

ELKHART RIVER BASIN

Stream Survey Report

ELKHART, NOBLE, LAGRANGE, AND KOSCIUSKO COUNTIES

INDIANA DEPARTMENT OF NATURAL RESOURCES

DIVISION OF FISH AND WILDLIFE

1971

Richard Peterson, Biologist

## ELKHART RIVER SURVEY

### INTRODUCTION

The Elkhart River Basin located in northcentral Indiana drains 454,000 acres, (710 square miles) of land. DeKalb, Noble, LaGrange, Kosciusko, and Elkhart County are included in this drainage area. Two branches, the North Branch and the South Branch, join in northcentral Noble County to make up the main stem of the Elkhart River. From here the Elkhart flows westward through Noble County and northwesterly through Elkhart County into the City of Elkhart, Indiana where it enters the St. Joseph River.

This study is a portion of a comprehensive Type IV investigation undertaken by the Department of Natural Resources, State of Indiana, in cooperation with the United States Department of Agriculture.

### DISCUSSION

The main purposes of the survey were to:

1. Evaluate the sport fishery of the River.
2. Provide a list of fish species of the River Basin.
3. Evaluate the water quality of the River.
4. Inform the public of the condition of the fish population.
5. Evaluate existing fish habitat.

Only limited water quality information was obtained due to the multiple objectives of this survey. None the less, the information obtained is of value in that it provides information from many different sections along these streams. The value of a single sample is that it can indicate a problem area that may warrant a detailed investigation.

Sample sites were distributed throughout the watershed on the basis of habitat type and accessibility. Most stations were felt to be fairly typical of the area in which they were taken. The two main fish sampling methods employed were:

1. ROTENONE: Sample sites were blocked at both ends with a  $\frac{1}{4}$  inch mesh seine so that no fish could escape. A toxic concentration of rotenone (3 ppm) was applied at the upstream net and allowed to drift through the station. The rotenone was detoxified at the lower net with potassium permanganate so that fish outside the sampling area would not be affected. Fish were measured to the nearest tenth inch and weighed to the nearest one hundredth pound. The length and width of each station were measured so that an estimate of standing crop, the weight of the fish present in an area, could be made.
2. ELECTRO-FISHING: In areas where the stream was too large for rotenone sampling, electro-fishing was utilized, but no standing crop could be made since only a small portion of the fish present were vulnerable to this sampling method. Fish collected by electro-fishing were converted to pounds per hour for comparative purposes.

A total of 11,704 fish were collected from 22 sampling stations in the Elkhart River Watershed.

Fifty four species were identified, representing eleven families. Seventeen species were grouped into the classification of game fish and the remaining 37 species were classified as miscellaneous fish.

At least one species of game fish such as smallmouth bass, rock bass, longear, green sunfish, bullheads, crappie, etc. were found at all twenty-two stations. Most stations contained 5 to 6 species acceptable to anglers.

The highest number of game species was 11 which occurred at Station Seven. The most abundant game fish in the Elkhart Basin was rock bass which comprised 4.11% of the total sample.

Of the species classified as miscellaneous fish, white suckers were the most abundant numerically followed by bluntnose minnow, creek chub, common shiner, and stoneroller.

The information obtained from 22 samples in the Elkhart River Basin indicates that the water quality is satisfactory for the production of a warm water fishery.

On the Elkhart River, dissolved oxygen readings below 5 ppm were recorded at Stations 12, 19, and 21. Dead trees and brush along the banks near Station 12 revealed spraying had recently taken place. The dissolved oxygen level in this area was barely under 5 ppm. The low dissolved oxygen concentrations at Stations 19 and 21 are normal for this area where the River slowly winds through an area of marshland.

In this excellent waterfowl area, the biological oxygen demand (BOD) was high as a result of decomposing vegetation. In 1967, numerous species of game fish were collected in this area at unbelievably low oxygen levels of 0.8 ppm and 1.2 ppm. This unexplained condition existed for at least two weeks.

Stream temperatures at Stations 16 and 20 were 72 and 82.5 degrees respectively. Both of these areas are presently being stocked with trout and they should be investigated in detail as water temperature may be a limiting factor effecting trout survival. Conditions are satisfactory for warm water fishes.

#### RECOMMENDATIONS:

Particular attention should be given by the sport fisherman to areas near stations 1, 2, 9, 10, 11, 13, 15, 17, and 20. These sampling areas have good to excellent fish habitat and satisfactory water quality to support sizeable game fish populations.

Lack of public access along the Elkhart River is a limiting factor to fishermen. Several locations near sample sites 6, 9, 10, 11, 13, and 17 should be considered for purchase and public access sites developed.

