Federal Aid in Sportfish and Wildlife Restoration

F-50-R 33

Performance Report Summary

Grant Title: Anadromous and Inland Fisheries Operational Management Investigations

Period Covered: July 1, 2016 – June 30, 2017

Project Personnel: John A. Viar - Fisheries Biologist II

JOB 9:   Warmwater and Coolwater Fisheries Population Assessment

JOB OBJECTIVES:

To use the best information available to sustain and improve warm and cool water sport fish populations through management and natural reproduction to provide recreational fishing opportunities in an ecologically sound manner. The specific objectives of warm and cool water assessments are to determine 1) fish condition, 2) size and population structure, 3) relative abundance (target and community species), 4) black bass young-of-year size and abundance, 5) compare measured population parameters among populations and years, 6) age and growth, 7) population changes resulting from prior management decisions, 8) angler effort, catch and harvest rates, and opinions related to management, 9) populations that would benefit from special angling regulations, and 10) potential effects of bass tournaments on the state's black bass resources.

SUMMARY OF ACTIVITIES:

Lower Beech Pond in Tuftonboro was sampled via Smith-Root electrofishing boat (SR-18; high range, 40 %, 120-V DC) on June 30, 2016. Commencing at dusk, five 500-second (2,500-s/0.69-hr total) community passes were conducted along discrete shorelines, with two bow and one aft net personnel. Surface water temperature was 25°C (77°F) at sampling onset; clear and calm conditions prevailed for the survey duration.

Total length (mm) and weight (g) were recorded for all individual fish captured; scale samples were obtained for Largemouth and Smallmouth Bass. Relative weight (Wr) indices were determined to assess respective body condition/robustness. Histograms were constructed to portray species length distributions (for N>5).

A total of 274 individual fish [catch-per-unit-effort (CPUE) = 397/hr] were collected representing seven different species, in descending order of abundance, Largemouth Bass, Smallmouth Bass, Yellow Perch (*Perca flavescens*), Common Sunfish (*Lepomis gibbosus*), Black Crappie (*Pomoxis nigromaculatus*), Chain Pickerel (*Esox niger*), and Golden Shiner (*Notemigonus crysoleucas*) (Table 1; Figure 1). One American Eel (*Anguilla rostrata*) was also positively identified, but evaded net capture.

Satisfactory body condition indices (mean Wr values >80-100) suggested at least adequate availability of prey items for the particular species represented, particularly Smallmouth Bass (mean Wr=96) and Common Sunfish (mean Wr=100) (Table 1).

Species CPUE was greatest for Largemouth and Smallmouth Bass; intermediary for Common Sunfish and Yellow Perch; and lowest for Chain Pickerel, Black Crappie, and Golden Shiner. Species CPUE exceeded and/or was comparable with respective statewide means (Table 2).

Peak length frequencies in the lower size ranges/skewness were indicative of the preponderance of young-of-year and juvenile specimens captured, particularly Largemouth and Smallmouth Bass, and Yellow Perch (Figures 2, 3).

TARGET DATE FOR ACHIEVEMENT:

Annual Surveys

STATUS OF PROGRESS:

On Schedule

SIGNIFICANT DEVIATIONS:

None

RECOMMENDATIONS:

Although the absence of formal lake-specific trend data precluded more thorough comparisons and analyses, data collected in this particular survey did not suggest any obvious and/or peculiar fishery concerns regarding Lower Beech Pond, particularly in terms of the observed species assemblage, overall and species-specific CPUE, and body condition indices (Wr).

When possible, given personnel time availability, Largemouth and Smallmouth Bass scale samples could be processed to gain further insight into lake-specific growth rates.

ACKNOWLEDGMENTS:

Fisheries Division Chief Jason Smith, and Fisheries Biologists Gabe Gries, Jason Carrier, Benjamin Nugent, and John Viar conducted the electrofishing survey.

