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Aquatic Macroinvertebrates Collected from Thirty-two Missouri Ozark Streams

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Abstract

A previously reported study of the distribution and status of an endemic dragonfly in Missouri emphasized data collected by aerial netting and examination of specimens housed in the Wilbur Enns Museum of Entomology. Dip net samples were also taken, however, to find naiads of the target species at sites where adults might not have been found and to determine whether there were associated species. Forty-one collections were made in 32 Ozark streams between mid-May and early June 1999-2000. Of the 372 taxa identified, *Psephenus herricki* was the most-frequently associated species. Six of the 32 streams either had not been sampled previously or the results have not been published. Three species (*Paragordius varius*, *Haliplus confluentus* and *Haliplus deceptus*) are first reports for Missouri.

Introduction

Harp and Trial (2001) discussed the distribution and status of an endemic dragonfly, *Ophiogomphus westfalli* Cook and Daigle, in Missouri and Arkansas. Their emphasis was on the Missouri status, and the data reported were limited to that specific species. While determining its status, however, voucher specimens of all adult Odonata observed at each site were also collected.

These latter data were eventually incorporated into Trial's (2005) Atlas of Missouri Odonata. Further, dip net samples of aquatic macroinvertebrates were taken at nearly all sites, with the intent of identifying additional sites where *O. westfalli* occurred through the collection of its naiads.

The Ozark Plateaus were formed by uplifting, folding and faulting processes 300 mya. They are characterized by rugged, flat-topped mountains, long, deep valleys, steep cliffs and ledges, and clear, spring-fed streams (Robison and Buchanan 1988). They formed as a broad dome around the Saint Francois Mountains.

The purposes of this study are to determine which aquatic macroinvertebrate species characteristically co-occur with *O. westfalli*, to provide additional macroinvertebrate records for some Missouri Ozark streams that have previously been sampled, to report aquatic macroinvertebrate lists for 6 Missouri Ozark streams which either have not been sampled or reported previously, and to document first Missouri records for aquatic macroinvertebrate species.

Materials and Methods

Forty-one samples were collected from 32 Missouri Ozark streams. Collections were made from 22 May-1 July 1999 and 1 June-5 July 2000 (Table 1). At each site aquatic invertebrates were collected with a Turtox Indestructible™ dip net for approximately 2 hours. Preservation of specimens was in 70% ethanol. These samples were supplemented at each site by collecting adult Odonata with an aerial net (Harp and Trial 2001).

Taxonomic usage follows Merritt et al. (2008) for aquatic insects and Smith (2001) for other aquatic macroinvertebrates. Common names of crayfishes follow Pflieger (1996), while those of Odonata follow Paulson and Dunkle (1999). Supplemental keys used were those of Poulton and Stewart (1991), Moulton and Stewart (1996) and Larson et al. (2000). Voucher specimens are housed in the Wilbur Enns Museum of Entomology, University of Missouri-Columbia.

Stream order ranged from 2nd (e.g. Rogers Cr.) to 5th (Meramec R.). Most of the streams sampled in this study lie within the Salem Plateau subdivision of the Ozark Plateaus, but Big Sugar, Indian and Shoal creeks lie within the Springfield Plateau. Overall, substrates varied from silt to bedrock.

Results and Discussion

Total number of taxa collected was 372 (Table 2). Average richness per site was 47.9 (standard error ± 1.64), with a range of 25-72. In general, species richness increased with stream order. Shoal and Rogers

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Table 1. Collecting sites for aquatic macroinvertebrate taxa, Missouri Ozark streams, 1999 (sites 1-21), 2000 (Sites 22-41). (Number of taxa).

Location	Date
1. South F. Spring R. at jct w/West F., S of St. Hwy. 142, SW¼Sec4, T22N, R8W, Howell Co. (39)	22 May
2. Bryant Cr. at Co. Hwy PP, 8mi. N Tecumseh, Warren Bridge Access, SE¼Sec16, T23N, R12W, Ozark Co. (38)	22 May
3. Eleven Pt. R. at Co. Hwy. W, NE¼Sec11, T25N, R7W, Howell Co. (57)	24 May
4. Rogers Cr. Just N HQ. Bldg., NE¼Sec32, T28N, R2W, Peck Ranch Conservation Area, Carter Co. (27)	25 May
5. Warm F. Spring R. at St. Hwy. 19, ~1mi. N Thayer, NE¼Sec19, T22N, R5W, Oregon Co. (46)	26 May
6. Roark Cr. at Roark Valley Rd., Branson, Sec22, T23N, R21W, Taney Co. (45)	31 May
7. Bull Cr. at U.S. Hwy. 160, W edge Walnut Shade, SCSec34, T24N, R21W, Taney Co. (35)	31 May
8. Swan Cr. at Co. Hwy. AA, ~4mi. NNW Taneyville, CSec1, T24N, R20W, Taney Co. (43)	1 June
9. James R. at Co. Hwy. O, ~8mi. SW Nixa, SW¼Sec19, T26N, R22W, Stone Co. (54)	2 June
10. Flat Cr. at Co. Hwy. EE, MDC Lower Flat Cr. Access, SE¼Sec27, T24N, R25W, Barry Co. (55)	3 June
11. Roaring R., Roaring R. Conservation Area, Co. Hwy. F, SE¼Sec36, T22N, R27W, Barry Co. (37)	3 June
12. Bryant Cr. at St. Hwy. 95, ~16mi. NNE Gainesville, SW¼Sec2, T24N, R13W, Ozark Co. (40)	5 June
13. Beaver Cr. at St. Hwy. 76, Bradleyville, WCSec11, T24N, R18W, Taney Co. (39)	5 June
14. Big Sugar Cr. at St. Hwy. 90, 14mi. E Pineville, NE¼Sec2, T21N, R30W, McDonald Co. (33)	14 June
15. Indian Cr. at St. Hwy. 76, SE edge Anderson, NE¼Sec12, T22N, R32W, McDonald Co. (53)	14 June
16. Shoal Cr. at MDC Jolly Access, NE¼Sec15, T25N, R29W, Newton Co. (39)	15 June
17. Shoal Cr. at MDC Cherry Corner Access (St. Hwy. 59 4mi S Diamond), WCSec34, T26N, R31W, Newton Co. (25)	15 June
18. Spring R. at St. Hwy. 97, 2mi. N Stotts City, jct. Sec13/14, T28N, R28W, Lawrence Co. (47)	17 June
19. Little Sac R. at St. Hwy. 215, 3mi. W Morrisville, NW¼Sec29, T32N, R23W, Polk Co. (51)	17 June
20. Jacks F. R. at St. Hwy. 19, Eminence (MDC Buttin Rock Access), SW¼Sec26, T29N, R4W, Shannon Co. (64)	22 June
21. West F. Black R. at St. Hwy. 21, Centerville (MDC Centerville Access), SW¼Sec20, T32N, R1E, Reynolds Co. (57)	1 July
22. Castor R. at Co. Hwy. V, NE¼Sec5, T32N, R8E, Madison Co. (51)	1 June
23. Meramec R., Meramec R. State Park picnic area, Sec5, T40N, R1W, Franklin Co. (50)	2 June
24. St. Francis R. at Co. Hwy. 302, 3.7mi. W Coldwater (MDC Coldwater Access), SW¼Sec2, T30N, R5E, Wayne Co. (64)	6 June
25. St. Francis R. at Co. Hwy. C, jct. Sec10/11, T32N, R5E, Madison Co. (44)	7 June
26. Twelvemile Cr. at Co. Hwy. C, 12.5mi. W Fredericktown, SE¼Sec13, T31N, R5E, Madison Co. (43)	7 June
27. St. Francis R. at Co. Hwy. H (Syenite), 5mi. S Farmington, NE¼Sec6, T34N, R6E, St. Francois Co. (48)	8 June
28. St. Francis R. at Millstream Gardens Conservation Area, SE¼Sec3, T33N, R5E, Madison Co. (68)	8 June
29. Black R. at Co. Rd. 2 (MDC Lesterville Access), SE¼Sec28, T32N, R2E, Reynolds Co. (51)	9 June
30. Big Piney R. at St. Hwy. 32, 8mi. W Licking, NW¼Sec12, T32N, R10W, Texas Co. (49)	15 June
31. North F. White R. At jct. St. Hwy. 14/181, SE¼Sec28, T25N, R11W, Douglas Co. (56)	15 June
32. Osage F. Gasconade R. at St. Hwy. 32, ~15mi. E Lebanon (MDC Drynob Access), NE¼Sec27, T34N, R14W, Laclede Co. (47)	22 June
33. Osage F. Gasconade R. 8mi. E Lebanon (MDC Hull Ford Access), SE¼Sec5, T34N, R14W, Laclede Co. (65)	22 June
34. Gasconade R. at Dawn Rd. (MDC Anna M. Adams Access), NE¼Sec26, T34N, R13W, Laclede Co. (54)	23 June
35. Gasconade R. ~0.5mi downstream of MDC Schlicht Springs Access, jct. Sec28/29, T37N, R12W, Pulaski Co. (34)	23 June
36. Roubidoux Cr. at N edge Waynesville (MDC Roubidoux Cr. Conservation Area), SW¼Sec24, T36N, R12W, Pulaski Co. (45)	29 June
37. Big Piney R. at Co. Hwy. J, ~0.3mi. N of its jct. w/Co. Hwy. M, SW¼Sec10, T35N, R10W, Phelps Co. (48)	29 June
38. Bourbeuse R. ~9mi. S Owensville (1mi upstream of St. Hwy. 19 bridge), NW¼Sec2, T40N, R5W, Gasconade Co. (72)	3 July
39. Bourbeuse R. at Co. Hwy. EE, 9mi. S Owensville (MDC Mint Spring Access), NE¼Sec13, T40N, R6W, Gasconade Co. (53)	4 July
40. Big R. at Co. Hwy. H (MDC Merrill Horse Access), NE¼Sec32, T40N, R3E, Jefferson Co. (50)	5 July
41. Big R. 2.5mi. W Desloge (MDC Leadwood Access), NE¼Sec3, T36N, R4E, St. Francois Co. (46)	5 July