Improved farming methods would aid in checking soil erosion and reduce the amount of silt entering these streams and rivers.

The news media should be utilized to inform the public of this desirable sport fishery.

SUBMITTED BY:

Richard Peterson  
Fish Management Biologist

ELKHART RIVER BASIN SURVEY STATION LOCATIONS

STATION NUMBER	STREAM NAME	LEGAL DISCRIPTION
1	Elkhart River	T 37 N, R 5 E, Sec. 4
2	Elkhart River	T 37 N, R 5 E, Sec. 25
3	Solomon Creek	T 35 N, R 7 E, Sec. 17
4	Yellow Creek	T 37 N, R 5 E, Sec. 34
4	Rock Run Creek	T 36 N, R 6 E, Sec. 12
6	Elkhart River	T 36 N, R 6 E, Sec. 28 & 33
7	Elkhart River	T 35 N, R 6 E, Sec. 3
8	Turkey Creek	T 34 N, R 5 E, Sec. 1
9	Elkhart River	T 35 N, R 6 E, Sec. 11
10	Elkhart River	T 35 N, R 6 & 7 E, Sec. 12 & 7
11	Elkhart River	T 35 N, R 7 E, Sec. 7
12	Turkey Creek	T 34 N, R 6 E, Sec. 2
13	Elkhart River	T 35 N, R 7 E, Sec. 11
14	Stony Creek	T 36 N, R 7 E, Sec. 35
15	Elkhart River	T 35 N, R 8 E, Sec. 21
16	Solomon Creek	T 35 N, R 7 E, Sec. 28
17	Elkhart River	T 35 N, R 8 & 9 E, Sec. 25 & 30
18	North Branch Elkhart River	T 35 N, R 9 E, Sec. 20
19	South Branch Elkhart River	T 34 & 35 N, R 9 E, Sec. 5 & 32
20	North Branch Elkhart River	T 35 & 36 N, R 9 E, Sec. 2 & 35
21	South Branch Elkhart River	T 35 N, R 9 E, Sec. 30
22	North Branch Elkhart River	T 35 N, R 9 E, Sec. 14

TABLE 1

Pounds of fish collected per hour of electrofishing

<u>Station</u>	<u>Pounds/Hour</u>
1	37.03
2	39.48
6	84.00
7	114.84
9	10.45
11	70.98
13	240.99
15	249.13
17	58.17
18	36.23
19	28.23
21	25.57
22	119.53

TABLE 2

Estimated pounds of fish per surface acre

<u>Station</u>	<u>Pounds/Acre</u>
3	64.8
4	76.3
5	151.3
8	112.9
10	259.9
12	#
14	185.0
16	138.1
20	106.0

# A fish kill from crop spraying preceded the stream sample, consequently few fish were present in this section of stream.



STATION One STREAM Elkhart River

DATE OF SURVEY June 16, 1971 COUNTY Elkhart

BIOLOGIST Peterson-Johnson

1. TWP. 37N R 5E S 4

2. NEAREST TOWN Elkhart, Indiana

3. MAXIMUM DEPTH 7 feet AVERAGE DEPTH 3.5 feet

4. WIDTH 144 feet LENGTH 1,800 feet ACRE FEET 20.8

5. BOTTOM TYPE sand, gravel, silt, muck, and rubble

6. COLOR dark brown

7. DESCRIPTION OF SAMPLING STATION Sample area number one was located along American Park within the city limits of Elkhart, Indiana. Station one began at the park entrance and ran 1,800 feet downstream. Both shorelines were lined with cement or stone retaining walls which limited overhanging brush and trees. However, twenty percent of the southwest bank did have 10-30 foot trees providing shade and fish habitat.

8. EVIDENCE OF EROSION OR POLLUTION Street discharge entered river along northeast shore.

9. SAMPLING EFFORT Electrofishing-2 units

ELECTROFISHING 2 units-for a total of 2 HOURS

TRAP NETS N/A NUMBER N/A HOURS

SEINING 2-100 foot hauls with a 30 foot sein

ROTENONE N/A GALLONS

10. TEMPERATURE 76.0°F SURFACE 74.5°F BOTTOM

11. DISSOLVED OXYGEN (SURFACE) 8.4 ppm 8.5 pH

12. REMARKS Some evidence of bank fishing was observed, however no fishing parties were noticed at the time of survey. Several white suckers were shocked while electrofishing but were not collected. This portion of river had been channeled. Park patrons stated fishing is poor along this portion of river.

