

**COLORADO RIVER RECOVERY PROGRAM
FY 2011 AND FY 2012 PROPOSED SCOPE OF WORK**

Project No.: 98a

Middle Yampa River northern pike removal and evaluation; Middle Yampa River (South Beach section) smallmouth bass removal and evaluation

Lead Agency: Colorado Division of Wildlife

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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:

Middle Yampa River northern pike removal and evaluation; Middle Yampa River smallmouth bass removal and evaluation

II. Relationship to RIPRAP:

This study will remove northern pike from the middle Yampa River and evaluate the efficiency of that effort. Smallmouth bass will also be removed from the entire CDOW study area and the efficiency of the removal evaluated.

Green River Action Plan: Yampa and Little Snake rivers:

III. Reduce negative impacts of nonnative fishes and sportfish management activities (nonnative and sportfish management).

III.A.1. Implement Yampa Basin aquatic wildlife management plan in reaches of the Yampa River occupied by endangered fishes. Each control activity will be evaluated for effectiveness and then continue as needed.

III.A.1.b. Control northern pike.

III.A.1.b.(1) Remove and translocate northern pike and other sport fishes from the Yampa River.

III. Study Background/Rationale and Considerations:

Study Background/Rationale:

Susceptibility of the Colorado River Basin to nonnative fish establishment has been attributed to the low diversity of the native fish fauna, a high degree of endemism of this fauna, and the highly altered physical habitat of the basin (Hawkins and Nesler 1991). Bezzerides and Bestgen (2002) report that the native fish fauna of the Colorado River Basin consists of at least 35 species, while at least 100 nonnative fishes have been introduced into the basin (Tyus and Saunders (2000). Twenty-eight of these nonnative fish species were identified as threats to native fishes through a recent survey of regional fisheries biologists (Hawkins and Nesler 1991). Of these 28 species, the northern pike (*Esox lucius*) was considered by biologists as the third greatest hazard to native fishes (Hawkins and Nesler 1991).

In Colorado, the northern pike is one of 40 known, introduced fish species currently existing within the Colorado River Basin (Nesler 2003). This species has been extensively introduced outside of the species' native range for use as a large, sportfish, and as a predator to control other fishes (Scott and Crossman 1973). Northern pike were first introduced to the Yampa River Basin of Colorado in 1977. Less than 1,000 fingerling northern pike were released into Elkhead Reservoir to predate on a large number of nonnative suckers present (Roehm 2004). Elkhead Creek is located approximately four miles upstream of Craig, and is the receiving stream of Elkhead Reservoir. This creek is tributary to the Yampa River. Movement of northern pike downstream was evidenced by collection of this species in the Yampa River, as early as 1979 (Tyus and Beard 1990). Northern pike numbers within the river had increased by the early 1980s (Wick et al. 1985; Tyus and Beard 1990). Subsequent downstream movement of northern pike into the Green River was first documented less than five years after initial release in Elkhead Reservoir (Tyus and Beard 1990). This species has since established itself as a self-sustaining population within the Yampa River.

Influences of such introductions on native fish fauna are cause for great concern, especially in areas occupied by endangered species. The Yampa River downstream of Craig is designated by the U.S. Fish and Wildlife Service (USFWS) as critical habitat for the federal- and state-listed Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and razorback sucker (*Xyrauchen texanus*). Primary threats to these native species include competition with, and predation by nonnative fish species (USFWS 2002). The northern pike has been identified as one of two principal, nonnative hazards to juvenile and adult Colorado pikeminnow (USFWS 2002). Northern pike and Colorado pikeminnow share similar habitat in the spring and early summer during the spawning season. Both species also rely on native sympatric species, such as roundtail chub (*Gila robusta*), flannelmouth sucker (*Catostomus latipinnis*), bluehead sucker (*Catostomus discobolus*), and speckled dace (*Rhinichthys osculus yarrowi*) as prey (Tyus and Beard 1990; Nesler 1995). Further, Nesler (1995) found that the nonnative redbside

shiner may also be a common prey item of northern pike and Colorado pikeminnow. Overall resource sharing between the two species may also increase the likelihood of northern pike predation on young and adult endangered fishes (Tyus and Beard 1990; Nesler 1995). Thus, the potential impacts of northern pike competition with, and predation of native, sympatric species (especially the Colorado pikeminnow) are severe.

