

SCANA Services, Inc.

Fish Community Assessment of  
Parr Reservoir 2007-2008

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Milton Quattlebaum  
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## Table Of Contents

Introduction.....	3
Methods .....	3
Endangered, Threatened and Species of Concern .....	3
Species of Interest.....	3
Results.....	4
Observation.....	4

## List of Figures

Figure 1.	Parr Reservoir Electrofishing, Gill Net, and Hoop Net Sample Locations.....	5
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## List of Tables

Table 1.	Seasonal Fish Collection Summary for Parr Reservoir.....	6
Table 2.	Fish Species Collected in Parr Reservoir.....	7
Table 3.	Total Fish collected Seasonally by Sampling Methods.....	8
Table 4.	Water Quality Data Parr Reservoir.....	9
Table 5	GPS Coordinates for Parr Reservoir Sample Stations.....	10

## **Introduction**

Parr Reservoir is located in Fairfield County, South Carolina. Parr Reservoir (4,400 acre) is formed by the impounding of the Broad River by the Parr Shoals Dam. Parr Reservoir is subject to daily fluctuations in level due to the operation of the Fairfield Pumped Storage Facility. SCE&G has filed a license application with the Nuclear Regulatory Commission for the right to construct two new nuclear units. The two new units, would discharge cooling tower blowdown and other liquid waste to Parr Reservoir. A fish community assessment was conducted by Corporate Environmental Services Department personnel in Parr Reservoir in the vicinity of the proposed cooling tower blowdown discharge location for the new nuclear reactors.

## **Methods**

A fish community assessment of Parr Reservoir was conducted quarterly from October 2007 through July 2008. Fish were collected using electrofishing equipment, gill net, and hoop net. Gill nets and hoop nets were set November 7, 2007, February 12, 2008, May 5, 2008, and July 14, 2008. Electrofishing was performed on October 31, 2007, February 29, 2008, May 13, 2008, and July 9, 2008. The location of electrofishing transects, gill net, and hoop net were recorded with GPS (Table 5). Locations are displayed in Figure 1.

Gill net samples were collected using an experimental nylon gill net, 120 feet long by 5 feet deep, constructed of twelve 10 foot panels of 2, 3,4,5,6, and 7 inch stretched mesh panels. The gill net was set perpendicular to the shore and allowed to fish overnight.

Hoop net samples were collected using a hoop net, 15 feet long with a 4.5 feet diameter mouth. Mesh size was 3 inch stretch in the body and 4 inch in the cod end. The net was set parallel to the shore and allowed to fish overnight.

Electrofishing was performed using an aluminum boat equipped with a Smith-Root GGP 2.5 electrofisher. Each sampling event consisted of 900 seconds of shocking time. All electrofishing samples were collected in the early morning along the shoreline.

All collected fish were identified to species, measured to the nearest millimeter, and weighed to the nearest gram. Several individual specimens were retained for identification verification.

## **Endangered, Threatened and Species of Concern**

No endangered, threatened, or species of concern fish were collected during the study. None of the fish collected were federal or state listed as endangered or threatened. All fish collected were representative of the piedmont lakes, rivers, and streams.

## **Species of Interest**

The robust redhorse (*Moxostoma robustum*) is a large, long-lived member of the redhorse sucker family. In 1995 a cooperative, voluntary partnership formed under a Memorandum of Understanding with state and federal resource agencies, private industries, and the conservation community was formed in an effort

to improve the status of the robust redhorse sucker throughout its former range. From 2004 through 2007, the South Carolina Department of Natural Resources (SCDNR) has stocked a total of 21,872 fingerling robust redhorse suckers in the Broad River above the Parr Hydroelectric Facility. A total of five robust redhorse suckers have been captured in the Broad River drainage in 2008 by various state and private entities.

