

DEP Stream Code: 62998 PA FISH AND BOAT COMMISSION
UNNAMED TRIBUTARY TO LAUREL RUN "Wheelbarrow Run"
COMMENTS AND RECOMMENDATIONS

February 16, 2012

WATER: Laurel Run Section 02 and Wheelbarrow Run (405B)
Luzerne County

EXAMINED: June 2011

BY: Aaron Frey, Jake Precone, Jesse Filingo, and Andy Fedor

Bureau Director Action: _____ Date: _____

Division Chief Action: _____ Date: _____

WW Unit Leader Action: _____ Date: _____

CW Unit Leader Action: _____ Date: _____

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AREA COMMENTS:

The Area 4 Fisheries Management Office surveyed Laurel Run Section 02 and an unnamed tributary to Laurel Run (Wheelbarrow Run) in 2011. We surveyed Laurel Run Section 02 because of persistent complaints that its wild trout population had declined, and we surveyed the unnamed tributary because of reports that it contained wild trout.

The wild trout population in Laurel Run Section 02 actually increased since the previous survey in 1994. Wild brook trout biomass more than doubled and the estimated number of legal fish in the section increased from 82 to 230. The unnamed tributary supported a Class A wild brook trout population.

AREA RECOMMENDATIONS:

1. Add the unnamed tributary to Laurel Run (Wheelbarrow Run), Section 01 to the wild trout waters list. The wild trout listing should extend from the headwaters downstream to the mouth.
2. Add the unnamed tributary to Laurel Run (Wheelbarrow Run), Section 01, to the Class A wild trout waters list, as a Class A wild brook trout water.
3. Petition the Pennsylvania Department of Environmental Protection to upgrade the Chapter 93 Water Quality Classification of the unnamed tributary to Laurel Run (Wheelbarrow Run) from Cold Water Fishes, Migratory Fishes to High-Quality Cold Water Fishes, Migratory Fishes.

**Pennsylvania Fish & Boat Commission
Bureau of Fisheries
Division of Fisheries Management**

Laurel Run Section 02 and Wheelbarrow Run (405B)
Fisheries Management Report

Prepared by:
Robert T. Wnuk and Aaron P. Frey

Date Sampled: June 2011

Date Prepared: September 2011

Introduction

Laurel Run is an 11 km long tributary to Mill Creek in Wilkes-Barre, Luzerne County. The Pennsylvania Fish and Boat Commission (PFBC) manages Laurel Run as three separate sections. Section 01 extends 2.6 km from the headwaters downstream to SR 2007 in Oliver Mills; Section 02 extends 5.1 km from SR 2007 downstream to Colebrook Dam; and Section 03 extends 3.7 km from Colebrook Dam downstream to the mouth. Copeland et al. (1994) surveyed the entire length of Laurel Run. At that time, Section 01 supported a Class B population of wild brook trout *Salvelinus fontinalis* estimated at 24.31 kg/ha. Wild brook trout biomass dropped to 12.05 kg/ha (Class C) in Section 02 and wild trout were absent from Section 03.

Section 02 of Laurel Run is a popular destination for wild trout anglers. Over the last several years, however, the Area 4 Fisheries Management Office has received persistent complaints that the wild brook trout population in the section has declined. Thus, we re-examined Section 02 in 2011 to determine if these reports were accurate. We also surveyed an unnamed tributary to Laurel Run during this work because it reportedly contained wild trout. This unnamed tributary enters Laurel Run in the Seven Tubs Natural Area, a Luzerne County Park, and is locally known as Wheelbarrow Run. We refer to the unnamed tributary as Wheelbarrow Run for the remainder of this report.

Methods

We examined Laurel Run Section 02 and Wheelbarrow Run from June 13 through June 15, 2011. Procedures on Laurel Run followed those for general inventories except we did not collect section physical and social data (Detar et al. 2011). Procedures on

Wheelbarrow Run followed those for unassessed waters (Weber et al. 2011).

This work assessed three sampling stations (Figure 1). Two stations were located on Laurel Run and were historic sites. Station 0201 began 300 m downstream from a railroad crossing (River Mile [RM] 5.53) and Station 0202 began 300 m downstream from a tunnel (RM 3.58). Our single sampling station on Wheelbarrow Run began 10 m upstream from the mouth (RM 0.01). Site length was 300 m at all stations.

