

## A PRELIMINARY INVENTORY OF THE FISHES OF WILDCAT SLOUGH

Donald G. Buth<sup>1</sup> and John E. Brezina<sup>2</sup><sup>1</sup>Prov. Dept. of Ecology, Ethology, and Evolution  
University of Illinois, Urbana, Illinois 61801<sup>2</sup>Department of Marine Sciences  
University of the Pacific, Stockton, California 95211

## INTRODUCTION

Assessments of man's impact on the environment are often hampered by inadequate data concerning the prior undisturbed conditions. Where such data are available, comparative studies may elucidate certain patterns (e.g. successional) that may allow some degree of predictability of future biological events under certain conditions. The fish faunas of Illinois streams have undergone many compositional changes related to the human alteration of the environment (Smith, 1968; 1971). These changes are still occurring, at various rates, although few studies have documented the degree of change through time. Existing data on the fishes of the upper Embarras River (Menzel, 1952) allowed Buth (1974) to examine such ichthyofaunal changes through time. Additional data to adequately assess possible faunistic trends are needed, especially in those types of streams that are common to the cultivated areas of the Midwest. Wildcat Slough is an example of such a "disturbed" stream in central Illinois and will form the basis of this study.

Forbes and Richardson (1920) apparently did not sample Wildcat Slough in their state survey of 1882-1901. Subsequent surveys of the fishes of Wildcat Slough have been made by Thompson and Hunt (1930), Larimore and Smith (1963), and the Illinois Department of Conservation (Stinauer, 1966). These studies contained a variable number of collecting stations and only the most recent study contained any quantitative data on the fish fauna present.

In this study, the ichthyofaunal composition of Wildcat Slough will be documented to begin to establish a means of comparison for future studies of fishes of this region.

## MATERIALS AND METHODS

Wildcat Slough, a 22.6 km long tributary of the Sangamon River, is located in the northwest quarter of Champaign County, Illinois. This stream originates in a series of grass waterways in cultivated lands near Ludlow, Illinois. The remainder of the stream and its branches have been dredged and straightened (Stinauer, 1966). Stinauer (1966) reported no

pollution in Wildcat Slough and practically no fishing pressure although "green sunfish up to 5.8 inches were somewhat numerous."

Nine collecting stations were designated along the length of Wildcat Slough (Figure 1). All stations may be located on the Fisher and Parton 7½ minute series state topographic maps. Station 1 was subdivided into two sub-stations, 1A and 1B, since the downstream portion of the station (1B) formed a distinct pool. All other stations were uniform in composition and were treated as single units.

Fishes were collected using a 3 mm mesh minnow seine during a period of low water in September, 1975. Sampling under these conditions may yield a higher proportion of the total fish population (Palouris, 1958), however this sampling may also be biased against deeper water species which may have retreated downstream. All specimens were preserved in 10% formalin at each capture site and identified later using Smith's (1973) Illinois fishes key.

Scientific names of fishes used in this study are those listed by Bailey et al. (1970).

Calculations of species diversity ( $H'$ ) are based on equations discussed by Lloyd et al. (1968).

## RESULTS

A total of 4761 specimens comprising 17 species were collected (Table 1). Little physiographic successional change was noted in this low-gradient stream. Measurements of species diversity ( $H'$ ), as shown in Table 1, did not form any observable pattern.

## DISCUSSION

Previous investigators (Thompson and Hunt, 1930; Larimore and Smith, 1963; Stinauer, 1966) listed several species, notably centrarchids and catostomids, that were missed in the 1975 collection. Most of these species require deeper water than persisted in Wildcat Slough at the time that the specimens were collected for this study. As inhabitants of the Sangamon River, these forms may only enter Wildcat Slough when water conditions are favorable.

Wildcat Slough has been shown to be a cyprinid-dominated stream that appears to roughly parallel, in ichthyological composition, the upper Embarras River ca. 1950-51 as reported by Menzel (1952). The Embarras River headwaters of that period contained mostly cyprinids, predominantly Emmymba buccata and Pimephales notatus, numerous darters, and relatively few centrarchids. Wildcat Slough cyprinids are predominantly Notropis dorsalis and Pimephales notatus. N. dorsalis and E. buccata are so similar in ecological requirements (Lederer

