

COLORADO RIVER RECOVERY PROGRAM
RECOVERY PROGRAM
FY 2008 ANNUAL REPORT

PROJECT NUMBER 154

- I. Project title: Nonnative Fish Control in the Green River, and associated tributaries, within the Uintah and Ouray Indian Reservation, Utah.
- II. Principal Investigator(s):

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- III. Product Summary:

The Upper Colorado River Endangered Fish Recovery Program has implemented a control strategy for nonnative fishes and considers predator control essential to the recovery of four endangered Colorado River fishes: Colorado pikeminnow (*Ptychocheilus licius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypah*), and bonytail (*Gila elegans*).

Since 2000, smallmouth bass (*Micropterus dolomieu*), a non native, invasive predator species, abundance has dramatically increased in the Green River (CRFP, 2003). As a result, a recommendation for smallmouth bass mechanical removal in the Green River and its tributaries was supported in 2004. The ensuing removal activities have added valuable knowledge to smallmouth bass control efforts in large river environments. Furthermore, Haines and Modde (2006) recognized the

importance of increasing control efforts at higher levels of exploitation for effective removal of smallmouth bass in the Green River. As a result of this new information, and the associated fiscal and personnel limitations made evident of implementing new exploitation rates, a reallocation of effort to specific concentration areas was employed. Consequently, the control effort in the Green River in Desolation and Gray Canyons were reallocated to the Echo Park/Split Mountain reach. Additionally, the non native fish control effort in the Duchesne River was abandoned in 2004 because of intermittent flows.

In the past two years, sampling in Desolation Canyon has shown evidence of increased smallmouth bass population densities (Badame and Modde, personal communication, 2007). A realistic potential for re-established smallmouth bass populations or expansion of existing populations merits monitoring and/or control of smallmouth bass in the Green River and its tributaries (Duchesne and White Rivers) from Sand Wash Boat Ramp(RM 215.3) to Swasey's Rapid (RM129.8).

The main objective of this project is to monitor and/or control smallmouth bass populations in the lower Green River and its tributaries within the Uintah and Ouray Indian Reservation. The primary sampling method included is continuous raft electroshocking. Sampling in 2008 included two passes on the Green River from river mile 215.9 – 132.1 and one pass on the Duchesne River from river mile 43 – 0.

- IV. Study Schedule:
 - a: Initial year: FY08
 - b: Final year: FY08

- V. Relationship to RIPRAP:

GENERAL RECOVERY PROGRAM SUPPORT ACTION PLAN

- III. Reduce negative impacts of nonnative fishes and sportfish management activities (nonnative and sportfish management).
 - III.A. Reduce negative interactions between nonnative and endangered fishes.
 - III.A.2. Identify and implement viable active control measures.

GREEN RIVER ACTION PLAN: MAINSTEM

- I. Reduce impacts of nonnative fishes and sportfish management activities (nonnative and sportfish management).
 - III.A. Reduce negative impacts to endangered fishes from sportfish management activities.
 - 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. Each control activity will be evaluated for effectiveness, and then continued as needed.

III.b.3. (Nonnative fish removal in Yampa Canyon).

VI. FY08 Accomplishments, Tasks and Deliverables, Initial Findings, Shortcomings and Discussion:

Task 1. Green River

Study Design

The Study area was divided into three reaches to identify high density areas and to make statistical comparisons. All smallmouth bass were measured, weighed, euthanized and deposited discretely on river banks. The first pass was completed by the Utah Division of Wildlife Resources (Moab) August 21–27, and the second pass was a collaborative effort by the Uintah and Ouray Indian Reservation and the U.S. Fish and Wildlife Service August 25-29 and October 14-19. Smallmouth bass were the target species for removal. We separated smallmouth bass into two groups for comparisons with other data sets, adults (those greater than or equal to 200 mm) and juveniles (bass less than 200mm).

Results

During both passes combined, 273 smallmouth bass were removed from the study area, 147 in pass one and 126 in pass two. CPE was calculated for: 1) total catch, 2) adults – smallmouth bass \geq 200 mm total length, and 3) juveniles – smallmouth bass $<$ 200 mm (Table 1).

Table 1. Smallmouth bass collected from the lower Green River, 2008.