creeks, the smallest creeks sampled, had 25 and 27 taxa, respectively Table 1). The low stream order of Rogers Creek was reflected in that 8 of its 27 taxa were reported from this site only (Table 2). The most commonly occurring taxa (30+ sites) included *Hyalella*, *Caenis*, *Isonychia* and *Tricorythodes* (Table 2).

Associated species

Six taxa were collected more than 50% if the time with *O. westfalli*, *Psephenus herricki* and *Perlesta shubuta* being the most frequent (Table 3). Those species most often found with this dragonfly likewise frequent streams with clear water, moderate current and well-defined riffles. Substrate typically will include

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sand and gravel, and there will be no obvious organic overload. While *O. westfalli* is endemic to the Interior Highlands, none of the 6 associated species are. The relationship is apparently limited to a kindred requirement for the relatively healthy habitat described above.

First reports for 6 streams

Of the 32 streams sampled, 6 (South Fork Spring River, Rogers Creek, Warm Fork Spring River, Twelvemile Creek, Roubidoux Creek and Bourbeuse River) either have not been sampled previously, or results of those samples have never been published (Randy Sarver, Mo. Dept. Nat. Res., pers. comm.). This fact was not discovered until late in the study.

In general, streams were chosen because of stream order and to provide a broad coverage of all stream basins in the Missouri Ozarks. The 6 previously unstudied streams were chosen specifically for a variety of reasons. South Fork of Spring River was chosen because *O. westfalli* was known to inhabit this stream along much of its Arkansas portion. Rogers Creek was chosen because it is a protected stream in the Peck Ranch Conservation Area. Roark Creek is an example of a relatively heavily altered stream, as it courses through Branson. Twelvemile Creek was chosen for its size, Roubidoux Creek because of the heavy influence by springs, and Bourbeuse River because of its position on the northern edge of the Salem Plateau, which may explain its having a somewhat heavier silt load than the other streams sampled. No *O. westfalli* were reported from any of these streams (Harp and Trial 2001).

The species richness of the 6 streams ranged from 27-72, with an average of 46.3 (standard error ± 5.22). The aquatic macroinvertebrates typified those of other Ozark streams of similar size. The lists for these streams provide baseline data for subsequent research.

First records for Missouri

One specimen each of *Paragordius varius* was collected from the Meramec and St. Francis rivers (Table 2). This species has been reported from several contiguous states, so our records fill in a gap in its known distribution (Schmidt-Rhaesa et al. 2003). As with all horsehair worms, this species is a pseudocoelomate in which the adult is free-living, typically in an aquatic habitat, while the larva is a parasite of insects. The juveniles of this particular species have been reported to parasitize some mayflies (*Baetis*, *Leptophlebia*, *Ephemerella*), Heteroptera (*Sigara*), Trichoptera (*Brachycentrus*) and Diptera (*Simulium*) (Schmidt-Rhaesa et al. 2003).

Two specimens of *Haliphus confluentus* Roberts were collected from the West Fork of Black River near Centerville. The species has been reported from Florida, Georgia, South Carolina and Virginia (Matta 1976), and this record extends the known range considerably to the west.

One specimen each of *Haliphus deceptus* Matheson was collected from Bryant Creek near Tecumseh and the West Fork of Black River at Centerville. This species has been reported from Colorado, Kansas, New Mexico, Oklahoma, Texas and Wyoming (Durfee et al. 2005) thus its known range is extended to the east.

Acknowledgments

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Table 2. Distribution of aquatic macroinvertebrate taxa among the 32 Ozark streams sampled.

