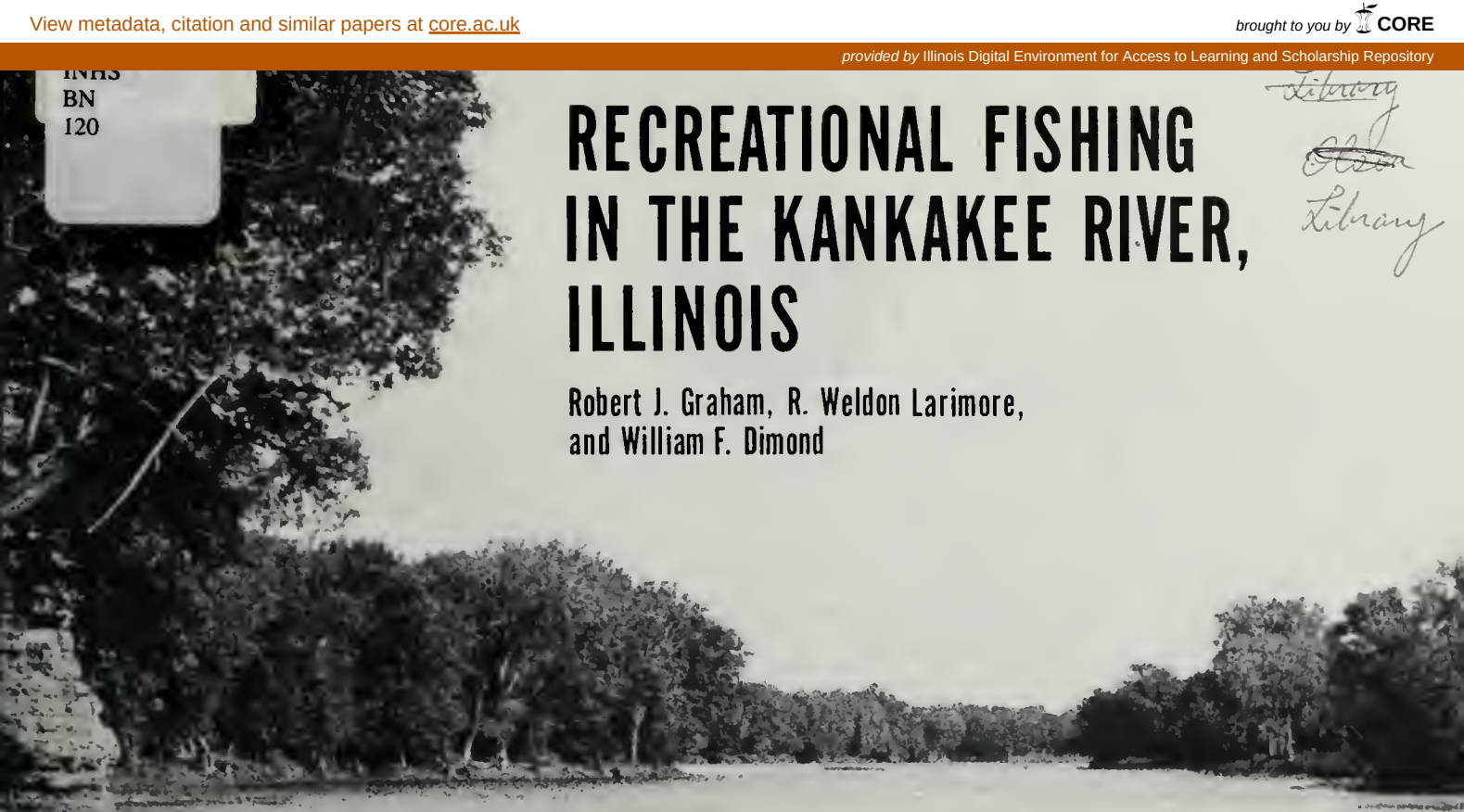
RECREATIONAL FISHING IN THE KANKAKEE RIVER, ILLINOIS

Robert J. Graham, R. Weldon Larimore,
and William F. Dimond



Illinois Natural History Survey
Champaign, Illinois – June – 1984

State of Illinois
Department of Energy and Natural Resources
Natural History Survey Division

