FISH MANAGEMENT REPORT 120

TROUT HARVEST AND EFFORT ON THE PLOVER RIVER AND EAST BRANCH OF THE EAU CLAIRE RIVER

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ABSTRACT

A creel census was conducted during May, June, and September of 1974 on the Plover River and East Branch of the Eau Claire River, two north central Wisconsin trout streams. Estimated harvest was 10,990 trout from the Plover River and 8,851 trout from the East Branch. The average catch rates were 0.55 and 0.96 fish/hour for the Plover and East Branch, respectively. Fishing during May accounted for 82% of the Plover River harvest and 84% of the East Branch catch, and about one-third of this harvest was during opening weekend. The minimum return rate on stocked fish was 33% for brown trout, 57% for brook trout, and 50% for rainbow trout. Stocked trout comprised 25% of the Plover River catch and 34% of the East Branch harvest. An estimated 61.9 trout/acre were harvested from the Plover River (Class I and II waters combined), while 120.4 trout/acre were taken from the East Branch of the Eau Claire River (Class II waters). Estimated fishing pressure averaged 126 hours/acre on the Plover River and 147 hours/acre on the East Branch. Angling pressure on individual segments of these streams ranged from 72-454 hours/acre.

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The East Branch is located 8 miles northwest of Antigo and 35 miles northeast of Wausau. Nearly all the land that the East Branch of the Eau Claire flows through is privately owned. There is no acquisition program covering any part of the stream.

The East Branch of the Eau Claire River is a medium hard water (M.P.A. 52 ppm), acid stream (pH 6.3) that averages 50 ft wide and 0.8 ft deep. The water is light brown in color. Sixteen miles of the East Branch are trout water, with 12 miles (73.5 acres) of Class II and 4 miles of Class III*. Although the East Branch contains a native brook trout population, it is also stocked with brook and brown trout. No estimates of standing stock are available for the East Branch of the Eau Claire River.

METHODS

A stratified sampling schedule was used to randomly sample each stream at various times of the day and on different days of the week in May, June, and September. The schedule assured that each day of the week was sampled once a month on each stream. The opening weekend on both streams was sampled from sunrise to sunset each day and the results computed independently of the remaining schedule. For each stream, sampling data for weekend days and weekdays were used separately to project total effort and harvest. Funding was not available to sample in July and August.

Each stream was divided into three or more study sections (Fig. 1, 2) to assess localized fishing pressure and harvest. The Class III section of trout water on the East Branch was excluded since access is limited and previous experience revealed only light fishing pressure. Three 8-hour sampling periods were established and randomly selected to cover all daylight hours (6 a.m.-2 p.m., 10 a.m.-6 p.m., and 2 p.m.-10 p.m.). Each sampling period was divided into 2-hour segments during which a car count and angler interviews were conducted. Car counts along the entire stream length were usually made at the beginning of each 2-hour period. Interviews were made on the return trip and consisted of talking to those who had completed their fishing trps and those who were still fishing. The interviews collected information on fish species , fin clips, number of fish caught, hours fished, and where the fish were caught. Section 4 on the Plover River includes a 2-acre spring pond complex adjacent to the river. Data from the river and spring pond were combined because of a parking lot used as an access point to both the river and spring..

Fishing pressure was calculated by: vehicle hours/day x average number of anglers/vehicle x 16 hours x the number of weekend or weekdays in a month. Total harvest was determined by multiplying angler hours x catch/hour.

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*Streams depending entirely upon annual stocking to maintain the fishery.