Pass	Total Bass Removed	Adult Bass Removed	Catch/Hr Adult Bass	Catch/Mile Adult Bass	Juv. Bass Removed	Catch/Hr Juv. Bass	Catch/Mile Juv. Bass
1	147	88	2.38	.92	59	1.60	.62
2	126	82	1.29	.86	44	.69	.46
Total	273	170			103		

The CPE for all passes combined was 2.72 which is lower than catch rates shown in similar efforts completed in the Green River basin (Figure 1).

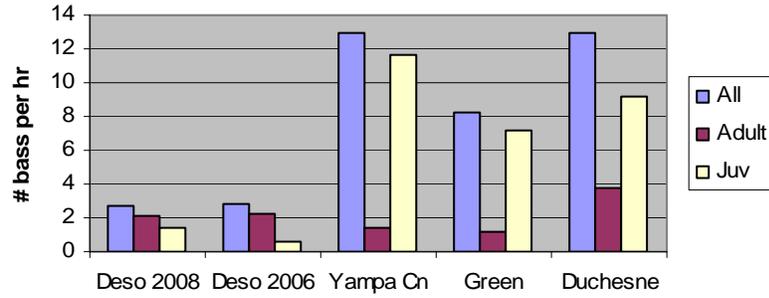


Figure 1. A comparison of smallmouth bass catch rates throughout the Green River basin; 2008 (2006 data from Desolation Canyon also included).

CPE was highest in reach one and lowest in reach three (downstream) during both passes (Figure 2).

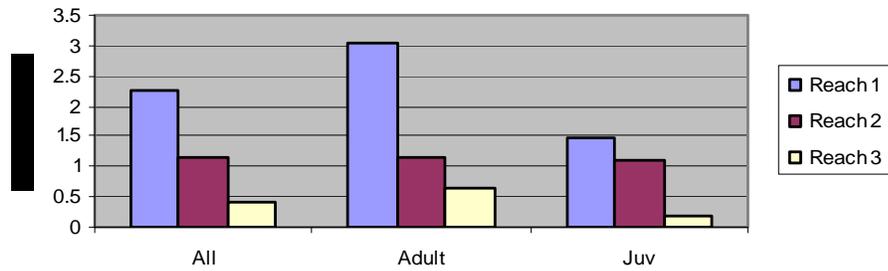
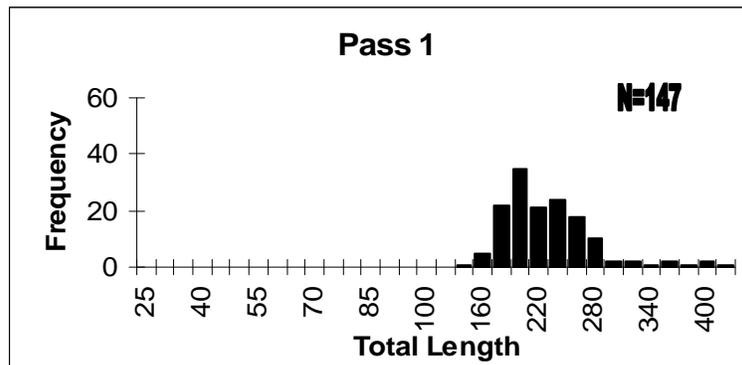


Figure 2. Smallmouth bass catch rates by Desolation Canyon reach; 2008

Smallmouth Bass Size

Mean total length (TL) for all smallmouth bass collected was 220 mm. The size (TL) most frequently caught was 200-220, and very few smallmouth bass less than 100 mm were collected (n=1), Figure 3.



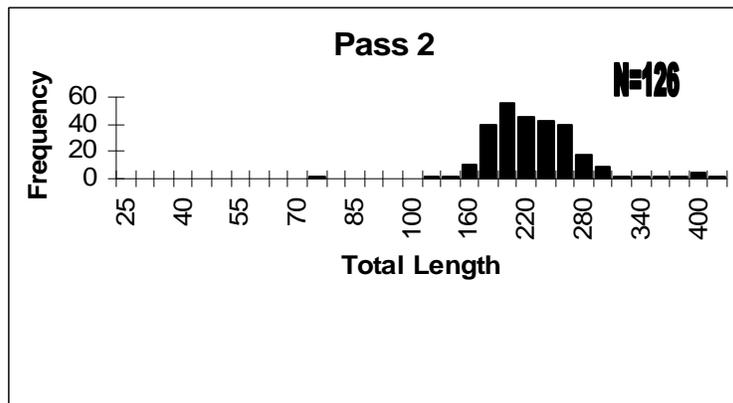


Figure 3. Length-frequency by sampling pass for smallmouth bass collected in Desolation Canyon of the Green River, Utah; 2008 .

