

DEP Stream Code: 28663 PA FISH AND BOAT COMMISSION
COMMENTS AND RECOMMENDATIONS
February 16, 2012

Lewis Creek

WATER: Lewis Creek (404G) Luzerne County
EXAMINED: August 2005
BY: Moase, Wnuk, and McGrady

Bureau Director Action: _____ Date: _____

Division Chief Action: _____ Date: _____

WW Unit Leader Action: _____ Date: _____

CW Unit Leader Action: _____ Date: _____

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CWU COMMENTS:

Lewis Creek (404G), Section 01, was initially inventoried during August 2005 to document the status of the trout population and to collect baseline data on the resource.

Section 01 can be characterized as a small, coldwater stream. The 2005 examination recorded the presence of 13 fish species, including a Class A wild brook trout population estimated at 37.39 kg/ha.

The estimated abundance of legal size (≥ 7 inches in length) wild brook trout was 34/km and the estimated abundance of legal size wild brown trout was 3/km. Based on a section length of 3.36 km (2.1 miles) this translated into an estimated total of 115 legal size wild brook trout ranging from seven to eight inches and 10 legal size wild brown trout ranging from seven to eight inches in length in Lewis Creek, Section 01.

CWU RECOMMENDATIONS:

1. Lewis Creek (404G), Section 01, should be managed as a Class A wild brook trout water. Statewide regulations should apply with no stocking.
2. Based on the presence of a Class A wild brook trout population, the DEP Chapter 93 Water Quality Standards should be upgraded to HQ-CWF. The special protected use classification should apply to the entire Lewis Creek basin.

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

Lewis Creek (404G)
Section 01
Fisheries Management Report

Prepared by:
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Fisheries Management Database Name: Lewis Ck
Lat/Lon: 412317754925

Date Sampled: August 2005

Date Prepared: September 2005

Introduction

Lewis Creek is a 3.36 km long tributary to the North Branch Susquehanna River located entirely within Exeter Township, Luzerne County (Figure 1). The stream originates on the summit of Mount Zion and flows generally northeast until it empties into the river at the Pennsylvania Fish and Boat Commission's (PFBC) Apple Tree Access Ramp. Forested areas dominate land use in the 4.25 km² drainage, but rural-residential development in conjunction with limited agriculture exists along the stream corridor. Additionally, several homeowners have constructed small ponds on and next to the stream. Devonian Age sandstones, siltstones, and shales from the Catskill Formation underlie the drainage. State Route 92 provides major road access while the Ransom 7.5 minute Quadrangle provides topographic coverage. The Pennsylvania Department of Environmental Protection (DEP) currently classifies Lewis Creek as a coldwater fishery (CWF) in its Chapter 93 Water Quality Standards.

We examined Lewis Creek as part of an effort to reduce the number of unassessed waters in the Area 4 Fisheries Management Region (Wnuk 2005). Our work was the first known biological investigation of Lewis Creek. Historically, the PFBC has managed this stream as a single section extending from the headwaters downstream to the mouth for its natural fish populations under statewide angling regulations without stocking.

Methods

We surveyed Lewis Creek on August 8 and 9, 2005. All procedures of the survey followed Marcinko et al. (1986). We collected physical and some social data for the section but did not evaluate parking.

We sampled a single station located at the mouth of Lewis Creek. The station was 300 m long and averaged 1.4 m in width. Stream flow at the time we sampled was normal. We evaluated total alkalinity with a mixed indicator, pH with a colorimetric method, and total hardness with EDTA titration. We used a Smith-Root backpack electrofisher (Model 12-A POW, 200 volts pulsed direct current) to assess the fish population. With the exception of sculpins *Cottus spp*, we identified all fish to species. We only identified sculpins to genus because it was difficult to accurately separate mottled sculpins *Cottus bairdi* from slimy sculpins *Cottus cognatus* in the field. The scientific and common names of the fish species we captured followed Robins et al. (1991).

We measured all of the trout we captured to 25 mm length groups and gave them an upper caudal fin clip. This allowed us to calculate a Chapman modified Petersen population estimate (Ricker 1975). We obtained wild trout population abundance and biomass estimates for the entire stream by expanding the estimated number and weight of trout at our site to numbers and kilograms per hectare using state average weights calculated on September 29, 2005.

Results and Discussion

We considered Lewis Creek to be a single section extending from the headwaters downstream to the mouth. Section 01 possessed a relatively high gradient of 61.2 m/km (Table 1). Human population density for the section was suburban at 77 persons/km² during the 2000 census. The section was completely in private ownership and closed to public fishing without permission. Some fishing activity did occur. The landowner we spoke with at our station told us that he fished the stream with his grandchildren on a catch-and-release basis.

