

SPECIES COMPOSITION AND RELATIVE ABUNDANCE OF BENTHIC MACROINVERTEBRATES IN GLOVER CREEK, SOUTHEAST OKLAHOMA

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INTRODUCTION

Glover Creek is the last major unregulated tributary of the Little River system of Oklahoma and Arkansas. There are no previously published accounts of the species composition or relative abundance of benthic macroinvertebrates in Glover Creek. During a three-year study (Oct. 1977-July 1980), we collected 119 samples of the benthic fauna in riffle habitats. These data can be used for comparison with species composition in the regulated tributaries and will serve as baseline information for Glover Creek.

Samples were taken once every three months using a circular depletion sampler (1). All samples were taken in riffle habitats, but attempts were made to sample at a range of depths and velocities within the riffles. All organisms were identified to the lowest taxon possible, and densities of each taxon were estimated for each season. On the basis of these densities, species were categorized as rare ($< 1/m^2$), uncommon ($1-9/m^2$), common ($10-99/m^2$), or abundant ($100/m^2$). Since a few organisms were not identified to species (or genus) in every season, their relative abundance was determined on the basis of their percent composition in samples in which they were identified to species.

We identified 130 benthic macroinvertebrate taxa (Table 1), most of which were aquatic insects in the orders Diptera (42), Ephemeroptera (19), Trichoptera (18), and Plecoptera (14). The number of taxa was highest in winter (84), followed by fall (82), summer (80), and spring (71).

Some of the species collected were previously known to occur in this geographic area based on regional fauna lists (2, 3, 4), but their presence had not been confirmed in Glover Creek. The few studies that had been done on benthic macroinvertebrates in southern Oklahoma streams indicate the presence of some of the same genera as were found in Glover Creek (5, 6, 7), although more taxa and different species were found in Glover Creek. A previously unrecorded mayfly species, *Baetisca* nr. *gibbera*, was taken rarely or uncommonly in our samples (Table 1). This species generally occurs in the southeastern U. S., but had not been previously recorded from Oklahoma (9). Also notable were the greater number of species of Plecoptera in Glover Creek as compared with other samples from southern Oklahoma streams (5, 6, 7). Part of this difference may be due to the lack of collection of winter samples by investigators (5, 6, 7), which meant that the winter stoneflies were not encountered. However, the location of Glover Creek may also be responsible. Glover Creek is located in the oak-pine forest of the Ouachita physiographic province in an area which is near the southwestern limits of many eastern species of Plecoptera (8). Hence, the Glover Creek stoneflies include eastern as well as southwestern species.

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TABLE 1. Relative abundance of benthic macroinvertebrates in Glover Creek, Oklahoma, 1977-80 (blanks = no specimens collected; R = rare ($<1/m^2$); U = uncommon ($1-9/m^2$); C = common ($10-99/m^2$); A = abundant ($\geq 100/m^2$)).

Taxa	Relative Abundance			
	Fall	Winter	Spring	Summer
Nematoda	U	R	U	U
Annelida				
<i>Lumbriculus</i>	C	A	C	C
<i>Bothrioneurum</i>				R
<i>Piscicola</i>	R	R		R
Mollusca				
Planorbidae	R			
Physidae			R	
<i>Ferrissia</i>	R			U
Unionidae	R	R		R
Sphaeriidae	R	R		R
Arthropoda				
Ostracoda	U			R
<i>Hyallela azteca</i>	R	R		
<i>Lirceus</i> prob. <i>hoppinae</i>	R	U	U	U
<i>Orconectes palmeri longimanus</i>	U	U	R	U
<i>O. l. leptogonopodus</i>	U	U	R	U
Hydracarina			U	R
Insecta				
Ephemeroptera				
<i>Baetisca</i> nr. <i>gibbera</i>	R	U	R	
<i>Ephoron album</i>		R		C
<i>Ephemera</i>	R	U		C
<i>Hexagenia</i>	R			C
<i>Caenis</i>	U	U	U	C
<i>Tricorythodes</i>	U			U
<i>Ephemerella excrucians</i>	U	U	U	C
<i>E. (Danella) simplex</i> ^a				
<i>E. (Eurylophella)</i> ^a				
<i>Stenonema femoratum</i> (= <i>tripunctatum</i>)	C	A	C	A
<i>Stenacron interpunctatum</i>	C	R	U	C
<i>Heptagenia</i> prob. <i>hebe</i>	R	U	U	C
<i>Rhithrogena</i>			U	
<i>Choroterpes</i>				C
<i>Paraleptophlebia</i> prob. <i>debilis</i>	U	U	U	R
<i>Baetis</i>	C	U	U	C
<i>Pseudocloeon</i>	U	U	C	C
<i>Centroptilum</i>				U
<i>Isonychia</i>	C	C	U	C
Odonata				
<i>Gomphus</i>	R	R	R	C
<i>Stylogomphus</i>			R	
<i>Hagenius</i>				R
<i>Lanthus</i>				R
<i>Argia</i>	U	C	U	C
Plecoptera				
<i>Zealeuctra claasseni</i>		R		
<i>Nemoura</i>			U	
<i>Acroneuria evoluta</i>	R	R	U	C
<i>Neoperla clymene</i>	C	C	C	A
<i>Perlesta placida</i>		U	U	R
<i>Phasganophora capitata</i>	R	U	U	U
<i>Hydroperla crosbyi</i>		U	R	
<i>Isoperla clio</i>		U	R	
<i>I. marlynia</i>		R	U	
<i>I. mobri</i>		R	U	
<i>Hastoperla</i>		U	U	
<i>Strophopteryx fasciata</i>		C	R	
<i>Taeniopteryx burksi</i>	U	C		
<i>Allocahnia granulata</i> (or <i>mobri</i>)		A	R	

