

COLORADO RIVER RECOVERY PROGRAM  
RECOVERY PROGRAM  
FY 2009 ANNUAL REPORT

PROJECT NUMBER 154

I. Project title: Native fish monitoring and Nonnative fish monitoring and control in the lower Green River and associated tributaries within the Uintah and Ouray Indian Reservation, Utah.

II. Principal Investigator(s):

Jay Groves  
Ute Indian Tribe Fish and Wildlife Department  
P.O Box 190  
Fort Duchesne, UT 84026  
Phone: (435) 725-4816  
E-mail: [jayg@utetribe.com](mailto:jayg@utetribe.com)

Mark Fuller  
U.S. Fish and Wildlife Service  
1380 South 2350 West  
Vernal, UT 84078  
Office (435) 789-0351 fax (435) 789-4805  
Email: [mark\\_h\\_fuller@fws.gov](mailto:mark_h_fuller@fws.gov)

III. Project 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 recent history, 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 within the Uintah and Ouray Reservation merits monitoring and/or control of smallmouth bass in the Green River and its tributaries (Duchesne and White Rivers).

In 2008, sampling was reinitiated in the Green River (Desolation Canyon) and the Duchesne River to determine if Smallmouth bass catch rates warranted increased removal efforts. Catch rates (CPUE) of Smallmouth bass in Desolation Canyon were found to be relatively low; however, catch rates (CPUE) in the Duchesne River were higher than previous documentation. Removal efforts in 2009 were focused on the Duchesne River.

The main objective of this project is to monitor and/or control Smallmouth bass populations in the lower Green River and its associated tributaries within the Ute Indian Tribe, Uintah and Ouray Reservation.

A secondary objective is to identify the native fish community composition at lower flows within the Duchesne River. Sampling methods that may be employed in this study may include continuous raft electro-fishing, backpack electro-fishing, canoe/barge electro-fishing and electric seining.

- IV. Study Schedule:
  - a: Initial year: FY09
  - b: Final year: FY09

- 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. FY09 Accomplishments, Tasks and Deliverables, Initial Findings, Shortcomings and Discussion:

**Task 1. Duchesne River – High Flow – Non Native Fish Monitoring**

*Study Design*

The Duchesne River non native monitoring pass consist of 42 RM, from Myton Bridge to the confluence with the Green River. For data analysis, the stream segment was divided into 2 reaches, each possessing distinct and varying habitat types, i.e., riffles, runs, pools, backwaters. Reach 1 consist of 25 RM, from Myton, Utah to Randlett, Utah; while Reach 2 consist of 17 RM, from Randlett, Utah to the confluence with the Green River. The Duchesne River non native monitoring pass was performed on at various times during June 2009 as a cooperative effort between the Ute Indian Tribe Fish and Wildlife Department (UIT F&WD) and the US Fish and Wildlife Service (FWS) and the Utah Division of Wildlife Resources (UDWR). The species of study were smallmouth bass and any non native fish species that occupy the Duchesne River. Additionally, for the purpose of data analysis, fish surveyed were determined to be within two distinct groups, either juvenile (<200mm) or adult (≥200mm).

*General Results*

Within the entire stream segment, a total of 868 non native fishes were observed, including smallmouth Bass (*Micropterus dolomieu*), channel catfish (*Ictalurus punctatus*), white sucker (*Catostomus commersonii*), black bullhead (*Ameiurus melas*), green sunfish (*Lepomis cyanellus*) and red shiner (*Lepomis cyanellus*). Of the 868 total observed non native fishes, smallmouth bass comprise the highest density of non native fish surveyed (Table 1).

Species	Average Length (mm)	Average Weight (g)	Total #
Smallmouth Bass (smb)	194.09	166.34	338
Cannel catfish (cc)	333.54	499.45	270
Green sunfish (gs)	95.32	28.09	25
White sucker (ws)	172.29	104.41	129
Red shiner (rs)	70.45	4.50	43

