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Fishes of Marion County, Indiana

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The purpose of this report is to bring together available information on the fishes of Marion County, Indiana. Marion County is in central Indiana and consists primarily of Indianapolis and its suburbs. Indianapolis is one of the larger cities of the United States. It is encircled by an Interstate Highway system, I-465. Also I-70, I-65, I-69, and I-74 traverse the city in various directions.

The west fork of the White River flows across the county from NE to SW. It and its tributaries drain the entire county. Flowing into the White River from the west are Eagle Creek, Crooked Creek and Williams Creek, listed from south to north. Corresponding creeks on the east are Lick Creek, Pleasant Run and Bean Creek which come together before entering the river and Fall Creek.

A complete list of the fishes of Marion County is given in Table 1, separated by collections made in the last century, those made by Gerking in Marion County during his studies of the fishes of Indiana, and recent collections (those made since 1965). Fishes from the White River are summarized in Table 2. Fishes of Eagle Creek are listed in Table 3, Fall Creek in Table 4, several small creeks in Table 5, and fishes of the Indianapolis Water Company Canal and in Pleasant Run in Table 6.

David Starr Jordan and associates reported a number of species from the White River and its tributaries in Indianapolis in the 1870s and 1880s. These were reported in several papers, and many of the names of the fishes are outdated and hard to link with present-day species. However, Eigenmann and Beeson (3), Gerking (7), and Gammon (6) have attempted to determine correct nomenclature and have summarized data from the early literature. We have used these works to determine the species, totalling 63, recorded from Marion County by Jordan and associates during the last century. The 63 are indicated in Table 1.

The most comprehensive study of the fishes of Indiana is by Gerking (7), who made 515 collections around the state from 1940 through 1943. Gerking made 5 collections in Marion County, taking 37 species (Table 1), 9 of them new records for the county. This brought the number of species of fish known from Marion County to 72. Species taken from the first time in Marion County by Gerking were

MINNOWS - Cyprinidae

Goldfish, *Carassius auratus*
Carp, *Cyprinus carpio*
Spotfin shiner, *Notropis spilopterus*
Mimic shiner, *N. volucellus*
Suckermouth minnow, *Phenacobius mirabilis*

TABLE 1. Complete list of fishes taken from Marion County, Indiana, with indication as to whether taken in past century by Jordan and associates (1870's), by Gerking (1945), or recently (since 1965).

	1870's	Gerking 1945	Since 1965
Lampreys — PETROMYZONTIDAE			
Silver lamprey, *Ichthyomyzon unicuspis* Hubbs & Trautman	X		
Paddlefishes — POLYODONTIDAE			
Paddlefish, *Polyodon spathula* (Walbaum)	X		
Gars — LEPISOSTEIDAE			
Longnose gar, *Lepisosteus osseus* (Linnaeus)	X		
Bowfins — AMIIDAE			
Bowfin, *Amia calva* Linnaeus			X
Herrings — CLUPEIDAE			
Gizzard shad, *Dorosoma cepedianum* (Lesueur)			X
Mooneyes — HIODONTIDAE			
Mooneye, *Hiodon tergisus* Lesueur			X
Mudminnows — UMBRIDAE			
Central mudminnow, *Umbra limi* (Kirtland)	X		
Pikes — ESOCIDAE			
Redfin pickerel, *Esox americanus* Gmelin	X		X
Minnows — CYPRINIDAE			
Stoneroller, *Campostoma anomalum* (Rafinesque)	X	X	X
Goldfish, *Carassius auratus* (Linnaeus)		X	X
Carp, *Cyprinus carpio* (Linnaeus)		X	X
Silverjaw minnow, *Ericymba buccata* Cope	X	X	X
Silvery minnow, *Hybognathus nuchalis* Agassiz	X		X
Bigeye chub, *Hybopsis amblops* (Rafinesque)	X	X	
Hornyhead chub, *Nocomis biguttatus* (Kirtland)	X	X	
River chub, *N. micropogon* (Cope)			X
Golden shiner, *Notemigonus crysoleucas* (Mitchill)	X		X
Popeye shiner, *Notropis ariommus* (Cope)	X		
Emerald shiner, *N. atherinoides* Rafinesque	X		X
River shiner, *N. blennius* (Girard)			X
Bigeye shiner, *N. boops* Gilbert	X	X	X
Striped shiner, *N. chrysocephalus* (Rafinesque)	X	X	X
Common shiner, *N. cornutus* (Mitchill)			X
Rosyface shiner, *N. rubellus* (Agassiz)	X	X	X
Spotfin shiner, *N. spilopterus* (Cope)		X	X
Sand shiner, *N. stramineus* (Cope)	X	X	X
Redfin shiner, *N. umbratilis* (Girard)	X	X	X
Mimic shiner, *N. volucellus* (Cope)		X	X
Steelcolor shiner, *N. whipplei* (Girard)	X		X
Suckermouth minnow, *Phenacobius mirabilis* (Girard)		X	X
Southern redbelly dace, *Phoxinus erythrogaster* (Rafinesque)	X		X
Bluntnose minnow, *Pimephales notatus* (Rafinesque)	X	X	X
Fathead minnow, *P. promelas* Rafinesque			X
Bullhead minnow, *P. vigilax* (Baird & Girard)			X
Blacknose dace, *Rhinichthys atratulus* (Hermann)	X		X
Creek chub, *Semotilus atromaculatus* (Mitchell)	X	X	X
Suckers — CATOSTOMIDAE			
River carpsucker, *Carpiodes carpio*	X		X
Quillback, *C. cyprinus* (Lesueur)		X	X
Highfin carpsucker, *C. velifer* (Rafinesque)			X
White sucker, *Catostomus commersoni* (Lacepede)	X	X	X
Creek chubsucker, *Erimyzon oblongus* (Mitchill)	X	X	X
Northern hog sucker, *Hypentelium nigricans* (Lesueur)	X	X	X
Bigmouth buffalofish, *Ictiobus cyprinellus* (Valenciennes)			X
Spotted sucker, *Minytrema melanops* (Rafinesque)	X		X
Black redhorse, *Moxostoma duquesnei* (Lesueur)		X	X
Golden redhorse, *M. erythrurum* (Rafinesque)		X	X

