

**RECOVERY PROGRAM
FY 2014-2015 SCOPE OF WORK for:**

Recovery Program Project Number: 126(a)

*Removal of Smallmouth Bass in the Upper Colorado River between Price-Stubb Dam
[Government Highline Diversion Dam] near Palisade, Colorado, and Westwater, Utah*

Reclamation Agreement number: R11PG40024

Reclamation Agreement term: *Oct. 1, 2013 – Sep. 30, 2018*

Lead agency: Fish and Wildlife Service
Colorado River Fishery Project – Grand Junction (CRFP-GJ)

Submitted by: Travis Francis, Fishery Biologist
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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: **Removal of Smallmouth Bass in the Upper Colorado River between Price-Stubb Dam [Government Highline Diversion Dam] near Palisade, Colorado, and Westwater, Utah.**
- II. Relationship to RIPRAP: Colorado River Action Plan: Mainstem
 - III. Reduce negative impacts of nonnative fishes and sportfish management activities.
 - III.A. Develop and implement control programs in reaches of the Colorado River occupied by endangered fishes.

Study Background/Rationale and Hypotheses:

General

Significant anthropogenic changes to the physical riverine habitat have undoubtedly played an important role in the decline and endangered status of Colorado pikeminnow, humpback chub, bonytail, and razorback sucker, but changes in the biological environment may also have been equally significant. Physical changes in the riverine habitat have been accompanied by the introduction, establishment, and proliferation of nonnative fishes, and concomitant declines in native fishes in the Upper Colorado River basin. The role of nonnative fishes is often identified, in association with habitat changes, as a major obstacle to conservation of native fish communities.

At least 67 nonnative fishes have been introduced actively or passively into the Colorado River system during the last 100 years (Minckley 1982; Tyus et al. 1982; Carlson and Muth 1989; Minckley and Deacon 1991; Maddux et al. 1993). By 1980, more than 50 nonnative fishes had been actively introduced into rivers and reservoirs of the Colorado River basin (Minckley 1982; Tyus et al. 1982; Carlson and Muth 1989). Native big river fishes have disappeared from about three-fourths of their original habitat while introduced fishes have become more widespread and abundant. Former studies have also documented a decline in the abundance of native fish species as nonnative species increased in abundance (Joseph et al. 1977; Behnke 1980; Osmundson and Kaeding 1989; Quarterone 1993).

Many of the nonnative fishes introduced into the Colorado River basin are suspected of adversely affecting the native main stem fishes in some fashion. Warm water game fish are thought to have the greatest adverse effect on endangered native fishes. Centrarchids (e. g., largemouth bass, green sunfish, bluegill, black crappie, and smallmouth bass), ictalurids (e. g., channel catfish and black bullhead), esocids (northern pike), and percids (walleye) are frequently listed as contributors to the decline of native fishes. An increasing body of evidence characterizes the negative interactions of nonnative fishes with the endangered big river fishes (Hawkins and Nesler 1991; Minckley et al. 1991; Maddux et al. 1993; Lentsch et al. 1996). Some of this evidence is indirect, including inferences from field data or results from laboratory studies of predation by nonnatives on natives. Laboratory studies have documented agonistic behavior, resource sharing, and vulnerability to predation (Papoulias and Minckley 1990; Karp and Tyus 1990; Ruppert et al. 1993; Johnson et al. 1993). Direct evidence of predation includes native fishes obtained from stomach contents of nonnative fishes and by visual observation of predation. Other means by which nonnative fishes may adversely affect native fishes are by competition for food, which limits the success of razorback sucker (Papoulias and Minckley 1990). The extent of predation pressure by some nonnative fishes on populations of native fishes is not exactly known. Tyus and Saunders (1996) went on to conclude that smallmouth bass along with channel catfish and northern pike were the main threat to juvenile Colorado pikeminnow and razorback sucker. During the 1990s the Yampa River experienced a dramatic increase in northern pike and then smallmouth bass in critical habitat. Predation by these two piscivorous species wreaked havoc on the native fish community. Anderson (2004; 2005) documented significant declines of native fish densities in parts of the Yampa River between 1998 and 2004 coincident with an increase in smallmouth bass abundance. Bioenergetic modeling by Johnson et al. (2008) indicated that smallmouth bass fish consumption was similar to northern pike and about 65 times greater than channel catfish, but if more prey fish were available, piscivory by smallmouth bass could be 10 fold the piscivory by northern pike and channel catfish. They concluded that smallmouth bass presented the greatest predatory threat to native fishes of the Yampa River.

Smallmouth Bass

Until 2003, smallmouth bass were only reported as incidental, rare captures in the Upper Colorado River from Price Stubb Dam (river mile 188.3) to the Colorado/Green River confluence. However, Fish and Wildlife sampling crews involved with the channel catfish removal evaluation recorded and documented the capture of 318 smallmouth bass in main channel riverine habitats in a 39-mile reach of the Upper Colorado River from the Gunnison/Colorado River confluence to the Utah/Colorado stateline (Burdick 2003(a)). Catch rates (fish/hour and fish/mile) steadily increased throughout the 4-month sampling period (30 June to 31 October) and reached a high of 4.07 fish/hr. The source(s) of these smallmouth bass are unknown.