Illustration 1. Duchesne River Total Non Native Species Distribution

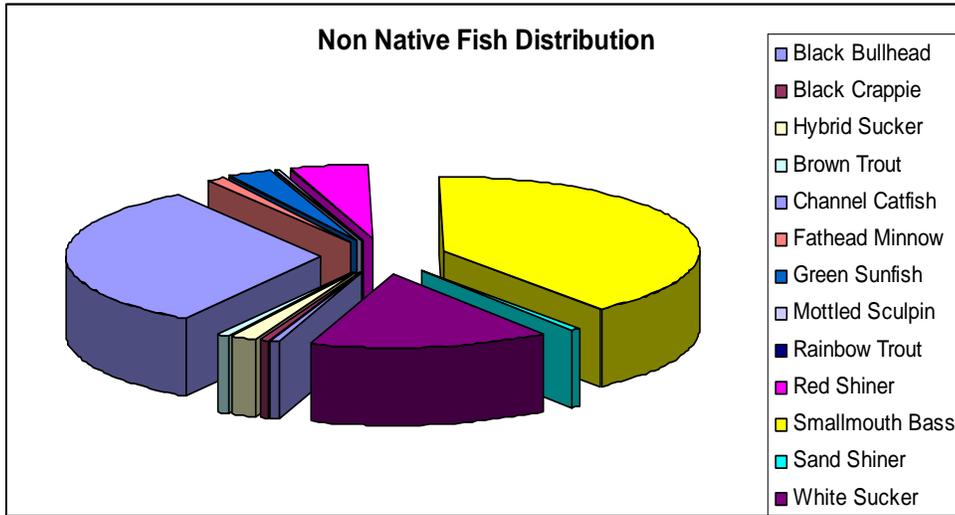
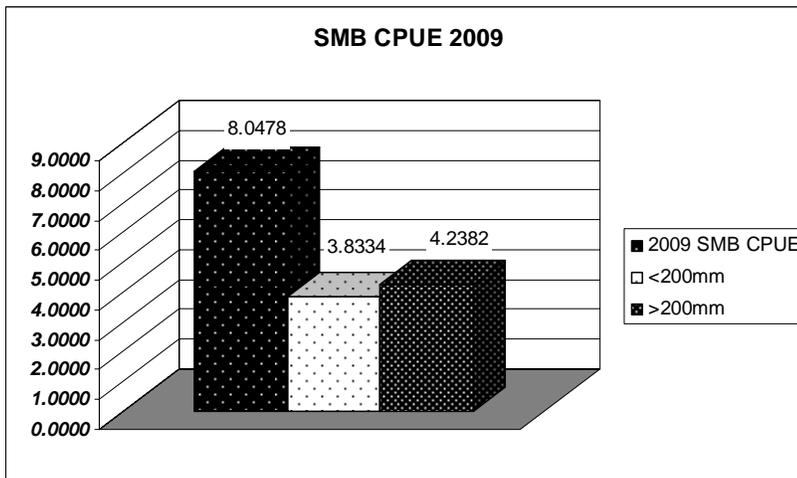


Illustration 1 demonstrates the distribution for all fish from Myton, Utah (RM 42) to the Green River confluence (RM0) in 2009. Smallmouth bass, Channel catfish and White sucker dominate the distribution with 39%, 31% and 15% of the observed non native fishes, respectively.

*Smallmouth Bass CPUE and Length Frequency*

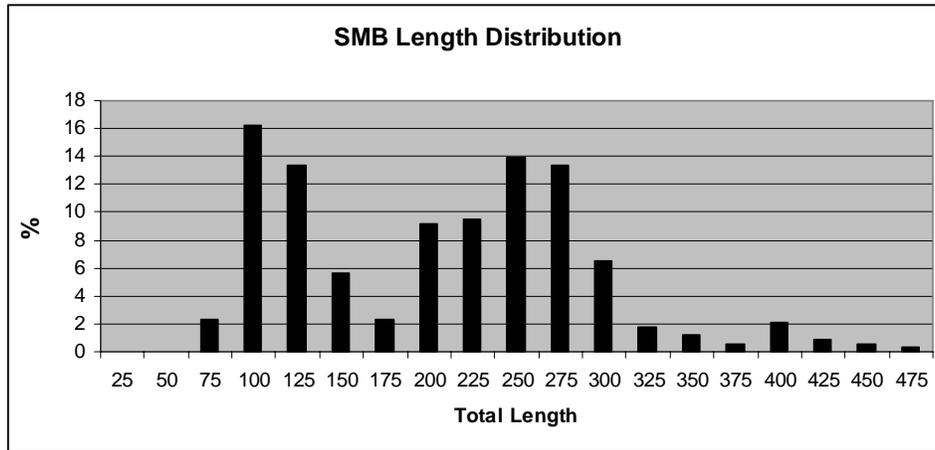
Both Smallmouth bass juvenile and adult densities were similar values in 2009, with adult densities slightly higher. CPUE values demonstrated below are from the entire stream segment (42RM).