	1870's	Gerking 1945	Since 1965
Shorthead redhorse, *Moxostoma lepidotum* (Lesueur)	X		
Catfishes — ICTALURIDAE			
Black bullhead, *Ictalurus melas* (Rafinesque)	X		X
Yellow bullhead, *I. natalis* (Lesueur)	X	X	X
Brown bullhead, *I. nebulosus* (Lesueur)	X		X
Channel catfish, *I. punctatus* (Rafinesque)	X		X
Stonecat, *Noturus flavus* Rafinesque	X		
Tadpole madtom, *N. gyrinus* (Mitchill)	X		
Brindled madtom, *N. miurus* Jordan	X		
Flathead catfish, *Pylodictus olivaris* (Rafinesque)	X		X
Pirateperches — APHREDODERIDAE			
Pirateperch, *Aphredoderus sayanus* (Gilliams)		X	
Killifishes — CYPRINODONTIDAE			
Blackstripe topminnow, *Fundulus notatus* (Rafinesque)	X		X
Silversides — ATHERINIDAE			
Brook silversides, *Labidesthes sicculus* (Cope)	X	X	X
Temperate basses — PERCICHTHYIDAE			
Yellow bass, *Morone mississippiensis* Jordan and Eigenmann			X
Bass & Sunfishes — CENTRARCHIDAE			
Rock bass, *Ambloplytes rupestris* (Rafinesque)	X	X	X
Green sunfish, *Lepomis cyanellus* Rafinesque	X		X
Pumpkinseed, *L. gibbosus* (Linnaeus)			X
Warmouth, *L. gulosus* (Cuvier)	X		X
Orange-spotted sunfish, *L. humilis* (Girard)			X
Bluegill, *L. macrochirus* Rafinesque	X	X	X
Longear sunfish, *L. megalotis* (Rafinesque)	X	X	X
Redear sunfish, *L. microlophus* (Gunther)			X
Smallmouth bass, *Micropterus dolomieui* Lacepede	X	X	X
Spotted bass, *M. punctulatus* (Rafinesque)			X
Largemouth bass, *M. salmoides* (Lacepede)	X	X	X
White crappie, *Pomoxis annularis* Rafinesque	X	X	X
Black crappie, *P. nigromaculatus* (Lesueur)	X		X
Perch & Darters — PERCIDAE			
Eastern sand darter, *Ammocrypta pellucida* (Putnam)	X	X	
Greenside darter, *Etheostoma blennioides* Rafinesque	X	X	X
Rainbow darter, *E. caeruleum* Storer	X	X	X
Bluebreast darter, *E. camurum* (Cope)	X		
Fantail darter, *E. flabellare* Rafinesque	X		X
Least darter, *E. microperca* Jordan & Gilbert	X		
Johnny darter, *E. nigrum* Rafinesque	X	X	X
Orangethroat darter, *E. spectabile* (Agassiz)	X		X
Logperch, *Percina caprodes* (Rafinesque)	X	X	X
Channel darter, *P. copelandi* (Jordan)	X		
Gilt darter, *P. evides* (Jordan & Copeland)	X		
Blackside darter, *P. maculata* (Girard)	X		X
Dusky darter, *P. sciera* (Swain)			X
River darter, *P. shumardi* (Girard)	X		
Slenderhead darter, *P. phoxocephala* (Nelson)			X
Yellow perch, *Perca flavescens* (Mitchill)			X
Drums — SCIAENIDAE			
Freshwater drum, *Aplodinotus grunniens* Rafinesque	X		X
Sculpins — COTTIDAE			
Mottled sculpin, *Cottus bairdi* Girard	X	X	X
No. species	63	37	72

SUCKERS - Catostomidae
Quillback, *Carpiodes cyprinus*
Black redhorse, *Moxostoma duquesnei*
Golden redhorse, *M. erythrurum*

PIRATE PERCHES

Pirate perch, *Aphredoderus sayanus*

Christensen (2) undertook studies of the fishes of the White River system, including one electrofishing site at Indianapolis. Christensen's Indianapolis collecting was done August 7 and 8, 1967, from the 16th St. Dam to the New York Street Bridge (T.16N., R.3E., Sect. 34; T.15N., R.3E., Sect. 3). A total of 17 species was reported as indicated in Table 2.