Upper Colorado River (Colorado)

In the Upper Colorado River between Price-Stubb Dam (river mile [RM] 188.3) and the head of Westwater Canyon, (RM 125), abundance and distribution information is limited for smallmouth bass. However, the increase in the number of smallmouth bass reported during the channel catfish removal evaluation had biologists and managers concerned that smallmouth bass abundance could increase quickly, and further impact recovery of native endangered fishes. Smallmouth bass have the potential to predate or compete with different life stages of the four native endangered fishes.

Fish passage has been restored at the Grand Valley Irrigation Company Diversion Dam near Palisade, the Government Highline Diversion Dam, and at the Price-Stubb Diversion Dam. For the first time in over 100 years fish now have upstream access from the Grand Valley to upstream reaches in the Upper Colorado River. Only a fish trap at the Government Highline fish passageway can prevent unimpeded movement upstream. Smallmouth bass are located in Rifle Gap Reservoir and Highline Lake and adult smallmouth bass have been collected in the Colorado River between Rifle and Price-Stubb Dam (Anderson 1997; Burdick 2008(a)).

Lower Gunnison River

In the fish trap of the Redlands Dam fish passageway in the Lower Gunnison River, the number of smallmouth bass have increased (19 fish in 2002 and 2003)(Burdick 2002; Burdick 2003(b)) over previous years of monitoring (1996–2001: 1 fish)(Burdick 2001). Fourteen smallmouth (third most abundant year since 1996) bass were collected and removed from the fish trap in 2012 (Francis 2012(a)). Nine smallmouth bass were collected in the fish trap at Redlands during 2004 (Burdick 2004) and 21 during 2005 (Burdick 2005a). No smallmouth bass were collected in the fish trap during 2006 (Burdick 2006) or 2007 (Burdick 2007) or 2011 (Burdick 2011(a)). Four were collected in 2008, one in 2009 (Burdick 2008(b); 2009), three in 2010 (Burdick 2010(a)). About 1,800 fingerling smallmouth bass were stocked by the Colorado Division of Wildlife (CDOW) in 1973 in the Gunnison River near Delta (Wiltzius 1978) upstream from Redlands Diversion Dam. None of these stocked smallmouth bass have been subsequently captured upstream from the diversion dam (Wiltzius 1978, Valdez et al. 1982; Burdick 1995). Redlands Dam (RM 3.0) provides an effective barrier to smallmouth bass and all other fish attempting to move further upstream in the Gunnison River.

Juanita Reservoir, which can connect to Kannah Creek and eventually to the Lower Gunnison River near the town of Whitewater, also contains smallmouth bass.

Control of Nonnative Fish by Mechanical Removal

Control of smallmouth bass and other nonnative fish species is a primary emphasis, along with habitat restoration, propagation and stocking, and instream flow management within the Recovery Program for the four endangered fish species. In the strategic plan for the control of nonnative fishes in the Upper Colorado River Basin (Tyus and Saunders 1996), “control” was defined as “reducing the numbers of one of more nonnative species to levels below which they are no longer an impediment to the recovery of endangered fish species.” The goal for nonnative fish control or management in the Upper Colorado River Basin is to reduce the adverse impacts of nonnative fishes on the endangered fishes which will hopefully increase the distribution and abundance of the endangered fishes and contribute to their recovery. It is not likely that nonnative fishes that have become

established in the Upper Colorado River Basin can be eliminated. However, preventive measures and active control programs could be implemented to reduce the abundance of nonnative fishes in riverine and adjacent floodplain habitats. Consequently, then, reducing the abundance of some problematic, nonnative fishes would reduce the potential for predation and competition on native listed and non-listed fishes. Management to promote recovery of listed fish species may have to include long-term or periodic suppression of some problematic nonnatives, such as mechanical removal, that minimizes impacts to remaining native fishes.

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

A. Study Goals

The purpose of this proposed study is to remove as many smallmouth bass as possible of all sizes in main channel riverine habitats in a 61-mile reach of the Upper Colorado River between Price-Stubb Dam and Westwater boat landing in eastern Utah. The goal is to reduce the abundance of smallmouth bass as quickly as possible in this reach which will ultimately benefit native listed fishes, and possibly contribute to their recovery.

B. Objectives

1. Remove all sizes of smallmouth bass in the Upper Colorado River by boat and raft-based electrofishing, and
2. Obtain an abundance estimate for smallmouth bass juvenile (100-199 mm) and adults (≥ 200 mm) by mark and recapture methods for the Upper Colorado River between GVIC Dam and Loma Boat Landing and the Lower Gunnison River between Redlands Dam and the Colorado/Gunnison river confluence (abundance estimates have been suspended indefinitely; may resume in the future if recommended via Project 161 – SMB synthesis).

C. End Products

Computerize and analyze field data; Prepare annual RIP reports.

