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**PA FISH AND BOAT COMMISSION
COMMENTS AND RECOMMENDATIONS**

September 7, 2012

WATER: UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (603A)
Schuylkill and Berks Counties

EXAMINED: August 21, 2012

BY: M. Kaufmann, G. Murphy, and J. Buzzar

Bureau Director Action: _____ Date: _____

Division Chief Action: _____ Date: _____

CW Unit Leader Action: _____ Date: _____
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AREA COMMENTS:

The UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061), located in sub-subbasin 03A, Schuylkill and Berks Counties, was surveyed on August 21, 2012 in an attempt to determine whether or not the stream supported a population of reproducing trout and met the qualifications for the statewide list of such waters. Based on the presence of multiple year classes of wild Brook Trout, the stream section qualified for the Listing of Wild Trout Streams, as outlined in 58 PA Code §57.11. The stream supported an exceptional wild Brook Trout population with an estimated biomass of 244.15 kg/ha, one of the highest biomass estimates recorded for Pennsylvania's wild Brook Trout streams, and met the Pennsylvania Fish and Boat Commission's minimum biomass criteria for a Class A wild Brook Trout population, as outlined in 58 PA Code §57.8a., Class A Wild Trout Streams. The abundance estimates for legal size Brook Trout (338 trout/mi) and Brook Trout 225 mm TL and longer (47 trout/mi) were substantially higher than the corresponding 90th percentiles for Pennsylvania's wild Brook Trout streams.

AREA RECOMMENDATIONS:

1. List the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Section 01, in its entirety as a stream section that supports natural reproduction of trout. Submitted in August 2012.
2. Manage the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Section 01, as a Class A Wild Trout Water.
3. By 2014, the Pennsylvania Department of Environmental Protection should redesignate the 25 Pennsylvania Code Chapter 93 Water Quality Standards listing for the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) to High Quality - Cold Water Fishes, Migratory Fishes, based on the Class A wild trout stream qualifier and consider redesignating to Exceptional Value based on the stream's location in State Game Lands No. 106.

This work made possible by funding from the Sport Fish Restoration Act Project F-57-R Fisheries Management.

**PENNSYLVANIA FISH & BOAT COMMISSION
BUREAU OF FISHERIES
FISHERIES MANAGEMENT DIVISION**

UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061)
(603A)
Fisheries Management Report
Unassessed Water

Prepared by
G. Murphy

Fisheries Management Database Name: UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061)

Lat/Lon: 40°36'41"/76°01'05"

Date Sampled: August 21, 2012 Date Prepared: September 7, 2012

Introduction

The UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) is a small, 2.07 km (1.29 mi) long stream located in sub-subbasin 03A, Schuylkill and Berks Counties. The stream originates on the western slope of Hawk Mountain in State Game Lands No. 106 at approximately 311 m (1,020 ft) elevation before flowing west to its confluence with the Little Schuylkill River at river mile (RM) 3.2, 40°36'41" latitude and 76°01'05" longitude. The UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) can be found on the Auburn and Hamburg, PA U.S. Geological Survey 7.5 minute quadrangles (Figure 1).

The UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) has a drainage area of 3.54 km² (1.37 mi²). The drainage basin is completely forested and encompasses portions of State Game Lands No. 106 and Weiser State Forest. The riparian land along the stream is 100 percent publically owned (Pennsylvania Game Commission).

The UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) was surveyed as part of the Unassessed Waters Program to gather baseline information on the resource for management purposes and to determine whether or not the stream supported a reproducing population of trout. The stream was expected to support a wild Brook Trout *Salvelinus fontinalis* population based on information obtained from anglers and observations of habitat/perennial flows by the Area Fisheries Manager over time. Documenting wild trout in streams is important in the proper permitting of land use activities, protection of associated wetlands, and for long-term

restoration projects, such as the Eastern Brook Trout Joint Venture.

Methods

The examination of the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) was conducted on August 21, 2012. All procedures were carried out according to those outlined by Weber et al. (2011).

The UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) was managed as one section for Fisheries Management purposes and one sampling station was established within the section. Physical characteristics, physical-chemical values, and the fish community were examined. Rapid bioassessment protocols (RBP) were used to assess stream and riparian habitats (Barbour et al. 1999). The fish community was sampled using an electrobackpack equipped with a TAS generator and Coffelt (BP-1C) variable voltage electrofisher set at 550 volts alternating current. Wild trout abundance and biomass estimates were determined using the Zippin three-pass depletion method (Zippin 1958). Wild trout were measured and recorded in 25 mm (1.0 inch) length groups. Statewide average weights calculated for each length group were used to generate the biomass estimate. Scientific and common fish names were referenced through the Integrated Taxonomic Information System (<http://www.itis.gov>).

Results

Station 0101 (RM 0.00)

Station 0101 (RM 0.00) began at the mouth, 40°36'41" latitude and 76°01'05" longitude. The 218 m long station averaged 2.0 m in width and covered 11 percent of the section length (Table 1). This portion of the stream flowed through a mature deciduous forest with dense patches of rhododendron in State Game Lands No. 106.

The instream habitat included short riffles, pocket pools, and for such a narrow stream some unusually long, 0.5 to 1.5 m deep pools. Gradient was steep in places. Cover was provided by boulders, pool depth, occasional snags, and some bedrock ledges. The stream substrate consisted primarily of cobble, gravel, boulders, and some bedrock. Bank erosion was moderate. The RBP analysis yielded a high final score of 171, indicating optimal habitat conditions (Table 2).

Physical-chemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 17.5°C, water temperature 14.5°C, specific conductance 22 umhos, pH 7.0 standard units, total alkalinity 4 mg/l, and total hardness 5 mg/l (Table 3).

Three fish species were captured or observed at the site, including wild Brook Trout, wild Brown Trout *Salmo trutta*, and Longnose Dace

Rhinichthys cataractae. Wild Brook Trout, which are common to coldwater streams, were observed in the greatest abundance. Longnose Dace were only observed in the lower portion of the site near the stream's mouth and may have entered from the Little Schuylkill River (Table 4).

Brown Trout

Two wild Brown Trout ranging from 75 to 99 mm in total length (TL) were captured during the survey. None was greater than or equal to the legal harvestable length (175 mm or 7 in). Total Brown Trout biomass was estimated to be 0.31 kg/ha. Brown Trout abundance was estimated to be 10 trout/km (16 trout/mi) with no trout being 175 mm or longer (Table 5).

Brook Trout

Four hundred and seventy-one wild Brook Trout ranging from 50 to 249 mm in total length (TL) were captured during the survey. Forty-three (nine percent) were legal size (175 mm) or longer. Total Brook Trout biomass was estimated to be 244.15 kg/ha. Brook Trout abundance was estimated to be 2,339 trout/km (3,763 trout/mi) with 210 trout/km (338 trout/mi) being 175 mm or longer (Table 6).

Discussion

The presence of multiple year classes of wild Brook Trout in the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) verified that this stream section supported natural reproduction of trout, as outlined in 58 PA Code §57.11., Listing of Wild Trout Streams. The UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) supported an exceptional wild Brook Trout population with an estimated biomass of 244.15 kg/ha, one of the highest biomass estimates recorded for Pennsylvania's wild Brook Trout streams, and met the Pennsylvania Fish and Boat Commission's minimum biomass criteria (30.0 kg/ha) for a Class A wild trout population, as outlined in 58 PA Code §57.8a., Class A Wild Trout Streams. The abundance estimates for legal size Brook Trout (338 trout/mi) and Brook Trout 225 mm TL and longer (47 trout/mi) were substantially higher than the corresponding 90th percentiles for Pennsylvania's wild Brook Trout streams. The stream's unusually large pools allowed it to support a robust wild Brook Trout population. The capture of two fingerling Brown Trout may have indicated some movement from the Little Schuylkill River by adult Brown Trout for spawning purposes.

The chemical parameters and associated values recorded in the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) indicated that the stream is vulnerable to acid precipitation due to the low total alkalinity (4 mg/L).

The current 25 Pennsylvania Code Chapter 93 Water Quality Standards listing of Cold Water Fishes and Migratory Fishes (CWF, MF) for the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) should be upgraded to High Quality - Cold Water Fishes and Migratory Fishes (HQ-CWF, MF) based on the Class A wild trout stream qualifier. It should be considered for Exceptional Value based on the stream's location in State Game Lands No. 106, where, by default, it receives protective zoning.

