Wisconsin Department of Natural Resources
Division of Fish, Game and Enforcement
Bureau of Fish Management
Madison, Wisconsin

Management Report No. 16

EVALUATION OF THE EFFECTS OF THE HABITAT MANAGEMENT PROGRAM AND THE WATERSHED PLANNING PROGRAM ON THE BROWN TROUT FISHERY IN BOHEMIAN VALLEY CREEK, LA CROSSE COUNTY

By

Ludwig Frankenberger*

and

Ronald Fassbender

November 29, 1967

*Presently with the Michigan Department of Conservation, Crystal Falls, Michigan

EVALUATION OF THE EFFECTS OF THE HABITAT MANAGEMENT PROGRAM AND THE WATERSHED PLANNING PROGRAM ON THE BROWN TROUT FISHERY IN BOHEMIAN VALLEY CREEK, LA CROSSE COUNTY

By

Ludwig Frankenberger and Ronald Fassbender
West Central Area

INTRODUCTION

In June of 1954, portions of Bohemian Valley Creek were sampled with electrofishing gear for the purpose of gathering data prior to the activation of a project aimed at improving the stream habitat for trout. In 1955, a habitat management program was initiated on one portion of the stream. Since 1958, Bohemian Valley Creek has been under intensive study to determine the effects of stream improvement practices on the brown trout fishery. Previously, a report was published on the first phase of the project (Frankenberger, 1960).

The 1960 report suggested that stream improvement alone did little to increase the brown trout fishery in Bohemian Valley Creek. It was suspected that severe flooding prevented the trout population from reaching a high level of production. In late 1959, three flood control structures were constructed above the experimental trout management area. These structures, funded by the P.L. 566 program*, provided an opportunity to evaluate the effects of a flood control program on the trout population. The trout study was continued with the objective of determining whether or not clear trends toward increased population levels would become apparent as a result of these flood control measures.

DESCRIPTION OF AREA

Bohemian Valley Creek, a branch of Coon Creek, is located in the coulee region of southeastern La Crosse County (Fig. 1). The watershed lies in a region of the unglaciated or driftless area characterized by narrow valleys and steep, narrow ridges. The valley floors and gentle slopes are primarily used for agricultural practices, as are the ridge tops, while the steep slopes are forested.

Prior to the construction of three P.L. 566 flood control structures in 1959, Bohemian Valley Creek was subject to severe periodic flash floods. These flash floods caused drastic seasonal changes in the ecology of the stream. From 1959-1964 and from 1966-1967, no major flooding occurred. In January 1965, unseasonably warm weather caused a thaw and heavy runoff which resulted in a severe flash flood. Extremely heavy runoff caused a second flash flood in April of that year.

*Public Law (P.L.) 566, also known as The Watershed Protection and Flood Prevention Act, is a federal act designed to help various local, state, and federal organizations plan effective watershed management programs. Flood control and sound soil conservation practices are an integral part of these watershed management programs.

Before initiation of the habitat management program, the stream consisted of a few pools separated by long, wide riffles. Instream cover was quite scarce. Aquatic vegetation was also scarce except where spring feeders entered the stream. Trout habitat was further limited by high summer water temperatures and the absence of shade-producing undercut banks. Bohemian Valley Creek was considered marginal trout water prior to 1955.

When the habitat management program was started in 1955, a 3.4 mile portion of Bohemian Valley Creek was set aside as a study area. The upper limit of the study area is a large spring known as Korn Springs. County Trunk Highway "H" bridge is the lower limit. The stream above and below the study area does not support a significant trout population.

The study area was divided into two sections, the improved area and an unimproved control area.

Section A (Fig. 2) was the control area. This 0.75 mile portion of the stream had an average width of 20 feet and an average depth of 8 inches. More than 50 percent of the section consisted of pools varying in depth from 6 inches to 3 feet. Some holes up to 6 feet deep are present. Sand, silt, and limestone rubble were the predominant bottom types. Aquatic vegetation was scarce. One spring entered the stream at the head of this section. In June 1964, Section A had a velocity of 0.49 feet per second and a metered flow of 5.7 cubic feet per second. From 1955 to 1964, Section A was kept in its original state. In 1964, the banks were stabilized and instream channeling devices similar to those present in Section B were installed.

Section B (Fig. 2), the area originally developed, is 2.6 miles long. It has an average width of 9 feet and an average depth of 7 inches. The primary bottom types are sand, silt, gravel and limestone rubble. Over 50 percent of Section B consists of pools greater than 3 feet deep. Nine springs enter the stream in this section, as does Fish Back Creek, a small tributary to Bohemian Valley Creek. The metered flow of Section B was 4.6 cubic feet per second and the velocity was 0.61 feet per second in June 1964.

By 1958, habitat development was completed on Section B. This consisted of stream fencing, bank stabilization, installation of cattle passes, and construction of instream channeling devices. The channeling devices created pools and instream cover while the fencing allowed willows to establish themselves along the stream providing bank cover and shade.