IV. Study Area:

Upper Colorado River:

Price-Stubb Diversion Dam downstream to Loma boat landing (RM 188.3 – 152.6) & the Lower Gunnison River (RM 3.0 – 0.0)

Loma Boat Launch to Westwater Ranger Station (RM 152.6 – 127.6) [Removed for 2012]

Rifle Bridge to Beavertail Mountain (RM 240.4 – 195.7) [added in 2004] [CPW's reach from 2012-2018]

Silt to Rifle (RMs ~ 250.0 – 240.4) [added in 2007] [removed for 2009/2010/2011] [CPW's reach from 2012-2018]

Government Highline Diversion Dam to Cameo Bridge (RMs 193.7 – 189.7) [added in 2009]

V. Study Methods/Approach:

General–Study Direction and Evolution

December 2003. One of the conclusions agreed upon by participants at the December 2003 Nonnative Fish Control Workshop in Grand Junction was that smallmouth bass posed a greater threat to native fishes than other nonnative game fishes (e.g., channel catfish). Northern pike was viewed as the present number one threat to native fishes. At this workshop, the priority was established to start removing smallmouth bass from the Upper Colorado River in western Colorado as soon as possible to head off a possible increase in the abundance of this species. Recovery of listed native fishes might be more attainable if the threats (i.e., predation and competition) posed by certain nonnative fishes, such as smallmouth bass, could be minimized or eliminated.

FY2006 Study Modifications. The decision was made during the December 14, 2005, Biology Committee meeting to obtain an abundance estimate for smallmouth bass in concentration areas of the Upper Colorado River from Price Stubb Dam to Westwater, Utah. In essence this endeavor entailed marking and releasing smallmouth bass during an initial pass starting in the summer of 2006, and lethally removing and recording previously marked smallmouth bass in all subsequent passes. Smallmouth bass were marked in the river segments from Price Stubb Dam to Fruita State Park in the Upper Colorado River and a 2.3-mile segment of the Lower Gunnison River. These river segments were identified as moderate to high concentrations areas for smallmouth bass based on capture data from the summers of 2004 and 2005. An additional first pass was added to accomplish the marking. Four successive passes were performed during 2006 in the concentration areas to lethally remove smallmouth bass as was conducted in both 2004 and 2005.

Population estimates for smallmouth bass have been performed from 2007-2012, to track population abundance.

The number of removal passes for areas of low densities of smallmouth bass as determined from 2004 and 2005 capture data was reduced during 2006. These river segments included the canyon-bound reaches of Ruby and Horsethief canyons to Westwater, Utah (RM 152.6 – 127.6). The reduced effort in these reaches was re-directed to increase the number of removal passes in river segments where smallmouth bass had proliferated over the past two years. One such river reach was the 45-mile reach of the Upper Colorado River from the Rifle Bridge to Beavertail Mountain and, in particular, the 10 mile river segment from Rifle to Rulison. In 2005, the number of smallmouth bass collected in these reaches increased 11 fold and catch effort increased about 5.5 times. Re-focusing the removal effort resulted in a zero net budget change.

In 2007, study direction was modified again. Four additional removal passes were added for the Grand Valley portion of the project area. Two additional passes were performed by Fish and Wildlife personnel and two by Colorado Division of Wildlife (CDOW) personnel. The last two removal passes performed by the CDOW were in river reaches where high concentration or high abundance of smallmouth bass had been determined during the past five years of sampling. This sampling regime continued from 2008-2011.

Further modifications to the sampling protocol were implemented in 2011 from earlier sampling years (2007-2010). Removal efforts in the 45-mile reach between Rifle Bridge and Beavertail Mountain were continued but the number of removal passes was reduced from three to one. The reduced effort in the Rifle to Beavertail reach was re-allocated to increase removal passes (two total) in some of the Grand Valley reaches of the Colorado River (RMs 185.3-152.6). The principal investigator believed it was imperative to re-allocate this effort from the Rifle to Beavertail Mountain reaches to the Grand Valley reaches for 2011 because the smallmouth bass cohort produced in 2010 in the Grand Valley reaches appeared to be stronger than that of 2007, which was recognized as one of

the strongest year classes in the upper Colorado River basin rivers. It was uncertain if this 2010 cohort would overwinter, and that would not be known until the 2011 summer sampling was underway. The Service was responsible for performing this “re-allocated” effort and would not affect the removal effort (two passes) performed by the CDOW (RP project no. 126(b)), which usually occurred in September. This reallocation of effort resulted in no additional costs to the 2011 budget for this project.

Sampling modifications were necessary to remain within the new budget prescribed by the Recovery Program for FY2012. These changes were directly related to the Recovery Program’s 20% budget reduction from the FY2009, FY2010, and FY2011 budget (\$157,200/fiscal year). The sampling modifications included, 1) reducing the number of removal passes from 10 to 6 in the Grand Valley reaches, 2) eliminated sampling in the 25-mile reach from the Loma Boat Landing to the Westwater BLM ranger station, UT, and the 4-mile reach between Government Highline Dam and the Cameo XCEL bridge. Colorado Parks and Wildlife shifted their efforts to the reach between Rulison and Beavertail.