Illustration 2. Duchesne River CPUE (SMB)



The majority of Smallmouth bass surveyed in 2009 were within the distribution range of 100mm to 300mm. (Illustration 3).

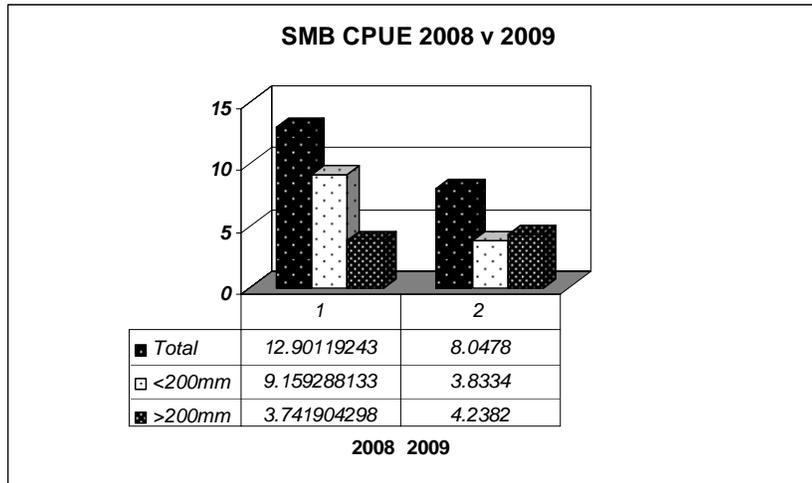
Illustration 3. Duchesne River Percent Length Frequency (SMB)



*Smallmouth Bass CPUE and Length Frequency Comparison*

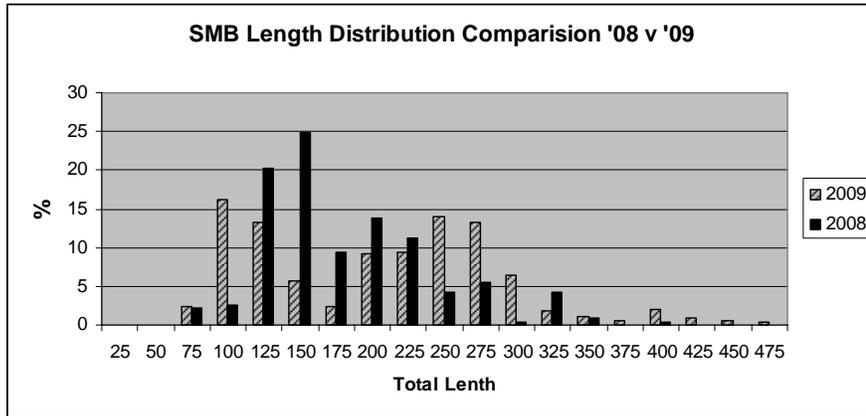
Overall, the CPUE comparison data implies that total Smallmouth bass densities were greater in 2008 than in 2009 (Illustration 4). Smallmouth bass juvenile densities were higher in 2008 than in 2009; however, in 2009 adult Smallmouth bass densities were higher. The higher CPUE values for both overall and juvenile Smallmouth bass, in 2008 and the higher value for adult Smallmouth bass in 2009 may be a result of Duchesne River flows during the surveys. The higher values were surveyed in much lower flows in 2008.

Illustration 4. Duchesne River CPUE Comparison (SMB)



In a comparison with 2008 percent length frequency (Illustration 5), the analysis indicates that the Percent Length Distribution for each year is similar; however, a noticeable peak is illustrated with maturing juveniles within the 2009 data set.