Table 1. Sample size (N), mean total length (TL mm, in), weight (W g, lb), and relative weight (Wr)*, with respective minimums and maximums (Min.-Max.), of species captured boat electrofishing, Lower Beech Pond, June 30, 2016.

Species	N	TL mm	Min.-Max.	TL in	Min.-Max.	W g	Min.-Max.	W lb	Min.-Max.	Wr*	Min.-Max.	Wr N* (>min. TL)
Largemouth Bass	89	145	22-496	5.7	0.9-18.7	111	5-1,652	0.23	<0.01-3.64	87	44-104	29
Smallmouth Bass	73	150	29-264	5.9	1.1-10.4	60	13-242	0.13	<0.01-0.53	96	87-115	35
Yellow Perch	58	51	32-210	2.0	1.3-8.3	47	11-96		<0.01-0.21	83	74-93	7
Common Sunfish	50	80	34-137	3.2	1.3-5.4	19	2-52	0.03	<0.01-0.11	100	75-123	36
Black Crappie	2	82	73-91	3.2	2.9-3.6	7	6-8	0.02	0.01-0.02	--	--	--
Chain Pickerel	1	363	--	14.3	--	283	--	0.62	--	94	--	1
Golden Shiner	1	49	--	1.93	--	1	--	<0.0	--	--	--	--
Total=	274							1				

Table 2. Catch-per-unit-effort (CPUE; fish/hr) of species captured via boat electrofishing at Lower Beech Pond, June 30, 2016, with respective statewide means and standard deviations (SD).

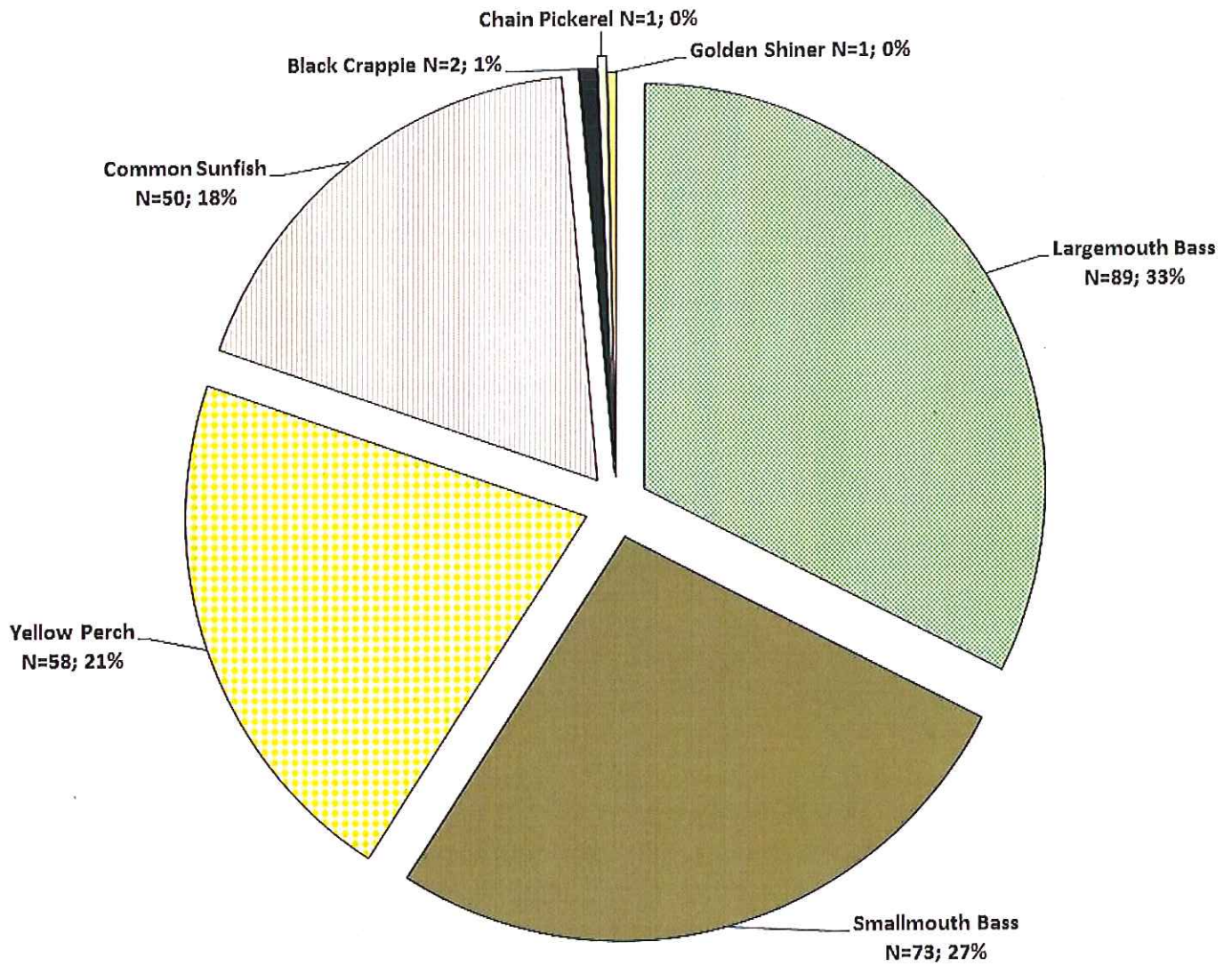| Species	Lower Beech CPUE fish/hr	Statewide CPUE fish/hr (SD)
Largemouth Bass	129.0	48.0 (53.3)
Smallmouth Bass	105.8	20.3 (27.4)
Yellow Perch	84.1	253.6 (207.5)
Common Sunfish	72.5	75.8 (60.7)
Black Crappie	2.9	12.5 (8.9)
Chain Pickerel	1.4	17.3 (14.6)
Golden Shiner	1.4	NA
Inclusive	397	NA