Water chemistries at our site reflected the geology and land use of the basin. They were normal for the area and sufficient fertility was present to prevent acid flushes. Total alkalinity was 42 mg/l and pH was 7.2 standard units (Table 2). Water temperature was 18.6°C despite the warm, dry summer we experienced and the ponds that existed upstream from our site. These ponds may have produced the high specific conductance (216 umhos) we recorded.

We documented the presence of 13 fish species at our site (Table 3). Species richness was very high for such a small stream and reflected the proximity of our site to the river. Most species were absent from the fish community in the upstream 180 m of the

station. Juvenile fallfish *Semotilus corporalis* were abundant in the downstream 120 m. This was noteworthy because fallfish have been declining throughout the Area 4 Fisheries Management Region (Wnuk et al. 2000).

Brook trout *Salvelinus fontinalis* and brown trout *Salmo trutta* were the only gamefish present. All of the trout we captured were wild. We captured 51 individual wild brook trout and a single wild brown trout during two electrofishing passes. Total wild brook trout biomass was 37.39 kg/ha (Class A; Table 4). Wild brook trout ranged from 50 to 224 mm total length (Figure 2) with 9 (18%) of these fish measuring \geq 175 mm. We estimated a total of 115 legal size and larger wild brook trout in the stream. The lone wild brown trout measured between 175 and 199 mm total length. The number of young-of-the-year wild brook trout present was far lower than expected. The high flows we experienced during fall 2004 and spring 2005 might have negatively impacted the 2005 year class (Seegrist and Gard 1972).

Lewis Creek supports a Class A wild brook trout population. As such, the DEP should upgrade its Chapter 93 Water Quality classification from CWF to high-quality coldwater fishery (HQ-CWF). The PFBC should add this stream to the Class A Wild Trout List and manage it under statewide angling regulations with no stocking. Special angling regulations are not necessary because the stream's small size and lack of public access combine to limit angling pressure and angler harvest.

MANAGEMENT RECOMMENDATIONS

1. The Pennsylvania Department of Environmental Protection should upgrade the Chapter 93 classification of Lewis Creek from coldwater fishery to high-quality coldwater fishery.
2. The Pennsylvania Fish and Boat Commission should add Lewis Creek, Section 01, to the list of Class A wild trout waters.
3. The Pennsylvania Fish and Boat Commission should manage Lewis Creek under statewide angling regulations with no stocking.

LITERATURE CITED

- Marcinko, M., R. Lorson, and R. Hoopes. 1986. Procedures for stream and river inventory information input. Pennsylvania Fish and Boat Commission, Bellefonte, PA.
- Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Fisheries Research Board of Canada Bulletin 191.
- Robins, C.R., R.M. Bailey, C.E. Bond, J.R. Brooker, E.A. Lachner, R.W. Lea, and W.B. Scott. 1991. A list of common and scientific names of fishes from the United States and Canada, 5th edition. American Fisheries Society Special Publication # 20. Bethesda, MD.
- Seegrist, D.W., and R. Gard. 1972. Effects of floods on trout in Sagehen Creek, California. Transactions of the American Fisheries Society 101:478-482.
- Wnuk, R.T., R.E. Moase, and K. Hauck. 2000. Sugar Creek basin fisheries management report. Pennsylvania Fish and Boat Commission, Bellefonte, PA.
- Wnuk, R.T. 2005. Memo to R.T. Greene, Coldwater Unit Leader. Pennsylvania Fish and Boat Commission files, Bellefonte, PA.

Table 1. Standard physical and social data for Lewis Creek (404G) Section 01.

Measurement	Value
Upper Limit	Headwaters
Lower Limit	Mouth
Length	3.36 kilometers
Mean Width	1.40 meters (based on 1 site)
Area	0.47 hectares
Gradient	61.2 meters per kilometer
County	100% Luzerne
USGS Quadrangle	Ransom (G39)
WCO District	3076
Current DEP Classification	Coldwater Fishery
Ownership	100% Private
2000 Human Population Density	77 Persons per square kilometer
Road Access:	
% Within 100 meters	90
% Within 300 meters	100

Table 2. Physical and chemical data collected at Station 0101 of Lewis Creek (404G) on August 8, 2005.

Measurement	Value
Time	10:15 AM
Air Temperature	22.0°C
Water Temperature	18.6°C
pH	7.2 Standard units
Total Alkalinity	42 milligrams per liter
Total Hardness	57 milligrams per liter
Specific Conductance	216 micromhos

Table 3. Scientific and common names of fish species captured at Station 0101 of Lewis Creek (404G) on August 8 and 9, 2005.