This proposed study is one of several designed for removal of northern pike and smallmouth bass, and evaluation of such efforts within the upper Colorado River Basin. The CDOW and Colorado State University (CSU) have cooperatively worked together to develop the logistics within this proposal. These collaborative efforts will increase the efficiency and effectiveness of removing northern pike and smallmouth bass within the middle Yampa River. Evaluation of the removal efforts will assist the Upper Colorado Recovery Program in attaining nonnative fish management goals.

Study Considerations:

The CDOW will complete a minimum of three removal passes across 47.3 miles within the time frame that weather and river conditions allow. Further, the CDOW will work with CSU and the US Fish and Wildlife Service-Vernal office (USFWS) to complete four additional removal passes within Reach 1 and Reach 3. The mark and recapture passes for both species will occur in a three week time period.

A crew of eight to nine people will be required to complete this project. Temporaries will be hired for 24, 40-hour work weeks (5.25 months). Four weeks (two weeks pre-sampling and two weeks post-sampling) of the 24 weeks will be devoted to crew training, preparation and maintenance of boats and equipment, and data entry.

Temporaries will work thirteen to fourteen weeks on the river to capture, remove, and translocate northern pike and smallmouth bass. Three to four additional weeks during the period allotted for river sampling will be dedicated to crew recovery, use of compensation time, and boat/equipment maintenance. Further, four weeks of this time are set aside for targeted smallmouth bass removal during the spawning period. Temporary employees will not be paid overtime wages.

IV. Study Goals, Objectives, End Product:

Study Goals:

- 1) To reduce the number of northern pike occupying 47.3 river miles of critical habitat within the Yampa River downstream of Craig, Colorado (RM 134.2 – RM 60.6), thereby benefiting native fishes of the Yampa River Basin, as well as native fish communities downstream within the Green River Basin
- 2) To transport live northern pike collected from the study area for release in Loudy Simpson ponds (Craig) or State Park's Headquarters' Kyle Pond, thereby increasing angler opportunities to harvest northern pike
- 3) To reduce the number of smallmouth bass occupying 47.3 river miles of critical habitat within the Yampa River downstream of Craig, Colorado for the benefit of Yampa and Green River native fishes.

- 4) To transport live smallmouth bass ($\geq 10''$ in total length) collected from the entire study area for release in Elkhead Reservoir, thereby increasing angler opportunities to harvest smallmouth bass

Study Objectives:

- 1) To remove and translocate as many northern pike as possible within the study area via three or more removal passes
- 2) To estimate the number of northern pike occupying the study area by generating a population estimate for northern pike utilizing a mark-recapture methodology (1 marking pass, minimum of 3 removal passes)
- 3) To calculate the proportion of the estimated northern pike population that was removed
- 4) To remove and translocate as many smallmouth bass as possible within Critical Habitat of the middle Yampa River, downstream of Craig, CO, thereby benefiting native fishes of the Yampa River basin, as well as native fish communities downstream within the Green River Basin.
- 5) To implement targeted removal of smallmouth bass during the SMB spawning in a coordinated effort with CSU, and with CSU as the lead.
- 6) To provide CSU with smallmouth bass data to estimate the number of smallmouth bass occupying Critical Habitat of the middle Yampa River.
- 7) To calculate the proportion of the estimated smallmouth bass population that was removed

End Product:

Annual Reports will be prepared and distributed to interested parties following the 2011 and 2012 field seasons. Presentations will also be provided during the Annual Nonnative Fish Control Workshop, and at the Annual Recovery Program Researchers' Meeting.

