

Fiscal Year 2021 Project Proposal

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Razorback Sucker Augmentation at NAPI Grow-Out Ponds

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Background

The Long-Range Plan for recovery of endangered fishes in the San Juan River calls for propagation and augmentation of Razorback sucker, *Xyrauchen texanus*, (RBS). Avocet East and West and Hidden ponds on Navajo Agricultural Products Industry (NAPI) lands will grow out RBS for stocking into the San Juan River in 2021.

Avocet Pond was originally a single pond built for watering cattle. On March 2, 1998 Avocet was divided into 2 ponds known as Avocet East and West. Avocet West is 3.4 acres and holds 18 acre-feet of water. Avocet West has a siphon for draining the pond. Avocet East is 3.52 acres and holds 19.6 acre-feet of water. Avocet East had no siphon when the ponds were divided, so draining was accomplished by renting a battery of water pumps. A siphon was installed in Avocet East during FY 2008 and the water can now be managed independent of Avocet West and without the need for pumping.

In October of 1999, Hidden Pond was built to rear razorback sucker. Hidden Pond is 2.83 acres. The dam was breached due to a storm event and the fish were lost. The dam was re-built in FY 2000 and a toe drain and spillway were built to protect the dam. Hidden Pond was lined with bentonite and contoured and a kettle was installed to facilitate fish harvest. A siphon was installed in July 2003. A salamander fence was installed around the Hidden Pond perimeter in August of 2003 to exclude predatory tiger salamanders.

Responsibility for Management of the NAPI ponds was originally shared between the U.S. Fish and Wildlife Service (Service), Bureau of Indian Affairs (BIA), Keller-Bliesner Engineering and Ecosystems Research Institute. The Service was responsible for determining when and which ponds would receive RBS. In addition, the Service conducted sample counts and harvested the ponds with the assistance of the BIA. Keller-Bliesner was responsible for design and construction of the Six Pack ponds and re-construction of Hidden Pond. The BIA was responsible for monitoring water quality and Ecosystems Research was responsible for fertilization of the ponds and for developing a pond management plan.

Original pond management was for multiple cohorts to be raised in the ponds. Harvesting would be done passively with fyke nets so that the ponds would not be drained on an annual basis. In FY 2007, it was determined to change pond management direction. All of the ponds would be drained and harvested and single cohort management would replace the multiple cohort approach. During the first harvesting and draining of a Six-pack Pond, high mortality resulted when the number of fish remaining in the pond could not be removed before they succumbed to the rapidly warming water. Adjustments were made to reduce the mortality in future harvesting and draining events. The adjustments consisted of increasing the trapping effort prior to de-watering to reduce the number of fish remaining in the pond. In addition, the final fish removal would be accomplished with a higher pool of water to slow the warming of the water during the time of final harvest. This resulted in less mortality.

The Navajo Nation Department of Fish and Wildlife (NNDFW) was contracted to assume responsibility for daily management of the NAPI ponds in 2007. The Service assists the NNDFW with pond harvest (active and passive) as needed.

The ponds have been fenced and electric lines have been installed at each of the ponds. Aerators have been installed at each of the ponds to improve water quality. Water quality issues have caused fish mortalities in some of the ponds in the past. Water quality issues appear to have been much improved since the installation of the 2016 aerators and air lines.

Objectives

(NAPI Ponds Management)

Manage razorback sucker grow-out in East Avocet, West Avocet, and Hidden ponds to provide an additional source of RBS to supplement the augmentation program. Harvest, Passive Implant Transponder (PIT) tag, and stock razorback sucker from the three grow-out ponds into the San Juan River, in order to assist in fulfilling the tasks and objectives outlined in the current version of *An Augmentation Plan for Razorback Sucker in the San Juan River* (Ryden 2003).