Figure 1. Number and respective percentage of species captured via boat electrofishing, Lower Beech Pond, June 30, 2016.
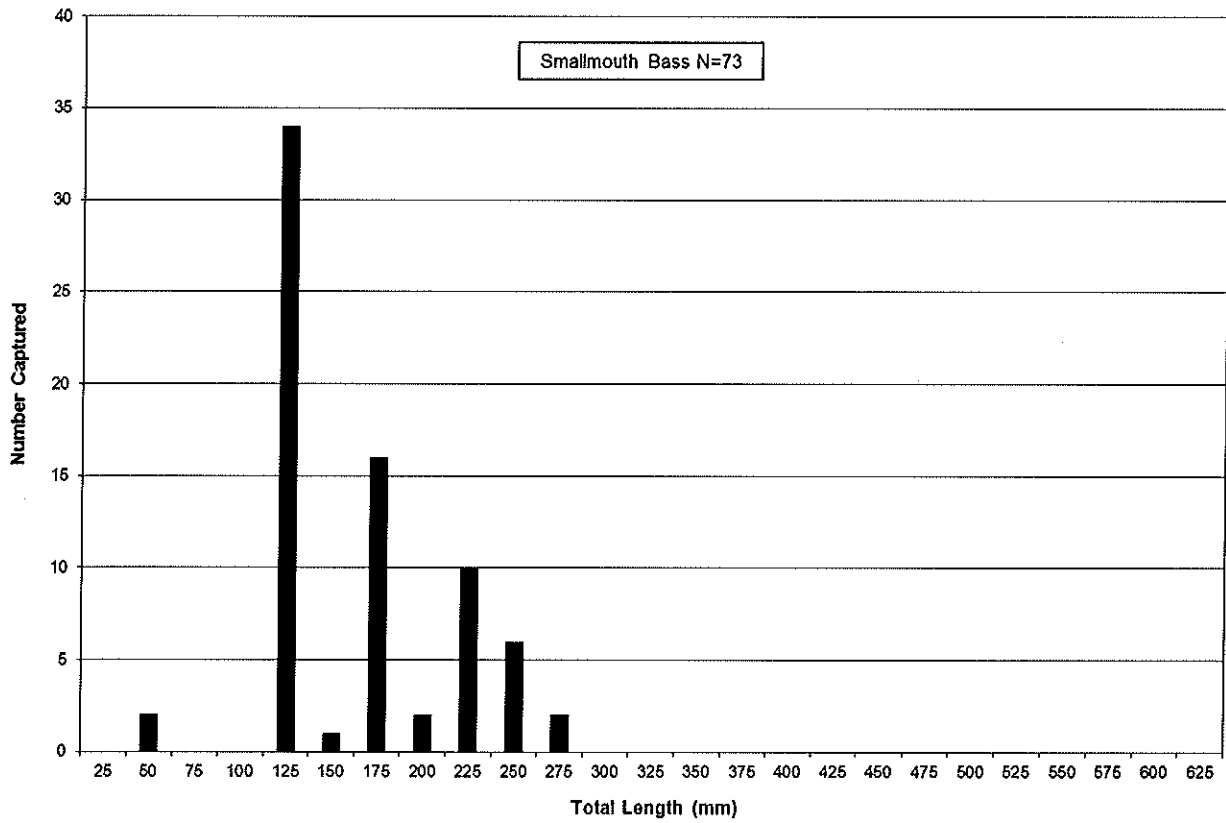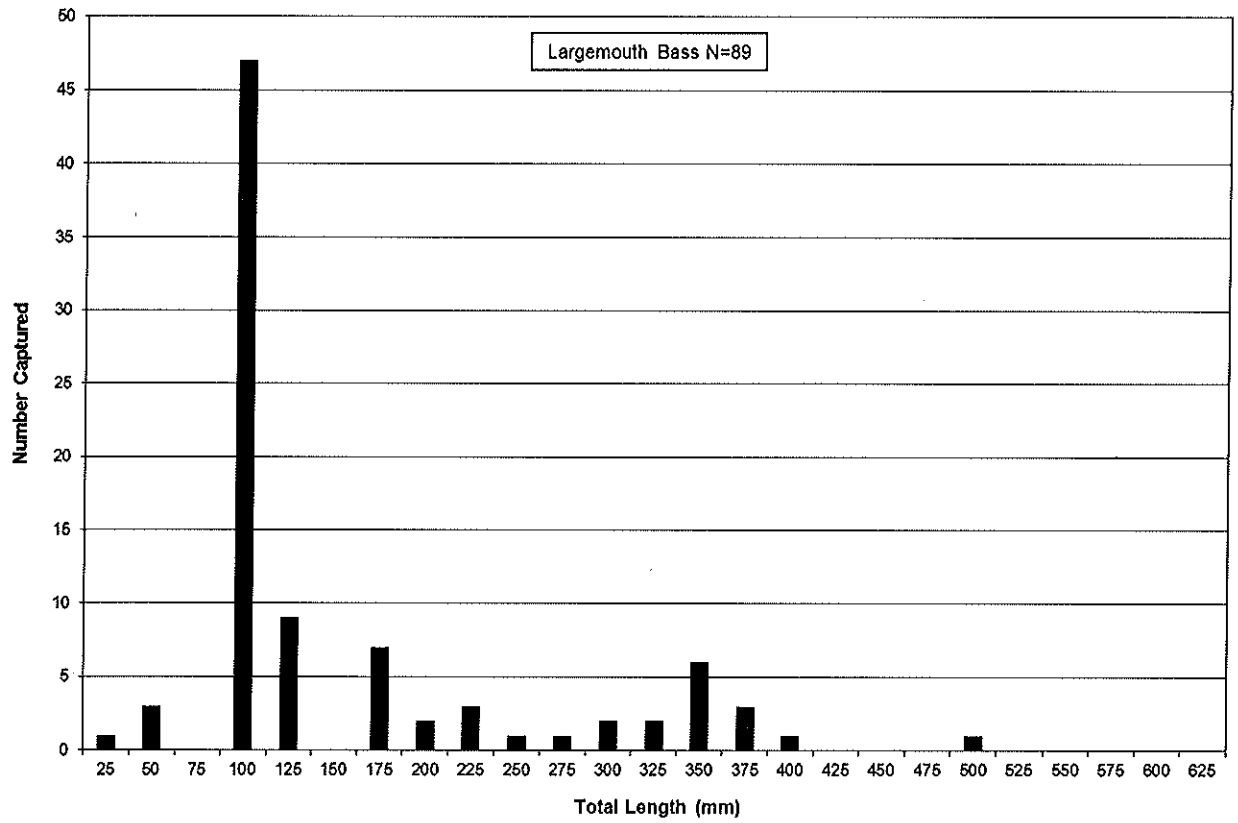
Figure 2. Largemouth and Smallmouth Bass