METHODS

All fish sampling was done with standard electrofishing gear. About 0.25 mile of the stream at the head of Section B was sampled with a 110-volt, alternating current, back-pack shocker. The remainder of Section B and all of Section A were sampled with a two-electrode, 230-volt, direct current stream shocker.

Population estimates were made employing the Peterson mark-and-recapture method as described in Lagler (1956). Separate estimates were made for both Sections A and B. Population estimates have been conducted twice each year, spring and fall, since 1958.

All trout stocked since 1958 have been permanently marked by fin clipping. Each year, a different fin was clipped in order to differentiate between year classes of stocked trout and native trout. All trout were stocked after the spring population estimates were completed. A listing of trout stocked since 1955 appears in Table 1.

POPULATION STUDIES

Section A

Prior to the installation of instream channeling devices in 1964, the trout populations were quite low in control Section A (Table 2, Fig. 3). From 1958 to 1964, the population varied from 1 to 30 individuals with a yearly average of about 11 trout. After the habitat improvement devices were constructed, the population rose to a higher level but still did not reach the magnitude of the trout population present in Section B (Table 2). From 1964 through 1967, the population fluctuated between 20 and 116 trout. The average yearly population during this period was about 90 individuals or about 120 trout per mile.

Native trout, those that were naturally produced in the stream, comprised the majority of the trout present in Section A in both the spring and the fall. Most of the fish stocked in this section each spring either die from natural causes or are caught by sport fishermen. Prior to 1964, the number of holdover trout, those hatchery-reared fish stocked in previous years but still present in the stream, averaged about 37 percent of total population each spring and about 47 percent in the fall. After 1964, the holdover trout averaged 17 percent of the total population in the spring and about 12 percent in the fall (Table 3).

Although both the native trout and holdover trout increased in numbers after the construction of habitat improvement devices, it is evident that the native trout received greater benefit from these structures. Native trout establish themselves in the best cover thus forcing the stocked trout to utilize poorer cover areas. This makes the stocked trout more susceptible to anglers, predators, and floods.

Prior to 1964, trout were almost nonexistent in Section A. Suitable habitat was completely lacking. Habitat improvement structures built in 1964 provided undercuts, crevices, and weedy pools suitable as trout habitat. As a result, the trout population immediately increased (Table 4).

In Section A, the trout population has generally increased over the winter. Migration of trout from Section B into Section A accounts for this overwinter increase in total brown trout population. During the winter of 1964-1965, the trout population decreased 48 percent from the fall level. This was due to the severe flooding that occurred during January of 1965.

Section B

Section B, the portion of Bohemian Valley Creek that was originally provided with habitat improvement structures, had considerably higher brown

trout populations than Section A throughout the study period (Table 2, Table 6). After flood control structures were constructed in the late summer of 1959, the trout population slowly increased from 206 to approximately 1,000 individuals in the fall of 1962. Under normal conditions, the population has maintained this level since 1962.

The population increase from 1959 to 1962 was slow because the floods prior to and during 1959 virtually eliminated the natural trout cover and severely damaged the habitat improvement structures, the number of spawning-age trout was at a relatively low level, the spawning areas had been severely altered, and food was virtually eliminated from the stream.

Within a year after the 1965 floods, the population had almost reached the levels that were present during the 1962-1964 period (Fig. 3). Fingerling trout were hard hit during the 1965 flood but the adult trout were not affected to a great extent. Flood detention structures had reduced the severity of the flood to a point that little damage was done to the trout habitat. Since suitable habitat and an adult trout population were present after the 1965 flood, the population rapidly returned to its former high levels.

The actual number of holdover trout present remained fairly stable during the 1960-1965 time period (between 100 and 200 trout); however, the percent of stocked trout in the 7.5 inch or greater size range was on the decline because the number of native trout in this size range increased during this time period (Table 7).

The flooding that occurred in 1965 eliminated virtually all of the native fingerling trout. Because of this, the number of native trout in the 7.5 inch or greater size range decreased sharply in 1966. Presently, the number of native trout over 7.5 inches long is beginning to reach the levels that were predominant before the 1965 flood.

Virtually all of the fingerling trout (trout less than 7.5 inches long) are native trout. In a normal year, the population averaged approximately 70 percent fingerling trout. During the 10-year study period from 1958 to 1967, this figure has varied from 2 percent in 1965 to 80 percent in 1958 and 1962. These dramatic fluctuations were due to periodic flooding. (Our spring population estimates were lower than the actual population because the gear used for the collection of fish was very inefficient for trout less than 2.5 inches long.)

Overwinter mortality and loss through migration in Section B fluctuated between 4 percent and 34 percent of the total population of trout present. Common loss values observed were between 5 and 10 percent of the total population. The only overwinter increase in the population noted occurred during the winter of 1959-1960.

EFFECTS OF FLOODING

As was mentioned earlier, flooding has always been a major problem in the management of Bohemian Valley Creek. To help ease the effects of floods, three P.L. 566 flood detention structures were constructed near the headwaters of Bohemian Valley Creek in late 1959 (Fig. 1). These structures were adequate to prevent severe flooding except in 1965.