Sampling modifications for FY2013 included; 1) eliminating the marking pass in the Grand Valley reaches, 2) increasing the number of removal passes in the Grand Valley reaches from 6 (FY2012) to 8, 3) completing two overnight trips removing centrarchids from the 25-mile reach between Loma boat landing to the Westwater, UT, BLM ranger station landing, and 4) CPW completed all work upstream of Beavertail Mountain with scope of work 126(b).

A final synthesis report describing results from 2004 to 2006 was completed in January 2008 (Burdick 2008(a)).

Methodology

To date, sampling efforts have focused on a reach and not river-wide scale. For logistical considerations, the entire 61-mile section of the Upper Colorado River from Price-Stubb Dam to the Westwater, Utah, was divided into three different sub-reaches based on hydro-geomorphic features.

Three general sub-reaches were sampled between 2004 and 2013. These included, 1) a 3-mile section between Price-Stubb and Grand Valley Irrigation dams and the 15-mile section that extends from Palisade to the Gunnison/Colorado River confluence (RMs 185.5–171), 2) the 18-mile reach that extends from the confluence of the Gunnison and Colorado rivers to the Loma Boat Landing (RMs 171.0–152.6), and 3) Ruby and Horsethief canyons (RMs 152.6–127.6) which extends from the Loma Boat Landing to the Westwater, Utah. The 15- and 18-mile sub-reaches flow through a wide alluvial section of the lower Grand Valley; the canyon-bound sub-reach is considered a quasi-alluvial sub-reach. The number of sampling occasions (i.e., passes) in the 15-mile reach has been affected by the availability of sufficient water for sampling craft to operate due to extended drought periods. Sampling the 3-mile section between Price-Stubb and Grand Valley Irrigation dams has also been reduced due to poor access and low-water conditions in mid- to late-summer.

A 45-mile reach of the Upper Colorado River from the Rifle Bridge (river mile 240.7) to Beavertail Mountain in Debeque Canyon (river mile 195.7) will have been sampled with raft electrofishing for the ten most recent years (2004 – 2013) of this study. This river reach was outside the original defined removal area. However, there were unsubstantiated reports that anglers had encountered smallmouth bass in these upstream

reaches, and it was determined that a “reconnaissance” sampling trip was warranted to substantiate or refute these claims. Burdick (2011(b)) reported 11 northern pike removed in this reach and Francis (2012(b)) reported 16 northern pike removed by CPW in this reach providing additional support to work in this reach. Sampling regime for this 45-mile reach (2004-2010) has been two complete passes and a third pass in high concentration areas of smallmouth bass. However, as noted above, only one pass was performed in these upper reaches in 2011 and only two in 2012.

FY 2014

Sampling Protocol

Sampling for FY2014 will include; 1) continued suspension of the marking pass in the Grand Valley reaches, 2) eight removal passes conducted in the Grand Valley reaches, 3) two overnight trips removing centrarchids from the 25-mile reach between Loma boat landing to the Westwater BLM ranger station, UT, and 4) CPW will complete all work upstream of Beavertail Mountain with scope of work 126(b). The UCRRP 2013 non-native workshop conclusions could change these protocols.

FY 2015

Sampling Protocol

Sampling for FY2015 will include; 1) continued suspension of the marking pass in the Grand Valley reaches, 2) eight removal passes conducted in the Grand Valley reaches, 3) two overnight trips removing centrarchids from the 25-mile reach between Loma boat landing to the Westwater BLM ranger station, UT, and 4) CPW will complete all work upstream of Beavertail Mountain with scope of work 126(b). The UCRRP 2014 non-native workshop conclusions could change these protocols.

Fish Disposal. All smallmouth bass (with the exception of marked fish during years when abundance estimates are conducted), other centrarchids, northern pike, walleye, gizzard shad, grass carp, and yellow perch collected will be lethally removed. White sucker will be removed at levels that don't interfere with the primary objective of removing centrarchids. Disposal of all these fishes will be as follows: following capture, fish will be euthanized afield and preserved with ice. All dead fish will be held on station in freezers and disposed of in the Mesa County landfill southeast of Grand Junction.

Data Analyses. All smallmouth bass captured within each of the sub-reaches will be enumerated in 2014 and 2015 similar to that during former years (2004 – 2013). Total numbers of smallmouth bass and largemouth bass collected and catch/effort (fish/hr) will be also determined for each sub-reach per sampling pass. Length data will be recorded for 2014 and 2015 similar to that during former years (2004 – 2013) to determine the size structure of smallmouth bass removed.

Data summary analyses similar to that employed between 2004 and 2013 will be used to analyze the 2014 and 2015 field data. We assume that during 2014 and 2015, abundance estimates will be suspended.