Biological Notes No. 120

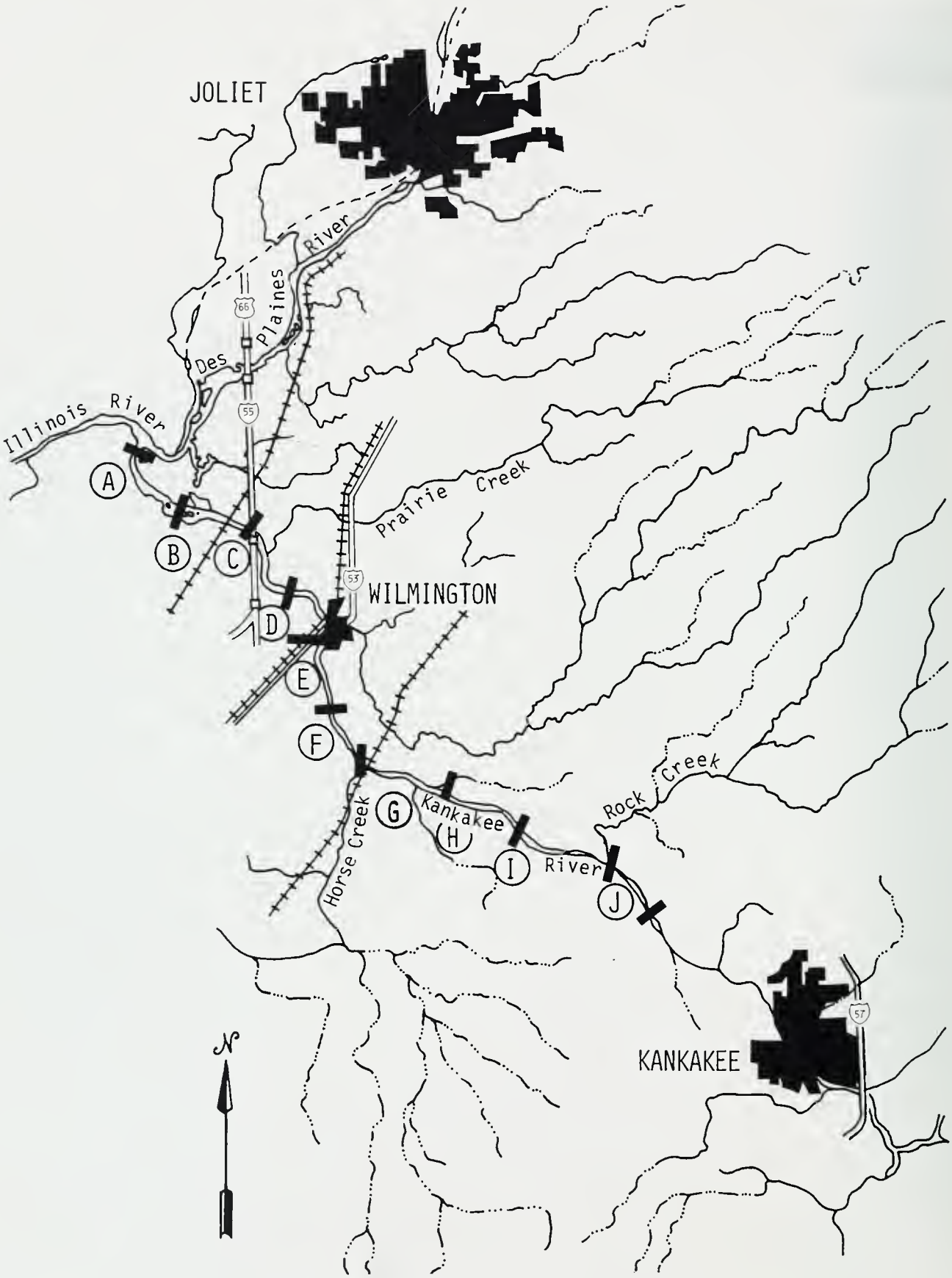


Fig. 1. — The lower Kankakee River, showing sections established for the 1978–1979 creel survey.

Cover photograph by Thomas Skelly.

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ABSTRACT

A 2-year creel survey was conducted on a 40-km reach of the lower Kankakee River during 1978 and 1979. Fishing effort averaged 3,823 man-hours per km per year. Although most fishing effort was not expended in pursuit of any particular species, effort directed toward channel catfish and smallmouth bass was high relative to that directed toward other species. The mean annual catch rate for all species was 0.13 fish and 56.7 g of fish per man-hour of fishing effort for an estimated total harvest of 469 fish weighing 217 kg per km per year. Most fishermen traveled 41–80 km to fish the river and then generally still-fished. Trotline fishermen were individualistic in methods employed and in success, making significant contributions to annual fishing effort and catch. The river's diverse habitats, high water quality, and accessibility account for its importance as a recreational fishing stream.

INTRODUCTION

Recreational fishing has rapidly increased in Illinois during the past decade, paralleling projected increases in population and fishing license sales (Baur & Rogers 1983) and creating a critical need to evaluate fisheries resources. The need is especially acute for running waters. More than 30 percent of Illinois fishing trips in 1980 were to streams (Baur & Rogers 1983), and a nationwide census of fishing (U.S. Department of the Interior and U.S. Department of Commerce 1982) revealed that 43 percent of all anglers fished in rivers or streams in 1980. In spite of this intense use, few studies have been made of the harvest of fish from warmwater streams.

The Kankakee River in northeastern Illinois is near several metropolitan areas and is intensively used for recreation. A survey of recreational fishing was conducted to determine who fishes the river, what they catch, and what determines their success. More specifically, the objectives of the survey were to determine the (1) numbers, types, and efficiency of fishermen, (2) the seasonal and annual harvest, and (3) the catch rate, i.e., fish caught per man-hour of fishing. The survey was conducted on the lower river (Fig. 1) during 1978 and 1979 as part of a project designed to evaluate the effects of the construction of Commonwealth Edison's Braidwood Nuclear Generating Station on the river's biota and water quality. This study was made during a period of construction activity that had little effect on the river.

The Kankakee River flows westward 239 km from its source in northwest Indiana, draining 13,650 km^2. At Wilmington, Illinois, near its mouth, the mean annual discharge is 116 m^3/second (range: 6–2,150 m^3/second) (U.S. Geological Survey 1981), and Fig. 2 shows the seasonal discharge patterns during the 2 survey years. A 40-km reach of the lower river (Fig. 1) flowing through Kankakee, Will, and Grundy counties in northeast Illinois was included in the creel survey. Alternating riffles, islands, and pools typify the stream habitats, with near-surface bedrock controlling the hydrography and distribution of bottom materials. The upper sections of the study area (16 km) are typified by gravel-cobble substrate with numerous riffles, shallow pools, and small islands; the middle sections (14 km) by moderately deep (<3 m), silted pools separated by extensive runs of solid bedrock; the lower sections (10 km) near the river's confluence with the Des Plaines River by generally wide, deep, heavily silted waters (>3 m deep). Two low dams near the town of Wilmington interrupt the succession of stream habitats. Clustered residential areas separated by undeveloped woodlands characterize both banks. Four major tributaries not included in the survey enter the river within the study area.

The river's fish community is diverse; Sule et al. (Sule, M. J., D. D. Myrick, T. M. Skelly, S. M. Pescitelli. 1980. Adult and juvenile fishes of the Kankakee River and Horse Creek. Pages 6-1–6-374 *in* Construction and preoperational monitoring program for the Kankakee River, Braidwood Station. Third annual report. Illinois Natural History Survey, Urbana, IL) collected a total of 72 fish species from a 3-km reach within the study area between 1977 and 1979 and noted that many of the species collected are known for their intolerance of silty or polluted conditions. Three major metropolitan areas (Chicago, Joliet, and Kankakee) and many smaller communities are located within 80 km of the study area. Numerous public and private roads adjacent to both banks provide good access to the stream.

