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A DESCRIPTIVE AND HISTORICAL ACCOUNT OF THE PLATTE RIVER,
ITS SURROUNDING AREA, AND ITS SALMONID FISHES ↓

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ABSTRACT

Michigan's Platte River is located in the northwestern part of the Lower Peninsula. Only about half of the main stream is suited for salmonid fishes the year round because the rest of it becomes too warm for them in summer. The three principal tributaries are cold-water streams. The surrounding land consists mostly of sand; much of it is forested, mainly with hardwoods, but there are extensive plantations of Christmas trees and forest-type conifers.

Settlement of this region commenced little more than 100 years ago. Lumbering and farming were the first industries, each of which receded after a brief flourish. Great expansion of sport fishing and of other leisure-time activities within recent years has made recreational services a significant industry in this area.

The grayling, which inhabited Platte River when settlement of this region began, became extinct here before 1895. The grayling was replaced by the brook trout, which was abundant into the 1930's. The rainbow trout appeared around 1920. It was numerous during the 1930's and 1940's, but greatly decreased in the 1950's and early 1960's from predation by sea lampreys in Lake Michigan. It became plentiful again by the mid-1960's, however, after lampreys had been drastically reduced. The brown trout was introduced in 1921. Some evidence suggests that its establishment progressed slowly.

Presently Platte River harbors considerable numbers of rainbow and brown trout, but has few brook trout. Large runs of coho salmon have entered this stream since it was first stocked with this species in 1966. Coho have reproduced naturally to some extent. Chinook salmon were planted here in 1971 and 1972.

✓ A contribution from Dingell-Johnson Project F-31-R, Michigan.

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People who furnished information used in this report are listed under "References cited." Their help, and that of all others who assisted in any way, is deeply appreciated. Persons who gave special assistance are the following:

Dorothy B. Hensel, formerly Director/Curator of the Benzie Area Historical Museum and now Consultant, told me of persons familiar with conditions in Benzie County in the past.

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Reeve M. Bailey, Curator of Fishes in the Museum of Zoology, The University of Michigan, made available the fishing diaries of E. W. Wait. The photograph reproduced in Figure 2 came from one of these diaries.

Thomas M. Stauffer, Doris S. Greenleaf, and Gerald P. Cooper edited the report.

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INTRODUCTION

Fisheries research biologists periodically collected samples and data from the Platte River in Benzie County from April 1967 through September 1972 for a study of competition between trout and coho salmon. The information from these collections, which is now being examined and organized, will be dealt with in forthcoming reports. This report was prepared to consolidate basic information on the drainage system and on the surrounding land. Although some information obtained during the field investigation appears herein, much more came from other sources. Such a compendium was thought quite desirable as a base of orientation for evaluating relationships between trout and salmon. Aside from this purpose, it will also serve as a general reference on the river and its tributaries.

Besides describing biological and physical aspects of the river and its drainage basin, the report presents some economic and social history of Benzie County. This plan of coverage was adopted because of several reasons, one being that we cannot eventually decipher the causes of significant changes in fish populations here within the last 100 years without looking into mankind's activities in this locality during that same time. Another reason for such an approach is to assist comprehension of the river's value as a recreational and esthetic asset at the present time. This, then, is why mills, railroads, farms, park attendance figures, and several other seemingly intrusive subjects have found their way into the story.

PART I. THE RIVER AND THE SURROUNDING LAND

The name

Probably many people have wondered about this river's name --its meaning and origin. It seems fitting that something be said about it here.

The names for this stream that appear on old maps, and generally in this sequence, are Assiette, Plate, and Platte. ¹ The first two are French words, and the third is an alteration of the second. Meanings of "assiette" include "plate" and "platter"; meanings of "plat" (feminine form, "plate") include "flat," "level," "even." A dictionary of place names (59) explains the name of the Platte River in the Great Plains region:

Plate. French "flat." In place names the feminine appears as Platte. The river NB [Nebraska] is a translation of the Omaha [Indian] name elsewhere transliterated as Nebraska, meaning a stream not running between high banks, but widely spread out.

It would appear that Michigan's Platte River was named by a Frenchman (fur trader, voyageur, or missionary?), perhaps

¹ Examples of maps on which these names appear: (1) Assiette: map of Michigan, Illinois, and Indiana, of unknown origin and date; (2) Assiette: "The Lower Peninsula of the Northwest Territory," John Cary, 1805; (3) Plate: "Geographical, Statistical, and Historical Map of Michigan Territory," J. Finlayson, engraved by Young and Dellecker, 1822; (4) Plate: "North America Sheet V, The Northwest and Michigan Territories," J. & C. Walker Sculp, 1833; (5) Platte: "Map of Michigan," T. G. Bradford, engraved by G. W. Boynton, 1838; (6) Platte: "Tourists Pocket Map of Michigan," J. H. Young, 1839. These and other old maps of the region concerned are on file in the Graduate Library of The University of Michigan.

directly, but possibly from a name given to it by Indians, which had a meaning similar to that of the French root word.² ✓

Why was this name chosen? The reason will probably never be definitely known, but it likely was because of some flat (plate-like) feature associated with the stream. As the river has low banks along much of its course, and especially within the stretch near the mouth, one could suppose that this feature influenced the choice. This characteristic is not unique, however, among tributaries of Lake Michigan. Therefore what could more likely have caused the choice is the character of the terrain near the mouth and its marked contrast with the terrain on either side of the valley. Beginning near Honor, the river courses through a broad, delta-shaped plain. On each side of this plain, extending to Lake Michigan, is much higher ground. The situation is well illustrated on relief maps.³ One can imagine that the contrast in elevations could have emphasized the flatness of the broad valley for a person on a high point of land or in a boat on Lake Michigan, which could have suggested the name chosen. This possibility of origin is strengthened when it is considered that the usual English equivalents of "assiette," which evidently was the first name the white man used for this river, are "plate" or "platter."⁴ ✓

² ✓ Nearby Betsie River (previously Betsy or Betsey) is named R. au Bec Scies on old maps of the Michigan territory. Jenks (26) has this to say about it: "The word 'Betsy' however is itself a corruption of the French name of the river, Riviere Aux Bec Scies, which means the 'river of the saw bill' or 'Merganser duck,' and the translation of the early French travelers of the Indian name of the stream, Unsig-o-ze-bee, which has the same meaning." Bruce Catton (10) tells an interesting story, whether factual or apocryphal, about the origin of the present name of this stream.

³ ✓ Appropriate references on this point are Helen Martin's map (30) and a detailed map of this area in Calver's paper (9).

⁴ ✓ Information from Professor J. D. Robertson, Department of Romance Languages and Literature, the University of Michigan.

Two lakes, a township, and a community in Benzie County, are also named Platte, quite certainly as a result of their close association with the river.

Location and length of the main stream,
and area of the drainage basin

Some of the headwaters of Platte River are located in Grand Traverse County, but Benzie County contains all of the main stream and its major tributaries. The outlet of Lake Ann forms the main stream, which from Lake Ann to Lake Michigan is about 25 miles long, including entry-to-exit distances across Bronson, Big Platte, and Loon lakes. The principal tributaries are the North Branch, Carter Creek, and Brundage Creek. Brown (7) records 30 miles of tributaries for the entire stream system.

Several areas have been given for the area of the drainage basin; these disagreements apparently have been due to differences of opinion on the location of the basin's periphery. At least three measurements of total area have been recorded; these are, in square miles, 150 (69), 171 (63), and 187 (7). Figure 1 shows the drainage system. The area of 150 square miles was determined from the latter map (69). Of the total area, approximately 128 square miles (81,920 acres) are in Benzie County. Hence this portion comprises about 37% of the total expanse (218,880 acres of land surface plus inland water area) of Benzie County.

