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NEW ICHTHYOFAUNAL RECORDS FOR THE CALUMET, KANKAKEE, AND IROQUOIS DRAINAGES OF INDIANA

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ABSTRACT: Field collections during July and August 1990 resulted in new distributional records for 13 fishes within the Calumet, Kankakee, and Iroquois River drainages of Indiana. Species previously unknown from the entire State include *Salmo salar, Notropis dorsalis,* and *Campostoma oligolepis.* New species records for northwestern Indiana include: *Etheostoma chlorosoma, Percina maculata, Pimpehales promelas,* and *Lampetra appendix* from the Calumet River drainage; *Lampetra aepyptera* and *Cyprinella whipplei* from the Kankakee River drainage; and *Moxostoma valenciennesi* and *Cyprinella lutrensis* for the Iroquois River drainage. Range extensions were documented for *L. appendix, Moxostoma duquesnei,* and *E. chlorosoma* in the Kankakee River drainage.

INTRODUCTION

In an effort to document the current distribution of Indiana fish species, a checklist of the vertebrate species of Indiana was compiled, which documented several new records of fishes from the State (Simon, *et al.,* 1992). In order to elucidate species occurrence and distributional trends, new records from the northwestern portion of the State were discovered during current evaluations of the Central Corn Belt Plain Ecoregion (Simon, 1991).

The surveys were conducted to develop biological criteria for the State of Indiana in the Central Corn Belt Plain Ecoregion. This survey is the most recent in a series of collections published for northwestern Indiana (Meek and Hildebrand, 1910; Gerking, 1945) and the adjacent upper Illinois River basin (Forbes and Richardson, 1920; Smith, 1979; Simon, 1990). The purpose of this study is to document newly discovered species, distributional trends, and present locality information for the 13 species present in northwestern Indiana.

METHODS AND MATERIALS

Sampling was conducted at 197 stations during the summer of 1990 during basin surveys of the Calumet, Kankakee, and Iroquois River drainages (Figure 1) in the Central Corn Belt Plain Ecoregion: 112 stations in the Kankakee basin, 37 in the Iroquois basin, and 48 in the Calumet basin. Some stations were selected based on historic collection efforts, and equal effort was attributed to each of the three basins based on total drainage area. At each location, a representative sample was collected from each of the available habitats within a longitudinal distance 15 times the river width up to a maximum of 500 m. The specimens were collected either by wading or from a boat using various sized 1/8 inch mesh minnow seines or pulsed DC electroshocking gear (T&J Model 1780 DCV, capable of 300 volt output). Voucher specimens of all species are available for inspection by professional ichthyologists.

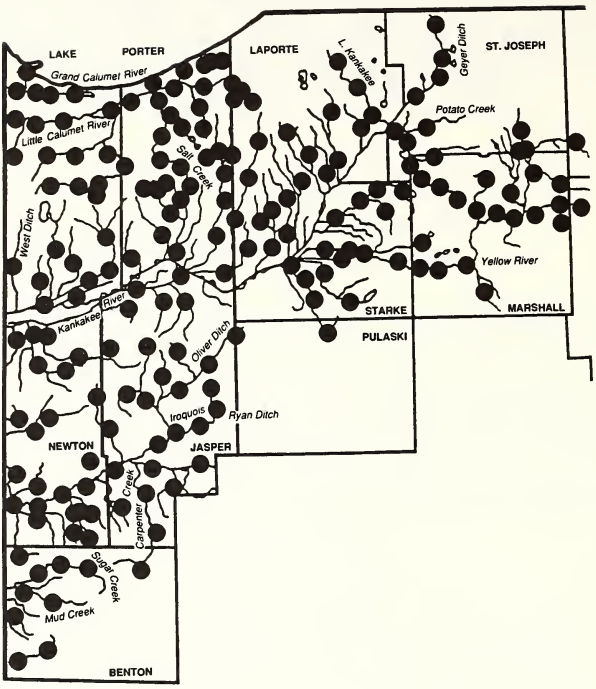

Figure 1. Location of 197 Central Corn Belt Plain Ecoregion sites within the political boundaries of Indiana for 1990 sampling in the Calumet, Kankakee, and Iroquois River drainages.

DISCUSSION

Campostoma oligolepis. The large scale stoneroller has gone unrecognized in Indiana even though extensive sampling has been conducted in the northwestern portion of the State. The species is recorded in Illinois from the upper Illinois River basin including the Fox River, mainstem Illinois River, and the Des Plaines River (Burr, 1980). This species appears to be abundant and more widely distributed in the northern part of the State than *Campostoma anomalum,* occurring throughout the major drainages of northwestern Indiana and in the headwaters of the Wabash, the St. Joseph of Lake Michigan, and Maumee River basins.