The only legal restrictions on angling in the Kankakee River apply to the black bass (limit of six fish), northern pike (three fish of 24 inches or longer), and walleye-sauger (six fish). Each fisherman may have two poles, trotlines, throw lines, or other legal devices not exceeding 50 hooks in total. Two untagged sport fishing devices are allowed; additional devices or devices left unattended must be tagged with the angler's name and address. No commercial fishing is permitted.

This paper is published by authority of the State of Illinois and is a contribution from the Section of Aquatic Biology of the Illinois Natural History Survey. Robert J. Graham is a former Research Assistant, Dr. R. Weldon Larimore is an Aquatic Biologist, and William F. Dimond is a Specialist in Aquatic Biology in the Section of Aquatic Biology.

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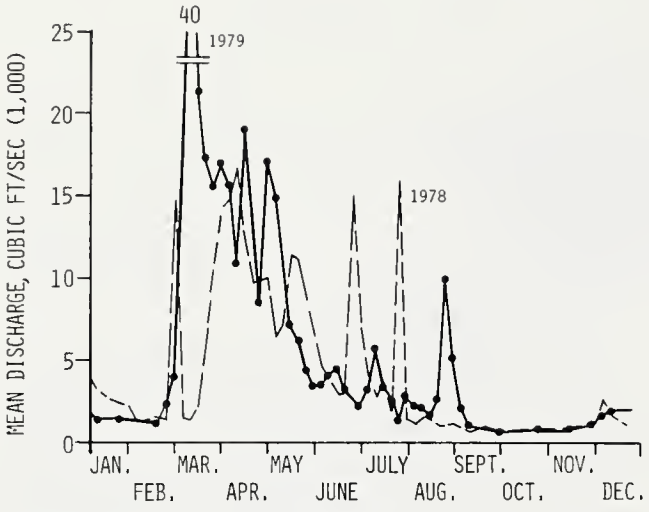

Fig. 2. — Five-day mean discharge of the Kankakee River near Wilmington, Illinois, during 1978 and 1979 as recorded by the U.S. Geological Survey.

METHODS

The survey method employed was a modification of that outlined by Starrett et al. (1963). The 40-km census area was divided into 10 sections of approximately equal length (Fig. 1). Although varying considerably through the 40-km reach, the stream averaged 197 m wide, creating sections of approximately 79 ha (195 acres). The sections were labeled alphabetically (A–J) from downstream to upstream. A stratified random sampling schedule was designed to survey all sections equally among days of the week and hours of the day. The schedule was based on an arbitrarily chosen 15-hour fishing day and an 8-day working week that sampled one or two sections per day for 5 consecutive days, allowed 1 day for supplementary contacts, and provided 2 consecutive days off for the creel clerk. This schedule required 128 days to complete and was performed twice each survey year. The 1978 survey year began 26 March and ended 4 December. The 1979 survey year began 20 March and ended 6 December. The December–February period was omitted because of greatly reduced fishing and dangerous ice conditions.

Surveys of each section consisted of a progressive count and fisherman contacts. For the progressive count, the creel clerk moved through a section as rapidly as possible, counting and categorizing those fishing as boat, bank, or wading fishermen. Fisherman contact data were recorded from those who had been fishing for 0.5 hour or more in the section being surveyed. These data included observations by the creel clerk of fishing methods and catch and interviews with fishermen to obtain background data, the total number of hours fished up to the time of contact, and the species sought. Fishermen with no preference as to species sought were assigned to a "general" category. Reports of fish released by fishermen were not recorded, since identifications of the fish were often uncertain.

During 1978, supplementary contact data were gathered weekly by stationing the creel clerk in one section for several hours in an attempt to contact fishermen

Table 1. — Kinds of fishing effort on sections (lettered from downstream to upstream) of the lower Kankakee River during the 1978 and 1979 survey years.

Fishing Category	Distribution of Fishing Effort (Man-hours per km per Year) by River Section										Mean
	A	B	C	D	E	F	G	H	I	J	
1978											
Bank	480	3,526	2,564	9,430	416	577	192	833	3,076	1,897	2,299
Wading	0	0	488	1,960	32	0	0	0	515	32	299
Boat	352	1,377	323	0	97	129	450	256	32	64	308
Total	*832*	*4,903*	*3,335*	*11,390*	*545*	*706*	*642*	*1,089*	*3,623*	*1,993*	*2,906*
1979											
Bank	1,138	4,501	4,282	16,792	1,580	464	532	1,139	3,267	4,130	3,782
Wading	0	562	99	3,530	32	0	0	263	196	224	491
Boat	1,030	1,278	596	99	0	631	464	302	196	67	466
Total	*2,168*	*6,341*	*4,977*	*20,421*	*1,612*	*1,095*	*996*	*1,704*	*3,659*	*4,421*	*4,739*
1978–1979 Pooled Mean											
Bank	809	4,013	3,423	13,111	998	520	362	986	3,172	3,014	3,041
Wading	0	281	274	2,745	32	0	0	132	356	128	395
Boat	691	1,328	460	50	49	380	457	279	114	66	387
Total	*1,500*	*5,622*	*4,157*	*15,906*	*1,079*	*900*	*819*	*1,397*	*3,642*	*3,208*	*3,823*

leaving the river who had completed their day's fishing. In 1979, weekly supplementary contact data were collected by a roving creel clerk who traversed all sections, contacted all fishermen encountered, and obtained information, in addition to the 1978 questions, concerning the primary purpose of the fisherman's visit, his selection of a particular fishing site, and the number of other sections he had previously fished within the study area.

Fishing effort was calculated from progressive counts using the mean-count method of Lambou (1961). Distribution of fishing effort, catch per unit of fishing effort, and calculated total projected catch according to species were determined by using procedures detailed by Starrett et al. (1963). The percentage of successful fishing parties (one or more fishermen sharing a common creel containing one or more fish) was determined as recommended by Lambou (1966).

Because trotline and limbline fishermen are secretive and nocturnal in their fishing habits, special efforts were made to contact these fishermen in 1979. Additional contacts were solicited by attaching to the fishing lines cards bearing a brief explanation of the creel survey, a statement of confidentiality, and a local telephone number to call. A total of 89 trotlines and 21 limblines were tagged on 26 June and 4 August.

