

**RECOVERY PROGRAM
FY 2018-2019 SCOPE OF WORK for:**

Recovery Program Project Number: 123d

Walleye control on the lower Green and Colorado Rivers

Reclamation Agreement number: R14AP00007
Reclamation Agreement term: 5/1/2014-9/30/2018

Note: Recovery Program FY18-19 scopes of work are drafted in May 2017. They often are revised before final Program approval and may subsequently be revised again in response to changing Program needs. Program participants also recognize the need and allow for some flexibility in scopes of work to accommodate new information (especially in nonnative fish management projects) and changing hydrological conditions.

Lead agency: Utah Division of Wildlife Resources
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Category:

- Ongoing project
- Ongoing-revised project
- Requested new project
- Unsolicited proposal

Expected Funding Source:

- Annual funds
- Capital funds
- Other *[explain]*

I. Title of Proposal: Walleye control on the lower Green and Colorado Rivers

II. Relationship to RIPRAP

GREEN RIVER ACTION PLAN: MAINSTEM

III.A.4.b.(3) Reduce negative impacts to endangered fishes from sportfish management activities - smallmouth bass in the middle and lower Green River

II.A.4.d. Reduce negative impacts to endangered fishes from sportfish management activities - Direct new (or shift existing) nonnative fish removal efforts to address increasing numbers of walleye.

COLORADO RIVER ACTION PLAN: MAINSTEM

III.A.8. Reduce negative impacts to endangered fishes from sportfish management activities - Direct new (or shift existing) nonnative fish removal efforts to address increasing numbers of walleye in the lower river.

III. Study Background/Rationale and Hypotheses:

The Upper Colorado River Endangered Fish Recovery Program has determined that control of nonnative fish in the upper Colorado River basin is essential to the recovery of the four endangered fish species: Colorado pikeminnow, razorback sucker, humpback chub, and bonytail. Walleye are a large bodied predatory sportfish native to waters east of the Continental Divide. This species was introduced into a reservoir in the Green River Sub-basin in the 1950s. By the early 1960s walleye had been detected within the Green and Colorado Rivers; however encounters remained infrequent through the mid 2000's. Between 2008 and 2013, encounters tripled within both the lower Green and Colorado Rivers. Researchers have documented walleye predation on both pikeminnow and bonytail in recent years. Additionally, because walleye fill the same ecological niche as the Colorado pikeminnow there is a high probability that these species are in direct competition for limited food resources. Responding to this threat, UDWR-Moab initiated a targeted walleye removal effort in 2014 in the lower Green River. In May of 2014 large numbers of walleye were removed from a 31-mile section of the lower Green River between Tusher Diversion and Ruby Ranch (RM 128.0-97.0). Although, in recent years, walleye have not been encountered in the numbers reported in 2013 and 2014, captures remain uncomfortably high. We are using our sampling efforts to increase our understanding of temporal variations in habitat use and vulnerability to exploitation by electrofishing. Targeted removal efforts will continue in 2017 on both the lower Green and Colorado Rivers. Future effort will be guided by the previous years' findings. When possible, effort will be combined with sampling under Project #128 (Abundance Estimates for Colorado Pikeminnow in the Green River) to maximize efficiency and reduce effects on native fish.

IV. Study Goals, Objectives, End Product(s):

Goal: Control and monitor abundance of walleye in the Green River between Tusher Diversion and Ruby Ranch and in the Colorado River between lower Westwater Canyon and Potash boat ramp.

Objectives:

1. Remove walleye in the lower Green River from Tusher Diversion (RM 128.0) to Ruby Ranch (RM 97.0) and on the lower Colorado River from lower Westwater Canyon (RM 116) to Potash (RM 47.2). (February-May, September-November)
2. Synthesize walleye status and management in the Upper Colorado River Basin in a basin-wide annual report. (October-November)

End Products: Annual report will synthesize all walleye removal efforts in the Green River and Lower Colorado River into a basin-wide report. This report will provide the current year's data by reach for: total CPUE, CPUE by river mile, length frequency histograms, CPUE for other nonnative species, total catch numbers, and estimates of spawning periods and locations. Data from past years will be included for relevant metrics to provide background and demonstrate trends.

Revisions to previous SOW: This work was previously described in project 123a SOW. Overall costs and effort remain the same.