Cyprinella lutrensis. The red shiner has migrated across the Mississippi River basin displacing or hybridizing with other *Cyprinella* (Larimore and Smith, 1963). The red shiner originally was reported from Illinois during observed hybridization swarms with *Cyprinella spiloptera* (Page and Smith, 1970). It was reported from the upper Illinois basin by Matthews (1980). No record of the species had been documented in Indiana, although the species may have been present for many years. It is extremely tolerant and capable of residing under low dissolved oxygen and degraded habitat conditions (pers. obs.).

Table 1.New fish species records in northwestern Indiana.

Species	Drainage System	County	Num. of Specimens	Collecting Sites
Campostoma oligolepis	Kankakee River	Lake	10	West Creek, 1.9 miles southwest of Belshaw, West Creek Township (Sec. 7/18, T32N, R9W)
			3	Spring Run of Greisel ditch, 3 miles east of Lowell, Cedar Creek Township (Sec. 29, T33N, R8W)
			7	East Branch Stony Run ditch, 2 miles south of LeRoy, Winfield Township (Sec. 5, T33N, R7W)
		Porter	73	Cornell ditch, 4.75 miles east of Hebron, Boone Township (Sec. 9, T33N, R6W)
			4	Wolf Creek, 4 miles northeast of Kouts, Porter Township (Sec. 28, T34N, R6W)
			5	Cobb ditch, 2 miles north-northeast of Kouts, Porter Township (Sec. 35, T34N, R6W)
			26	Crooked Creek, 2 miles northeast of Kouts, Morgan Township (Sec. 33, T34N, R5W)
			36	Crooked Creek, 5 miles east-southeast of Valparaiso, Morgan Township (Sec. 10, T34N, R5W)
		LaPorte	4	Slocum ditch, Wanatah, Clinton Township (Sec. 32, T35N, R4W)
		Marshall	8	Yellow River, 4.5 miles south of Plymouth, Center Township (sec. 31, T33N, R2E)
			27	Yellow River, 4.5 miles southwest of Plymouth, Union Township (Sec. 35, T33N, R1E)
			2	Crews ditch, 5 miles east of Plymouth, Center Township (Sec. 12, T38N, R2E)

Species	Drainage System	County	Num. of Specimens	Collecting Sites
			23	Wolf Creek, 4.75 miles south of Plymouth, Center Township (Sec. 33, T33N, R2E)
			2	Yellow River, 2.25 miles north of Breman, German Township (Sec. 22, T35N, R3E)
		Starke	3	Yellow River, 4 miles west of Knox, Center Township (Sec. 18, T33N, R2W)
			1	Yellow River, 5 miles east of Knox, Washington Township (Sec. 27/28, T33N, R1W)
			3	Craigmile ditch, 4 miles southwest of Knox, Wayne Township (Sec. 1, T32N, R3W)
		Kosciusko	2	Dausman ditch, 4.75 miles south of Nappanee, Scott Township (Sec. 29,T34N, R5E)
		Elkhart	20	Lateral ditch No. 5 (Lost Creek), 3.5 miles northwest of Napanee, Locke Township (Sec. 11, T35N, R4E)
		Jasper	10	Bice ditch, 4.75 miles south of Rensselaer, Milroy Township (Sec. 22, T28N, R6W)
			18	Carpenter Creek, 0.75 miles northwest of Egypt, Jordan Township (Sec.22, T28N, R7W)
	Iroquois River	Newton	11	Hunter ditch, 6.5 miles northeast of Kentland, Grant Township (Sec. 10, T27N, R8W)
			8	Darroch ditch, 5.5 miles east of Kentland, Grant Township (Sec. 21, T27N, R8W)
			139	Darroch ditch, 7.5 miles northeast of Kentland, Grant Township (Sec. 9, T27N, R8W)