RESULTS

Fishing Effort

Fishing effort expended by contacted fishermen comprised 2.3 percent of annual projected fishing effort for the 1978 survey year and 1.4 percent for the 1979 survey year, or 1.7 percent of total projected fishing effort for the combined years.

Fishing effort within the study area during the 1978 and 1979 survey years averaged 3,823 man-hours per km per year (Table 1). Observed annual fishing effort in 1979 was 61.3 percent greater than in 1978; this apparent increase may have been influenced by the more frequent use of a canoe for progressive counts during low-water periods, probably yielding increased accuracy in progressive counts. However, the use of the canoe may have had little influence on estimates of total fishing, for canoeing was generally limited to relatively inaccessible areas that received little fishing pressure. Despite the increase in estimated fishing effort in 1979, distributions of effort by categories of fishermen, sections fished, species sought, and sampling schedules completed during the first and second halves of both survey years were consistent between years.

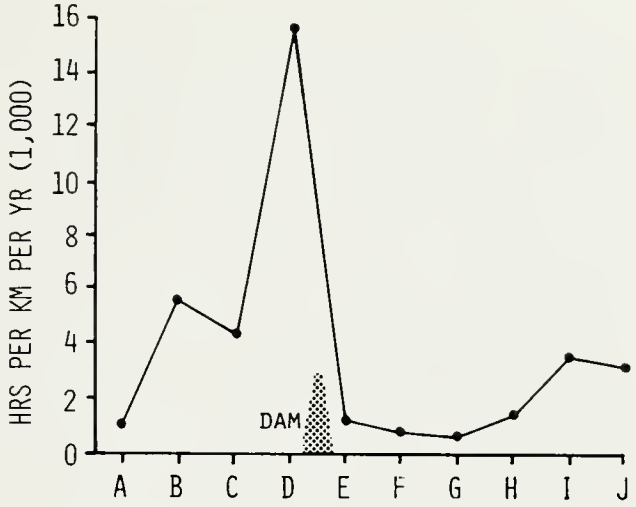

Fig. 4. — Distribution of fishing effort through sections of the lower Kankakee River study area. Sections are lettered from downstream to upstream.

Bank fishermen (Fig. 3) accounted for 79.1 and 79.8 percent of annual fishing effort in 1978 and 1979, respectively, dominating all sections except G in 1978 and F in 1979, both above Wilmington dam, where private lands limit public access. Wading fishermen expended 10.3 and 10.4 percent of the effort in 1978 and 1979, respectively, with the greatest pressures on sections C, D, and I in 1978 and sections B, D, and H in 1979. These intensively used sections (B, C, and D below the Wilmington dam and H and I in the riffles and around the islands of Kankakee River State Park) are partly or wholly public property and

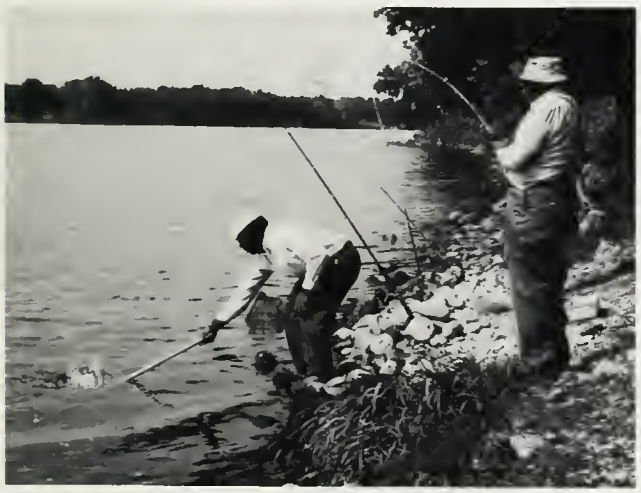

Fig. 3. — Many hours are spent bank fishing.

Fig. 5. — Wilmington dam attracts many fishermen.

have good roads closely paralleling both sides of the stream. During both years, the greatest number of hours was spent in Section D (Fig. 4), where fishermen waded the shallow tail waters below the Wilmington dam (Fig. 5). Fishermen also waded to avoid crowded areas or to gain access to isolated areas. Boat fishermen accounted for 10.6 percent of the fishing effort in 1978 and 9.8 percent in 1979. Boat fishing was limited by access restrictions, the Wilmington dam between sections D and E, and the shallow, rocky nature of the river. Direct boat access (excluding canoes) exists only in sections B (below Wilmington) and I (in the Kankakee River State Park), except for persons living along the river's banks. Docking facilities in section G provide access for private club members to sections F, G, and H above Wilmington, where private ownership limited public entry. High water levels during spring and summer reduced the limitations on boat fishing imposed by shallow water. All sections of the lower Kankakee River are accessible by canoe, though few fishermen were observed using them. Water skiing discouraged many summer boat fishermen from using sections A, B (above the confluence with the Des Plaines River), and G (with many private clubs and cottages).

Table 2. — Primary purpose of visit, reason for site selection, and number of sections fished by 869 fishermen contacted during the 1979 survey year on the lower Kankakee River.

	Number	Percentage
Purpose of Visit [a]		
Fishing	639	74
Escape from pressure	114	13
Picnicking	33	4
Camping	17	2
Nature study	6	<1
Boating	4	<1
Other	65	7
Reason for Site Selection[a]		
Previous success	255	29
Easy access	189	22
Attractive spot	112	13
Advice of friends	105	12
Solitude	36	4
Press reports	31	4
Scenery	4	<1
Campsite	2	<1
Other	184	21
Number of Other Sections Fished		
0	603	69
1	161	18
2	72	8
3	15	2
4	11	1
5	2	<1
6	0	<1
7	0	<1
8	3	<1
9	2	<1

[a] Several fishermen gave more than one purpose or reason.

Table 3. — Numbers and weights (kg) of fishes caught by contacted fishermen on the lower Kankakee River during the 1978 and 1979 survey years.