Widths, depths, and flow

The main stream is from 20 to 90 feet wide. Unlike the typical situation of streams gradually broadening toward their lower end, Platte River is about as wide in some places near Lake Ann as it is near its mouth. The average width for the main stream is

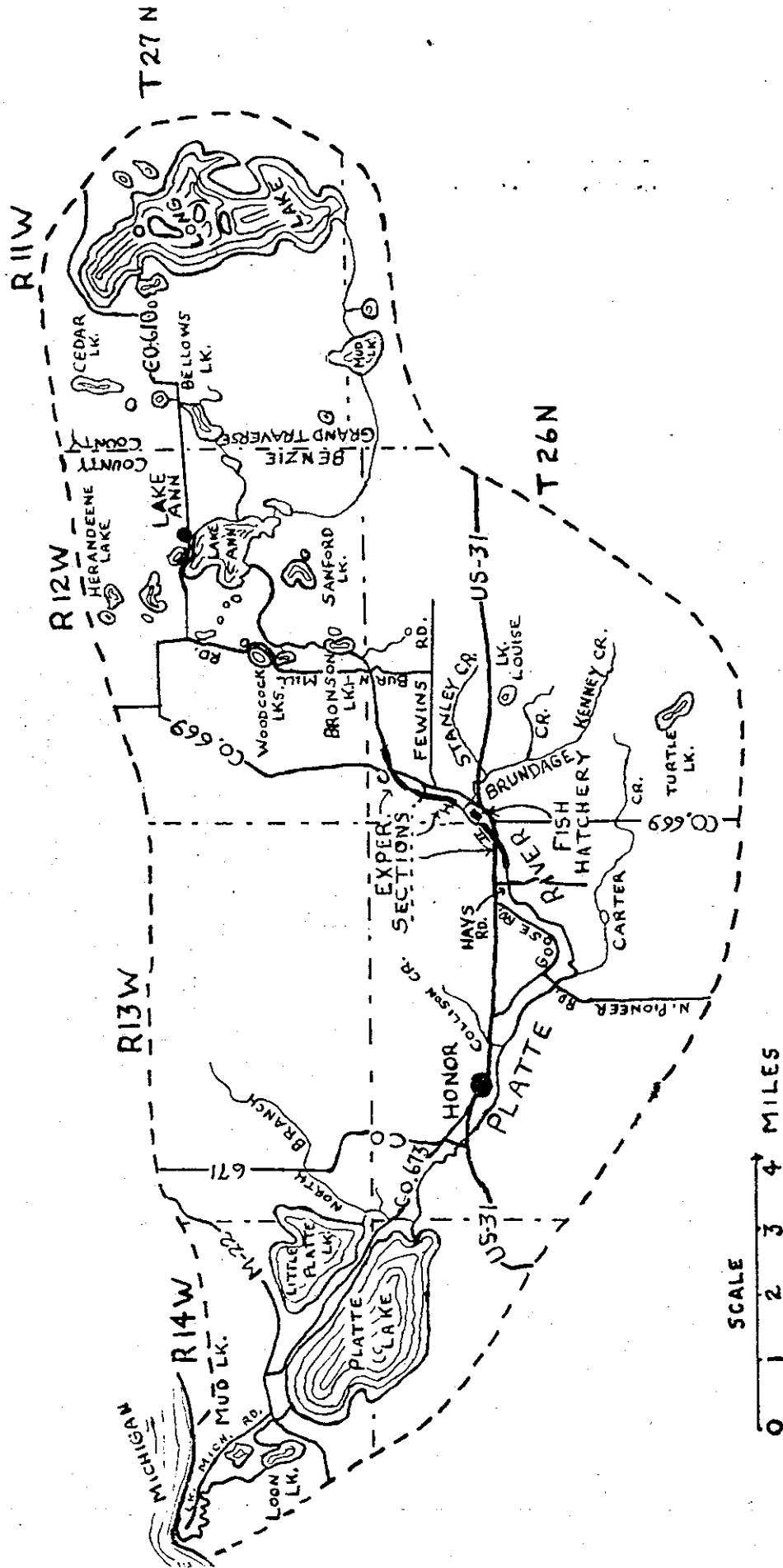


Figure 1.--The Platte River Watershed, in Benzie and Grand Traverse counties. Copied, and modified, from "Platte River Watershed Reconnaissance Survey Report," by R. G. Wicklund and B. C. Dean, 1957.

probably between 45 and 50 feet. The mean widths in feet of the 1-mile experimental sections in which the investigation of 1967-1972 was carried out are as follows: Control Section, 51 feet; Section I, 44 feet; and Section II, 44 feet. ⁵ Acres of water surface in the experimental sections at the time of normal summer flow are: Control Section, 5.8; Section I, 5.3; Section II, 5.3. Approximate average widths of the North Branch and Carter and Brundage creeks are 15, 12, and 10 feet, respectively.

Water depths in Platte River are generally shallow, especially in the stretch from Lake Ann to about a mile above Platte Lake. Most of the stream here is less than a foot deep; few of the pools are as much as 5 feet deep. Mean depths of the experimental sections during normal summer flow were found to be 10 inches in the Control Section, 12 inches in Section I, and 15 inches in Section II.

The volume of flow is quite stable, and extreme flooding rarely happens. Among 44 measurements made by the U.S. Geological Survey at the US-31 bridge east of Honor between January 1961 and November 1968, the range of discharge was 56-98 cubic feet per second (63). Average discharge by season was: winter (December, January, February--10 samples), 75 cfs; spring (March, April, May--12 samples), 81 cfs; summer (June, July, August--11 samples), 68 cfs; fall (September, October, November--11 samples), 71 cfs. A large flash flood reportedly occurred in the summer of 1956 (69). During the various occasions we worked on the river in 1967-72, the greatest observed rise in level from rainfall was 0.8 foot (from observations on the staff gage at the US-31 bridge east of Honor).

Records on flow volumes at various points in the river and in the three larger tributaries appear in Table 1.

⁵ These figures for widths and depths, as well as those for bottom soils and mean depths, were determined from detailed maps of the test sections. The test sections (I, II, and Control), located above and below the fish hatchery, are indicated in Figure 1.

Table 1.--Discharge measurements of Platte River and tributaries,
October 7, 1957*

Stream	Location	Drain- age area (sq. mi.)	Dis- charge (cfs)	cfs per square mile
Platte R.	SE 1/4 Sec. 27, T. 27N., R. 13W., 1/2 mile down- stream from Lake Ann	47.6	16.9	0.35
Platte R.	SE 1/4 Sec. 6, T. 27N., R. 13W. at Allyn (Maple City Rd. crossing)	71.6	36.6	0.51
Brundage Cr.	SW 1/4 Sec. 7, T. 26N., R. 13W. 500 ft. upstream from Platte R.	12.7	13.5	1.10
Platte R.	SE 1/4 Sec. 12, T. 26N., R. 14W. at U.S. Highway 31	91.9	66.0	0.72
Carter Cr.	NE 1/4 Sec. 22, T. 26N., R. 14W. 1/2 mile upstream from mouth	10.9	4.83	0.44
Platte R.	SE 1/4 Sec. 15, T. 26N., R. 14W. At Case Bridge, 1/2 mile downstream from Carter Cr.	109.0	81.6	0.75
Platte R.	NE 1/4 Sec. 16, T. 26N., R. 14W. at south edge of Honor	117.0	94.2	0.80
North Branch Platte R.	NE 1/4 Sec. 1, T. 26N., R. 15W. on County Road 673	31.1	17.1	0.55
Platte R.	NE 1/4 Sec. 28, T. 27N., R. 15W. 200 ft. downstream from M-22	166.0	115.0	0.69
Platte R.	NW 1/4 Sec. 20, T. 27N., R. 15W. 1/4 mile upstream from Lake Michigan	171.0	118.0	0.69

* This table adapted from Surface Water Supply of the United States, 1958. Part 4. St. Lawrence River Basin. U.S. Geological Survey Water-Supply Paper 1557 (1960), U.S. Geol. Surv., Washington, D. C. 394 pp.

The water of Platte River is remarkably clear, and it is not very turbid during spring run-off or after heavy rains. Despite its high clarity, however, drift nets showed that the stream carries a surprising amount of suspended silt and organic debris.

The average current velocities in the experimental sections during May 1967 were 1.3 feet per second in both the Control Section and Section I, and 1.7 feet per second in Section II (22).

Water temperatures and chemistry

The 13 miles of main stream between Burnt Mill Road and Platte Lake is the better trout water of the river because of temperature conditions. Other parts of the main stream become excessively warm in summer. This warming is strongly influenced by the outflow from lakes connected with the river. Approximately 12 miles of the main stream are either marginal or generally unsuited for salmonids in the summer because of intolerable temperatures (70), although trout may be found in small, isolated areas where there is spring inflow. On the other hand, trout and salmon (mainly seasonal migrants from Lake Michigan) use these portions of the river extensively at other times.

Temperatures even in the more favorable 13-mile portion can either approach or reach the upper limits of tolerance for salmonids during unusually warm weather. These periods, however, are infrequent and usually brief. Salmonids at such times may congregate in areas with spring inflow. Water temperatures were taken when air temperatures were warmer than usual for that region (Table 2). The water temperatures recorded on July 9, 1967 were only a degree or two higher than those which prevail on a normal summer day (air temperature in the mid-70's), as judged from numerous readings obtained in the experimental sections.