Species	Drainage System	County	Num. of Specimens	Collecting Sites
			40	Montgomery ditch, 2.75 miles northeast of Kentland, Jefferson Township (Sec. 12, T27N, R9W)
			30	Montgomery ditch, 2.5 miles northwest of Kentland, Jefferson Township (Sec. 8, T27N, R9W)
			18	Whaley ditch, 5.75 miles northwest of Kentland, Washington Township (Sec.23, T28N, R10W)
			1	Hickory Branch, 1.6 miles northeast of Brook, Iroquois Township (Sec.9, T28N, R8W)
		Jasper	1	Bruner ditch, 7.5 miles north of Rensselear, Union Township (Sec. 18, T30N, R6W)
		Benton	1	Leuck ditch, 7 miles southwest of Fowler, Hickory Grove Township (Sec. 20, T24N, R9W)
			2	Mud Creek, 4.5 miles southwest of Earl Park, Parish Grove Township (Sec. 6, T26N, R9W)
			118	Sugar Creek, 4 miles southwest of Earl Park, York Township (Sec. 31, T26N, R9W)
			26	Bonham ditch, 4 miles northwest of Earl Park, York Township (Sec. 6, T26N, R9W)
			19	Sugar Creek, 4 miles east of Earl Park, Richland Township (Sec. 17, T26N, R8W)
			195	Sugar Creek, 0.5 miles north of Earl Park, Richland Township (Sec. 14, T26N, R9W)
			3	Carpenter Creek, 5 miles south of Remington, Gilboa Township (Sec. 11, T26N, R7W)

Species	Drainage System	County	Num. of Specimens	Collecting Sites
			25	Curtis Creek, 5.5 miles west of Rensselear, Newton Township (Sec. 19, T29N, R7W)
Cyprinella lutrensis	Kankakee River	Marshall	2	Yellow River, 7.5 miles southwest of Plymouth, Union Township (Sec. 31, T33N, R1E)
		Starke	21	Yellow River, 4 miles west of Knox, Center Township (Sec. 18, T33N, R2W)
	Iroquois River	Newton	12	Iroquois River, 2 miles east of Brooks, Iroquois Township (Sec. 15, T28N, R8W)
			11	Iroquois River, 2.75 miles northeast of Kentland, Washington Township (Sec. 25, T28N, R9W)
			8	Iroquois River, 4 miles northwest of Kentland, Jefferson Township (Sec. 1, T27N, R10W)
			1	Whaley ditch, 5.75 miles northwest of Kentland, Washington Township (Sec. 23, T28N, R10W)
Cyprinella whipplei	Kankakee River	Porter	2	Crooked Creek, 2 miles northeast of Kouts, Morgan Township (Sec. 33, T34N, R5W)
		Marshall	2	Yellow River, 7.5 miles southwest of Plymouth, Union Township (Sec.31, T33N, R1E)
	Iroquois River	Newton	8	Iroquois River, 2.75 miles northeast of Kentland, Washington Township (Sec. 35, T28N, R9W)
			7	Iroquois River, 4 miles northwest of Kentland, Jefferson Township (Sec. 1, T27N, R10W)
			1	Whaley ditch, 5.75 miles northwest of Kentland, Washington Township (Sec. 23, T28N, R10W)

Species	Drainage System	County	Num. of Specimens	Collecting Sites
			1	Beaver Creek, 3.25 miles west of Morocco, Beaver Township (Sec.24/19, T29N, R10/9W)
Etheostoma chlorosma	Calumet River	Lake	1	Deep River, 2 miles north of Hobart, Hobart Township (Sec. 20, T36N, R7W)
	Kankakee River	Lake	1	West Creek, 2 miles northwest of North Hayden, West Creek Township (Sec. 13/24, T33N, R10W)
			1	Cedar Creek, 3 miles south of Lowell, Cedar Creek Township (Sec. 2, T32N, R9W)
		LaPorte	1	Pitner ditch, 0.5 miles north of Lomax near mouth with Kankakee River, Dewey Township (Sec. 4, T32N, R4W)
Lampetra aepyptera	Kankakee River	Laporte	2	Waltham ditch, 2.5 miles north-northeast of Hanna, Noble Township (Sec. 26/35, T35N, R3W)
			1	Little Kankakee River, 2 miles south of Fish Lake, Lincoln Township (Sec. 30, T36N, R1WS)
		St. Joseph	2	Pine Creek, 3 miles north of Walkerton, Lincoln Township (Sec. 11,T35N, R1W)
Lampetra appendix	Calumet River	Laporte	10	Reynold's Creek, 1.5 miles west of Highway 421 and US 80/90 intersection, New Durham Township (Sec. 6, T36N, R4W)
			2	Reynold's Creek, 8.5 miles west of LaPorte, Spring Township (Sec. 32, T37N, R4W)
	Kankakee River	Laporte	3	Mill Creek, 6 miles southwest of LaPorte, Scipio Township (Sec. 32, T36N, R3W)