VI. Task Description and Schedule:

Description

- Task 1. Remove all sizes of smallmouth bass and other centrarchid fishes.
6/2014 – 10/2014; 6/2015 – 10/2015
- Task 2. a) Electronically input field data; b) analyze data; c) prepare annual RIP reports. Schedule
a) 9/2014-11/2014; 9/2015-11/2015, b) & c) 11/2014, 11/2015

VII. Deliverables, Due Dates, and Budget by Fiscal Year:
FY 2014
 Deliverables: *Tasks 1 and 2*

FY 2014								
Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate		Total
	Project Leader GS-14		1	240	78.63	0	0	18871.2
	Administrative Officer GS-09		1	260	42.15	0	0	10959
	Fishery Biologist GS-11		1	800	46.53	0	0	37224
	Fishery Biologist GS-07		1	300	31.76	120	47.64	15244.8
	Crew leader Tech. GS-06		1	300	30.88	120	46.32	14822.4
	Biological Tech. GS-05		3	500	18.39	120	27.58	37513.8
Labor Subtotal								134635.2
Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration		Total
	Office Supplies	FEDEX charges for Biological samples						100
	Office Supplies	Rite in the rain paper						50
	Office Supplies	Data clipboards						50
	Office Supplies	Ink Cartridges and paper						200
	Office Supplies	Cell, SAT, and Office phone service						800
	Field Equipment	GSA vehicle lease per month	3.25	each	344.02	3.25		3633.7113
	Field Equipment	Mileage	3648	miles	0.31	1		1130.88
	Field Equipment	Boat Gasoline 91 octane	205	gallons	4.12	1		844.6
	Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	5,500	1		5500
	Field Equipment	ETS unit	2	each	5,435	1		10870
	Field Equipment	Honda Generators	2	each	2,890	1		5780
	Field Equipment	*Misc. Field Supplies See Justification	1	see basis	2,500	1		2500
								31459.191
Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips		Total
Camping	5	0	28	15	4	2		1310
Meetings/ Lakewood 2013 GSA Rates	2	149	66	15	3	1		1052
								2362
Grand Total								168456
USFWS Grand Jct.								

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a “typical” field season for one study would include the following:

- Spark plugs for generators – 5 at \$7 each = \$35
- Synthetic oil for generators - 5 quarts at \$7 each = \$35
- Generator repair/tune-up - 5 hrs @ \$75/hr = \$375
- Hip boots – 2 pair at \$50/pair = \$100
- Breathable chest waders - 2 pair @ \$125/pair = \$250
- Stearns Type III life jackets – 3 @ \$70 each = \$210
- Electrical Gloves - 3 pairs @ \$65/pair = \$195
- Dura-Frame electrofishing dip nets – 2 @ \$300 each = \$600
- Boat trailer maintenance
 - Signal light pigtail adapters – 2 @ \$30 each = \$60
- Replace any missing NRS HD-brand tie-down straps:
 - Ten 2-ft straps @ \$4.20 each = \$42
 - Five 3-ft straps @ \$4.30 each = \$21.50
 - Ten 4-ft straps @ \$4.70 each = \$47
 - Five 6-ft straps @ \$5.05 each = \$25.25
 - Five 9-ft straps @ \$5.7 each = \$28.50
 - Five 12-ft straps @ \$6.15 each = \$30.75
- Replace any missing D-style carabiners, each boat needs:
 - 10 @ \$7.50 each = \$75
- Mesh rig bag – 1 @ \$50 each = \$50
- Yeti 125-quart coolers – 1 @ \$500 each = \$500
- Rafting oars, oar blades, and oar rowing sleeves
 - Carlisle 10-foot oar shafts – 2 @ \$90 each = \$180
 - Carlisle Oars blades – 4 @ \$65 each = \$260
 - Oar sleeves – 4 @ \$12 each = \$48
- 5-gallon plastic gasoline jerry cans – 5 @ \$20 each = \$100
- River bags
 - NRS 3.8 heavy-duty Bill’s Bag – 1 @ \$100 each = \$100
 - Clavey (green 7 X 17) dry bag – 3 @ \$22 each = \$66
 - Clavey (blue 10 X 24) dry bag) – 4 @ \$26 each = \$104
- 20 lb. propane tanks – 3 @ \$20 each = \$60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male &

female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves, lanterns, lantern mantles, small “pony” propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtails, new electrofishing spheres, wire rope for replacing electrofishing “witches brooms,” 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc.

FY 2015

Deliverables: *Tasks 1 and 2*

FY 2015									
	Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate		Total
		Project Leader GS-14	1	240	80.99	0	0		19437.6
		Administrative Officer GS-09	1	260	43.41	0	0		11286.6
		Fishery Biologist GS-11	1	800	47.93	0	0		38344
		Fishery Biologist GS-07	1	300	32.72	120	49.07		15704.4
		Crew leader Tech. GS-06	1	300	31.81	120	47.71		15268.2
		Biological Tech. GS-05	3	500	18.94	120	28.41		38637.6
	Labor Subtotal								138678.4
	Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration		Total
		Office Supplies	FEDEX charges for Biological samples						100
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						200
		Office Supplies	Cell, SAT, and Office phone service						816
		Field Equipment	GSA vehicle lease per month	3.25	each	354.34	3.25		3742.7163
		Field Equipment	Mileage	3648	miles	0.32	1		1167.36
		Field Equipment	Boat Gasoline 91 octane	205	gallons	4.24	1		869.2
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	5,500	1		5500
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	3,300	1		3300
									15795.276
		Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips	Total
		Camping	5	0	28	15	4	2	1310
		Meetings/ Lakewood 2013 GSA Rates	2	149	66	15	3	1	1052
									2362
									Grand Total
	USFWS Grand Jct.								156836

