

MONTANA FISH AND GAME DEPARTMENT
FISHERIES DIVISION
HELENA, MONTANA

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. F-23-R-5

Name Fishery Investigation Laboratory

Job No. I & II

Title Age and Growth Studies and Analysis of

Bottom Samples in Connection with Pollution

Studies

Period Covered: May 1, 1961 to June 30, 1962

Abstract:

Over 7,000 scale samples were processed in the laboratory during 1961-62. A summary of average growth rates is presented for the larger collections aged in the laboratory. No benthos analysis work was done during the year.

Objectives:

In formulating a sound fisheries management program it is necessary to know the growth rates and age composition of the fish populations. This laboratory provides facilities for processing scale samples, determining age and growth and maintaining files of age and growth data. The laboratory is located at Montana State College and this allows for the utilization of well-trained student laboratory assistants in both scale work and in the tedious analysis of bottom samples.

Techniques and Findings:

During 1961-62, over 7,000 scale samples were received and mounted in the laboratory. These included two large collections, from Flathead Lake and Dailey Lake, which were mounted for analysis as a part of special graduate research projects. One collection of kokanee otoliths from Flathead Lake were aged. Data from the collections aged were returned to the biologists throughout the State.

A summary of the significant scale samples aged in the laboratory during 1961-62 are shown on Table I.

Age and growth data in the laboratory files were summarized and placed on file cards. A complete list of age and growth data is now in preparation.

No benthos analysis work was done during the year.

Table I - Summary of Age and Growth Studies for 1961-62

SALMONIDAE						
	I	II	III	IV	V	VI
<u>Lake Whitefish - <i>Coregonus clupeaformis</i></u>						
Noxon Rapids Reservoir	7.0(54)	10.9(53)	14.0(53)			
<u>Mountain Whitefish - <i>Prosopium williamson</i></u>						
Beaverhead River	4.8(14)	9.5(14)	11.4(10)	12.6(6)	13.9(2)	
Doctor Lake	1.8(7)	3.3(7)	4.7(7)	6.2(7)	7.6(6)	8.9(5)
		<u>VII</u> 10.0(4)	<u>VIII</u> 11.1(3)	<u>IX</u> 12.7(2)	<u>X</u> 13.5(2)	<u>XI</u> 13.6(1)
Hungry Horse Res.(1961)	3.4(119)	7.4(114)	10.0(94)	11.1(61)	12.7(27)	13.7(5)
Hungry Horse Res.(1958)	3.3(103)	7.0(99)	9.3(77)	10.8(48)	11.3(14)	12.5(3)
		<u>VII</u> 13.8(2)	<u>VIII</u> 14.6(2)			
Inez Lake	3.5(25)	6.6(25)	8.7(23)	10.0(18)	10.9(7)	11.1(1)
Marias River	4.2(14)	6.3(7)	11.0(1)	12.1(1)	14.4(1)	
Salmon Lake	3.2(33)	6.6(32)	9.4(29)	10.5(15)	11.7(7)	13.0(3)
<u>Kokanee - <i>Onchorhynchus nerka</i></u>						
Georgetown Lake	4.0(8)	9.0(8)	10.7(5)			
Salmon Lake	4.1(16)	8.8(6)				
<u>Cutthroat Trout - <i>Salmo clarki</i></u>						
Boulder Creek	3.5(35)	6.3(12)	9.9(1)			
Bowman Lake	2.8(24)	6.1(26)	8.9(25)			
Cabin Lake	2.3(17)	7.1(17)	10.0(17)			
Doctor Lake	2.1(21)	4.9(21)	6.9(21)	8.9(19)	10.3(13)	11.3(3)
Finley Creek	1.9(10)	4.6(9)	7.0(2)			
Fish Lake No. 1	3.1(20)	5.5(17)	7.5(17)	9.1(8)		
Fish Lake No. II	2.8(6)	6.0(6)	9.4(5)	11.0(1)		
Georgetown Lake	2.7(8)	7.0(8)	10.6(3)	12.6(1)		
Holiday Lake	3.9(14)	9.9(14)	16.0(3)	12.5(1)		