V. Study Area:

The lower Green River between Tusher Diversion and Ruby Ranch (RM 128.0-97.0), and the lower Colorado River between lower Westwater Canyon and Potash (RM 116 -47.2).

VI. Study Methods/Approach:

Walleye will be removed by electrofishing. Boat or raft mounted electrofishers will be used depending on flows and location of sampling. Effort will be focused on high-value walleye habitat on the Green River between Tusher Diversion and Ruby Ranch (RM 128.0-97.0) and on the Colorado River between lower Westwater Canyon and Potash (RM 116-47.2). Removal effort will vary by year on the Green River. During years when sampling for Project #128 occurs (2016-2018), effort will be combined when possible to maximize efficiency and reduce effects on native fish. Six days of targeted walleye removal will be completed during these years in addition to passes under Project #128. During off years for Project #128, Targeted removal effort will be doubled to 12 removal days. However, sampling effort allocation may be shifted in location and timing to maximize walleye exploitation. Spawning condition and stomach contents of all walleye will be noted. Tissue samples, including otoliths, eyeballs and muscle plugs, will be collected in accordance with applicable protocols.

Data Analysis: The basin-wide report includes analysis and summary of all walleye data collected within the Green, Yampa, White and Colorado Rivers. Contributing agencies include USFWS-Vernal and Grand Junction, Colorado State University-Fort Collins and UDWR-Vernal and Moab offices. Walleye total catch-per-unit-effort (CPUE), CPUE by river mile and length frequency histograms will be calculated where possible. For reaches with few encounters, only total CPUE will be calculated. CPUE for other nonnative fish will be calculated for all targeted walleye removal reaches. Data from past years of sampling will be included for relevant comparisons and to demonstrate trends.

Fish Handling and Disposal: All centrarchids (green sunfish, bluegill, black crappie, smallmouth bass and largemouth bass), northern pike and white sucker encountered will be removed. Any nonnative species of special concern such as grass carp or burbot which are encountered will be removed and the appropriate state Fish and Game agencies will be contacted. Euthanized walleye will either be collected for later consumption or disposed of in the main river channel. Any Colorado pikeminnow, humpback chub or bonytail captured will be scanned for a PIT tag, tagged if needed, weighed (g), measured TL (mm), and released alive. Due to the large number of razorback sucker encountered in this reach, field crews will only net and process this species if time allows. Endangered fish data will then be reported to appropriate principal investigators and included in annual reporting.

VII. Task Description and Schedule:

Task 1. Six (twelve when Project #128 isn't occurring) removal days between Tusher Diversion and Ruby Ranch (February-May, October-December).

Task 2. Six removal days between Cisco and Potash (October-December).

Task 3. Data entry, analysis, and reporting – October/November

Task	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept
1	X	X	X		X	X	X	X				
2	X	X	X									
3	X	X										

VIII. Deliverables, Due Dates, and Budget by Fiscal Year:

UDWR costs are based on previous year's actual costs (when applicable) plus a 2% increase. Personnel rates reflect previous year's hourly rates and fringe costs. Vehicle rental is approximately \$8,000/year/vehicle (includes fleet rental, mileage, and gas), which is based on the average annual cost for all trucks used in our program. Vehicle costs for this budget are an estimated percentage of this total based on previous year's usage. Equipment costs are based on previous year costs and rates with a 2% increase on all line items for each year following. Equipment includes but is not limited to electrofishing wiring, dip nets, outboard motor repair, raft repair, oars, dry boxes, coolers, PFDs, first aid supplies, satellite phone services, fuel, etc...

FY2018: Annual Report by November 2018.

FY 2018 Costs for UDWR- Moab

Task 1. Lower Green WLY Removal (see note) (6 days)

Note: Three WLY removal passes will be conducted simultaneously with sampling under Project #128. This budget only reflects targeted removal effort.