Task 2. Duchesne River

Study Design

The Study Area consisted of the lower 43 miles of the Duchesne River from Myton, Utah to the confluence with the Green River. The Study Area was divided into two reaches based on distinct and varying habitat types. Reach 1 was 26 miles in length from Myton, Utah to Randlett, Utah. Reach 2 was 17 miles in length from Randlett, Utah to the confluence with the Green River. The Duchesne River non native monitoring pass was performed on June 24, 25, 26, 2008 and September 19, 2008 as a cooperative effort between the Ute Indian Tribe Fish and Wildlife Department (UIT F&WD) and the US Fish and Wildlife Service (FWS). Smallmouth bass were the targeted species. We report catch statistics for two size classes of smallmouth bass: juveniles (<200mm) and adult (≥200mm).

General Results

A total of 765 non native fishes were observed (collected ?) including smallmouth Bass (*Micropterus dolomieu*), channel catfish (*Ictalurus punctatus*), white sucker (*Catostomus commersonii*), black bullhead (*Ameiurus melas*), green sunfish (*Lepomis cyanellus*) and bluegill (*Lepomis macrochirus*). Smallmouth bass were the second most abundant species in our catch, trailing (Table 2; Figure 4).

Species	Average Length (mm)	Average Weight (g)	Total #
Smallmouth Bass (smb)	170.70	110.53	231
Cannel catfish (cc)	378.94	552.23	24
Green sunfish (gs)	104.86	37.78	52
Black bullhead 9bb)	140.36	71.20	11
White sucker (ws)	--	--	443
Bluegill (bg)	--	--	4

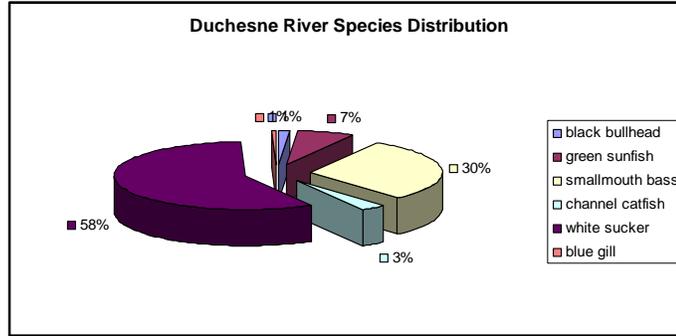


Figure 4. Nonnative species composition in the Duchesne River, Utah.

In Figure 5, we demonstrate a comparison of Catch Per Unit Effort (CPE) for all fish from Myton, Utah to the Green River confluence for 2005 and 2008. The 2008 CPE for the entire stream segment exhibits a dramatically higher yield than the effort in 2005. This may be a result of lower flows experienced at the time of the surveys in 2008 or may be indicative of population expansion within the 3 year absence.

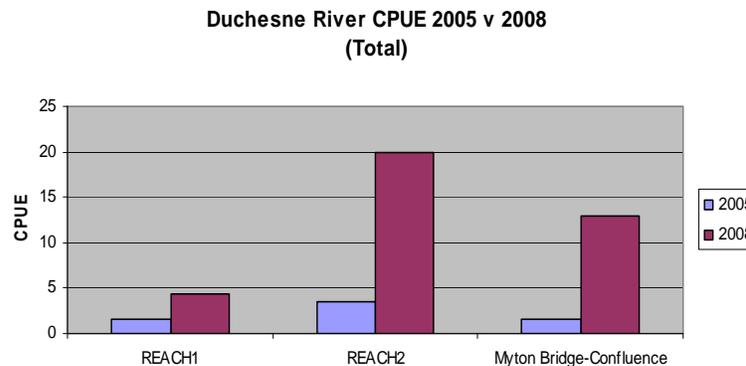


Figure 5. Total Catch per Unit Effort (All Species): Duchesne River, Utah; 2005 vs 2008.

Smallmouth Bass CPE and Length Frequency

Smallmouth bass juvenile CPE was higher from Randlett, Utah to the Green River confluence (Reach 2) than from Myton, Utah to Randlett, Utah (Reach 1). Juvenile SMB were also generally more abundant (59%) than adults throughout the entire stream segment (Table 3; Figure 6).