Table 2. --Warm-weather water temperatures of Platte River and three of its tributaries, Benzie County, July 1967*

Station locations	July 9		July 22	
	Hour (p.m.)	Temp (°F)	Hour (p.m.)	Temp (°F)
Old railroad crossing, about 200 ft. up from Burnt Mill Rd. (Sec. 4, T.26N., R.13W.)	4:45	70	2:00	71
Burnt Mill Road crossing (Sec. 4)	4:50	72	2:15	71
Old railroad crossing, about 2,000 ft. below Burnt Mill Rd. (Sec. 4)			3:15	70
County Road 669 crossing (Sec. 6)	5:15	69	4:30	72
About 3,000 ft. below Co. Rd. 669 crossing (Sec. 6)	5:20	68	4:35	72
Fewins Rd. crossing (Clark Bridge, Sec. 7)	5:25	69		
Road bridge on fish hatchery grounds (Sec. 7)	5:30	69	4:40	72
<u>Brundage Cr.</u> , Co. Rd. 669 crossing (Sec. 7)	5:45	54	4:50	56
US-31 crossing, E. of Honor (Sec. 13, 26N., 14W.)	6:45	64	5:00	69
Haze (Hays) Rd. crossing (Sec. 13)	7:00	66		
State Forest campground, near picnic area (Sec. 22)	7:15	67	5:15	70
N. Pioneer Rd. crossing (Case Br.) (Sec. 15)	7:30	64	5:30	69
<u>Carter Cr.</u> , Brownell Rd. crossing (Sec. 22)			5:45	60
South St. Br. (at Honor, Sec. 16)	7:45	64	6:00	68
US-31 crossing, W. of Honor (Sec. 8)	7:55	65		
Indian Hill Rd. crossing (Sec. 8)	8:00	64		
<u>North Branch</u> , Indian Hill Rd. crossing (Sec. 30, 27N., 14W.)	8:15	52		
<u>North Branch</u> , Deadstream Rd. crossing (Sec. 1, 26N., 15W.)	8:30	68		
M-22 crossing (Sec. 28, 27N., 15W.)	8:45	70		

* Air temperatures taken at sites where water temperatures were recorded: July 9--4:45 p.m., 82; 6:00, 82; 7:00, 78; 8:00, 77; 8:45, 74; July 22--2:00 p.m., 84; 4:30, 86; 5:00, 84; 6:00, 82.

Some information has been obtained on the chemical and physical properties of Platte River water. Electrical conductivity in the experimental sections (recorded under both high-water and normal conditions) has ranged between 290 and 340 μ mhos (standardized to 25 C). The range of methyl orange alkalinity was 110-150 ppm. Tables 3 and 4 show values for various minerals and gases.

Bottom soils

The bottom soils of Platte River are mainly gravel, sand, silt, and mixtures of these types. Small patches of clay are exposed in scattered locations, and there also are small areas of rubble. In the experimental sections, the percentages of the three prevalent types of exposed bottom soil were as follows:

<u>Section</u>	<u>Gravel</u>	<u>Sand</u>	<u>Silt-sand</u>
Control	71	8	21
I	58	25	17
II	57	31	12

These percentages were determined from soil designations that had been recorded together with depths when the sections were mapped.

In many places where sand or silt are the exposed soils, gravel composes the underlying substrate, beginning usually less than a foot below the cover soil.

Aquatic vegetation

Close observations on vegetation were made only in the experimental sections, but casual observations indicated that the plant life was similar in the other trout-water portions of Platte River. Plants

Table 3.--Analyses for some minerals and gases and several other chemical and physical properties of water in the Platte River*

Station 1 was at Burnt Mill Road; Station 2 at mouth of the river

Material or property	Amount in ppm or mg/l	
	Station 1	Station 2
Aluminum	0.0	0.0
Calcium (CaCO ₃)	116	108
Phenolph. hardness (CaCO ₃)	trace	0.0
Methyl purple hardness (CaCO ₃)	141	143
Total hardness	198	196
Chloride	3.5	3.0
Copper	0.22	0.25
Iron	0.7	0.6
Nitrate nitrogen	0.197	0.197
Nitrite nitrogen	0.003	0.003
Dissolved oxygen	9.8	8.3
Total phosphate	0.22	0.30
Ortho phosphate	0.02	0.10
Meta (poly) phosphate	0.20	0.20
Silica	7.0	8.2
Sulphate	14.0	18.0
Tanin and lignin	0.4	0.4
<hr/>		
pH value	8.3	8.3
Conductivity value	290 μ mhos	310 μ mhos
Water temperature (°F)	72 (10 a.m.)	72 (9:15 a.m.)

* Samples were collected and analyzed by personnel of the U.S. Bureau of Sport Fisheries and Wildlife, July 17, 1970.

Table 4. --Average value and range for some minerals and gases and for several other chemical and physical properties of water in the Platte River*

Material or property	Number of analyses	Amounts in ppm or mg/l	
		Average	Range
Alkalinity	10	158	150-175
Ammonia (NH ₃)	11	0.0	0
Nitrate nitrogen (NO ₃)	11	0.31	0.25-0.40
Nitrite nitrogen (NO ₂)	9	0.003	0.0-0.01
Dissolved oxygen	12	9.7	9.0-11.2
Total phosphate	11	0.04	0.0-0.15
Ortho phosphate	10	0.0	0
pH	11	8.1	7.6-8.3
BOD	10	2.1	1.2-3.2
Air temperature °F	12	56	28-84
Water temperature °F	12	52	36-66

*Samples were collected and analyzed by members of the technical staff, Michigan Water Resources Commission, Bureau of Water Management, November 1967 to October 1968 (17).
Samples collected in Section 13, T. 26 N., R. 14 W.

occur mostly in the shallower areas where the current is slow, and on silt bars. They have wide variety, but most kinds are sparse. The more prevalent aquatics are waterweed (Elodea), buttercup (Ranunculus), watercress (Nasturtium), and a narrow-leaf pondweed, Potamogeton vaginatus.⁶ Typically, all of these plants are either entirely or mostly submerged, but here watercress grows out of water on silt bars in many places. Watercress provides good cover for fish where the beds are submerged.

The pondweed may possibly have the greatest importance for fish of any plant in the river. Its stems and leaves harbor numerous insect larvae, and it affords good cover. Trout hide, and perhaps also feed, in the dense beds. When fish were being collected, trout were often found here. Most kinds of vegetation in streams thrive only where the current is slow, but this plant apparently prefers locations in brisk current.

Fish foods

Judging again mainly from studies and observations made in the experimental sections, fish-food organisms are plentiful in Platte River. Insects compose the bulk of the food. The more common groups are caddis flies (Trichoptera), mayflies (Ephemeroptera), and true flies (Diptera) (22, 23). Grayfish are moderately abundant and are important in the diet of the larger trout. Hildebrand's publication (23) lists the kinds of bottom-dwelling organisms found in the test sections, and indicates their abundance.

⁶ Identification verified by Professor Edward G. Voss, Curator, of Vascular Plants, Herbarium, The University of Michigan.

The fishes

Brown trout (Salmo trutta) and rainbow trout (Salmo gairdneri) are the principal sport fishes of Platte River. The brook trout (Salvelinus fontinalis) is extremely scarce now, but it formerly was abundant, and for some years was this stream's only salmonid fish after the grayling (Thymallus arcticus) disappeared. Coho salmon (Oncorhynchus kisutch) have inhabited this stream since 1966. The young coho live in the river from the time they hatch until they migrate to Lake Michigan about a year later, but adults are present only from late September into early winter. Chinook salmon (Oncorhynchus tshawytscha) were planted here in 1971 and 1972. The river provides some angling for salmon during the spawning runs.

Any species of fish that inhabits the connected inland lakes may sometimes be found in Platte River, and several species that primarily are residents of Lake Michigan occasionally are seen here also. A weir that was in use in the lower part of the river during 1941-43 captured 16 species of fish (54). Collecting with electrical gear in the experimental sections during 1967-1972 accounted for at least 17 additional species, including minnows and other small fishes that ordinarily would not be taken in a weir not designed for them (Table 5). All but a few species of the small and warmwater fishes, however, occur rarely in Platte River. The fishes other than salmonids that are more frequently encountered in the experimental sections are the white sucker (Catostomus commersoni), blacknose dace (Rhinichthys atratulus), creek chub (Semotilus atromaculatus), and mottled sculpin (Cottus bairdi). Their abundance varies widely among locations in the 3 miles of stream that have comprised the experimental sections, which obviously is influenced by differences in habitat.

Table 5. --Fishes captured in the Platte River in 1941-43 and 1967-72, with general assessments of abundance*

Species**	1941-1943	1967-1972	Species	1941-1943	1967-1972
Brown trout		N	White sucker	F to N	F to C
Rainbow trout	N	N	Bullhead spp.	F	R
Brook trout		F	Burbot	F	
Coho salmon		N	Brook stickleback		R
Chinook salmon		F			
Chestnut lamprey	X	X	Smallmouth bass	F	F
Sea lamprey	X	X	Largemouth bass		R
Bowfin	X		Pumpkinseed		R
Cisco	F to C	R	Bluegill		R
Rainbow smelt	F	R	Rock bass	C	F
Central mudminnow		F			
Northern pike	F	R	Walleye	F	
Carp	F to N	R	Yellow perch	C	F
Creek chub		F to C	Logperch		F to C
Blacknose dace		C to N			
Hornyhead chub		F	Mottled sculpin		C to N
Emerald shiner	N				
Rosyface shiner		F			
Common shiner		F to C			
Bluntnose minnow		F			

* Collections of 1941-43 taken in a weir near the mouth of the river, in Sec. 20, T. 27 N., R. 15 W. Collections of 1967-72 taken with electro-fishing gear in three 1-mile sections of the river, located in Sec. 13, T. 26 N., R. 14 W., Sec. 12, T. 27 N., R. 14 W., and Secs. 7, 6, 5, T. 26 N., R. 13 W.