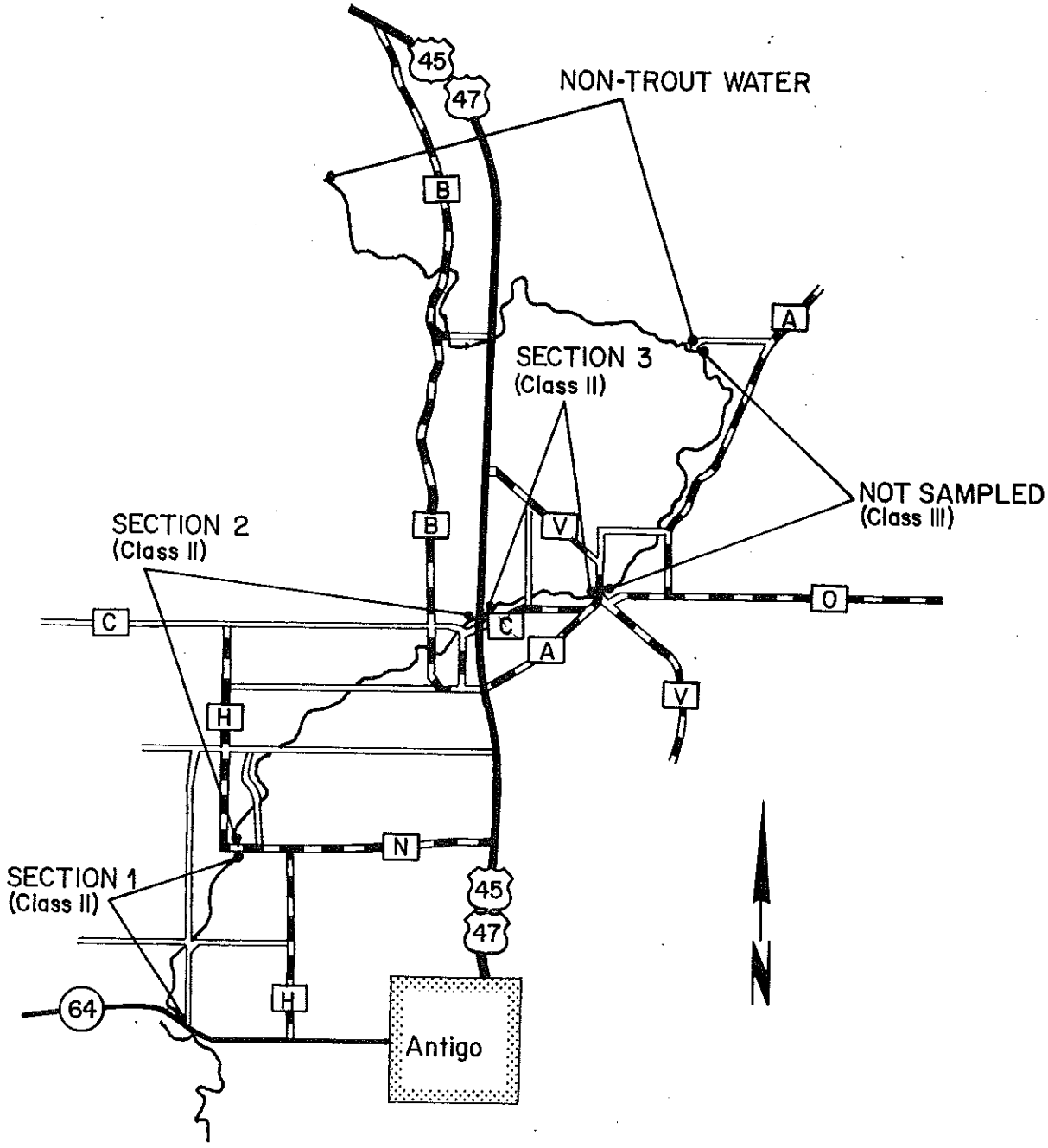

Figure 2. Study sections used for creel census studies conducted on the East Branch of the Eau Claire River.

TABLE 2. Estimated fishing pressure in each study section during May, June, and September 1974 on the Plover River and East Branch of the Eau Claire River.

	Study Section	Trout Class	Length (miles)	Est. Area (acres)	Hours Fished*	Hours/ Acre
Plover River	1	II	9.3	88.0	6,346	72
	2	II	6.0	43.0	4,091	95
	3	I	6.0	37.0	7,572	205
	4	I	3.8	9.6	4,353	453
Total			25.1	177.6	22,362	126 (weighted)** avg.
East Branch, Eau Claire River	1	II	3.25	20.0	1,643	82
	2	II	6.80	40.0	8,152	204
	3	II	2.14	13.5	1,021	76
Total			12.19	73.5	10,816	147 (weighted)** avg.