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	40	\$1,403
Biologist	\$32.32	160	\$5,171
Technician	\$16.96	200	\$3,392
		subtotal	\$9,965

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$40,800.00	0.01	\$408
Food (5 people, 6 days)	\$30.00	30	\$900
		subtotal	\$1,308

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$250
Sampling gear repair/replacement:			\$250
Boating gear repair/replacement:			\$500
Fuel for motors/generators	\$4.00	30	\$120
		subtotal	\$1,120

Task 1 subtotal **\$12,393**

Task 2. Lower Colorado WLY Removal (6 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	40	\$1,403
Biologist	\$32.32	180	\$5,817
Technician	\$16.96	180	\$3,053
		subtotal	\$10,272

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$40,800.00	0.01	\$408
Food (5 people, 6 days)	\$30.00	30	\$900
		subtotal	\$1,308

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$250
Sampling gear repair/replacement:			\$250
Boating gear repair/replacement:			\$500
Fuel for motors/generators	\$4.00	25	\$100
		subtotal	\$1,100

Task 2 subtotal **\$12,680**

Task 3. Data management, reporting, administration

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.07	40	\$1,403
Biologist	\$32.32	320	\$10,341
		subtotal	\$11,744

Task 3 subtotal **\$11,744**

Grand Total FY 2018	\$36,817
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FY2019: Annual Report by November 2019.

FY 2019 Costs for UDWR- Moab (with 2% increase from FY18 on all line items)

Task 1. Lower Green WLY Removal (see note) (12 days)

Note: Sampling under Project #128 will not be occurring this year. This budget reflects all effort to remove walleye in Lower Green River.

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	80	\$2,861
Biologist	\$32.96	320	\$10,548
Technician	\$17.30	400	\$6,920
		subtotal	\$20,329

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 2% of total fleet costs)	\$41,616.00	0.02	\$832
Food (5 people, 12 days)	\$30.60	60	\$1,836
		subtotal	\$2,668

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$510
Sampling gear repair/replacement:			\$510
Boating gear repair/replacement:			\$1,020
Fuel for motors/generators	\$4.08	60	\$245
		subtotal	\$2,285

Task 1 subtotal **\$25,282**

Task 2. Lower Colorado WLY Removal (6 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$35.77	40	\$1,431
Biologist	\$32.96	180	\$5,933
Technician	\$17.30	180	\$3,114
		subtotal	\$10,478

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$41,616.00	0.01	\$416
Food (5 people, 6 days)	\$30.60	30	\$918

		subtotal	\$1,334
<u>Equipment</u>			
	Rate	Quantity	Cost
Camping gear repair/replacement:			\$255
Sampling gear repair/replacement:			\$255
Boating gear repair/replacement:			\$510
Fuel for motors/generators	\$4.08	25	\$102
		subtotal	\$1,122

Task 2 subtotal **\$12,934**

Task 3. Data management, reporting, administration

<u>Personnel Costs (salary + fringe costs)</u>			
	Rate	Hours	Cost
Project Leader	\$35.77	80	\$2,861
Biologist	\$32.96	360	\$11,866
		subtotal	\$14,728

Task 3 subtotal **\$14,728**

Grand Total FY 2019	\$52,944
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FY2020: Annual Report by November 2020.

FY 2020 Costs for UDWR- Moab (with 2% increase from FY19 on all line items)

Task 1. Lower Green WLY Removal (see note) (12 days)

Note: Sampling under Project #128 will not be occurring this year. This budget reflects all effort to remove walleye in Lower Green River.

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.48	80	\$2,919
Biologist	\$33.62	320	\$10,759
Technician	\$17.65	400	\$7,058
		subtotal	\$20,736

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 2% of total fleet costs)	\$42,448.32	0.02	\$849
Food (5 people, 12 days)	\$31.21	60	\$1,873
		subtotal	\$2,722

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$520
Sampling gear repair/replacement:			\$520
Boating gear repair/replacement:			\$1,040
Fuel for motors/generators	\$4.16	60	\$250
		subtotal	\$2,330

Task 1 subtotal **\$25,788**

Task 2. Lower Colorado WLY Removal (6 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$36.48	40	\$1,459
Biologist	\$33.62	180	\$6,052
Technician	\$17.65	180	\$3,176
		subtotal	\$10,687

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$42,448.32	0.01	\$424
Food (5 people, 6 days)	\$31.21	30	\$936

		subtotal	\$1,361
<u>Equipment</u>			
	Rate	Quantity	Cost
Camping gear repair/replacement:			\$260
Sampling gear repair/replacement:			\$260
Boating gear repair/replacement:			\$520
Fuel for motors/generators	\$4.16	25	\$104
		subtotal	\$1,144

Task 2 subtotal **\$13,193**

Task 3. Data management, reporting, administration

<u>Personnel Costs (salary + fringe costs)</u>			
	Rate	Hours	Cost
Project Leader	\$36.48	80	\$2,919
Biologist	\$33.62	360	\$12,104
		subtotal	\$15,022

Task 3 subtotal **\$15,022**

Grand Total FY 2020	\$54,003
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FY2021: Annual Report by November 2021.