We examined physical habitat, water quality parameters, and fish communities at all three sites. Physical habitat evaluations followed the United States Environmental Protection Agency's Rapid Bioassessment Protocols for high gradient streams (Barbour et al. 1999). All chemical parameters were measured in the field using a colorimetric method for pH, a mixed indicator for total alkalinity, and EDTA titration for total hardness. We used backpack electrofishing gear to assess fish populations. Backpack setups included a Coffelt unit (Model BP 1C, 125 volts alternating current at Laurel Run Station 0202) and a Smith-Root unit (Model 12-A POW, 100 volts pulsed direct current at the other two stations). The Smith-Root unit consisted of a single anode with a rat-tail cathode.

We determined that all of the trout we captured were of wild origin based on species, coloration, size, and fin wear. We measured the wild trout to 25 mm length groups and gave them an upper caudal fin clip to obtain a Chapman modified Petersen population estimate (Ricker 1975). We obtained wild trout biomass estimates using state average weights calculated on September 16, 2011.

Results and Discussion

Laurel Run Section 02

Physical habitat at both sites in Section 02 was Optimal with total physical habitat scores ranging from 161 - 165 (Table 1). Both sites were located in areas of mature forest with dense shading and substrates that consisted of boulder, rubble, cobble, and gravel. Water quality was acidic throughout the section. Total alkalinity ranged from 7 to 12 mg/l and pH ranged from 6.9 to 7.0 (Table 2). As expected in an acidic, coldwater system, fish species diversity was low. The only species we captured in Section 02 were wild brook trout and blacknose dace *Rhinichthys atratulus* (Table 3).

At both sites combined, we captured 183 individual wild brook trout ranging from 50 to 224 mm total length (Figure 2). Mean wild brook trout biomass for Section 02 was 29.13 kg/ha (Class B; Table 4) and we estimated there were 230 legal brook trout in the section. In comparison, Copeland et al. (1994) captured 135

individual wild brook trout at the same two sites. Mean biomass in 1994 was 12.05 kg/ha (Class C) and there were an estimated 82 legal brook trout in the section. Contrary to angler perceptions, the wild brook trout population in Section 02 has actually improved.

Wheelbarrow Run

Wheelbarrow Run originates from an unnamed pond west of the Pennsylvania Turnpike. It flows southwest through a mostly forested drainage for 2.3 km to its confluence with Laurel Run in the Seven Tubs Natural Area. Like the rest of the Mill Creek basin, Wheelbarrow Run is classified as Cold Water Fishes and Migratory Fishes (CWF, MF) in the Pennsylvania Department of Environmental Protection's (DEP) Chapter 93 Water Quality Standards.

Physical habitat, water quality, and fish species composition in Wheelbarrow Run were similar to that in Laurel Run Section 02. The total physical habitat score was Optimal at 165 (Table 1). Total alkalinity was 12 mg/l and pH was 7.1 (Table 2). Three fish species were present: wild brook trout, blacknose dace, and a bluegill *Lepomis macrochirus* that had escaped from a local pond (Table 3).

We captured 96 wild brook trout ranging from 50 to 224 mm total length (Figure 3) at our single sampling station. Total wild brook trout biomass was 32.57 kg/ha and the biomass of wild brook trout < 150 mm was 20.31 kg/ha (Table 5). These values were sufficient to qualify Wheelbarrow Run for Class A status. We estimated there were 85 legal wild brook trout in the stream.

Because wild brook trout biomass reached Class A status, the DEP classification of CWF, MF was inadequate for Wheelbarrow Run. This stream should be upgraded to High-Quality Cold Water Fishes, Migratory Fishes (HQ-CWF, MF).

MANAGEMENT RECOMMENDATIONS

1. Add the unnamed tributary to Laurel Run (Wheelbarrow Run), Section 01, to the wild trout list. The wild trout listing should extend from the headwaters downstream to the mouth.
2. Add the unnamed tributary to Laurel Run (Wheelbarrow Run), Section 01, to the Class A wild trout waters list, as a Class A wild brook trout water.
3. Petition the Pennsylvania Department of Environmental Protection to upgrade the Chapter 93 Water Quality Classification of the unnamed tributary to Laurel Run (Wheelbarrow Run) from Cold Water Fishes, Migratory Fishes to High-Quality Cold Water Fishes, Migratory Fishes.