V. Study Area:

The study area for this project will focus on 47.3 miles of the Yampa River just downstream of Craig, Colorado (RM 134.2) to just upstream of Cross Mountain Canyon (RM 60.6). Specific river segments to be sampled include: RM 134.2 (South Beach launch) to RM 124.0 (Round Bottom), RM 100.0 (upstream Government Bridge) to RM 91.0 (mouth of Little Juniper Canyon), RM 88.7 (downstream of Juniper Canyon) to RM 79.2 (old Maybell bridge launch), RM 79.2 to RM 71.0 (Sunbeam launch), and RM 71.0 to RM 60.6 (just upstream of Cross Mountain launch). Northern pike will not be removed by the CDOW in 24 miles of river, RM 124 (Round Bottom) to RM 100 (near Government Bridge). CSU has established this reach as a smallmouth bass study area. These 24 miles have also been included in previous studies for northern pike removal. Therefore, CSU will remove northern pike within these stretches in conjunction with their smallmouth bass study. CSU will also remove smallmouth bass and northern pike from downstream of Cross Mountain Canyon (RM 55.5) to just downstream of the Little Snake River confluence (RM 50.5). CSU's northern pike data will be collated with CDOW data

and reported by CDOW. The CDOW will also remove smallmouth across the entire CDOW study area. Approximately two miles of river within Juniper Canyon will not be sampled, due to non-navigable riverine conditions.

VI. Study Methods/Approach:

All northern pike, smallmouth bass, roundtail chub, and Colorado pikeminnow captured will be identified, measured in total length to the nearest millimeter (mm), and weighed to the nearest gram (g). Capture locations for northern pike and smallmouth bass will be recorded to the nearest tenth of a river mile. Northern pike and smallmouth bass collected will be examined for the presence of FLOY tags, and fin clips. Northern pike and smallmouth bass (individuals of both species must be a minimum of 150 mm total length) will be marked with unique, grey-colored FLOY tags, numbered from 3,200-3,700, and released alive. FLOY tag number and color will be recorded.

Colorado pikeminnow and roundtail chub captured will be scanned to determine the presence of passive integrated transponder (PIT) tags. PIT tag number will be recorded and stored in the PIT tag reader for those fish encountered with PIT tags. Individuals without PIT tags will be implanted with a new PIT tag following the appropriate protocol; tags for Colorado pikeminnow will be provided by the USFWS. Capture locations for Colorado pikeminnow and roundtail chub will be recorded to the nearest tenth of a river mile. UTM coordinates associated with capture locations will also be recorded, when possible. All Colorado pikeminnow and roundtail chub captured will be released alive, immediately. Any native fish captured that is visibly stressed will not be processed, but rather returned to the location of capture within the river, immediately.

Incidental contact with other nonnative game fish (including centrarchids and walleye, excluding channel catfish) will result in lethal removal. Up to 20 specimens of black crappie, largemouth bass, smallmouth bass, northern pike and walleye of various minimum sizes will be provided to Brett Johnson (CSU) for otolith microchemistry analysis. Samples will also be provided to the State Health Department for heavy metals analysis. Disposal of all the aforementioned fishes will be as follows: following capture, fish will be euthanized in the field, and preserved with ice. All other dead fish not provided to Martinez will be disposed of in the Mesa County landfill southeast of Grand Junction, Colorado.

Capturing and removing northern pike within main channel and backwater habitat will be the focus of this sampling effort. Further, capturing and removing smallmouth bass across the entire study area will continue in 2011. Incidental contact with Colorado pikeminnow and roundtail chub will be handled per the protocol below. This study will occur between the middle of April and end of July. Ten day trips across two weeks (seven/eight days on the river and two/three days travel) will constitute one pass. A minimum of three passes will be completed for northern pike

and smallmouth bass removal in Reach 2, Reach 4, and Reach 5. A minimum of seven removal passes will be completed in Reach 1 and Reach 3.

One pass during the study will be designated for tagging and releasing northern pike. In order to integrate USFWS's study area into a combined northern pike estimate, the CDOW will initiate a northern pike tagging pass on April 20th, when USFWS plans to start on the river. This will likely be the CDOW's second pass overall. As such, the third pass will constitute the recapture pass and the second removal pass for northern pike. The smallmouth bass marking pass will commence when CSU initiates their third pass, a date which has not yet been determined.

Smallmouth bass that are removed during removal passes and are ≥ 10 inches in total length will be translocated to Elkhead Reservoir after it has ceased spilling over, prior to then all SMB will be euthanized. Smallmouth bass captured during removal passes that are less than 10 inches in total length will be euthanized and either deposited in Rio Blanco County Landfill or donated to CSU for research purposes.

Northern pike that are removed will be translocated to Yampa River State Park Headquarters West Pond. Northern pike and smallmouth bass that are removed from the river and translocated to other waters will be given a unique numbered Gray FLOY tag, if they did not already have a tag when captured. Those fish that were previously tagged will be translocated with that same tag.

