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Fishing Pressure and Harvest on Bohemian Valley Creek
La Crosse County

by

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INTRODUCTION

Since 1955, a 3.4-mile portion of Bohemian Valley Creek has been under intensive study to determine how habitat improvement practices and flood control measures affect the brown trout population (Frankenberger, 1960; Frankenberger and Fassbender, 1967). Frankenberger (1960) suggested that stream improvement alone did little to increase the wild brown trout fishery. It was suspected that severe flooding prevented the trout population from being highly productive.

In 1959, three flood detention structures were constructed near the headwaters of Bohemian Valley Creek. These structures helped reduce the severity of the floods allowing the total trout population to increase (Frankenberger and Fassbender, 1967).

In order to evaluate the return of stocked brown trout in relation to the return of native browns, a creel census was conducted during the 1965 trout season. This creel census was designed to provide an accurate appraisal of fishing pressure and harvest.

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DESCRIPTION OF AREA

Bohemian Valley Creek flows through the hilly coulee region of southeastern La Crosse County. The watershed area of 12 square miles is characterized by deep, narrow valleys and steep, narrow ridges. Land adjacent to the stream is used primarily for agricultural purposes.

Bohemian Valley Creek has a base flow of 5.7 cubic feet per second and a high flood crest. Sand, limestone rubble, silt, and gravel are the predominant bottom types. Deep pools and undercut banks provide most of the trout habitat. Stream banks and instream cover are fairly stable. A more complete description of the physical features of the stream can be found in Frankenberger and Fassbender (1967).

Nineteen incorporated cities and villages lie within 20 miles of Bohemian Valley Creek. La Crosse, with a population of 50,000, is the largest city in the area. Twelve of the remaining municipalities have a population less than 1,000 (Fig. 1).

The Department of Natural Resources holds leases and easements on the entire study area.

Good fishing, easy accessibility, and nearness to metropolitan areas make Bohemian Valley Creek a very popular trout stream.

METHODS

Population Estimate

Population estimates, utilizing the Peterson mark-and-recapture method as described in Lagler (1956), were conducted during 1965. One estimate was conducted in the spring prior to the trout season's opening while a second estimate was conducted after the season closed in the fall.

All fish sampling was done with standard electrofishing gear. A small portion of the stream near the upper end of the study area was sampled with a 110-volt, battery-powered, A.C., backpack shocker. The remainder of the area was sampled with a two-electrode, 230-volt, D.C. stream shocker.

Stocking

Each year, Bohemian Valley Creek receives a quota of brown trout. Stocking takes place after the spring population estimates have been conducted. In 1965, 1,800 brown trout were stocked before the season opening and 2,400 were stocked during the second week of the season.

All trout stocked in Bohemian Valley Creek were marked by fin clipping. Trout stocked in one year could be distinguished from trout stocked in other years by the fin clipped. All trout stocked in 1965 had their right pectoral fin removed. In 1964, all trout stocked had their left pelvic fin clipped. The adipose fin was removed on all trout stocked in 1963.

Creel Census

During the first and second weekends (May 8, 9 and May 15, 16) of the trout season, complete car counts were made every three hours from 1 a.m. Saturday until 10 p.m. Sunday. Between car counts, fishermen were contacted to obtain information such as the number in the party; time fished; number, size, and origin of fish caught; and the age and hometown of the anglers.

Car counts and interviews were made on two days during the first week (May 10-14) of the season. During this period, car counts were made from 4 a.m. to 10 p.m. Interviews were conducted between the car counts.

For the remainder of the season (May 17-September 15), car counts and interviews were made on one weekday and on one weekend day of each week. Census days were alternated from week to week. For example:

Week	Census Days
1	Saturday, Monday
2	Sunday, Tuesday
3	Saturday, Thursday
4	Sunday, Friday
5	Saturday, Wednesday

May 31, July 5, and September 6 were considered weekend days.

Car counts were made on the whole study area in as short a time as possible and as near to the scheduled time as possible. Every car present was counted, even if it were present during previous counts.