Species	Drainage System	County	Num. of Specimens	Collecting Sites
			2	Waltham ditch, 2.5 miles north-northeast of Hanna, Noble Township (Sec. 26/35, T35N, R3W)
			1	Kingsbury ditch, 2 miles north of Kingsbury Heights, Washington Township (Sec. 6,T35N, R2W)
			8	Little Kankakee River, 7.5 miles southeast of LaPorte, Lincoln Township (Sec. 18, T36N, R1W)
		St. Joseph	10	Pine Creek, 3 miles north of Walkerton, Lincoln Township (Sec. 11, T35N, R1W)
		Marshall	1	Yellow River, 4.5 miles southwest of Plymouth, Union Township (Sec. 35, T33N, R1E)
			4	Yellow Bank Creek, 1 mile northwest of Teegarden, Polk Township (Sec. 22, T35N, R1E)
			2	Peter Saber ditch, 1 mile north of Tyner, Polk Township (Sec. 4, T34N, R1E)
		Starke	1	Robbins ditch, 0.75 miles northwest of Koontz Lake, Oregon Township (Sec. 2/11, T34N, R1W)
			2	Yellow River, 5 miles east of Knox, Washingtn Township (Sec. 27/28, T33N, R1W)
Moxostoma duquesnei	Kankakee River	Marshall	1	Dausman Ditch, 5 miles southeast of Bremen, Bourbon Township (Sec. 29, T34N, R4E)
			2	Yellow River, 7.5 miles southwest of Plymouth, Union Township (Sec. 31, T33N, R1E)
	Iroquois River	Benton	2	Sugar Creek, 4 miles east of Earl Park, Richland Township (Sec. 17, T26N, R8W)

Species	Drainage System	County	Num. of Specimens	Collecting Sites
Moxostoma valenciennesi	Iroquois River	Jasper	1	Oliver ditch, 2 miles west of Lewiston, Barkley Township (Sec. 14, T30N, R6W)
Notropis dorsalis	Kankakee River	Lake	4	Kankakee River, 1 mile southeast of Shelby, Eagle Creek Township (Sec. 34, T32N, R8W)
Percina maculata	Calumet River	Porter	1	Little Calumet River, Porter, Westchester Township (Sec. 34, T37N, R6W)
Phoxinus erythrogaster	Kankakee River	Porter	1	West Branch of Crooked Creek, 4 miles east of Valparaiso, Washington Township (Sec. 10, T35N, R5W)
Pimephales promelas	Calumet River	Lake	7	Deer Creek, 1 mile southeast of Merrillville, Ross Township (Sec. 31, T35N, R7W)
			34	Main Beaver Dam ditch, 1.5 miles east of Crown Point, Center Township (Sec. 4, T34N, R8W)
			4	Main Beaver Dam ditch, 1.25 miles north of Crown Point. (Sec. 32, T35N, R8W)
			2	Dyer Ditch, 1.5 miles east of Dyer, St. John Township (Sec. 7/18, T35N, R9W)
			23	Little Calumet River, Lake Station, Calumet Township (Sec. 9, T36N, R7W)
			1	Little Calumet River, Munster, North Township (Sec. 19, T36N, R9W)
			1	Grand Calumet River, East Chicago, North Township (Sec. 5, T36N, R9W)
		Porter	5	Burns Ditch, Ogden Dunes, Ogden Dunes Township (Sec. 36/25, T36/37N, R7W)

Species	Drainage System	County	Num. of Specimens	Collecting Sites
			2	Little Calumet River, 1.5 miles west of Portage, Portage Township (Sec. 2, T36N, R7W)
			3	Salt Creek, 1.5 miles east of Portage, Portage Township (Sec. 5/6, T36N, R6W)
			1	Sager Creek, 1 mile south of Valparaiso, Center Township (Sec. 25, T35N, R6W)
			2	Sand Creek, 1 mile northeast of Chesterton, Westchester Township (Sec. 32, T37N, R5W)
Salmo salar	Calumet River	Porter	1	Little Calumet River, 3.75 miles south of Pines, Pine Township (Sec. 25, T37N, R5W)
		Laporte	5	Reynold's Creek, 1.5 miles west of State Road 421 and US 80/90 intersection, New Durham Township (Sec. 6, T36N, R4W)
	Kankakee River	St. Joseph	1	Geyer ditch, 5.3 miles east of New Carlisle, Warren Township (Sec. 10, T37N, R1E)

Cyprinella whipplei. The only upper Illinois River basin collection records of the steelcolor shiner have been from the lower Yellow River, Starke County (Gilbert and Burgess, 1980). The species is rare in the Kankakee, in spite of being collected from several of its northern tributaries, but it is more common in the Iroquois River and tributaries.