In 1965 several thaws produced severe flash flooding in January and April. Much of the silt, clay and topsoil from the upper watershed areas settled out in the detention dam basin on the main channel of Bohemian Valley Creek.

This structure in the main channel is the largest of the three dams present in the watershed. During periods of normal precipitation, the structure impounds no water. The stream flows through its basin and out of the low flow outlet. This outlet continually discharges water. When flooding occurs, excess water is detained in the basin. The position of the low flow outlet creates convection currents that tend to keep soils in the vicinity of the outlet in suspension as long as a small pool of water remains.

Because of the large amount of silt that was deposited in the basin of the detention dam and distributed throughout the stream system by the continuous flow of turbid water out of the dam, Bohemian Valley Creek was turbid for a three-week period beginning on April 1, 1965. Prior to the installation of the P.L. 566 structures, the stream usually cleared up less than 48 hours after a major flood occurred. The extreme turbidity of the P.L. 566 structure discharge and its long duration had a deleterious effect on fish and on all other aquatic organisms present in the stream.

Almost all of the trout captured during the spring shocker run of 1965 showed evidence of scale loss through abrasion. Some of the smaller fish had abraded areas covering approximately 50 percent of their body area. Scale loss was much more evident on 8- to 10-inch fish than on trout over 12 inches in length. Evidently, large brown trout are not as susceptible to flood damage as are smaller trout.

A routine shocker survey was again conducted during the fall of 1965. One hundred forty-six native brown trout and 115 stocked brown trout were present in Section B while 18 native and 2 stocked brown trout were found in Section A. This represents an 85 percent reduction of the trout population between the fall of 1964 and the fall of 1965. Most of the trout lost were in the 2.5-7.4 inch size range. This size group contained only young-of-the-year and yearling trout. The 1966 spring population data indicated that there were only three survivors from the 1965 year class of brown trout (Tables 4 and 5, Fig. 3).

EFFECTS OF ANGLING

Because of its close proximity to La Crosse and other urban areas, Bohemian Valley Creek receives heavy fishing pressure. Nineteen incorporated cities and villages lie within 20 miles of Bohemian Valley Creek. La Crosse, with a population of about 50,000, is the largest city in the area.

In an effort to evaluate the effects of angling on the trout population, a stratified creel census was conducted during the 1965 fishing season (Fassbender and Churchill, 1967).

Fishing Pressure

Fishing pressure fluctuated throughout the season. During the first week-end of the season (May 8-9) anglers fished about 1,300 hours or 28 percent of

the total for the season. By the end of the fourth week of the season, anglers had fished about 3,200 hours (69 percent of the season's total). Only 31 percent of the fishing pressure occurred during the last 15 weeks of the season.

Fifty-six percent of the fishermen came from La Crosse during the 1965 season. Eight percent came from over 20 miles to fish Bohemian Valley Creek. The remaining 36 percent came from other localities within 20 miles of the stream.

Trout Harvest

During 1965, about 4,700 brown trout (about 90 percent of the population 6 inches long or greater) were harvested from Bohemian Valley Creek. Eighty-three percent of this total were stocked before and during the 1965 season. One percent of the trout caught was stocked in 1964 while 16 percent were native trout.

Fishermen caught 1,089 brown trout (23 percent of the season's total) during the first week of the season. By the end of the fourth week, 3,221 trout (81 percent of the total catch) had been harvested. Only 1,541 trout (19 percent) of the trout harvested were caught in the last 15 weeks of the season.

The best fishing occurred from May 15 to May 31. About 2,500 trout were caught in this time period of which 94 percent were stocked just prior to and during the 1965 season. During this period, about 1.6 fish per hour were caught. This figure is at least twice as high as it was for any other period.

COST-BENEFIT ANALYSIS

Since 1955, approximately $31,500.00 has been spent on construction and maintenance of the Bohemian Valley Creek habitat improvement structures (Table 8). Administrative costs, supervisory costs, and flood control costs are not included in this figure.

If this money had been invested in trout for stocking into Bohemian Valley Creek instead of on habitat improvement, a total of 29,440 pounds of brown trout could have been produced and delivered to the stream based on 1966 production and distribution costs. This would be a total of about 117,760 8- to 9-inch brown trout.

Prior to the habitat improvement project, the yearly stocking quotas were adjusted to provide about 2,000 catchable fish per year. At an annual quota of 2,000 legal brown trout (8 to 9 inches long), a stocking program could have been conducted from the year 1955 to 2014 (59 years) for the same amount of money as was spent on habitat improvement.

On the basis of the 1965 creel census, a total of 650 native fish reached the creel. This would represent a population of 725 legal size, native brown trout present prior to the season's opening (assuming that 90 percent of the population were caught). The 725 native trout represent the yearly production of legal trout after habitat improvement was completed. Virtually no native trout production was present prior to the habitat improvement project. Trout could have been stocked for about 162 years or until the year 2117 for the

same cost as that of the habitat improvement measures (assuming the yearly quota was set at the level of the annual production of legal size, native brown trout after habitat improvement had been completed).