Interview contacts were spread evenly over the entire study area. If the creel census clerk could not cover the whole area between car counts, he would interview in a different section of the stream during the next period.

If an angler were contacted more than once, only the time fished and the catch since the last contact were recorded.

Fishing pressure was calculated from car counts made at three-hour intervals on census days. Missing counts and incomplete days were filled in by interpolation. Fishing pressure, expressed as angler hours per day, was calculated by: Car counts x 3 x average number of anglers per car. The latter figure was derived from the interview data.

Total harvest was computed by multiplying angler hours times catch per hour as determined from interview data. In this way a reasonable approximation of the total harvest was obtained.

RESULTS

Population Studies

Population estimates conducted in the spring of 1965 indicated that 1,038 brown trout were present in Bohemian Valley Creek. An additional 4,200 trout were stocked prior to and during the season (Table 1).

After the trout season closed in September, 281 trout remained in the study area (Table 1).

Table 1. Number of legal trout present in Bohemian Valley Creek, 1965.

	1965	
	Spring	Fall
Native Trout	968	164
1965 Stock	4,200	109
1964 Stock	64	8
1963 Stock	6	0
TOTAL	5,238	281

Total Harvest

Projected creel census data indicate that 4,762 brown trout were harvested during the 1965 season. Of the total number of fish harvested, 762 (16 percent) were native brown trout; 3,952 (83 percent) were stocked in 1965; and 48 (1 percent) were trout stocked in 1964 and 1963.

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 of the season, 3,221 trout (81 percent of the total catch) had been harvested. Only 19 percent of the trout were harvested in the last 15 weeks of the season. (See Table 2, Fig. 2).

In 1965, about 35 large, (over 14.5 inches) brown trout were caught. Of these, 80 percent were native, 10 percent were stocked in 1964, and 10 percent were stocked in 1963.

Table 2. Origin of brown trout caught in Bohemian Valley Creek (in percent of total catch).

Time Period	Native	1965 Stock	1964 Stock	1963 Stock	Cumulative Total for Season
May 8 - 9	18	80	2	Trace	23
May 10 - 14	29	69	2	-	28
May 15 - 31	6	94	Trace	-	81
June 1 - Sept. 15	36	59	5	-	100
Season Average	16	83	1	Trace	-

Newly stocked brown trout provided most of the fishing during the season. The percentage of stocked trout caught varied considerably from one time period to the next (Fig. 3, Table 2).

About 0.8 trout per angler-hour were caught during the first week of the season. About 1.6 trout per hour were caught the next three weeks of the season. The last 15 weeks of the season yielded only 0.6 trout per angler-hour. The average for the season was 1.0 trout per hour fished.

Fishing Pressure

In 1965, anglers spent 4,725 hours fishing Bohemian Valley Creek. About 29 percent of the fishing pressure occurred during the opening weekend of the season. By the end of the fourth week of the season, 69 percent of the fishing pressure had occurred (Fig. 2). Weekend days consistently received more fishing pressure than did weekdays.

During the 1965 season, 92 percent of the fishermen who utilized Bohemian Valley Creek came from within 20 miles of the stream. Of the total number of people fishing the stream, 56 percent came from La Crosse, 12 percent were local residents, and 24 percent came from other localities within 20 miles.

In 1965, 24 percent of the anglers who utilized Bohemian Valley Creek could legally fish without a license. Thirteen percent were under 16 years old while 11 percent were over 65 years old. These figures varied considerably from weekends to weekdays (Table 3).

Table 3. Age composition of anglers utilizing Bohemian Valley Creek.

	Percent of Anglers		
	Under 16	16 - 65	Over 65
Weekend	15	77	8
Weekdays	10	69	21
Season Average	13	76	11

Based on incomplete fishing trips, 54 percent of all anglers who fished Bohemian Valley Creek caught at least one brown trout. The remaining 46 percent caught no legal trout at all. Four percent of the anglers caught limits (10 legal brown trout). Fishermen were most successful during the May 15-31 time period when 62 percent of the anglers caught trout. During this period, 10 percent of the anglers caught legal limits of brown trout (Table 4).