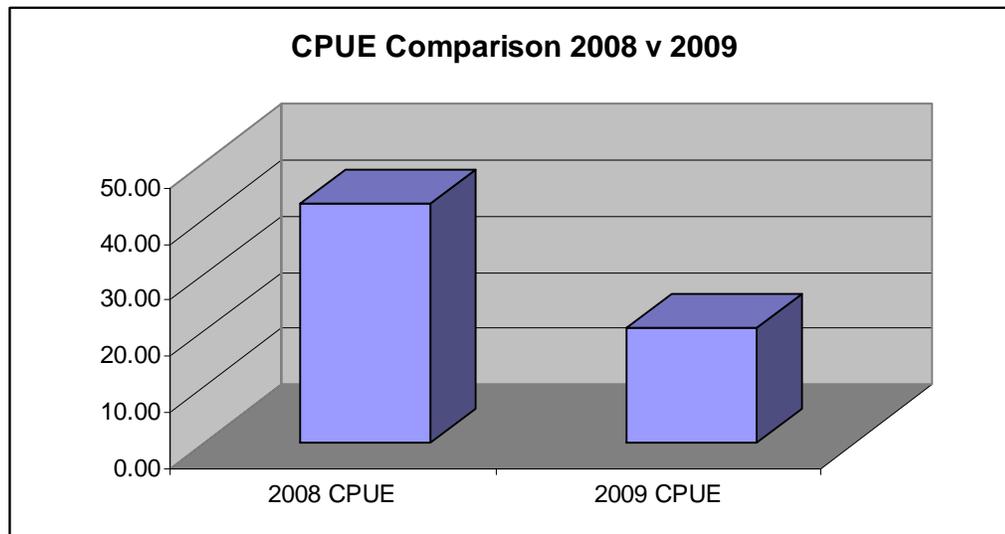
Illustration 5. Duchesne River Percent Length Frequency 2008 v 2009



*Smallmouth Bass Discussion*

In a comparison of 2008 and 2009 Duchesne River Smallmouth bass monitoring data (Illustration 6), it is evident that the calculated CPUE for the entire stream segment are much higher for 2008 values of 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 schedules. It is evident by these affecting factors, that additional monitoring is warranted on the Duchesne River.

Illustration 6. Duchesne River SMB CPU Comparison



**Task 2. Duchesne River – High Flow –Native Fish Community Composition**

*Study Design*

The Duchesne River native fish community composition pass consists of a 42 RM stream segment, from Myton Bridge to the confluence with the Green River. For data analysis, the stream segment was divided into eight (8) Designated Miles. Each Designated Mile is a one (1RM) mile reach, each possessing distinct and

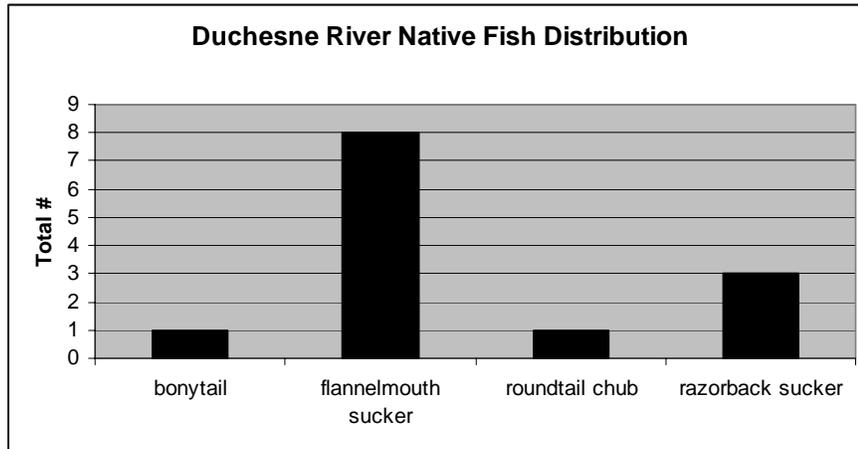
varying habitat types, i.e., riffles, runs, pools, backwaters. Each reach was established at an equal distance (5RM) from each other, originating at the confluence with the Green River (RM 0) to River Mile 40. The Duchesne River native fish community composition pass was performed at various times during June 2009 as a cooperative effort between the Ute Indian Tribe Fish and Wildlife Department (UIT F&WD) and the US Fish and Wildlife Service (FWS) and the Utah Division of Wildlife Resources (UDWR). The species of study were all native fish species that occupy the Duchesne River.

*General Results*

Within each of the Designated Mile's, a total of 13 native fishes were sampled, including Roundtail chub (*Gila robusta*), Razorback sucker (*Xyrauchen texanus*), Flannelmouth sucker (*Catostomus latipinnis*), and Bonytail (*Gila elegans*). Of the 13 total observed native fishes, Flannelmouth sucker comprise the highest density of fish surveyed (Table 2, Illustration 7).