Scientific Name	Common Name	Location (Table 1)
PLATYHELMINTHES	Unsegmented flatworms	
Class Turbellaria	Turbellarians	
Order Tricladida	Triclad turbellarians	
Planariidae	Planarians	14
<i>Cura formanii</i>	Planarian	27,28,30,34,38,40
<i>Dugesia tigrina</i>	Planarian	32
NEMATOMORPHA	Horsehair worms	
Class Gordioidea		
Chordodidae	Horsehair worm	
<i>Chordodes morgani</i>	Horsehair worm	37
Gordiidae	Horsehair worm	
<i>Gordius robustus</i>	Horsehair worm	1
Family Parachordodidae	Horsehair worm	
<i>Paragordius varius</i> *	Horsehair worm	23,24
ANNELLIDA	Segmented round worms	
Class Oligochaeta	Oligochaetes	
Naididae	Aquatic earthworm	6
Lumbriculidae	Aquatic earthworm	5,7,8,10,11,14,16,17,22,23,24,26,31,32,33,34,36,38,39,40,41
Class Hirudinea	Leeches	
Order Rhynchobdellida	Rhynchobdellid leeches	
Erpobdellidae	Erpobdellid leeches	22,33,34
<i>Erpobdella</i> sp.?	Erpobdellid leech	17,19
<i>Mooreobdella</i>	Erpobdellid leech	9
Glossiphoniidae	Glossiphoniid leeches	
<i>Helobdella</i>	Glossiphoniid leech	24,38,39
<i>Placobdella</i>	Glossiphoniid leech	3,7,9,18,19,27,36
<i>Placobdella papillifera</i> ?	Glossiphoniid leech	20
MOLLUSCA		
Class Pelecypoda	Clams, mussels (Bivalves)	
Unionoida	Unionoid mussels	
Unionidae	Freshwater mussels	
<i>Lampsilis reevesiana</i>	Broken-rays mussel	7
Veneroida	Veneroid mussels	
Corbiculidae	Asiatic clam	
<i>Corbicula fluminea</i>	Asiatic clam	12

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Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
ARTHROPODA	Arthropods	
Hydracarina	Water mites	22,24,25,38
Class Crustacea	Crustaceans	
Order Isopoda	Isopods	
Asellidae	Sow bug or pill bug	
<i>Caecidotea</i>	Sow bug	11,21,23,34,36
<i>Lirceus</i>	Sow bug	5,9,10,14,16,17,18,28,36
<i>Lirceolus?</i>	Sow bug	17
Order Amphipoda	Sideswimmers or scuds	
Crangonyctidae	Sideswimmers or scuds	
<i>Allocrangonyx</i>	Sideswimmer	7
<i>Crangonyx</i>	Sideswimmer	15,21,36,40
<i>Synurella</i>	Sideswimmer	5,9,17
Gammaridae	Sideswimmers or scuds	
<i>Gammarus</i>	Sideswimmer	4,23
<i>Gammarus bousfieldi?</i>	Sideswimmer	18
<i>Gammarus minus</i>	Sideswimmer	11
<i>Gammarus pseudolimnaeus</i>	Sideswimmer	16
Talitridae	Sideswimmers or scuds	
<i>Hyalella azteca</i>	Sideswimmer	1,2,3,9,10,11,12,13,14,15,16,18, 20,21,24,25, 26,27,28,29,30,31,33, 34,35,36,37,38,39,40,41
Cambaridae	Crayfishes	
<i>Orconectes</i>	Crayfish	18,24,29,30,33,34,36,37,39,41
<i>Orconectes luteus</i>	Golden crayfish	1,8,10,13,14,15,16,17,18,23,32
<i>Orconectes ozarkae</i>	Ozark crayfish	2
<i>Orconectes virilis</i>	Northern crayfish	5,9
Class Insecta	Insects	
Order Collembola	Springtails	
Poduridae	Podurid springtails	
<i>Podura aquatica</i>	Podurid springtail	38
Isotomidae	Isotomid springtails	
<i>Isotomurus</i>	Isotomid springtail	35
Sminthuridae	Sminthurid springtails	
<i>Sminthurinus</i>	Sminthurid springtail	27
Order Ephemeroptera	Mayflies	
Baetidae	Baetid mayfly	5
<i>Baetis</i>	Baetid mayfly	2,3,4,6,7,8,9,10,11,12,14,15,16,17,18,19,20, 21,24,28,29,31,34,36,37,38,41
<i>Callibaetis</i>	Baetid mayfly	33,39,40
<i>Procloeon rubropictum</i>	Baetid mayfly	38
Caenidae	Caenid mayfly	
<i>Caenis</i>	Caenid mayfly	1,2,3,6,7,8,9,10,11,12,13,14,15,18,19,20,21, 22,23,24,25,26,27,29,31,33,34,37,38,39,40,41
Ephemerellidae	Ephemerellid mayflies	
<i>Attenella attenuata</i>	Ephemerellid mayfly	12,29
<i>Ephemerella invaria</i>	Ephemerellid mayfly	1
<i>Eurylophella aestiva?</i>	Ephemerellid mayfly	6
<i>Eurylophella bicolor</i>	Ephemerellid mayfly	2,5,11,13,14,15
<i>Eurylophella enoensis</i>	Ephemerellid mayfly	1,2,3,4,5,7,8,9,10,11,12,13,14, 15,16,20,22,23,24,26,29,30,31
<i>Serratella deficiens</i>	Ephemerellid mayfly	20,30,37
<i>Serratella serratoides</i>	Ephemerellid mayfly	28
Ephemeridae	Burrowing mayflies	
<i>Ephemerella simulans</i>	Burrowing mayfly	5,9,37
<i>Ephemerella guttulata</i>	Burrowing mayfly	38
<i>Hexagenia atrocaudata</i>	Burrowing mayfly	2,12,20,31,36
<i>Hexagenia limbata</i>	Burrowing mayfly	5,9,15,18,25,37,40
Heptageniidae	Heptageniid mayflies	
<i>Leucrocuta</i>	Heptageniid mayfly	18,19
<i>Nixe</i>	Heptageniid mayfly	8,10,11,15,18

