

CHIRONOMIDS OF THE NELSON ENVIRONMENTAL STUDY AREA

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The Chironomidae (Diptera) are a family of nonbiting midges whose mating swarms are commonly seen along the banks of freshwater habitats. There are currently 1051 species recognized in North America north of Mexico (Oliver et al. 1990). Chironomid larvae are abundant, in terms of species number and biomass, in most freshwater habitats while a few representatives are found in brackish water, marine water, semiaquatic habitats and terrestrial habitats. Larvae play a vital role in aquatic ecosystems through the breakdown of organic matter, recycling of nutrients, feeding on smaller invertebrates and providing a source of food for other animals (e.g., aquatic invertebrates, fish, and birds). Chironomids have also proven to be beneficial in water quality research due to their usual dominance in freshwater ecosystems and tolerance to a wide range of chemicals and pollutants.

A list of chironomids was compiled from various collections taken from the Nelson Environmental Study Area (NESA) since 1982. The original citations of species are referenced in Oliver et al. (1990) and voucher specimens have been deposited in the chironomid collection of the Kansas Biological Survey. Most specimens were collected from an ongoing project being conducted at the Aquatic Research Facility located within NESA using adult emergence traps or multiplate artificial benthic samplers. This project involves examination of the effects of agricultural pesticides on the flora and fauna of experimental ponds. Additional chironomid data were gathered from two previous projects at NESA (Dewey 1986; Huggins 1990) and random collections by various individuals using light traps to collect adults and D-nets to collect larvae for rearing.

A total of 53 genera and 123 taxa of Chironomidae have been collected from NESA during the previous eight years. Thirty-nine of these species are new records for the state of Kansas. The subfamilies Chironominae, Orthoclaadiinae and Tanypodinae were represented by three, two and five tribes, respectively.

The results of this study generally support previous biogeographic findings in that most chironomids occurring at NESA, located in the glaciated region of Kansas, are either cosmopolitan species or are species widely distributed across the eastern United States. This is consistent with predictions by Ferrington (1983), who demonstrated that six generalized distributional patterns contribute to the species richness of the chironomid fauna of Kansas. He proposed that the fauna of the eastern portion of the state, west to approximately the Flint Hills, would consist predominantly of either cosmopolitan species, or eastern species with western distributional limits in the central plains. In addition to cosmopolitan and eastern species, however, he demonstrated that species with predominantly northern and southeastern distributions extend into Kansas.

Two of the species collected at the NESA ponds, *Psectrocladius simulans* and *Constempellina* n. sp., appear to represent southern extensions of more northerly species. Two other species previously known only from the southeastern portion of the United States, *Fittkaunmyia* sp. and *Clinotanypus planus*, also occur at NESA, and probably reach their northern and western limits in Kansas. The presence of species with more northern and southern distributions thus adds additional support to the existing hypothesis.

Two species occurring at NESA, *Psectrocladius spinifer* and *Larsia lyra*, have been reported previously only from California (Oliver et al. 1990). If these species are considered to

have a western or southwestern distributional pattern, as the literature records suggest, then their presence at NESAs is of particular interest, since other species characteristic of this type of distributional pattern extend only into the high plains ecophysiographic region of western Kansas. Their presence in northeastern Kansas may indicate that the high plains boundary is not a strong barrier for taxa with western or southwestern distributions.

The accompanying list is presented in alphabetical order (subfamily, tribe, and species) and is not intended to suggest phylogenetic relationships. An asterisk (*) following a species indicates a new state record for Kansas. The collection method is given with ABS = artificial benthic sampler; ET = emergence trap; HP = hand picked; and LT = light trap. The collection at NESAs is given as EX = experimental pond; FP = farm pond; and GA = general area at NESAs, including the reservoir pond and experimental ponds. The life stage for each species record is indicated with A = adult; L = larvae; P = pupae; and R = reared association (larvae, pupae, and adult).

Literature Cited

- Dewey, S. L. 1986. Effects of the herbicide atrazine on aquatic insect community structure and emergence. *Ecology* 67(1): 148-162.
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- Huggins, D. G. 1990. Ecotoxic effects of atrazine on aquatic macroinvertebrates and its impact on ecosystem structure. Doctoral Dissertation, University of Kansas. 378 pp.
- Oliver, D. R., M. E. Dillon and P. S. Cranston. 1990. Catalog of Nearctic Chironomidae. Agriculture Canada Publ. 1857/B. 89 pp.