Scientific name	Common name
<i>Salmo trutta</i>	Brown trout
<i>Salvelinus fontinalis</i>	Brook trout
<i>Campostoma anomalum</i>	Central stoneroller
<i>Notropis hudsonius</i>	Spottail shiner
<i>Notropis procne</i>	Swallowtail shiner
<i>Pimephales notatus</i>	Bluntnose minnow
<i>Rhinichthys atratulus</i>	Blacknose dace
<i>Rhinichthys cataractae</i>	Longnose dace
<i>Semotilus corporalis</i>	Fallfish
<i>Catostomus commersoni</i>	White sucker
<i>Etheostoma olmstedii</i>	Tessellated darter
<i>Etheostoma zonale</i>	Banded darter
<i>Cottus spp.</i>	Sculpins
Total Species: 13	

Table 4. Wild brook trout biomass estimate determined at Station 0101 of Lewis Creek (404G) in August 2005.

Length Group (mm)	Population Estimate	Number per Kilometer	Number per Hectare	Kilograms per Hectare	Estimated Number in Entire Section
50 - 74	6	20	143	0.24	67
75 - 99	10	33	238	1.43	111
100 - 124	10	33	238	3.33	111
125 - 149	14	47	333	8.10	158
150 - 174	8	27	190	7.86	91
175 - 199	8	27	190	12.14	91
200 - 224	2	7	48	4.29	24
0 - 174	48	160	1,142	20.96	538
175 - 224	10	34	238	16.43	115
Totals:	58	194	1,380	37.39	653

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Figure 1. Lewis Creek (404G) drainage basin in Exeter Township, Luzerne County. Lewis Creek