From this point of view, it would seem that the habitat improvement project was not worth its cost.

On the other hand, the habitat improvement project has done some good. Most important, perhaps, is the fact that nature's habitat destruction has almost been stopped. The flood control structures alone did not halt erosion nor did they increase trout production (Section A, for example). The flood control structures, when used in conjunction with bank stabilization structures and rechannelization structures, have all but halted streambank erosion and siltation within the study area.

Prior to 1955, little trout cover was available. Bohemian Valley Creek was wide and shallow. Rechannelization and instream structures have created pools and undercut banks. Fencing has allowed plants to grow providing additional cover. Based on previous population estimates, it appears that the environment will support 4,000 to 5,000 trout through the summer and about 1,000 trout through the winter. These figures are estimates; however, because no quantitative measurements of carrying capacity have been recorded.

A third factor to be considered is the quality fishing that has been created. Several large trout are taken annually. Quality trout are available to the angler throughout the season. Neither of these facts might be true today if the habitat improvement project had never been completed and if Bohemian Valley Creek were still managed strictly as a put-and-take fishery.

Aesthetics is the fourth factor that must be considered. Today, trees and shrubs now shade pools that were once cattle watering holes. Pools and deep runs are present where wide, shallow riffles once were. Small waterfalls are scattered throughout the stream. As a whole, Bohemian Valley Creek is pleasing to look at and fish.

It is very difficult to compare concrete monetary values (number of trout that could be stocked, for example) with abstract values such as fishing quality or aesthetics. At best, the Bohemian Valley Creek habitat improvement project produced only marginal results.

CONCLUSIONS

Habitat management techniques employed in Bohemian Valley Creek were of benefit to native brown trout.

The fall native trout population in Section A had increased by 107 trout in 1964. Evidence indicates that this increase was the result of habitat improvement conducted in the summer of 1964. Prior to the construction of habitat improvement devices, the carrying capacity of Section B was much less than it is at the present time although the exact figures are not available. The percentage of native trout in both sections fluctuated greatly from year to year prior to habitat development.

Visual observations showed that stocked trout were caught less frequently after habitat improvement devices were installed. The circumstances suggest that the stocked trout were harder to catch.

Both habitat improvement and flood control practices are necessary to provide a sustained significant increase in carrying capacity in streams similar to Bohemian Valley Creek. The habitat improvement devices must be constructed in such a way that cover for the smaller fish will be provided. Evidence indicates that flash flooding and extended periods of turbidity are very detrimental to the trout population, especially yearling and young-of-the-year fish. Flood control structures should be designed to eliminate prolonged turbidity.

Stocked trout provide most of the fish caught by angling each year except in the larger size groups but do not contribute greatly to the total overwintering trout population.

Considerable thought must be given to any future stream improvement projects on coulee streams. Only the best streams should be considered for habitat improvement projects. Only then can you hope to receive maximum benefits from the money spent.

ACKNOWLEDGMENTS

The authors wish to thank all of the Department of Natural Resources field personnel who helped in the collection of data for this report. Special thanks go to Warren Churchill who analyzed the creel census data and to Willis Fernholz and Gordon Slifer for their comments and constructive criticisms of this report.

