

**RECOVERY PROGRAM**  
**FY 2018-2019 SCOPE OF WORK for:**  
Nonnative fish control in the Green River

Recovery Program Project Number: 123a

Reclamation Agreement numbers: R14AP00007 & R15PG00083  
Reclamation Agreement terms: 5/1/2014-9/30/2018 & 10/1/2014-9/30/2019

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: USFWS

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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: Nonnative fish control in the Green River, Dinosaur National Monument, and Desolation/Gray Canyons.

II. Relationship to RIPRAP:

GREEN RIVER ACTION PLAN: MAINSTEM

III. Reduce impacts of nonnative fishes

III.A.4. Develop and implement control programs for nonnative fishes

III.A.4.b.(3) Smallmouth bass in middle and lower Green River

III.A.4.d. Walleye in the middle and lower Green River

III.A.4.g. Other emerging nonnative fishes

III. Study Background/Rationale and Hypotheses:

The Upper Colorado River Endangered Fish Recovery Program has determined that control of nonnative fishes 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. Smallmouth bass abundance increased dramatically in the Green River after 2000, and control efforts for this species commenced in 2004. Based on data collected each year, investigators and the Recovery Program have modified this project in an effort to adapt to new insights and population dynamics. In particular, efforts have been focused on targeting adult smallmouth bass as they spawn, in an attempt to both remove large adults and reduce reproduction. In 2012 and 2013, dry conditions and low river discharge resulted in a large group of sub-adult fish in the Echo-Split reach. Crews noted higher abundances of age-0 bass in the Island Park area during these years, suggesting this may be a spawning reach. This was confirmed in 2016 by additional captures of large adults and young of year, in addition to the capture of recently hatched bass on a nest. Since 2014, passes through Island Park have been coordinated between UDWR in Vernal and Moab, as well as FWS Vernal, in order to maximize removal during the period when bass were likely spawning. This approach has resulted in improved allocation of effort to maximize captures during this period. Catch rates for adults in this focal reach are higher during this time than for the rest of the season. Bass will also be tagged in order to estimate population abundance, track movement, and monitor the effectiveness of control passes. Smallmouth bass will only be marked on one pass and will be removed on all subsequent passes.

In 2008, two control/monitoring trips were completed to assess smallmouth abundance and distribution within Desolation/Gray Canyons. The 2008 assessment showed relative abundance remained low and that although distribution had spread downstream 85% of bass captured were within the first 40 miles of the reach, similar to patterns seen in 2006. Intensive control efforts in this reach were deemed unnecessary at that time. Reports of increasing smallmouth bass captures in the upper most section of Desolation Canyon led to renewed sampling efforts in 2011 and 2012 which resulted in overall catch rates similar to previous years; however bass were present further downstream compared to the 2004-2006 period. No sampling occurred in 2013 but two sampling trips were completed in 2014. The 2014 assessment showed a four-fold increase of overall catch rate of bass from approximately 4 fish/hour to 16 fish/hour. While the catch rate of adult bass doubled the four-fold increase in overall catch rate was attributed to an increase of juvenile bass (TL=100-199 mm) captured. These juveniles were produced during the low water years of 2012 and 2013; in 2014 these cohorts were seen in large numbers in most reaches where bass removal was occurring. Not only did the abundance of bass increase during 2014 sampling, but the distribution of bass also expanded downstream to include the entire 80 mile reach, with large numbers of fish seen below the areas commonly occupied in earlier surveys. Targeted smallmouth bass catch rate in this reach in 2015 and 2016 was far lower than 2014. Size structure data suggest that smallmouth bass recruitment has been limited since 2014 but indicate the continued presence of cohort(s) first identified in 2014 and their progress into the adult size class. Smallmouth bass continue to be found throughout the Desolation/Gray reach. Crews will continue to remove bass and monitor this reach with two passes annually. However, this task may be adjusted to more or less effort depending upon hydrologic conditions. For example, effort may be reduced to one pass (and effort shifted upstream to the Echo/Split reach) in years when Project #128 is occurring or when the smallmouth bass threat is naturally suppressed by the seasonal flow regime. In years when river conditions are conducive to bass spawning, such as 2012, more effort may be applied to the reach.