STATION # One

NAME OF STREAM Elkhart River

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)
White sucker	853	88.9	0.9-20.0	50.51
* Rock bass	49	5.1	2.2-10.4	10.11
* Smallmouth bass	23	2.4	3.5-13.8	7.09
Silver redhorse	3	0.3	15.9-16.0	3.11
* Northern pike	1	0.1	18.2	1.22
* Longear sunfish	9	0.9	3.8- 5.5	1.01
Grass pickerel	2	0.2	9.3-11.8	0.63
Common shiner	10	1.0	1.7- 6.2	0.28
Spotfin shiner	1	0.1	3.4	0.04
Blacknose shiner	4	0.4	1.3- 1.5	0.01
Johnny darter	3	0.3	0.8- 0.9	0.01
Blackside darter	1	0.1	1.1	0.01
Central mudminnow	1	0.1	4.2	0.03
TOTALS	13	960	99.9	74.06

ACRES: 5.9

LBS./HOHR: 37.03

lbs. Game Fish/Hour- 9.72  
 lbs. Miscellaneous Fish/Hour- 27.31  
 37.03

STATION Two STREAM Elkhart River

DATE OF SURVEY June 17, 1971 COUNTY Elkhart

BIOLOGIST Peterson-Johnson

1. TWP. 37N R R 5E S 25

2. NEAREST TOWN Midway, Indiana

3. MAXIMUM DEPTH 5.5 feet AVERAGE DEPTH 3.0 feet

4. WIDTH 118 feet LENGTH 900 feet ACRE FEET 7.3

5. BOTTOM TYPE gravel and muck

6. COLOR tea

7. DESCRIPTION OF SAMPLING STATION Sample area number two began at the County Road 17 bridge and continued downstream for 900 feet. Both banks were covered with large trees and thick brush. Farmland bordered both river banks. A pool (100 feet wide X 63 feet long X 5 feet deep) was located where a gas pipeline crossed the river channel.

8. EVIDENCE OF EROSION OR POLLUTION Bank erosion where pipeline crossed river channel.

9. SAMPLING EFFORT Electrofishing

ELECTROFISHING 2 units for a total of 2 HOURS

TRAP NETS N/A NUMBER N/A HOURS

SEINING N/A

ROTENONE N/A GALLONS

10. TEMPERATURE 76.5°F SURFACE 75.0°F BOTTOM

11. DISSOLVED OXYGEN (SURFACE) 10.2 ppm 8.5 pH

12. REMARKS Elodea, coontail, curly leaf pondweed and sago pondweed were growing in heavy concentrations in the shallow and back water areas. River banks showed signs of heavy fishing pressure. Three fisherman with catches of rockbass were creeled.

STATION # Two

NAME OF STREAM Elkhart River

NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)
White sucker	53	8.9	3.5-14.6	41.3
*Rock bass	136	22.7	2.1- 9.4	25.16
Hornyhead chub	93	15.6	2.0- 7.0	5.16
Common shiner	246	41.1	1.6- 7.2	3.41
*Longear sunfish	12	2.0	4.7- 6.4	1.77
* Smallmouth bass	8	1.3	3.4- 8.7	0.93
Grass pickerel	3	0.5	7.8- 8.2	0.40
Spotted sucker	2	0.3	4.0- 7.9	0.25
* Green sunfish	2	0.3	4.7- 5.3	0.23
Fathead minnow	4	0.7	3.5- 3.7	0.10
Creek chub	6	1.0	3.0- 3.9	0.09
Silver shiner	18	3.0	1.9- 2.5	0.07
Blackside darter	4	0.7	3.5- 3.6	0.06
Tadpole madtom	1	0.2	3.4	0.02
Bluntnose minnow	9	1.5	2.1	0.01
Johnny darter	1	0.2	0.9	0.01
TOTALS	16	598	100.0	78.97

