

MONTANA DEPARTMENT OF FISH AND GAME
FEDERAL AID IN FISH RESTORATION SECTION
HELENA, MONTANA

JOB COMPLETION REPORT
INVESTIGATIONS PROJECTS

State of Montana

Project No. F-23-R-2

Name Fisheries Investigations Lab-
oratory

Job No. I, II, & III

Title Age and Growth, Bottom Sample
and Miscellaneous Studies

Period Covered May 1, 1958 to April 30, 1959

Abstract:

Age-growth studies were made on about 2,600 specimens. Bottom samples analyzed were 85 sq. ft. samples and 16 sq. yard samples. Files on past age-growth data were reorganized and progress was made on summarization of past age-growth studies.

Objectives:

Age-growth data are used extensively by field biologists in managing the various waters. Bottom samples provide additional biological data to fish managers when problems arise in polluted or potentially polluted waters. These time consuming jobs are preformed at the laboratory using standard procedures to facilitate comparisons. Past age-growth data would be reviewed and compiled in tabular form.

Techniques and Findings:

Age and growth determinations were made on approximately 2,600 specimens. A summary of part of these is presented in Table I. In addition to these, growth studies were made on small collections from mountain lakes.

The files on past age-growth studies were reorganized and exact locations to collections established. Some progress was made in summarization of data by species. The approximate number of specimens and collections (at least 10 fish per collection) for some of the major samples available for comparison are presented in Table II. In addition to these, age-growth data are available for at least 16 other species of fish.

Table I - Summary of some age-growth determination made during 1959.

Location	Sp.	Mean calculated total length (inches) at each annulus							
		I	II	III	IV	V	VI	VII	VIII
Wolf Creek	Eb	3.0(32)	5.8(18)	8.6(3)	8.5(1)				
Big Sandy Creek	Eb	2.7(9)	4.9(7)	7.1(2)	11.0(1)				
Eagle Creek	Eb	3.5(22)	6.2(8)	9.2(1)					
Silver Lake	Eb	2.4(55)	5.5(55)	7.8(24)					
Georgetown Lake	Eb	4.0(12)	9.9(12)	14.6(3)					
Moore Lake	Eb	3.7(46)	7.3(27)	9.8(4)					
Big Sandy Creek	Rb	2.7(47)	5.1(26)	7.1(16)					
Eagle Creek	Rb	3.1(41)	6.5(27)	7.6(27)					
Duck Lake	Rb	5.3(26)	16.8(26)	22.0(26)	25.5(1)				
Tiber Res.	Rb	8.7(50)	11.5(23)						
Canyon Ferry	Rb	3.4(13)	7.2(12)	13.8(10)	17.1(1)	19.0(1)			
East Boulder R.	Rb	2.3(22)	4.8(18)	7.0(14)	9.7(3)				
Georgetown Lake	Rb	6.1(24)	13.5(23)	15.9(1)					
Storm Lake	Rb	4.4(15)	7.4(9)	11.8(9)	15.1(5)				
Rock Cr. (Sec.1)	Rb	2.8(147)	6.9(140)	11.0(78)	13.7(36)	16.1(6)	17.0(2)		
Rock Cr. (Sec.2)	Rb	2.7(118)	6.5(113)	10.1(66)	12.6(19)	15.6(3)			
Mystic Lake	Rb	2.5(20)	6.0(20)	9.4(13)	11.2(9)	11.7(1)			
Crystal Lake	Rb	2.9(10)	6.1(7)	8.6(3)	11.0(3)	12.8(1)			
Lyon Lake	Rb	2.9(11)	7.3(8)	10.7(1)					
Racetrack Lake	Rb	2.7(20)	6.6(19)	10.2(5)	12.7(3)	14.1(1)			
Canyon Ferry Res.	LL	4.2(67)	10.4(67)	14.3(35)	17.2(34)	20.7(9)	23.6(3)		
East Boulder R.	LL	3.3(56)	6.7(27)	9.5(11)	13.2(4)	17.2(1)	19.2(1)	20.7(1)	
West Boulder R.	LL	2.6(65)	5.7(28)	8.9(12)	12.6(3)	16.1(2)			
Rock Creek(Sec.1)	LL	3.5(31)	8.5(21)	12.9(9)					
Georgetown Lake	Ct.	3.9(124)	9.4(119)	13.6(47)	16.7(15)	21.3(1)			
Rock Creek(Sec.1)	Ct.	2.7(78)	6.3(72)	9.7(23)	12.4(4)	15.4(2)			
Rock Creek(Sec.2)	Ct.	2.7(60)	6.5(58)	10.2(14)	14.1(1)				
Lower Twin Lake	Ct.	2.4(32)	4.8(32)	7.0(32)	11.3(3)	14.4(1)			
Fisher Lake	Ct.	3.1(13)	6.4(13)	9.3(8)	11.0(4)				

* The number of specimens averaged is in parenthesis.

