

# Survey of Aquatic Invertebrates of South-Central Oklahoma

## I. Lotic Animals

N.J. Cheper

Department of Biology, East Central University, Ada, Oklahoma, 74820

**Distributional and ecological data are presented for 50 genera of lotic aquatic invertebrates collected in south-central Oklahoma.**

### INTRODUCTION AND METHODS

The biology and taxonomy of lotic macroinvertebrates has received some attention in Oklahoma (1 - 6). The purpose of this research is to provide a list of aquatic invertebrates found in south-central Oklahoma.

Animals were collected in the spring and summer of 1982. Collections were concentrated in Pontotoc County, Oklahoma. Collection sites included the Muddy Boggy Creek, Clear Boggy Creek, Sandy Creek, Little Sandy Creek and their tributaries, Big and Little Blue River drainages, and the tributaries of the Canadian River. Additional collections were made in parts of Hughes, Johnston, Murray, and Seminole counties. Both lentic and lotic habitats were sampled. This report documents only those organisms found in stream (lotic) habitats.

Animals were collected using a hand-held strainer (4 - mm mesh) which could be used to sample vegetation along the banks of a stream as well as gravel and litter in the stream. Animals were preserved in dilute formalin and returned to the laboratory for identification and cataloging in the ECU museum.

Animals were identified to genus by using available reference materials (5 - 9). The frequency of occurrence for each genus in all collections was tabulated to determine relative abundance. Relative abundance was divided into four categories: rare, occasional, common and abundant. For convenience of presentation, the data have been divided into insect and non-insect taxa.

### RESULTS AND DISCUSSION

Eight orders of aquatic insects were identified in the collections (Table 1). Among the mayflies, naiads of *Stenonema*, *Tricorythodes*, and *Caenis* predominated. *Stenonema* was found in areas where there was good water flow, gravel, and little silt. *Tricorythodes*, characteristically found in alkaline streams (9), was collected in streams near Delta Mining Corporation, which mines dolomite. *Caenis*, a 'pollution-tolerant' mayfly, was found in both clear and organically polluted streams.

Representative of the odonates were three damselflies: *Hyponeura*, *Enallagma*, and *Hetaerina*. They were found in habitats where there was emergent vegetation along the stream bank. In addition, two dragonflies, *Gomphus* and *Erpetogomphus*, were common in muddy or silty areas where they could burrow in the substrate.

The water strider *Gerris*, the caddisfly *Cheumatopsyche*, and the whirlygig beetle *Dineutus* were found in almost every sample. *Gerris* was found in all but the swiftest flowing streams, while *Cheumatopsyche* predominated in streams where there were rocky habitats with a good water current. *Dineutus*, both adults and larvae, was the most frequent genus encountered in the samples, being collected in a variety of habitats.

Dipteran larvae, though infrequently collected, were identified only to family because of difficulties encountered in generic determination. Blackfly larvae were noted in streams near cattle ranches; the others were in more stagnant or 'pool-like' areas.

Non-insect taxa collected are listed in Table 2. The crawfish *Orconectes* and the pulmonate snail *Physa* were the two most commonly collected organisms. *Orconectes* (specifically *O. palmeri longimanus*) was found in habitats that provided suitable cover (i.e. rocky) as well as areas for burrowing. *Physa* was found anywhere there was sufficient vegetation for feeding.