#### IV. Study Goals, Objectives, End Products:

Goal: Control and monitor abundance of smallmouth bass and other nonnative fishes in the Green River between Echo Park and Split Mountain boat ramp, and Desolation and Gray canyons

##### Objectives:

1. Remove smallmouth bass and other nonnative fishes in the Green River from Echo Park (RM 344.5) to Split Mountain (RM 319.5) and in Desolation/Gray Canyons from Tabyago Riffle to Swasey's boat ramp (RM 207-129.8).
2. Monitor adult and juvenile smallmouth bass to determine extent of control needed in the Green River, including marking and recapturing bass in the Echo-Split reach.

End Products: Annual reports will provide the current year's data for: adult and juvenile total CPUE, CPUE by river mile and size class, monthly length frequency histograms, CPUE for other nonnative species, total catch numbers, and estimates of spawning periods and locations. Population abundances of smallmouth bass will be estimated using tag and recapture data from Echo-Split. Data from past years will be included for relevant metrics to provide background and demonstrate trends.

Revisions from previous SOW: This SOW no longer includes walleye removal in the lower Green and Colorado rivers; walleye removal work is now in a stand-alone SOW (123d). This SOW continues to fund 12 total passes of removal in Echo/Split reach (Task 1) and 2 total passes in Desolation Canyon (Task 3), but describes contingencies for reallocating those efforts based on hydrologic conditions and expected nonnative fish removal outcomes.

#### V. Study Areas:

- a. Green River within Dinosaur National Monument from Echo Park to Split Mountain boat ramp (RM 344.5-319.5), June-September
- b. Desolation/Gray Canyons from Tabyago Riffle to Swasey's boat ramp (RM 207-129.8), June-July

#### VI. Study Methods/Approach:

Temporarily reducing riverine smallmouth bass and northern pike populations appears viable under certain environmental conditions, but both species can easily reverse these reductions in population abundance and return to pre-removal abundances under favorable environmental conditions (Breton et al. 2014; Zelasko et al. 2015). Therefore, mechanical removal efforts will attempt to reach eradication of nonnative fish populations in the river. Synthesis reports investigating effectiveness of in-river removal efforts for northern pike and smallmouth bass, however, have determined that reducing in-river populations of these two species will not be successful unless in-river reproduction and reservoir escapement are controlled (Breton et al. 2014; Zelasko et al. 2015). Therefore, mechanical removal efforts will continue to temporarily suppress riverine populations, and will focus on reducing in-river reproduction when feasible. Simultaneously, Program partners will work on other means to reduce in-river reproduction and reservoir escapement, in order to make mechanical removal more effective in an attempt to reach complete eradication of riverine populations.

VII. Task Description and Schedule:

Task 1. Eight removal passes from Echo Park to Split Mountain boat ramp (USFWS GRB-FWCO – Vernal; July-September).

Task 2. One marking and three removal passes from Echo Park to Split Mountain boat ramp (UDWR Moab; June - August).

Task 3. Two removal passes in Desolation and Gray Canyons (UDWR Moab; June-July).

Task 4. 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
2									X	X	X	
3									X	X		
4	X	X										

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

USFWS personnel costs are based on FY2017 GS and WG tables, with current benefit rates included for each position. Future rates were determined assuming a 2% inflation and cost of living increase. Vehicle and travel costs are based on current GSA rates, again assuming a 2% rate of inflation in future years

UDWR personnel costs are based on FY2017 costs plus a 2% increase on hourly rates and fringe costs per year. Vehicle rental is approximately \$6,800/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 years usage. Equipment costs are based on FY2017 costs and rates with a 2% increase on all line items for each year following.

FY 2018

Deliverables: Annual report due November 2018. Data submitted to database coordinator by January 2019.