	I	II	III	IV	V	VI
Hungry Horse Res.(1961)	2.4(51)	4.6(51)	8.0(43)	12.3(37)	14.5(29)	15.2(7)
Hungry Horse Res.(1958)	2.8(70)	5.8(66)	9.5(45)	12.2(23)	13.7(6)	
Koessler Lake	2.4(13)	5.6(15)	9.1(15)	11.5(12)		
Lick Lake	3.0(8)	6.2(8)	9.3(5)	12.0(2)		
Lost Horse Creek	2.6(11)	4.4(9)	6.3(4)	6.3(1)		
Lower Twin Lakes	2.9(7)	6.4(7)	9.8(6)	12.4(2)		
Miller Creek	3.0(19)	5.1(4)	7.4(3)			
Running Wolf Creek	3.0(5)	5.0(2)				
Stoney Lake	3.6(30)	6.7(35)	9.3(25)	11.4(14)	14.0(3)	
Twelve Mile Creek	2.4(46)	4.6(15)	6.2(1)			
Upper Twin Lake	3.4(16)	6.6(12)	10.8(11)	15.0(11)	18.0(5)	
Van Lake	3.7(12)	8.3(12)	17.3(9)			
Wolf Creek	3.8(6)	9.7(2)				
<u>Rainbow Trout - <i>Salmo gairdneri</i></u>						
Bashum Lake	2.7(8)	5.4(8)	7.9(8)	11.9(2)		
Beaverhead River	2.7(11)	8.9(9)	13.2(9)	14.9(3)		
Bowman Lake	3.2(11)	6.4(11)	9.0(9)	12.1(2)		
Browns Lake	4.1(30)	7.2(30)	10.9(2)			
Dead Man's Basin	3.3(18)	1.0(18)	1.0(4)	1.0(1)		
Dry Fork Marias River	2.2(11)	8.8(11)	12.0(8)			
Duck Lake	11.3(1)					
Echo Lake	3.0(12)	7.0(12)	1.0(7)			
East Fork Reservoir	3.0(29)	9.0(38)	13.5(16)	17.6(4)		
Harrison Lake	2.9(30)	7.3(12)	11.1(9)	12.9(3)	14.9(2)	16.1(2)
Holiday Lake	3.6(53)	7.9(44)	12.4(26)			
Lena Lake	2.5(12)	6.3(12)	9.9(10)	12.3(1)		
McGilvary Lake	2.6(27)	5.8(27)	10.8(27)			

Table I - cont'd

	I	II	III	IV	V	VI
McKafery Lake	3.1(16)	7.3(16)	9.4(10)	11.0(5)		
Marias River	3.4(19)	8.9(7)	12.1(5)	13.3(4)		
Marias River	2.8(25)	6.7(20)	11.4(17)	12.6(13)	14.1(5)	
Marias River	3.3(35)	9.6(32)	12.1(21)	12.2(1)		
Meadow Lake	2.4(17)	5.3(17)	8.3(14)	10.3(7)	12.5(4)	
Moose Lake	2.3(23)	8.4(23)	12.1(20)	14.9(4)		
Noxon Rapids Reservoir	2.6(30)	5.7(30)	9.2(28)	13.5(15)	16.4(8)	22.4(1)
Running Wolf Creek	3.0(23)	5.7(16)	6.0(3)			
Stafford Lake	0.4(9)	1.0(9)	1.1(5)	1.5(1)		
Thompson River	2.5(31)	7.8(1)				
Tiber Reservoir	8.0(44)	11.6(42)	13.1(34)	13.2(1)		
Wolf Creek	2.7(15)					
<u>Brown Trout - <i>Salmo trutta</i></u>						
Bluewater Creek	3.8(101)	6.6(43)	9.7(17)	14.2(4)	15.7(1)	17.3(1)
Clarks Fork River	3.1(18)	6.2(15)	12.9(2)			
Harrison Lake	3.0(45)	7.6(35)	11.0(15)	14.4(5)	17.7(2)	
Noxon Rapids Reservoir	2.7(21)	5.8(21)	10.1(21)	12.8(16)	15.3(2)	
Salmon Lake	2.9(6)	5.4(6)	8.9(6)	11.7(5)	14.1(3)	15.8(2)
<u>Eastern Brook Trout - <i>Salvelinus fontinalis</i></u>						
Culver Pond	3.7(24)	6.6(17)	10.6(5)			
Diamond Lake	2.7(75)	5.8(75)	7.5(11)			
Echo Lake	3.0(13)	5.9(13)	8.4(3)	11.9(1)	14.5(1)	16.0(1)
						<u>VII</u>
						17.4(1)
East Fork Reservoir	3.0(8)	6.1(8)	8.8(5)			
Finley Creek	3.3(10)	4.4(1)				