Species	1978		1979	
	No.	kg	No.	kg
Carp *(Cyprinus carpio)*	68	53.859	70	46.774
Channel catfish *(Ictalurus punctatus)*	40	18.104	82	56.271
Shorthead redhorse *(Moxostoma macrolepidotum)*	26[a]	13.440	24	12.831
River redhorse *(Moxostoma carinatum)*	4[a]	4.251	25	14.545
Smallmouth bass *(Micropterus dolomieui)*	34	9.503	36	8.695
Golden redhorse *(Moxostoma erythrurum)*	10	7.709	12	8.531
Freshwater drum *(Aplodinotus grunniens)*	26	7.863	7	5.665
Rock bass *(Ambloplites rupestris)*	19	3.380	31	3.217
Silver redhorse *(Moxostoma anisurum)*	1	0.200	5	4.027
Northern pike *(Esox lucius)*	4	2.264	1	0.684
Black bullhead *(Ictalurus melas)*	8	0.813	14	1.125
Walleye *(Stizostedion vitreum)*	1	0.160	2	1.281
Quillback *(Carpoides cyprinus)*	1	1.350	. .	. . . .
Black redhorse *(Moxostoma duquesnei)*	. .	. . . .	3	1.290
Bowfin *(Amia calva)*	1	1.138	. .	. . . .
Longnose gar *(Lepisosteus osseus)*	. .	. . . .	1	0.876
Yellow bullhead *(Ictalurus natalis)*	3	0.563	2	0.300
Northern hog sucker *(Hypentelium nigricans)*	1	0.740	. .	. . . .
Longear sunfish *(Lepomis megalotis)*	2	0.037	12	0.428
White crappie *(Pomoxis annularis)*	. .	. . . .	4	0.429
Creek chub *(Semotilus atromaculatus)*	. .	. . . .	6	0.395
Bluegill *(Lepomis macrochirus)*	1	[b]	5	0.383
Green sunfish *(Lepomis cyanellus)*	3	0.100	6	0.282
Black crappie *(Pomoxis nigromaculatus)*	8	0.382	. .	. . . .
Stonecat *(Noturus flavus)*	2	0.290	2	0.082
Total	*263*	*126.146*	*350*	*168.111*

[a] A few river redhorse may have been misidentified as shorthead redhorse during the first part of the census.

[b] Weight not obtained.

Fishing effort tended to be concentrated in those sections most accessible to the public. More than 75 percent of the annual fishing effort occurred in sections B, C, D below Wilmington dam and sections I and J in Kankakee River State Park (Fig. 4). Most (74 percent) fishermen contacted in 1979 said that fishing was the primary purpose of their visit, followed by escape from pressure (13 percent) (Table 2). Previous success and easy access accounted for 29 and 22 percent, respectively, of the reasons given for the selection of a particular fishing site. Sixty-nine percent of the fishermen questioned fished one section exclusively, and only 18 percent had previously fished two sections within the study area.

Catch and Catch Rate

Twenty-five species of fishes were observed in the possession of fishermen during the study (Table 3). The principal species (numbers) caught by contacted fishermen during both years were carp, channel catfish, smallmouth bass, rock bass, and shorthead redhorse, whereas catch (biomass) was dominated by carp, channel catfish, shorthead redhorse, river redhorse, and smallmouth bass. A high percentage of these species was caught downstream of the two low dams. All freshwater drum were taken in those lower sections (Table 4).

The majority (61 percent) of fishing effort during both years was not expended in pursuit of any particular species (Table 5). However, fishing effort directed toward channel catfish (20 percent), smallmouth bass (10 percent), and walleye (5 percent) was high relative to that expended on other species.

Fishing effort expended from mid-March through early August accounted for 70.8 and 68.2 percent of the effort in 1978 and 1979, respectively. The mean annual catch rate for all species for 1978 and 1979 combined was 0.13 fish and 56.7 g of fish per man-hour of fishing effort (Table 6). Many carp, redhorse, and stonecat were reportedly released. The numbers and grams of fish caught per man-hour of effort from mid-March through early August were greater than those of the period mid-August through early December both years (Table 6). Approximately 22 and 26 percent of all fishing parties contacted during the 1978 and 1979 survey years, respectively, were successful. Both years combined showed a 25-percent success ratio for the mid-March through early August period and a 20-percent success ratio for the period from mid-August through early December.

The projected catch for the 1978 and 1979 survey years averaged 472 fish weighing 217 kg per km per year (Table 7), which equals 23.8 fish weighing 11.0 kg per hectare, or 9.6 fish weighing 9.8 pounds per acre. The 1979 catch in terms of both numbers and biomass of fish caught was approximately twice that of 1978 due to increases in both fishing effort (Table 1) and catch per unit of fishing effort (Table 6).

Fisherman Profile

The fishing population was primarily composed of males between the ages of 11 and 50 years (Table 8) who

Table 4. — Numbers and weights (kg) of the eight most important species measured during the 1978 and 1979 creel surveys in each section (lettered from downstream to upstream) of the lower Kankakee River.

	River Section											
Species	A	B	C	D	[Low Dams]	E	F	G	H	I	J	Total
Carp												
Number	12	35	14	66		2	3	1	. . .	. . .	5	138
Weight	6.34	20.51	7.71	52.49		0.65	6.34	0.64			5.96	100.64
Channel catfish												
Number	8	35	12	19		. . .	22	16	7	1	2	122
Weight	2.25	18.84	6.32	7.82			15.22	12.25	7.86	2.84	0.99	74.39
Shorthead redhorse												
Number	1	3	3	26		2	. . .	. . .	2	3	10	50
Weight	0.51	1.24	1.34	14.34		0.90			0.84	1.50	5.62	26.29
River redhorse												
Number	1	1	1	22		. . .	. . .	1	. . .	1	2	29
Weight	0.48	0.28	0.34	15.81				0.54		0.40	0.95	18.80
Smallmouth bass												
Number	. . .	2	7	38		2	. . .	9	1	2	9	70
Weight		0.28	1.84	10.24		0.31		2.28	0.84	1.01	1.41	18.21
Golden redhorse												
Number	. . .	1	. . .	17		. . .	. . .	. . .	1	1	2	22
Weight		0.13		12.16					0.93	1.22	1.80	16.24
Freshwater drum												
Number	2	11	4	16		. . .	. . .	. . .	. . .	. . .	. . .	33
Weight	0.53	3.65	4.72	4.64								13.54
Rock bass												
Number	. . .	2	. . .	38		1	. . .	. . .	4	3	2	50
Weight		0.29		4.52		0.13			0.31	0.96	0.40	6.61

Table 5. — Distribution of effort spent fishing for different species in the lower Kankakee River during the 1978 and 1979 survey years.