- 1) Manage three grow-out ponds using a single cohort strategy; including passive and active harvest techniques. All three ponds will be in production for the 2021 season. Our passive harvest percentage is at 3% and active harvest number is at 100% of fish removed. Increasing Fyke net use for this year per pond from 2 to 4, this will aide with our passive harvest numbers percentage increase. Completion of the kettle at Hidden in early spring of 2020 was a tremendous help during active harvest. Winter of 2020 East Avocet had a kettle installed and both Hidden and East Avocet were setup with a new drain system. Aquatic Consultants came in and replaced the Siphon system with new drain piping. We are hoping to install a new drain and kettle at the West Avocet to assist with better harvest numbers.
- 2) Annually stock 3,500 (≥ 175 mm) razorback sucker per pond.
- 3) Harvest all ponds on an annual basis.
 - a. All Razorback Sucker will be scanned for a PIT tag and the number will be recorded. If tag cannot be detected, fish will be implanted with a PIT tag prior to stocking into the San Juan River.
 - b. From recent conversations among the Biology Committee, it has been decided that stocking of any Razorback <300 mm TL into the San Juan River will no longer be acceptable.
 - c. Stock ~ 4,200 to 6,300 fish based on 40-60% return.
 - 3c. Investigate and utilize multiple stocking localities. Locations are determined by USFWS, but PNM release site is a constant location for stocking.
- 4) Prioritize ways to increase return rates of Razorback Suckers. Currently seeking ways to improve the efficiency of fish harvest to minimize stress and improve water quality.
 - a. Continue to search for funding to install a harvest kettle and drain in West Avocet Pond.
 - b. Continue to search for funding to remove siphons and replace with drains in West Avocet and Hidden Pond.
 - c. Continue to search for funding to design and build a Fish Processing Center between East and West Avocet Ponds to be used for all NAPI Pond Fish Harvesting.
 - d. Design and install pond cover to deter predators and provide shade from the sun.

Location

The RBS grow-out ponds are located in Block III of Region 2 on NAPI lands, south of Farmington, New Mexico. Avocet East and West are located NW of the intersection of N 4062 and N 4087, which is approximately 3 miles southwest of the Ojo Amarillo NHA Housing Subdivision. Hidden Pond is located SE of the intersection of N 4087 and N 4095 approximately 1-mile northwest of the NAPI Region II Complex.

Methods/Approach

The NNDFW will be responsible for overall management of the NAPI ponds regarding daily management duties, harvesting, and stocking. The Service, NMFWCO, will be responsible for coordinating the stocking of the ponds with Southwestern Native Aquatic Resource and Recovery Center and NNDFW per US Fish and Wildlife Service Region 2 stocking policy. The NNDFW will be responsible for daily management of the three grow out ponds on NAPI with assistance by the Service, Region 2. Harvesting, tagging, and stocking will be conducted by NNDFW, with assistance from the Service if additional personnel are needed. Associated data management and reporting for the project will be handled by staff from the NNDFW.

NMFWCO has been assisting with beginning of the season pond vegetation mowing to keep the willows and reeds from overgrowing and being a nuisance. The remote biologist has been assisting with pipe repairs, conditioning tank setup and operation, monthly sample counts and stocking both passive and active. A team from NMFWCO does come up for end of the season to assist with active harvest. They are responsible for selecting the stocking sites and number of RBS taken to each site from the three ponds.

Pond management requires that staff monitor and record water quality and quantity, and feed the fish on a daily basis. Water quality samples parameters include dissolved oxygen concentrations, pH, water temperature and conductivity. Measurements are taken twice a day from each corner of the ponds. Fish food calculations are calculated each month after sample counts have been conducted. Using the pond temperature, we are able to calculate the growth percentage and input that into the overall feed calculation and feeding rate. The calculation is [(lbs./fish) *growth rate*total number of fish in pond. In additional, staff manages water quantity to ensure that water quality is optimal. Maintenance includes operating and repairing valves, aerators and pipes, evaluating the pond perimeters for erosion problems, repairing fences, monitoring aquatic vegetation and maintaining a log book and database for management of the ponds.

During FY 2021, East Avocet, West Avocet, and Hidden ponds will be managed for a single cohort of RBS. NNDFW will implement passive harvest using fyke nets to trap, tag, and stock RBS into the SJR for several days or months prior to dewatering the ponds. As the ponds are dewatered, NNDFW and Service staff will work together to do the final RBS removal, tagging, and stocking into the SJR.

Aquatic Consultants has been apart of the project from getting the aeration system overhauled, kettle and drain installation and most recently the inlet water supply piping at the Avocet ponds. They come in once a month to perform pond vegetation treatments and aeration system management; they provide a brief report of what was done at each pond for every monthly site visit. They provide equipment and personnel when we are in need during active harvest or emergency repairs at the ponds.

Whenever the ponds are drained, they will be evaluated for structural stability. Areas away from ponds that may be impacted by dewatering will also be evaluated. Staff will identify and document any structural damage to the ponds and dewatering areas if necessary. Feasibility will determine whether improvements are made or not. This proposal does not include any maintenance or repair work that is major and requires mobilization of heavy equipment and is outside of the constraints of this budget.