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Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
<i>Rhithrogena pellucida</i>	Heptageniid mayfly	8,10
<i>Stenacron interpunctatum</i>	Heptageniid mayfly	1,5,7,9,10,11,15,16,18,19,20,22,23,33,34,36,37,38,39
<i>Maccaffertium exiguum</i>	Heptageniid mayfly	10,33
<i>Maccaffertium mediopunctatum</i>	Heptageniid mayfly	1,5,7,8,9,10,12,14,15,19,20,22,24,25,26,30,31,32,33,34,37,38,39,41
<i>Maccaffertium modestum</i>	Heptageniid mayfly	16,18
<i>Maccaffertium pulchellum</i>	Heptageniid mayfly	15,23,25,28,32,33,37,38,39
<i>Maccaffertium terminatum</i>	Heptageniid mayfly	3,5,6,7,9,11,12,15,20,22,24,25,26,27,28,29,31,33,34,37,38,41
<i>Stenonema femoratum</i>	Heptageniid mayfly	3,5,6,8,13,14,15,19,20,21,22,26,28,34,38,39
Isonychiidae	Isonychiid mayflies	
<i>Isonychia</i>	Isonychiid mayfly	1,2,3,5,7,8,9,10,11,12,13,14,15,16,17,19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,37,38,39,41
Leptophlebiidae	Leptophlebiid mayflies	39
<i>Choroterpes basalis</i>	Leptophlebiid mayfly	6,8,15
<i>Leptophlebia</i>	Leptophlebiid mayfly	34
<i>Paraleptophlebia guttata</i>	Leptophlebiid mayfly	7,10,11
<i>Paraleptophlebia mollis</i>	Leptophlebiid mayfly	6,11,20
Polymitarcyidae	Polymitarcyid mayflies	
<i>Ephoron album</i>	Polymitarcyid mayfly	17,18,19
Potamanthidae	Burrowing mayflies	
<i>Anthopotamus myops</i>	Burrowing mayfly	5,13
<i>Anthopotamus neglectus</i>	Burrowing mayfly	29,33,34,37
<i>Anthopotamus verticis</i>	Burrowing mayfly	9,23,33
Leptohiphidae	Leptohiphid mayflies	
<i>Tricorythodes</i>	Leptohiphid mayfly	3,5,6,8,9,10,11,12,13,14,15,16,18,19,20,21,22,23,24,25,26,27,28,29,30,31,33,34,36,37,38,39,40,41
Order Odonata	Dragonflies, damselflies	
Calopterygidae	Broad-winged damsels	
<i>Calopteryx maculata</i>	Ebony jewelwing	1,2,3,4,5,7,11,14,16,17,18,20,21,22,24,27,29,30,31,33,35,36,37,39,40,41
<i>Hetaerina americana</i>	American rubyspot	9,10,15,17,19,21,22,23,24,25,27,28,29,30,31,33,34,35,37,38,39,40,41
Lestidae	Spreadwing damsels	
<i>Lestes disjunctus</i>	Common spreadwing	18
<i>Lestes inaequalis</i>	Elegant spreadwing	3,35
Coenagrionidae	Pond damsels	
<i>Argia</i>	Dancer	7,8,9,30
<i>Argia apicalis</i>	Blue-fronted dancer	14,18,19,20,23,25,34,35,38,39,40
<i>Argia fumipennis violacea</i>	Variable dancer	1,6,20,22,23,26,31,33,36,39,41
<i>Argia moesta</i>	Powdered dancer	1,2,6,14,17,19,20,21,22,24,25,27,29,30,31,33,34,35,37,38,39,40,41
<i>Argia plana</i>	Springwater dancer	3,6
<i>Argia sedula</i>	Blue-ringed dancer	1,19,23,24,27,28,31,33,34,35,36,37,38,39,40,41
<i>Argia tibialis</i>	Blue-tipped dancer	1,13,17,19,23,24,25,27,30,31,33,34,37,38,39
<i>Argia translata</i>	Dusky dancer	21,25,31,37,38,39
<i>Chromagrion conditum</i>	Openwing damsel	1
<i>Enallagma</i>	Bluet	1,2,3,7,9,10,12,13,23,26,28,31,32
<i>Enallagma basidens</i>	Double-striped bluet	20,22,24,25,33,34,40
<i>Enallagma civile</i>	Familiar bluet	6
<i>Enallagma divagans</i>	Turquoise bluet	1,21
<i>Enallagma exsulans</i>	Stream bluet	1,2,5,6,17,18,19,20,21,22,24,25,27,29,30,31,33,34,35,36,37,38,39,40,41
<i>Enallagma geminatum</i>	Skimming bluet	25,36
<i>Enallagma signatum</i>	Orange bluet	27,30
<i>Ischnura</i>	Forktail	28,32,35
<i>Ischnura hastata</i>	Citrine forktail	6,18
<i>Ischnura posita</i>	Fragile forktail	1,5,6,15,18,20,22,24,25,27,30,31,33,34,36,37,38,40,41
<i>Ischnura verticalis</i>	Eastern forktail	1,33,36,38

Aquatic Macroinvertebrates Collected from Thirty-two Missouri Ozark Streams

Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
Aeshnidae	Darner dragonflies	
<i>Anax junius</i>	Green darner	3,18,34,40,41
<i>Basiaeschna janata</i>	Springtime darner	8,13,22,35,36,37
<i>Boyeria vinosa</i>	Fawn darner	2,5,9,10,12,15,16,20,21,26,28,29,30,31,32,33,34,35,36,38,39,40,41
Gomphidae	Clubtail dragonfly	
<i>Arigomphus villosipes</i>	Unicorn clubtail	3
<i>Dromogomphus spinosus</i>	Black-shouldered spinyleg	3,6,13,15,17,18,20,24,28,29,31,33,34,35,36,38,40,41
<i>Erpetogomphus designatus</i>	Eastern ringtail	34,38,35
<i>Gomphus</i>	Clubtail	38
<i>Gomphus exilis</i>	Lancet clubtail	22,24,25,26,28
<i>Gomphus graslinellus</i>	Pronghorn clubtail	1,3,5,6,7,10,16,17,18,20,32
<i>Gomphus lineatifrons</i>	Splendid clubtail	30,34
<i>Gomphus ozarkensis</i>	Ozark clubtail	1,7,12,17,20,24,25,28,30,31,34,35,37
<i>Gomphus quadricolor</i>	Rapids clubtail	20
<i>Gomphus vastus</i>	Cobra clubtail	23,35
<i>Hagenius brevistylus</i>	Dragonhunter	5,8,12,21,25,27,29,30,31,32,33,34,36,37,38,40,41
<i>Ophiogomphus westfalli</i>	Westfall's snaketail dragonfly	2,7,8,10,12,13,14,16,20,22,23,30,32,33,35,37
<i>Progomphus obscurus</i>	Common sanddragon	24,26,27,28,29,30,31,37,38,40
<i>Stylogomphus sigmastylus</i>	Western least clubtail	1,6,7,8,9,10,11,12,13,14,15,16,18,19,20,21,22,23,25,26,29,30,32
<i>Stylurus spiniceps</i>	Arrow clubtail	40
Macromiidae	River cruisers	
<i>Didymops transversa</i>	Stream cruiser	30
<i>Macromia</i>	River cruiser	8,10,23,28,29,31,38
<i>Macromia pacifica</i>	Gilded river cruiser	27
Corduliidae	Emeralds	
<i>Epitheca</i>	Emerald	21
<i>Epitheca cynosura</i>	Common baskettail	24,25,27
<i>Epitheca princeps</i>	Prince baskettail	1,5,24,25,27,33,34,35,38,39
<i>Neurocordulia xanthosoma</i>	Orange shadowdragon	19
Libellulidae	Skimmer dragonflies	
<i>Celithemis fasciata</i>	Banded pennant	39
<i>Dythemis velox</i>	Swift setwing	1
<i>Erythemis simplicicollis</i>	Eastern pondhawk	1,5,15,17,18,19,20,24,25,27,30,33,34,35,36,37,38,39,40
<i>Libellula cyanea</i>	Eastern spangled skimmer	5,7,22,27,28,36
<i>Libellula incesta</i>	Slaty skimmer	1,20,28,33,34,37,38
<i>Libellula luctuosa</i>	Widow skimmer	1,9,20,24,25,27,30,31,33,34,35,36,37,38,39,40,41
<i>Libellula pulchella</i>	Twelve-spotted skimmer	22
<i>Libellula vibrans</i>	Great blue skimmer	34
<i>Pachydiplax longipennis</i>	Blue dasher	1,5,17,27,28,31,34,36,41
<i>Perithemis tenera</i>	Eastern amberwing	5,18,27,28,33,39
<i>Pantala hymenaea</i>	Spot-winged glider	7
<i>Plathemis lydia</i>	Common whitetail	4,5,7,17,18,25,29,31,34,36,38,40
<i>Sympetrum</i>	Meadowhawk	39
<i>Sympetrum vicinum</i>	Yellow-legged meadowhawk	33
<i>Tramea lacerata</i>	Black saddlebags	23,25,27
Order Plecoptera	Stoneflies	
Pteronarcyidae	Pteronarcyid stoneflies	
<i>Pteronarcys</i>	Pteronarcyid stonefly	12,30,31,33,36,37
<i>Pteronarcys pictetii</i> ?	Pteronarcyid stonefly	20
Leuctridae	Winter stoneflies	
<i>Zealeuctra</i>	Winter stonefly	8,9,11,20,21,26,29
Nemouridae	Nemourid stoneflies	
<i>Amphinemura delosa</i> ?	Nemourid stonefly	2,3,5
Perlidae	Perlid stoneflies	
<i>Acroneuria</i>	Perlid stonefly	6,33,34
<i>Acroneuria evoluta</i>	Perlid stonefly	1,9
<i>Agnetina capitata</i>	Perlid stonefly	9,11
<i>Agnetina flavescens</i>	Perlid stonefly	9,15,24,27,28