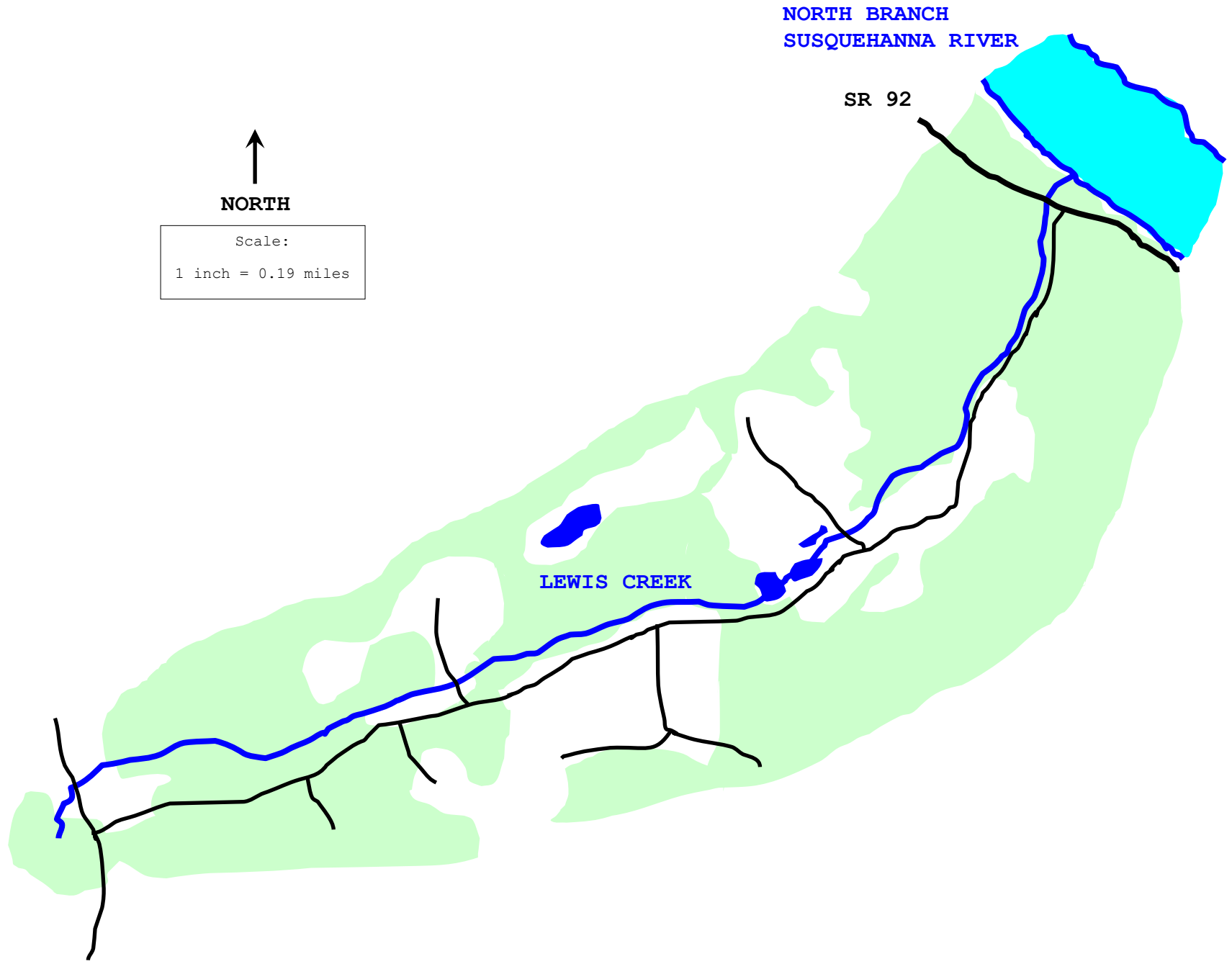
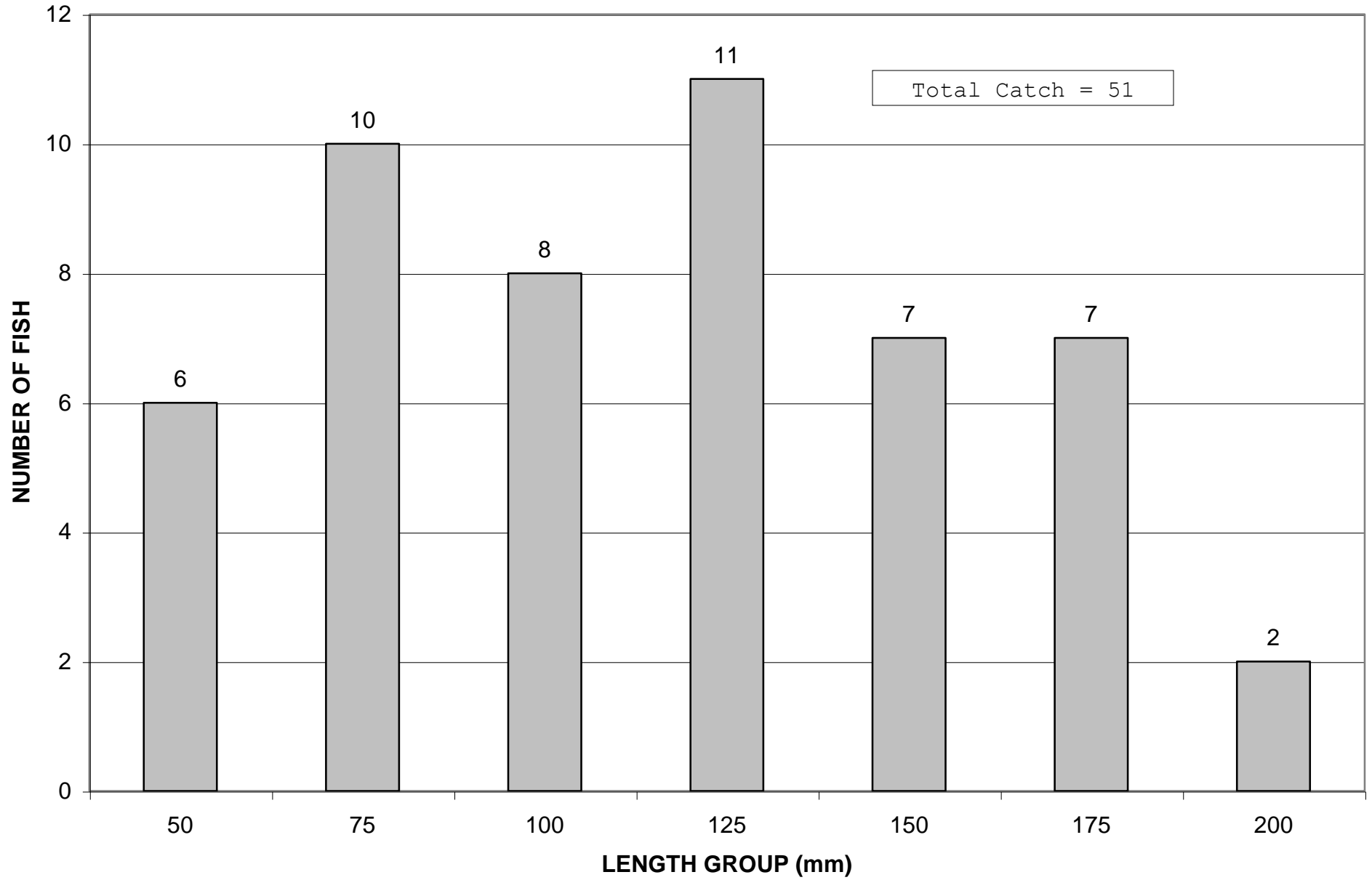


Figure 2. Length-frequency distribution (M+C-R) of wild brook trout captured at Station 0101 of Lewis Creek (404G) in August 2005.



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Lewis Creek

DISTRIBUTION

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