** Names are those given in A List of Common and Scientific Names of Fishes from the United States and Canada (3rd ed. 1970) By Reeve M. Bailey et al., American Fisheries Society Special Bull. No. 6.

Two or three species of minnows collected in 1967-72 were not identified to species and therefore are not listed.

Key to symbols for abundance: N = numerous; C = common; F = few; R = rare (1-3 captures altogether); X = abundance not evaluated.

Variation of abundance indicated for some species in 1967-72 was associated oftener with stream location than with time.

An angler's description of the stream

E. W. Wait, who fished Platte River a long time ago and about whom more will be said later, on May 26, 1903 wrote this comment (66a) in his fishing diary:

The Platte is one of the most beautiful rivers, if not the most beautiful, of any in this part of the state. For ten miles from Allyn to Honor the river runs through a virgin forest, in no place does a farm come down to the banks. So similar is the river in all its parts, that a view of one part is a view of all, the river having a uniform and but little widening width the whole distance, being from forty to fifty feet wide. The wading is fine and also quite uniform. Although of course the stream is somewhat deeper in the lower course, being except in the holes from one to two feet deep. The bottom is always sandy and gravelly, and the water ripples along swiftly over the fine bottom. There is absolutely no brush in the river, although here and there a stranded log or large boulder stands above the water with the river rippling around it. The holes which are nowhere near as deep as on the Boardman are invariably under one or both banks and are so similar as to need no separate description being all overhung by bushes. Once in a while but not frequently a "sweeper" of cedar or maple falls out half way across the creek. It is a beautiful spot [near Hays Bridge] and on the day we were fishing seemed to be alive with speckled beauties of every size.

With the deletion of a few words (especially "virgin forest," in the second sentence), the stream as it appears today between Maple City Road and Honor could still be generally described with that passage.

Geology and soils

As a river is strongly influenced by the character of its drainage basin and man's use of the area, the surrounding land should also be considered in a descriptive account of the stream. Beginning with this

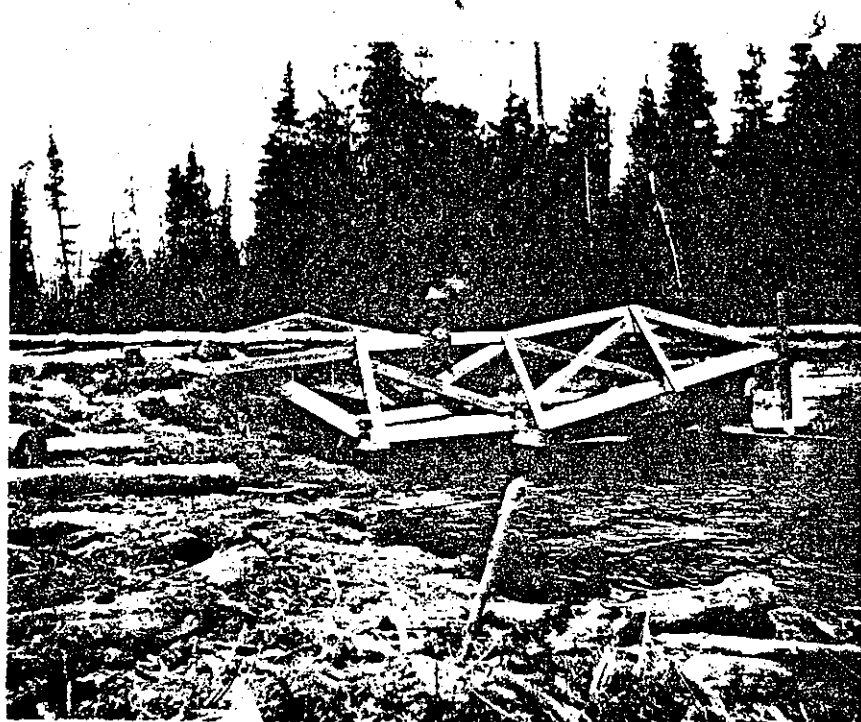


Figure 2. --Platte River at Hays (Haze) Bridge.
Photograph taken probably in 1904.



Figure 3. --Upstream view of Platte River from
Hays Bridge, April 20, 1972. The pine stumps in the
stream were placed there in 1958 for fish cover.

topic, the rest of Part I of the report will deal mostly with the surroundings.

The basic geological features of the Platte River watershed consist of (1) outwash and glacial channels, (2) rolling and high moraines, and (3) lakes and old lake beds, which occur mainly around the lower third of the stream's course (30). The first feature has the greatest area; the smaller areas occupied by the other two features apparently are similar in extent.

The drainage basin and adjacent areas have a highly interesting geological history. Their physiography is so distinctive that it is one of the prime attractions for drawing visitors to this region. The Pointe Betsie and Empire moraines, which border the lower portion of the Platte River valley, are examples of outstanding formations. Another distinctive feature is nearby Sleeping Bear Dune. The postglacial lakes that at various times occupied the basin of Lake Michigan, and which influenced shoreline formations in numerous ways, created a highly interesting chapter in local geological history. For anyone interested in details of the geology of this area, Calver's paper (9) and Dorr and Eschman's book (15) are recommended. Helen Martin's map (30) affords a general view of the geology and topography.

The drainage basin's surface soils are dominated by sand, almost to the exclusion of other soils. Veach (64) designates its various grades of sand as Class II and Class III soils, which are poor to medium for agriculture. Deposits of gravel occur some distance below the surface. As mentioned previously, gravel is prevalent in the channel of the river.

Forest cover

Trees and shrubs line the banks of the river and tributaries along most of their courses. In some places the river valley is

completely forested, and there are adjoining upland woodlands as well. These situations, of course, benefit the fishes of the streams by retarding runoff and preventing soil erosion, and shading helps to prevent excessive warming of the water.

As noted from personal observations and supplemented with information provided by area foresters Ted M. Reuschel and Clark Oliver (cc), these are the predominant trees and shrubs on the floor of the Platte River valley: (1) from Lake Ann to Honor--aspen mainly; also white cedar, hemlock, yellow birch, maple, elm, willow, and tag alder (the Dutch elm disease has begun destruction of elm stands); (2) from Indian Hill Road to Platte Lake--primarily tamarack, but also white cedar, hemlock, and tag alder; (3) from highway M-22 to the mouth--tamarack, white pine, and red pine, with cedar, hemlock, and tag alder bordering the banks.

Game and fur-bearing animals

From an economic standpoint, the whitetail deer may well be Benzie County's most important game animal, although its population here is not large. Two other significant species are the ruffed grouse and the snowshoe hare. There are a few cottontail rabbits. Squirrels consistently provide good hunting, fox squirrels outnumbering the gray species (bb). Wild turkeys were introduced into Benzie County about 7 years ago, but it is doubtful whether any presently survive (bb). The woodcock is an important game bird of this area, and there are some snipe. Ducks and geese are not abundant in the Platte River drainage basin, but they provide some hunting. Ducks frequent the lakes associated with the river more than the river itself.

The muskrat doubtless is the most abundant furbearer of this area. Judging from signs along the river, raccoons are plentiful; as is to be expected, mink are much less common, and otters are

rare. Numerous old cuttings indicate that beavers were fairly common along Platte River within recent time, but only one colony is known to be in its drainage basin now (bb). Conservation Officer George Peters also reported, however, that within the county in general there has been a considerable increase of beavers after 3 years of complete protection (bb). Other common furbearers of the area are the striped skunk, red fox, and weasels. There are a few coyotes and badgers. It is questionable whether any bobcats are present (bb).

The black bear is not known to occur in Benzie County now (bb), although it was formerly present. Other game and fur animals that previously inhabited parts of the Lower Peninsula, and quite possibly the Grand Traverse region also, were the moose, caribou, timber wolf, lynx, fisher, and marten (8).

Fayette Clark (11) has said that passenger pigeons nested by the thousands in the Platte River valley; he has mentioned also that pigeon hunters from New York boarded at his parents' home in Inland Township, and that they shipped out barrels of the pigeons. The Potawatomi Indian chieftain, Simon Pokagon, wrote a magazine article (50) in which he described the passenger pigeon, its habits, abundance, and methods used by market hunters to capture it. He also mentioned in this item a nesting site with these words:

In May 1880, I visited the last known nesting place east of the Great Lakes. It was on Platt [sic] River in Benzie County, Michigan. There were on these grounds many large birch trees filled with nests. These trees have manifold bark, which when old hangs in shreds like rags or flowing moss, along the trunks and limbs.

Immediately after this passage, Pokagon told of a method used here for capturing the birds, which because of its cruel aspects, was a discredit to the pigeon market hunters. ↴

Early settlement

An account of this kind should tell something of man's influence on the river and on the land it drains. Such coverage requires the inclusion of some social and economic history. Benzie County in its entirety will usually be involved in the discussion of the next several topics, rather than only Platte River's drainage area. A demanding reason for this procedure is that statistics used for reference were compiled on a county basis. But for other reasons also it is well to take a broader view, even to including other counties, mainly to place local conditions in perspective.