LITERATURE CITED

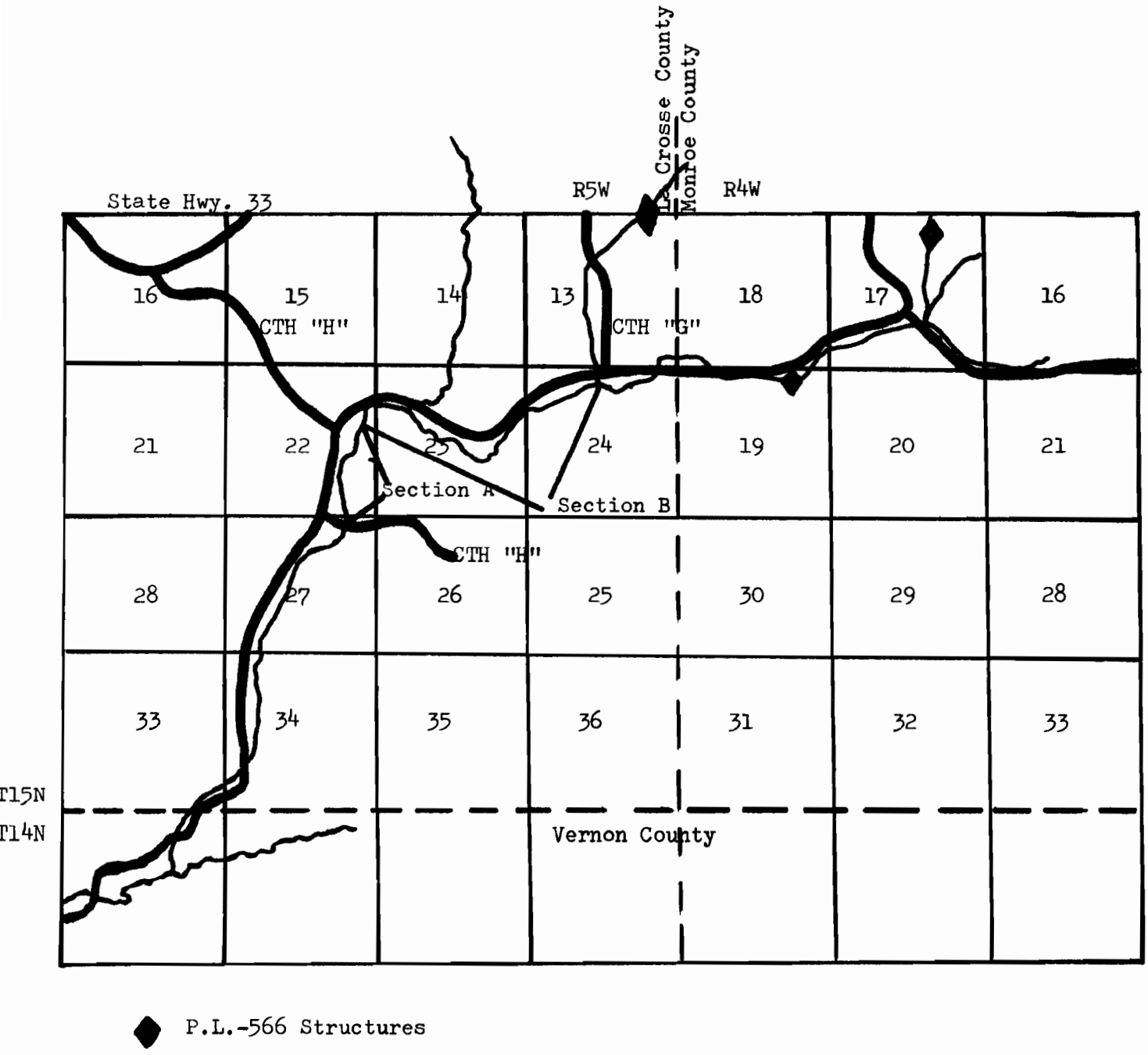
Fassbender, Ronald L. and Warren Churchill. 1967. Fishing pressure and harvest on Bohemian Valley Creek, La Crosse County. Wis. Dept. of Natural Resources, Bureau of Fish Management, Management Report (in press)

Frankenberger, L. 1960. A preliminary report on evaluation of the habitat management program in Bohemian Valley Creek, La Crosse County. Investigational Memorandum No. 11, West Central Area, 8 pp. mimeo.

Lagler, Karl F. 1956. Freshwater fishery biology. Wm. C. Brown Company, Dubuque, Iowa, 421 pp.

10-8-68
bs

Fig. 1. Bohemian Valley Creek Watershed - Vernon, La Crosse and Monroe Counties, Wisconsin