Two, three man electrofishing crews will utilize jon boats with outboard jet units within each river segment to perform mark-recapture sampling in the main channel. Each crew will simultaneously move downstream with Smith Root GPP 5.0 electrofishers. One crew will work one side of the river, while the second crew will work the other side. Island perimeters will also be electrofished. No river segment will be electrofished on consecutive days, to allow for fish to recover and redistribute. A third, chase boat, will be operated by two additional crew members to process northern pike at a maximum of 2.0 mile intervals, depending on the number of fish caught.

Backwaters where the CDOW has obtained permission to sample will also be included within the study. Both crews will sample backwater areas along both sides of the river. A trammel net will be used with a block and shock technique. Backwater habitats will be sampled until the river recedes and habitat is no longer accessible. Output power will be adjusted within backwaters based upon changes in river conductivity. Additionally, output power will be reduced during the boat approach to the blocked mouth. Both processes will minimize the potential for electrofishing injuries to fish.

Data collected will be analyzed to determine northern pike and smallmouth bass population estimates, fish densities, length frequency distributions, catch per unit effort, and movement. Length frequencies and catch per unit effort will also be determined for Colorado pikeminnow and roundtail chub. Annual Reports will

include the data analyses mentioned above for all years of study in which comparable methodology and data exists. Data collected regarding Colorado pikeminnow will be provided to the USFWS.

The Surge

As was the case in 2010, CDOW will assist CSU with a targeted intensive smallmouth bass removal effort during the smallmouth bass spawning period. This will include the use of three electrofishing boats and a crew of four to five employees. Previous work has shown that adult smallmouth bass are most vulnerable to our sampling gear during this period and increased rates of removal can be achieved. Further, this effort aims to explore our ability to interfere with the spawning process by increasing the return frequency to identified river reaches during the spawning period. For more information regarding the surge effort see SOW #125.

The Extended Surge

Intensive removal of smallmouth bass during their spawning period has become known as "The Surge", an activity that concentrates the efforts of several agencies in reaches with spawning habitat. In 2010, the Surge started June 22nd and stopped 18 days later when flows declined to base flow levels below 1000 cfs. Flows below 1000 cfs are unsafe for navigation when using aluminum electrofishing boats. Recent work by Bestgen and Hill showed that smallmouth bass spawning continues for about 4 weeks and often for 2-3 weeks after flows decline to 1000 cfs. In order to maximize the disruption of spawning this new Task will extend The Surge beyond the 1000-cfs threshold by switching to electrofishing rafts. We will also try other gear as needed including small aluminum electrofishing boats, trammel nets, and angling over nests. This extended work will be done by CSU-LFL and CDOW crews and will focus on the same spawning reaches as The Surge. We are planning for this extended period to occur for an additional 2-3 weeks after flow declines below 1000 cfs. Fish will be shocked by two electrofishing crews with two boats, one on each side of the river and fish that are translocated will be held in a chase boat (raft) in large coolers with oxygenated water. Fish will be handled as normal, with smallmouth bass ≥ 250 mm TL being translocated to Elkhead Reservoir and those smaller being euthanized. The CDOW and CSU-LFL will each contribute two electrofishing rafts and one chase raft. CDOW will contribute four people and CSU-LFL will contribute six people to this effort. For more information regarding the extended surge effort see SOW #125.

VII. Task Description and Schedule:

Task 1. Establish landowner contacts, and obtain permission to access property (backwaters) for fish sampling.

Schedule: February - March of 2011 and 2012

Task 2. Plan logistics, hire and train personnel, order and maintain equipment, and prepare for sampling.

Schedule: February-April of 2011 and 2012

Task 3. Sample study area to capture, remove, and translocate northern pike and smallmouth bass. Limited data entry.

Schedule: April 15 – June 15, 2011; April 15 – June 15, 2012

Task 4. “The Surge” -Targeted Removal During Bass Spawn:

June 15-July 7, 2011; June 15-July 7, 2012

Task 4.5 “The Extended Surge” – Low Flow Targeted Removal During Bass Spawn completed using electrofishing rafts. July 2011; July 2012

Task 5. Maintenance of equipment. Data entry, data analysis, and prepare final report. Present findings during the Annual Nonnative Fish Control Workshop, and at the Annual Recovery Program Researchers Meeting.