The white people who first settled near Platte River quite surely fished in it and trapped and hunted along its banks. The first white man who settled in the area now within the boundaries of Benzie County is said to have been Joseph Oliver. He was a trapper and trader who built a log hut near the mouth of Betsie River sometime

↴ Some comment on Simon Pokagon seems to be in order here. He was a son of Leopold Pokagon, also a Potawatomi chieftain, who in the early 1800's had settled in Silver Creek Township, Cass County. A village that eventually developed here was named Pokagon. Simon attended the University of Notre Dame, travelled widely, gave lectures, lived at various locations in southwestern Michigan, and gained a reputation as a writer. Although he apparently was a talented man, evidence also indicates that he received much assistance in writing the items credited only to him; a brilliant woman he knew is reputed to have had much to do with the quality of his published output. The Potawatomi Indians associated with the Ottawas in the northern part of the Lower Peninsula; Simon Pokagon wrote that he had been a fur trader in that region. Born in the 1830's, he died in Allegan County in 1899. All of this information has been provided by Everett Claspy in his histories which deal with the Potawatomi tribe in Michigan (12, 13).

within 1846-1854 (18, 29, 48). By 1858, three families were living in the area where Frankfort is now located (29). In 1857 and 1858, explorations were made in the Grand Traverse region to find a site for establishing a Christian colony and college, the idea of which the Reverend Charles E. Bailey of Ohio had conceived. The first location that the Reverend Bailey, his brother John, and several compatriots chose for the colony was approximately a mile south and 2 miles east of where Benzonia presently stands. However, when settlement began late in 1858 it took place at the latter location, because they found it more desirable.⁸ James Walker Case (1862-1946), son of Lucious W. Case, was the first white child born in the Benzonia area.⁹

The years that settlement began in other localities, identified by present townships of Benzie County, are reported to have been as follows: Almira and Homestead, 1862; Inland and Joyfield, 1863; Platte, 1864 (18). The first roads built in this region were one between Benzonia and Manistee in 1862, and another between Benzonia and Traverse City in 1863 (29).

Settlement in the area now within Grand Traverse County began earlier and progressed faster than in the Benzie area. Grand Traverse County was organized in 1851 (34). A post office was established in

⁸ Dorothy B. Hensel, a Bailey descendant who resides in Frankfort, has provided the information on the establishment of Benzonia, based largely on an account of it in the book, The Grand Traverse Region, published in 1884 by H. R. Page and Company of Chicago. Miss Hensel has also noted that although land claims had been made around Betsie Lake as early as 1851, it was not until 1859 that true settlement began at the location of Frankfort, and that this community did not show evidence of becoming a stable village until 1867-69.

⁹ Shelton M. Case, the present curator of the Benzie Area Historical Museum, contributed the information on his father, James Walker Case.

1853 in the village that was to become Traverse City (29). To illustrate how much faster southern Michigan had become populated than the northern part by the middle of the last century, Grand Traverse County was reported to have contained 911 people in 1854, when Washtenaw County had 28,836 (27). Grand Traverse Bay provided good access to the Grand Traverse area. Desirable stands of timber nearby also encouraged settlement here sooner than in some other parts of the north country. A lumber mill existed here already in the 1840's, and after the Hannah, Lay Company of Chicago bought the Boardman Mill in 1851, lumbering appreciably increased (29). By 1870 the population of Grand Traverse County was 4,443, while that of Benzie County (organized in its present form in 1869) was 2,184 (27).

Lumbering

Extensive commercial lumbering began later in Benzie County than in Grand Traverse County and in some other northern localities. Reasons for the delay apparently include the scarcity here of large stands of pine, much lower demand for hardwood while pine was still plentiful, and lack of good means in this area for transporting logs and wood products. Sizable stands of pine in this vicinity are reported to have been confined to one between Platte Lake and Lake Michigan, and another that extended between Lake Ann and Bendon (a, g, 31). There were, however, patches of high quality pine among the hardwoods (L, 48). Someone around 1901 described in the following account (48) the location of one of these smaller areas, and also mentioned pines that were scattered along the banks of Platte River and tributary streams:

In the central portion [of Inland Township], and for a short distance south of that, was a valuable tract of pine, while in the southern part was a strip of hardwood, with better soil than that in the center. The

northern portion is well watered by the Platte River, a clean pebbly bottomed stream, and a fine system of tributary creeks, whose banks are covered with a dense growth of hemlock and cedar, interspersed with birch, ash and grand old pines, some of which towered like giants above the surrounding forest one hundred and fifty feet high.

One of the early lumber mills was situated on Platte River a short distance below Bronson Lake. This mill was powered by the flow of the river, and it produced lumber for homes and barns of pioneer settlers (g, l, z). The road that led to it was Mill Road. After fire destroyed the structure, this winding, trail-like highway was renamed Burnt Mill Road.

The history of other mills and of logging activities in the Platte River basin is obscure; yet many of the details could surely be recovered by someone with the desire and opportunity. Although the aim has been to make this commentary on lumbering as accurate as possible, it is but a general survey. Installations and activities will be described mostly in the order of their location from Lake Ann to the mouth of Platte River.

Like the Boardman and Au Sable rivers (14, 45) and other northern streams (31, 46) used for transporting logs, Platte River (11) was clogged with fallen trees when the early settlers arrived. These obstructions had to be removed before logs could be floated down the stream's course. Someone described the Platte in print as "a shallow stream so choked with timber and brush that it was not possible for a person to walk down its bed" (48). On shallow streams used for log driving, barriers known as freshet dams were built to provide sufficient depth (31). Some evidence indicates that such dams were used on Platte River in the early days (g, z). Deadheads are still plainly evident in the stream; it is not known whether they date mostly from the first logging period, or from the one of 1895-1915, but both periods probably are represented.

Two lumber mills are said to have operated on Lake Ann (g, k, z), one of which was the Habler Mill (g). A steam-powered mill was located at Allyn, a hamlet that once existed where Maple City Road (also known as County Road 669) crosses Platte River, in Section 6 of Inland Township. This mill required a crew of 11 men for operation at full capacity (11). It was functioning when the Bates family moved onto a farm nearby in 1878 (g). William T. Shutt was the proprietor (d, 11). Near this mill was a store owned by John Richardson, which sometime later was bought by Shutt (n). The store building was eventually converted into a residence; the original building, together with an addition, still stands in good condition on what is now the Volpe property on the west side of Maple City Road and south of the river (m). The Manistee and Northeastern Railroad passed through Allyn, and it had a siding here (n, 66a).

Orson Clark (Fayette Clark's father) and another man built a water-powered mill around 1880 about a 100 yards upstream from where Fewins Road crosses the river. After fire destroyed it, Orson Clark rebuilt the dam and constructed another lumber mill here in about 1910 which he owned alone. In succeeding years he added machinery for grinding flour and livestock feed, and expanded facilities for making shingles, lath, and a greater variety of lumber. Eventually he added a mill, on the opposite bank, which shelled corn and ground flour and stock feeds for local customers (11, *l*). Fayette Clark, who still lives at the mill site, took over the business in 1923, and later owned it. He completely remodeled the sawmill. Later on, increased adoption of electricity made water-powered mills obsolete. Operation of the Clark Mills ended in 1946 (11, *l*).

D. C. Brundage and sons of his built a shingle mill on the headwaters of Brundage Creek early in the 1880's (a, 48). A logging camp, operated by the State Lumber Company, was located near the mouth of Brundage Creek and on land now occupied by the Platte



Figure 4. --The Clark Mills, about 1935.

River Anadromous Fish Hatchery (a, ²). The Manistee and North-eastern Railroad maintained a siding here (11, 66a). Lloyd Bates (born in 1879) worked out from this camp one winter (g).

Wesley Amidon, the father of Ralph Amidon, ¹⁰ operated a steam-powered mill near Hays Bridge, ¹¹ beginning in 1905. Its products included lumber, shingles, lath, and parts for wagons and sleighs (a).

Charcoal kilns are said to have existed in early days in the vicinity of the present junction of Valley Road with US-31 (m, 66d). A shingle mill, located along the river a short distance upstream from present Henry Street in Honor, is reported as having operated in the early 1800's (a, t).

D. C. and S. K. Carter had a sawmill on Carter Creek in early days that furnished lumber for settlers in Homestead Township (48). This may have been the same mill in Section 22 that was run in later years by Burt Osburn. Ralph Amidon says (a) that this mill was equipped with an "up-and-down" saw, also known as the pit or whip saw (31).

Expansion of a wood-products industry resulted in the founding of Honor. The Guelph Patent Cask Company, which had a mill at

¹⁰ Ralph "Happy" Amidon, born in 1892, has resided in the Honor area all his life. He worked at his father's mill, and then for the Seymour and Peck Company from about 1910 to 1915, where he rode the log carriage. Mr. Amidon helped build the fish weir near the mouth of Platte River which the State operated in 1941-43 (a).