Budget

<b>Task 1 – USFWS Echo Sampling (8 trips)</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$60.84	320	\$19,469
4 GS-5 Tech/ WG-5 Boat Operator	\$23.16	1280	\$29,645
Overtime for technicians (3 hrs/week x 8 weeks x 4 techs)	\$34.75	96	\$3,336
<b>Subtotal</b>			<b>\$52,450</b>
<b>Travel</b>			
Shuttle (3 trucks/trip x \$175/truck x 8 trips) Echo to Split Mountain			\$4,200
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
<b>Subtotal</b>			<b>\$7,800</b>
<b>Equipment</b>			
(3 trucks/trip x 175 mi/truck x \$0.33/mi x 8 trips) Vernal to Echo Park, round trip			\$1,386
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$250	6	\$1,500
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
Honda 9.9hp 4 stroke motor replacement (2018 only)	\$2,351	1	\$2,351
GS-8 Fish Tech maintenance work	\$43.43	196	\$8,512
<b>Subtotal</b>			<b>\$15,539</b>
<b>Task 1 Total</b>			<b>\$75,789</b>
<b>Task 6 - USFWS, Data analysis, reporting, administration</b>			
	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$60.84	336	\$20,442
GS-9 Admin. Officer	\$41.57	88	\$3,658
<b>Subtotal</b>			<b>\$24,100</b>
<b>Travel</b>			
Lodging (1 person x \$93/day x 2 days) Vernal to Grand Junction			\$186
Meals and IE (1 person x \$52/day x 3 days) Vernal to Grand Junction			\$156
Travel to present data at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.33/mi)			\$95
<b>Subtotal</b>			<b>\$437</b>
<b>Task 6 USFWS Total</b>			<b>\$24,537</b>
<b>SOW USFWS Total</b>			<b>\$100,326</b>

<b>FY 2018 Costs for UDWR- Moab</b>
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**Task 2. Four Echo/Split SMB Removal Passes**

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Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$35.07	80	\$2,805
Biologist	\$32.32	250	\$8,079
Technician	\$16.96	670	\$11,363
		<b>subtotal</b>	<b>\$22,248</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (2 trucks for 10% of total fleet costs)	\$40,800.00	0.10	\$4,080
Food (6 people, 4 days, 4 passes )	\$30.00	96	\$2,880
Shuttle (2 trucks, 4 passes)	\$150.00	8	\$1,200
		<b>subtotal</b>	<b>\$8,160</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$1,215
Sampling gear repair/replacement:			\$1,551
Boating gear repair/replacement:			\$1,560
Fuel for motors (10 gallons/pass)	\$4.00	40	\$160
		<b>subtotal</b>	<b>\$4,486</b>

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**Task 2 subtotal** **\$34,893**

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**Task 3. Two Desolation/Grey SMB Removal Passes (reallocated to Echo/Split as necessary)**

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Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$35.07	80	\$2,805
Biologist	\$32.32	240	\$7,756
Technician	\$16.96	1000	\$16,960
		<b>subtotal</b>	<b>\$27,521</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (3 trucks for 10% of total fleet costs)	\$40,800.00	0.10	\$4,080
Food (6 people, 8 days, 2 passes)	\$30.00	96	\$2,880
Shuttle (3 trucks, 2 passes)	\$175.00	6	\$1,050
		<b>subtotal</b>	<b>\$8,010</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$575
Sampling gear repair/replacement:			\$700
Boating gear repair/replacement:			\$1,175
Fuel for motors (40 gallons/pass)	\$4.00	80	\$320
		<b>subtotal</b>	<b>\$2,770</b>

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**Task 3 subtotal** **\$38,301**

**Task 6. Data management, reporting, administration**

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Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$35.07	80	\$2,805
Biologist	\$32.32	240	\$7,756
		<b>subtotal</b>	<b>\$10,561</b>

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**Task 6 subtotal** **\$10,561**

<b>UDWR- Moab Total FY 2018</b>	<b>\$83,756</b>
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FY 2019

Deliverables: Annual report due November 2019. Data submitted to database coordinator by January 2020.