TABLE 1. Insect taxa identified and their relative abundance\*

Organism	Relative Abundance
<b>Ephemeroptera:</b>	
<i>Stenonema</i>	C
<i>Siphonurus</i>	O
<i>Isonychia</i>	O
<i>Tricorythodes</i>	C
<i>Caenis</i>	A
<i>Callibaetis</i>	O
<i>Baetis</i>	R
<i>Pseudocloeon</i>	R
<b>Odonata:</b>	
<i>Ophiogomphus</i>	R
<i>Erpetogomphus</i>	C
<i>Gomphus</i>	C
<i>Gomphoides</i>	R
<i>Dromogomphus</i>	R
<i>Hyponeura</i>	A
<i>Enallagma</i>	A
<i>Aeshna</i>	O
<i>Somatochlora</i>	R
<i>Agrion</i>	R
<i>Hetaerina</i>	A
<i>Archilestes</i>	R
<i>Celithemis</i>	R
<b>Plecoptera:</b>	
<i>Neoperla</i>	O
<b>Hemiptera:</b>	
<i>Belostoma</i>	O
<i>Gerris</i>	A
<i>Rhagovelia</i>	R
<b>Megaloptera:</b>	
<i>Sialis</i>	R
<b>Trichoptera:</b>	
<i>Cheumatopsyche</i>	A
<i>Hydropsyche</i>	O
<b>Coleoptera:</b>	
<i>Dineutus</i>	A
<i>Hydrophilus</i>	C
<i>Hydrocanthus</i>	R
<i>Gyrinus</i>	O
<i>Hydaticus</i>	R
<i>Peltodytes</i>	R
<b>Diptera:</b>	
<i>Simuliidae (larvae)</i>	O
<i>Culicidae</i>	O
<i>Chironomidae</i>	O
<i>Tipulidae</i>	O
<i>Tabanidae</i>	R

TABLE 2. Non-insect taxa identified and their relative abundance\*

Organism	Relative Abundance
<b>Platyhelminthes</b>	
<b>Turbellaria:</b>	
<i>Dugesia</i>	O
<b>Nematoda</b>	
	O
<b>Annelida</b>	
<b>Oligochaeta</b>	R
<b>Hirudinea</b>	O
<b>Arthropoda</b>	
<b>Amphipoda:</b>	
<i>Hyalella azteca</i>	O
<b>Decapoda:</b>	
<i>Orconectes</i>	A
<b>Mollusca</b>	
<b>Gastropoda:</b>	
<i>Gyraulus</i>	O
<i>Lymnaea</i>	R
<i>Physa</i>	A
<i>Planorbula</i>	R
<b>Pelecypoda:</b>	
<i>Corbicula</i>	R
<i>Elliptio</i>	R
<i>Sphaerium</i>	O

\*(R-rare, O-occasional, C-common, A-abundant)

The ten most common genera collected in the region were *Dineutus*, *Cheumatopsyche*, *Gerris*, *Physa*, *Enallagma*, *Orconectes*, *Caenis*, *Hetaerina*, *Hyponeura* and *Stenonema*. These genera are representative of what one would expect to find in a 'typical' fresh-water lotic habitat.

## ACKNOWLEDGEMENTS

I thank Delta Mining Corporation and Dr. R.L. Neman for their assistance in this study. This research was supported by a grant from East Central University.

**REFERENCES**

1. W.K. Reisen, Proc. Okla. Acad. Sci. 55: 25 - 31 (1975).
2. R.E. McKinley, R. Prins and L.E. Jeck, Proc. Okla. Acad. Sci. 52: 49 - 52 (1972).
3. D.J. Orth, R.N. Jones, and O.E. Maughan, Proc. Okla. Acad. Sci. 62: 18 - 21 (1982).
4. J.L. Wilhm and T.C. Dorris, Am. Midl. Nat. 76: 427 - 449 (1966).
5. G.H. Bick and J.C. Bick, Southwest. Nat. 2: 1-18 (1956).
6. R.D. Reimer, Proc. Okla. Acad. Sci. 48: 49 - 65 (1969).
7. R.W. Pennak, *Fresh-water Invertebrates of the United States*, 2nd ed., John Wiley and Sons, New York, NY, 1978.
8. R.L. Usinger (Ed.), *Aquatic Insects of California*, University of California Press, Berkeley, CA, 1956.
9. F.K. Parrish (Ed.), *Keys to Water Quality Indicative Organisms of the Southeastern United States*, 2nd ed., U.S. Environmental Protection Agency, Washington, D.C., 1973.