Management Recommendations

1. List the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Section 01, in its entirety as a stream section that supports natural reproduction of trout. Submitted in August 2012.
2. Manage the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Section 01, as a Class A Wild Trout Water.
3. By 2014, the Pennsylvania Department of Environmental Protection should redesignate the 25 Pennsylvania Code Chapter 93 Water Quality Standards listing for the UNT to Little Schuylkill River (RM 3.2 - SGL above 00SR 61) to High Quality - Cold Water Fishes, Migratory Fishes, based on the Class A wild trout stream qualifier and consider redesignating to Exceptional Value based on the stream's location in State Game Lands No. 106.

Literature Cited

- Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and rivers. U.S. Environmental Protection Agency. Report 814-99-002. Washington, DC.
- Weber, R., R.T. Greene, and D. Miko. 2011. Protocols for conducting biological assessments of unassessed trout waters. Pages 95-101 in D. Miko, editor. Sampling protocols for Pennsylvania's wadeable streams. Pennsylvania Fish and Boat Commission. Harrisburg, PA.
- Zippin, C. 1958, The removal method of population estimation. Journal of Wildlife Management 22: 82-90.

Table 1. UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Schuylkill County. Site sampling location, length surveyed, average site width, and site area.

Site Date	River Mile	Downstream Limit Description	Length (m)	Ave. Width (m)	Site Area (ha)
8/21/2012	0.00	Site began at mouth	218	2.0	0.04

Table 2. High Gradient Rapid Bioassessment Protocol ratings for Station 0101 (RM 0.00) on the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Schuylkill County, on August 21, 2012.

Habitat Parameter	Score	Habitat Parameter	Score
Epifaunal Substrate / Available Cover	19	Left Bank Stability	6
Embeddedness	12	Right Bank Stability	6
Velocity / Depth Regime	18	Left Bank Vegetative Protection	9
Sediment Deposition	18	Right Bank Vegetative Protection	9
Channel Flow Status	15	Left Bank Riparian Vegetative Width	10
Channel Alteration	19	Right Bank Riparian Vegetative Width	10
Frequency of Riffles or bends	20	Total Score	171

Table 3. Chemical parameters and their associated values recorded at Station 0101 (RM 0.00) on the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Schuylkill County, on August 21, 2012

Parameter	Station 0101
Site RM	0.0
Sample Date	08/21/2012
Time (24 hour)	1000
Water Temperature (C)	14.5
Air Temperature (C)	17.5
pH Field Colorimetric (SU)	7.0
Specific Conductance (UMHOS)	22
Total Alkalinity Field Mixed Indicator (MG/L)	4
Total Hardness Field EDTA (MG/L)	5

Table 4. Fish species occurrence and subjective abundance at Station 0101 (RM 0.00) on the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Schuylkill County, on August 21, 2012.

Common Name	Scientific Name	Subjective Abundance
Brook Trout	<i>Salvelinus fontinalis</i>	A
Brown Trout	<i>Salmo trutta</i>	P
Longnose Dace	<i>Rhinichthys cataractae</i>	P

Notes:

Subjective Abundance Index (based on 300 m long station):

R = Rare (< 3); P = Present (3 - 25); C = Common (26 - 100); and A = Abundant (> 100)

Table 5. Wild Brown Trout Zippin three-pass abundance and biomass estimates at Station 0101 (RM 0.00) on the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Schuylkill County, on August 21, 2012.

Size Group	Estimate	p	Low95CI	High95CI	NumHa	KgHa	NumKm
75	2	0.6147	2	3	49	0.31	10
Totals	2				49	0.31	10

Table 6. Wild brook trout Zippin three-pass abundance and biomass estimates at Station 0101 (RM 0.00) on the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Schuylkill County, on August 21, 2012.

