

Distribution

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PA FISH AND BOAT COMMISSION
COMMENTS AND RECOMMENDATIONS
February 22, 2018~~October 23, 2015~~

WATER: Benson Run (216A) Erie County
EXAMINED: June 25, 2015
BY: Brian Ensign, Tim Wilson and Freeman Johns

Bureau Director Action: _____ Date: _____
Division Chief Action: _____ Date: _____
CW Unit Leader Action: _____ Date: _____
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AREA COMMENTS:

Benson Run is a small coldwater stream that flows through State Game Lands 109 into LeBoeuf Creek located south of Waterford Township in Erie County. During our unassessed waters surveys in the Erie County watershed we found the stream to support a very good wild Brown Trout population. Multiple age-classes of trout were present including a good abundance of legal-size fish. Results of the survey estimated the total biomass of wild Brown Trout was estimated to be 41.20 kg/ha at site RM 0.03. The biomass met the minimum biomass criteria for listing as a Class A wild Brown Trout stream. Ten percent of the stream length was sampled.

AREA RECOMMENDATION:

1. Add Benson Run (16A), Section 01, from the headwaters downstream to the mouth on the PFBC's list of stream sections that support natural reproduction of trout.
2. Add Benson Run (16A), Section 01, (from the headwaters to the mouth) to the Commission's Class A Wild Trout Streams program.
3. Manage Benson Run, Section 01, as a Class A wild Brown Trout Stream under Commonwealth Inland Waters regulations with no trout stocking.
4. Request the Department of Environmental Protection to designate Benson Run as a High Quality-Cold Water Fishes (HQ-CWF) under 25 PA Code Chapter 93 based on the Class A qualifier found in 93.4b(2)(ii).
5. Work with Erie County Conservation District and local watershed groups to maintain and improve the quality of the habitat in Benson Run.

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**

Benson Run (16A)
Section 01
Fisheries Management Report

Prepared by
Brian A. Ensign

Fisheries Management Database Name: Benson Run
Lat/Lon: 41°57'35"/79°58'04"

Date Sampled: 06/25/2015

Date Prepared: October 08, 2015

Introduction

Benson Run is a small stream located in Erie County. It has a total length of 5.10 km (3.17 mi), a drainage area of 7.46 km² (2.88 mi²) and flows into LeBoeuf Creek at River Mile (RM) 6.61, 41°57'35" latitude and 79°58'04" longitude (Figure 1). This stream can be found on the Waterford, PA United States Geological Survey 7.5 minute quadrangle.

Benson Run was initially surveyed as part of the Unassessed Waters Program to gather baseline information on the resource for management purposes and to verify and document the presence of a naturally reproducing population of trout. Knowledge of the presence of wild trout in streams is important in the proper permitting of land use activities and in the long-term restoration projects such as the Eastern Brook Trout Joint Venture.

Benson Run is managed as a single section from headwaters to the mouth and the riparian land along it is 80% privately owned and 20% publicly owned by State Gamelands 109.

Methods

The examination of Benson Run was conducted on June 25, 2015. All procedures were carried out according to those outlined by Detar et al. (2011). One representative sampling station was chosen to be representative of Section 01.

Physical characteristics, physical-chemical values, and fish communities were examined. Rapid bioassessment protocols (RBP) were used to assess the habitat in this stream (Barbour et al. 1999). The fish communities were sampled using a gas powered electrobackpack equipped with a Coffelt Model BP-1C variable voltage electrofisher set at 100 volts AC-Alternating Current. 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. During the 2015 survey wild trout were given an identifying upper caudal fin clip during the initial electrofishing pass to facilitate a mark-recapture population estimate with trout densities determined by using the Chapman modification of the Petersen estimator or M+C-R when R was less than three in an individual 25 mm length group. Scientific and common fish names reference the Integrated Taxonomic Information System (<http://www.itis.gov>).

Results

Site River Mile: 0.03

Sampling site RM 0.03 was located approximately 41 m upstream of the mouth, 41°57'36" latitude and 79°58'05" longitude (Figure 1). The 511 m long station averaged 3.77 m in width (Table 1) and comprised 10 percent of the total section length. This portion of the stream primarily flowed through a mature hemlock and northern hardwood forest, which provided dense shade to the stream. Bank erosion was moderate to heavy and the stream substrate consisted primarily of gravel, rubble, boulder and sediment. Benson Run had good channel width to flow ratio and a good number of deeper pools with cover provided by large woody debris. The riparian area in the vicinity of the site was undisturbed by human activities. The RBP analysis yielded a final score of 165 (Table 2).

Physical-chemical parameters and their associated values measured under normal flow conditions were as follows: air temperature 22.0°C, water temperature 14.5°C, specific conductance 220 umhos, pH 7.5 standard units, total alkalinity 108 mg/l, and total hardness 129 mg/l (Table 3).

