

CAENIS MAYFLY RECORDS FOR KANSAS

by

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Members of the genus *Caenis* are distributed throughout the world, except for the Australian region and most oceanic islands, and in Kansas occur in nearly every county. They are one of the smallest mayflies found in North America. The nymphs are most often found in still water, including quiet interstitial areas along shorelines and eddies of streams and rivers. Edmunds, Jensen and Berner (1976) showed that several species of *Caenis* are capable of withstanding certain amounts of pollution; this, in conjunction with their omnivorous feeding habits, probably contribute to their widespread distribution.

Taxonomically only the adults are known with any degree of certainty. Two major works treat the North American species in depth; McDunnough (1931) and Needham, Traver and Hsu (1935), with Edmunds, Jensen and Berner (1976) giving an update of North and Central American accounts. Burks (1953) described those species found in the midwestern portions of the United States and southern Canada. The most recent list (Edmunds, Jensen & Berner, 1976) includes 13 North American species. Those species previously known to occur in Kansas are *Caenis hilaris*, *C. ridens* and *C. delicata*. Two additional species, *C. simulans* and *C. punctata*, can now be added to the Kansas fauna.

The following is a list of the species of *Caenis* occurring in Kansas and their distribution as presently known. Where a species was found in more than ten counties only the counties are listed; if the species is known from ten counties or less complete collection data is given. All specimens are housed in the collection of the State Biological Survey of Kansas unless otherwise noted. Identifications were made by the author using keys and descriptions provided in McDunnough (1931), Needham, Traver and Hsu (1935), and Burks (1953) and comparisons with representative material verified by Arwin V. Provonsha at Purdue University. It was brought to the author's attention (per. comm.: W. P. McCafferty, 1979) that the taxonomy for the genus is inadequate and subject to change upon revision.

*Caenis delicata* Traver, 1935

Atchison, Barber, Barton, Bourbon, Brown, Butler, Chase, Clark, Chautauqua, Cherokee, Crawford, Douglas, Ellsworth, Ford, Jewell, Kingman, Leavenworth, Lincoln, McPherson, Mitchell, Nemaha, Ottawa, Pottawatomie, Reno, Riley (Needham, Traver & Hsu, 1935), Scott, Sumner, Trego, Washington and Wilson counties.

This species was described by Traver (Needham, Traver & Hsu, 1935) from a specimen collected at Murray, Oklahoma. At the same time Traver made reference to two Kansas counties where specimens had been taken. *Caenis delicata* is one of the more frequently encountered species in Kansas and is often found with *C. simulans*.

*Caenia hilaris* (Say, 1839)

CLAY Co.: Milford Lake at Wakefield edge of backwater next to Clay County Park, 28 Jun 1977, S. Roth. DOUGLAS Co.: McDunnough (1931). MITCHELL Co.: Solomon River below dam at Beloit, 4 Aug 1977, S. Roth. NEOSHO Co.: Neosho River, 2.3 mi W St. Paul, K-57 Hwy, UV light, 1 Oct 1978, P. Liechti. RILEY Co.: Needham, Traver & Hsu (1935).

This species is common in the eastern areas of the United States but apparently does not extend its range west of the Great Plains. A small species, *C. hilaris*, seems to be found in streams and rivers more often than impounded waters and with reference to Kansas geophysiography the species will probably not be found in the more western counties of the state.

*Caenis punctata* McDunnough, 1931

CHAUTAUQUA Co.: old Sedan City Lake, UV light at outflow, 6 Jun 1978, S. W. Hamilton, F. C. Gilbert & G. A. Schuster.

The only previous accounts for the species are from northeastern United States and southeastern Canada. The closest recorded occurrence to Kansas is Wisconsin. This is a considerable range extension for *C. punctata*. Only three male specimens were collected, one of which is now in the collection of A. V. Provonsha, Purdue University, who also verified the species determination.

*Caenis ridens* McDunnough, 1931

DOUGLAS Co.: McDunnough (1931); Lawrence, neon light downtown, 25 Jul 1977, P. Liechti & D. Huggins. MITCHELL Co.: Solomon River below dam at Beloit, 4 Aug 1977, S. Roth.

This minute mayfly is primarily an eastern species and seems to prefer flowing to still water for development. The type locality for *Caenis ridens* is Lawrence, Kansas, and the species has not yet been collected west of Kansas.

*Caenis simulans* McDunnough, 1931

Atchison, Barber, Brown, Butler, Chase, Chautauqua, Cherokee, Cowley, Crawford, Douglas, Ellsworth, Geary, Greenwood, Harper, Jewell, Kingman, Leavenworth, Mitchell, Nemaha, Neosho, Ottawa, Pottawatomie, Republic, Stafford, Sumner, Washington and Woodson counties.

*Caenis simulans* is a moderate sized caenid that is known throughout the United States, however, this record is the first account for it in Kansas. Morphologically distinctive, *C. simulans* is common in impounded waters and in Kansas is often collected at night lights along with *C. delicata*. Although our present collections of adults are all from eastern Kansas, the overall species distribution would suggest it is probably present in western Kansas.

Nymph Records

Members of the genus *Caenis* have been found throughout the state (85 counties) and are the most frequently collected immature mayfly taken by Biological Survey personnel. Unfortunately, associations between the

nymphal and adult stages have not been made for most caenid species, therefore, the nymphs will remain unnamed until appropriate keys can be written. In the western half of the state, however, the most frequently encountered caenid will be *Caenis simulans* and/or *C. delicata*, especially if taken in or around impounded water.

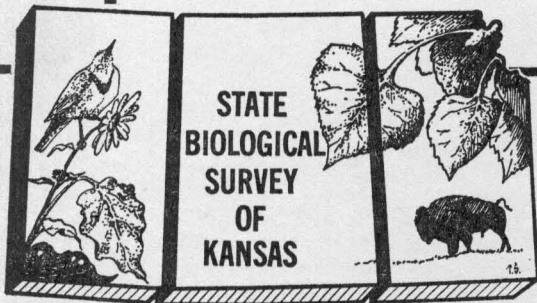
#### Possible Species

Three species of *Caenis* have been found in states bordering Kansas and can be anticipated being collected in Kansas in the future. These species are eastern in general distribution and eastern Kansas will most likely be the extent of their western range. McCafferty and Provonsha (1978) reported *C. amica* and *C. anceps* from northwestern Arkansas. These two species are also known to be in Missouri. The third species, *C. jocososa*, was reported from Oklahoma by Needham, Traver and Hsu (1935) but the author has reservations about the record. *Caenis delicata* and *C. jocososa* are very similar in morphology with the exception of *C. delicata* being slightly larger and with dots on the hind femur and tibia. The *C. delicata* specimens taken in Kansas by Biological Survey staff have shown some variability in these characters to the point that some specimens nearly fit the description of *C. jocososa*. Some specimens have been collected that closely resemble *C. jocososa* but fading of pigmentation and variation in other characters precluded exact determination in either *C. jocososa* or *C. delicata* species category and are therefore not reported in this publication. Other records for *C. jocososa* are from more eastern states except for the aforementioned Oklahoma account. Since *C. delicata* is known to occur in the same area of Oklahoma where the *C. jocososa* was collected, the author feels the specimens, if still available for viewing, should be re-examined and if possible compared with the type material to ensure the authenticity of the records.

#### LITERATURE CITED

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