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Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
<i>Neoperla catharae</i>	Perlid stonefly	7,19,39
<i>Neoperla falayah</i>	Perlid stonefly	10,15,22,38
<i>Neoperla harpi</i>	Perlid stonefly	8,15,18,19,20,22,24,25,28
<i>Neoperla osage</i>	Perlid stonefly	15,25,28,34
<i>Perlesta browni</i>	Perlid stonefly	1,2,8,12,15
<i>Perlesta cinctipes</i>	Perlid stonefly	5,6,8,9,17
<i>Perlesta decipiens</i>	Perlid stonefly	3,7,9,10,13,14,18,19,23,27,28
<i>Perlesta shubuta</i>	Perlid stonefly	1,2,7,9,10,12,15,18,19,20,22,26,28,29, 30,31,37
Perlodidae	Perlodid stoneflies	
<i>Isoperla couchatta</i>	Perlodid stonefly	2
<i>Isoperla dicala</i>	Perlodid stonefly	11
Order Hemiptera	True bugs	
Belostomatidae	Electric light bugs	
<i>Belostoma nymph</i>	Electric light bug	23,28,33,38
<i>Belostoma flumineum</i>	Electric light bug	2,17,18,20,24,30,31,32,34,36
Corixidae	Water boatmen	38
<i>Palmacorixa buenoi</i>	Water boatman	4
<i>Sigara grossolineata</i>	Water boatman	15,21
<i>Sigara mathesoni</i>	Water boatman	3,4,5,16
<i>Trichocorixa</i>	Water boatman	1,13
<i>Trichocorixa calva</i>	Water boatman	2,3,16,18,19,20,23,33,39,40
<i>Trichocorixa kanza</i>	Water boatman	7,9,31
Gelastocoridae	Toad bugs	
<i>Gelastocoris oculatus</i>	Toad bug	1,3,5,6,15,17,23,24,25,28,32,33,35,36,37
Gerridae	Water striders	
<i>Gerris nymph</i>	Water strider	5,15,25,29,40
<i>Aquarius remigis</i>	Water strider	11,16,18,23,30,36
<i>Gerris marginatus</i>	Water strider	23,24,25,27,34,39,41
<i>Gerris nebularis</i>	Water strider	34
<i>Limnporus canaliculatus</i>	Water strider	29
<i>Metrobates hesperius</i>	Water strider	23,25,28,38
<i>Neogerris hesione</i>	Water strider	8,37
<i>Rheumatobates trulliger</i>	Water strider	19,20,40
<i>Trepobates nymph</i>	Water strider	27,35,38,39
<i>Trepobates knighti</i>	Water strider	24,28,33
<i>Trepobates subnitidus</i>	Water strider	18,20,31
Hebridae	Velvet water bugs	
<i>Hebrus concinnus</i>	Velvet water bug	32
<i>Hebrus consolidus</i>	Velvet water bug	16,26,35
Hydrometridae	Water measurers	
<i>Hydrometra australis</i> (= <i>martini</i>)	Water measurer	1,3,5,15,16,20,25,26,28,29,30,32,33,34,35, 36,37
Mesoveliidae	Water treaders	
<i>Mesovelia nymph</i>	Water treader	15,29,40d
<i>Mesovelia mulsanti</i>	Water treader	1,2,6,7,8,9,19,20,22,23,24,25,27,28,30, 31,32,33,34,35,38,39,41
Naucoridae	Creeping water bugs	
<i>Pelocoris nymph</i>	Creeping water bug	35,38
<i>Pelocoris femoratus</i>	Creeping water bug	24,32
Nepidae	Water scorpions	
<i>Nepa apiculata</i>	Water scorpion	16
<i>Ranatra kirkaldyi</i>	Water scorpion	3,21,28,29,32,33,34,35,38,39
<i>Ranatra nigra</i>	Water scorpion	19,20,24,27,35
Notonectidae	Back swimmers	
<i>Notonecta irrorata</i>	Back swimmer	18
Pleidae	Pygmy backswimmers	
Pleid nymph	Pygmy backswimmer	33,41
<i>Neoplea striola</i>	Pygmy backswimmer	2,9,16,17,34,39
Saldidae	Shore bugs	
<i>Pentacora</i>	Shore bug	6
<i>Saldula pallipes</i>	Shore bug	21