TABLE 2. Fishes from White River, Marion County, Indiana, by author and date.

	Gerking 1945	Christensen 1968	Aquatic Control 1973	Hogan 1975a	Hogan 1975b	WAPORA 1978	IHB 1979-80	Kingsley 1983	ESE 1987
Bowfins — AMIIDAE									
Bowfin					1			1	
Herrings — CLUPEIDAE									
Gizzard shad		91	57	11	88	138	A	135	163
Mooneyes — HIODONTIDAE									
Mooneye							1		
Minnows — CYPRINIDAE									
Stoneroller	x		3		1			13	20
Goldfish		25	8	8	18	7	1	6	27
Carp		36	21	8	21	65	12	127	122
Silverjaw minnow					5			2	52
Silvery minnow				4	1				
Bigeye chub	x								
Golden shiner			3	8	1	17		10	51
Emerald shiner						1			2
River shiner					3				
Bigeye shiner	x								
Striped shiner								5	1
Common shiner			1						1
Spotfin shiner				4	1	6		218	867
Sand shiner				2		3		8	1
Redfin shiner						1			6
Mimic shiner			1						1
Steelcolor shiner			14	5	2				6
Suckermouth minnow	x				2			8	7
Bluntnose minnow	x		4	5	75	87		186	467
Fathead minnow				1	2	1			6
Bullhead minnow					4				1
Blacknose dace			3						
Creek chub				1	14			9	3
Sucker — CATOSTOMIDAE									
River carpsucker		20		4			2		19
Quillback		5		4		1	4	98	1
Highfin carpsucker		6	33	7	1				1
White sucker			1	3	4	7		26	26
Creek chubsucker	x								
Northern hog sucker			1	1				11	2
Bigmouth buffalofish								3	3
Spotted sucker			2			1	6	22	56
Black redhorse	x		2	1					
Golden redhorse		17						12	8
Catfishes — ICTALURIDAE									
Black bullhead		5		1					12
Yellow bullhead						1		3	8
Brown bullhead		4							
Channel catfish			1			2		120	5
Flathead catfish								7	
Silversides — ATHERINIDAE									
Brook silversides						1	1	1	11
Temperate basses — PERCICHTHYIDAE									
Yellow bass									3

	Gerking 1945	Christensen 1968	Aquatic Control 1973	Hogan 1975a	Hogan 1975b	WAPORA 1978	IHB 1979-80	Kingsley 1983	ESE 1987
Bass & Sunfishes — CENTRARCHIDAE									
Rock bass								6	1
Green sunfish		7	7	6	53	133	5	29	150
Pumpkinseed		29							9
Orange-spotted sunfish		3	1	5	26	17		57	67
Bluegill		13	5	13	53	31	37	38	226
Longear sunfish	x	91	99	12	52	282	33	617	466
Redear sunfish				1		1			
Smallmouth bass								45	1
Spotted bass		4				43		3	66
Largemouth bass		68	12	10	1	13	20	121	173
White crappie		8	2	9	4		17	34	96
Black crappie			4				2	23	37
Perch & Darters — PERCIDAE									
Greenside darter									
Rainbow darter								1	
Fantail darter									
Logperch	x								
Slenderhead darter								1	
Drums — SCIAENIDAE									
Freshwater drum									1
TOTAL	9	17	23	25	24	23	14	35	44

A = Abundant

Five of these species had not been previously reported from Marion County, bringing the total number of species known from the county to 77. The five are:

Gizzard shad, *Dorosoma cepedianum*

Highfin carpsucker, *Carpiodes velifer*

Orange-spotted sunfish, *Lepomis humilis*

Pumpkinseed, *L. gibbosus*

Spotted bass, *Micropterus punctulatus*

The gizzard shad, the carpsucker, the spotted bass, and the orange-spotted sunfish are all species now commonly found in larger silty streams, perhaps directly or, more likely, indirectly because of siltation (many other species appear to decrease with siltation). Also, the spotted bass was often overlooked in earlier studies. The pumpkinseed is a species of far northern Indiana. Records from Gerking were almost entirely from north of the Wabash River. Presumably the Pumpkinseed has been introduced at Indianapolis. The brown bullhead is primarily a species of northern and southern Indiana, with a rather distinct break in the central part of the state (7).

The number of species of fish generally decreases, but the number of individuals of tolerant species generally increases in partially polluted streams. Christensen (2) found more fish species at the Indianapolis collecting site than at any other site he studied on the west fork of the White River. This site is in the central part of the city, before most of the pollutants enter. However, at Waverly, in Morgan County, 16 miles below Indianapolis, only carp were taken, and even they were in poor condition.

Twenty-five miles below Indianapolis, at Exchange, Morgan Co., four species were taken, with the number per hour given in parentheses: carp (39.96), goldfish (1.76), green sunfish (1.76), longear sunfish (8.80). At Martinsville, Morgan Co., about 30 miles below Indianapolis, the number of fish species taken was twelve.

Aquatic Control, Inc. (1) made four collections near the Perry K and three near the E.W. Stout generating plants of the Indianapols Power and Light Company at Indianapolis. Perry K is about 0.3 mi south of Washington St. The four collections

TABLE 3. Fishes from Eagle Creek, Marion County, Indiana. Data presented as presence (x) or the actual number taken, when available.