◆ P.L.-566 Structures

Fig. 2 BOHEMIAN VALLEY CREEK, LA CROSSE COUNTY

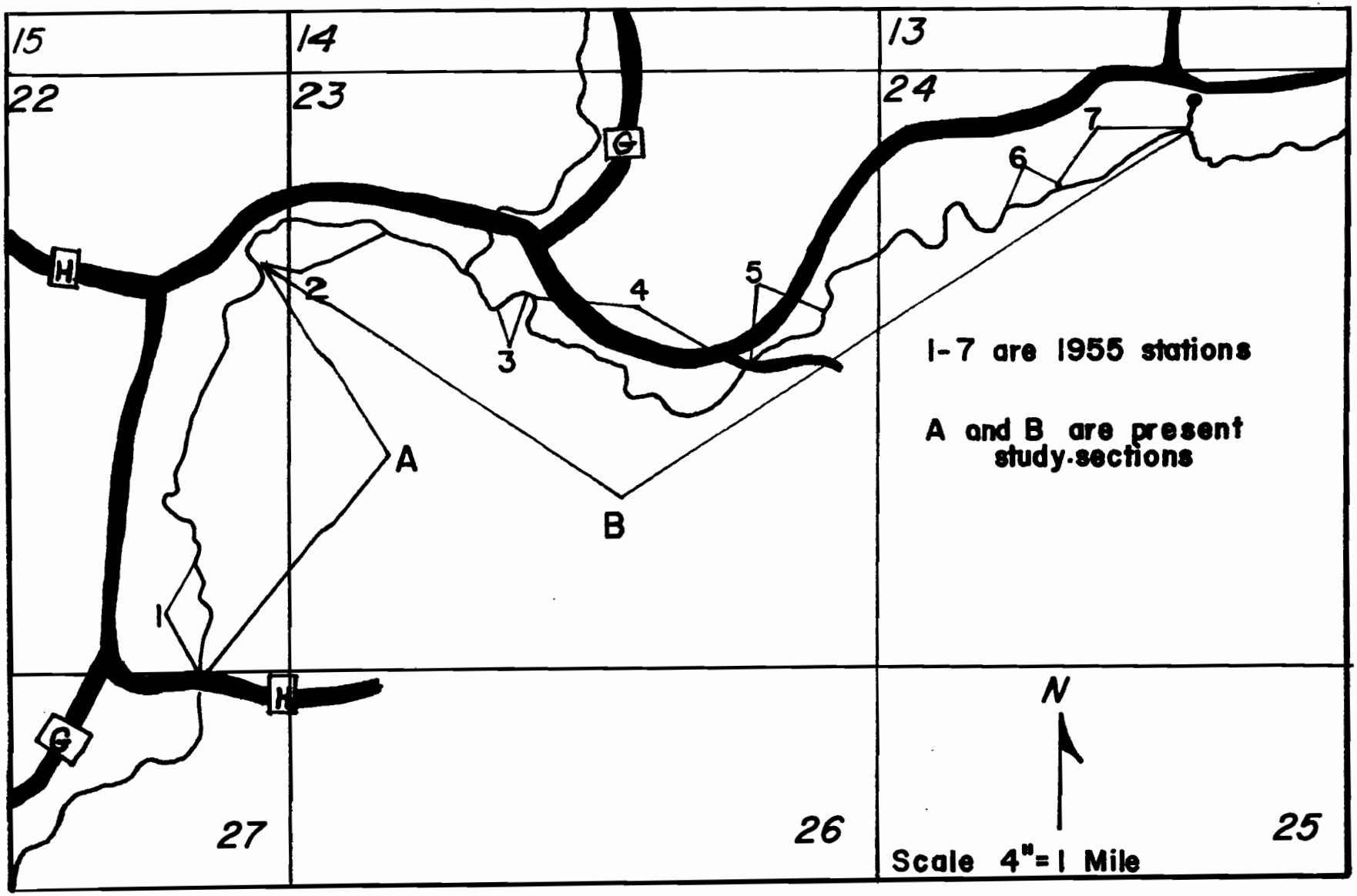


FIG. 3 BROWN TROUT IN BOHEMIAN VALLEY CREEK

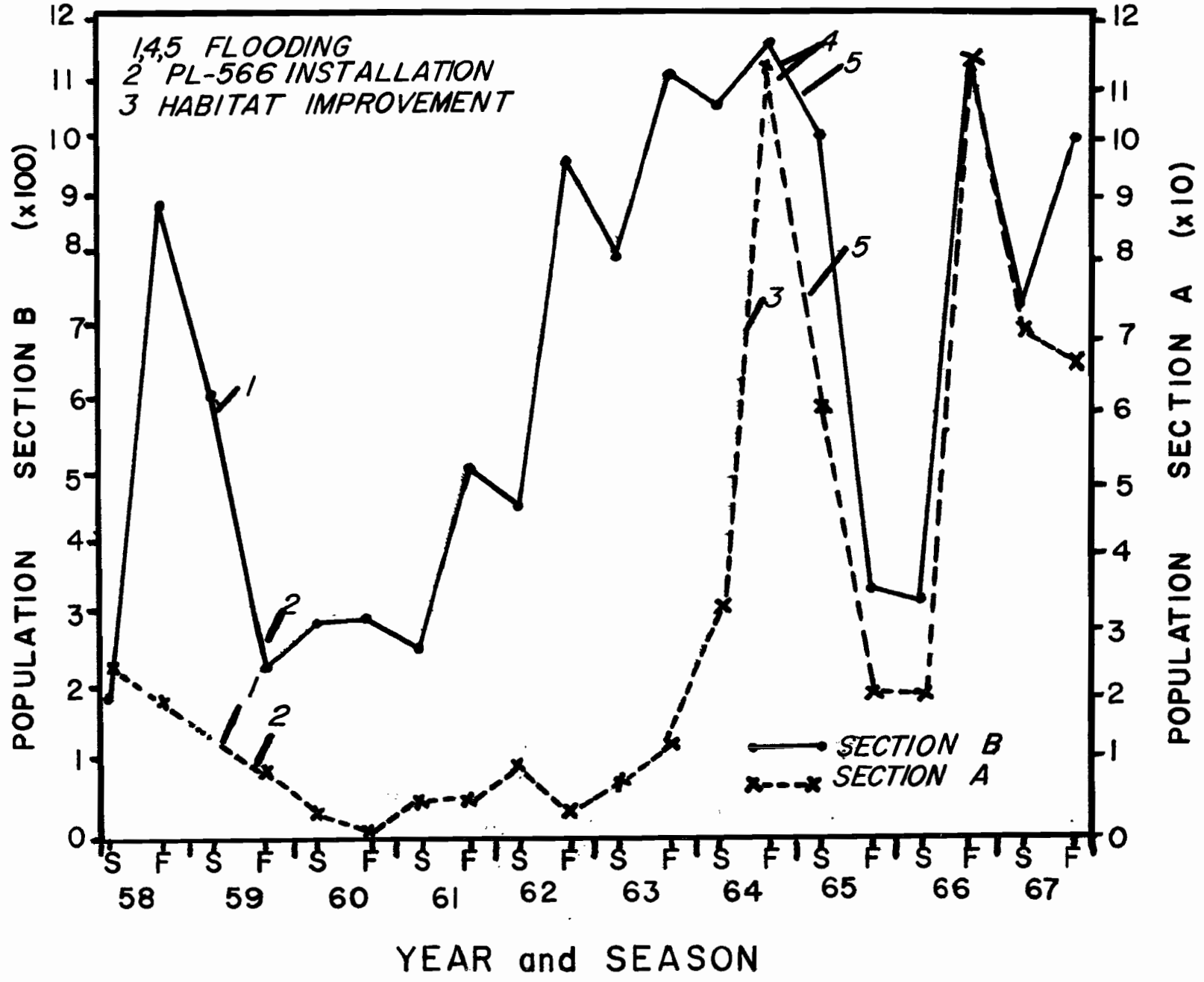


Table 1. Stocking record, Bohemian Valley Creek, La Crosse County

Year	Species	Number	Size	Fin Clip
1955	Brook Trout	600	Yearling	
	Rainbow Trout	1,100	Yearling	
	Brown Trout	1,100	Yearling	
1956	Brook Trout	500	Yearling	
	Brown Trout	2,300	Yearling	
	Rainbow Trout	1,000	Yearling	
1957	Brown Trout	2,350	Yearling	
	Rainbow Trout	1,500	Yearling	
1958	Brown Trout	2,160	Yearling	Adipose
	Rainbow Trout	1,086	Yearling	
1959	Brown Trout	2,950	Yearling	Dorsal
1960	Brown Trout	3,000	Legal	Adipose - Right Pectoral
1961	Brown Trout	3,000	Legal	Right Pectoral
1962	Brown Trout	3,000	Yearling	Right Pelvic
1963	Brown Trout	4,000	Legal	Adipose
1964	Brown Trout	3,500	Legal	Left Pelvic
1965	Brown Trout	4,200	Legal	Right Pectoral
1966	Brown Trout	3,500	Legal	Left Pectoral
1967	Brown Trout	3,000	Legal	Adipose

Totals - 13-Year Period

Brook Trout (Yearling)	1,100
Brown Trout (Yearling)	13,860
(Legal)	24,200
Rainbow Trout (Yearling)	4,686
Grand Total	43,846

Table 2. Comparison of the total populations of brown trout in Section A and Section B, Bohemian Valley Creek, La Crosse County

SPRING

Year	Section A		Section B	
	Estimated Population	Trout Per Mile	Estimated Population	Trout Per Mile
1958	27	36	192	74
1959	*	*	598	230
1960	3	4	262	101
1961	5	7	238	92
1962	8	11	431	166
1963	7	9	773	297
1964	30	40	1036	398
1965	60	80	993	392
1966	20	27	251	97
1967	72	96	699	269

FALL

Year	Section A		Section B	
	Estimated Population	Trout Per Mile	Estimated Population	Trout Per Mile
1958	18	24	885	348
1959	9	12	206	79
1960	1	2	265	102
1961	5	7	497	191
1962	4	5	928	357