Schedule: August-December 2011, January 2012; August-December 2012, January 2013

VIII. FY-2011 Work:

Deliverables/Due Dates: Annual report due November 2011

FY-2011 Budget by Task:

Task 1.

Labor =

Two Wildlife Manager IIIs:

Lodging (8 nights @ \$65.00/night = \$520) x 2 positions = **\$1040**

(Deer Park Inn = \$130/night double occupancy)

Per diem (10 days @ \$42/day = \$420) x 2 positions = **\$840**

Total = \$1,880

Task 2.

Labor = Three seasonal technicians (Technician I's):

Salary (2, 40 hour weeks @ \$14.46/hour = \$1156) + Benefits : (11.69%

= \$135) + Indirect costs (37.19% of \$1291= \$480) = \$1,771 x 3 positions

= **\$5,313**

Labor= One seasonal technician (Technician II)

Salary (2, 40 hour weeks @ \$15.62/hour = \$1249) + Benefits (11.69% = \$146) + Indirect costs (37.19% of \$1395 = \$519) = **\$1,914**

Equipment =

Smith Root GPP 5.0 Electrofisher (replacement) = **\$13,834**

Dip nets, fish measuring boards, and fish scales = **\$1,582:**

(12 short and long handles with interchangeable net heads @ \$79/each = \$948; 5 fish measuring boards @ \$42/each = \$210; 8 spring scales @ \$53/each = \$424)

Fish hauling tank and regulators, aerators, and oxygen = **\$4,363:**

(2 fish tank and regulators @ \$1,575/each=\$3,150; 6 re-circulating aerator set-ups @ \$158/each = \$948; 12 oxygen tanks rental @ \$22/each = \$264)

FLOY tags, guns, and needles (per FLOY Tag) = **\$1,386:**

(2,000 tags @ \$520/1,000 tags = \$1,040; 5 guns @ \$50/each = \$250; 12 needles @ \$8/each = \$96)

PIT tags and implanter (per Biomark) = **\$2,300**

(500 tags @ \$4.50/tag = \$2,250; 2 sets of one dozen implanters @ \$25/dozen = \$50)

Waders, lifejackets, rain gear, electrofishing gloves = **\$2,176:**

(4 pairs of waders @ \$79/each = \$316; 5 lifejackets @ \$116/each = \$580; 4 sets of heavy duty rain gear jackets and pants @ \$200/each = \$800; 16 pairs of gloves @ \$30/each = \$480)

GPS units (1 @ \$150/each) = **\$150**

Two-way radios (4 sets @ \$75/each) = **\$300**

Net pens (2 @ \$100/each = **\$200**

Factory calibration of Smith Root GPP 5.0 (3 @ \$280 each) = **\$840**

Maintenance of boats and trailers, excluding fuel (per Chuck's Marine, Marine Max, and Mercs and More)= **\$4,372** (includes replacement,

repair, and maintenance of boat and trailer parts: (6 tune-ups @ \$100/ each =\$600; 6 spare jet sleeves/liners @ \$42/each = \$252; 3

spare impellers @ \$450/each = \$1,350; 9 spare water pumps and

kits @ \$60/each = \$450; 6 spare throttle and steering cables

@\$45/each = \$270; motor oil and grease @ \$800; 2 spare batteries

@ \$50/each = \$100; 6 trailer bunks @ \$50/each = \$300; trailer

lights and bearings = \$250)

Boat fuel (3 @ \$1,400/each) = **\$4,200**

Maintenance of generators (oil and fuel) = **\$850**

Maintenance of electrofishers = **\$900:**

(Spare anodes, cathodes, plugs, booms, wiring, and hardware)

Total = \$44,680

Task 3.