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a “typical” field season for one study would include the following:

- Spark plugs for generators – 5 at \$7 each = \$35
- Synthetic oil for generators - 5 quarts at \$7 each = \$35
- Generator repair/tune-up - 5 hrs @ \$75/hr = \$375
- Hip boots – 2 pair at \$50/pair = \$100
- Breathable chest waders - 2 pair @ \$125/pair = \$250
- Stearns Type III life jackets – 3 @ \$70 each = \$210
- Electrical Gloves - 3 pairs @ \$65/pair = \$195
- Dura-Frame electrofishing dip nets – 2 @ \$300 each = \$600

Boat trailer maintenance

- Signal light pigtail adapters – 2 @ \$30 each = \$60

Replace any missing NRS HD-brand tie-down straps:

- Ten 2-ft straps @ \$4.20 each = \$42
- Five 3-ft straps @ \$4.30 each = \$21.50
- Ten 4-ft straps @ \$4.70 each = \$47
- Five 6-ft straps @ \$5.05 each = \$25.25
- Five 9-ft straps @ \$5.7 each = \$28.50
- Five 12-ft straps @ \$6.15 each = \$30.75

Replace any missing D-style carabiners, each boat needs:

- 10 @ \$7.50 each = \$75

Mesh rig bag – 1 @ \$50 each = \$50

Yeti 125-quart coolers – 1 @ \$500 each = \$500

Rafting oars, oar blades, and oar rowing sleeves

- Carlisle 10-foot oar shafts – 2 @ \$90 each = \$180

- Carlisle Oars blades – 4 @ \$65 each = \$260

- Oar sleeves – 4 @ \$12 each = \$48

5-gallon plastic gasoline jerry cans – 5 @ \$20 each = \$100

River bags

- NRS 3.8 heavy-duty Bill’s Bag – 1 @ \$100 each = \$100

- Clavey (green 7 X 17) dry bag – 3 @ \$22 each = \$66

- Clavey (blue 10 X 24) dry bag) – 4 @ \$26 each = \$104

20 lb. propane tanks – 3 @ \$20 each = \$60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male & female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves,

lanterns, lantern mantles, small “pony” propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtaails, new electrofishing spheres, wire rope for replacing electrofishing “witches brooms,” 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc. .

Out-year budgets for Removal of Smallmouth Bass in the Upper Colorado River between Price-Stubb Dam [Government Highline Diversion Dam] near Palisade, Colorado, and Westwater, Utah: 2016-2018

THESE BUDGETS ARE ESTIMATES ONLY AND MAY NOT REPRESENT ACTUAL COSTS

FY 2016

Deliverables: *Tasks 1 and 2*

FY 2016									
	Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate		Total
		Project Leader GS-14	1	240	83.42	0	0		20020.8
		Administrative Officer GS-09	1	260	44.72	0	0		11627.2
		Fishery Biologist GS-11	1	800	49.36	0	0		39488
		Fishery Biologist GS-07	1	300	33.7	120	50.54		16174.8
		Crew leader Tech. GS-06	1	300	32.76	120	49.14		15724.8
		Biological Tech. GS-05	3	500	19.51	120	29.26		39798.6
	Labor Subtotal								142834.2
	Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration		Total
		Office Supplies	FEDEX charges for Biological samples						100
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						200
		Office Supplies	Cell, SAT, and Office phone service						816
		Field Equipment	GSA vehicle lease per month	3.25	each	364.97	3.25		3854.9956
		Field Equipment	Mileage	3648	miles	0.33	1		1203.84
		Field Equipment	Boat Gasoline 91 octane	205	gallons	4.37	1		895.85
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	5,500	1		5500
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	2,100	1		2100
									14770.686
		Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips	Total
		Camping	5	0	28	15	4	2	1310
		Meetings/ Lakewood 2013 GSA Rates	2	149	66	15	3	1	1052
									2362
									Grand Total
	USFWS Grand Jct.								159967

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a “typical” field season for one study would include the following:

- Spark plugs for generators – 5 at \$7 each = \$35
- Synthetic oil for generators - 5 quarts at \$7 each = \$35
- Generator repair/tune-up - 5 hrs @ \$75/hr = \$375
- Hip boots – 2 pair at \$50/pair = \$100
- Breathable chest waders - 2 pair @ \$125/pair = \$250
- Stearns Type III life jackets – 3 @ \$70 each = \$210
- Electrical Gloves - 3 pairs @ \$65/pair = \$195
- Dura-Frame electrofishing dip nets – 2 @ \$300 each = \$600

Boat trailer maintenance

- Signal light pigtail adapters – 2 @ \$30 each = \$60

Replace any missing NRS HD-brand tie-down straps:

- Ten 2-ft straps @ \$4.20 each = \$42
- Five 3-ft straps @ \$4.30 each = \$21.50
- Ten 4-ft straps @ \$4.70 each = \$47
- Five 6-ft straps @ \$5.05 each = \$25.25
- Five 9-ft straps @ \$5.7 each = \$28.50
- Five 12-ft straps @ \$6.15 each = \$30.75