1963	12	16	1098	422
1964	116	155	1152	442
1965	20	27	261	100
1966	115	153	1101	423
1967	67	89	995	383

* Data not collected for spring, 1959, in Section A.

Table 3. Comparison of the native brown trout population with the stocked trout population in Bohemian Valley Creek, La Crosse County

Section A

Spring	1960	1961	1962	1963	1964	1965	1966	1967
Native	1	4	6	7	27	60	12	60
Stocked	2	1	2	0	3	0	8	12
Percent Native	33	80	75	100	90	100	60	83
Percent Stocked	67	20	25	0	10	0	40	17

Fall	1960	1961	1962	1963	1964	1965	1966	1967
Native	0	3	3	9	116	78	92	56
Stocked	1	2	1	3	0	2	23	11
Percent Native	0	60	75	75	100	90	80	84
Percent Stocked	100	40	25	25	0	10	20	16

Section B

Spring	1960	1961	1962	1963	1964	1965	1966	1967
Native	198	116	308	682	929	923	140	545
Stocked	64	122	123	91	107	70	111	154
Percent Native	76	49	71	88	90	93	55	78
Percent Stocked	24	51	29	12	10	7	45	22

Fall	1960	1961	1962	1963	1964	1965	1966	1967
Native	120	334	810	974	1010	146	898	845
Stocked	146	163	118	124	142	115	203	150
Percent Native	45	67	87	89	88	56	82	85
Percent Stocked	55	33	13	11	12	44	18	15

Table 4. Size distribution of brown trout in Section A, Bohemian Valley Creek, La Crosse County

Size Range (Inches)	1958	1959[1/]	1960	1961	1962	1963	1964	1965	1966	1967
				SPRING						
2.5 - 5.4	3		0	0	0	0	0	1	0	0
5.5 - 7.4	*		0	0	0	2	5	23	0	7
7.5 - 10.4	3		0	3	3	4	16	28	2	45
10.5 - 12.4	12		1	0	2	1	5	1	11	10
12.5 - 14.4	6		2	2	2	0	3	0	7	6
14.5+	3		0	0	1	0	1	7	0	4
TOTALS	27		3	5	8	7	30	60	20	72
				FALL						
2.5 - 5.4	-	-	-	-	-	-	45	-	5	3
5.5 - 7.4	-	-	-	1	-	2	64	-	80	35
7.5 - 10.4	3	3	-	-	-	2	-	6	7	3
10.5 - 12.4	6	5	-	2	2	6	4	11	15	15
12.5 - 14.4	4	1	-	1	1	2	2	2	3	7
14.5+	5	-	1	1	1	-	1	1	5	4
TOTALS	18	9	1	5	4	12	116	20	115	67

1/ Section A was not electrofished in spring, 1959.