Labor =

Three seasonal technicians (Technician I's):

Salary (14, 40 hour weeks @ \$14.46/hour = \$8,098) + Benefits (11.69% = \$947) + Indirect costs (37.19% of \$9,045 = \$3,364) = \$12,409 x 3 positions = **\$37,227**

Lodging (8 nights/trip @ \$65.00/night = \$520/trip x 5 trips = \$2,600/pos. x 3 positions = **\$7,800**

Per diem (10 days/trip @ \$420/trip x 5 trips = \$2,100/pos. x 3 positions = **\$6,300**

One seasonal technician (Technician II)

Salary (14, 40 hour weeks @ \$15.62/hour = \$8,747) + Benefits (11.69% = \$1023) + Indirect costs (37.19% of \$9770 = \$3633) = **\$13,403**

Lodging (8 nights/trip @ \$65.00/night = \$520/trip x 5 trips = **\$2,600**

Per diem (10 days/trip @ \$420/trip x 5 trips = **\$2,100**

Four Wildlife Manager III's:

Lodging (8 nights/trip @ \$65.00/night = \$520/trip x 5 trips = \$2,600/pos. x 4 positions = **\$10,400**

Per diem (10 days/trip @ \$420/trip x 5 trips = \$2,100/pos. x 4 positions = **\$8,400**

Total = \$88,230

Task 4.

Labor =

Three seasonal technicians:

Salary (5, 40 hour weeks @ \$14.46/hour = \$2,892) + Benefits (11.69% = \$338) + Indirect Costs (37.19% of \$3,230 = \$1201) = \$4,431 * 3 positions = **\$13,294**

Lodging (3 trips @ 8 nights/trip @ \$65.00/night = \$1560) x 3 positions = **\$4,680**

Per Diem (3 10 day trips @ \$420.00/trip = \$1260) * 3 positions = **\$3,780**

One seasonal Technician (Technician II)

Salary (5, 40 hour weeks @ \$15.62/hour = \$3,124) + Benefits (11.69% = \$365) + Indirect Costs (37.19% of \$3,489 = \$1,298) = **\$4,787**

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1560**

Per Diem: 3 10 day trips @ \$420.00/trip = **\$1260**

Wildlife Manager III

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1560**

Per Diem: 3 10 day trips @ \$420.00/trip = **\$1260**

Total = \$32,181

Task 4.5.

Labor =

Three seasonal technicians (Technician I):

Salary (3, 40 hour weeks @ \$14.46/hour = \$1735) + Benefits (11.69% =

\$203) + Indirect costs (37.19% of \$1,938 = \$721) = \$2659 * 3 positions = **\$7,976**

Lodging (3 trips @ 8 nights/trip @ \$65.00/night = \$1560) x 3 positions = **\$4,680**

Per Diem (3 10 day trips @ \$420.00/trip = \$1260) * 3 positions = **\$3,780**

One seasonal technician (Technician II):

Salary (3, 40 hour weeks @ \$15.62/hour = \$1874) + Benefits (11.69% = \$219) + Indirect costs (37.19% of \$2,093 = \$778) = **\$2,871**

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1,560**

Per Diem: 3 10 day trips @ \$420.00/trip = **\$1,260**

Wildlife Manager III

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1,560**

Per Diem: 3 10 day trips @ \$420.00/trip = **\$1,260**

Total = \$24,947

Task 5.

Labor =

Three seasonal technicians (Technician Is):

Salary (2, 40 hour weeks @ \$14.46/hour = \$1156) + Benefits (11.69% = \$135) + Indirect costs (37.19% of \$1,291 = \$480) = \$1,771 x 3 positions = **\$5,313**

One seasonal technician (Technician II)

Salary (2, 40 hour weeks @ \$15.62/hour = \$1,250) + Benefits (11.69% = \$146) + Indirect costs (37.19% of \$1,396 = \$519) = **\$1,950**

Total = \$7,263

Grand Total to CDOW = \$199,181

VIII. FY-2012 Work:

Deliverables/Due Dates: Annual report due November 2012

FY-2012 Budget by Task:

Task 1.

Labor =

Two Wildlife Manager IIIs:

Lodging (8 nights @ \$65.00/night = \$520) x 2 positions = **\$1,040**
(Deer Park Inn = \$130/night double occupancy)

Per diem (10 days @ \$42/day = \$420) x 2 positions = **\$840**

Total = \$1,880

Task 2.