FY 2021 Costs for UDWR- Moab (with 2% increase from FY20 on all line items)

Task 1. Lower Green WLY Removal (see note) (6 days)

Note: Three WLY removal passes will be conducted simultaneously with sampling under Project #128. This budget only reflects targeted removal effort.

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.21	40	\$1,489
Biologist	\$34.29	160	\$5,487
Technician	\$18.00	200	\$3,600
		subtotal	\$10,575

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$43,297.29	0.01	\$433
Food (5 people, 6 days)	\$31.84	30	\$955
		subtotal	\$1,388

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$265
Sampling gear repair/replacement:			\$265
Boating gear repair/replacement:			\$531
Fuel for motors/generators	\$4.24	30	\$127
		subtotal	\$1,189

Task 1 subtotal **\$13,152**

Task 2. Lower Colorado WLY Removal (6 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.21	40	\$1,489
Biologist	\$34.29	180	\$6,173
Technician	\$18.00	180	\$3,240
		subtotal	\$10,901

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$43,297.29	0.01	\$433
Food (5 people, 6 days)	\$31.84	30	\$955

		subtotal	\$1,388
<u>Equipment</u>			
	Rate	Quantity	Cost
Camping gear repair/replacement:			\$265
Sampling gear repair/replacement:			\$265
Boating gear repair/replacement:			\$531
Fuel for motors/generators	\$4.24	25	\$106
		subtotal	\$1,167

Task 2 subtotal **\$13,456**

Task 3. Data management, reporting, administration

<u>Personnel Costs (salary + fringe costs)</u>			
	Rate	Hours	Cost
Project Leader	\$37.21	40	\$1,489
Biologist	\$34.29	320	\$10,974
		subtotal	\$12,463

Task 3 subtotal **\$12,463**

Grand Total FY 2021	\$39,071
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FY2022: Annual Report by November 2022.

FY 2022 Costs for UDWR- Moab (with 2% increase from FY21 on all line items)

Task 1. Lower Green WLY Removal (see note) (6 days)

Note: Three WLY removal passes will be conducted simultaneously with sampling under Project #128. This budget only reflects targeted removal effort.

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.96	40	\$1,518
Biologist	\$34.98	160	\$5,597
Technician	\$18.36	200	\$3,672
		subtotal	\$10,787

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$44,163.23	0.01	\$442
Food (5 people, 6 days)	\$32.47	30	\$974
		subtotal	\$1,416

Equipment

	Rate	Quantity	Cost
Camping gear repair/replacement:			\$271
Sampling gear repair/replacement:			\$271
Boating gear repair/replacement:			\$541
Fuel for motors/generators	\$4.33	30	\$130
		subtotal	\$1,212

Task 1 subtotal **\$13,415**

Task 2. Lower Colorado WLY Removal (6 days)

Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.96	40	\$1,518
Biologist	\$34.98	180	\$6,296
Technician	\$18.36	180	\$3,304
		subtotal	\$11,119

Food and Travel

	Rate	Quantity	Cost
Fleet Costs (3 trucks for 1% of total fleet costs)	\$44,163.23	0.01	\$442
Food (5 people, 6 days)	\$32.47	30	\$974

	subtotal	\$1,416
<u>Equipment</u>		
	Rate	Quantity
		Cost
Camping gear repair/replacement:		\$271
Sampling gear repair/replacement:		\$271
Boating gear repair/replacement:		\$541
Fuel for motors/generators	\$4.33	25
	subtotal	\$1,191

Task 2 subtotal **\$13,726**

Task 3. Data management, reporting, administration

<u>Personnel Costs (salary + fringe costs)</u>			
	Rate	Hours	Cost
Project Leader	\$37.96	40	\$1,518
Biologist	\$34.98	320	\$11,194
		subtotal	\$12,712

Task 3 subtotal **\$12,712**

Grand Total FY 2022	\$39,852
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IX. Budget Summary:

	UDWR Moab
FY2018	\$36,817
FY2019	\$52,944
FY2020	\$54,003
FY2021	\$39,071
FY2022	\$39,852
Subtotal	\$222,687

X. Reviewers: Recovery Program Director's Office – May 2017; Biology Committee – July 2017