	1978		1979		Mean	
Species Sought	Man-hours per km per Year	Percentage	Man-hours per km per Year	Percentage	Man-hours per km per Year	Percentage
General	1,807	62	2,863	60	2,335	61
Channel catfish	550	19	989	21	769	20
Smallmouth bass	283	10	450	9	366	10
Walleye	119	4	241	5	180	5
Rock bass	91	3	41	<1	66	2
Crappie	24	<1	66	1	45	1
Carp	28	<1	31	<1	29	<1
Northern pike	2	<1	37	<1	20	<1
Panfish (all inclusive)	0	<1	13	<1	7	<1
Game fish (all inclusive)	0	<1	8	<1	4	<1
White bass	2	<1	0	<1	1	<1
Suckers	2	<1	0	<1	1	<1

still-fished using natural bait (Table 9). The majority (60 percent) of fishermen contacted resided in Cook County and many (50 percent) traveled between 41 and 80 km to fish the river, indicating that the Chicago metropolitan area was where most fishermen lived (Table 10). Fishermen who resided in Will County and those who traveled between 17 and 40 km were the second most abundant groups of fishermen contacted (31 and 22 percent, respectively), and most probably resided in the Joliet metropolitan area. Local fishermen (travelling 0–16 km) may have resided in Kankakee, southern Will, or Grundy counties; they were a relatively minor segment (13 percent) of the fishermen using the lower Kankakee River.

Though commercial fishing is prohibited on the Kankakee River, many fishermen employed trotlines and limblines. Creel clerks counted 171 trotline jugs, 10 trotlines without jugs, and 164 limblines during a 1-week survey of the study area in 1979. These counts did not represent the actual number of actively fished lines due to (1) incomplete counts as a consequence of adverse weather conditions, (2) the fact that fishermen often abandoned their lines for indefinite periods throughout the course of the season, and (3) the submersion of trotlines and limblines during periods of high water and for purposes of concealment.

Table 6. — Comparison of catch per man-hour of fishing effort by numbers and weights of fish recorded in sampling schedules completed during the first and second halves of the 1978 and 1979 survey years on the lower Kankakee River.

	Mid-March Early August		Mid-August Early Dec.		Entire Year[a]	
Year	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)
1978	0.11	49.9	0.09	31.3	0.10	46.6
1979	0.14	67.8	0.13	49.2	0.14	63.0
Combined years [a]	0.13	59.6	0.10	38.7	0.13	56.7

[a] Based on pooled data.

Twenty-one different trotline fishermen were interviewed on 54 occasions in 1979. Two of these interviews were the result of the survey card system. One limbline fisherman was contacted but refused to be interviewed. Twenty of the trotline fishermen sought channel catfish exclusively. The frequency of baiting and checking lines varied from once every hour to once every 3 days. These fishermen actively fished their lines for a period varying from half a day to half a year. On several occasions creel clerks accompanied trotline fishermen when they checked their lines. Fish caught on these trips were weighed along with others in the fisherman's live-box that had been previously caught on trotlines (Table 11). Three of the fishermen interviewed claimed annual catches of channel catfish of well over 45 kg. Many carp, redhorse, stonecat, and small (<250 mm) channel catfish were reportedly released. Although valid estimation of effort or catch was impossible, it is probable that large numbers of channel catfish were taken by trotline during 1979.

DISCUSSION

The lower Kankakee River is popular with northeastern Illinois fishermen, attracting 3,823 hours of

Table 7. — Projected catch of fishes from the lower Kankakee River during the 1978 and 1979 survey years. Species are arranged in descending order of weight taken.

Species	1978		1979		Mean	
	No. per km per Year	Wt (kg) per km per Year	No. per km per Year	Wt (kg) per km per Year	No. per km per Year	Wt (kg) per km per Year
Carp	76	59.08	123	83.21	100	71.14
Channel catfish	44	19.86	147	100.10	96	59.98
Shorthead redhorse	29	14.74	43	22.82	36	18.78
River redhorse	3	1.28	43	25.88	23	13.58
Smallmouth bass	38	10.82	66	15.47	52	13.14
Golden redhorse	12	8.29	24	15.18	18	11.73
Freshwater drum	29	8.60	14	10.08	22	9.34
Rock bass	20	3.71	57	5.72	38	4.72
Silver redhorse	3	0.22	9	7.17	6	3.70
Northern pike	6	2.48	5	1.22	6	1.85
Black bullhead	9	0.89	24	2.00	16	1.44
Walleye	3	0.17	5	2.28	4	1.22
Quillback	3	2.29	0	0.00	2	1.14
Black redhorse	0	0.00	5	1.48	2	0.74
Bowfin	3	1.25	0	0.00	2	0.62
Longnose gar	0	0.00	5	1.18	2	0.59
Yellow bullhead	3	0.62	5	0.54	4	0.58
Northern hog sucker	3	0.81	0	0.00	2	0.40
Longear sunfish	3	0.04	24	0.76	14	0.40
White crappie	0	0.00	9	0.76	4	0.38
Bluegill	3	[a]	9	0.68	6	0.34
Creek chub	0	0.00	9	0.68	4	0.34
Green sunfish	3	0.11	9	0.52	6	0.32
Black crappie	9	0.60	0	0.00	4	0.30
Stonecat	3	0.32	5	0.15	4	0.24
Total	*305*	*136.17*	*640*	*297.86*	*472*	*217.02*

[a] Weight was not obtained.