LITERATURE CITED

- Barbour, M., J. Gerritsen, B. Snyder, and J. Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and rivers: periphyton, benthic macroinvertebrates, and fish, second edition. EPA 841-B-99-002. U.S. Environmental Protection Agency, Office of Water, Washington, D.C.
- Copeland, T., R. Moase, and R. Paine. 1994. Mill Creek Basin (405B) management report. Pennsylvania Fish and Boat Commission files, 450 Robinson Lane, Bellefonte, PA.
- Detar, J., R. Wnuk, T. Greene, and M. Kaufmann. 2011. Standard electrofishing protocols for sampling wadeable streams. Pages 10 - 28 in D. Miko, editor. Sampling protocols for Pennsylvania's wadeable streams. Pennsylvania Fish and Boat Commission files, 450 Robinson Lane, Bellefonte, PA.
- Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada Bulletin 191.
- Weber, R., R.T. Greene, and D. Miko. 2011. Procedures for conducting biological assessments of unassessed trout waters. Pages 62 - 68 in D. Miko, editor. Sampling protocols for Pennsylvania's wadeable streams. Pennsylvania Fish and Boat Commission files, 450 Robinson Lane, Bellefonte, PA.

Table 1. Total physical habitat scores for sites sampled in Laurel Run Section 02 and Wheelbarrow Run (405B) in 2011. All scores were determined using the method for high gradient sites.

Stream	Station	Total Physical Habitat Score
Laurel Run	0201	165 (Optimal)
	0202	161 (Optimal)
Wheelbarrow Run	0101	165 (Optimal)

Optimal = 150 - 200; Sub-optimal = 100 - 149; Marginal = 50 - 99; Poor = 0 - 49.



Table 2. Physical-chemical data collected at sampling stations in Laurel Run Section 02 and Wheelbarrow Run (405B) during 2011.

Parameter	Laurel Run		Wheelbarrow Run
	0201	0202	0101
Date	6/14	6/13	06/13
Time (24 hour)	1210	1305	1225
Air temperature (°C)	19.0	20.0	19.0
Water temperature (°C)	14.0	15.0	14.8
pH (standard units)	6.9	7.0	7.1
Total alkalinity (mg/l)	12	7	12
Total hardness (mg/l)	15	18	26
Specific conductance (umhos)	106	165	237

Table 3. Abundance ratings for fish species captured in Laurel Run Section 02 and Wheelbarrow Run (405B) during 2011.

Common name	Scientific name	Laurel Run		Wheelbarrow Run
		0201	0202	0101
Brook trout	<i>Salvelinus fontinalis</i>	A	C	C
Blacknose dace	<i>Rhinichthys atratulus</i>	A	A	A
Bluegill	<i>Lepomis macrochirus</i>			R
Total Species:		2	2	3