		Hogan 1975a					
		Near					
		Sewage	Washington St.			Fisher & Gammon	
	Gerking	Disposal	Big	Little	Kingsley	School	Fishback
	1945	Plant	Eagle	Eagle	1983	Branch	Creek
Herrings — CLUPEIDAE							
Gizzard Shad	x					5	
Minnows — CYPRINIDAE							
Stoneroller	x				36	121	528
Goldfish		x					
Carp						1	
Silverjaw minnow			x	x	1	9	4
Bigeye chub	x						
Hornyhead chub	x						
River chub						1	
Bigeye shiner	x						
Striped shiner						7	131
Common shiner	x						
Rosyface shiner	x						
Spotfin shiner	x		x				1
Sand shiner					2		
Redfin	x					1	36
Suckermouth minnow	x				1		2
Bluntnose minnow	x		x	x	22	30	406
Blacknose dace	x		x		1		
Creek chub	x				7	239	379
Sucker — CATOSTOMIDAE							
White sucker					4	48	110
Creek chubsucker							1
N. hog sucker			x		39		
Black redhorse					4		
Catfishes — ICTALURIDAE							
Black bullhead						53	
Yellow bullhead	x				15		2
Silversides — ATHERINIDAE							
Brook silversides					3	1	
Bass & Sunfishes — CENTRARCHIDAE							
Rock bass							8
Green sunfish					18	7	55
Orange spotted sunfish			x				
Bluegill				x	9	31	61
Longear sunfish	x				10	12	3
Spotted bass						9	8
Largemouth bass					7	12	4
Smallmouth bass	x						
White crappie		x	x			1	
Perch & Darters — PERCIDAE							
Greenside darter	x				1	2	
Rainbow darter	x		15		2		
Fantail darter					2		
Johnny darter						21	100
Orangethroat darter						98	128
Logperch	x					64	56
Blackside darter							9
Dusky darter							5
Sculpins — COTTIDAE							
Mottled sculpin					15	152	
	19	2	8	3	20	23	22

TABLE 4. Collections from Fall Creek, Marion County, Indiana. Data presented as presence (x) or the actual number taken, when available.

		WAPORA, Hogan		Kingsley 1983			
	Gerking	1975a		Indiana	30th	56th	79th
	1945	Mouth	I-65 N	Ave.	St.	St.	St.
Herrings — CLUPEIDAE							
Gizzard shad				5	3	20	14
Minnows — CYPRINIDAE							
Stoneroller	x			1			
Goldfish	x	x			5		
Carp		x		10	33	9	
Silverjaw minnow	x						
Bigeye chub	x(?)						
Hornyhead chub	x						
Golden shiner					3		
Striped shiner	x						
Rosyface shiner	x(?)						
Spotfin shiner	x	x		60	7	2	2
Sand shiner	x			64			
Redfin shiner	x						
Mimic shiner	x						
Suckermouth minnow	x			9			
Bluntnose minnow	x	x		56	75	8	
Fathead minnow						1	
Suckers — CATOSTOMIDAE							
Quillback	x			8			
White sucker	x			1	3	5	
Northern hog sucker	x			7		9	
Spotted sucker					10	4	1
Golden redhorse	x			2		19	
Catfishes — ICTALURIDAE							
Yellow bullhead					1		
Channel catfish				8		1	
Bass & Sunfishes — CENTRARCHIDAE							
Rock bass	x				1	4	
Green sunfish			x		1		5
Orangespotted sunfish			x				
Bluegill	x	x	x		1		5
Longear sunfish	x	x	x	10	39	37	23
Smallmouth bass	x			4		12	
Spotted bass					1		
Largemouth bass	x			2	13	1	3
White crappie	x			1		3	
Black crappie				1			
Perch & Darters — PERCIDAE							
Eastern sand darter	x						
Greenside darter	x						
N. Rainbow darter	x						
Johnny darter	x						
Yellow perch							1
Sculpins — COTTIDAE							
Mottled sculpin	x						
	28	6	4	17	15	15	8

were by electrofisher on September 27, 1973. Data from the four are summarized in Table 2. Longear sunfish, gizzard shad, highfin carpsucker and carp were the most abundant species. The Stout plant is above a dam about 0.7 miles below the mouth of Eagle Creek, and below the Indianapolis Sewage Disposal plant, from which it received water with low dissolved oxygen (3.8 to 5.6 mg/liter here as opposed to 7.2

TABLE 5. Fishes taken in several smaller creeks of Marion County in Kingsley (1983).