TABLE 1. (continued)

Taxa	Relative Abundance			
	Fall	Winter	Spring	Summer
Hemiptera				
Velliidae				R
<i>Gerris</i>	R			
Megaloptera				
<i>Corydalus cornutus</i>	C	C	U	C
<i>Sialis</i>	U	R		U
Neuroptera				
<i>Climacia</i>				R
<i>Sisyra</i>				R
Trichoptera				
<i>Chimarra</i>	A	C	C	A
<i>Wormaldia</i>			C	
<i>Polycentropus</i>				U
<i>Neureclipsis</i>		U		R
<i>Cheumatopsyche</i>	A	C	U	A
<i>Hydropsyche</i>	C	C	U	C
<i>Macronema</i>	R	R		R
<i>Rhyacophila</i>			U	
<i>Agapetus</i>		R		
<i>Dibusa angata</i>		U		
<i>Hydroptila</i>		U	U	
<i>Stactobiella</i>			R	
<i>Micrasema</i>			R	
<i>Hydatophylax</i>	R			
<i>Pycnopsyche</i>		U	R	U
<i>Helicopsyche</i>	C	U	R	U
<i>Ceraclea</i>	R	U		
<i>Oecetis</i>				R
Lepidoptera				
<i>Paragyraetis</i>	U	U	R	C
Coleoptera				
<i>Stenelmis exigua</i>				
larvae	A	A	A	A
adults	C	C	C	A
<i>Microcylloepus pusillus</i>				
larvae	C	C	C	U
adults	C	C	U	C
<i>Dubiraphia</i>	R	R	R	
<i>Heterelmis</i>	R		R	
<i>Helichus</i>	R		R	
<i>Ectopria</i>	R		R	
<i>Psephenus herricki</i>	R	R	U	
<i>Gyrinus</i>	C	C		C
<i>Peltodytes</i>	R			
<i>Berosus</i>	U	R		
Diptera				
<i>Tipula</i>	U	U	U	R
<i>Hexatoma</i>	U	U	U	C
Culicidae	R			
Ceratopogonidae (Heleidae)	R	R		R
<i>Atricopogon</i>	R			
<i>Simulium</i>	U	A	U	U
<i>Tabanus</i>	U	U	U	U
Empididae	R	R	U	
Dolichopodidae	R			
<i>Xenochironomus xenolabis</i>		R	R	R
<i>Pseudochironomus</i>	U	U	U	
<i>Stenochironomus</i>		U		R
<i>Criptochironomus</i>	R	U		
<i>Endochironomus</i>	R			
<i>Glyptotendipes</i>	R			
<i>Parachironomus</i>	R			
<i>Chironomus</i>	U			
<i>Goeldichironomus</i>	U			
<i>Dicrotendipes modestus</i>	C	R		U

TABLE 1. (continued)

Taxa	Relative Abundance			
	Fall	Winter	Spring	Summer
<i>Polypedilum</i>	C	U	C	C
<i>Tribelos</i>		U		U
<i>Microtendipes</i>	R	C	U	A
<i>Paratendipes</i>				R
<i>Microapsectra</i>	U	R	U	U
<i>Rheotanytarsus</i>	R	U		C
<i>Tanytarsus</i>	U			
<i>Cladotanytarsus</i>				R
<i>Psectrocladius</i>				
species a	U	U	R	U
species b		R		
<i>Cricotopus</i>				
species a		C	R	U
species b	U	U	C	R
<i>Orthocladius</i>		C	R	
<i>Heterotrissocladius</i>			U	
<i>Nanocladius</i>				
species a		U	C	
species b	R	C		R
<i>Trichocladius</i>	R			
<i>Procladius</i>		R		R
<i>Labrundinia</i>				R
<i>Ablabesmyia mallochii</i>	U			R
<i>Conchapelopia</i>	R	C	U	C
<i>Larsia</i>	R			R
<i>Clinotanytus</i>		R		

a. Rare, no data on seasonal abundance.

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