* Estimation based on interviews with 711 anglers who fished 1,581 hours on the Plover River and 481 anglers who fished 700 hours on the East Branch of the Eau Claire River.

** Total number of hours fished divided by total estimated acres.

TABLE 3. Estimated harvest by study section and species (May, June, and September 1974).

	Estimated Harvest							
	Native Brook	Stocked Brook (1979)	Native Brown	Stocked Brown (1974)	Carryover Stocked Rainbow	Stocked Rainbow (1974)	Total	No./ Acre
Plover River								
Section 1 (Class II)	1,029	152	406	981	109	497	3,174	36
Section 2 (Class II)	1,458	184	144	419	0	0	2,205	51
Section 3 (Class I)	3,012	82	207	269	0	0	3,570	96
Section 4 (Class I)	1,552	0	489	0	0	0	2,041	213
Total	7,051	418	1,246	1,669	109	497	10,990	61.9 (weighted avg.)*
	Native Brook	Stocked Brook (1979)	Native Brown	Stocked Brown (1974)	Stocked Coho** (1974)		Total	No./ Acre
East Branch, Eau Claire River								
Section 1 (Class II)	884	162	263	285	0		1,594	80
Section 2 (Class II)	4,219	1,443	193	732	52		6,639	166
Section 3 (Class II)	117	411	0	0	90		618	46
Total	5,220	2,016	456	1,017	142		8,851	120.4 (weighted avg.)*

* Based on hours fished.

**Escaped from state hatchery.

DISCUSSION

This creel census was subject to some limitations. The census was restricted to May, June, and September, but experience and periodic spot checks indicated fishing pressure was relatively light during the unsampled months. However, the absence of July and August data provides estimates of fishing pressure and harvest that are minimal, while the percent of annual pressure and harvest attributed to any month would be inflated. A projection of probable July and August harvest, using June and September data, increased estimated harvest in the Plover River by 1,451 trout (13%) and 1,429 trout (16%) in the East Branch of the Eau Claire River.

Fish stocked prior to the 1974 season were not fin clipped; therefore, any of these carryover trout were counted as native fish. The bias in the comparison of harvest of native and stocked trout was probably minimal. Johnson (1983) reported finding average minimum survival rates of 1.7% and 11.3% for yearling brook and brown trout, respectively, after 60-120 days in 13 north central Wisconsin streams. Mason et al. (1967) found that stocked brook trout were harvested early in the fishing season and did not contribute to the late season catch from 5 Wisconsin streams.

Fishing Pressure

Average fishing pressure on the two streams was relatively light (126 and 147 hours/acre on the Plover and East Branch, respectively). Angling pressure on the study streams was lower than observed in six out of seven other Wisconsin studies where a range of 149-563 hours/acre was reported (Table 5). Only Westfield Creek (Avery 1974b) was found to have annual fishing pressure (52 hours/acre) considerably less than the Plover or East Branch. Large variations in angler effort became apparent when different classes of trout water or different sections of the study streams were compared (Table 2). Angling pressure on the Class I waters (256 hours/acre) was 149% greater than that found on Class II waters (103 hours/acre). The greatest pressure on either stream occurred on section 4 of the Plover River (453 hours/acre) and was comparable to that reported in previous studies on Lawrence Creek (413-495 hours/acre) (Hunt et al. 1962) and the lower North Branch of Beaver Creek (458 hours/acre) (Thuemler and Meyers 1976).

The opening weekend accounted for 24% and 21%, respectively, of the total fishing pressure on the Plover and the East Branch. The month of May, including opening weekend, comprised about 75% of the fishing pressure on both streams. Both opening weekend and the month of May accounted for a much larger portion of the total pressure than did the 3% and 17%, respectively, found on the Lower North Branch of Beaver Creek (Thuemler and Meyers 1976). If the projected angling pressure for July and August is included, the opening weekend accounted for 17% and 19% of the annual pressure on the Plover and East Branch, respectively. This is still considerably higher than the lower North Branch of Beaver Creek.