Budget

<b>Task 1 – USFWS Echo Sampling (8 trips)</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$62.05	320	\$19,856
GS-11 Fish Biologist	\$43.73	80	\$3,498
4 GS-5 Tech/ WG-5 Boat Operator	\$23.63	1200	\$28,356
Overtime for technicians (3 hrs/week x 8 weeks x 4 techs)	\$35.44	96	\$3,402
<b>Subtotal</b>			<b>\$55,113</b>
<b>Travel</b>			
Shuttle (3 trucks/trip x \$179/truck x 8 trips) Echo to Split Mountain			\$4,296
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
<b>Subtotal</b>			<b>\$7,896</b>
<b>Equipment</b>			
(3 trucks/trip x 175 mi/truck x \$0.34/mi x 8 trips) Vernal to Echo Park, round trip			\$1,428
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$255	9	\$2,295
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$44.29	255	\$11,294
<b>Subtotal</b>			<b>\$16,807</b>
<b>Task 1 Total</b>			<b>\$79,816</b>
<b>Task 6 - USFWS, Data analysis, reporting, administration</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$62.05	336	\$20,849
GS-9 Admin. Officer	\$42.69	116	\$4,952
<b>Subtotal</b>			<b>\$25,801</b>
<b>Travel</b>			
Lodging (1 person x \$94/day x 2 days) Vernal to Grand Junction			\$188
Meals and IE (1 person x \$54/day x 3 days) Vernal to Grand Junction			\$162
Travel to present data at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.33/mi)			\$98
<b>Subtotal</b>			<b>\$448</b>
<b>Task 6 USFWS Total</b>			<b>\$26,249</b>
<b>SOW USFWS Total</b>			<b>\$106,064</b>

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

**Task 2. Four Echo/Split SMB Removal Passes**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$35.77	80	\$2,861
Biologist	\$32.96	250	\$8,241
Technician	\$17.30	670	\$11,590
		<b>subtotal</b>	<b>\$22,692</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (2 trucks for 10% of total fleet costs)	\$41,616.00	0.10	\$4,162
Food (6 people, 4 days, 4 passes )	\$30.60	96	\$2,938
Shuttle (2 trucks, 4 passes)	\$153.00	8	\$1,224
		<b>subtotal</b>	<b>\$8,323</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$1,239
Sampling gear repair/replacement:			\$1,582
Boating gear repair/replacement:			\$1,591
Fuel for motors (10 gallons/pass)	\$4.08	40	\$163
		<b>subtotal</b>	<b>\$4,576</b>

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**Task 2 subtotal** **\$35,591**

**Task 3. Two Desolation/Grey SMB Removal Passes**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$35.77	80	\$2,861
Biologist	\$32.96	240	\$7,911
Technician	\$17.30	1000	\$17,299
		<b>subtotal</b>	<b>\$28,072</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (3 trucks for 10% of total fleet costs)	\$41,616.00	0.10	\$4,162
Food (6 people, 8 days, 2 passes)	\$30.60	96	\$2,938
Shuttle (3 trucks, 2 passes)	\$178.50	6	\$1,071
		<b>subtotal</b>	<b>\$8,170</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$587

Sampling gear repair/replacement:			\$714
Boating gear repair/replacement:			\$1,199
Fuel for motors (40 gallons/pass)	\$4.08	80	\$326
		<b>subtotal</b>	<b>\$2,826</b>

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**Task 3 subtotal** **\$39,067**

**Task 6. Data management, reporting, administration**

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Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$35.77	80	\$2,861
Biologist	\$32.96	240	\$7,911
		<b>subtotal</b>	<b>\$10,772</b>

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**Task 6 subtotal** **\$10,772**

<b>UDWR- Moab Total FY 2019</b>	<b>\$85,431</b>
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FY 2020

Deliverables: Annual report due November 2020. Data submitted to database coordinator by January 2021.

Budget

<b>Task 1 – USFWS Echo Sampling (8 trips)</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$63.30	320	\$20,256
GS-11 Fish Biologist	\$46.92	80	\$3,754
4 GS-5 Tech/ WG-5 Boat Operator	\$24.10	1280	\$30,848
Overtime for technicians (3 hrs/week x 8 weeks x 4 techs)	\$36.15	96	\$3,470
<b>Subtotal</b>			<b>\$58,328</b>
<b>Travel</b>			
Shuttle (3 trucks/trip x \$182/truck x 8 trips) Echo to Split Mountain			\$4,368
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
<b>Subtotal</b>			<b>\$7,968</b>
<b>Equipment</b>			
(3 trucks/trip x 175 mi/truck x \$0.34/mi x 8 trips) Vernal to Echo Park, round trip			\$1,428
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$260	9	\$2,340
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$46.34	255	\$11,817
<b>Subtotal</b>			<b>\$17,375</b>
<b>Task 1 Total</b>			<b>\$83,671</b>
<b>Task 6 - USFWS, Data analysis, reporting, administration</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$63.30	336	\$21,269
GS-9 Admin. Officer	\$44.42	116	\$5,153
<b>Subtotal</b>			<b>\$26,422</b>
<b>Travel</b>			
Lodging (1 person x \$96/day x 2 days) Vernal to Grand Junction			\$192
Meals and IE (1 person x \$55/day x 3 days) Vernal to Grand Junction			\$165
Travel to present data at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.34/mi)			\$98
<b>Subtotal</b>			<b>\$455</b>
<b>Task 6 USFWS Total</b>			<b>\$26,876</b>
<b>SOW USFWS Total</b>			<b>\$110,547</b>