Aquatic Macroinvertebrates Collected from Thirty-two Missouri Ozark Streams

Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
Veliidae	Small water striders	
<i>Microvelia</i> nymphs	Small water strider	2,14,23,37,41
<i>Microvelia americana</i>	Small water strider	4,5,8,11,15,16,18,19,20,21,22,25,26,27,29,31, 33,34,36,38
<i>Microvelia hinei</i>	Small water strider	24,28,33
<i>Microvelia paludicola</i>	Small water strider	13
<i>Rhagovelia</i> sp.	Broad-shouldered water strider	1,2,3,6,9,10,12
<i>Rhagovelia knighti</i>	Broad-shouldered water strider	15,18,19,21,22,25,26,27,28,29,31,32,33,34, 36,37,40,41
<i>Steinovelina stagnalis</i>	Small water strider	32,34,35,37
Order Megaloptera	Alderflies, dobsonflies, fishflies	
Corydalidae	Dobsonflies, fishflies	
<i>Chauliodes pectinicornis</i>	Fishfly	21,31
<i>Corydalus cornutus</i>	Hellgrammite	1,3,7,8,10,12,13,15,19,20,21,22,23,24,25,28,29,30, 31,32,33,37,38,39,41
<i>Nigronia serricornis</i>	Fishfly	8,11,22,26,30
Sialidae	Alderflies	
<i>Sialis</i>	Alderfly	5,6,19,23,24,28,37,38,39
Order Trichoptera	Caddisflies	
Glossosomatidae pupa	Glossosomatid caddisflies	32
Helicopsychidae	Helicopsychid caddisflies	
<i>Helicopsyche</i> pupa	Helicopsychid caddisfly	26,30
<i>Helicopsyche borealis</i> ?	Helicopsychid caddisfly	24
<i>Helicopsyche limnella</i>	Helicopsychid caddisfly	3,5,10,16,36
Hydropsychidae	Hydropsychid caddisflies	
<i>Ceratopsyche</i>	Hydropsychid caddisfly	12,13,20,21,22,26,29,30,36,37,41
<i>Ceratopsyche slossonae</i>	Hydropsychid caddisfly	12
<i>Cheumatopsyche</i>	Hyropsychid caddisfly	9,13,14,16,18,19,23,25,26,27,28,29,30,33,37,38,39,41
<i>Hydropsyche</i>	Hydropsychid caddisfly	1,5,8,9,10,16,17,18,19
<i>Hydropsyche scalaris</i>	Hydropsychid caddisfly	24
<i>Potamyia flava</i>	Hydropsychid caddisfly	1,3,5,6,7,8,9,11,12,13,15,17,18,21,22,24,27,31,34,36, 37,38,39,41
Hydroptilidae	Hydroptilid caddisflies	
<i>Hydroptila</i>	Hydroptilid caddisfly	28
<i>Ochrotrichia</i>	Hydroptilid caddisfly	38
<i>Orthotrichia</i>	Hydroptilid caddisfly	40
<i>Paucicalcaria ozarkensis</i> ?	Hydroptilid caddisfly	9
<i>Stactobiella</i> ?	Hydroptilid caddisfly	40
Leptoceridae	Leptocerid caddisflies	
<i>Nectopsyche</i>	Leptocerid caddisfly	41
<i>Oecetis</i>	Leptocerid caddisfly	23
<i>Oecetis avara</i> ?	Letocerid caddisfly	40
<i>Nectopsyche</i>	Leptocerid caddisfly	12,20,24,28,30,40
<i>Triaenodes</i>	Leptocerid caddisfly	29,30,33,36
Limnephilidae	Limnephilid caddisflies	
<i>Platycentropus radiatus</i>	Limnephilid caddisfly	4
<i>Pycnopsyche</i>	Limnephilid caddisfly	4,18
<i>Pseudostenophylax</i>	Limnephilid caddisfly	7
Odontoceridae	Odontocerid caddisflies	
<i>Marilia flexuosa</i>	Odontocerid caddisfly	9,22,26
Philopotamidae	Philopotamid caddisflies	
<i>Chimarra</i>	Philopotamid caddisfly	1,8,10,13,16,22,24,26,27,32,33,38,39,41
Polycentropodidae	Polycentropodid caddisflies	
<i>Polycentropus</i>	Polycentropodid caddisfly	23,31
Psychomyiidae	Psychomyiid caddisflies	
<i>Psychomyia flavida</i>	Psychomyiid caddisfly	20,33
Uenoidae	Uenoid caddisflies	
<i>Neophylax concinnus</i>	Uenoid caddisfly	18
Order Lepidoptera	Butterflies, moths	
Pyalidae	Pyalid moths	
<i>Crambus</i>	Pyalid moth	33
<i>Parapoynx</i>	Pyalid moth	9,10,41

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Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
Order Coleoptera	Beetles	
Curculionidae	Weevils	
<i>Lixus</i>	Weevil	32,35,36,40,41
<i>Rhinoncus</i>	Weevil	35
Dryopidae	Dryopid riffle beetles	8
<i>Helichus fastigiatus</i>	Dryopid riffle beetle	16,27,38
<i>Helichus lithophilus</i>	Dryopid riffle beetle	7,10,12,13,22,23,24,25,27,28,30,31,32, 33,34,35,36, 37,38,40,41
Dytiscidae	Predaceous diving beetles	
<i>Agabus</i>	Predaceous diving beetle	5
<i>Agabus ambiguus?</i>	Predaceous diving beetle	3
<i>Agabus obliterated</i>	Predaceous diving beetle	4
<i>Agabus semivittatus</i>	Predaceous diving beetle	23
<i>Agabus subfuscatus</i>	Predaceous diving beetle	4
<i>Bidessonotus inconspicuus</i>	Predaceous diving beetle	4
<i>Celina hubbelli</i>	Predaceous diving beetle	3,6
<i>Coptotomus venustus</i>	Predaceous diving beetle	20,21,27,28,32,34
<i>Cybister fimbriolatus</i>	Predaceous diving beetle	24,28
<i>Graphoderus</i> larva	Predaceous diving beetle	27
<i>Hydroporus</i> sp. 1	Predaceous diving beetle	2,3,5,6,9,12,13,14,15,16,17,18,19,21,23,27, 28,32,33,34,36,38,39,40,41
<i>Hydroporus</i> sp. 2	Predaceous diving beetle	3,5,23,32,39,40
<i>Hydroporus</i> sp. 3	Predaceous diving beetle	40
<i>Hydrovatus pustulatus</i>	Predaceous diving beetle	3
<i>Ilybius biguttulus</i>	Predaceous diving beetle	4
<i>Ilybius incarinatus</i>	Predaceous diving beetle	13,21
<i>Laccophilus</i> larvae	Predaceous diving beetle	24
<i>Laccophilus fasciatus rufus</i>	Predaceous diving beetle	20,40
<i>Laccophilus maculosus maculosus</i>	Predaceous diving beetle	23,31,38,39,40
<i>Laccophilus proximus proximus</i>	Predaceous diving beetle	3,4,18,19
<i>Thermonectus basillaris</i>	Predaceous diving beetle	3
<i>Thermonectus ornaticollis</i>	Predaceous diving beetle	3
<i>Uvarus</i>	Predaceous diving beetle	5
<i>Ancyronyx variegata</i>	Elmid riffle beetle	14,31
<i>Dubiraphia minima</i>	Elmid riffle beetle	2,7,8,10,12,13,18,19,20,21,22,24,25,26,27, 28,29,30, 31,33,37,38,40,41
<i>Dubiraphia vittata</i>	Elmid riffle beetle	14,16,36
Elmidae	Elmid riffle beetles	
<i>Macronychus glabratus</i>	Elmid riffle beetle	9,10,19,23,27,28,29,31,33,37,38,40
<i>Microcylloepus?</i> larva	Elmid riffle beetle	13
<i>Microcylloepus pusillus</i>	Elmid riffle beetle	24,25,28,29
<i>Optioservus</i> larva	Elmid riffle beetle	33,36,37
<i>Optioservus sandersoni</i>	Elmid riffle beetle	2,12,13,15,16,17,18,20,21,22,24,25,26, 29,30,31,36,38
<i>Stenelmis</i> larva	Elmid riffle beetle	5,14,20,23,24,25,29,31,32,33,34,36,37,39,41
<i>Stenelmis beameri</i>	Elmid riffle beetle	7,10,15,18,19,22,32,34
<i>Stenelmis crenata</i>	Elmid riffle beetle	1,9,18,19,27,28,33,38,41
<i>Stenelmis exigua</i>	Elmid riffle beetle	24,25,28,38,39
<i>Stenelmis exilis</i>	Elmid riffle beetle	6,17
<i>Stenelmis lateralis</i>	Elmid riffle beetle	10,15,21,26,32,33
<i>Stenelmis mera</i>	Elmid riffle beetle	8,22,26,33
<i>Stenelmis sandersoni</i>	Elmid riffle beetle	28
<i>Stenelmis sexlineata</i>	Elmid riffle beetle	39
Gyrinidae	Whirligig beetles	
<i>Dineutus</i> larva	Whirligig beetle	21,23,25,38,39,41
<i>Dineutus assimilis</i>	Whirligig beetle	18
<i>Dineutus carolinus</i>	Whirligig beetle	20
<i>Dineutus ciliatus</i>	Whirligig beetle	1
<i>Dineutus discolor</i>	Whirligig beetle	1,13,20,23,25,26,29,31,38,39,40,41