Table 8. — Sex and age of fishermen contacted on the lower Kankakee River during the 1978 and 1979 survey years.

	1978		1979		Mean	
	No.	%	No.	%	No.	%
Sex						
Male	838	84	715	82	776	83
Female	163	16	154	18	158	17
Age						
1–10	64	6	42	5	53	6
11–20	194	19	143	16	168	18
21–30	239	24	192	22	216	23
31–40	185	18	165	19	175	19
41–50	136	14	128	15	132	14
51–60	101	10	86	10	94	10
60 +	82	8	113	13	98	10

Table 9. — Fishing methods and baits used by fishermen contacted on the lower Kankakee River during the 1978 and 1979 survey years.

	1978		1979		Mean	
	No.	%	No.	%	No.	%
Method						
Still	927	91	820	91	874	91
Cast	87	9	81	9	84	9
Troll	0	<1	2	<1	1	<1
Bait [a]						
Natural	904	83	771	74	838	78
Prepared	99	9	156	15	128	12
Artificial	97	9	108	10	102	10

[a] Some fishermen used more than one bait.

Table 10. — County of residence of fishermen contacted and distance traveled to fish on the lower Kankakee River during the 1978 and 1979 survey years.

	1978		1979		Mean	
	No.	%	No.	%	No.	%
County						
Cook	600	60	511	59	556	59
Will	297	30	282	32	290	31
Kankakee	63	6	48	6	56	6
Du Page	20	2	16	2	18	2
Grundy	14	1	1	<1	8	<1
La Salle	3	<1	0	<1	2	<1
Kane	2	<1	1	<1	2	<1
Livingston	1	<1	2	<1	2	<1
Champaign	0	<1	1	<1	0	<1
Christian	0	<1	1	<1	0	<1
Sangamon	0	<1	1	<1	0	<1
Out of state	1	<1	5	<1	3	<1
Distance						
Miles km						
0-10 0- 16	151	15	97	11	124	13
11-25 17- 40	178	18	214	25	196	22
26-50 41- 80	460	46	474	55	467	50
51-75 81-120	207	21	75	9	141	15
76-99 121-158	4	<1	3	<1	4	<1
100 + 159 +	1	<1	6	<1	4	<1

fishing per kilometer (6,156 hours per mile or 79 hours per acre of water) during the 1978 and 1979 seasons. This fishing effort per unit of stream length is several times larger than those reported in comparable creel surveys (Fleener 1975; Funk & Fleener 1966, 1974; Harrison 1962). When expressed by area, 79 hours of fishing per acre per year in the lower Kankakee River falls within the range (53-111 hours) of 8 years of fishing records on the Big Piney River (Funk & Fleener 1974), is well above the range (31-54 hours) for 11 years on the Niangua River (Funk & Fleener 1966), and is below the range (107-190 hours) on Courtois Creek (Fleener 1975), all Missouri streams on which intensive surveys have been conducted. Although exceeded by the smaller Courtois Creek in fishing pressure per unit of surface area (per acre), the intense fishing pressure, when expressed by unit of length of stream (per kilometer), on the lower Kankakee River demonstrates its attraction and value as a recreational resource.

The importance of public access was emphasized by the distribution of fishing effort through the study sections. Those sections that received the greatest effort were accessible through state parks, conservation areas, or city parks (Fig. 4). Only one other section (H) had public access over state lands but received light fishing pressure, probably because it was inaccessible to automobiles. Sections E, F, and G were fished relatively little because most of the stream bank is private land. Easy access to an unfamiliar body of water plays an important part in the selection of a fishing site (Hewston & Franklin 1969), and areas with an assemblage of pleasing characteristics, i.e., parks, will attract more fishermen than drab, less inter-

Table 11. — Numbers and weights of fishes caught on trotlines by fishermen contacted on the lower Kankakee River during the 1979 survey year.

Species	Number	Weight (kg)
Channel catfish	42	30.42
Carp	1	4.15
Freshwater drum	1	2.67
Silver redhorse	3	2.63
Shorthead redhorse	1	0.65
River redhorse	1	0.61
Yellow bullhead	2	0.47
Smallmouth bass	1	0.35
Rock bass	1	0.24
American eel *(Anguilla rostrata)*	1	[a]
Total	*54*	*42.19*

[a] Weight was not obtained.

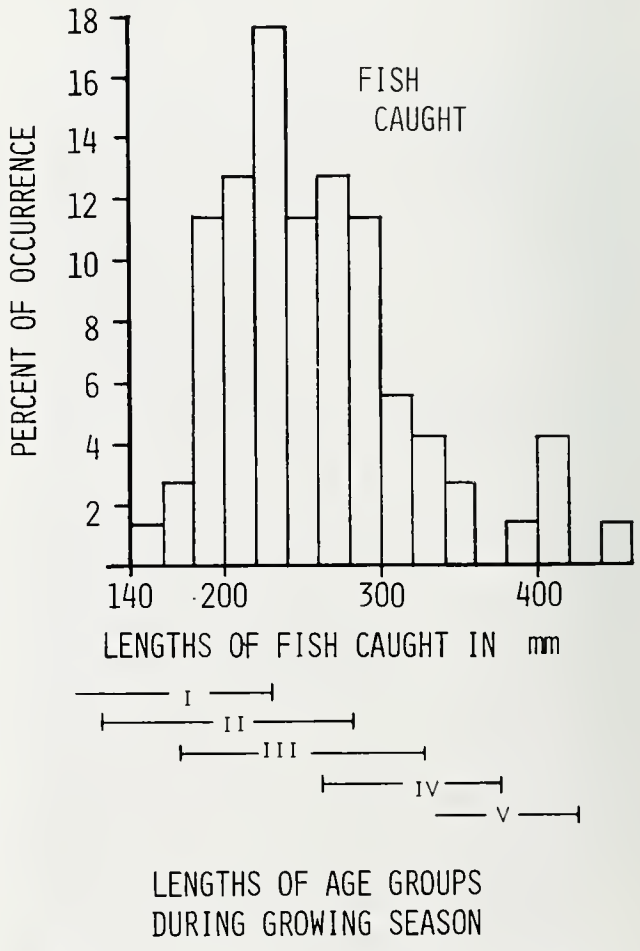

Fig. 6. — Total lengths (mm) of smallmouth bass caught and range in sizes of each year class in the river during the fishing season, including the smallest fish in the spring and the largest one in the fall.

esting ones (Zeller 1960). Most fishermen contacted were either satisfied with the fishing conditions available or were ignorant of access available in other sections on the Kankakee.