Products/Schedule

In the spring of 2021, Southwest Native Aquatic Resources and Recovery in Dexter, NM will deliver 10,500 \geq 175 mm RBS to the three NAPI grow-out ponds. In the fall of 2021, the NAPI ponds will be de-watered and the RBS, which are targeted to be \geq 300 mm will be harvested and transported to the San Juan River for stocking. A database summarizing numbers of fish, stocking locations and PIT tag

numbers will be submitted to the USFWS. A draft report will be submitted by 31 March 2021 and finalized by 1 June 2021. This report will include the extra data collected during the season including Aquatic Consultant visits, Water Quality data, Feeding rates and sample count data.

Fiscal Year - 2021 NNDFW NAPI Ponds Budget	
Personnel	
Fish Biologist	\$47,673.60
Fish Culturist, Seasonal 1040 hrs.	\$4,986.80
Fringe Benefits Fish Biologist	\$22,826.12
Fringe Benefits Fish Culturist	\$482.72
Sub-Total Personnel Expenses	\$75,969.24
Travel	
GSA	\$12,546.00
Per Diem Lodging and Meals	\$3,725.00
Travel Sub-Total	\$16,271.00
Operating Supplies	
3qty - Pulaski w/sheaths	\$332.40
3qty - Shovel	\$204.75
3qty - Tree Limb Saw	\$637.38
3qty - Limb Saw Blades	\$229.47
1qty - Dewalt radio/charging station	\$219.00
2qty - Reciprocating Saw Dewalt	\$344.00
2qty - Reciprocating Blades pk10	\$79.97
6qty - Dewalt Battery extra	\$539.91
3qty - HD limb loppers	\$74.25
1qty - MS-311 Chainsaw	\$489.95
1qty - Performance zip chaps - 6 layer	\$109.99
Rangen Fish Feed (3mm and 4mm) 1,000 lbs	\$1,300.00
Sub-Total Operating Supplies	\$4,561.07
Consulting NAPI Pond Management	\$27,825.00
Subtotal	\$124,626.31
Indirect Cost 18.7% See Worksheet	\$19,633.63
Total NAPI Ponds	\$144,259.94

Response to questions:

Program Office

How can the technical aspects of this SOW be improved?

- It would be good to see all the data collected during the growing season (i.e., temporal data on water temperature, DO, feeding rates) in an annual report that is included in the description of this SOW's deliverables.

Response: The 2021 Annual report will include the extra data collected like our water temperature, DO and Feed rates.

- It would be useful to see a table of annual return rates over time to assess overall trends in efficiency.

Response: The 2021 Annual report will have a table included to see the return rates of the previous years to assess efficiency of the NAPI ponds.

- It seems that the current need is to increase return rates and the SOW should prioritize ways to increase those rates since increasing that would likely be the most cost-effective means of getting more fish into the system.

Response: Currently seeking ways to improve the efficiency of fish harvest to minimize stress and improve water quality.

- Continue to search for funding to install a harvest kettle and drain in West Avocet Pond.
- Continue to search for funding to remove siphons and replace with drains in West Avocet and Hidden Pond.
- Continue to search for funding to design and build a Fish Processing Center between East and West Avocet Ponds to be used for all NAPI Pond Fish Harvesting.
- Design and install pond cover to deter predators and provide shade from the sun.

- Since Aquatic Consultants Inc. is being contracted to help with the ponds it would be useful to understand their involvement and what they are doing.

Response: Aquatic Consultants has been a part of the project from getting the aeration system overhauled, kettle and drain installation and most recently the inlet water supply piping at the Avocet ponds. They come in once a month to perform pond vegetation treatments and aeration system management; they provide a brief report of what was done at each pond for every monthly site visit. They provide equipment and personnel when we are in need during active harvest or emergency repairs at the ponds.

- Provide a description of the support provided by the NMFWCO for this SOW.

Response: NMFWCO has been assisting with beginning of the season pond vegetation mowing to keep the willows and reeds from overgrowing and being a nuisance. The remote biologist has been assisting with pipe repairs, conditioning tank setup and operation, monthly sample counts and stocking both passive and active. A team from NMFWCO does come up for end of the season to assist with active harvest. They are responsible for selecting the stocking sites and number of RBS taken to each site from the three ponds.

What is this SOW's contribution to recovery?

- Stocking is one of the primary management actions that directly contributes to recovery.

Response: Harvest all ponds on an annual basis. All Razorback Sucker will be scanned for a PIT tag and the number will be recorded. If tag cannot be detected, fish will be implanted with a PIT tag prior to stocking into the San Juan River. From recent conversations among the Biology Committee, it has been decided that stocking of any Razorback <300mm TL into the San Juan River will no longer be acceptable. Stock ~ 4,200 to 6,300 fish based on 40-60% return. Investigate and utilize multiple stocking localities. Locations are determined by USFWS, but PNM release site is a constant location for stocking.