¹¹ The name of the road this bridge is located on has undergone transformation within recent years. It was first known as either Hays or Hayes, but road markers and maps presently show it as Haze. Quite certainly this road was named after one S. Hays who, according to Benzie County Plat Book No. 1, acquired either by purchase or through a homestead grant the northwest quarter of Section 13, Homestead Township, on September 8, 1866.

Wolverine, established another plant in Homestead Township in 1895 (48, 51). The firm had but a small, portable sawmill here at the start, but soon expanded considerably. Although a low-head dam on Platte River was associated with the mill, steam was used for power; the main product was veneer, but this plant also produced lumber (a, t). As the plant's original name implies, the veneer was used for casks. The town born from the establishment of this industry was named in compliment to Honor Gifford, baby daughter of J. A. Gifford, general manager of the company (a, t, 48). Business places established here by the summer of 1896 were two general stores, one bazaar store, a hardware store, barber shop, three boarding houses, and a blacksmith shop (47). Frank Conklin came here the year the village was established and soon became its blacksmith (o). Later, he and a brother operated a hardware store; after his brother's death, he ran the business alone, which now is carried on by his son, Verrol. The veneer-lumber mill of Seymour and Peck stood on the north bank of the river and opposite the location where the Honor Motel is now situated.

There were logging facilities on Platte Lake and on Platte Bay of Lake Michigan that are thought to have preceded the establishment of Honor. Logs were floated on Platte Lake, and there was a mill at Edgewater, off the northwest shore of this lake; a narrow-gauge railroad transported lumber from here to a dock on Platte Bay. There were two lumber docks on Platte Bay--the Debridge and the East Bay docks (a).

Extension of lines into Benzie County and Honor by the Chicago and West Michigan Railway and the Manistee and Northeastern Railroad must have greatly invigorated the economy of the area. The Chicago and West Michigan¹² branch was built in 1895 (42). Laying of the

¹²The Chicago and West Michigan Railway was reorganized into the Pere Marquette Railroad in 1900 (24), so henceforth it will be referred to by this name or simply "the P. M." as it was commonly known in the localities it served. In 1951 this company was absorbed into the Chesapeake and Ohio Railroad System (16).

tracks of the M. & N.E. Railroad's Platte River Branch commenced in 1898 (60), and was completed by December 21, 1898 (42). Between its connection near Lake Ann with the main (Manistec-Traverse City) line and Honor, this road closely followed the course of the river, and crossed it five times. The other terminus of the 17-mile branch was at Empire Junction. The latter point was also the southern terminus of the Empire and Southeastern Railroad, a short logging road, whose other end was at Empire (60). Establishment of the M. & N. E.'s roads was specifically based on transport of logs and timber products (60), as was development of the Pere Marquette system in the northern part of the State (24).

The Guelph Patent Cask Company, which later became known as the Seymour and Peck (or Honor) Company, could not have functioned without railroad service, nor could several other local industries. The Honor plant was serviced by the P. M.'s Clary-Honor branch, as were the Desmond Charcoal and Chemical Company's interests ¹³ on Carter Creek. Among the M. & N.E.'s sidings were a log-loading station that was located a short distance below the point where Pioneer Road crosses Platte River, and another located below the US-31 crossing east of Honor (a, 66a).

By 1913 the thriving lumber town of Honor had a population of 550. It was the county's seat of government, which had been moved here from Frankford in 1908. Some of the business establishments and services were: three general stores, two meat markets, two produce stores, hardware, drug store, two physicians, post office, railroad express, telegraph service, three telephone companies, three hotels, a bank, a Congregational Church, and a newspaper (51).

¹³ These holdings were a plant at which various chemicals were extracted from wood and charcoal was made, and a general store, all located in Section 24 of Homestead Township. The store fronted on what is now County Road 669, on the east border of Section 24, and stood a little north of the creek; the industry was situated about a quarter mile west of here (x). Ruins of the charcoal kilns still remain.

Nothing was mentioned in the business directory about the several saloons which the town also had. Honor was incorporated as a home rule village on November 30, 1914, and its charter was adopted on January 30, 1915 (34).

It has been said that there were as many as 15 lumber camps operating at one time within a 5-mile radius of Honor (t). The timber of Benzie County in those days consisted mainly of maple and beech; other kinds were hemlock, cedar, tamarack, yellow birch, ash, basswood, elm, and black cherry (g, ee). The bark was harvested from hemlock trees, which was used by tannaries (c, ee). Common procedure was to cut these trees in winter, strip their bark (beginning in the spring and continuing into summer), and then cut them into saw logs (c). Beech trees were sometimes used for falling maples into them to prevent the latter from splitting (ee). Beech was used for veneer and wooden dishes; the Oval Dish Company at Traverse City was a market for this wood (29, ee). Maple was also used for veneer, and it was important for flooring and furniture. Waldo Hobson, who was employed by the Seymour and Peck Company 11 years, says (t) that about 95% of the logs the mill received were maple and beech; the remainder were from various kinds of trees. He says that the average diameter of the saw logs was about 30 inches.

Honor evidently attained its zenith around 1915, whereas local lumbering, which essentially nourished the town and its people, had previously reached its peak. Various events indicate the virtual finish of the industry throughout this corner of the State around 1915, although cutting continued for some years beyond that time. The Traverse City Lumber Company, successor to the Hannah, Lay Company, closed its mill in 1915 (14). Wesley Amidon sold his mill on Platte River in 1910 or 1911, and a year or so later the new owner dismantled it and moved it elsewhere (a). Seymour and Peck closed its Honor plant in 1915 (a, t). The M. & N.E. Railroad was plainly in financial trouble by 1917 (60). The Pere Marquette Company was in serious financial straits several

times before this year (24). The P. M. 's Clary-Honor branch ceased servicing Honor in either 1915 or 1916, but continued service as far as the location of the Desmond Charcoal and Chemical Company's holdings on Carter Creek until this firm abandoned operations in 1920 (x). The M. & N. E. took up the tracks of its Platte River branch line about 1923 (11, p).

Forest fires (which perhaps more properly should be called brush fires) broke out often on Benzie County's cut-over lands in the early 1900's (a, g), as they did in other parts of northern Michigan. Charred pine stumps still serve as reminders of such burns in the vicinity of Platte River. The town of Lake Ann is said to have experienced three extensive fires during its early days, one of which was caused by wind-driven sparks, from a steam tug on the lake, that reached the grounds of a sawmill (g). The destruction of young trees and forest duff from fires surely amounted to significant losses, and one may wonder about the effects of the fires on streams and fish. Fayette Clark describes a bad fire of 1908 which destroyed a logging camp and spread to his father's farm (11).

Agriculture

As in other parts of northern Michigan, lumbering and agriculture developed together in the Benzie County area. The second industry expanded as the first shrank. Because cleared land was scarce and nearby markets and good means of transportation were lacking, farming in its beginnings here scarcely provided as much as subsistence. Fayette Clark tells of an experience of his family that may sound almost fictional at the present time of monetary inflation and reputed affluence, but which is not only true but evidently was far from uncommon in the 1800's. The first year that Mr. Clark's father worked his 120-acre homestead in Inland Township, income from marketed produce was \$6, of which \$2 went for taxes (11).

Lumbering made vast areas available for farming. The railroad companies, which promoted further settlement by advertising, also offered land for sale (which they had received free in government grants) and provided transportation for produce (16). ¹⁴ The Secretary of State's reports on farming activities contain information that affords a view of agriculture of that time in Benzie County (43). Statistics from two of these reports appear below, with Grand Traverse County records included for comparison:

	Acres of land in farms			Num- ber of farms	Aver- age acre- age
	Improved	Unim- proved	Total		
<u>1881</u>					
Benzie	8,586	28,649	37,235	351	106
Grand Traverse	25,016	49,771	74,787	721	104
<u>1903</u>					
Benzie	24,921	25,695	50,616	659	77
Grand Traverse	75,045	45,465	120,510	1,420	85

As the above tabulation shows, the acreage of improved land in these two counties trebled within 22 years, while the numbers of farms approximately doubled. The reports for these years reveal that on an acreage basis the main crops in Benzie County were hay and corn. Next in importance (about 1,000 acres of each) were potatoes, wheat, oats, and apples. The lumber companies bought produce from farmers (such as

¹⁴The railroad companies also promoted recreation in the northlands, as is illustrated by the following quotation from a brochure titled Fishing and Hunting in Michigan issued by the Pere Marquette Railroad from its Detroit office in 1912. This comment appeared under the Benzie County directory: "Lake Ann--On M. & N.E.R.R. Reached through Traverse City. Fine fishing and hunting. Summer hotel, the Douglas; rates \$1.00 per day; \$5.00 to \$7.00 per week. Power and rowboats furnished; also bait, tackle, etc. Write J. G. Turk, Lake Ann."

beef and pork) to supply their camps (a, g). In later years potatoes, wheat, and hay continued to be important, and buckwheat was a significant crop besides (a, d, g). Potatoes were marketed in Traverse City in the early days; later on a potato warehouse was built at Cedar, and still later, another was built at Lake Ann (g).

