mm TL** from the NAPI ponds through flow conditioning prior to stocking into the San Juan River. The goals and objectives for this project will be determined through experiment. The test period for running fish through the flow conditioning tanks will begin once the system is complete, and we will be able to determine the number of test runs that can be done annually. **Note: this project was considered non-essential and was postponed until at least FY 2021, because of current and potential future travel restrictions and health concerns of COVID-19.**
- Objective 3. The New Mexico FWCO will collect and report stocking information such as the timing, location, and physical water chemistry at time of fish releases. We will also report the number and size range of fish released. Once recapture data is available, we will calculate and report survival rates and population estimates from each cohort of released fish. We will use recapture data from annual demographic monitoring trips and remote PIT tag arrays for analysis and data reporting. These data will then be provided in annual reports and incorporated into long term plans for both Colorado Pikeminnow and Razorback Sucker. The New Mexico FWCO will

conduct all requested data analysis and reports will be submitted to the Program Office for review by the Biology Committee. We propose evaluating augmentation success through: meeting augmentation target goals for each species, using demographic monitoring results for adult survival and population estimates, using N_b estimates to track trends in genetic integrity, and small bodied monitoring to evaluate recruitment. These analyses will be integrated from other reports and studies. Additional analysis will be considered if requested by the Program Office, but are not covered by this SOW, and will be included in future SOWs.

- Objective 4. The New Mexico FWCO will communicate with the Program Office to ensure that augmentation goals and required analysis are understood and are being met. If the Program Office requests specific analysis from New Mexico FWCO we will determine our abilities to do the analysis and respond to the Program Office.

In support of these objectives, the New Mexico FWCO will identify new or alternative suitable stocking sites throughout the basin (e.g., tributaries, secondary channels, etc.) if we lose access to stocking sites or if we are requested to seek additional or alternate release sites. Site selection for Colorado Pikeminnow stockings will follow the *Stocking plan and protocol for the augmentation of Colorado Pikeminnow (Ptychocheilus lucius) in the San Juan River* (Furr and Davis 2009), until it is replaced by other guidance. Stocking locations and protocols for Razorback Sucker will be outlined in *Augmentation Plan for Razorback Sucker in the San Juan River Basin* (Furr 2020). Modifications to protocols and plans will be made to reflect new data as it becomes available.

Products/Schedule

An electronic data file will be provided for inclusion in the centralized database by 31 December 2021. A draft summary report detailing findings will be submitted to the SJRIP Biology Committee, by 31 March 2021. Revisions will be completed and a final annual report will be submitted by 1 June 2021. Any inability to meet deadlines will be communicated to the Program Office, and we will negotiate a compromise deadline.

Budget Justification

The budget for Colorado Pikeminnow and Razorback Sucker augmentation now includes our proposed work as augmentation lead for the Program, and for the Razorback Sucker NAPI pond harvest and stocking each year. We re-calculated the travel associated with each project and the management costs for each project, and by doing this we decreased the funds we are requesting for the combined scopes of work.

| FY 2021 | | | | | | |
|--|-------------------|-------------------|------------------|-------------------|---|--------------------|
| Razorback Sucker and Colorado Pikeminnow Augmentation | | | | | | |
| <u>Labor Cost</u> | | | | | | |
| <u>Position</u> | <u>Grade/Step</u> | <u>ry w/ Ben</u> | <u>Hours/Day</u> | <u>Total Days</u> | | <u>Sub-total</u> |
| Fish Biologist | GS 9/7 | \$47.16 | 8 | 45 | | \$16,977.60 |
| Fish Biologist | GS 9/4 | \$41.72 | 8 | 40 | | \$0.00 |
| Supervisory Fish Biologist | GS 13/4 | \$71.12 | 8 | 10 | | \$5,689.60 |
| Adminstrative Officer | GS 9/9 | \$46.93 | 8 | 5 | | \$1,877.20 |
| Supervisory Fish Biologist | GS 14/2 | \$80.24 | 8 | 5 | | \$3,209.60 |
| Fish Biologist | GS 11/7 | \$52.04 | 8 | 5 | | \$2,081.60 |
| Bio. Science Techs (2 people)* | GS 5/1 | \$18.67 | 8 | 10 | | \$1,493.60 |
| | | | | | Total Labor | \$31,329.20 |
| <u>Travel and Per Diem*</u> | | | | | | |
| | <u>Days</u> | <u>Rate</u> | | | | <u>Sub-total</u> |
| Hotel Costs | 36 | \$96.00 | | | | \$3,456.00 |
| Hotel tax | 36 | \$12.00 | | | | \$432.00 |
| Per Diem (Travel Day) | 32 | \$41.25 | | | | \$1,320.00 |
| Per Diem (Full Day) | 32 | \$55.00 | | | | \$1,760.00 |
| Concur Fee | 36 | \$14.75 | | | | \$531.00 |
| | | | | | Total Travel/Per Di | \$7,499.00 |
| <u>Equipment</u> | | | | | | |
| | <u>Miles/Qty</u> | <u>Total Mile</u> | <u>Rate</u> | | | <u>Sub-total</u> |
| 1 truck x 10 trips - ABQ to Farmington, NM - 366mi RT + 150mi/trip local commute | 516 | 5,160 | \$0.54 | | | \$2,786.40 |
| Remote biologist savings | \$ 13,350.40 | | | | Equipment | \$2,500 |
| | | | | | Sub-total for Augmentation - NMFWCO only | \$41,328.20 |
| | | | | | Overhead 3% | \$1,239.85 |
| | | | | | Grand Total | \$42,568.05 |

