

MICHIGAN DEPARTMENT OF CONSERVATION
Research and Development Report No. 79*

August 30, 1966

ANGLING RESULTS DURING THE EXTENDED FALL TROUT
SEASONS, BURTON'S LANDING TO WAKELEY BRIDGE,
AU SABLE RIVER, 1964 AND 1965¹

By Gaylord R. Alexander and David S. Shetter

Research investigations on the special-regulation waters of the North Branch of the Au Sable River, Pigeon River, Little South Branch of the Pere Marquette River, and main stream of the Au Sable River demonstrated that fall standing crops of trout were somewhat higher in sections fished under special regulations (unpublished Department reports). From the North Branch of the Au Sable River and Pigeon River, where information is available on the survival of trout from fall to spring, data also have been reported which demonstrated that the summer "stock-piling" of trout was only temporary. Natural mortality between trout seasons reduced the population to levels of abundance comparable to population levels found in streams fished under normal fishing rules: any lure, a 7.0-inch minimum size, and a 10-trout daily bag limit.

For the last 2 years (1964 and 1965), part of the main branch of the Au Sable River in Crawford County has had an extended fall trout season of 30 days to permit some harvest of the trout that normally

* Institute for Fisheries Research Report No. 1729.

¹ Contribution from Dingell-Johnson Project F-27-R, Michigan

would die between seasons. Michigan's regular season commences on the last Saturday in April and closes the second Sunday in September. The portion studied was an 8.7-mile section between Burton's Landing and Wakeley Bridge. This stream area has been fished under special trout fishing rules since 1955. The special rules in force are: lure restricted to artificial fly; minimum legal length for trout, 10.0 inches; and a daily bag limit of 5 trout.

Methods

A randomly stratified creel census, for which the trout season was divided into five periods, was used to evaluate the fishing results in 1964 and 1965. The regular trout season was divided into four periods, each about 35 days long; the fifth period was the 30-day extended fall season. A detailed description of the census method is given in Research and Development Report No. 68 (Alexander and Shetter, 1966).

From 1959 to 1962, fall population estimates of trout were made by using a mark-and-recapture procedure utilizing d-c electrofishing gear. Two 1,000-foot sections of river served as representative sample areas. The average estimates for these two sections were used to calculate the total population for the stream.

Results

From 1960-1963, the fishing pressure during the regular season ranged between 35,533 and 52,287 man-hours for the experimental

river section (Table 1). In 1964 there were 39,956 hours of fishing; in 1965 anglers spent 41,881 hours fishing on the stream. Both values fall within the range noted prior to the extension of the season. Anglers fished an additional 1,340 hours during the extended season in 1964 for a 3.4% increase in total fishing pressure. In 1965, anglers fished 2,205 hours during the extended season, an increase of 5.3% over the fishing intensity during the regular season.

Prior to the fall seasons, anglers creeled between 5,777 and 6,305 trout each year in 1960-1963 (Table 1). In 1964, the catch was 5,612 trout of which 101 (1.8%) were caught in the fall. In 1965, anglers creeled 8,859 trout during the regular season and 152 during the extended fall season, an increase of 1.7% over the regular-season catch.

The average catch per hour of trout for the regular seasons in 1960-1963 varied from 0.11 to 0.16 fish per hour; 0.14 fish per hour in 1964; and 0.22 fish per hour in 1965. Catch-per-hour rates during the 1964 and 1965 extended seasons were only 0.08 and 0.07 trout per hour, respectively.

Between 1959 and 1962, estimates of the fall populations of trout over 9.9 inches averaged 12,050 fish (Table 2). These estimates were made immediately following the regular trout season. Since an average of only 127 trout were caught each fall in 1964 and 1965, there was no significant harvest of surplus trout in the extended season. Also in 1959-1962, fall standing crops of trout 7.0-9.9 inches long averaged 23,803 fish for this experimental section. In view of results

Table 1. --Angling statistics for the regular and fall trout seasons on the Au Sable River, Burton's Landing - Wakeley Bridge

Year	Season	Hours fished	Catch	Catch per hour
1960	Regular	52,287	5,777	.11
1961	Regular	45,368	6,305	.14
1962	Regular	40,769	6,115	.15
1963	Regular	35,533	5,861	.16
1964	Regular	39,956	5,511	.14
	Fall	1,340	101	.08
1965	Regular	41,881	8,859	.21
	Fall	2,205	152	.07

Table 2. --Estimated number of trout over 6.9 inches in the Au Sable River between Burton's Landing and Wakeley Bridge (1959-1962)

Year	Size group	
	7.0-9.9	10.0+
1959	18,305	9,805
1960	24,969	13,154
1961	25,117	12,502
1962	26,805	12,746
Average	23,803	12,050

from the North Branch of the Au Sable River (Shetter and Alexander, 1966), many trout in this size class also could be cropped without endangering future fishing.