CHIRONOMIDAE OF THE NELSON ENVIRONMENTAL STUDY AREA

Subfamily/Tribe/Species	Collection Method	Collection Site	Life Stage
Chironominae			
Chironomini			
<i>Apedilum elachistus</i> *	ET	EX	A
<i>Axarus festivus</i>	ET	EX	A
<i>Chironomus</i> (<i>Chironomus</i>) sp.	ET	EX	A
<i>Chironomus</i> (<i>Chironomus</i>) decorus	ET,HP	EX,FP	A,R
<i>Chironomus</i> (<i>Lobochironomus</i>) n. sp.	HP	FP	R
<i>Chironomus</i> (<i>Lobochironomus</i>) longipes *	ET	EX	A
<i>Cladopelma collater</i>	ET,HP,LT	EX,FP,GA	A,R
<i>Cladopelma edwardsi</i>	ET	EX	A
<i>Cladopelma viridula</i>	LT	GA	A
<i>Cryptochironomus blarina</i> *	LT	GA	A
<i>Cryptochironomus digitatus</i>	LT	GA	A
<i>Cryptochironomus fulvus</i>	LT	GA	A
<i>Cryptochironomus ponderosus</i> *	ET	EX	A
<i>Cryptotendipes darbyi</i> *	ET,HP	EX	P,A
<i>Cryptotendipes emorsus</i>	ET,LT	EX,GA	A
<i>Demeijerea brachialis</i> *	HP	FP	R
<i>Dicrotendipes lucifer</i>	ET	EX	A
<i>Dicrotendipes modestus</i>	ET	EX	A
<i>Dicrotendipes neomodestus</i>	ABS,ET	EX	L,A
<i>Dicrotendipes nervosus</i>	ET	EX	A
<i>Dicrotendipes simpsoni</i>	ABS	EX	L
<i>Dicrotendipes tritomus</i> *	HP	FP	R
<i>Einfeldia chelonia</i> *	LT	GA	A
<i>Endochironomus nigricans</i>	ABS,ET,LT	EX,GA	L,A
<i>Endochironomus subtendens</i> *	ET,LT	EX,GA	A
<i>Glyptotendipes lobiferus</i> *	ET	EX	A
<i>Glyptotendipes paripes</i> *	ET	EX	A
<i>Goeldichironomus holoprasinus</i>	ABS	EX	L
<i>Harnischia incidata</i>	ABS,ET	EX	L,A
<i>Kiefferulus</i> (<i>Kiefferulus</i>) sp. 1 nr. dux	HP,LT	FP,GA	A,R
<i>Kiefferulus</i> (<i>Kiefferulus</i>) sp. 2 nr. dux	HP	FP	R
<i>Lauterborniella agrayloides</i> *	ET	EX	A
<i>Microchironomus nigrovittatus</i>	ABS,ET	EX	L,A
<i>Microtendipes pedellus</i>	ABS	EX	L
<i>Nilothauma</i> n. sp.	ET	EX	A
<i>Parachironomus</i> n. sp.	ET	EX	A
<i>Parachironomus abortivus</i>	ET	EX	A
<i>Parachironomus carinatus</i>	ET	EX	A
<i>Parachironomus chaetaolus</i>	ET	EX	A
<i>Parachironomus monochromus</i>	ET	EX	A
<i>Parachironomus potamogeti</i>	ET	EX	A
<i>Parachironomus tenuicaudatus</i>	ET	EX	A
<i>Parachironomus varus</i> *	ET	EX	A
<i>Paralauterborniella nigrohalterale</i> *	ET	EX	A
<i>Paratendipes albianus</i> *	ET	EX	A
<i>Phaenopsectra dyari</i> *	ET	EX	A
<i>Phaenopsectra punctipes</i> *	ABS,ET	EX	L,A
<i>Polypedilum</i> (<i>Pentapedilum</i>) <i>sordens</i> *	ET	EX	A
<i>Polypedilum</i> (<i>Polypedilum</i>) <i>angustum</i> *	HP	FP	R
<i>Polypedilum</i> (<i>Polypedilum</i>) <i>illinoense</i> *	ET	EX	A

CHIRONOMIDAE OF THE NELSON ENVIRONMENTAL STUDY AREA (cont.)