Species composition of the 1978 and 1979 catch (Table 3) accents the lower Kankakee River's diverse habitat and good water quality. The Kankakee River is considered one of the best channel catfish, smallmouth bass, and walleye streams in Illinois. It is the source of the present Illinois state record walleye (14 pounds) and carp (42 pounds) and held the state smallmouth bass record until 1980, with a 5-pound, 15.5-ounce fish. The river's reputation for channel catfish and smallmouth bass was substantiated by the creel survey (Table 5). Smallmouth bass entered the creel at the small size of 140 mm and contributed most to the catch as 230-mm fish at age II and III (Fig. 6). Although of special interest, only three walleye were observed in the possession of fishermen during the study. There were many reports of good walleye catches in the early spring and late fall, but those catches were generally in the upper reaches of the river between the city of Kankakee and the Illinois-Indiana state line. In the Des Moines River, a river similar to the lower Kankakee River in many respects, Harrison (1962) regarded the walleye as a species mainly taken by specialist fishermen.

Although fishermen enjoyed a diverse catch, the catch rate of only 0.12 fish per hour is low. The fish caught were large (436 g, or nearly a pound) compared with the 134-g fish taken in Courtois Creek (Fleener 1975), where 0.80 fish was caught per hour. Generally, warmwater streams with high catch rates produce large numbers of small sunfishes, unlike those streams yielding low numbers per hour, with the catch composed of large fish, especially catfish, carp, and suckers (Fig. 7). Bennett (1971) stated that catch rates of less than 50 g per man-hour of fishing effort were unsatisfactory to most fishermen, a criterion barely exceeded by lower Kankakee River fishermen.

Fig. 7. — Large carp, catfish, and suckers make up much of the angler's catch.

Fig. 8. — Family fishing is important where access is easy, as along the side channel in Wilmington Park.

Field observations suggested two factors that may have adversely influenced fishing success. First, conditions for good fishing on the lower Kankakee River are often of relatively brief duration because the river is subject to rapid fluctuations in turbidity and elevation due to heavy spring and summer rains, and these fluctuations are exacerbated by channelization of the upper reaches. Fleener (1975) described a similar situation that periodically virtually eliminated fishing in an Ozark smallmouth bass stream, but in his report, data from periods of poor conditions were excluded. Fishermen on the lower Kankakee River, especially those who traveled long distances, did not appear to time their visits to coincide with periods of favorable conditions. Thus, fishing effort exerted during poor conditions reduced fishing success.

A second factor that decreased fishing success was the lack of aptitude or skill of the average fisherman. Harrison (1962) reported that low catch rates persisted for 9 years in the Des Moines River despite large fish populations, concluding that the low catch rates were "largely the result of fishing techniques employed by *each* angler." An analogous situation existed on the lower Kankakee River. Many fishermen were not actively seeking fish. Rather, they selected one spot and stayed there or were engaged in other activities, such as picnicking with all members of the family (Fig. 8). Enjoyment of the total outdoor experience seemed to be the prime consideration

Fig. 9. — Mouths of tributaries, such as Rock Creek, shown here, are popular fishing places.

of most fishermen (McFadden 1969; Moeller & Engelken 1972; Weld 1977), because the majority were not seeking any particular species of fish and had fished only one or two sections of the study area.

Thus, the low catch per hour was caused by (1) few small fish in the catch, (2) the casual attitudes of many unskilled fishermen, (3) fishing during poor river conditions and unproductive seasons, (4) fish thrown back that were not counted, and (not mentioned above) (5) our poor nighttime catch records for catfish.

That fishing effort and success were greater in both years from mid-March through early August than it was during the mid-August through early December period (Table 7) may have been due to intensive exploitation of spring spawning runs and the prevalence of novice fishermen in late summer and fall. The Kankakee River and its tributaries are noted for excellent fishing during the spring (Nielson 1977). Although the tributary streams within the study area were not surveyed, the areas of their confluence with the river were. Fishermen often sought out these areas during spring spawning runs (Fig. 9). Tributary streams of the lower Kankakee River are extremely valuable as spawning habitats and nursery areas for several species of fish (Fig. 10), and fish and fishermen concentrate in these areas, increasing the probability of fishing success. Rupp's (1961) observation that most inexperienced fishermen lose interest as the season progresses would in part account for the decrease in fishing effort during the August through early December period.

Trotlines were generally used in an effort to harvest a large number of fish, particularly channel catfish, in a short period of time and were very effective when employed by experienced fishermen. Considering the paucity of literature concerning trotlines, this fishing method certainly merits further study.

Fig. 10. — Rock Creek, a tributary used by spawning bass and suckers.

Funk & Pflieger (1975) called attention to the distinctive characteristics and recreational opportunities offered by warmwater streams, often ignored or taken for granted. In view of its diverse fish population that includes many attractive sport species, proximity to major metropolitan areas, and extensive use by the fishing public, the lower Kankakee River must be considered a major outdoor recreational area.

ACKNOWLEDGEMENTS

The authors thank R. L. Holtz for field assistance, the Walter Sherry Chapter of the Izaak Walton League of America for the use of their grounds, and various members of the Illinois Natural History Survey for helping in numerous ways. We also extend our thanks to Robert Gorden, Thomas Skelly, and Jana Waite of the Survey; Michael Sule, John A. Tranquilli, Bill A. Bertrand, and James Langbein of the Illinois Department of Conservation; and Leonard Durham of Eastern Illinois University for reviewing the manuscript. Most of the financial support for this project was provided by the Commonwealth Edison Company, Chicago.

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US ISSN 0073-490X

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(R4-3800 — 3M — 6-84)