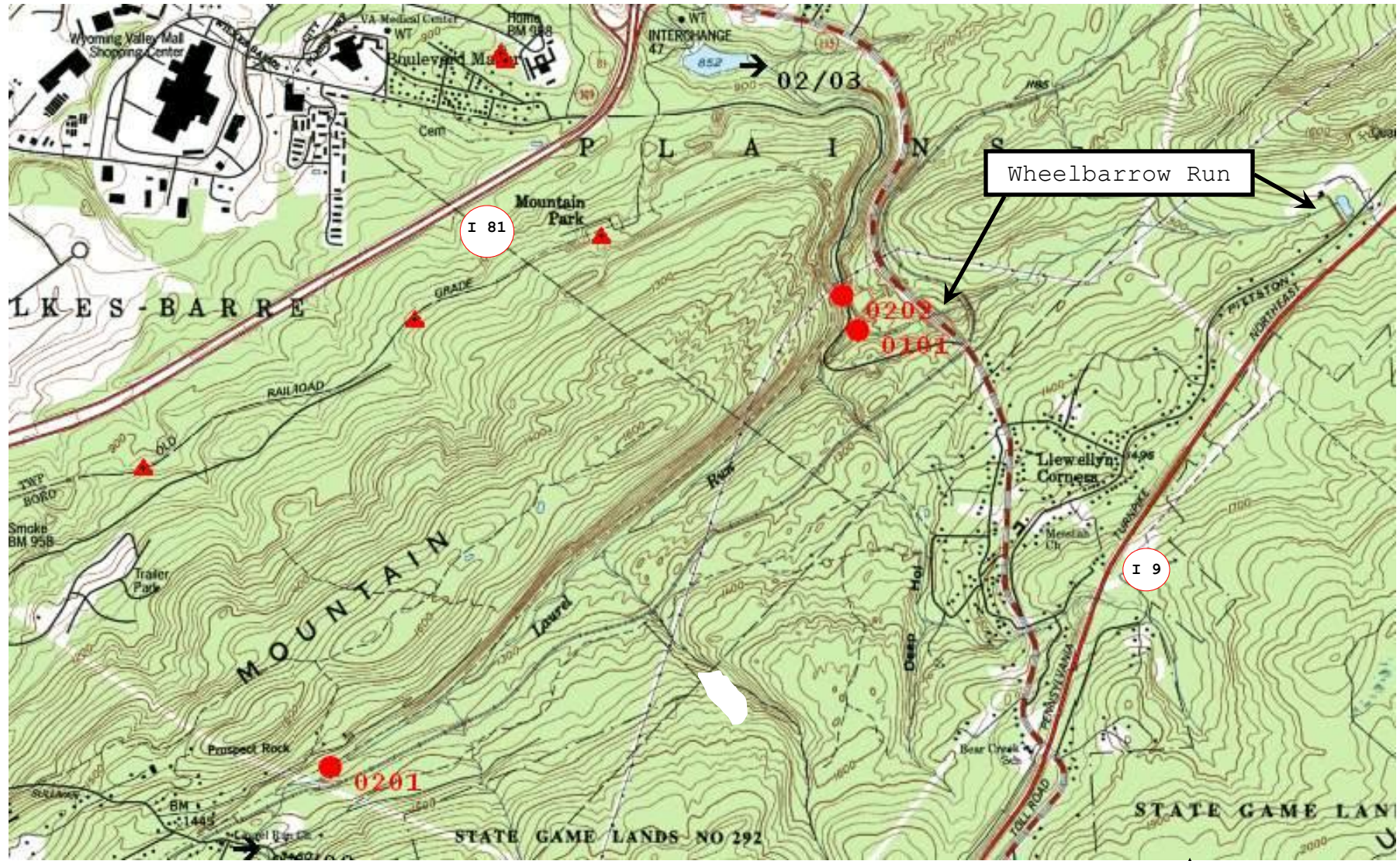
Abundance ratings (based on estimated number of individuals seen in 300 m of electrofishing): A = Abundant (> 100); C = Common (26 - 100); P = Present (3 - 25); R = Rare (< 3).

Table 4. Wild brook trout abundance estimate for Section 02 of Laurel Run (405B) determined in 2011.

Length Group (mm)	Population Estimate	Number/Hectare	Number/Kilometer	Kilograms/Hectare
50 - 74	2	15	7	0.04
75 - 99	45	341	150	2.03
100 - 124	24	221	78	3.02
125 - 149	30	296	100	7.21
150 - 174	19	192	63	7.89
175 - 199	12	114	38	7.29
200 - 224	2	18	7	1.65
Totals:	134	1,197	443	29.13
≥ 175 mm:	14	132	45	8.94

Table 5. Wild brook trout abundance estimate for Wheelbarrow Run (405B) determined in 2011.

Length Group (mm)	Population Estimate	Number/Hectare	Number/Kilometer	Kilograms/Hectare
50 - 74	1	9	3	0.02
75 - 99	9	83	30	0.50
100 - 124	85	787	283	10.77
125 - 149	40	370	133	9.02
150 - 174	13	120	43	4.95
175 - 199	8	74	27	4.74
200 - 224	3	28	10	2.57
Totals:	159	1,471	529	32.57
≥ 175 mm:	11	102	37	7.31
< 150 mm:	135	1,249	449	20.31



● 2011 Sample Site
➔ Section Limit

↑ NORTH

Scale:
1 cm = 258 m

Figure 1. Laurel Run and Wheelbarrow Run (405B).