Table I - cont'd

	I	II	III	IV	V	VI
Georgetown Lake	3.1(9)	5.1(9)	10.0(7)			
Holiday Lake	4.1(58)	8.4(57)	11.0(37)			
Lake of the Woods	2.4(7)	5.1(7)	7.2(3)			
Miller Creek	3.1(15)	6.3(5)				
Running Wolf Creek	2.9(25)	5.5(11)				
Silver Lake	2.9(29)	5.9(28)	7.2(5)	8.5(1)		
Twelve Mile Creek	2.9(11)	5.0(5)	7.4(2)			
Wolf Creek	3.8(6)	9.7(2)				
Wolf Creek	3.0(32)	5.8(18)	8.6(3)			
Dolly Varden - <u>Salvelinus melma</u>						
Boulder Creek	2.8(34)	5.6(17)				
Doctor Lake	3.0(6)	5.4(6)	10.0(6)	13.3(6)	18.0(2)	
East Fork Reservoir	3.1(34)	6.9(34)	10.6(25)	14.7(4)		
Hungry Horse Res.(1958)	2.6(152)	5.4(152)	8.7(138)	12.7(98)	17.1(40)	20.6(19)
Hungry Horse Res.(1961)	2.8(214)	5.5(214)	8.7(194)	13.0(133)	17.5(91)	23.3(31)
						<u>VII</u> 27.6(5)
Salmon Lake	3.0(15)	5.9(15)	9.2(14)	12.5(10)	17.3(1)	
Twelve Mile Creek	2.3(6)	4.2(3)	6.4(2)			
Lake Trout - <u>Salvelinus namaycush</u>						
Whitefish Lake	3.0(17)	5.8(17)	9.4(17)	14.3(17)	20.0(17)	25.0(17)
				<u>VII</u> 29.3(17)	<u>VIII</u> 31.5(15)	<u>IX</u> 3.1(4)
Hiodontidae						
Goldeye - <u>Hiodon alosodes</u>						
Marias River	3.3(17)	6.9(17)	9.7(17)	10.9(16)	11.5(12)	12.2(1)
Catostomidae						
Longnose Sucker - <u>Catostomus catostomus</u>						
Bluewater Creek	1.7(107)	4.1(65)	7.3(46)	10.6(29)	12.6(12)	

Table I - cont'd

	I	II	III	IV	V	VI
Marias River	1.4(45)	3.7(42)	6.7(38)	9.2(30)	11.4(15)	13.4(11)
					<u>VII</u> 13.8(4)	<u>VIII</u> 14.6(1)
Tiber Reservoir	1.2(6)	2.7(6)	6.9(6)	10.0(6)	11.8(5)	12.8(2)
White Sucker - <u>Catostomus commersoni</u>						
Bluewater Creek	1.8(56)	4.6(17)	6.5(8)	8.8(6)	9.9(3)	11.6(1)
Culver Pond	1.5(23)	5.0(23)	9.0(15)			
Marias River	2.6(32)	6.9(32)	9.6(23)	11.6(11)	13.4(2)	
Poplar Creek	1.6(18)	3.1(14)	4.7(11)	7.0(3)	8.6(3)	10.7(2)
						<u>VII</u> 10.5(1)
Tiber Reservoir	1.1(92)	3.0(91)	5.8(85)	8.2(69)	10.2(8)	
N. Redhorse Sucker - <u>Moxostoma macrolepidotum</u>						
Marias River	1.4(15)	3.7(15)	6.1(10)	9.1(5)	11.0(2)	13.1(1)
						<u>VII</u> 14.5(1)

CENTRARCHIDAE

Pumpkinseed - Lepomis gibbosus

Blanchard Lake	0.8(6)	1.6(6)	2.5(6)	4.3(3)	6.0(2)	5.8(1)
				<u>VII</u> 6.4(1)	<u>VIII</u> 7.3(1)	<u>IX</u> 7.7(1)

Bluegill - Lepomis macrochirus

Engdahl Reservoir	0.9(4)	3.6(4)	5.8(4)	7.0(4)	7.2(1)	
Jacobson Reservoir	1.0(10)	2.8(10)	4.0(10)	5.4(10)	6.0(10)	6.6(10)
Stafford Lake	0.4(9)	1.0(9)	1.1(5)	1.5(11)		

Largemouth Bass - Micropterus salmoides

Engdahl Reservoir	2.7(4)	7.9(4)	10.4(4)			
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Table I - cont'd

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	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>V</u>	<u>VI</u>
Tolksdorf Reservoir	1.8(17)	4.8(17)				
Latka Reservoir	1.8(42)	4.8(42)				

PERCIDAE

Yellow Perch - Perca flavescens

Blanchard Lake	1.5(51)	3.0(51)	4.7(51)	6.6(44)	8.2(38)	9.1(16)
				<u>VII</u>	<u>VIII</u>	<u>IX</u>
				10.4(5)	11.9(3)	12.7(2)

Sauger - Stizostedion canadense

Marias River	4.4(16)	8.0(16)	11.1(14)	13.2(9)	15.1(2)	18.3(1)
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Walleye - Stizostedion vitreum

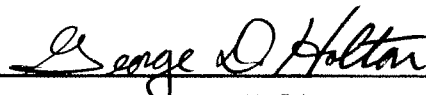
Hauser Lake	6.6(9)	12.8(9)	16.9(4)	20.7(1)		
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Recommendations:

Collection and analysis of fish scales for age and growth should continue with attention devoted to collecting adequate samples from the important waters. Work on assembling age and growth data has progressed to where we will be able to determine weak areas in the collections.

Prepared by John R. Heaton

Approved by


 George D. Holton
Date July 5, 1962