

ELECTRO-FISHING SURVEYS - NORTHEAST IOWA
TROUT STREAMS, 1953 and 1954by
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Preparatory to changing Iowa's trout fishing to a continuous open-season basis, surveys concerned with post-season populations and the winter carry-over of these populations were instigated. In March of 1953, four of Iowa's 44 trout streams were spot-checked with a 120-volt D. C. shocker in an effort to gain information on their winter carry-over of trout. These initial surveys were more or less experimental in nature. In addition to actual data on residual populations (Table 1), observations as to mechanical improvements on the fishing gear and shocker as well as its limitations in various stream habitats were made.

Table 1 - Number of Trout taken during winter carry-over surveys, March 1953

<u>Stream</u>	<u>Area Shocked</u>	<u>No. Fish</u>
Mink Creek	1.50 miles	16
Elk Creek	.25 "	82
Trout River	2.00 "	14
South Bear	1.50 "	133

It is unfortunate that an exact record of the species composition was not kept for each stream during the 1953 spring surveys. However, in the future this species delineation will be made since it is believed that the residual number of brown or rainbow trout may be indicative of stream conditions.

In order to supplement these data with a pre-winter index which, in effect, would give us some idea as to the number of trout present in certain reaches of these streams prior to natural winter and spring losses, it was decided to re-work these streams in the fall and to increase the coverage to 13 streams. The surveys were begun in early November, 1953, since it was assumed that angling and the subsequent angling loss of trout in these streams would be minimal at this time of year. Either of two considerations were met in the choice of streams to be surveyed: 1) that the stream be a "problem" stream; or 2) that it be one of the heavily utilized streams of the area.

Table 2 lists the streams, the areas covered, and the number of trout taken at each station during the 1953 fall

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surveys. The "shocking" stations, varying in length according to accessibility, are arranged with the upstream stations listed first.

Table 2 - Geographical Location, Length of Area Covered, and Trout Taken During the Post-season Electro-fishing in Northeast Iowa Trout Streams, November 1953.

Stream	Township	Section	Estimated Coverage in Miles	Trout	
				R.B.	Brown
Big Mill ²	Bellevue	7	1.20	16	24
Big Mill	Bellevue	10	.25	0	0
Swiss Valley ^{1,2}	Table Mound	20	.33	0	0
Swiss Valley	Table Mound	16	.25	75	6
Buck Creek ¹	Garnavillo	16	.50	0	1
Buck Creek	Garnavillo	9	.25	9	20
Elk Creek ²	Elk	15	.25	46	40
Bloody Run ²	Giard	9	.50	19	39
Bloody Run	Mendon	19	.50	10	16
Bloody Run	Mendon	16	.50	2	12
Livinggood Spr. ¹	Post	3	.25	4	6
Village Creek ²	Center	19	.50	4	12
Village Creek	Center	21	.50	1	1
French Creek ²	French Creek	14	.25	0	79
French Creek	French Creek	11	.50	9	66
Mink Creek ¹	Illyria	14	1.00	1	9
Waterloo Cr. ²	Waterloo	9	.25	1	3
Waterloo Cr.	Waterloo	16	.75	3	9
Waterloo Cr.	Waterloo	24	.25	22	24
Trout River ²	Glenwood	21	1.75	4	2
South Bear Cr. ²	Highland	28&33	1.50	13	30
Bohemian Cr. ¹	Sumner	17	.50	1	23
Totals			12.53	240	422

1 - "Problem" stream

2 - Heavily utilized stream

Using the "Totals" from Table 2 as a sample estimate of the residual trout population in 146.1 miles of designated "Trout Water" in the State of Iowa (calculated at 52/miles of stream), indications are that 95.7 per cent of the trout stocked annually are either creeled or otherwise "lost" through natural causes such as disease, "wash-out", or similar calamities. This statistic is based only on the number of trout stocked in 1953 and does not take into account the the residual trout from previous years' stocking. The product is also based on the premise that the "shocker is 100

per cent effective, which it is not. However, in previous tests as to its effectiveness, the machine ranged from 50 to 100 per cent effective on the recovery of known numbers of marked fish. Assuming that the 1953 calculated trout per mile of stream constitutes an average residual population and that the "shocker" is only 50 per cent effective, 91.8 per cent of the total trout population, residual and stocked, was either creeled or "lost" naturally during 1953.