ACRES: 2.4

lbs. Game Fish/Hour- 14.04

lbs. Miscellaneous Fish/Hour- 25.44

LBS./HOUR: 39.48

39.48



STATION Six STREAM Elkhart River  
DATE OF SURVEY June 18, 1971 COUNTY Elkhart  
BIOLOGIST Peterson-Johnson  
1. TWP. 36N R 6E S 28 and 33  
2. NEAREST TOWN Waterford Mills, Indiana  
3. MAXIMUM DEPTH 6 feet AVERAGE DEPTH 3.5 feet  
4. WIDTH 184 feet LENGTH 1,250 feet ACRE FEET 18.6  
5. BOTTOM TYPE sand, muck  
6. COLOR Brown  
7. DESCRIPTION OF SAMPLING STATION Sample area number six began at the junction of Turkey Creek and the Elkhart River and continued downstream for 1,250 feet. Woodlots were located along both banks. Immediate shore areas were swampy and grown up with emergent vegetation.  
8. EVIDENCE OF EROSION OR POLLUTION None observed.  
9. SAMPLING EFFORT Electrofishing  
ELECTROFISHING 2-units for a total of 2 HOURS  
TRAP NETS N/A NUMBER N/A HOURS  
SEINING 2- 100 foot hauls with a 30 foot sein  
ROTENONE N/A GALLONS  
10. TEMPERATURE 72.5°F SURFACE 70.5°F BOTTOM AIR: 84.5°F  
11. DISSOLVED OXYGEN (SURFACE) 7.4 ppm 8.5 pH  
12. REMARKS Four fishermen were interviewed, all reporting no success. Fishermen did report having previous catches of catfish, yellow perch, and largemouth bass. The Goshen Dam is located approximately two miles downstream from the sample area.

STATION # SixNAME OF STREAM Elkhart River

## NAME, NUMBER, PERCENTAGE, SIZE, AND WEIGHT OF FISHES COLLECTED

COMMON NAME	NUMBER	PERCENTAGE	SIZE RANGE (INCHES)	TOTAL WEIGHT (POUNDS)
Spotted sucker	25	18.9	8.5-17.8	46.00
Bowfin	13	9.8	16.7-22.4	36.50
Carp	6	4.5	6.9-28.1	32.75
White sucker	8	6.1	1.6-17.9	12.10
* Pumpkinseed sunfish	20	15.2	4.2- 7.0	11.96
Golden redhorse	10	7.6	9.7-14.9	6.85
* Northern pike	1	0.8	29.6	6.50
* Largemouth bass	5	3.8	10.4-16.4	5.58
* Brown bullhead	3	2.3	12.6-13.5	3.76
* Rock bass	9	6.8	5.9- 9.2	2.81
Grass pickerel	14	10.6	2.1-10.2	2.07
* Black crappie	1	0.8	10.0	0.60
* Smallmouth bass	2	1.5	4.5- 5.4	0.15
* Bluegill sunfish	1	0.8	5.4	0.14
* Green sunfish	1	0.8	4.5	0.10
Common shiner	7	5.3	1.8- 3.7	0.04
Central mudminnow	2	1.5	2.3- 3.5	0.03
* Longear sunfish	1	0.8	2.9	0.03
Lake chubsucker	1	0.8	2.7	0.02
Brook silverside	1	0.8	3.6	0.02
Johnny darter	1	0.8	2.0	0.01
TOTALS 21	132	100.3		168.01

ACRES: 5.3
 lbs. Game Fish/Hour- 15.81  
 lbs. Miscellaneous Fish/Hour- 68.19  
 84.00
LBS./ HOUR: 84.00

STATION Seven STREAM Elkhart River  
DATE OF SURVEY June 22, 1971 COUNTY Elkhart  
BIOLOGIST Peterson-Johnson-Taylor

1. TWP. 35N R 6E S 3  
2. NEAREST TOWN Bainter Town, Indiana  
3. MAXIMUM DEPTH 3.5 feet AVERAGE DEPTH 2.1 feet  
4. WIDTH 53 feet LENGTH 800 feet ACRE FEET 2.0  
5. BOTTOM TYPE Gravel, silt, and muck  
6. COLOR Gray-Green  
7. DESCRIPTION OF SAMPLING STATION Sample area number seven began at the County Road 142 bridge and continued upstream for 800 feet. This portion of the Elkhart River had been channeled creating uniform banks and water depth. The north bank was completely void of trees and brush however, the south bank had several large overhanging trees and underbrush.  
8. EVIDENCE OF EROSION OR POLLUTION Bank erosion due to lack of vegetation.  
9. SAMPLING EFFORT Electrofishing  
ELECTROFISHING 2- units for a total of 2 HOURS  
TRAP NETS N/A NUMBER N/A HOURS  
SEINING N/A  
ROTENONE N/A GALLONS

10. TEMPERATURE 75.0°F SURFACE 73.5°F BOTTOM AIR: 78°F  
11. DISSOLVED OXYGEN (SURFACE) 8.6 ppm 8.5 pH  
12. REMARKS Due to a lack of rooted vegetation, bank erosion was occurring along the north bank. A land development project was in progress along the east bank. Public access to the river is gained along County Road 142. Evidence of fishing was observed along the north bank. Two fishermen, reporting no success, were interviewed.