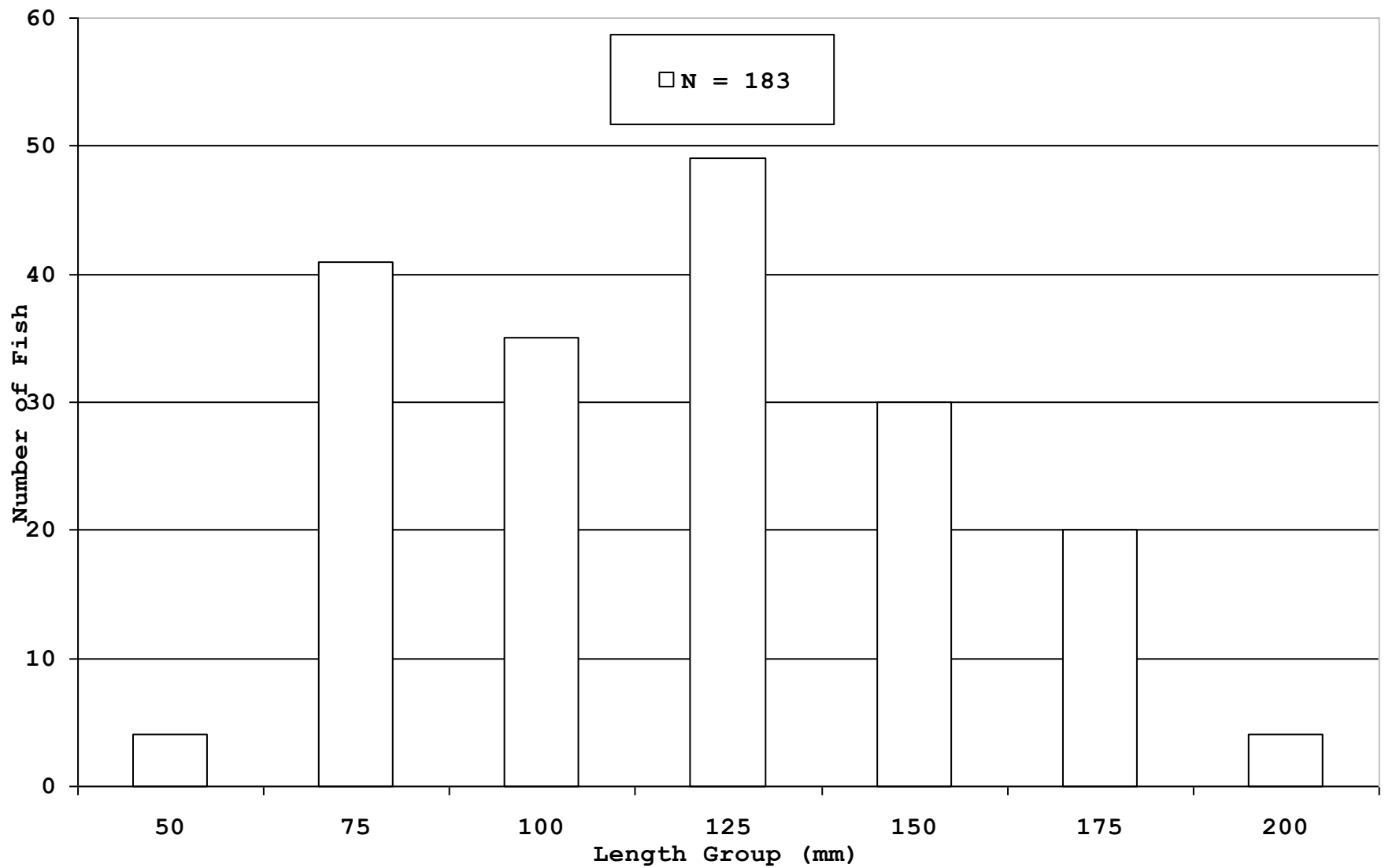


Figure 2. Length-frequency distribution of wild brook trout captured in Laurel Run (405B) Section 02 during 2011.