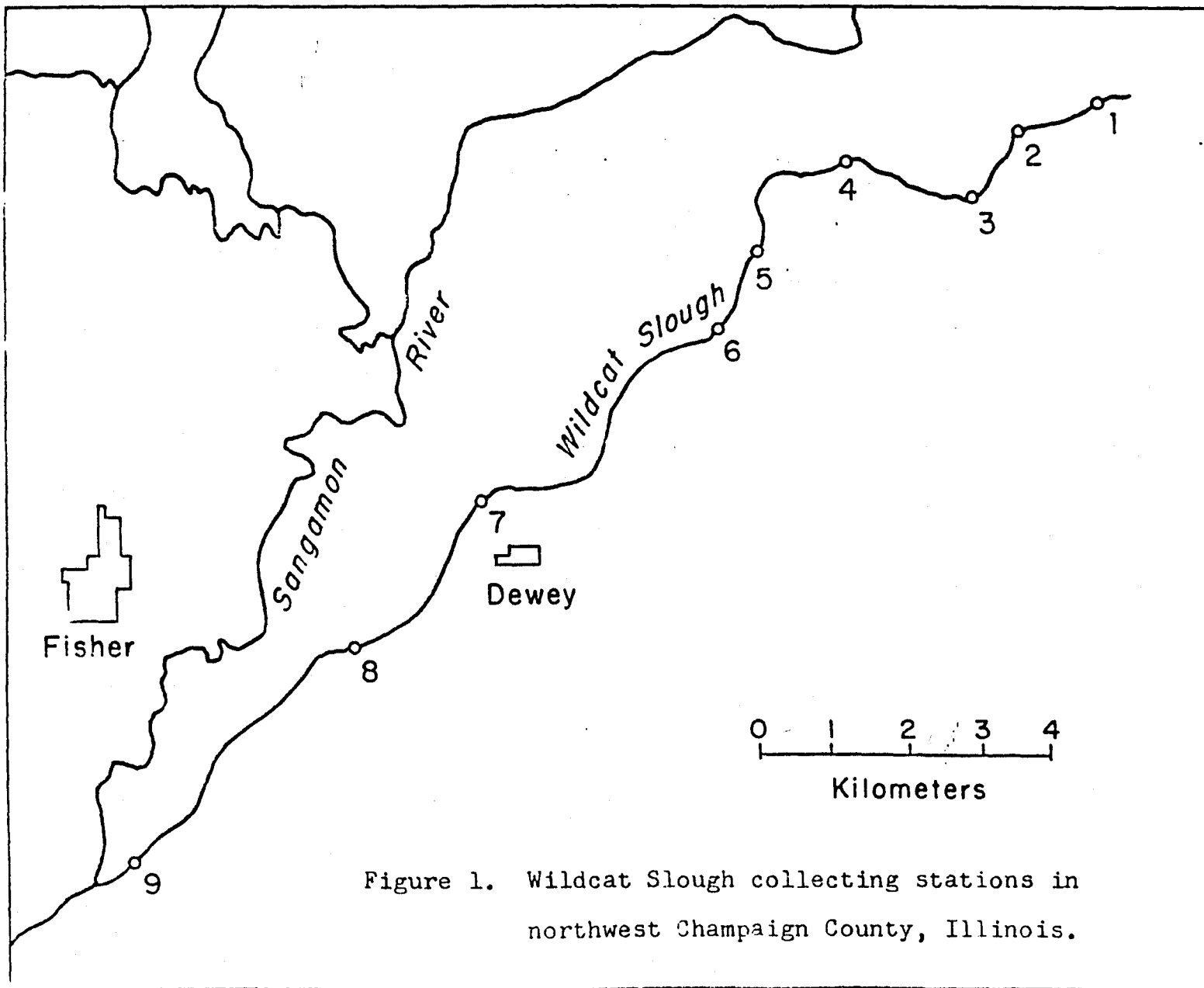


Table 1. Fishes collected by seine in Wildcat Slough, September, 1975.

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Species	Stations										Total
	1A	1B	2	3	4	5	6	7	8	9	
<u>Notropis chrysocephalus</u>	1	58	42	153	41	20	4	2	5	84	410
<u>Fundulus notatus</u>	2	4	12	9	3	5	22	63	7	3	130
<u>Pimephales notatus</u>	35	245	883	552	12	59	102	9		4	1901
<u>Semotilus atromaculatus</u>	17	44	64	209	20	6	2	2		26	390
<u>Notropis dorsalis</u>	50	80	96	456	349	76	5		2	95	1209
<u>Etheostoma spectabile</u>	5	18		38	23	3	2		8	1	98
<u>Nocomis biguttatus</u>	4	17	52	116	6	1		15	5		216
<u>Campostoma anomalum</u>	3	34	87	14	2						140
<u>Etheostoma nigrum</u>		15	51	1	3	27	47	35	2		181
<u>Notropis stramineus</u>		1	1		5	30		4	2	2	45
<u>Erimyzon oblongus</u>		1	3								4
<u>Pimephales promelas</u>		1									1
<u>Catostomus commersoni</u>			24								24
<u>Phenacobius mirabilis</u>			3								3
<u>Noturus gyrinus</u>					1	2					3
<u>Cyprinus carpio</u>								5			5
<u>Lepomis macrochirus</u>										1	1
Total specimens	117	518	1318	1548	465	229	184	135	31	216	4761
Total species	8	12	12	9	11	10	7	8	7	8	17
Diversity index (H')	2.10	2.42	1.82	2.18	1.46	2.52	1.74	2.13	2.60	1.74	

and Verner, 1972) that they may be considered to be ecologically equivalent species in these two drainages. Wildcat Slough presently supports a large darter population of two species. The centrarchid population may be underestimated due to the water conditions while collecting. Notropis umbratilis as well as Micropterus dolomieu and Lepomis spp. may all have moved downstream to the Sangamon River during this period of low water and may have been missed for this reason.

The parallel between Wildcat Slough and the Embarras River ca. 1950-51 may allow some predictions as to the future ichthyological composition of this stream. Assuming that Wildcat Slough undergoes some degree of siltation comparable to that experienced by the Embarras River, a decline in silt-intolerant and an increase in silt-tolerant species may be expected. Thus one may predict a decrease in the now abundant N. dorsalis and Etheostoma spp. populations and an increase in such species as N. umbratilis, Semotilus atromaculatus, and Fundulus notatus. Since 1955, several species including; Cyprinus carpio, Erimyzon oblongus, Esox americanus, Notemigonus crysoleucas, and Lepomis macrochirus have moved up into Wildcat Slough supporting a hypothetical faunistic shift favoring silt-tolerant species as has been shown in the Embarras River by Buth (1974). These previously listed species were mentioned by Smith (1968) as those favoring conditions created by siltation.

Hopefully, future examinations of Wildcat Slough will aid in the understanding of the degree and rate of faunistic shift that fishes experience under conditions of siltation. A future increase in silt-tolerant centrarchid and ictalurid populations may allow Wildcat Slough to be utilized by local fishermen to some extent.

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