## **Results**

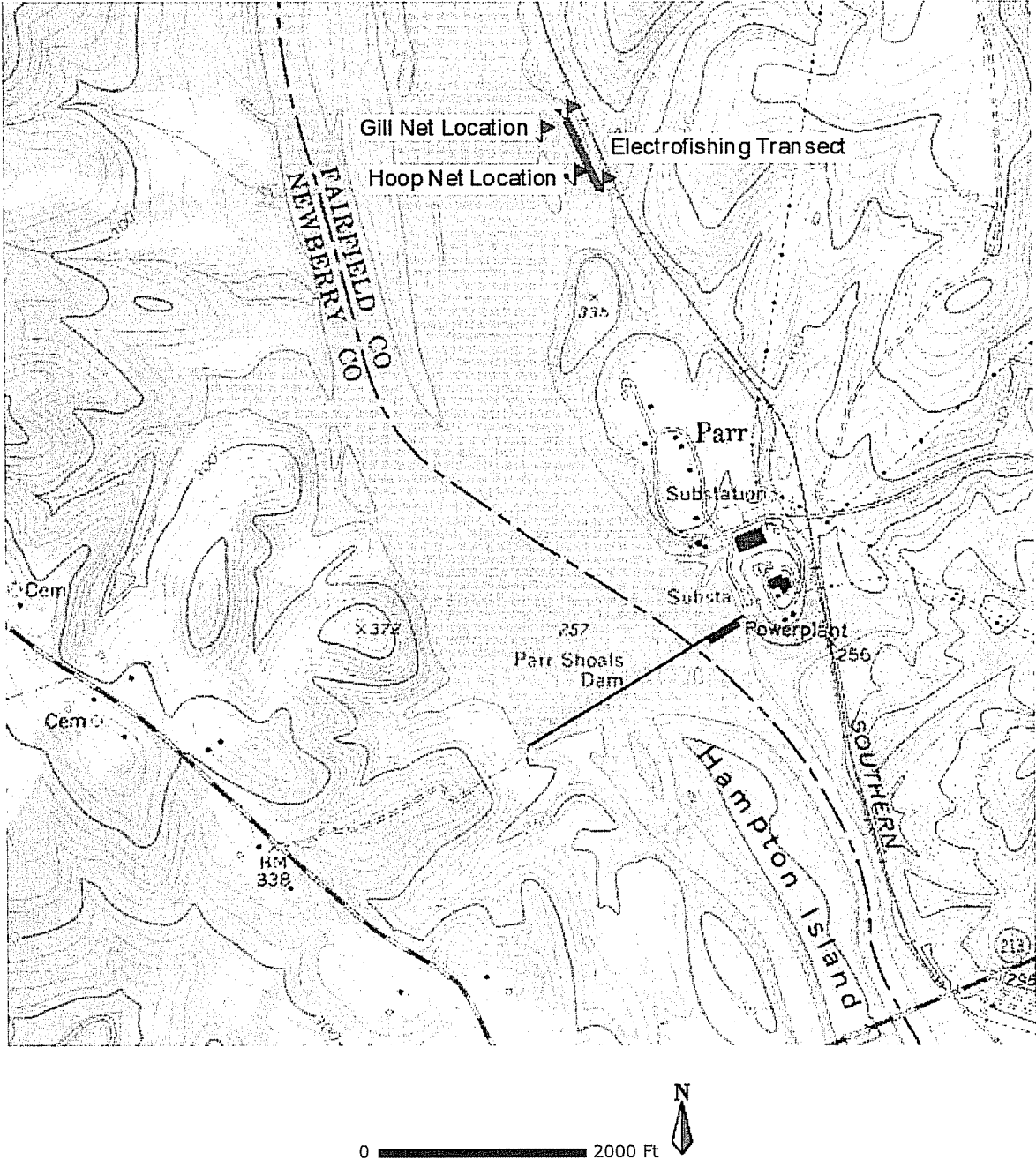
A total of 422 fish (electrofishing, gill net, and hoop net) representing 22 species were collected during the study period (Tables 1-3). Bluegill (18.7%), notchlip redhorse (6.1%), largemouth bass (5.5%), and blue catfish (3.3%) were collected during each season. 160 threadfin shad representing (37.9%) were collected during the fall sampling event. During the July 2008 electrofishing event one robust redhorse was collected and released alive in the area of capture.

Water quality results for Parr Reservoir are presented in Table 4. Temperature ranged from a low of 10.4° C to a high of 28.3° C and dissolved oxygen readings ranged from 10.5 mg/L to 6.53 mg/L during the study period.

## **Observations**

Parr Reservoir supports a diverse fish population representative of South Carolina impoundments. Seasonal water quality data demonstrates Parr Reservoir is capable of sustaining this diverse fish population.