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

**Task 2. Four Echo/Split SMB Removal Passes**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$36.48	80	\$2,919
Biologist	\$33.62	250	\$8,405
Technician	\$17.65	670	\$11,822
		<b>subtotal</b>	<b>\$23,146</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (2 trucks for 10% of total fleet costs)	\$42,448.32	0.10	\$4,245
Food (6 people, 4 days, 4 passes )	\$31.21	96	\$2,996
Shuttle (2 trucks, 4 passes)	\$156.06	8	\$1,248
		<b>subtotal</b>	<b>\$8,490</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$1,264
Sampling gear repair/replacement:			\$1,614
Boating gear repair/replacement:			\$1,623
Fuel for motors (10 gallons/pass)	\$4.16	40	\$166
		<b>subtotal</b>	<b>\$4,667</b>

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**Task 2 subtotal** **\$36,303**

**Task 3. Two Desolation/Grey SMB Removal Passes**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$36.48	80	\$2,919
Biologist	\$33.62	240	\$8,069
Technician	\$17.65	1000	\$17,645
		<b>subtotal</b>	<b>\$28,633</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (3 trucks for 10% of total fleet costs)	\$42,448.32	0.10	\$4,245
Food (6 people, 8 days, 2 passes)	\$31.21	96	\$2,996
Shuttle (3 trucks, 2 passes)	\$182.07	6	\$1,092
		<b>subtotal</b>	<b>\$8,334</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$598

Sampling gear repair/replacement:			\$728
Boating gear repair/replacement:			\$1,222
Fuel for motors (40 gallons/pass)	\$4.16	80	\$333
		<b>subtotal</b>	<b>\$2,882</b>

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**Task 3 subtotal** **\$39,849**

**Task 6. Data management, reporting, administration**

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Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$36.48	80	\$2,919
Biologist	\$33.62	240	\$8,069
		<b>subtotal</b>	<b>\$10,988</b>

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**Task 6 subtotal** **\$10,988**

<b>UDWR- Moab Total FY 2020</b>	<b>\$87,140</b>
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FY 2021

Deliverables: Annual report due November 2021. Data submitted to database coordinator by January 2022.

Budget

<b>Task 1 – USFWS Echo Sampling (8 trips)</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$66.37	320	\$21,238
4 GS-5 Tech/ WG-5 Boat Operator	\$24.58	1280	\$31,462
Overtime for technicians (3 hrs/week x 8 weeks x 4 techs)	\$36.87	96	\$3,540
<b>Subtotal</b>			<b>\$56,240</b>
<b>Travel</b>			
Shuttle (3 trucks/trip x \$186/truck x 8 trips) Echo to Split Mountain			\$4,464
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
<b>Subtotal</b>			<b>\$8,064</b>
<b>Equipment</b>			
(3 trucks/trip x 175 mi/truck x \$0.35/mi x 8 trips) Vernal to Echo Park, round trip			\$1,470
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$265	6	\$1,590
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$47.26	196	\$9,263
<b>Subtotal</b>			<b>\$14,113</b>
<b>Task 1 Total</b>			<b>\$78,417</b>
<b>Task 6 - USFWS, Data analysis, reporting, administration</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$66.37	376	\$24,955
GS-9 Admin. Officer	\$45.61	80	\$3,649
<b>Subtotal</b>			<b>\$28,604</b>
<b>Travel</b>			
Lodging (1 person x \$97/day x 2 days) Vernal to Grand Junction			\$194
Meals and IE (1 person x \$57/day x 3 days) Vernal to Grand Junction			\$171
Travel to present data at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.35/mi)			\$101
<b>Subtotal</b>			<b>\$466</b>
<b>Task 6 USFWS Total</b>			<b>\$29,070</b>
<b>SOW USFWS Total</b>			<b>\$107,487</b>