Table 4. Fishing success during the 1965 season on Bohemian Valley Creek*

Time Period	Percent of Anglers Successful	Unsuccessful	Limits
May 8 - 9	60	40	3
May 10 - 14	26	74	-
May 15 - 31	62	38	10
June 1 - Sept. 15	46	54	-
Season Average	54	46	4

* Based on incomplete fishing trips.

DISCUSSION

The structure of the pre-season brown trout population was not typical in 1965. Flooding that occurred earlier in the year had eliminated a large number of native brown trout (Frankenberger and Fassbender, 1967). As a result, the creel census may have indicated a larger percentage of native trout caught in relation to the total number of native trout present in the stream than would be apparent in a normal year. Previous population estimates indicated a fairly stable fall population of native trout (Frankenberger and Fassbender, 1967). Therefore, the annual harvest of native brown trout is probably fairly constant.

The large harvest of 1965 stocked trout during the May 15 - 31 period was due to the stocking of 2,400 brown trout during the second week of the season. More successful fishing trips and a large percentage of limit catches were also noted during this time period. Again this was due to the large number of trout stocked during the second week of the season.

The estimated harvest was 91 percent of the estimated total population of available trout (native, holdover, and newly stocked). Since this is the quotient of two estimates, both subject to sampling error, it cannot be considered an exact figure, although it is statistically sound. Nevertheless, it indicates that the rate of exploitation is very high for both native and stocked trout.

Population estimates and projected creel census data show that the proportion of stocked fish is about the same in harvest as it is in available population. The circumstances show that the rate of exploitation of native trout is approximately the same as that of stocked trout.

The projected creel census data, when viewed in the same perspective as population estimates conducted in other years, indicate that native trout carry the population through the winter and provide larger fish, while stocked trout provide most of the sport fishery.

ACKNOWLEDGMENTS

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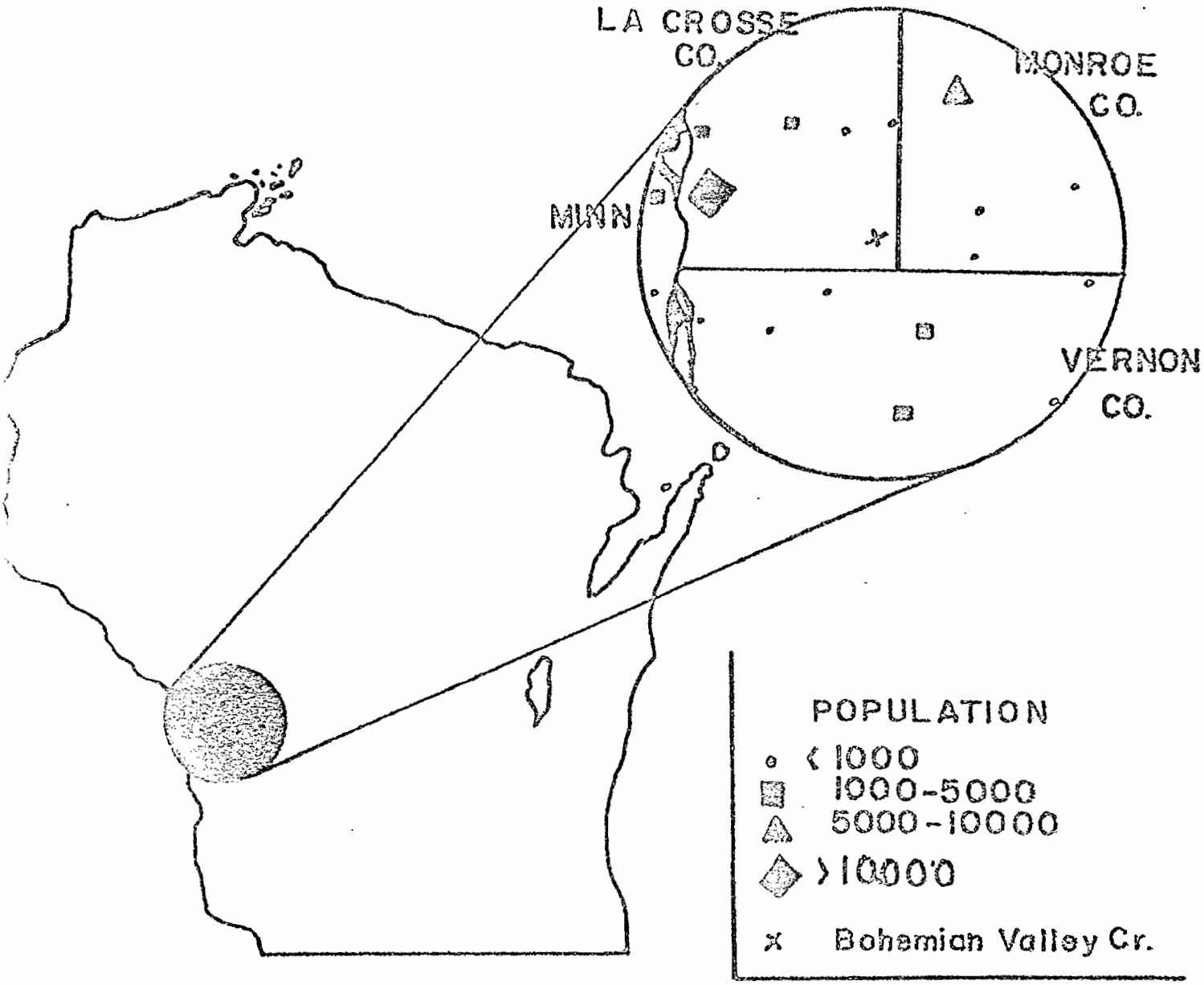