Aquatic Macroinvertebrates Collected from Thirty-two Missouri Ozark Streams

Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
<i>Gyretes sinuatus</i>	Whirligig beetle	38,40
<i>Gyrinus</i> larva	Whirligig beetle	1,29,40
<i>Gyrinus analis</i>	Whirligig beetle	3,8,13,20,25
<i>Gyrinus gibber</i>	Whirligig beetle	18
<i>Gyrinus pachysoma</i>	Whirligig beetle	10
<i>Gyrinus woodruffi</i>	Whirligig beetle	20,30,32,33,35
Haliplidae	Crawling water beetles	
<i>Haliplus confluentus</i> *	Crawling water beetle	21
<i>Haliplus deceptus</i> *	Crawling water beetle	2,21
<i>Haliplus fasciatus</i>	Crawling water beetle	20
<i>Haliplus triopsis</i>	Crawling water beetle	2,24,29,30,34
<i>Peltodytes dispersus</i> ?	Crawling water beetle	24
<i>Peltodytes dunavani</i>	Crawling water beetle	1
<i>Peltodytes</i>		
<i>duodecempunctatus</i>	Crawling water beetle	3,5,7,10,19,24,32,33,34,35,38,39,40,41
<i>Peltodytes festivus</i>	Crawling water beetle	38,39
<i>Peltodytes lengi</i>	Crawling water beetle	9,23,24,27,32
<i>Peltodytes litoralis</i>	Crawling water beetle	1,2,3,19,23,30,32,34,38,40
<i>Peltodytes muticus</i>	Crawling water beetle	4,19,33,38
<i>Peltodytes sexmaculatus</i>	Crawling water beetle	2,3,10,20,23,24,27,30,33,35
Helophoridae	Water scavenger beetles	
<i>Helophorus linearis</i>	Water scavenger beetle	3,5
Hydrochidae	Water scavenger beetles	
<i>Hydrochus rufipes</i>	Water scavenger beetle	3,27,28,30,32,33,34
Hydrophilidae	Water scavenger beetles	
<i>Anacaena limbata</i>	Water scavenger beetle	16
<i>Anacaena suturalis</i>	Water scavenger beetle	3,27,28
<i>Berosus</i> larva	Water scavenger beetle	33
<i>Berosus fraternus</i>	Water scavenger beetle	34
<i>Berosus infuscatus</i>	Water scavenger beetle	20,28,39
<i>Berosus peregrinus</i>	Water scavenger beetle	2,9,19,21,22,24,27,28,34,39,40,41
<i>Berosus striatus</i>	Water scavenger beetle	21
<i>Derallus altus</i>	Water scavenger beetle	3
<i>Enochrus blatchleyi</i>	Water scavenger beetle	28
<i>Enochrus ochraceus</i>	Water scavenger beetle	3,4,5,10,16,20,21,22,28,30,34,35
<i>Enochrus perplexus</i>	Water scavenger beetle	4
<i>Enochrus pygmaeus nebulosus</i>	Water scavenger beetle	14,17,23,25,27,28,31,32,34,39
<i>Enochrus cinctus</i>	Water scavenger beetle	18,21
<i>Enochrus consortus</i>	Water scavenger beetle	27,33
<i>Enochrus sayi</i>	Water scavenger beetle	6,19,21
<i>Helochaeres maculicollis</i>	Water scavenger beetle	16,20,31,33
<i>Hydrobiomorpha casta</i>	Water scavenger beetle	23
<i>Laccobius</i>	Water scavenger beetle	14,25
<i>Laccobius minutoides</i>	Water scavenger beetle	24,30,36
<i>Laccobius reflexipennis</i>	Water scavenger beetle	21,22,32
<i>Paracymus</i>	Water scavenger beetle	3,20,22,27,32
<i>Paracymus confluens</i>	Water scavenger beetle	21
<i>Paracymus subcupreus</i>	Water scavenger beetle	20,25
<i>Sperchopsis tessellatus</i>	Water scavenger beetle	23,24,26,37
<i>Tropisternus</i> larva	Water scavenger beetle	1,8,13,14,15,19,20,23,24,25,28,29,30,31,32,33,34,35,38,39,40,41
<i>Tropisternus blatchleyi modestus</i>	Water scavenger beetle	19
<i>Tropisternus collaris mexicanus</i>	Water scavenger beetle	18,23
<i>Tropisternus c. mexicanus x</i>		
<i>T. collaris striolatus</i>	Water scavenger beetle	18
<i>Tropisternus c. striolatus</i>	Water scavenger beetle	20,23
<i>Tropisternus glaber</i>	Water scavenger beetle	3,5,19,20,22,27,32,34,38,39,41

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Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
<i>Tropisternus lateralis nimbatus</i>	Water scavenger beetle	3,20,23
<i>Tropisternus natator</i>	Water scavenger beetle	1,2,3,10,21,23,24,28,30,31,36,40
Lutrochidae	Marsh-loving beetles	
<i>Lutrochus laticeps</i>	Marsh-loving beetle	6,7,8,9,10,12,13,20,21,24,31
Noteridae	Burrowing water beetles	
<i>Hydrocanthus atripennis</i>	Burrowing water beetle	2,3,24
<i>Hydrocanthus oblongus</i>	Burrowing water beetle	3
Psephenidae	Water pennies	
<i>Ectopria nervosa</i>	Water penny	15
<i>Psephenus herricki</i>	Water penny	1,6,7,8,9,10,12,13,14,15,17,22,30,31,32,33,34,37
Scirtidae	Marsh beetles	
<i>Cyphon</i>	Marsh beetle	11,18
<i>Scirtes</i>	Marsh beetle	1,3,5,16,20,21,22,24,30,31,32,33,34,35,36, 37,38
Athericidae	Snipe flies	
<i>Atherix variegata</i>	Snipe fly	15,20,21,22,24,25,26,28,29,37
Ceratopogonidae	No-see-ums	
Ceratopogonid pupa	No-see-um	32
<i>Atrichopogon</i>	No-see-um	6
<i>Bezzia</i> or <i>Palpomyia</i>	No-see-um	2,3,21,22,24,25,27,28,29,30,34,35,36,38,39, 40,41
<i>Culicoides</i>	No-see-um	40
<i>Probezzia</i>	No-see-um	1,6,8,9,10,11,25,31,36
<i>Sphaeromyia longipennis</i>	No-see-um	18,20,35
<i>Stilobezzia</i>	No-see-um	24
Chironomidae	Bloodworms	
Tanypodinae (not T. Gp.)	Bloodworm	21
<i>Clinotanypus</i>	Bloodworm	4,6,8,24,30,31,38,39,40
<i>Procladius</i> (<i>Holotanypus</i>)	Bloodworm	4,6,15,20,38,39,40
<i>Procladius bellus</i>	Bloodworm	38
<i>Ablabesmyia annulata</i>	Bloodworm	40
<i>Ablabesmyia mallochi</i>	Bloodworm	10,13,27,29,31,41
<i>Ablabesmyia rhamphe</i> gp.	Bloodworm	6,38
<i>Conchapelopia</i>	Bloodworm	3
<i>Pentaneura</i> sp. A	Bloodworm	21
<i>Thienemannimyia</i> gp.	Bloodworm	1,6,7,12,14,15,19,21,26,29,36,37
<i>Potheadia gaedia</i> gp.	Bloodworm	21
<i>Sympothastia</i>	Bloodworm	21
Orthoclaadiinae	Bloodworm	8,9,20,24,33
<i>Brillia</i> cf <i>flavifrons</i>	Bloodworm	5,11
<i>Cardiocladius</i>	Bloodworm	13,26
<i>Cardiocladius</i> cf <i>obscurus</i>	Bloodworm	37
<i>Cricotopus</i> / <i>Orthoclaadius</i>	Bloodworm	15
<i>Cricotopus</i>	Bloodworm	2,3,6,11,14,39
<i>Cricotopus bicinctus</i>	Bloodworm	10,11,12,19,28,38,41
<i>Cricotopus trifascia</i>	Bloodworm	9,11
<i>Eukiefferiella</i>	Bloodworm	25
<i>Heterotrissocladius</i>	Bloodworm	4
<i>Nanocladius</i>	Bloodworm	8,25,28
<i>Nanocladius downesi</i>	Bloodworm	30,32,33
<i>Orthoclaadius</i>	Bloodworm	22
<i>Parametriocnemus</i>	Bloodworm	26,36
<i>Paraphaenocladius</i>	Bloodworm	34
<i>Psectrocladius psilopterus</i> gp	Bloodworm	26
<i>Psectrocladius</i> cf <i>simulans</i>	Bloodworm	26
<i>Rheocricotopus</i> cf <i>robacki</i>	Bloodworm	26
<i>Tvetenia</i> cf <i>vitracies</i>	Bloodworm	28
<i>Chironomus</i>	Bloodworm	1,2,9,12,13,15,19,20,21,22,26,34,38
<i>Cryptochironomus</i>	Bloodworm	7,19,27,39
<i>Cryptotendipes</i>	Bloodworm	40