	Crooked Creek	Dollar Hide	Lick Creek	Little Buck	Williams	Howland Ditch
Minnows — CYPRINIDAE						
Stoneroller	8	66	9	29	3206	
Carp	5					1
Silverjaw minnow		4	14	13	335	
Emerald shiner	1				24	
Striped shiner		1			1	
Spotfin shiner					4	2
Sand shiner					201	
Redfin shiner					3	
Suckermouth minnow					199	
S. redbelly dace		5				
Bluntnose minnow	1	1	20	1	310	1
Blacknose dace		23		34	35	
Creek chub	6	34	71	27	490	
Suckers — CASTOSTOMIDAE						
White sucker		5	16	2	272	
Creek chubsucker	2				1	
N. hog sucker	13				89	
Catfishes — ICTALURIDAE						
Black bullhead	4					
Yellow bullhead			4		6	1
Bass & Sunfishes — CENTRARCHIDAE						
Rock bass					1	
Green sunfish	43	2	13		1	19
Pumpkinseed						1
Warmouth	1					3
Bluegill	7		3			16
Longear sunfish	5					13
Smallmouth bass					2	
Spotted bass			2		2	
Largemouth bass	3				1	11
Perch & Darters — PERCIDAE						
Orangethroat darter		5			21	
TOTAL SPECIES	13	10	9	6	21	10

to 8.8 at Perry K). Only 39 fish of five species were taken at the three sites near the Stout plant. They were: bluntnose minnow, *Pimephales notatus* (19 individuals), carp, *Cyprinus carpio* (16), green sunfish, *Lepomis cyanellus* (2), bluegill, *L. macrochirus* (1), and golden shiner, *Notemigonus crysoleucas* (1). The low numbers and low diversity were assumed to be due primarily to the sewage plant effluent. A total of 23 species was taken during the Aquatic Control studies (Table 2), all but one previously reported from Marion County. The one was the common shiner, *Notropis cornutus*, bringing the fish to a total of 78 species known from Marion County.

WAPORA, Inc., carried out electrofishing and seining June 2 to 6, 1975 (8) in the White River (Table 2). Eleven zones were sampled in the river, zone 1 above the mouth of Lick Creek; 2 & 3 east of Harding St.; 4 north of Raymond St.; 5 between Morris St. and Interstate 70; 6, 7 & 8 north of Oliver Ave.; 9 just north of New York St.; and 10 and 11 near 16th St. Seining was carried out at 7 sites, 2 near electrofishing zone 1, 2 near zones 2 & 3, 1 near zone 4, 1 at zone 5 and 1 near zones 6-8.

The total number of species taken by electrofishing and seining between the White River from north of I-465 at the south edge of the city north to about 16th

TABLE 6. Fishes recently collected in Indianapolis Water Company Canal (Hlavec, unpublished; Kingsley, 1983) and Pleasant Run (1983). Data presented as presence (x) or the actual number taken, when available.

	Indianapolis Water Co. Canal						Pleasant Run	
	Hlavec, unpublished				Kingsley 1983		Kingsley, 1983	
	Broad Ripple	Butler Univ.	35th St.	24th St.	Burdsal Pkwy.	College Ave.	Bluff Road	English Ave.
Herrings — CLUPEIDAE								
Gizzard shad					3	3		
Pikes — ESOCIDAE								
Redfin pickerel		x						
Minnows — CYPRINIDAE								
Stoneroller							359	
Goldfish						1		
Carp						4	6	
Silverjaw minnow					1		3082	
Golden shiner	x				3	4		
Emerald shiner							3	
Spotfin shiner						8	7	
Sand shiner							744	
Mimic shiner						1		
Suckermouth minnow						3	1746	
Bluntnose minnow						18	1904	
Fathead minnow							340	3
Blacknose dace							220	
Creek chub							73	
Suckers — CATOSTOMIDAE								
Quillback						1	7	
White sucker							9	
Spotted sucker					39	48		
Golden redhorse						3		
Catfishes — ICTALURIDAE								
Yellow bullhead	x		x	x			1	
Channel catfish					4	21		
Flathead catfish					4			
Killifishes — CYPRINODONTIDAE								
Blackstripe topminnow			x	x	1			
Silversides — ATHERINIDAE								
Brook silverside	x							
Bass & Sunfishes — CENTRARCHIDAE								
Rock bass	x	x	x	x	2	1		
Green sunfish	x	x	x	x			30	
Orange-spotted sunfish							7	
Bluegill	x	x			3	2	1	
Longear sunfish	x	x	x	x	11	22		
Smallmouth bass						2		
Largemouth bass	x		x	x	3	6		
White crappie	x				1	2		
Black crappie						1		
Perch & Darters — PERCIDAE								
Johnny darter	x					1		
No. species	10	5	6	6	12	20	17	1

St. was 25, 23 by electrofishing, 19 by seining (Table 2). Three species were taken by seining, not by electrofishing: the fathead minnow, the sand shiner, and the creek club. Additional electrofishing was carried out at 4 sites in Eagle Creek (Table 3), at the Sewage Disposal Plant (just north of its confluence with the White River), just above the sewage disposal plant, in Eagle Creek, and in Little Eagle Creek south

of Washington St. just before the two streams converge. Two electrofishing sites were established in Pleasant Run, one at the mouth of the creek and one just south of Raymond St. In Fall Creek, there was one site at the mouth and one at the dam near Meridian St. Excluding *Ictiobus* identified only to genus, three new species for Marion County were taken by Hogan (8): the fathead minnow, *Pimephales promelas*, the bullhead minnow, *Pimephales vigilax*, and the redear sunfish, *Lepomis microlophus*.