Labor = Three seasonal technicians (Technician I's):

Salary (2, 40 hour weeks @ \$14.46/hour = \$1156) + Benefits : (11.69% = \$135) + Indirect costs (37.19% of \$1291= \$480) = \$1,771 x 3 positions = \$5,313 + 10% projected increase = **\$5,844**

Labor= One seasonal technician (Technician II)

Salary (2, 40 hour weeks @ \$15.62/hour = \$1249) + Benefits (11.69% = \$146) + Indirect costs (37.19% of \$1395 = \$519) = \$1,914 = 10% projected increase = **\$2,105**

Equipment =

Smith Root GPP 5.0 Electrofisher (replacement) = **\$13,834**

Dip nets, fish measuring boards, and fish scales = **\$1,582:**

(12 short and long handles with interchangeable net heads @ \$79/each = \$948; 5 fish measuring boards @ \$42/each = \$210; 8 spring scales @ \$53/each = \$424)

Fish hauling tank and regulators, aerators, and oxygen = **\$4,363:**

(2 fish tank and regulators @ \$1,575/each=\$3,150; 6 re-circulating aerator set-ups @ \$158/each = \$948; 12 oxygen tanks rental @ \$22/each = \$264)

FLOY tags, guns, and needles (per FLOY Tag) = **\$1,386:**

(2,000 tags @ \$520/1,000 tags = \$1,040; 5 guns @ \$50/each = \$250; 12 needles @ \$8/each = \$96)

PIT tags and implanter (per Biomark) = **\$2,300**

(500 tags @ \$4.50/tag = \$2,250; 2 sets of one dozen implanters @ \$25/dozen = \$50)

Waders, lifejackets, rain gear, electrofishing gloves = **\$2,176:**

(4 pairs of waders @ \$79/each = \$316; 5 lifejackets @ \$116/each = \$580; 4 sets of heavy duty rain gear jackets and pants @ \$200/each = \$800; 16 pairs of gloves @ \$30/each = \$480)

GPS units (1 @ \$150/each) = **\$150**

Two-way radios (4 sets @ \$75/each) = **\$300**

Net pens (2 @ \$100/each = **\$200**

Factory calibration of Smith Root GPP 5.0 (3 @ \$280 each) = **\$840**

Maintenance of boats and trailers, excluding fuel (per Chuck's Marine, Marine Max, and Mercs and More)= **\$4,372** (includes replacement,

repair, and maintenance of boat and trailer parts: (6 tune-ups @ \$100/ each =\$600; 6 spare jet sleeves/liners @ \$42/each = \$252; 3

spare impellers @ \$450/each = \$1,350; 9 spare water pumps and

kits @ \$60/each = \$450; 6 spare throttle and steering cables

@\$45/each = \$270; motor oil and grease @ \$800; 2 spare batteries @ \$50/each = \$100; 6 trailer bunks @ \$50/each = \$300; trailer lights and bearings = \$250)

Boat fuel (3 @ \$1,400/each) = **\$4,200**

Maintenance of generators (oil and fuel) = **\$850**

Maintenance of electrofishers = **\$900**:
(Spare anodes, cathodes, plugs, booms, wiring, and hardware)

Total = \$45,402

Task 3.

Labor =

Three seasonal technicians (Technician I's):

Salary (14, 40 hour weeks @ \$14.46/hour = \$8,098) + Benefits
(11.69% = \$947) + Indirect costs (37.19% of \$9,045 = \$3,364) =
\$12,409 x 3 positions = \$37,227 + 10% projected increase = **\$40,950**

Lodging (8 nights/trip @ \$65.00/night = \$520/trip x 5 trips =
\$2,600/pos. x 3 positions = **\$7,800**

Per diem (10 days/trip @ \$420/trip x 5 trips = \$2,100/pos. x 3
positions = **\$6,300**

One seasonal technician (Technician II)

Salary (14, 40 hour weeks @ \$15.62/hour = \$8,747) + Benefits (11.69% =
\$1023) + Indirect costs (37.19% of \$9770 = \$3633) = \$13,403 + 10%
projected increase = **\$14,743**

Lodging (8 nights/trip @ \$65.00/night = \$520/trip x 5 trips =
\$2,600

Per diem (10 days/trip @ \$420/trip x 5 trips = **\$2,100**

Four Wildlife Manager III's:

Lodging (8 nights/trip @ \$65.00/night = \$520/trip x 5 trips =
\$2,600/pos. x 4 positions = **\$10,400**

Per diem (10 days/trip @ \$420/trip x 5 trips = \$2,100/pos. x 4
positions = **\$8,400**

Total = \$93,293

Task 4.