length-frequency distributions,
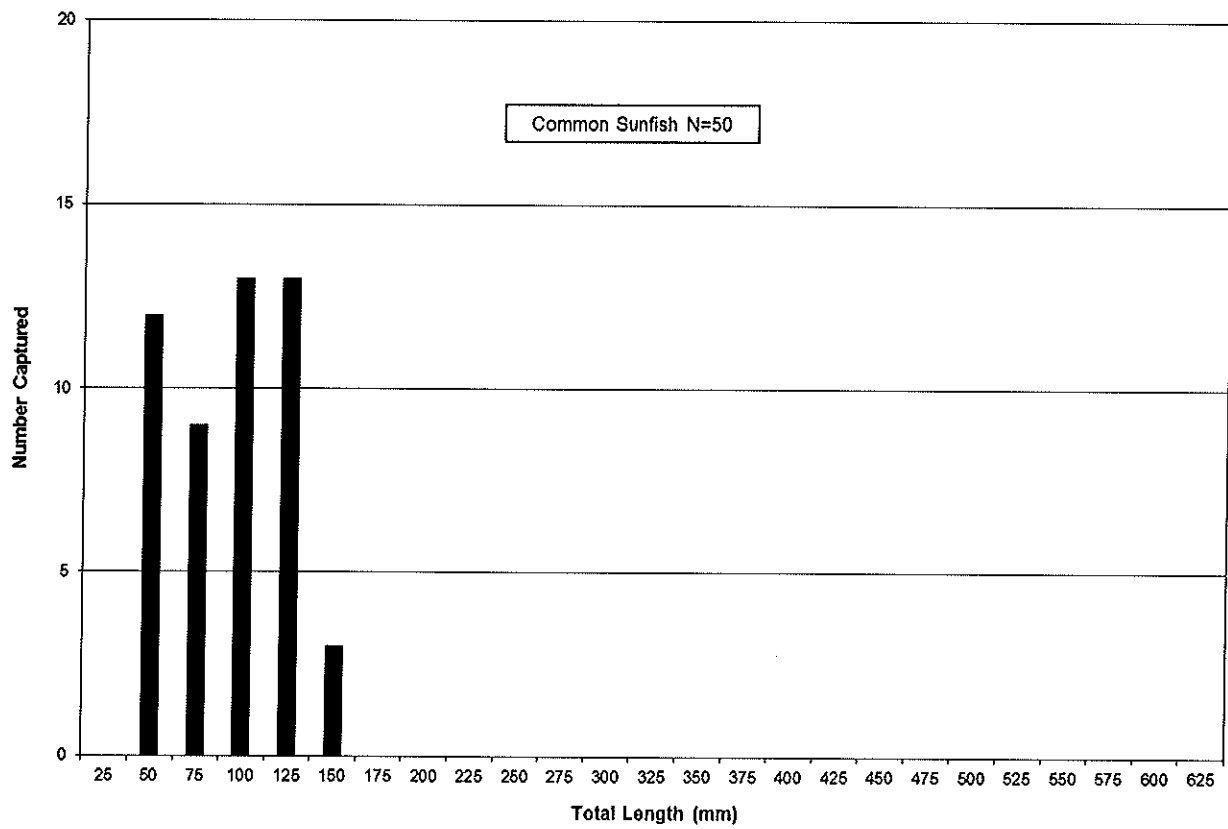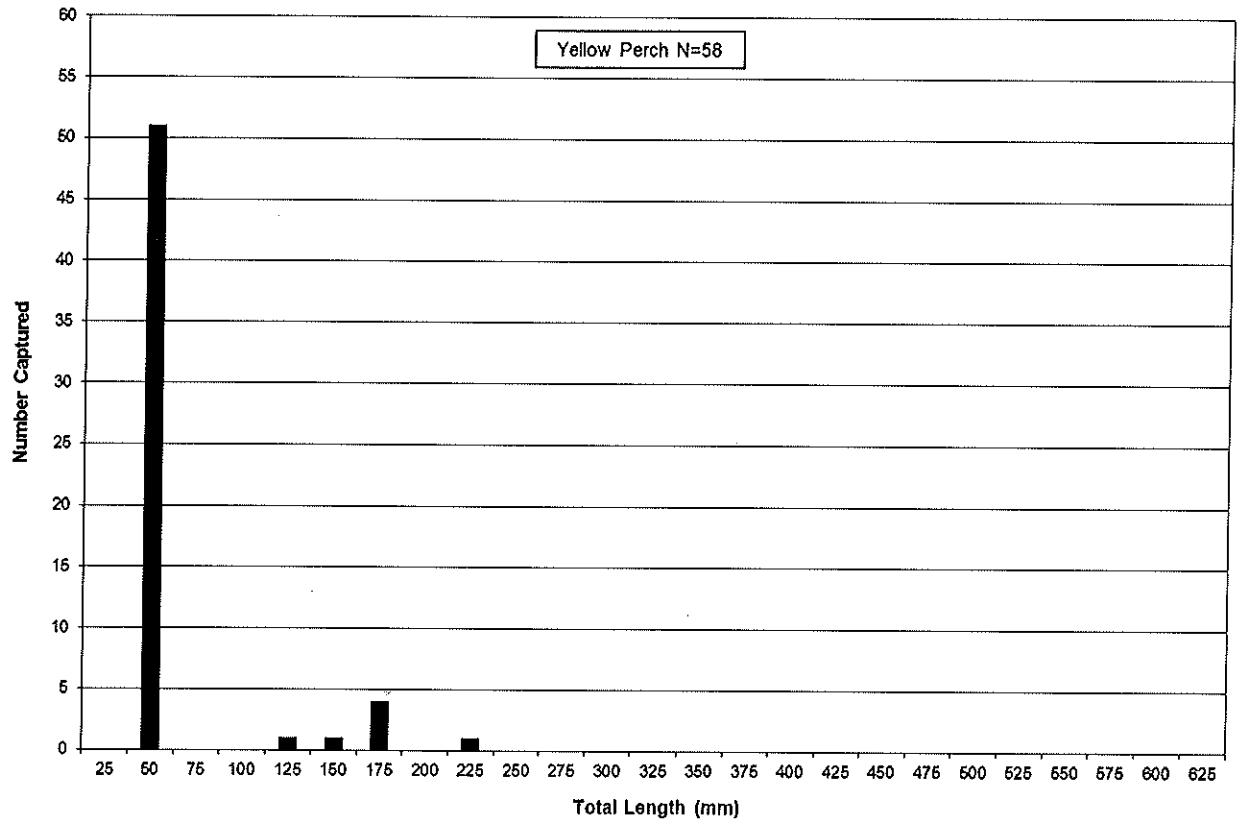Lower Beech Pond, June 30, 2016.

Figure 3. Yellow Perch and Common Sunfish length-frequency distributions,
Lower Beech Pond, June 30, 2016.