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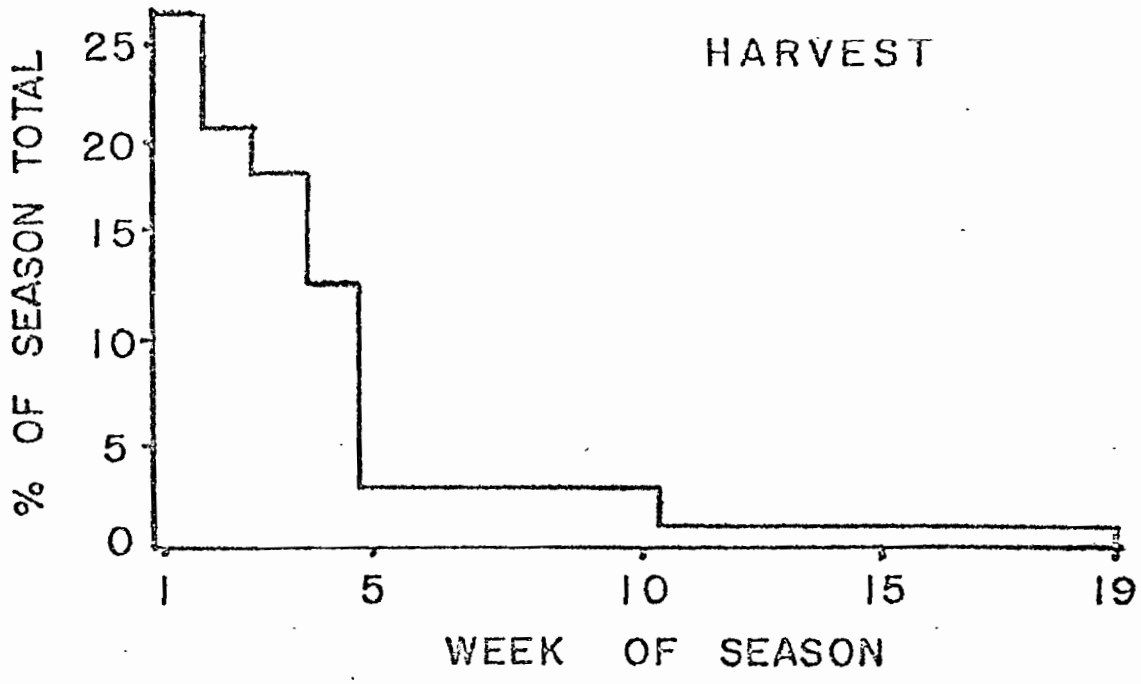
Fig. 1 CITIES WITHIN 20 MILES OF BOHEMIAN VALLEY CREEK