Figure 1. Parr Reservoir Electrofishing, Gill Net, and Hoop Net Sample Locations.



**Table 1. Seasonal Fish Collection Summary for Parr Reservoir.**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Fall 2007</b>	<b>Winter 2008</b>	<b>Spring 2008</b>	<b>Summer 2008</b>
blue catfish	<i>Ictalurus furcatus</i>	X	X	X	X
brassy jumprock	<i>Scartomyzon cf. lachneri</i>			X	X
bluegill	<i>Micropterus macrochirus</i>	X	X	X	X
channel catfish	<i>Ictalurus punctatus</i>		X	X	X
gizzard shad	<i>Dorosoma cepedianum</i>		X	X	X
highfin carpsucker	<i>Carpionodes velifer</i>	X			
largemouth bass	<i>Micropterus salmoides</i>	X	X	X	X
longnose gar	<i>Lepisosteus osseus</i>	X			
mosquitofish	<i>Gambusia affinis</i>		X		
notchlip Redhorse	<i>Moxostoma collapsum</i>	X	X	X	X
pumpkinseed	<i>Lepomis gibbosus</i>	X			
quillback	<i>Carpionodes cyprinus</i>	X	X		
redeer sunfish	<i>Lepomis microlophus</i>	X	X	X	
robust redhorse	<i>Moxostoma robustum</i>				X
sandbar shiner	<i>Notropis scepeticus</i>	X			
shorthead redhorse	<i>Moxostoma macrolepidotum</i>	X		X	X
snail bullhead	<i>Ameiurus brunneus</i>			X	
spottail shiner	<i>Notropis hudsonius</i>	X		X	
threadfin shad	<i>Dorosoma petenense</i>	X			
white catfish	<i>Ictalurus catus</i>	X			X
white perch	<i>Morone americana</i>	X		X	X
whitefin shiner	<i>Notropis niveus</i>	X			

Table 2. Fish Species Collected in Parr Reservoir.

Species	# Individuals	Relative Abundance
blue catfish	14	3.3
brassy jumprock	8	1.9
bluegill	79	27.9 18.7 (2)
channel catfish	9	2.1
gizzard shad	9	2.1
highfin carpsucker	2	0.5
largemouth bass	23	5.5
longnose gar	1	0.2
mosquitofish	2	0.5
notchlip Redhorse	26	6.1 (5)
pumkinseed	2	0.5
quillback	5	1.2
redeer sunfish	7	1.7
robust redhorse	1	0.2
sandbar shiner	2	0.05
shorthead redhorse	28	6.6 (4)
snail bullhead	1	0.2
spottail shiner	32	7.6 (3)
threadfin shad	160	GI- 30.6 37.9 (1)
white catfish	3	0.7
white perch	7	1.7
whitefin shiner	1	0.2

N = 22

TOTAL 422

**Table 3. Total Fish Collected Seasonally by Sampling Methods.**

Season	Electrofishing	Gill Net	Hoop Net
Fall 2007	241	13	0
Winter 2008	8	20	0
Spring 2008	25	25	0
Summer 2008	60	30	0



**Table 4. Water Quality Data Parr Reservoir.**

EVENT	DATE	Temperature (°C)	pH	Dissolved Oxygen (mg/L)
Electrofishing	10/31/07	22.7	7.46	7.37
Gill Net	11/8/07	20.6	6.98	7.52
Electrofishing	2/29/08	10.8	7.36	10.22
Gill Net	2/12/08	10.4	7.56	10.5
Electrofishing	5/13/08	19.9	7.73	7.69
Gill Net	5/5/08	21.9	6.92	7.68
Electrofishing	7/9/08	27.9	7.01	6.94
Gill Net	7/14/08	28.3	6.96	6.53

**Table 5. GPS Coordinates for Parr Reservoir Sample Stations.**

Event	Upper Point of Sample Area	Lower Point of Sample Area	Sample Location
Electrofishing	N 34° 16' 47.7" W 081° 20' 16.8"	N 34° 16' 39.3" W 081° 20' 14.0"	
Gill Net			N 34° 16' 39.3" W 081° 20' 39.3"
Hoop Net			N 34° 16' 31.9" W 081° 20' 15.0"