Brown trout comprised 93% of the season's catch, brook trout 4%, and rainbows 3% (Table 3). Also, large trout (over 10.0 inches) were caught in proportion to their abundance. Note that among the larger size groups brown trout comprise a greater proportion of the population. Apparently most brook trout die of natural mortality before reaching the legal size limit of 10.0 inches. Rainbow trout either die of natural causes or migrate from this section.

While checking fishermen, considerable evidence was found that poaching of small trout occurred throughout the fishing season. Thus all mortality of sublegal trout cannot be attributed to natural factors. The magnitude of this poaching is hard to determine because unbiased samples are difficult to obtain.

In the observed catches, 92% of the trout kept by anglers were of legal length; 8% were sublegals. By species, 92% of the rainbow trout, 97% of the brown trout, and only 43% of the brook trout seen were legal fish.

The average length attained by trout of various ages in the fall is shown in Table 4. Brook trout generally do not reach 10.0 inches until their fourth summer of life (age-group III). This short life span, in part, explains why most brook trout die before reaching legal size. Both brown and rainbow trout grow faster than brook trout in these

Table 3. --Average percentage of brown, brook, and rainbow trout, by size groups, in the October population estimates (1959-1962) and anglers' catch (1960-1965)

Size group	Brown	Brook	Rainbow
<u>Population</u>			
0.0-6.9	34	37	29
7.0-9.9	80	18	2
10.0 and over	98	1	1
<u>Catch</u>			
10.0 and over	93	4	3

Table 4. --Average length at capture of trout of various ages in the
fall, Au Sable River, Burton's Landing - Wakeley Bridge
(1959-1962)

Species	Age group						
	0	I	II	III	IV	V	VI
Brown	4.5	7.9	11.3	14.1	17.1	19.1	20.1
Brook	4.4	7.0	9.3	10.7	-	-	-
Rainbow	4.0	8.6	10.6	-	-	-	-

waters and reach legal size during their third summer of life (age-group II). Older brown trout are well represented in the population even though this species contributes the bulk of the fish to the fishery.

The average seasonal distribution of angling effort and trout catch for 1964 and 1965 is shown in Table 5. In general, effort decreases throughout the season. The first 5 weeks of the season (first period) had about 8 times the activity of the 30-day extended season (fifth period). The trout catch generally follows angling effort.

Pleasure boating is of major concern to fishermen using this portion of the Au Sable. Anglers and pleasure boaters compete for use of the river in this area, and most anglers prefer to fish at times when boating activity is at a minimum (Alexander and Shetter, 1966). Man-hours of boating for the various time periods of the trout season are presented in Table 6. Boat traffic was at its lowest intensity during the fore part of the season, with pleasure boating and boat fishing activity about equally divided. Boating activity reached its seasonal peak during the fourth period, especially pleasure boating. Although boating falls off sharply during the fifth period, competition for space remains keen because of fewer daylight hours.

Acknowledgments

The authors acknowledge the assistance of Duane Brooks, Donald Parsons, Max Fenby and Otis Williams in the collection and tabulation of data. We also appreciate the editorial assistance given by Mercer H. Patriarche.

Table 5. --Average number of angling hours and trout caught, by period of the trout season, on the Au Sable River, between Burton's Landing and Wakeley Bridge, 1964-1965

Period ^a	Hours fished	Catch
1	14,662	3,432
2	12,397	1,991
3	7,722	1,535
4	6,139	228
5	1,773	127

^a Periods 1-4 each about 5 weeks long; Period 5 is the 30-day extended season.

Table 6. --Average seasonal distribution of boating activity (man-hours) by sightseers and anglers during the five periods of the trout season (1964-1965) on the Au Sable River between Burton's Landing and Wakeley Bridge

Type of boating	Period of trout season				
	1	2	3	4	5
Pleasure	1, 523	15, 370	13, 114	25, 151	8, 231
Fishing	1, 668	1, 378	1, 195	1, 074	58
All boating	3, 191	16, 748	14, 309	26, 225	8, 289

Literature cited

Alexander, Gaylord R., and David S. Shetter. 1966. Fishing and boating on segments of the Au Sable River in Michigan, 1960-63. Michigan Department of Conservation, Research and Development Report No. 68.

Shetter, David S., and Gaylord R. Alexander. 1966. Results of angling under special and normal trout fishing regulations in a Michigan trout stream. Trans. Amer. Fish. Soc., 94 (3): 219-226.

INSTITUTE FOR FISHERIES RESEARCH

Gaylord R. Alexander and
David S. Shetter

Report approved by : M. H. Patriarche

Typed by M. S. McClure