Table 2. Duchesne River Native Fish Total Distribution (HF)				
RTC	RZB	FMS	BTC	Total
1	3	8	1	13

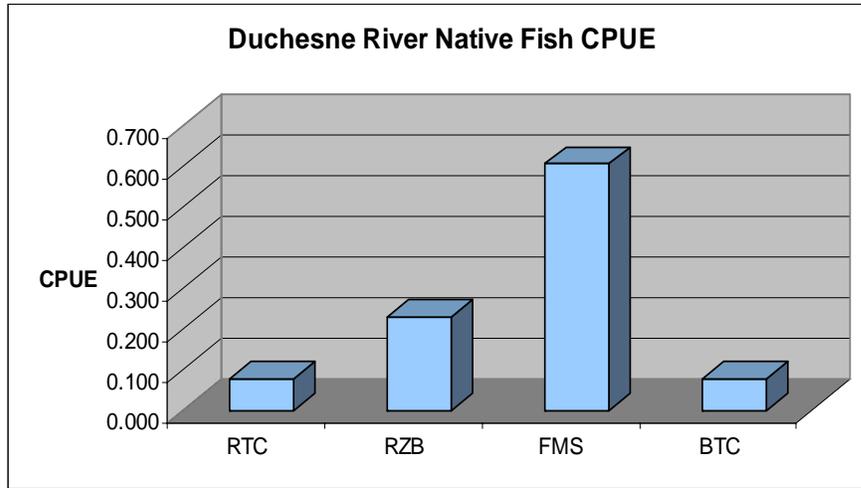
Illustration 7. Duchesne River High Flow Survey



*Native Fish Community Composition Discussion*

The 2009 Duchesne River native fish community composition data demonstrates low numbers of native fish species that occupy the Duchesne River, within sub sampling reaches, during high flow events. CPUE values for Bonytail, Flannelmouth sucker, Roundtail chub and Razorback sucker are 0.076, 0.227, 0.006 and 0.076, respectively (Illustration 8) for each Designated Mile. Additionally, CPUE calculated for each native fish species are well below a single (1) fish caught per hour. Of the 10 known native fish species that have historically occupied the Duchesne River, only four (4) were observed during the 2009 native fish community composition survey.

Illustration 8. Duchesne River Native Fish Community Composition (HF)



**Task 3. Duchesne River – Low Flow –Native Fish Community Composition**

*Study Design*

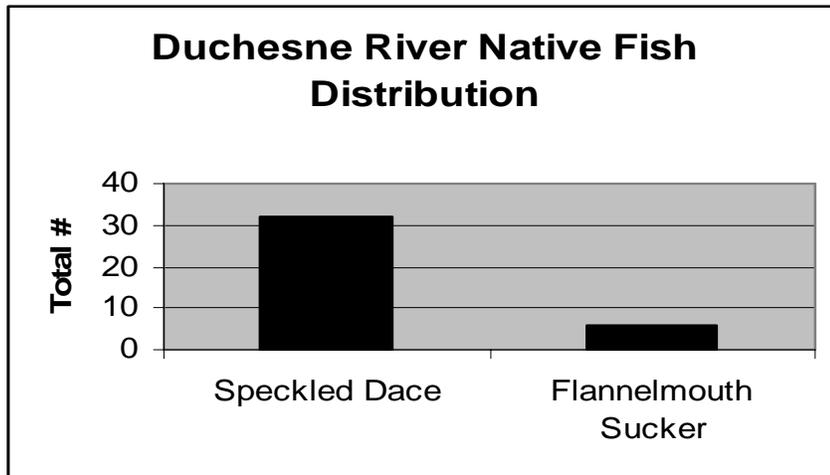
The Duchesne River, low flow, native fish community composition survey consists of a 42 RM stream segment, from Myton Bridge to the confluence with the Green River. For data analysis, the stream segment was divided into eight (8) Designated Miles. Each Designated Mile is a one (1RM) mile reach, each possessing distinct and varying habitat types, i.e., riffles, runs, pools, backwaters. Each reach was established at an equal distance (5RM) from each other, originating at the confluence with the Green River (RM 0) to River Mile 40. Each Designated Mile includes two (2) survey reaches. Each survey reach is approximately 400m in length and are located at random locations within each Designated Mile. The Duchesne River, low flow, native fish community composition survey was performed at various times from August through September, 2009 as a cooperative effort between the Ute Indian Tribe, Fish and Wildlife Department (UIT F&WD), the US Fish and Wildlife Service (FWS) and the Utah Division of Wildlife Resources (UDWR). The species of study were all native fish species that occupy the Duchesne River.