* 1958 and 1959 data combine the 2.5 - 5.4 and 5.5 - 7.4 size group into one group.

Table 5. Size distribution of brown trout in Section B, Bohemian Valley Creek, La Crosse County

SPRING

Size Range (Inches)	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
2.5 - 5.4	84	402	3	0	20	64	34	14	0	17
5.5 - 7.4	*	*	84	49	158	467	456	500	3	277
7.5 - 10.4	24	118	71	50	94	100	329	285	35	239
10.5 - 12.4	56	41	46	84	69	101	146	138	147	117
12.5 - 14.4	20	18	34	30	64	23	51	40	54	34
14.5+	8	19	24	25	26	25	20	16	12	15
TOTALS	192	598	262	238	431	773	1036	993	251	699

FALL

Size Range (Inches)	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
2.5 - 5.4	709	148	50	177	625	545	531	-	505	376
5.5 - 7.4	*	*	19	120	118	275	260	4	346	192
7.5 - 10.4	100	88	117	47	92	134	233	104	136	158
10.5 - 12.4	27	36	40	102	49	105	90	107	66	205
12.5 - 14.4	19	15	15	28	13	22	21	26	27	33
14.5+	30	19	24	23	31	17	17	20	21	31
TOTALS	885	206	265	497	928	1098	1152	261	1101	995

* 1958 and 1959 data combine the 2.5 - 5.4 and 5.5 - 7.4 size group into one group 2.5 - 7.4.

Table 6. Comparative single run population data, Bohemian Valley Creek, La Crosse County.

Size Range	Section A					Section B				
	1955	1958	1961	1964	1967	1955	1958	1961	1964	1967
2.4 - 5.4	1	0	0	9	1	37	305	86	259	149
5.5 - 7.4	*	*	1	15	11	*	*	61	139	91
7.5 - 10.4	0	3	0	0	1	12	56	27	134	84
10.5 - 12.4	2	2	1	2	5	15	17	60	55	113
12.5 - 14.4	0	1	1	1	3	2	12	17	14	19
14.5+	0	1	1	1	1	3	20	15	11	16
TOTALS	3	7	4	28	22	69	410	266	612	472

* 1958 and 1959 data combine the 2.5-5.4 and 5.5-7.4 size group into one group, 2.5-7.4

Table 7. Comparison of the percent of stocked fish and native fish present in the 7.5 inch and greater size range (Section B).

Percent Native

Year	1960	1961	1962	1963	1964	1965	1966	1967	Average
Spring	63	35	52	62	81	85	56	62	62 %
Fall	26	19	37	55	61	57	19	65	42 %

Percent Stocked

Year	1960	1961	1962	1963	1964	1965	1966	1967	Average
Spring	37	65	48	38	19	15	44	38	38 %
Fall	74	81	63	45	39	43	81	35	58 %

Table 8. Cost breakdown of the Bohemian Valley Creek Habitat Management Project

Expense[1]	Year 1955	1956	1957	1958	1962	1963	1964	1965	1966	Total
Fencing costs[1]	-	-	-	-	-	-	-	-	-	
Construction costs[1]	-	-	-	-	-	-	$6,492.59	-	-	$6,492.59
Misc. expense[1]	-	-	-	-	-	-	-	-	-	
Maintenance expense[1]	-	-	-	-	-	-	-	$470.08	-	470.08
Total[1]	-	-	-	-	-	-	$6,492.59	$470.08	-	$6,962.67
Fencing costs[2]	$1,119.10	$ 759.00	$1,245.76	-	-	-	-	-	-	$3,123.86
Construction costs[2]	3,547.50	3,759.33	3,182.62	$5,115.53	-	-	-	-	-	15,604.98
Misc. expense[2]	847.83	562.13	308.51	953.70	-	-	-	-	-	2,672.17
Maintenance expense[2]	-	-	-	-	$1,870.71	$175.70	-	$400.12	$676.84	3,123.37
Total[2]	$5,514.43	$5,080.46	$4,736.89	$6,069.23	$1,870.71	$175.70	-	$400.12	$676.84	24,524.38
GRAND TOTAL[3]	$5,514.43	$5,080.46	$4,736.89	$6,069.23	$1,870.71	$175.70	$6,492.59	$870.20	$676.84	31,487.05

[1] Costs for development of Section A.

[2] Costs for development of Section B.

[3] Costs for development of both sections.

NOTE: The above costs do not include supervisors' pay, administrative costs, and cost of PL-566 structures.