Fifteen fish species were captured at the site, including wild Brown Trout *Salmo trutta*. Other fish species captured in this site include Mottled Sculpin *Cottus bairdii*, Johnny Darter *Etheostoma nigrum*, Rainbow Darter *Etheostoma caeruleum*, Blacknose Dace *Rhinichthys atratulus*, Central Stoneroller *Campostoma anomalum*, Creek Chub *Semotilus atromaculatus*, White Sucker *Catostomus commersonii*, Bluegill *Lepomis macrochirus*, Fantail Darter *Etheostoma flabellare*, Grass Pickerel *Esox americanus vermiculatus*, Logperch *Percina caprodes*, Redside Dace *Clinostomus elongatus*, Yellow Bullhead *Ameiurus natalis*, and Northern Hog Sucker *Hypentelium nigricans*. The fish species found in greatest density based on subjective abundance indices were indicative of a coldwater environment (Table 4).

Brown Trout

One hundred and forty-five wild Brown Trout ranging from 25 mm to 374 mm in total length (TL) were captured during the survey. Thirty-three (23 percent) were greater than or equal to the legal harvestable length (175 mm: 7 in). Total Brown Trout biomass was

estimated to be 41.20 kg/ha. Brown Trout abundance was estimated at 432 trout/km (695 trout/mi) with 72 trout/km (116 trout/mi) being of legal length or longer (Table 5).

Discussion

Results from the 2015 survey indicated that Section 01 of Benson Run supported natural reproduction of Brown Trout and qualified for the Listing of Wild Trout Streams, as outlined in 58 PA Code §57.11. The wild Brown Trout density determined from the 2015 survey exceeded the Pennsylvania Fish and Boat Commission's minimum biomass criteria for consideration as a Class A population, as outlined in 58 PA Code §57.8a. Class A Wild Trout Streams.

Benson Run supported an excellent wild Brown Trout population with a high abundance of young-of-the-year Brown Trout observed in 2015 and very good numbers of legal size Brown Trout, especially given the small width of the stream.

The current 25 PA Code Chapter 93 Water Quality Standards listing of Trout Stocking (TSF) for the Benson Run basin does not adequately protect the existing flora and fauna present within the basin. Due to the significant wild trout resource, which meets Class A criteria, Benson Run should be upgraded to the High Quality-Cold Water Fishes (HQ-CWF) designation by the PA Department of Environmental Protection (DEP) upon listing by the Commission as a Class A wild trout stream.

Management Recommendations

1. Add Benson Run (16A), Section 01, from the headwaters downstream to the mouth on the PFBC's list of stream sections that support natural reproduction of trout.
2. Add Benson Run (16A), Section 01, (from the headwaters to the mouth) to the Commission's Class A Wild Trout Streams program.
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5. Work with Erie County Conservation District and local watershed groups to maintain and improve the quality of the habitat in Benson Run.

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. USEPA, Report 841-99-002 Washington, DC.
- Detar, J., R. Wnuk, R.T. Greene, and M. Kaufmann. 2011. Standard electrofishing protocols for sampling Pennsylvania wadeable streams. Pages 5-24 in D. Miko, editor. Sampling protocols for Pennsylvania's wadeable streams. Pennsylvania Fish and Boat Commission. Harrisburg, PA.

Table 1. Benson Run (16A), Erie County. Site sampling location, length surveyed, average site width and site area.

Site Date	RM	Downstream limit description	Length (m)	Ave. Width (m)	Site Area (ha)
6/25/2015	0.03	41 m upstream of the mouth	511	3.77	0.19

Table 2. High Gradient Rapid Bioassessment Protocol ratings Benson Run (16A), Erie County conducted at RM 0.03 in 2015.

Habitat Parameter	Score
Epifaunal Substrate / Available Cover	19
Embeddedness	16
Velocity / Depth Regime	18
Sediment Deposition	16
Channel Flow Status	12
Channel Alteration	19
Frequency of Riffles or bends	16
Left Bank Stability	8
Right Bank Stability	8
Left Bank Vegetative Protection	8
Right Bank Vegetation Protection	8
Left Bank Riparian Vegetation Width	9
Right Bank Riparian Vegetative Width	8
Total Score	165

Table 3. Chemistries collected in Benson Run (16A), Erie County, in 2015.

Date	06/25/2015
Site RM	0.03
Time (24 hour)	1310
Air Temperature (C)	22.0
pH Field Colorimetric (SU)	7.5
Specific Conductance (UMHOS)	220
Total Alkalinity Field Mixed Indicator (MG/L)	108
Total Hardness Field EDTA (MG/L)	129
Water Temperature (C)	14.5

Table 4. Fish species occurrence Benson Run (16A), Erie County at sample site RM 0.03 in 2015.

Common Name	Scientific Name	*Relative Abundance
Blacknose Dace	Rhinichthys atratulus	Common (26-100)
Bluegill	Lepomis macrochirus	Rare
Brown Trout	Salmo trutta	
Central Stoneroller	Campostoma anomalum	Common (26-100)
Creek Chub	Semotilus atromaculatus	Common (26-100)
Fantail Darter	Etheostoma flabellare	Rare
Grass Pickerel	Esox americanus vermiculatus	Rare
Johnny Darter	Etheostoma nigrum	Abundant (>100)
Logperch	Percina caprodes	Rare
Mottled Sculpin	Cottus bairdii	Abundant (>100)
Northern Hog Sucker	Hypentelium nigricans	Rare
Rainbow Darter	Etheostoma caeruleum	Abundant (>100)
Redside Dace	Clinostomus elongatus	Rare
White Sucker	Catostomus commersonii	Common (26-100)
Yellow Bullhead	Ameiurus natalis	Rare

*-Subjective abundance indices were conducted on the first 300 m of the survey site in 2015.

