

# Biological Assessment for Moravian Run, Clearfield County

## Technical Report Provided Through Trout Unlimited AMD Technical Assistance Program

February 22, 2010

### **Background**

The fishery of four stream sites (Table 1) in the Moravian Run watershed was evaluated to provide biological data for the Clearfield County Conservation District's (CCCD) Moravian Run Snapshot Final Report (Snapshot). CCCD requested these data be collected because although Moravian Run is designated by the Pennsylvania Department of Environmental Protection (DEP) as a Cold Water Fishery and several of its tributaries are known to support brook trout populations the Pennsylvania Fish and Boat Commission does not list these streams as natural reproduction trout waters.

Table 1. Site Locations

Site	Latitude	Longitude
MOR-SB	40.99154 N	78.26878 W
MOR-MS	41.00937 N	78.26565 W
SO58	40.98863 N	78.26126 W
CAVE	40.99071 N	78.26517 W

Sampling occurred on July 8<sup>th</sup> 2009 and included TU staff, CCCD staff, and a volunteer. Sample sites were closed to immigration and emigration with block nets and electrofishing was carried out with an *Appalachian Aquatics Model AA-24 Backpack Aquatic Sampling Device*. A moderate to low voltage (200 to 300) was used with direct current (DC) as the conductivity was >100  $\mu$ S. A single-pass effort was conducted at each site to provide an index of relative abundance.

### **MOR-SB**

MOR-SB is located at the mouth of Tributary #5 (Sally Bottom tributary). Data collected at this site for the Moravian Run TMDL (DEP, unpublished) and for the Snapshot indicate an average flow of 1,758 gpm and an average lab pH of 6.1. Furthermore, it was determined through the Snapshot that the watershed is contributing 277 lb/day of acidity, 8 lbs/day of iron, 8 lbs/day of manganese and 8 lbs/day of aluminum to Moravian Run.

Data collected as part of this technical assistance grant (Table 3) indicate a brook trout fishery worthy of a Class A designation. In addition, this brook trout population provides a means of natural repopulation to Moravian Run once Moravian's in-stream AMD pollution is abated.

Table 2. MOR-SB Field Data

Field Parameters	
Conductivity ( $\mu$ S)	213
pH (standard units)	6.4

Table 3. MOR-SB Brook Trout Relative Abundance

	Station length (m)	Station width (m)	Site area (ha)		
	100	4.5	0.045		
Species	Number	Mean wt (g)	Weight (kg)	kg/ha	
Brook Trout - <i>Salvelinus fontinalis</i>					
<49mm)	-	-	-		
(50-74mm)	-	-	-		
(75-99mm)	-	-	-		
(100-124mm)	3	29.3	0.088	5.87	
(125-149mm)	1	38	0.038	0.84	
(150-174mm)	3	82	0.246	16.40	
(175-199mm)	-	-	-		
(200-224mm)	2	175	0.35	15.56	
YOY	1				
<b>Total</b>	<b>10</b>			<b>38.67</b>	

Figure 1. MOR-SB Brook Trout



### **MOR-MS**

MOR-MS is located on Moravian Run upstream of Snapshot sample MOR-80 and downstream of Snapshot Tributary #5. Data collected at this site for the Snapshot indicate an average flow of 1,758 gpm, an average lab pH of 6.1 and indicate that the stream contains 658 lbs/day of acidity, 32 lbs/day iron, 31 lbs/day of manganese, and 9lbs/day of aluminum at this location.

No fish were captured as part of this effort although habitat appeared favorable with the exception of iron precipitation (Figure 2).

*Table 4. MOR-MS Field Data*

Field Parameters	
Conductivity (uS)	182
pH (standard units)	5.6

*Figure 2. MOR-MS*



### **SO58**

SO58 is located on the main stem of Moravian Run upstream of Snapshot tributary #7. According to data collected as part of the Snapshot, Moravian Run at this location has an average flow of 912 gpm, and field pH of 5.1. Furthermore, Snapshot data indicate that the stream is carrying 198 lbs/day of acidity, 3 lbs/day of iron, 14 lbs/day of manganese, and 4lbs/day of aluminum.

Historical biological data collected at this site as part of an unpublished Unsuitable for Mining (UFM) study completed by the DEP on Big Run in 2007 indicate impaired conditions. The UFM study resulted in five different benthic macroinvertebrate taxa

however these taxa were present in low numbers and comprised acid tolerant families. Furthermore, an electrofishing survey conducted as part of the UFM produced no fish.

No fish were captured as part of this effort, corroborating historical data, although habitat appeared favorable (Figure 3).

Table 5. SO58 Field Data

Field Parameters	
Conductivity ( $\mu$ S)	182
pH (standard units)	6.56

Figure 3. SO58



### **CAVE**

CAVE is located at the mouth of Snapshot tributary #6 also known as the CAVE tributary. According to one sampling event made for the Snapshot, the CAVE tributary has a field pH of 6.0 and a flow of 100 gpm and is delivering 0 lbs/day of acidity, 0.3 lbs/day iron, 0.05 lbs/day of manganese, and 0.2lbs/day of aluminum to Moravian Run.

Data collected as part of this TAG (Table 7) indicate a brook trout fishery worthy of a Class A designation. In addition, this brook trout population provides a means of natural repopulation to Moravian Run once Moravian's in-stream AMD pollution is abated.

Table 6. CAVE Field Data

Field Parameters	
Conductivity (uS)	159
pH (standard units)	6.62

Table 7. CAVE Brook Trout Relative Abundance

	Station length (m)	Station width (m)	Site area (ha)		
	100	4.5	0.045		
Species	Number	Mean wt (g)	Weight (kg)	kg/ha	
Brook Trout - <i>Salvelinus fontinalis</i>					
<49mm					
(50-74mm)					
(75-99mm)	2	18	0.094	4.18	
(100-124mm)	1	22.0	0.134	2.98	
(125-149mm)	2	56	0.196	8.71	
(150-174mm)	4	87.2	0.214	19.02	
(175-199mm)					
(200-224mm)					
YOY	2				
<b>Total</b>	<b>11</b>			<b>30.71</b>	

Figure 4. CAVE Brook Trout



Figure 5. Moravian Run Sampling Locations