Labor =

Three seasonal technicians:

Salary (5, 40 hour weeks @ \$14.46/hour = \$2,892) + Benefits (11.69% =
\$338) + Indirect Costs (37.19% of \$3,230 = \$1201) = \$4,431 * 3 positions
= \$13,294 + 10% projected increase = **\$14,623**

Lodging (3 trips @ 8 nights/trip @ \$65.00/night = \$1560) x 3 positions =
\$4,680

Per Diem (3 10 day trips @ \$420.00/trip = \$1260) * 3 positions = **\$3,780**

One seasonal Technician (Technician II)

Salary (5, 40 hour weeks @ \$15.62/hour = \$3,124) + Benefits (11.69% =
\$365) + Indirect Costs (37.19% of \$3,489 = \$1,298) = \$4,787 + 10%
projected increase = **\$5,266**

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1,560**

Per Diem: 3 10 day trips @ \$420.00/trip = **\$1,260**

Wildlife Manager III

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1,560**
Per Diem: 3 10 day trips @ \$420.00/trip = **\$1,260**

Total = \$33,989

Task 4.5.

Labor=

Three seasonal technicians (Technician I):

Salary (3, 40 hour weeks @ \$14.46/hour = \$1735) + Benefits (11.69% = \$203) + Indirect costs (37.19% of \$1,938 = \$721) = \$2659 * 3 positions = \$7,976 + 10% projected increase = **\$8,774**

Lodging (3 trips @ 8 nights/trip @ \$65.00/night = \$1560) x 3 positions = **\$4,680**

Per Diem (3 10 day trips @ \$420.00/trip = \$1260) * 3 positions = **\$3,780**

One seasonal technician (Technician II):

Salary (3, 40 hour weeks @ \$15.62/hour = \$1874) + Benefits (11.69% = \$219) + Indirect costs (37.19% of \$2,093 = \$778) = \$2871 + 10 % projected increase = **\$3,158**

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1,560**

Per Diem: 3 10 day trips @ \$420.00/trip = **\$1260**

Wildlife Manager III

Lodging: 3 trips @ 8 nights/trip @ \$65.00/night = **\$1,560**

Per Diem: 3 10 day trips @ \$420.00/trip = **\$1260**

Total = \$26,032

Task 5.

Labor=

Three seasonal technicians (Technician Is):

Salary (2, 40 hour weeks @ \$14.46/hour = \$1156) + Benefits (11.69% = \$135) + Indirect costs (37.19% of \$1,291 = \$480) = \$1,771 x 3 positions = \$5,313 + 10% projected increase = **\$5,844**

One seasonal technician (Technician II)

Salary (2, 40 hour weeks @ \$15.62/hour = \$1,250) + Benefits (11.69% = \$146) + Indirect costs (37.19% of \$1,396 = \$519) + 10% projected increase = **\$2,145**

Total = \$7,989

Grand Total to CDOW = \$208,585

IX. Changes in Number of Removal Passes and Allocation of Effort

The removal effort expended for both species in 2010 will be repeated in 2011, and increased for smallmouth bass specifically to account for recommendations to target smallmouth bass during their spawning period, and when flows have dropped below the threshold that render aluminum bottomed john boats unsafe. Once flows reach this threshold, we will switch to other gear until smallmouth bass spawning has ceased.

Additional Costs to Scope of Work

Most of the additional costs associated with 98a level of effort in the FY11 scope of work are a result of extending The Surge. These costs are associated with the need for additional personnel time, travel per diem, and lodging. Further, one of the four seasonal technicians required for this project was switched from Technician I wages (\$14.46/hour) to Technician II wages (\$15.62/hour). This is to account for the anticipated return of a seasonal employee who has worked on this project for three years, and who fulfills a higher level of responsibility than the other Technician I's. For planning purposes the \$14.46/hour rate for three Technician I's and the \$15.62/hour rate for one Technician II is used for the FY12 budget; however, a 10% increase was added to account for projected wage increases in 2012..

X. Budget Summary:

FY 2011: \$199,181
FY 2012: \$208,585

XI. Reviewers:

Biology Committee

XII. References:

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