Table 5. Wild Brown Trout Petersen abundance and biomass estimates at sample site RM 0.03 on Benson Run (16A), Erie County, in 2015.

Length group (mm)	Population Estimate	Low 95% CI	High 95% CI	Estimated Number/Ha	Estimated Kg/Ha	Estimated Number/Km
25	104	49	239	540	0.57	204
50	33	18	68	171	0.44	65
100	7			36	0.52	14
125	28	17	50	145	3.82	55
150	11			57	2.51	22
175	4			21	1.40	8
200	7			36	3.53	14
225	8	3	19	42	5.60	16
250	7	3	16	36	6.62	14
275	5			26	6.15	10
300	2			10	3.15	4
325	1			5	1.98	2
350	2			10	4.91	4
Totals	219			1,135	41.20	432

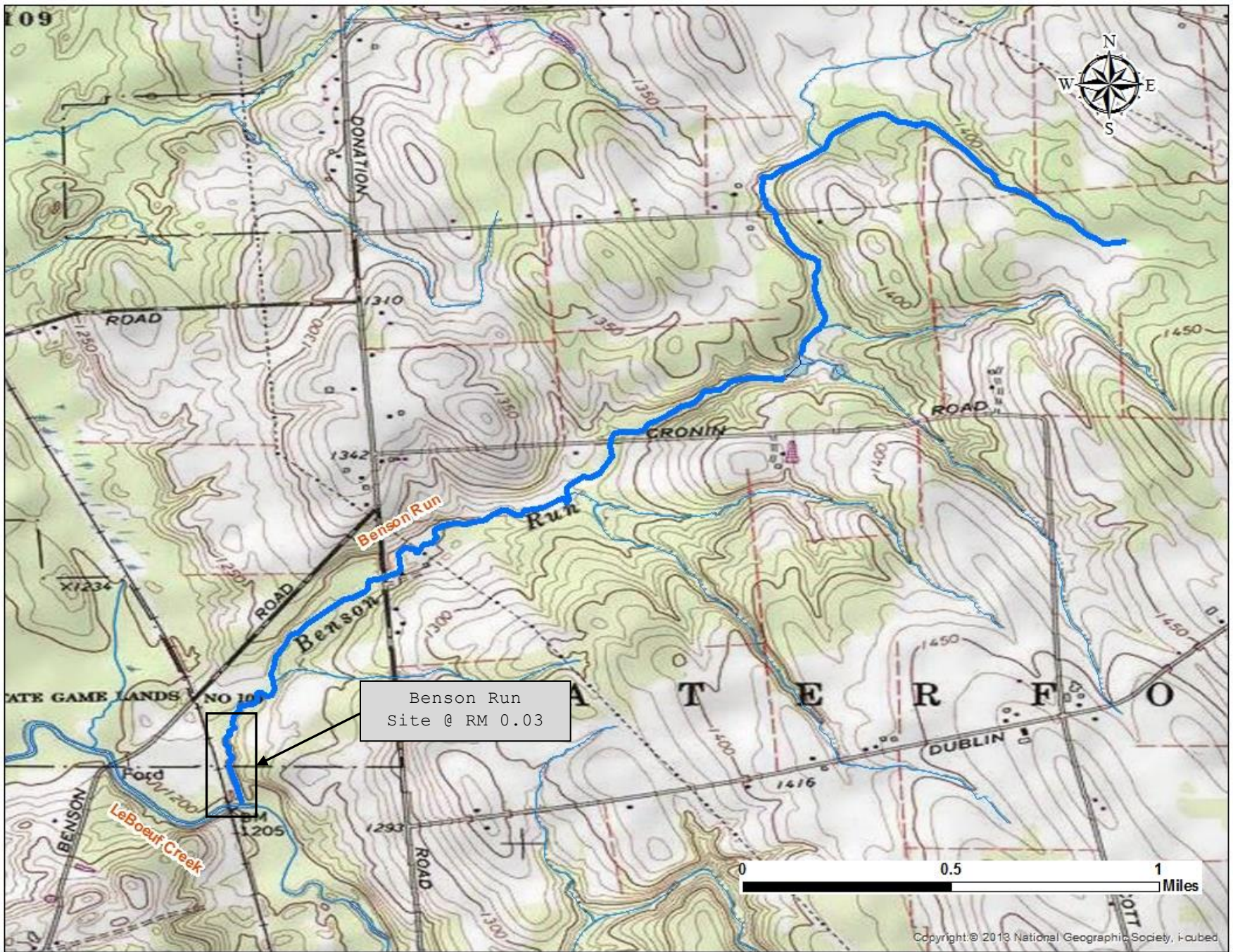


Figure 1. Location map for sample site river mile 0.03 on Benson Run (16A), Erie County.