Replace any missing D-style carabiners, each boat needs:

- 10 @ \$7.50 each = \$75

Mesh rig bag – 1 @ \$50 each = \$50

Yeti 125-quart coolers – 1 @ \$500 each = \$500

Rafting oars, oar blades, and oar rowing sleeves

- Carlisle 10-foot oar shafts – 2 @ \$90 each = \$180

- Carlisle Oars blades – 4 @ \$65 each = \$260

- Oar sleeves – 4 @ \$12 each = \$48

5-gallon plastic gasoline jerry cans – 5 @ \$20 each = \$100

River bags

- NRS 3.8 heavy-duty Bill’s Bag – 1 @ \$100 each = \$100

- Clavey (green 7 X 17) dry bag – 3 @ \$22 each = \$66

- Clavey (blue 10 X 24) dry bag) – 4 @ \$26 each = \$104

20 lb. propane tanks – 3 @ \$20 each = \$60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male & female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves,

lanterns, lantern mantles, small “pony” propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtales, new electrofishing spheres, wire rope for replacing electrofishing “witches brooms,” 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc. .

FY 2017

Deliverables: *Tasks 1, 2*

FY 2017									
Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate			Total
	Project Leader GS-14		1	240	85.92	0	0		20620.8
	Administrative Officer GS-09		1	260	46.06	0	0		11975.6
	Fishery Biologist GS-11		1	800	50.84	0	0		40672
	Fishery Biologist GS-07		1	300	34.71	120	52.06		16660.2
	Crew leader Tech. GS-06		1	300	33.74	120	50.62		16196.4
	Biological Tech. GS-05		3	500	20.09	120	30.14		40985.4
Labor Subtotal									147110.4
Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration			Total
	Office Supplies	FEDEX charges for Biological samples							100
	Office Supplies	Rite in the rain paper							50
	Office Supplies	Data clipboards							50
	Office Supplies	Ink Cartridges and paper							200
	Office Supplies	Cell, SAT, and Office phone service							816
	Field Equipment	GSA vehicle lease per month	3.25	each	375.92	3.25			3970.655
	Field Equipment	Mileage	3648	miles	0.34	1			1240.32
	Field Equipment	Boat Gasoline 91 octane	205	gallons	4.5	1			922.5
	Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	5,500	1			5500
	Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,000	1			1000
									13849.475
	Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips	Total	
	Camping	5	0	28	15	4	2	1310	
	Meetings/ Lakewood 2013 GSA Rates	2	149	66	15	3	1	1052	
									2362
USFWS Grand Jct.									Grand Total 163322

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a “typical” field season for one study would include the following:

- Spark plugs for generators – 5 at \$7 each = \$35
- Synthetic oil for generators - 5 quarts at \$7 each = \$35
- Generator repair/tune-up - 5 hrs @ \$75/hr = \$375
- Hip boots – 2 pair at \$50/pair = \$100
- Breathable chest waders - 2 pair @ \$125/pair = \$250
- Stearns Type III life jackets – 3 @ \$70 each = \$210
- Electrical Gloves - 3 pairs @ \$65/pair = \$195
- Dura-Frame electrofishing dip nets – 2 @ \$300 each = \$600

Boat trailer maintenance

- Signal light pigtail adapters – 2 @ \$30 each = \$60

Replace any missing NRS HD-brand tie-down straps:

- Ten 2-ft straps @ \$4.20 each = \$42
- Five 3-ft straps @ \$4.30 each = \$21.50
- Ten 4-ft straps @ \$4.70 each = \$47
- Five 6-ft straps @ \$5.05 each = \$25.25
- Five 9-ft straps @ \$5.7 each = \$28.50
- Five 12-ft straps @ \$6.15 each = \$30.75

Replace any missing D-style carabiners, each boat needs:

- 10 @ \$7.50 each = \$75

Mesh rig bag – 1 @ \$50 each = \$50

Yeti 125-quart coolers – 1 @ \$500 each = \$500

Rafting oars, oar blades, and oar rowing sleeves

- Carlisle 10-foot oar shafts – 2 @ \$90 each = \$180

- Carlisle Oars blades – 4 @ \$65 each = \$260

- Oar sleeves – 4 @ \$12 each = \$48

5-gallon plastic gasoline jerry cans – 5 @ \$20 each = \$100

River bags

- NRS 3.8 heavy-duty Bill’s Bag – 1 @ \$100 each = \$100

- Clavey (green 7 X 17) dry bag – 3 @ \$22 each = \$66

- Clavey (blue 10 X 24) dry bag) – 4 @ \$26 each = \$104

20 lb. propane tanks – 3 @ \$20 each = \$60

Other potential uses for these same funds could include replacing hand tools (ratchet and sockets, screw drivers, vise grips, pliers, Allen wrenches, crescent wrenches, hammer, etc.), WD-40, bailing wire, duct tape, electrical supplies (12 and 14 gage wire for the boats, junction boxes, extra male & female plugs, wire nuts, fuses, Ohm meter, electrical tape), batteries (C, AA and AAA), camp stoves,

lanterns, lantern mantles, small “pony” propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtales, new electrofishing spheres, wire rope for replacing electrofishing “witches brooms,” 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc. .