Judging from figures on amounts of farm produce carried by the M. & N.E. Railroad, agriculture underwent appreciable and steady expansion in the Grand Traverse region between 1889 and 1912, remained quite stable during 1912-1916, and declined between 1916 and 1919. The tonnage of farm produce carried by this railroad in various years was as follows: 1889--605; 1895--6,923; 1903--17,156; 1912--42,955; 1916--42,849; 1919--27,560 (41, 60). One should keep in mind that these figures cover all of the M. & N.E.'s lines, which ran across or into seven counties, of which Leelanau, Grand Traverse, Benzie, and Manistee probably were the more important agriculturally. The P.M. lines also carried much farm freight in this area (41).

Population figures afford another insight into the economic situation at various times. Between 1870 and 1920, lumbering and agriculture were the main industries in the north country. These were the populations of Benzie County during this 50-year span according to the U.S. Census:

1870--2,184	1900--9,685
1880--3,433	1910--10,638
1890--5,237	1920--6,947

Much of the area was poor for farming, and a number of especially poor choices evidently were made for farm sites. Some people reacted to the shortcomings of the soil by "pulling stakes" soon after the agricultural boom commenced; more of them gave up during the economic recession that followed World War I. This is what happened also in many other localities throughout the northern half of the Lower Peninsula.¹⁵

¹⁵A good historical reference on the lands of Michigan with regard to the claims made for them, their public disposal, and their reversion to State ownership because of abandonment or tax delinquency, is

A transitional era

The years from 1930-1945 comprised a relatively static period in the economic history of Benzie County, and for much of northern Michigan for that matter. Lumbering was of minor significance then, while agriculture--with some exceptional aspects--continued on a downhill road. The situation might have been much different without the influence of two strong social forces of that period--the economic depression of the 1930's and World War II. As viewed in retrospect, outdoor recreation activities and tourism showed signs in the 1930's of their eventual importance to that region, but the weak economy of those years deferred their development. The automobile had become a reliable machine for distant travel, and good roads led into this part of the State where a few years before they had been lacking. Then as the Nation was beginning to emerge from the stifling depression, it became deeply involved in war. Now military obligations, scarcity of time for recreation, and restrictions on travel through rationing of gasoline and sharply reduced sale of automobiles further delayed development of the recreation industry. Manufacturing that supported the military effort was almost entirely confined to the lower part of the State where all but a small amount of the peacetime products had been made before the war.

The economy in recent time

Lumbering and farming, major industries in Benzie County in past years, are now practiced here on far smaller scales and in much different ways than formerly. What was once the lumbering industry perhaps should now be referred to as the forest products industry, which includes production of pulpwood and Christmas trees. The following assessment of production reflects the importance that these two commodities have attained within recent time.

Timber cutting in Benzie County has been fairly active in recent years. Aspen and other trees used for pulp are being harvested near the allowable level (700-1,000 acres per year estimated), but hardwoods used for lumber apparently are undercut (cc). This county ranks high in Christmas tree production; in 1972 the cut amounted to 100,000 trees, mainly Scotch pine, with white spruce probably second. Around 3,000 acres are in Christmas tree plantations (cc).

The potential of lumber and pulpwood production in the future is good. The composition of this county's timber stands by percentage is approximately as follows, according to the records (cc):

Northern hardwoods (mostly sugar maple, also, beech, etc.)	30
Aspen	30
Lowland hardwoods (mostly red maple, also ash, elm, etc.)	12
Oak	12 or less
Pine (mostly red pine)	8
Swamp conifers (mostly cedar)	7

Reforestation of State lands in Benzie County has declined in the last 10 years, mainly because most of the plantable areas have been planted. Interest continues in planting trees on private lands, but the extent of this activity presently is small. Both the State and private land owners mostly set out pine (cc).

Aside from their direct value of wood production, forest lands have of course other values that are highly important in their bearing on recreation and other public use. These assets include benefits that streams derive from trees (prevention of erosion, stabilization of flow, etc.), provision of habitat and food for game animals and song birds, and accommodations for hunting and other kinds of recreation.

Although agriculture still is a significant contributor to the economy of Benzie County, it has continued to decline. However, since about 1945, land has been removed from crop production all over the State and in the Nation as a whole; apparently the recent recession of agriculture in northern Michigan largely stems from the same causes that are responsible for the national trend. ¹⁶ Table 6 indicates the extent that farming activity changed between 1950 and 1969 in Benzie County and in the three bordering counties. Accompanying the recession were changes in crop plantings, that are indicated below by approximate acreages of principal crops in Benzie County in 1950 and 1969 (62):

	Orchards (apples and cherries mainly)	Hay	Corn	Small grains
Year 1950:	4,600	3,000	2,700	1,700
Year 1969:	5,000	1,900	900	400

Still greater changes in planting patterns developed before 1950, according to long-time local residents. Production of potatoes formerly was important (d, g), but in recent years it has been virtually nil on a commercial basis (62). Similarly, small grains (wheat, oats, rye, buckwheat) were grown more extensively in former years (a, d, g, n). At one time at least three threshers operated in Benzie County. Lloyd Bates, who was one of the custom threshers, says that he and a son spent about 2 months of each year at this work (g). The raising of small grains is said to have begun to decline around 1940 (n). Presently the chief crops of Benzie County are, in this order of importance, fruit, beef, feeder and dairy cattle, and dairy products (i).

¹⁶ One should not infer from this situation that national agricultural production has decreased also; production has in fact been rising through improved farming practices, which have been aided by new and better kinds of machinery and fertilizers, scientifically selected seeds, etc.

Table 6. --Number and acreage of farms in four Michigan counties,
1950 and 1969*.

County and year	Number of farms	Land acreage of county	Percent- age in farms	Land in farms	Average size of farms
Benzie		202,240			
1950	541		34.5	69,872	129.2
1969	231		19.2	38,771	167.8
Grand Traverse		296,960			
1950	1,200		48.1	142,969	119.1
1969	633		28.3	83,712	132.2
Leelanau		223,360			
1950	884		54.4	121,484	137.4
1969	511		35.3	77,745	152.1
Manistee		357,120			
1950	971		34.6	123,771	127.5
1969	376		19.3	68,336	181.7

* Data from U.S. Census of Agriculture, 1954 and 1969 (62).

Tables 7 and 8 carry other information for depicting recent changes in agriculture in this region. These data show also the rising importance of other industries. Some comment on the data is desirable to round out this survey.

The increasing importance of manufacturing for people of Benzie County is especially significant. Although only a little manufacturing is done in this county, apparently a sizable number of the residents travel to places (probably Traverse City and Manistee mainly) where it is prevalent. This industry has expanded greatly since 1945 in a number of northern communities of the Lower Peninsula.

Although income rose during 1950-1967 in seven of the eight sources listed in Table 7, substantial portions of the rise can be ascribed to raises in wages and prices of goods. Therefore, to obtain a more accurate comprehension of the economic situation of this period, distribution of the labor force among the various industries should be considered also (Table 8). Among the impressions conveyed by these sources of information and others are: (1) some sources of income that formerly had small significance have become quite significant within recent years; and (2) the recreation industry (a conglomerate whose income comes from several sources, especially retail trade and services) now has important rank. One of the various indications of the importance of recreation in the north country is that private land owners year by year put more land that formerly was in farms into recreational use (j).

It seems appropriate to mention Honor again here to further illustrate the change that Benzie County has undergone with the passage of time. This village presently has little over half the number of inhabitants (1970 population, 282) that it had in 1913. Still, it experienced a much better fate than a number of other early towns which disappeared after the county's first lumber

Table 7.--Distribution of total income* among eight major sources in four Michigan counties, 1950, 1959, and 1967 **

County	Farm			Government*** (Federal, State, local)		
	1950	1959	1967	1950	1959	1967
Benzie	1,648 24	907 9	1,190 8	871 12	1,659 17	3,141 21
Grand Traverse	9,101 26	6,996 13	3,340 4	4,870 14	9,073 17	17,360 19
Leelanau	3,706 55	1,448 19	1,654 14	930 14	2,698 36	4,218 36
Manistee	1,761 12	1,514 6	1,473 4	1,574 11	2,901 12	5,664 14

County	Manufacturing			Contract construction		
	1950	1959	1967	1950	1959	1967
Benzie	1,035 15	1,833 19	2,897 20	665 9	701 7	1,007 7
Grand Traverse	7,746 22	10,368 19	20,870 23	1,686 5	4,083 8	8,327 9
Leelanau	347 5	676 9	972 8	369 6	603 8	1,022 9
Manistee	5,253 36	9,535 39	17,881 43	554 4	1,169 5	2,505 6

* Total income in thousands of dollars; lower figure, percentage of the total for eight sources.

** Source of data: 1972 Michigan Economic and Population Statistics, Office of Economic Expansion, Michigan Department of Commerce (34).