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

**Task 2. Four Echo/Split SMB Removal Passes**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$37.21	80	\$2,977
Biologist	\$34.29	250	\$8,573
Technician	\$18.00	670	\$12,059
		<b>subtotal</b>	<b>\$23,609</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (3 trucks for 10% of total fleet costs)	\$43,297.29	0.10	\$4,330
Food (6 people, 8 days, 2 passes)	\$31.84	96	\$3,056
Shuttle (3 trucks, 2 passes)	\$159.18	8	\$1,273
		<b>subtotal</b>	<b>\$8,659</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$1,289
Sampling gear repair/replacement:			\$1,646
Boating gear repair/replacement:			\$1,655
Fuel for motors (10 gallons/pass)	\$4.24	40	\$170
		<b>subtotal</b>	<b>\$4,760</b>

**Task 2 subtotal** **\$37,029**

**Task 3. Two Desolation/Grey SMB Removal Passes (reallocated to Echo/Split as necessary)**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$37.21	80	\$2,977
Biologist	\$34.29	240	\$8,231
Technician	\$18.00	1000	\$17,998
		<b>subtotal</b>	<b>\$29,206</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (3 trucks for 10% of total fleet costs)	\$43,297.29	0.10	\$4,330
Food (6 people, 8 days, 2 passes)	\$31.84	96	\$3,056
Shuttle (3 trucks, 2 passes)	\$185.71	6	\$1,114
		<b>subtotal</b>	<b>\$8,500</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$610

Sampling gear repair/replacement:			\$743
Boating gear repair/replacement:			\$1,247
Fuel for motors (40 gallons/pass)	\$4.24	80	\$340
		<b>subtotal</b>	<b>\$2,940</b>

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**Task 3 subtotal** **\$40,646**

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**Task 6. Data management, reporting, administration**

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Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$37.21	80	\$2,977
Biologist	\$34.29	240	\$8,231
		<b>subtotal</b>	<b>\$11,208</b>

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**Task 6 subtotal** **\$11,208**

<b>UDWR- Moab Total FY 2021</b>	<b>\$88,882</b>
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FY 2022

Deliverables: Annual report due November 2022. Data submitted to database coordinator by January 2023.

Budget

<b>Task 1 – USFWS Echo Sampling (8 trips)</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$67.70	320	\$21,664
4 GS-5 Tech/ WG-5 Boat Operator	\$25.07	1280	\$32,090
Overtime for technicians (3 hrs/week x 8 weeks x 4 techs)	\$37.61	96	\$3,611
<b>Subtotal</b>			<b>\$57,364</b>
<b>Travel</b>			
Shuttle (3 trucks/trip x \$189/truck x 8 trips) Echo to Split Mountain			\$4,536
Per diem (5 people/day x \$30/person x 3 days/trip x 8 trips)			\$3,600
<b>Subtotal</b>			<b>\$8,136</b>
<b>Equipment</b>			
(3 trucks/trip x 175 mi/truck x \$0.36/mi x 8 trips) Vernal to Echo Park, round trip			\$1,512
(12 gal gas/boat x 3 boats/trip x \$4.00/gal x 8 trips)			\$768
GSA trucks (3 trucks x 2 months)	\$271	6	\$1,626
Maintenance/replacement of rafting gear (oars, repair kit supplies, raft repairs/patching, motor maintenance), sampling nets, electrofishing gear (generator maintenance, electrode replacement), safety equipment (life jackets, control pedals/mats), camping equipment (based on average annual expenses from prior years).			\$1,022
GS-8 Fish Tech maintenance work	\$48.21	196	\$9,449
<b>Subtotal</b>			<b>\$14,377</b>
<b>Task 1 Total</b>			<b>\$79,877</b>
<b>Task 6 - USFWS, Data analysis, reporting, administration</b>	<b>Rate \$/hr</b>	<b>Total hrs</b>	<b>Cost</b>
<b>Labor</b>			
GS-12 Supervisory Fish Biologist	\$67.70	376	\$25,455
GS-9 Admin. Officer	\$46.53	80	\$3,722
<b>Subtotal</b>			<b>\$29,178</b>
<b>Travel</b>			
Lodging (1 person x \$99/day x 2 days) Vernal to Grand Junction			\$198
Meals and IE (1 person x \$58/day x 3 days) Vernal to Grand Junction			\$174
Travel to present data at workshops and meetings (1 truck/trip x 288 mi/truck x \$0.36/mi)			\$104
<b>Subtotal</b>			<b>\$476</b>
<b>Task 6 USFWS Total</b>			<b>\$29,653</b>
<b>SOW USFWS Total</b>			<b>\$109,531</b>