Size Group	Estimate	p	Low95CI	High95CI	NumHa	KgHa	NumKm
50	168	0.568	156	181	3867	9.52	773
75	34	0.6239	33	39	799	4.76	160
100	96	0.566	89	107	2223	30.45	445
125	109	0.5661	101	120	2523	61.63	505
150	53	0.591	50	60	1231	50.57	246
175	23	0.5878	22	28	543	34.67	109
200	15	0.6352	15	18	362	33.46	72
225	6	0.6147	6	8	146	19.09	29
Totals	510				11694	244.15	2339

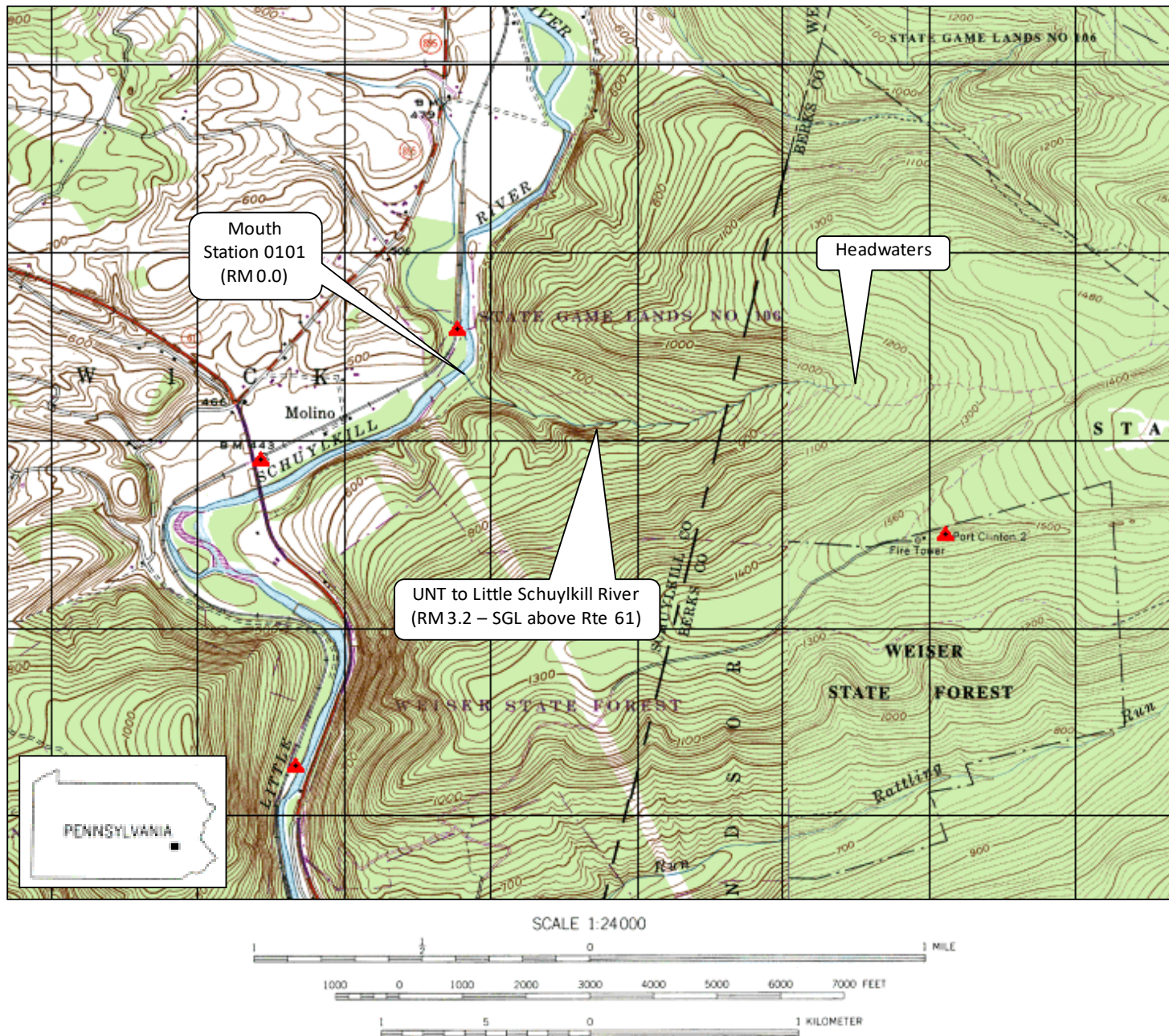


Figure 1. Location map for Station 0101 (RM 0.0) on the UNT to Little Schuylkill River (RM 3.2 - SGL above SR 0061) (03A), Schuylkill County.