Etheostoma chlorosoma. The bluntnose darter historically occurred in Wolf Lake, Cook County, Illinois (Meek and Hildebrand, 1910; Forbes and Richardson, 1920) but has been considered extirpated from the Calumet basin due to industrialization (Smith, 1979). A single specimen from Deep River above the Lake George dam is the first record of the bluntnose darter from the Calumet basin in 80 years and is the furthest northern report in Indiana. Additional collections from the Kankakee River indicate that the species is more widely distributed than previously believed.

Lampetra aepyptera. The least brook lamprey has never been reported from the upper Illinois River basin (Rhode and Jenkins, 1980). The nearest known Indiana

location was a tributary of the middle Wabash River in Vigo County. The three newly reported locations (Table 1) represent the northern limit of distribution of the least brook lamprey in Indiana. Although the small number of lamprey specimens collected indicates that the species has always been rare, many historic collections may have been deficient in lamprey specimens due to the selectivity of the collecting equipment used.

Lampetra appendix. The American brook lamprey has a wide-ranging distribution centered around the Great Lakes. It has previously been recorded from three Kankakee River drainage locations in Indiana (Gerking, 1945; Rohde, 1980) but not from any Lake Michigan tributary waters in Indiana. The species may be more common than previously recognized as evidenced by the additional locations discovered in the Kankakee River drainage. Further efforts to collect lampreys should be a priority, since the absence of lampreys from most ichthyological surveys reduces our knowledge of these organisms over most of their range.

Moxostoma duquesnei. The black redhorse had been recorded from only a single tributary location (Gerking, 1945) and at several additional mainstem localities in the upper Kankakee River (Jenkins, 1980). It is widely distributed in the adjacent Illinois portion of the basin but has not previously been recorded from the Iroquois River drainage in Illinois (Smith, 1979) or Indiana (Gerking, 1945; Jenkins, 1980).

Moxostoma valenciennesi. The greater redhorse has only recently been documented in the upper Illinois River at RM 249, Illinois, with a single specimen collected from a 1985 survey (Seegert, 1986). The species has not been reported previously from the Kankakee or Iroquois basins of Indiana (Gerking, 1945).

Notropis dorsalis. The bigmouth shiner is common in the streams and small rivers of Illinois, and it entered Indiana through the Kankakee River. Gerking (1955) indicated that the only other previously known record was from an unknown location near South Bend and was probably doubtful. The location where the bigmouth shiner was collected (Table 1) occurs just over the Illinois-Indiana State line and represents the only extant record with vouchered specimens among a large number of collections from northern Indiana (Nelson and Gerking, 1968). Trautman (1957) suggested that the disjunct distribution of this species is due to the past expansion and subsequent retreat of the dry prairie habitat it prefers.

Percina maculata. The blackside darter is widely distributed throughout the Kankakee River and adjacent drainages but has never been recorded from either of the Calumet River basins of Indiana. The species previously occurred in the Trail Creek drainage (Gerking, 1945), a tributary of Lake Michigan near Michigan City, but its current status is unknown. The record from the Little Calumet River is the first record of this species from the Indiana portion of the basin.

Phoxinus erythrogaster. The southern redbelly dace had not been previously reported from the Kankakee River drainage, but it has been documented from the Calumet, White, Wabash, and Ohio River drainages (Meek and Hildebrand, 1910; Nelson and Gerking, 1968). The species occurs in the adjacent portion of the Kankakee drainage in Illinois (Starnes and Starnes, 1980).

Pimephales promelas. Although the fathead minnow is a ubiquitous species often occurring in greatest abundance in degraded pools of small to moderate sized streams, it has not been previously documented from the Calumet drainage of Indiana (Gerking, 1945; Lee and Shute, 1980). The species was usually represented by a few individuals from marginal habitat in low-gradient streams and creeks, such as the Grand Calumet and tributaries of the Little Calumet Rivers.

Salmo salar. The earliest stocking attempts of coho, chinook, and Atlantic salmon into tributaries of the Great Lakes during the 1800's proved futile. Beginning in the 1970's, Atlantic salmon were successfully stocked after multiple attempts into Lake Michigan tributaries by the State of Michigan Department of Natural Resources (Becker, 1983). No previous record of Atlantic salmon from the inland waters of Indiana has been recorded, and no intentional stocking of the species had been planned (T. Lauer, pers. comm.). The specimen recorded from the Kankakee River drainage was obviously introduced, since the only dispersal route would have required the individual to migrate through the Illinois Canal system up the Kankakee River. Specimens in the Little Calumet River basin may have been from disrupted migration from Lake Michigan stocking efforts.

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