Two species reported by Hogan (8), the longnose dace, *Rhinichthys cateractae*, and the bigmouth shiner, *Notropis dorsalis*, are likely misidentifications. The one previous record for the state of *R. cateractae* is from the St. Joseph River, Elkhart County (7). The blacknose dace, *R. atratulus*, had been previously reported from Marion County (1), and is fairly common in Indiana, but was not reported by WAPORA. We suspect WAPORA misidentified *R. atratulus* as *R. cateractae*, and have included the record here as *R. atratulus*. The bigmouth shiner, *Notropis dorsalis*, has not been previously taken in Indiana and is reported by Gerking (7) as of doubtful occurrence. Specimens of this species should be reexamined; until they can be verified, we have chosen to omit them from further consideration.

A second WAPORA study (9) was carried out for the Indianapolis Power and Light Company (IPALCO) in the degraded section of the river below the Indianapolis Sewage Treatment Plant and in the area of the IPALCO E.W. Stout Plant in southwestern Indianapolis, north of I-465 and west of Harding Street. Sampling occurred in 7 electrofishing zones and 7 seining zones, some the same zones used by Hogan (8).

Surprisingly, a total of 24 species of fish was taken in this area (Table 2), including 2 species not taken previously from Marion County, *Notropis blennius*, the river shiner, and *Amia calva*, the bowfin. Thirteen species were taken above the Sewage Plant, 11 were taken between the Sewage Plant and the E.W. Stout dam, and 19 species were taken below the dam. However, the numbers of individuals were much reduced in the outflow area from the sewage plant; 1.7 fish being taken per 10 minute period here by electrofishing, as compared to 19.0 upstream above the sewage plant, and 15.2 downstream below the E.W. Stout dam.

More recently, WAPORA, Inc., carried out an additional study of water quality and fish populations in the White River (11), from Indianapolis to Petersburg, Indiana, about 200 river miles. WAPORA established a total of 27 sampling zones, 7 of them in Marion County. Each of these was sampled twice, once during each of the periods August 23-30 and October 21-28, 1977. Sampling consisted of 10-30, usually 20 minutes effort.

Zones were:

Zone	River Mile*	Location	*Dissolved Oxygen (mg/g) and Ammonia (mg/l)* Aug. 23-24 O_2	Aug. 23-24 NH_3	Oct. 21-22 O_2	Oct. 21-22 NH_3
1	238.0	Above Fall Creek	8.4	0.1	9.4	0.2
2	236.2	Above Perry K	7.2	0.3	8.8	0.3
3	235.7	Below Kentucky St.	8.0	0.3	9.6	0.3
4	233.7	Above Harding St. Bridge	6.2	0.6	8.4	0.5
5	232.0	Just above Lick Creek	4.0	6.1	7.3	2.9
6	231.5	Just below Lick Creek	4.2	4.0	8.5	2.9
7	227.0	Just below Buck Creek	4.0	10.9	4.7	6.5

*River mile designation is for upstream end of sampling zone, and is from US Corps of Engineers 1931 charts for the White River.

A total of 23 species of fish was taken during this work (Table 2), but all had been previously taken in Marion County.

In 1978, Roger Hlavec of Marian College, Indianapolis, collected fishes from the Indianapolis Waterway Canal (unpublished). Unfortunately, most of the minnows have not yet been identified. Hlavec collected at four locations on the canal (Table 6), and collected twelve species of fish.

Three fish collections were made by electrofishing in the White River by the Indiana State Board of Health, Division of Water Pollution Control (unpublished). The first two were near Broad Ripple Park in northern Marion County on 6 Sept. 1979 and 8 Sept. 1980. In these two samples, only fish collected for analysis were tabulated. These consisted of five each of largemouth bass, *Micropterus salmoides*, longear sunfish, *Lepomis megalotis*, and carp, *Cyprinus carpio*, in the first collection, and spotted sucker, *Minytrema megalops*, longear sunfish, largemouth bass, and carp in the second collection. Gizzard shad were also listed as abundant at this station in 1979. The third collection was made between Michigan and Washington Streets on Dec. 1, 1980. Fishes taken were gizzard shad (2), mooneye (1), goldfish (1), carp (2), river carpsucker (2), quillback (4), spotted sucker (1), brook silversides (1), green sunfish (5), longear sunfish (23), bluegill (37), largemouth bass (10), white crappie (17), and black crappie (2). This collection adds one additional species, the mooneye, *Hiodon tergisus*, not previously reported from the county.

A three-year study of agricultural effects included studies of fishes at several localities in central Indiana, including two Marion County localities, both tributaries of Eagle Creek (Fisher and Gammon, 5). One was Fishback Creek below and under Wilson Road Bridge, 1.0 mi west of Traders Point. The second locality was locality E-1 from Hendricks County. The collection was from School Branch at County Line Road Bridge, Hendricks/Marion Counties, and some of the collecting was in Marion County; thus this collection is included also. Fisher and Gammon took a total of 30 species (Table 3), including 23 at School Branch and 22 at Fishback Creek. Two of the species were new to Marion County, the river chub, *Nocomis micropogon*, and the dusky darter, *Percina sciera*.