Table I cont. - Summary of some age-growth determination made during 1959.

Location	Sp.	Mean calculated total length (inches) at each annulus							
		I	II	III	IV	V	VI	VII	VIII
Clarks Fork River	Wf	4.4(54)	8.3(26)	10.9(18)	12.3(12)				
Canyon Ferry	Wf	5.2(10)	8.2(6)	9.9(4)	11.8(3)	13.5(3)			
Como Lake	Wf	3.7(21)	7.9(21)	10.2(10)	11.9(4)	13.6(1)			
Chancey Flynn Res.	NP	9.8(23)	15.3(23)	18.2(19)					
Frenchman Res.	WE	7.3(34)	13.3(28)	15.8(9)	18.1(4)	17.7(1)			
Fort Peck Res.	Saug.	5.1(22)	8.5(22)	11.8(21)	12.9(6)	14.7(4)	17.9(1)		
Georgetown Lake	Gr	3.4(32)	9.4(27)	13.0(16)					
Georgetown Lake	SS	3.6(8)	8.7(8)	13.3(3)	17.5(2)				
Rock Creek (Sec. 1)	Dv	3.4(35)	6.7(35)	9.6(32)	12.9(5)				
Upper Whitefish L.	Dv	2.9(17)	5.8(17)	8.5(17)	10.7(11)	14.3(2)	16.3(1)		
Mid Thompson Lake	KOK	4.2(37)	8.4(17)	10.6(11)					
Tiber Res.	C Su	3.0(67)	9.7(32)						
Canyon Ferry Res.	C Su	1.9(112)	5.2(108)	8.5(100)	10.8(81)	12.9(42)	14.3(6)	14.9(5)	16.4(3)
Canyon Ferry Res.	F Su	2.3(46)	5.7(42)	8.9(33)	10.4(19)	10.7(2)			
Canyon Ferry Res.	YP	2.5(88)	5.2(88)	7.1(67)	8.7(39)	10.8(7)	12.4(3)		
Dailey Lake	YP	2.1(65)	4.7(58)	7.1(30)	8.8(28)	10.1(1)			
East Boulder River	Rbx Ct	2.3(15)	4.5(14)	6.5(10)	8.5(5)	10.9(1)			
Clarks Fork River	C Su	1.8(123)	3.3(82)	5.6(54)	7.4(43)	10.4(39)	12.7(26)	15.5(21)	16.8(9)
Thompson Falls Res.	C Su	1.7(82)	3.3(63)	5.1(39)	7.3(30)	10.1(29)	13.3(18)	15.9(16)	17.0(3)
Clarks Fork River	C Su	2.4(36)	4.6(22)	6.1(6)	8.4(3)				
Clarks Fork River	SQ	1.8(78)	3.4(58)	5.0(38)	6.7(19)	8.4(14)	9.9(11)	11.5(8)	12.8(4)
Thompson Falls Res.	SQ	1.6(28)	3.2(22)	4.6(15)	6.5(3)	8.3(2)	9.9(2)	11.8(1)	13.0(1)

Table II - The major collections and number of specimens on which age-growth determinations have been made.

Species	Number of Collections	Number of Specimens
Rainbow trout	108	6,600
Cutthroat trout	78	3,000
Brook trout	50	3,200
Brown trout	52	3,600
Whitefish	41	2,000
Yellow perch	32	1,900

The work completed on bottom samples was as follows:

- A. Sheep Creek - 25 sq. ft. samples.
- B. Deep Creek - 16 sq. yard samples.
- C. Boulder River - 60 sq. ft. samples

Samples A and B are included in the completion report for the DDT study (F-21-R). The samples for the Boulder River were collected in anticipation of a Forest spray program in this area for 1959 and are reported in Project F-9-R-7.

Miscellaneous work completed or in progress includes the following:

1. Analysis of 375 trout stomach samples from Flint Creek (in progress).
2. Stomach samples analyzed from the Clarks Fork Columbia River were 25 whitefish, 20 Columbia River chubs, 21 squawfish and 26 coarse-scale suckers.
3. Supplying chemicals, preservatives and supplies and liaison with the various departments of the college for field personnel.

Recommendations:

Laboratory work on age-growth and bottom sample analysis should be limited to specific and justifiable management needs of field biologists. The summary and tabulation of past age-growth data should continue to facilitate comparison of information.

Data and Reports:

The original data are with the project leader at Montana State College, Bozeman.

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Date May 13, 1959