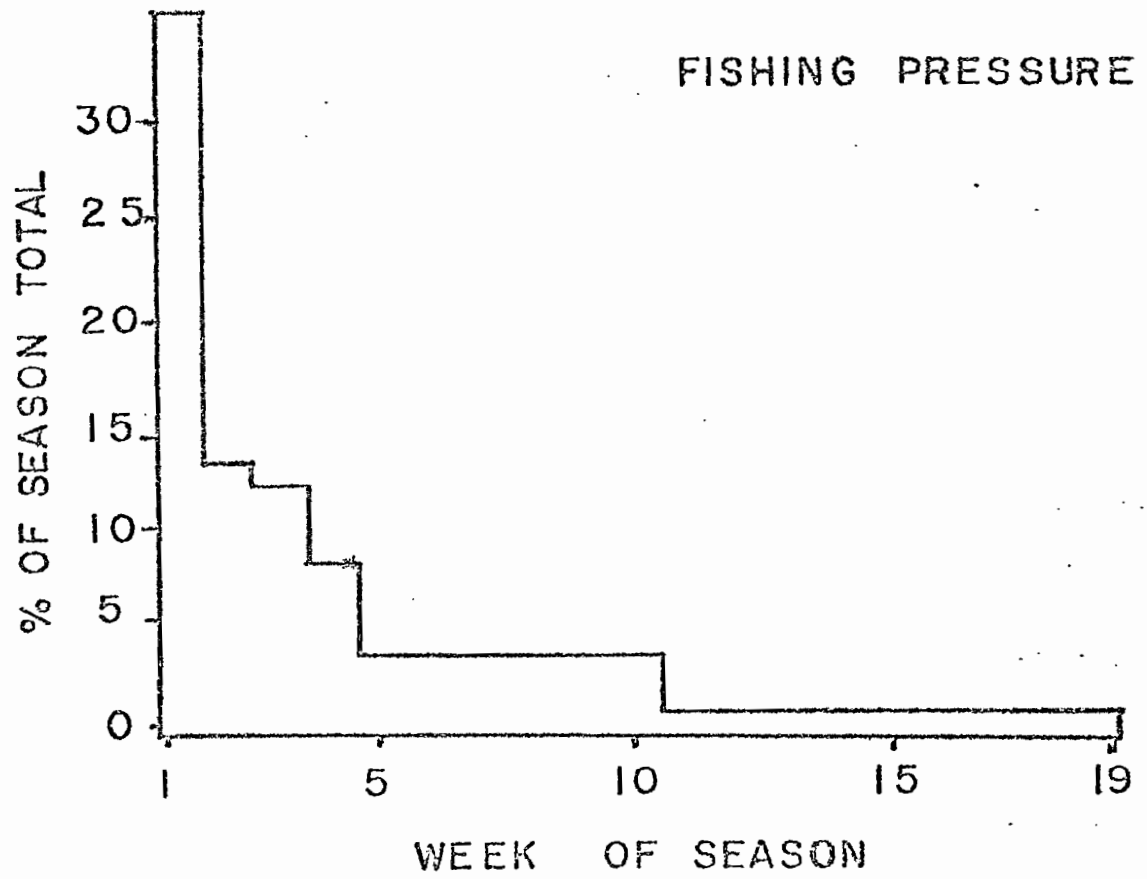


FIG. 2 SEASONAL DISTRIBUTION OF FISHING PRESSURE