Kingsley (10) undertook an electrofishing survey in Marion County to accumulate further information on the fishes. Thirteen sampling sections were established on the main stem of the White River, 15 on the tributaries, Eagle Creek (3), Fall Creek (4), Pleasant Run (2), Lick, Little Buck, Dollar Hide, Crooked, and Williams Creeks (1 each), one on Howland Ditch, and 2 on the Indianapolis Water Company Canal (2). Different methods were used depending on conditions at the site, but electrofishing, gill nets, trap nets and seines were used. A total of 17,378 fishes of 54 species was collected (Tables 2-6). Four species not previously taken in Marion County were included, the bigmouth buffalofish, *Ictiobus cyprinellus*, the yellow bass, *Morone mississippiensis*, the slenderhead darter, *Percina phoxocephala*, and the yellow perch, *Perca flavescens*. Four additional ones, the flathead catfish, the southern redbelly dace, the fantail darter, and the warmouth had not been taken in this century from Marion County.

Thirty-five species were taken in the White River (Table 2), six species in Little Buck Creek, 13 in Crooked Creek, 10 in Dollar Hide Creek, 9 in Lick Creek, 21 in Williams Cree, and 10 in Howland Ditch, each in one collection (Table 5).

In 3 collections in Eagle Creek (Table 3), Kingsley took 20 species and 199 individuals of fish, including 2 fantail darters, 2 rainbow darters, 1 greenside darter, and 15 mottled sculpins. Two collections were made on Pleasant Run, with one at Bluff Road yielding 17 species and 8539 individuals (Table 6). One at English Avenue yielded 3 fathead minnows only. Two collections in the Indianapolis Water Company Canal yielded a total of 227 individuals including 23 species. Twenty-five species were taken in 4 collections in Fall Creek (Table 4).

Environmental Science and Engineering, Inc. has carried out additional sampling of the lower 200 miles of the White River. This work involved electrofishing and seining and included collections on the White River in Marion County near the Perry K and E.W. Stout Indianapolis Power and Light Company dams. Forty-four species were taken during this work (Table 2), but all had been previously taken.

This brings to 90 the number of species reported from Marion County (Table 1).

Species from Various Streams in Marion County

Much of the collecting in Marion County has been in the White River. The fish species taken there recently (since 1940) total 61 species (Table 2). One collection was made by Gerking (6) in the White River, about 8 miles north of Indianapolis. In it were found only 9 species. However, other workers have reported numbers of species varying up to 44 (9) with the number of species much influenced by the amount and type of collecting.

One might think that the number of species would increase to the north in the White River in Marion County, in relation to decreased pollutant load of the river. Individual collections in the White River were listed in approximate order from south to north as follows. (We have combined some of these data such as seining and electrofishing collections in the same area or collections on opposite sides of the river. Numbers and letters refer to original collection designations.)

		No.	*species*	
Kingsley #1	Johnson Co. Line		5	
Kingsley #2	Southport Road		13	
WAPORA 1978#7	Below Southport sewage treatment plant		2	
Kingsley#3	I-465		17	
WAPORA 1978 #6	Below Lick Creek		7	
ESE 1987	E.W. Stout vicinity		34	
Hogan 1975b	E.W. Stout plant		24	
Hogan 1978 #4	Below E.W. Stout Dam		11	
Hogan 1978 #5	Above E.W. Stout Dam		11	
Aquatic Control	3 collections in Lick Creek area near E.W. Stout Dam	EWS 1	4	
		EWS 2	1	(carp)
		EWS 3	1	(carp
Hogan 1975a Ha1	Area near E.W. Stout Dam		14	
Hogan 1975a Ha2	Area near E.W. Stout Sam		12	
Kingsley #4	Harding Street		19	
Hogan 1975a Ha3	At Raymond Street		16	
Hogan 1975a Ha4	At I-70		18	
Hogan 1978 #4	Upstream from Harding St.		11	
Aquatic Control	4 collections in area of Perry K Power Plant	PK 1	10	
		PK 2	8	
		PK 3	11	
		PK 4	18	
Hogan 1975a Ha5	Below Perry K		15	
Hogan 1975a Ha6	Above Perry K		8	
Hogan 1978 #3	Downstream from Kentucky Ave.		11	
Hogan 1978 #2	Upstream from Perry K		13	
ESE 1987	Perry K		39	
Kingsley #5	Washington-Michigan St.		17	
Hogan 1975a Ha7	New York Ave.		9	

		No.	*species*
Christiansen	16th St. to New York St.		17
Hogan 1975a Ha8	16 St. to New York St.		16
Hogan 1978-1	Upstream from Fall Creek		10
Kingsley #6	Lake Indy, lower end		17
Kingsley #7	Lake Indy, upper end		14
Kingsley #8	Northwestern Avenue		18
Kingsley #9	Kessler Boulevard		13
Kingsley #10	Broadripple, lower end		15
Kingsley #11	Broadripple, upper end		14
Kingsley #12	79th St.		15
Kingsley #13	96th St.		14

There is no steady increase of fish species to the north. Several factors affect the individual collection data, type and amount of time of collection, amount of pollution, and type of habitat and habitat variation present. However, the average number of species per collection did tend to increase to the north. The four collections in the most southerly part of the county averaged 9.3 species per collection. Progressing northward similar values were $\bar{x}$ = 12.4 (12 collections in vicinity of E.W. Stout Generating Station), 17.0 (2 collections, between E.W. Stout and Perry K), 12.2 in 6 collections in vicinity of Perry K, 16.3 between Washington St. and U.S. 36, and 19.8 north of U.S. 36. Thus numbers were lower in the extreme southern part of the county and near the two generating plants, but generally higher to the north.