	Total #	CPE	CPE<200mm	CPE≥200mm
Myton Bridge- Confluence (Total Effort)	768	27.6	--	--
Myton Bridge- Confluence (SMB)	231	13.0	9.2	3.7
Reach 1 (SMB)	77	4.3	4.5	5.4
Reach 2 (SMB)	154	19.9	10.7	4.4

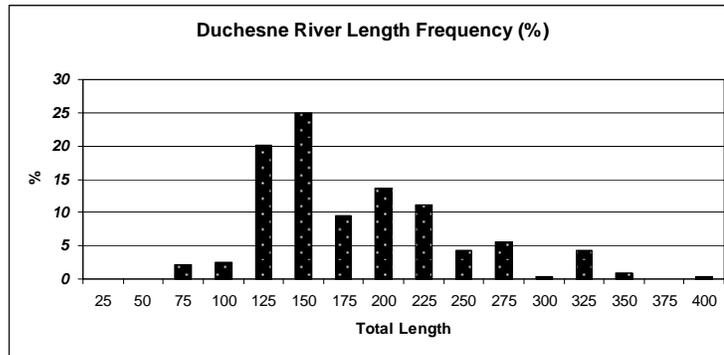


Figure 6. Length Frequency (% of total catch) for smallmouth bass collected in the Duchesne River, Utah; 2008

Smallmouth Bass Discussion

In a comparison of 2005 and 2008 Duchesne River Smallmouth bass monitoring data (Figure 7), it is evident that the calculated CPE for the entire stream segment, including each reach, are much higher for 2008 values of both juvenile and adult smallmouth bass occupying the Duchesne River. As mentioned above, there may be a variety of factors that may contribute to the increase in abundance of non native species, including variable seasonal and annual flows and seasonal survey scheduling. Evident by these affecting factors, it is apparent that additional monitoring, in the least, is warranted on the Duchesne River for application of responsible native fish management.

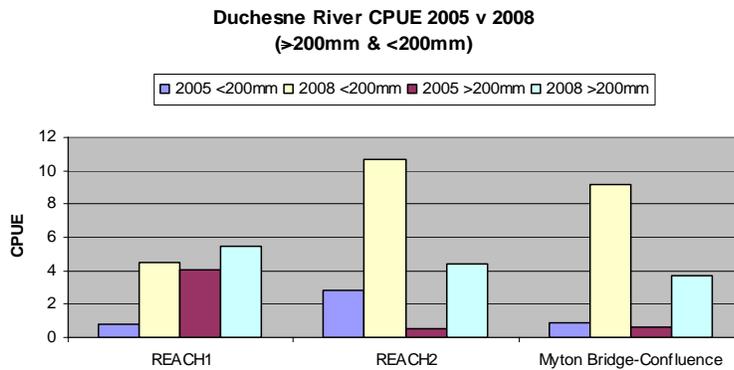


Figure 7. . A comparison of smallmouth bass catch rates in the Duschesne River, Utah: 2005 vs 2008.

VII. Recommendations

1. We recommend continued smallmouth bass control in the Duchesne River.
2. We recommend continuing to monitor the Green River in Desolation, and Grey canyons, the lower White River and the Green River between Ouray, Utah and Sand Wash Boat Ramp.

VIII. Project Status:
Final Year: FY08

IX. FY 0 Budget Status:

	<u>Total</u>
A. Funds Provided:	46,730
B. Funds Expended:	46,730
C. Difference:	0
D. Recovery Program funds spent for publication charges:	\$0

X: Status of Data Submission:
Data is being entered in dBASE files and will be submitted to the program data base manager upon completion in 2008.

XI. References:

Modde, T., and Fuller, F. 2002. Feasibility of channel catfish reduction in the lower Yampa River. Final Report, Project 88. Submitted to the Recovery Implementation Program, U.S. Fish and Wildlife Service, Denver, CO.

Tyus, H.M., and J.F. Saunders. 1996. Nonnative fishes in the upper Colorado River basin and a strategic plan for their control. Final Report of University of Colorado Center for Limnology to Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

Lentsch, L.D., R.T. Muth, P.d. Thompson, B.G Hoskins and T.A. Crowl. 1996. Options for selective control of nonnative fishes in the upper Colorado River basin. Utah Division of Wildlife Resources Publication 96-14, Salt Lake City, Utah.