

- I. Project Title: Non-native fish removal from the middle and lower Green River  
(Channel catfish removal evaluation)

**Note: This project has been redirected toward smallmouth bass management in the Green River, beginning in FY 04. Catfish management may resume if/when more effective management techniques are identified. This report serves as the final report for the FY 03 effort in the Green River.**

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- III. Project Summary:

Predation and competition by channel catfish is considered a significant factor in the decline of native 'large river' fishes in the Colorado River Basin (Hawkins and Nesler 1991, Tyus and Saunders 1996). In an effort to address the concerns for negative interactions of channel catfish on native fishes, several pilot studies were initiated on the Green and Yampa rivers to evaluate the feasibility of reducing catfish in these areas (Modde and Fuller 2002, Crowl and Badame 2000). These studies suggest that, given sufficient pressure, population size of channel catfish can be reduced.

Channel catfish habitat use of the Green River sub-basin appears similar to that observed in the San Juan River, where the larger fish are found upstream (Brooks et al. 2000). This study initiates a cooperative effort by the Utah Division of Wildlife Resources (UDWR) and the U.S. Fish and Wildlife Service-Vernal (FWS) to evaluate reduction of channel catfish in the Green River between Sand Wash (RM216) and Swaseys Beach (RM132). A reduction of channel catfish in Desolation/Gray canyons and an

improvement in habitat for native endangered fishes is the ultimate goal of the effort. Other non-native fish collected with this effort will be removed and enumerated. The study objectives are to:

1. Evaluate removal effects on channel catfish populations by comparing population response between the control and treatment sub-reaches.
2. Evaluate movement of catfish between sub-reaches.
3. Minimize public resistance to the project through public information and dialogue. This will be accomplished through the Utah Resource Advisory Council and Wildlife Board process as well as the normal media outlets.

IV. Study Schedule: 2003 - 2007

V. Relationship to RIPRAP:

Green River Action Plan: Mainstem.

III. Reduce negative impacts of nonnative fishes.

III.A.4. Develop and implement control programs for nonnative fishes in river reaches occupied by the endangered fishes to identify required levels of control.

III.A.4.c. Remove channel catfish to protect humpback chub populations, and in the middle Green River (e.g., Deso/Gray Canyons) to protect razorback sucker and Colorado pikeminnow.

VI. Accomplishment of FY 2003 Tasks and Deliverables, Discussion of Initial Findings and Shortcomings:

Task 1: Add channel catfish marking to existing studies.

As part of sampling efforts to develop population estimates for Colorado pikeminnow on the Green River in Desolation and Gray Canyons and in the White River, and humpback chub in Desolation and Gray Canyons, channel catfish were captured using electrofishing equipment and trammel nets and then marked and released.

*Desolation/Gray Canyon*

Four passes of electrofishing as part of abundance estimates of Colorado pikeminnow in the Green River were completed from Sand Wash to Swasey's Rapid beginning the week of 24 March and concluding on 6 June 2003. All channel catfish collected between Sand Wash and Tusher Wash were marked. Channel catfish from the following river miles were marked accordingly:

1. River miles 211-216: left pectoral spine removed.
2. River miles 211-179: adipose fin clipped to the base of the fin.

3. River miles 179-169: right pectoral spine removed.
4. River miles 169- 131.5: adipose fin clipped to the base of the fin.

This effort resulted in the capture, mark and release of 1,116 channel catfish ranging from 60 to 666 mm and averaging 251mm total length. Of the 1,116 channel catfish captured, six were recaptures of fish that were marked in previous passes. Five of the recaptures were caught in the subreach where they were initially caught. One channel catfish was recaptured in Reach 3 after originally being captured in Reach 1. This covers a distance of at least 42 miles.

Other non-native species encountered included smallmouth bass and walleye. A total of 11 smallmouth bass ranging in length from 202 to 370 mm with an average of 277 mm were removed. One 535 mm walleye was also removed.

#### *White River*

Three electrofishing passes were completed as part of abundance estimates of Colorado pikeminnow in the White River. This effort began on 24 April and concluded on 29 May 2003. The reach of the White River sampled began at river-mile 72 and continued down river to the confluence with the Green River. A control reach was established between river miles 35 and 25 in which all channel catfish caught were marked with a left pelvic or pectoral fin clip. This effort resulted in the capture of 905 channel catfish which ranged in length from 56 to 925 mm and averaged 323 mm. In the control reaches, 190 channel catfish were captured, marked and released. Subsequent passes resulted in the recapture of three channel catfish within the control reach.