Harvest

An estimated 61.9 trout/acre were harvested from the Plover River (Class I and II waters combined), while 120.4 trout/acre were taken from the East Branch (Class II waters). When the Plover River Class I and II waters are separated, the harvest was 120.4 and 41 trout/acre, respectively. The catch from Plover River Class I and East Branch Class II waters was approximately 19% greater than the 101 trout/acre taken from the lower North Branch of Beaver Creek (Class II) in 1975 (Thuemler and Meyers 1976) . In McKenzie Creek (Class I and II) (Lowry 1971), the 1957 harvest of 177 trout/acre was 47% greater than the maximum from either stream in this study, while the 1963 catch of 118.6 trout/acre was quite similar to the maximums found. In Lawrence Creek (Hunt et al. 1962) and Westfield Creek (Avery 1974b), the maximum harvest found was 32 trout/acre, which was 22% lower than the minimum (41 trout/acre) taken from either the Plover or the East Branch.

Stocked trout comprised 25% and 34%, respectively, of the total harvest from the Plover and the East Branch. In the stocked sections only, hatchery fish provided 34-36% of the harvest. These levels are comparable to the 32% of total harvest provided by stocked trout (brown trout only) in the lower North Branch of Beaver Creek (Thuemler and Meyers 1976). The contribution of stocked fish to the total harvest was similar on these three streams even though different combinations of fish species were present.

Estimated return to the creel of hatchery fish stocked ranged from 21-66% for brook trout, 28-100% for brown trout, and 50% for rainbow trout. No fall stocked fingerling brook or brown trout were recorded from the Plover River during the census. In the summer of 1975, an electrofishing survey of the Plover River recovered no fall stocked fingerling brook trout from October 1974 and only 1.25% of the fall stocked fingerling brown trout. The apparent low survival rate of these fish limits their potential contribution to the harvest. If these fall stocked fingerlings are excluded from the number of potentially harvestable fish, then the return rates for stocked holdover fish are 57-66% for brook trout and 33-100% for brown trout.

The 33% return rate for stocked Plover River brown trout is similar to the 23% found by Thuemler and Meyers (1976). The estimated 100% harvest of East Branch stocked brown trout exceeded the returns found in other Wisconsin studies (Table 5). The abnormally high return can be attributed to sampling bias. Adverse stream conditions delayed the stocking of brown trout in the East Branch until the Monday immediately following the opening weekend. Consequently, two of the randomly selected May sampling rates were within three days of the stocking, and one of the days coincided with the planting date. Catch rates for two of these sampling dates (1.4 and 0.19 fish/hour) were quite high, while the remaining three days sampled in May had a combined catch rate of 0.0 fish/hour. Although the results are probably biased, there may have been essentially a 100% harvest of these fish since not one stocked brown trout was observed in the creel after June 1.

in targeting of this species for harvest and help in reducing predation by larger brown trout. The end result hopefully would be a higher quality brook trout fishery.

Use of a split stocking appeared to provide an extended period of recreation on Class II and III waters. Typically, pressure and harvest declined to virtually zero after 1 June when a single stocking was made. In the East Branch, catch rates for brook trout increased in June after the second stocking. Several problems are associated with multiple stockings. First, the costs of distribution and rearing increase for each additional stocking. Secondly, should each stocking be publicized, it can lead to "truck chasers"--fishermen who follow stocking trucks to the trout water. If the stocking is unpublicized, then there is no assurance that enough anglers will be fishing these stocked segments to use the fish and they may perish before anglers find out that a stocking has been made. In Class II sections of water where some carryover is desired, perhaps unannounced stockings would be most appropriate. In Class III waters, carryover in many cases is not a prime objective, and it may be desirable to announce second and third stockings. Such publicity would probably assure a high return of the stocked trout to the angler.

ACKNOWLEDGMENTS

The author acknowledges Max Johnson, Larry Smith, Marv Zaddack, and Mark Ebbers, who assisted in collecting the census data. The study was designed by Bob Carline. Lloyd Andrews, Max Johnson, and Charles Krueger critically reviewed the manuscript. A special thanks to Lois Bernhardt for her assistance and typing.

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