Aquatic Macroinvertebrates Collected from Thirty-two Missouri Ozark Streams

Table 2. Continued

Scientific Name	Common Name	Location (Table 1)
<i>Dicrotendipes</i>	Bloodworm	3,9,12,14,20,21,29,41
<i>Dicrotendipes modestus/</i> <i>neomodestus</i>	Bloodworm	6,10,11,13,15,22,26
<i>Endochironomus</i>	Bloodworm	6
<i>Kiefferulus</i>	Bloodworm	22
<i>Microtendipes pedellus</i> gp.	Bloodworm	5,6,10,11,26,36,37,38
<i>Paratanytarsus</i>	Bloodworm	11,33,38,41
<i>Phaenopsectra</i>	Bloodworm	6,31
<i>Phaenopsectra</i> or <i>Tribelos</i>	Bloodworm	11,12,13,38
<i>Paratendipes</i>	Bloodworm	4
<i>Paratendipes albimanus</i> gp.	Bloodworm	36
<i>Polypedilum</i>	Bloodworm	6,30
<i>Polypedilum aviceps</i>	Bloodworm	12,13,14
<i>Polypedilum fallax</i>	Bloodworm	10,20
<i>Polypedilum flavum</i>	Bloodworm	6,7,8,9,10,13,15,16,17,19,22,24,25,27, 28,37,38,39
<i>Polypedilum halterale</i> gp.	Bloodworm	31,38
<i>Polypedilum illinoiense</i> gp.	Bloodworm	2,3,8,9,10,11,12,13,14,15,16,18,19,20,22,24,25,27, 28,29,31,32,33,34,35,37,38, 40,41
<i>Polypedilum scalaerum</i> gp.	Bloodworm	6
<i>Stictochironomus</i>	Bloodworm	11,28
<i>Tribelos cf jucundum</i>	Bloodworm	38
<i>Cladotanytarsus</i>	Bloodworm	19
<i>Paratanytarsus</i>	Bloodworm	40
<i>Rheotanytarsus</i>	Bloodworm	19,27,28,29,39
<i>Tanytarsus</i> sp. G or L (Epler)	Bloodworm	20,38,41
Culicidae	Mosquitoes	
<i>Anopheles</i>	Mosquito	34,39
<i>Anopheles punctipennis</i>	Mosquito	16
Dixidae	Dixid midges	
<i>Dixa</i>	Dixid midge	3,4,5
<i>Dixella</i>	Dixid midge	4,29,30
Dolichopodidae	Long-legged flies	35
Muscidae	Muscid flies	
<i>Limnophora</i>	Muscid fly	6
Sciomyzidae	Marsh flies	
<i>Sepedon</i>	Marsh fly	3,4
Simuliidae	Blackflies	
<i>Cnephia</i>	Blackfly	1,3,7,9,11,12,14,15,16,17,18,19,20,21,22,24,25,26,28, 29,30,31,36,37
<i>Metacnephia</i>	Blackfly	10
<i>Simulium</i>	Blackfly	6
Stratiomyidae	Soldier flies	
<i>Stratiomys</i>	Soldier fly	14,20,23,30,31,33,35
Tabanidae	Horseflies, deerflies	
<i>Chrysops</i>	Horsefly	4,10,16
<i>Hybomitra</i>	Horsefly	1,3,12,22,24,30,34,39
Tipulidae	Crane flies	
<i>Hexatoma</i>	Crane fly	7,25,28,36,39
<i>Holorusia</i>	Crane fly	22
<i>Limnophila</i>	Crane fly	33
<i>Limonia</i>	Crane fly	26,35
<i>Pilaria</i>	Crane fly	32
<i>Rhabdomastix?</i>	Crane fly	14
<i>Tipula</i>	Crane fly	1,6,14,21,26,30,33,36

Total Taxa = 372

*New State Record.

G. Harp, P. Harp, and S. McCordTable 3. Frequency of co-occurrence of the most commonly collected aquatic macroinvertebrates with *Ophiogomphus westfalli*.

Taxon	No. of times collected	With <i>Ophiogomphus</i>	% Freq.
<i>Psephenus herricki</i>	18	11	61
<i>Perlesta shubuta</i>	17	10	59
<i>Helichus lithophilus</i>	21	12	57
<i>Polypedilum illinoiense</i> gp.	27	15	56
<i>Stylogomphus sigmastylus</i>	17	9	53
<i>Eurylophella enoensis</i>	23	12	52
<i>Stenonema mediopunctatum</i>	25	13	52
<i>Scirtes</i>	18	9	50
<i>Isonychia</i>	35	16	48
<i>Boyeria vinosa</i>	23	11	48
<i>Mesovelia mulsanti</i>	23	11	48
<i>Peltodytes duodecempunctatus</i>	15	7	47
<i>Baetis</i>	27	12	44
<i>Stenonema interpunctatum</i>	18	8	44
<i>Corydalus cornutus</i>	25	11	44
<i>Dubiraphia minima</i>	25	11	44
<i>Caenis</i>	32	13	41
<i>Enallagma</i>	32	13	41
<i>Hydrometra australis</i>	17	7	41
<i>Argia</i>	15	6	40
<i>Cnephia</i>	25	10	40