Other non-native species encountered included one smallmouth bass at 346 mm and one yellow bullhead at 236 mm.

#### Task 2: Remove (treatment) or mark/release (control) channel catfish in Desolation/Gray canyons.

Originally, one pass of intensive fyke netting was scheduled to occur at a rate of approximately five fyke nets per river mile through Desolation and Gray canyons. As a result of low summer flows and other logistical circumstances, effort to remove or mark/release channel catfish was shifted to other reaches of river. Removal or mark/release was done in the Green River below Ouray, and from Sand Wash to Desolation Canyon.

#### *Ouray*

During the week of 15 September 2003, fyke nets were set in a 22-mile reach of the middle Green River downstream from Ouray to evaluate removal efficiency of channel catfish. Sampling began below the White River confluence (river mile 245.8) and continued downriver to Sheep Wash (river mile 233.3). Ten fyke nets were set for four

nights for a total of 40 net-nights for the week. A total of 361 channel catfish were removed from this reach of river for a catch per unit effort of 9 channel catfish/net-night (Table 1). These channel catfish ranged from 120 to 650 mm and averaged 195 mm.

In addition to fyke netting efforts, a total of fifteen man hours of angling were completed. Twenty-two channel catfish were removed from this reach by angling resulting in a catch rate of 1.5 channel catfish/angling hour. These channel catfish ranged in length from 120 to 450 mm and averaged 282 mm.

Smallmouth bass and black crappie were encountered in much higher numbers than in previous years indicating likely establishment of these species in this reach of river. One hundred and thirty black crappie were captured by fyke netting and ranged in length from 111 to 238 mm and averaged 150 mm. Thirteen smallmouth bass were captured and ranged in length from 175 to 337 mm with an average of 246 mm. Native species included adult flannelmouth sucker and bluehead sucker.

*Sand Wash/Desolation Canyon*

During the week of 14 July, twenty fyke nets were set each night from near the Sand Wash boat ramp (RM 220) and down river 20 miles to Rock House Rapid (RM 200). Fyke nets were set for four nights for a total of 80 net-nights. This effort resulted in the collection of 241 channel catfish or 3 channel catfish/net-night. Catfish removed ranged from 89 mm to 503 mm with an average of 196 mm.

Ten fyke nets with ½ inch mesh caught 207 channel catfish while the remaining ten fyke nets of ¾ – 1 inch mesh only caught 34 channel catfish.

Approximately 20 man-hours of angling in this reach of river resulted in the capture of 131 channel catfish for an average of 6.5 channel catfish/angling hour. Lengths of channel catfish caught by angling ranged from 110 to 470 mm and averaged 282 mm.

Other non-native species encountered were black crappie, smallmouth bass, carp and green sunfish. Native species found included flannelmouth sucker and humpback chub.

Table 1. Sampling efficiency by gear type for fyke nets and angling in the Ouray and Sand Wash/Desolation Canyon reaches of the middle Green River, 2003.

Location	Gear Type Catch Per Unit Effort				
	Fyke nets		Angling		
	# caught	# /net-night	# caught	#/angler-hour	#/angler-day
Ouray	361	9	22	1.5	12
Sand Wash/Deso	241	3	131	6.5	52
Total	602		153		
Average		6		4	32

Task 3: Data integration entry/analysis and preparation.

Data have been entered and analyzed.

VII. Recommendations:

- Redirect effort toward removal of smallmouth bass.
- Investigate more efficient methods of channel catfish removal.
- Evaluate removal effects on channel catfish populations by comparing population response between control and treatment sub-reaches.
- Evaluate movement of channel catfish between sub-reaches.
- Continue to provide public information and dialogue to minimize public resistance to the project.
- Incorporate other modifications as recommended following project review.

VIII. Project Status: This project has been redirected toward smallmouth bass management in the Green River, beginning in FY 04. Catfish management may resume if/when more effective management techniques are identified. This report serves as the final report for the FY 03 effort in the Green River.

IX. FY 2003 Budget Status

- A. Funds Provided: \$99,955
- B. Funds Expended: \$99,995
- C. Difference: \$ 0
- D. Percent of the FY 2003 work completed, and projected costs to complete: 100%
- E. Recovery Program funds spent for publication charges: \$0

X. Status of Data Submission: All tagging data has been submitted to the database manager. Data will be submitted with the final report.

XI. Signed: Kevin Christopherson 5 April 2004  
Principal Investigator Date