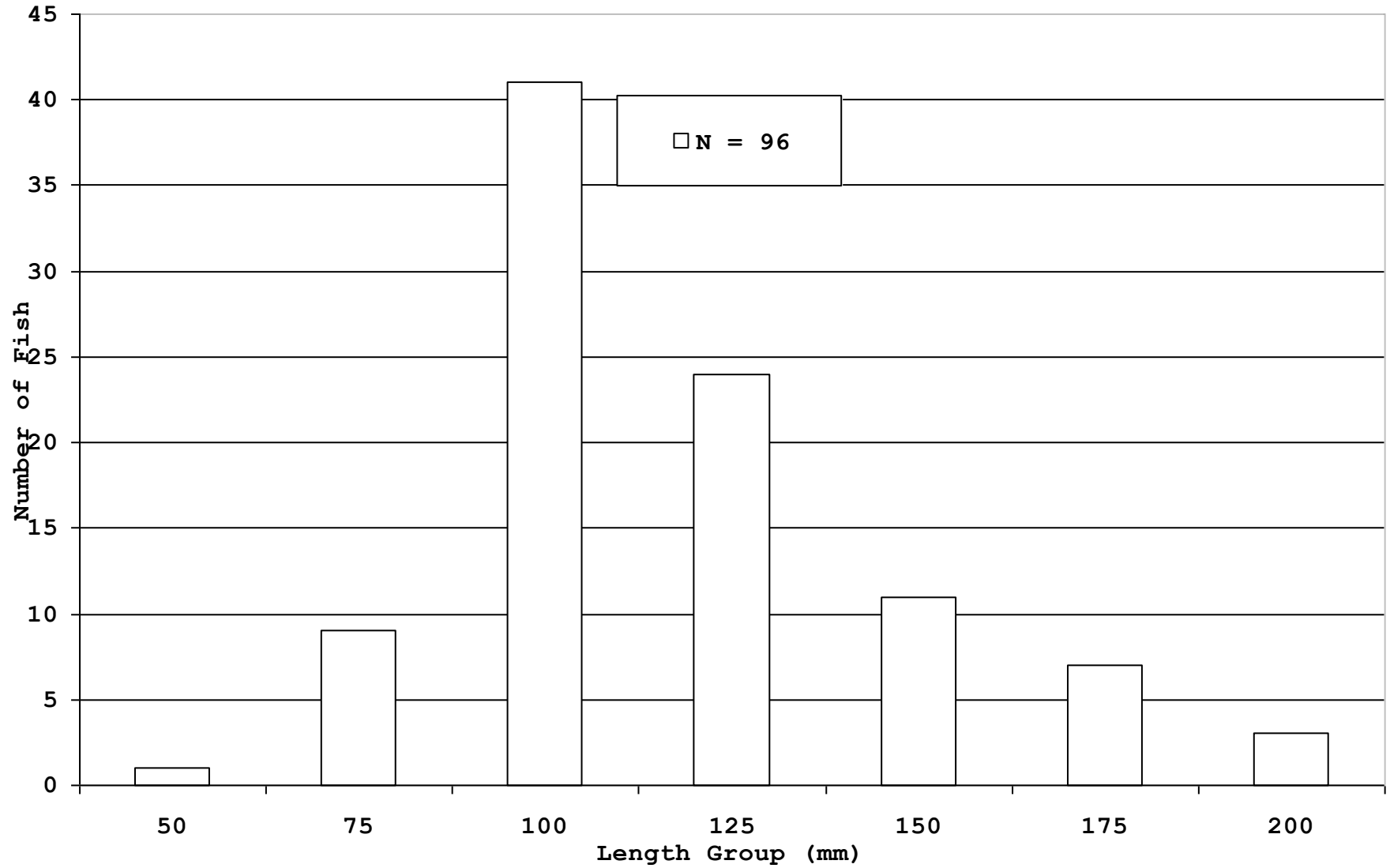


Figure 3. Length-frequency distribution of wild brook trout captured in Wheelbarrow Run (405B) during 2011.

DEP Stream Code: 62998

UNT to Laurel Run "Wheelbarrow Run"

DISTRIBUTION

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(Chapter 93 upgrade)