FY 2018

Deliverables: *Tasks 1, 2*

FY 2018									
	Labor	Title	# of employees	Hours	Reg. Rate	OT Hours	OT Rate		Total
		Project Leader GS-14		1	240	88.5	0	0	21240
		Administrative Officer GS-09		1	260	47.44	0	0	12334.4
		Fishery Biologist GS-11		1	800	52.37	0	0	41896
		Fishery Biologist GS-07		1	300	35.75	120	53.62	17159.4
		Crew leader Tech. GS-06		1	300	34.76	120	52.13	16683.6
		Biological Tech. GS-05		3	500	20.7	120	31.04	42224.4
	Labor Subtotal								151537.8
	Equipment & Supplies	Category	Item	Quantity	Unit	Rate	Duration		Total
		Office Supplies	FEDEX charges for Biological samples						100
		Office Supplies	Rite in the rain paper						50
		Office Supplies	Data clipboards						50
		Office Supplies	Ink Cartridges and paper						200
		Office Supplies	Cell, SAT, and Office phone service						816
		Field Equipment	GSA vehicle lease per month	3.25	each	387.2	3.25		4089.8
		Field Equipment	Mileage	3648	miles	0.35	1		1276.8
		Field Equipment	Boat Gasoline 91 octane	205	gallons	4.64	1		951.2
		Field Equipment	Motor, Generator, Boat Repair (Based on 10 year depreciation and replacement costs)	1	see basis	5,500	1		5500
		Field Equipment	*Misc. Field Supplies See Justification	1	see basis	1,000	1		1000
									14033.8
	Type Of Travel	Number of Travelers	Hotel Costs	Per Diem	TAV Fee	# days	# of trips	Total	
	Camping	5	0	28	15	4	2	1310	
	Meetings/ Lakewood 2013 GSA Rates	2	149	66	15	3	1	1052	
								2362	
								Grand Total	
	USFWS Grand Jct.							167934	

*Misc. Field Supplies

Exact use of the money in this line item will vary from year to year depending on what equipment needs to be maintained, repaired, or replaced, but use of these funds for a “typical” field season for one study would include the following:

- Spark plugs for generators – 5 at \$7 each = \$35
- Synthetic oil for generators - 5 quarts at \$7 each = \$35
- Generator repair/tune-up - 5 hrs @ \$75/hr = \$375
- Hip boots – 2 pair at \$50/pair = \$100
- Breathable chest waders - 2 pair @ \$125/pair = \$250
- Stearns Type III life jackets – 3 @ \$70 each = \$210
- Electrical Gloves - 3 pairs @ \$65/pair = \$195
- Dura-Frame electrofishing dip nets – 2 @ \$300 each = \$600

Boat trailer maintenance

- Signal light pigtail adapters – 2 @ \$30 each = \$60

Replace any missing NRS HD-brand tie-down straps:

- Ten 2-ft straps @ \$4.20 each = \$42
- Five 3-ft straps @ \$4.30 each = \$21.50
- Ten 4-ft straps @ \$4.70 each = \$47
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Yeti 125-quart coolers – 1 @ \$500 each = \$500

Rafting oars, oar blades, and oar rowing sleeves

- Carlisle 10-foot oar shafts – 2 @ \$90 each = \$180

- Carlisle Oars blades – 4 @ \$65 each = \$260

- Oar sleeves – 4 @ \$12 each = \$48

5-gallon plastic gasoline jerry cans – 5 @ \$20 each = \$100

River bags

- NRS 3.8 heavy-duty Bill’s Bag – 1 @ \$100 each = \$100

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- Clavey (blue 10 X 24) dry bag) – 4 @ \$26 each = \$104

20 lb. propane tanks – 3 @ \$20 each = \$60

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lanterns, lantern mantles, small “pony” propane bottles for lanterns, Gott 5-gallon water jugs, shovels, 5-gallon buckets, cargo nets, fix chips or cracks in vehicle windshields, bulbs, lenses, and wiring to fix trailer lights and pigtales, new electrofishing spheres, wire rope for replacing electrofishing “witches brooms,” 2-man dome tents, NRS Canyon Box for dry storage, camping kitchen gear (roll-up camp tables, anodized dutch ovens, plates, bowls, cups, silverware), pencils, repair/replace river maps, etc. .

VIII. Budget Summary:

FY2014	
USFWS-GJ	\$168,456
FY2015	
USFWS-GJ	\$156,836
2014-2015 Total =	\$325,292

Estimated Budget Summary for Fiscal Years 2016-2018:

FY2016	
USFWS-GJ	\$159,976
FY2017	
USFWS-GJ	\$163,322
FY2018	
USFWS-GJ	\$167,934
2016-2018 Total =	\$491,232
5-Year Total =	\$816,524

IX. Reviewers: Program Staff and Biology Committee

X. References:

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