

SELECTED AQUATIC INSECTS OF THE KANSAS ECOLOGICAL RESERVES

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Kansas, in general does not have a great variety of aquatic insects in comparison to other states, essentially due to a lack of a diversity of suitable aquatic habitats. The fauna can best be described as being primarily composed of eastern North American species, many of which are at the western limit of their continental range. Exceptions to this generalization are transcontinental species and a few species endemic to the Great Plains' states. The Kansas Ecological Reserves (KER) is within the most species rich portion of Kansas (eastern one-third of the state) which is concurrent with the bulk of the states' available aquatic habitat.

Natural aquatic habitat on KER principally consists of intermittent and ephemeral streams. Seeps or wet areas also can be found but typically only contain surface water for short periods during most annual cycles. The extensive wooded areas of KER provide an additional aquatic habitat, holes in trees that accumulate and hold water long enough for adapted species to utilize. There are also a number of constructed ponds, with the largest concentration on the Nelson Environmental Study Area (NESA), and considerable information is available on species associated with these lentic habitats.

Below is a list of species for five Orders of aquatic insects that occur at KER. The Kansas Biological Survey (KBS) aquatic invertebrate collection was used to construct the list except for one species, *Callibaetis centralis*, which was taken from a published account (Peters 1959) and for which the species type locality is the Fitch Natural History Reservation (FNHR). Specimens in the KBS collection were obtained between 1971 and 1984 and species listed were taken from either the FNHR or NESA.

Only species in five Orders were included because the extensive KBS collection is not yet computer automated to a point that allows site specific retrieval of information making it prohibitively time consuming to extract accounts for all orders. The preponderance of lentic species on the list is a reflection of study efforts on ponds at NESA and should not be considered as a true representation of all the aquatic insects most likely occurring at KER.

Future efforts directed at aquatic habitats other than ponds should give a more complete description of the ecological diversity of KER. Even though permanent flowing water is not prevalent at KER, the number of insect species in intermittent and ephemeral streams can be diverse and often exceeds that of small impoundments. For example, an ephemeral stream on the east edge of FNHR contains a stonefly *Amphinemura varshava* thus far not found in an intermittent, westward flowing stream near the center of FNHR. Conversely, the westward flowing stream contains a dragonfly *Cordulegater obliqua* not found in the ephemeral stream on east. The two streams are similar in most respects except for permanency of water. The stonefly is a spring emerging (March) species and is not dependent on permanent water. It has a short life keyed to the late fall through mid-spring months when ephemeral streams usually contain water or a least the stream bed is saturated. During the balance of the year when the stream is typically dry the next generation of individuals rests in the egg stage, waiting for a period of sufficient moisture and cool temperatures to hatch. In stark contrast, the aquatic larvae of the dragonfly requires 2-4 years to reach maturity. Not being able to survive without some form of permanent water, an ephemeral stream is not a suitable habitat for the species.

The 45 species listed below combined with other occurrence records for aquatic insects at KER only constitutes a fraction of the actual number of species that likely can be found inhabiting KER. It would not be surprising to find the fauna to be composed of as many as

- 1,000 species of aquatic insects. Additionally, wind carried adults of riverine aquatic insects from the Kansas River (approx. 4.8 km, 3 mi., south of FNHR) should be expected since sporadic accounts have already been noted. However, appropriate habitat does not exist conducive to their colonization and those species have been intentionally left off of this species list.

All records are from either NESAs or FNHR. Ecological information concerning the genera can be found in Merritt and Cummins (1984).

Literature Cited

- Peters, W.L. 1959. A new species of *Callibaetis* from Kansas (Ephemeroptera: Baetidae). J. Kansas Entomol. Soc. 32(4): 173-175.
- Merritt, R.W. and K.W. Cummins. 1984. An Introduction to the Aquatic Insects of North America (second ed). Kendall/Hunt Publ. Co. 722 pp.

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Order/Species	Order/Species
Ephemeroptera (Mayflies)	Zygoptera (Damselflies)
Baetidae	Calopterygidae
<i>Baetis intercalaris</i> McDunnough	<i>Calopteryx maculata</i> (Beavois)
<i>Callibaetis centralis</i> Peters	Coenagrionidae
Caenidae	<i>Argia apicalis</i> (Say)
<i>Caenis latipennis</i> Banks	<i>Enallagma aspersum</i> (Hagen)
Ephemeridae	<i>Enallagma basidens</i> Calvert
<i>Hexagenia bilineata</i> (Say)	<i>Enallagma civile</i> (Hagen)
Heptageniidae	<i>Enallagma geminatum</i> Kellicott
<i>Stenacron interpunctatum</i> (McDunnough)	<i>Enallagma signatum</i> (Hagen)
<i>Stenonema femoratum</i> (Say)	<i>Ischnura hastata</i> (Say)
Siphonuridae	<i>Ischnura verticalis</i> (Say)
<i>Siphonurus marshalli</i> Traver	Lestidae
Lepodoptera (Butterflies and Moths)	<i>Archilestes grandis</i> (Rambur)
Pyrilidae	<i>Lestes disjunctus</i> (Selys)
<i>Synclita oblitalis</i> (Walker)	<i>Lestes unguiculatus</i> Hagen
Megaloptera (Alderflies, Dobsonflies and Fishflies)	Plecoptera (Stoneflies)
Corydalidae	Nemouridae
<i>Neohermes concolor</i> (Davis)	<i>Amphinemura varshava</i> (Ricker)
Sialidae	
<i>Stalis</i> spp.	
Odonota (Dragonflies and Damselflies)	
Anisoptera (Dragonflies)	
Aeshnidae	
<i>Anax longipes</i> Hagen	
<i>Anax junius</i> Drury	
<i>Nasiaeschna pentacantha</i> (Rambur)	
Cordulegastridae	
<i>Cordulegaster obliqua</i> (Say)	
Corduliidae	
<i>Epitheca cynosura</i> (Say)	
<i>Epitheca princeps</i> Hagen	
Gomphidae	
<i>Progomphus obscurus</i> (Rambur)	
<i>Gomphus externus</i> Hagen	
<i>Gomphus graslinellus</i> Walsh	
<i>Gomphus militaris</i> Hagen	
Libellulidae	
<i>Celithemis eponina</i> (Drury)	
<i>Erythemis simplicicollis</i> (Say)	
<i>Libellula luctuosa</i> Burmeister	
<i>Libellula pulchella</i> Drury	
<i>Perithemis tenera</i> (Say)	
<i>Pachydiplax longipennis</i> (Burmeister)	
<i>Pantala flavescens</i> (Fabricius)	
<i>Pantala hymenea</i> (Say)	
<i>Plathemis lydia</i> Drury	
<i>Sympetrum corruptum</i> (Hagen)	
<i>Tramea lacerata</i> Hagen	
<i>Tramea onusta</i> Hagen	