* Travel and per diem costs include NAPI pond harvest, field work and assistance tagging fish at Southwest Native ARRC.

FIGURE 1. COLORADO PIKEMINNOW AND RAZORBACK SUCKER AUGMENTATION/NAPI POND HARVEST AND STOCKING BUDGET FOR FY 2021.

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Bill Miller, Southern Ute Indian Tribe, BC member

How can the technical aspects of this SOW be improved?

Line 47-49 states 20,000 age 1 Colorado Pikeminnow. The number discussed at the BC meeting was 12,000 based on capacity at SNARRC and other considerations. The proposed number for stocking should agree with the current direction from the BC. **Changed**

Line 120: Objective 2 should be rewritten to state the intent to stock up to 4,800 fish. The statement “stock all available Razorback Sucker” is too general. **Done**

Line 170: Objective 3 should also include a review by the Biology Committee. **Done**

What is this SOW’s contribution to recovery?

No comments

Matt Zeigler, NMDGF, BC member

How can the technical aspects of this SOW be improved?

Line 48,49,119: This should be amended to “Beginning in 2021, the SJRIP will annually release 12,000 age-1 PIT tagged Colorado Pikeminnow”. 20,000 Pikeminnow appears to be a mistake because Southwestern ARRC can only produce 12,000 age-1 CPM per year. **Changed**

What is this SOW’s contribution to recovery?

Augmentation efforts have proven essential to Colorado Pikeminnow and Razorback Sucker recovery efforts in the San Juan River.

Program Office

How can the technical aspects of this SOW be improved?

- Objectives could be clarified to explain specifically how NMFWCO is helping Southwestern ARRC, NAPI ponds, and GJFWCO-Horsethief Canyon? What are the needs and how is NMFWCO filling those gaps. **Attempted to provide answers to how augmentation provides support for each of the separate programs. New Mexico FWCO is listed as the augmentation lead for the SJRRIP; the funding we receive for augmentation provides funding to support the personnel responsible for augmentation, both through field activities and through coordination and planning.**
- Detail the analyses that will be used for Objective 3 and provide a timeline for when these will be accomplished, otherwise remove the objective if it is expected that the PO will do these analyses. **Done**
- There seems to be a fairly standard stocking regime so it is difficult to understand what else needs to be figured out as far as stocking locations are concerned. Explaining what those gaps are and how they will be addressed would be useful. **Not sure where this comment applies, perhaps I had changed wording from a previous document. We will continue to stock fish at established stocking locations, but if requested or we lose access to a stocking site we can add or change stocking locations.**
- It would help to understand how this SOW is integrated with that from NAPI Ponds, Southwestern ARRC, Horsethief Canyon, and Remote Biologist SOWs. **We separated the SOW for the Remote Biologist- it is now a stand alone SOW, the duties of the Remote biologist are defined in that SOW. Our budget for the NAPI ponds SOW is contained in this SOW, and was removed from the Navajo Nations SOW. the Augmentation SOW contains the work that pertains to our role as the augmentation lead for this program, and field work associated with all stockings, and travel to Southwest Native ARRC to assist with tagging both species. We provided brief details on how we will assist Southwest Native ARRC and Grand Junction FWCO with augmentation.**

Editorial:

Objectives for FY21 states they are stocking 20,000 PIT tagged age-1 CPM. Southwestern ARRC plans to stock 12,000 fish. **Changed.**

What is this SOW's contribution to recovery?

Stocking is one of the primary management actions that directly contributes to increased numbers of fish in the river.