*** Government income includes that from military service.

(Concluded, next page)

Table 7. --concluded

County	Transportation, communications, public utilities			Wholesale and retail trade		
	1950	1959	1967	1950	1959	1967
Benzie	579 8	1,950 20	2,273 15	1,233 18	1,368 14	2,132 14
Grand Traverse	1,244 4	4,534 8	5,478 6	6,085 17	9,926 18	18,817 20
Leelanau	88 1	136 2	195 2	685 10	1,007 13	1,696 14
Manistee	862 6	1,489 6	2,214 5	2,858 20	4,267 18	5,778 14

County	Finance, insurance, real estate			Services		
	1950	1959	1967	1950	1959	1967
Benzie	96 1	136 1	252 2	878 13	1,259 13	1,944 13
Grand Traverse	739 2	1,935 4	3,148 3	3,670 10	6,764 13	14,865 16
Leelanau	40 1	91 1	309 2	538 7	887 12	1,767 15
Manistee	219 1	559 2	988 2	1,519 10	2,926 12	4,752 12

County	Total		
	1950	1959	1967
Benzie	7,005	9,813	14,836
Grand Traverse	35,141	53,679	92,205
Leelanau	6,703	7,546	11,833
Manistee	14,600	24,360	41,255

Table 8. --Percentage breakdown of employed labor force by industry for Benzie and Leelanau counties and Michigan as a whole, 1940, 1950, 1960*

Industry	Benzie County			Leelanau County			Statewide		
	1940	1950	1960	1940	1950	1960	1940	1950	1960
Agriculture	36.1	19.8	9.5	57.8	40.0	18.1	11.8	6.7	3.4
Forestry and fisheries	1.9	0.7	0.9	1.8	0.9	0.8	0.1	0.1	0.1
Construction	8.8	8.3	6.4	6.9	8.8	8.8	4.1	4.9	4.6
Manufacturing	4.6	14.2	20.3	3.7	9.7	17.2	38.6	41.0	38.0
Transportation, communication, and utilities	12.0	20.0	15.9	2.9	3.6	3.4	5.4	6.4	5.8
Wholesale and retail trade	13.2	13.7	17.0	7.9	13.6	19.9	16.1	17.5	17.7
Finance, insurance and real estate	1.1	2.0	1.8	0.5	0.8	2.0	2.6	2.7	3.3
Services	21.2	19.9	26.5	17.7	20.1	28.4	19.0	18.6	23.3
Unreported and minor categories	1.2	1.4	1.8	0.7	3.7	1.2	2.3	1.9	3.9

* Data adapted from The Proposed Sleeping Bear Dunes National Seashore (1).

industry died. The businesses and services of this progressive village now are as follows: two grocery-meat stores, two restaurants, four motels, four gasoline-auto service stations, two sporting goods stores, two hardware-building supply stores, a clothing-variety store, variety store, antique store, tavern, two beauty shops, barber shop, an insurance agency, two real estate agencies, a bank, an apple storage plant, county highway garage, Congregational Church, a school, and post office.

A subject definitely pertinent to this discussion is the economic worth of Platte River from the recreational standpoint. Although no determination of it has ever been made, estimates for other waters may give some idea on the value of just the fishery of this stream. When drawing an evaluation from the two following evaluations, one should keep in mind that the Au Sable River system is much larger than the Platte River system, and that the Grand Traverse Bay fishery is of a different type. Nevertheless, the monetary values that these examples have shown are applicable to some extent for judging the dollar value of Platte River angling.

It has been estimated that the economic value to Michigan of the fishing done by Michigan residents on the Au Sable River in 1970 was \$535,640. This estimate was partially based on an individual person's average expenditure of \$2.18 for each daily trip on the stream. The total value estimated for the 1971 fishing season was \$836,290 (49).

From a survey that was conducted on fishing in Grand Traverse Bay of Lake Michigan from May 1971 to May 1972, the estimated gross expenditure within the vicinity of the bay by anglers from Michigan areas outside this vicinity amounted to \$419,000; from this figure, net community income was estimated to have been \$204,000 (28).

Fishing on Platte River is particularly heavy in early spring when large rainbow trout from Lake Michigan are present in the stream for spawning. Regional Fisheries Biologist John MacGregor

took a census of fishermen here from a plane on the opening day of the early trout season in 1967 (Saturday, April 6), covering the stretch of river between the mouth and the US-31 bridge east of Honor. It was estimated that from 9 a.m. until noon 780 fishermen were present on these 13 1/2 miles of stream (y). Fishing pressure on Platte River is, however, much lighter than this during most of the trout season.

Even though the total economic value of Platte River apparently amounts to a high figure, the stream's immeasurable social value probably exceeds it in importance. Such assessment may apply as well to other unspoiled scenic streams.

Public lands and facilities
and their use

Benzie County is richly endowed with public land, most of which is administered by State agencies. Much of the frontage on Platte River is in public ownership. State land comprises about 28% of the total area of this county. The following tabulation shows its distribution by designation (w):

<u>Designation</u>	<u>Acres</u>	<u>Platted lots</u>
State forest	58,836.13 and	6,363
State park	2,295.02	
State game area	697.23 and	1
Public fishing sites and public water access	245.35 and	3
Undedicated	63.38	
Total	62,137.11	6,367

The public forest land of Benzie County is included in the Betsie River State Forest. It is distributed over various parts of the county, but most of it is in the eastern half. The Forestry Division of the Department of Natural Resources manages these timber lands, including campgrounds on Grass Lake, Lake Ann, and two on Platte River, which provide water access.

Benzie State Park, which has frontage on both Platte River and Platte Bay of Lake Michigan, was established in 1923 (2). In 1957 it contained 180 acres, whereas presently it covers about 13 times that area. This facility has played an important role in the Fisheries Division's salmon program; it affords camping accommodations and a boat launching site for salmon fishermen who congregate here in large numbers each fall.

The Betsie River State Game area, administered by the Wildlife Division, extends upstream from Betsie Lake along both banks of the river for about 2 1/2 miles. Grass Lake, a headwater of Betsie River, is a wildlife flooding area.

In Benzie County, the State maintains 12 water access sites on lakes, 3 on Platte River, and 1 on Betsie River. The city of Frankfort operates a fee-charge launching area for boats used on Lake Michigan. Besides these designated points, free access is available for some miles along the Platte and Betsie rivers by way of State-owned frontage.

Parks sponsored by other governmental units also offer free accommodations for sportsmen and tourists. Lake Township Park (area, about 3 1/2 acres) (t) fronts on Platte River near its mouth; salmon and trout fishermen use this development intensively for access to Lake Michigan. Small, village-supported parks are located in Beulah, Honor, Lake Ann, and Thompsonville. *Betsie*

Two facilities of the Department of Natural Resources are credits to the entire State as well as to Benzie County. One of them is the \$6.5 million Platte River Anadromous Fish Hatchery.

Construction of this plant began in 1967, and fish production commenced in 1969. The hatchery is situated on the grounds formerly occupied by the Platte River Trout Rearing Station, that operated from 1928 (36) until its functions were absorbed by the hatchery.

The other of these facilities is the 200-mile Michigan riding and hiking trail for horseback riders and hikers. A portion of the original trail, which extends between Tawas and Empire, courses through the northeast corner of Benzie County, and all of the branch trail that leads to Elberta is confined to this county (38).

Because the relationship is so obvious, it almost need not be said that the public lands of this region and developments on them are invaluable assets to the recreation industry. They also provide numerous free benefits for local people as well as visitors.

Some figures on usage assist comprehension of the importance of the resources. Below are Benzie State Park's attendance and camp permit records of several recent years (dd). The attendance figures cover campers as well as day users:

<u>Year</u>	<u>Atten- dance</u>	<u>Camp per- mits issued</u>
1956	36,068	754
1966	64,766	3,350
1967	110,469	5,506
1972	130,311	6,549

Much of the increased use of Benzie State Park in 1967 over that in 1966 is attributable to the interest aroused in 1967 by the first presence of full-term mature (3-year-old) coho salmon in Lake Michigan and Platte River.

Additional land in this county is coming into public ownership through the Sleeping Bear Dunes National Lakeshore. This park, located in the western portions of Benzie and Leelanau counties, is expected to eventually cover about 60,000 acres (1). Since

establishment of this park was officially approved in October 1970, it has acquired approximately 3,500 acres of land through purchase (19). Plans call for including the Benzie and D. H. Day state parks in the National Lakeshore area.

Private use of Platte River
and associated lakes

Except as recreational enterprises (canoe liveries, bait and tackle shops, etc.) benefit from Platte River and its tributaries, these streams serve no industrial use today. Neither agriculture nor grazing are presently practiced on their borders. Homes and cottages are situated on the banks of the river in several areas. Such development is not extensive now, but it likely will soon increase greatly on privately owned frontage. Since 1968 a real estate development has been underway on Bronson Lake, which until then had no buildings on its shores. Numerous dwellings are located on Lake Ann and Platte Lake, where much boating, water skiing, and fishing are done.