*General Results*

Within each of the Designated Mile's, a total of 38 native fishes were observed, including Speckled dace (*Rhinichthys osculus*) and Flannelmouth sucker (*Catostomus latipinnis*). Of the 38 total observed native fishes, Speckled dace comprise the highest density of fish surveyed (Table 3, Illustration 9).

SD	FMS			Total
32	6			38

Illustration 9. Duchesne River Low Flow Survey



*Native Fish Community Composition Discussion*

The 2009 Duchesne River native fish community composition data demonstrates low numbers of native fish species that occupy the Duchesne River, within sub sampling reaches, during the low flow season. The CPUE for each Designated Mile, sampling reach, are relatively high in comparison to native fish CPUE (Illustration 10), there were a total of 1305 fish sampled with 38 being native fish species. CPUE values for Speckled dace and Flannelmouth sucker are 12.35 and 2.31, respectively (Illustration 11). Additionally, of the 10 known native fish species that have historically occupied the Duchesne River, only two (2) were observed during the 2009, low flow, native fish community composition survey.

Illustration 10. Duchesne River Native Fish Community Composition (LF)

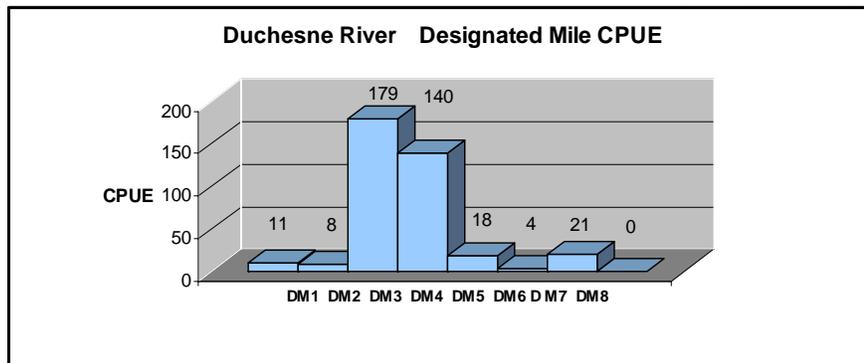
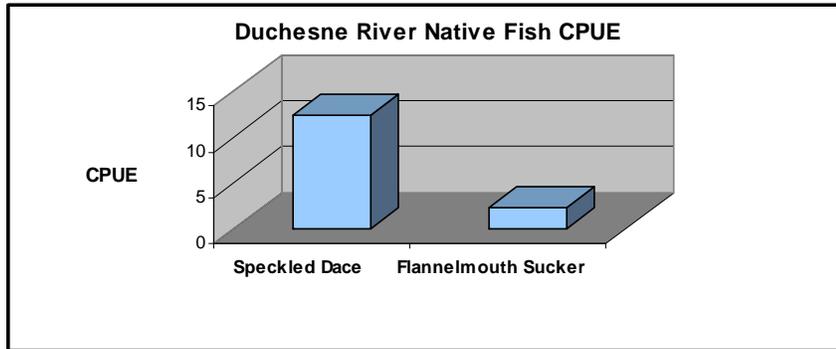


Illustration 11. Duchesne River Native Fish Composition Effort (LF)



VII. Recommendations

Task 1 Duchesne River – High Flow – Non Native Fish Monitoring

1. We recommend continuing smallmouth bass control in rivers that occupy or border the Uintah and Ouray Indian Reservation with emphasis to reduce smallmouth bass numbers.
2. We recommend extending the non native monitoring to include the invasive predatory fish species: Channel catfish (*Ictalurus punctatus*) and White sucker (*Catostomus commersonii*) in rivers that occupy or border the Uintah and Ouray Indian Reservation with emphasis to reduce invasive, predatory fish species' numbers.

Task 2 Duchesne River – High Flow –Native Fish Community Composition

1. We recommend continuing the native fish community composition monitoring in rivers that occupy or border the Uintah and Ouray Indian Reservation with emphasis to acquire native fish community composition data in the Duchesne River.

Task 3 Duchesne River – Low Flow –Native Fish Community Composition

1. We recommend continuing the native fish community composition monitoring in rivers that occupy or border the Uintah and Ouray Indian Reservation with emphasis on acquiring native fish community composition data in the Duchesne River.

VIII. Project Status:

Final Year: FY09

IX. FY 0 Budget Status:

	<u>Total</u>
A. Funds Provided:	15,505
B. Funds Expended:	15,505
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 2009.

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.