Subfamily/Tribe/Species	Collection Method	Collection Site	Life Stage
Chironominae, cont.			
Chironomini, cont.			
<i>Polypedilum (Polypedilum) ophioides</i> *	ET	EX	A
<i>Polypedilum (Polypedilum) trigonus</i> *	ET,HP	EX,FP	A,R
<i>Polypedilum (Tripodura) digitifer</i> *	ET	EX	A
<i>Polypedilum (Tripodura) c.f. floridense</i> *	ET,LT	EX,GA	A
<i>Polypedilum (Tripodura) simulans</i>	ET,HP	EX,FP	A,R
<i>Stictochironomus varius</i>	ET	EX	A
<i>Tribelos</i> sp.	ABS	EX	L
<i>Xenochironomus xenolabis</i> *	ET,HP,LT	EX,FP,GA	A,R
<i>Zavreliella marmorata</i>	ABS,ET	EX	L,A
Pseudochironomini			
<i>Pseudochironomus pseudoviridis</i>	ET,HP	EX	A,R
<i>Pseudochironomus rex</i> *	ET	EX	A
<i>Pseudochironomus richardsoni</i>	ET,HP	EX	P,A,R
Tanytarsini			
<i>Cladotanytarsus</i> spp. (at least 2 spp.)	ET	EX	A
<i>Constempellina</i> n. sp.	ET	EX	A
<i>Micropsectra</i> sp.	ET	EX	A
<i>Nimbocera</i> sp.	ABS	EX	L
<i>Paratanytarsus dubius</i> *	ET	EX	A
<i>Paratanytarsus recens</i> *	ET	EX	A
<i>Tanytarsus mendax</i> gr. sp.	HP	EX	R
<i>Tanytarsus</i> n. sp. 1	ET	EX	A
<i>Tanytarsus</i> n. sp. 2	ET	EX	A
<i>Tanytarsus</i> n. sp. 3	ET	EX	A
<i>Tanytarsus allicis</i> *	ET	EX	A
<i>Tanytarsus dendyi</i> *	ET	EX	A
<i>Tanytarsus glabrescens</i> *	ET	EX	A
<i>Tanytarsus neoflavellus</i> *	ET	EX	A
Orthoclaadiinae			
"Corynoneurini"			
<i>Corynoneura</i> n. sp. 1	ET	EX	A
<i>Corynoneura</i> n. sp. 2	ET	EX	A
<i>Corynoneura</i> cf. <i>taris</i>	ABS	EX	L
<i>Thienemanniella</i> sp.	ABS	EX	L
"Orthoclaadiini"			
<i>Cricotopus (Cricotopus)</i> n. sp. 1	ET	EX	A
<i>Cricotopus (Cricotopus)</i> n. sp. 2	ET	EX	A
<i>Cricotopus (Cricotopus) bicinctus</i> gr.	ET	EX	A
<i>Cricotopus (Isocladius) sylvestris</i>	ET	EX	A
<i>Cricotopus (Isocladius) tricinctus</i> *	ET	EX	A
<i>Hydrobaenus</i> spp. (at least 2 spp.)	ABS,ET	EX	L,A
<i>Nanocladius (Nanocladius) alternantherae</i> *	ET	EX	A
<i>Nanocladius (Nanocladius) mallochi</i>	ET	EX	A
<i>Orthoclaadius</i> spp. (at least 2 spp.)	ET	EX	A
<i>Parakiefferiella coronata</i>	ABS,ET	EX	L,A
<i>Psectrocladius spinifer</i> *	ET	EX	A
<i>Psectrocladius (Psectrocladius) simulans</i> *	ET	EX	A
<i>Psectrocladius (Psectrocladius) vernalis</i> *	ET	EX	A

CHIRONOMIDAE OF THE NELSON ENVIRONMENTAL STUDY AREA (cont.)

Subfamily/Tribe/Species	Collection Method	Collection Site	Life Stage
Tanypodinae			
Coelotanypodini			
<i>Clinotanypus (Clinotanypus) aureus</i>	HP	FP	R
<i>Clinotanypus (Clinotanypus) pinguis</i>	ET,HP,LT	EX,FP,GA	A,R
<i>Clinotanypus (Clinotanypus) planus</i> *	HP	FP	R
<i>Coelotanypus concinnus</i>	LT	GA	A
<i>Coelotanypus scapularis</i>	HP	FP	R
Macropelopiini			
<i>Fittkaumya</i> sp.	ABS	EX	L
<i>Psectrotanypus dyari</i>	HP	FP	R
Pentaneurini			
<i>Ablabesmyia (Ablabesmyia) mallochii</i>	ABS,ET	EX	L,A
<i>Ablabesmyia (Ablabesmyia) monilis</i>	ABS	EX	L
<i>Ablabesmyia (Ablabesmyia) parajanta</i>	ABS	EX	L
<i>Ablabesmyia (Asayia) annulata</i>	ABS	EX	L
<i>Ablabesmyia (Karelia) illinoensis</i>	LT	GA	A
<i>Ablabesmyia (Karelia) peleensis</i>	ABS,HP,LT	EX,FP,GA	L,A,R
<i>Labrundinia neopilosella</i>	ABS,ET	EX	L,A
<i>Labrundinia pilosella</i>	ET,LT	EX,GA	A
<i>Labrundinia</i> spp. (at least 2 spp.)	HP	GA	P
<i>Larsia decolorata</i>	ET,HP	EX,FP	A,R
<i>Larsia lyra</i> *	ET	EX	A
<i>Paramerina smithae</i>	ABS,ET,LT	EX,GA	L,A
<i>Telopelopia okobojii</i>	ET,LT	EX,GA	A
Procladiini			
<i>Procladius (Holotanypus) sublettei</i>	ABS,ET,HP	EX,FP	L,P,A,R
<i>Procladius (Psilotanypus) bellus</i>	ABS,ET,LT	EX,GA	L,A
Tanypodini			
<i>Tanypus (Apelopia) neopunctipennis</i>	HP	FP	R
<i>Tanypus (Tanypus) concavus</i>	ET	EX	A
<i>Tanypus (Tanypus) punctipennis</i>	ET,HP	EX,FP	A,R
<i>Tanypus (Tanypus) stellatus</i>	ABS,LT	EX,GA	L,A