Table 3 lists the spring and fall comparable data as to number of trout taken in the same reach of stream, the data indicate some constancy of a standing crop in the first two streams, but do not hold up in the latter two streams. The discrepancy in the assumed standing crop of Trout River and South Bear may well have been caused by extremely heavy flooding on these streams during July, 1953. Elk Creek and Mink Creek were not subjected to these same heavy floods.

Table 3 - Number of Trout taken at identical stations in March and November 1953 on certain streams in northeast Iowa.

<u>Stream</u>	<u>Length of Section</u>	<u>Total Number of Trout</u>	
		<u>March</u>	<u>November</u>
Elk Creek	.25 miles	82	86
Mink Creek	1.5 mi. & 1.0 mi.*	16	10
Trout River	2.0	14	6
South Bear	1.5	133	43

* Only 1 mile of 1.5 miles covered in the spring of 1953 was covered in the fall of 1953.

Table 4 shows the ratio in which rainbow were stocked to browns and also the recovery ratio of the same two species. The latter figure is based on actual recovery with the shocker, while the former covers the year's stocking ratio over the entire stream. Using the recovery ratio as an index to both ecological and/or angling survival, the results seemingly indicate a highly disproportionate ratio on four of the five so-called "problem streams": Swiss Valley, Mink, Livinggood Spring, and Bohemian Creek.

Assuming that brown trout are more difficult for the average angler to creel and are better able to withstand the rigors of adverse physical conditions such as floods and limited cover, the remaining streams covered during the survey are not too badly out of line with the expected survival ratio.

The average stocking ratio for all streams covered was 1.4 rainbow trout to 1.0 brown trout. The post season recovery ratio was 1.0 rainbow to 2.2 browns, which when projected gives a utilization and/or loss ratio of 3.1 rainbows to one brown.

Table 4 - Comparison of 1953 Stocking Ratio and Survival Ratio of Rainbow and Brown Trout on Certain Streams in Northeast Iowa.

<u>Stream</u>	<u>Stocking Ratio Rainbow/Brown</u>	<u>Recovery Ratio Rainbow/Brown</u>
Big Mill	5/3	2/3
Swiss Valley	6/5	11/1
Buck Creek	3/1	1/2
Elk Creek	2/3	11/10
Bloody Run	10/9	1/3
Livinggood Spring	3/1	2/3
Village Creek	1/1	2/5
French Creek	1/1	1/16
Mink Creek	2/1	1/9
Waterloo Creek	9/4	2/3
Trout River	7/6	2/1
South Bear	3/2	2/5
Bohemian Creek	1/2	1/23

Previous commitments and adverse weather allowed for only 5 of the 12 "test streams" to be resurveyed with the shocker in March of 1954. In two of these streams, Big Mill and Elk Creek, road work with its accompanying stream straightening and habitat spoiling, greatly reduced the natural cover and in doing so likely reduced the residual population of trout. Mink Creek still was 25 to 30 per cent ice-covered, and coverage was reduced by that percentage.

Table 5 lists the findings of the spring survey. All of these streams had received token "stockings" and had been open to fishing for over two weeks prior to the survey.

It is of interest to note that the winter carry-over of both brown and rainbow trout are practically the same. Therefore it would seem that the resistance to natural calamities is quite similar in the two species. The disproportionate post-season recovery ratio could then be the result of the difference in angling susceptibility with the rainbow trout being more susceptible to angling than the brown.

With the exception of an occasional large specimen, pools over 3 feet depth and 50 feet by 20 feet in length and width, were mostly barren of trout. Observations indicate that over 95 per cent of the trout taken were found in shallow, rocky waters, good bank and marsh cover, or in small, deep pools with either or both aforementioned features. Admittedly, the shocker functions best in shallow waters, but despite its limitations, the relative efficiency

Table 5 - Winter Carry - over Surveys on Certain Northeast Iowa Trout Streams, March 1954

Stream	Per cent of Fall Pop. Present in "Shocked" Area ¹	%Marked Rainbows Retaken	%Marked Browns Retaken	% of All Marked Trout Retaken
Big Mill	82.5	50.0	12.5	25.0
Buck Creek	183.0	11.1	40.0	31.0
Elk Creek	49.0	32.0	18.0	28.0
Swiss Valley	53.0	10.7	16.8	11.1
Mink Creek	10.0	00.0	11.0	10.0
Totals		21.8	21.5	21.7

¹ All species combined, both marked and unmarked fish.

Was the same in both habitats except in pools too deep to wade. Visual indications on reactions to fish taken and those seen but not taken, point out the fact that water should be below 50 degrees F for the efficient operation of the present sized shocker.