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

**Task 2. Four Echo/Split SMB Removal Passes**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$37.96	80	\$3,037
Biologist	\$34.98	250	\$8,745
Technician	\$18.36	670	\$12,300
		<b>subtotal</b>	<b>\$24,081</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (2 trucks for 10% of total fleet costs)	\$44,163.23	0.10	\$4,416
Food (6 people, 4 days, 4 passes )	\$32.47	96	\$3,117
Shuttle (2 trucks, 4 passes)	\$162.36	8	\$1,299
		<b>subtotal</b>	<b>\$8,833</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$1,315
Sampling gear repair/replacement:			\$1,679
Boating gear repair/replacement:			\$1,689
Fuel for motors (10 gallons/pass)	\$4.33	40	\$173
		<b>subtotal</b>	<b>\$4,856</b>

**Task 2 subtotal** **\$37,770**

**Task 3. Two Desolation/Grey SMB Removal Passes (reallocated to Echo/Split as necessary)**

Personnel Costs (salary + fringe costs)

	<b>Rate</b>	<b>Hours</b>	<b>Cost</b>
Project Leader	\$37.96	80	\$3,037
Biologist	\$34.98	240	\$8,395
Technician	\$18.36	1000	\$18,358
		<b>subtotal</b>	<b>\$29,790</b>

Food and Travel

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Fleet Costs (3 trucks for 10% of total fleet costs)	\$44,163.23	0.10	\$4,416
Food (6 people, 8 days, 2 passes)	\$32.47	96	\$3,117
Shuttle (3 trucks, 2 passes)	\$189.43	6	\$1,137
		<b>subtotal</b>	<b>\$8,670</b>

Equipment

	<b>Rate</b>	<b>Quantity</b>	<b>Cost</b>
Camping gear repair/replacement:			\$623

Sampling gear repair/replacement:			\$758
Boating gear repair/replacement:			\$1,272
Fuel for motors (40 gallons/pass)	\$4.33	80	\$346
		<b>subtotal</b>	<b>\$2,999</b>

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**Task 3 subtotal** **\$41,459**

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**Task 6. Data management, reporting, administration**

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Personnel Costs (salary + fringe costs)

	Rate	Hours	Cost
Project Leader	\$37.96	80	\$3,037
Biologist	\$34.98	240	\$8,395
		<b>subtotal</b>	<b>\$11,432</b>

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**Task 6 subtotal** **\$11,432**

<b>UDWR- Moab Total FY 2022</b>	<b>\$90,660</b>
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IX. Budget Summary:

	USFWS Vernal	UDWR Moab	Total
<b>FY2018</b>	\$100,326	\$83,756	<b>\$184,082</b>
<b>FY2019</b>	\$106,064	\$85,431	<b>\$191,495</b>
<b>FY2020</b>	\$110,547	\$87,140	<b>\$197,687</b>
<b>FY2021</b>	\$107,487	\$88,882	<b>\$196,369</b>
<b>FY2022</b>	\$109,531	\$90,660	<b>\$200,191</b>
Subtotal	\$533,955	\$435,869	<b>\$969,824</b>

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

XI. References:

Breton, A. R, D. L. Winkelman, J. A. Hawkins, and K. R. Bestgen. 2014. Population trends of smallmouth bass in the upper Colorado River basin with an evaluation of removal effects. Final report to the Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado. Larval Fish Laboratory Contribution 169.

Zelasko, K. A., K. R. Bestgen, J. A. Hawkins, G. C. White. 2014. Abundance and population dynamics of invasive northern pike *Esox lucius*, Yampa River, Colorado, 2004–2010. Final

Report to the Upper Colorado River Endangered Fish Recovery Program, Project 161b,  
Denver. Larval Fish Laboratory Contribution 185.