AND HARVEST, 1965

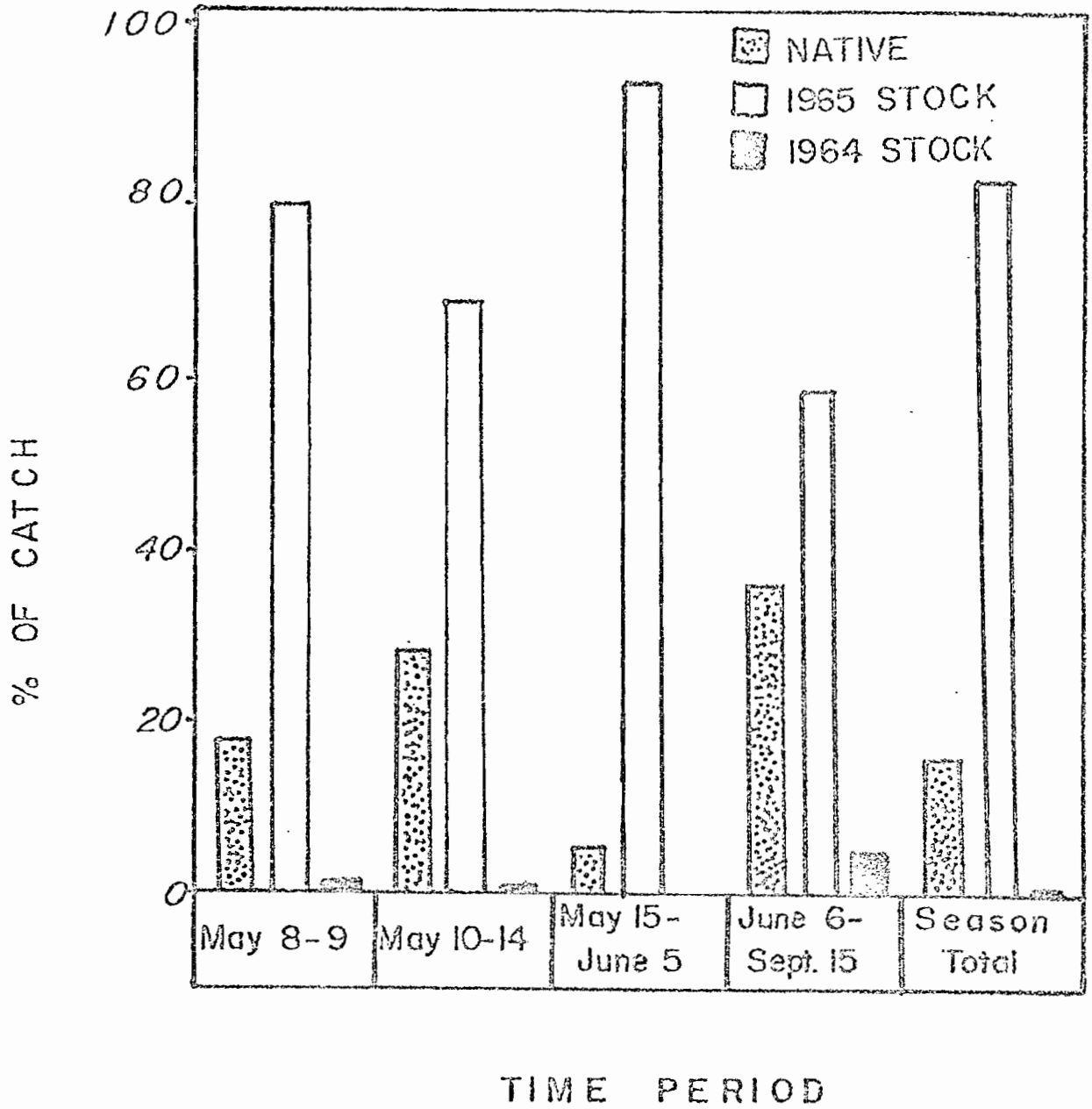
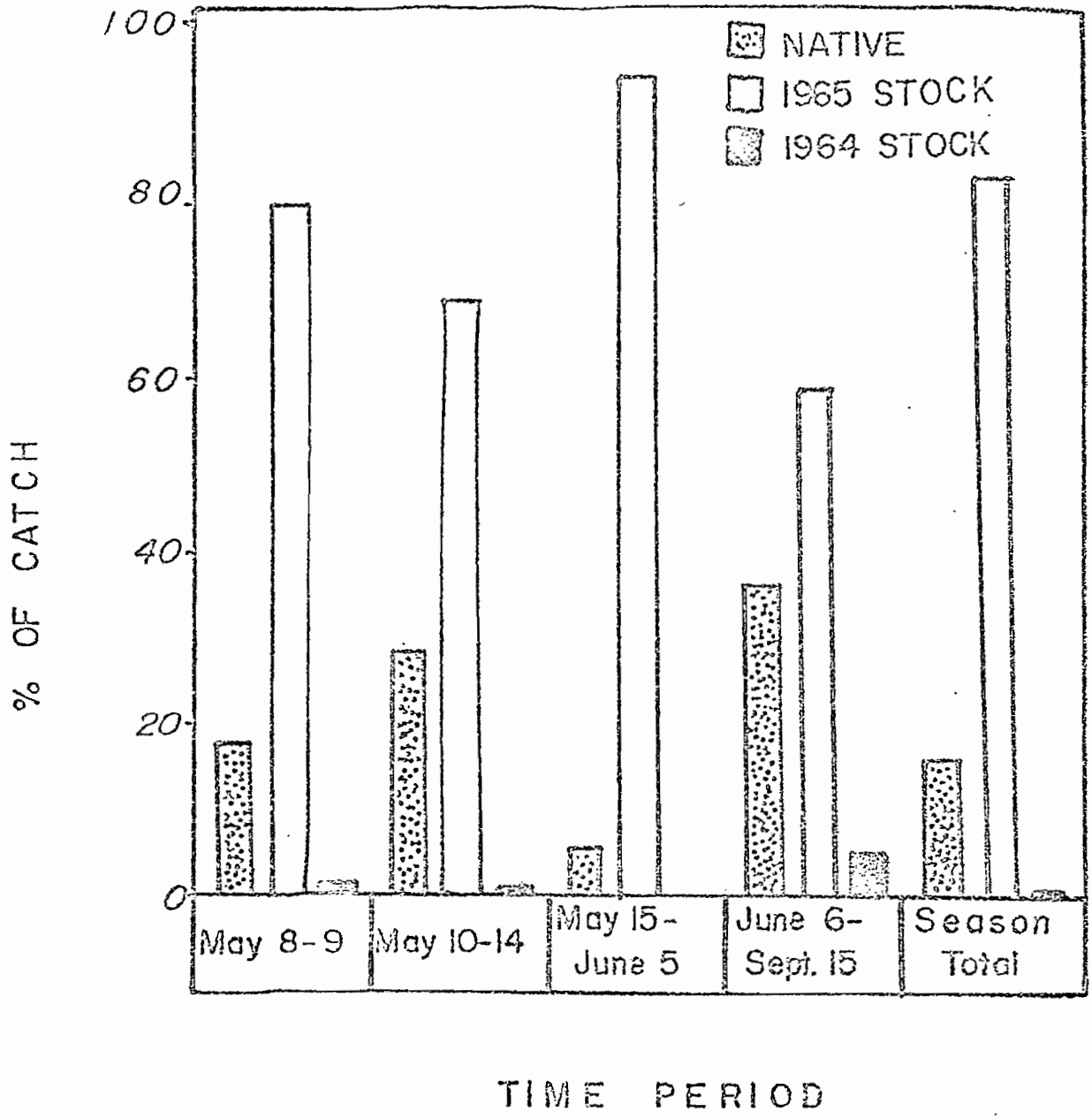


FIG. 3 Origin of Trout Caught in 1965



F.G. 3 Origin of Trout Caught in 1965