Data collected from Eagle Creek are summarized in Table 3. A total of 44 species has been taken, with individual collections varying from 2 to 23 species. In Eagle Creek there are few fish downstream near the Sewage Disposal Plant, but upstream 20 species were collected by Kingsley (10) and 30 were taken by Fisher and Gammon (5).

Fall Creek was sampled at seven sites (7, 8, 10; Table 4). The site sampled by Gerking was apparently near I-465, whereas one of those of WAPORA was at the mouth; the second was in central Indianapolis at about I-65 North. Only six species were taken at the mouth of Fall Creek, and four at I-65 North by WAPORA, whereas 27 species were taken upstream by Gerking, and 24 by Fisher and Gammon (5). Thus lower Fall Creek harbors few species, but upstream Fall Creek still harbors a number of species.

Two sites in Pleasant Run Creek were sampled by WAPORA, one at the mouth and one just south of Raymond Street. Much of this stream is heavily polluted and no fish were taken at either point. However, Kingsley (10, Table 6) sampled upstream in Pleasant Run and collected 17 species in addition to 3 carp at a downstream locality.

Collections were made by Kingsley (10) in six of the other smaller streams of Marion County. The number of species per collection in these streams ranged from 6 to 21. One of these was in Little Buck Creek, a creek in which Gerking (7) sampled. Gerking collected 15 species, as follows: Stoneroller, silverjaw minnow, striped shiner, spotfin shiner, sand shiner, redfin shiner, suckermouth minnow, bluntnose minnow, white sucker, creek chubsucker, northern hogsucker, longear sunfish, largemouth bass, greenside darter, and rainbow darter. Kingsley collected 6 species in this stream. Williams Creek, flowing into the White River in the north central part of Marion County, harbored the most diverse fish community of the smaller streams, with 21 species being taken.

Hlavec (unpublished) and Kingsley (10) sampled fishes of the Indianapolis Waterway Canal. Twelve species were identified, but many of the minnows taken by Hlavec

are as yet undetermined. Kingsley took a total of 22 species at the two sites from which he collected.

Discussion

Fourteen of the 90 species of fishes known from Marion County were taken in the 1870's, but not since. They are the silver lamprey, *Ichthyomyzon unicuspis*, paddlefish, *Polyodon spathula*, longnose gar, *Lepisosteus osseus*, central mudminnow, *Umbra limi*, popeye shiner, *Notropis ariommus*, shorthead redhorse, *Moxostoma macrolepidotum*, stonecat, *Noturus flavus*, tadpole madtom, *N. gyrinus*, brindled madtom, *N. miurus*, bluebreast darter, *Etheostoma camurum**, least darter, *E. microperca**, channel darter, *Percina copelandi**, gilt darter, *P. evides**, and river darter, *P. shumardi**.

Three additional species were taken in the 1870's and by Gerking (7) but not since. They are: bigeye chub, *Hybopsis amblops*; horny head chub, *Nocomis biguttatus*; and the eastern sand darter, *Ammocrypta pellucida*; and one species, the pirateperch, *Aphredoderus sayanus*, was taken only by Gerking (7). This brings to 18 the species that have not been taken in recent years (1965 to present). Some of these are endangered or threatened in Indiana (those marked with an asterisk). It seems unlikely that all of these species have become extirpated since 1945. It would seem likely that further sampling of the larger streams would turn up at least the silver lamprey and longnose gar, and intensive sampling with seines in relatively unpolluted upstream areas might turn up some of the other species.

This leaves 72 species of fish that have been collected in Marion County since 1965.

Eighteen species were not reported until the more recent studies. They are: bowfin, *Amia calva*; gizzard shad, *Dorosoma cepedianum*, mooneye, *Hiodon tergisus*; river chub, *Nocomis micropogon*, river shiner, *Notropis blennius*; common shiner, *Notropis cornutus*; fathead minnow, *Pimephales promelas*; bullhead minnow, *P. vigilax*; highfin carpsucker, *Carpiodes velifer*; bigmouth buffalofish, *Ictiobus cyprinellus*; yellow bass, *Morone mississippiensis*; pumpkinseed, *Lepomis gibbosus*; orange-spotted sunfish, *L. humilis*; redear sunfish, *L. microlophus*; spotted bass, *Micropterus punctulatus*; dusky darter, *Percina sciera*; slenderhead darter, *Percina phoxocephala*; and yellow perch, *Perca flavescens*.

Some of these may simply have been overlooked in earlier studies. The redear sunfish and pumpkinseed may have been brought in by man. The redear sunfish, in particular, is often stocked. Some of these species often thrive in silty water situations, and may have invaded or at least increased their numbers considerably with increased siltation and other forms of pollution. The decrease in numbers or disappearance of species partial to clear water such as darters and madtoms could further enhance the success of these forms.

It is apparent that the streams in the southwest section of Indianapolis are quite heavily polluted and silted; and that this has decreased or eliminated fish from many portions. However, it is also evident that there are places even here where fish still exist, sometimes with fair diversity. It is also clear that many of the upstream areas of Marion County harbor numerous fish of many species.

We suspect that more fish species will be found with additional collecting such as that done in Vigo County where 108 species are known (13). An intensive survey of Marion County, with concentration on the smaller, relatively unpolluted upstream areas, would give us a more complete knowledge of its fishes.

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