

A Preliminary Checklist of the Caddisflies (Insecta: Trichoptera) of Oklahoma

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Abstract

One hundred forty-five species of caddisflies representing 15 families and 46 genera are reported from Oklahoma. Thirty-nine species are new state records. Families having the greatest species richness were Hydroptilidae (44 species), Leptoceridae (31 species), Hydropsychidae (26 species), and Polycentropodidae (13 species).

Introduction

In 1984, we initiated studies on the distribution of caddisflies (Trichoptera) in the Interior Highlands of the United States. Previously we have completed inventories for the mountainous regions of Arkansas (Bowles and Mathis 1989) and Missouri (Mathis and Bowles 1992). Herein, we present an inventory of the caddisfly species known to inhabit Oklahoma, emphasizing the fauna of mountainous regions of the state. Until now, records of caddisflies from Oklahoma have been scattered in the literature; this study serves to synthesize these and new data on the distribution of caddisflies in Oklahoma and provides a baseline for future studies of these insects in the region.

The natural environment of Oklahoma is astonishingly diverse. Although most of Oklahoma lies in the Great Plains region of the United States and has a topography dominated by prairies and plains, numerous mountainous areas also occur in the state (Gibson 1981). Principal mountain systems include the Arbuckle, Ouachita, Ozark, and Wichita formations all in the eastern one-half of the state. In the western one-half, the panhandle region is dominated by numerous buttes and mesas. Elevation in Oklahoma ranges from 1,524

m above sea level in the northwestern corner of the panhandle (Black Mesa) to 99 m above sea level in the southeastern coastal plain. Moreover, western Oklahoma is arid, receiving less than 46 cm average annual rainfall, but the southeastern region receives on average 142 cm annual rainfall (Gibson 1981). This broad physiographic variation coupled with a wide variety of aquatic habitats including large rivers, mountain streams, springs, farm ponds, reservoirs, and swamps provide a diversity of trichopteran habitats.

Anthropogenic disturbances to Oklahoma's natural environment have been numerous and sometimes catastrophic. Intensive agriculture has been practiced in the state for decades, and the effects of livestock grazing have greatly altered the plains and prairies. All major streams and rivers in the state have been altered at least to some extent. The most dramatic anthropogenic disturbance that has occurred in the state was the drought-assisted dust bowl of the 1920's and 1930's that decimated the environment of the panhandle region (Bonnifield 1979). The impact of these environmental disturbances on the regional aquatic insect fauna, including caddisflies, is not known, but is presumed to be significant.

Collection Methods

Collection records were obtained from several sources. Extensive ultraviolet (UV)-light trap collections from Latimer County were made available to us by Karl Stephan of Red Oak, Oklahoma. These collections were made from September 1987 to August 1989. We also made UV-light trap collections throughout the state. Other specimens were obtained through laboratory rearings of field-collected specimens, taken with Malaise traps, flight-intercept traps, molasses bait traps (Bowles *et al.* 1990), or by sweeping riparian vegetation. Additionally, unpublished records and unidentified material were obtained from the insect collections of the Illinois Natural History Survey (INHS), Oklahoma Museum of Natural History (OMNH), and the University of Arkansas Arthropod Museum (UAAM). The majority of species determinations were based on male specimens, but females and immatures were used in some cases.

Although the collection records presented here are predominantly for the eastern mountainous portions of the state, a sufficient number of records were accumulated for the remainder of the state to warrant inclusion in the list. Additional collecting, particularly in the western regions, should increase the number of species known from the state considerably.

Species Richness

Oklahoma has a rich caddisfly fauna with diverse biogeographical affinities. We report 145 species of caddisflies representing 15 families and 46 genera. Thirty-nine species previously were unreported from Oklahoma. Families exhibiting highest richness were the Hydroptilidae (44), Leptoceridae (31), Hydropsychidae (26), and Polycentropodidae (13). The number of species reported for Oklahoma is comparable to nearby states including Arkansas (160 species; Bowles and Mathis 1989, Frazer and Harris 1991, Frazer *et al.* 1991, Unzicker *et al.* 1970), Colorado (188 species; Herrmann *et al.* 1986, Ruitter 1990), Missouri (143 species; Mathis and Bowles 1992), Kansas (104 species; Hamilton and Schuster 1978, 1979, 1980, Hamilton *et al.* 1983, Schuster and Hamilton 1978), and Texas (91 species; Edwards 1973). Caddisfly records for New Mexico are scattered although Waltz and McCafferty (1983) published a list of 13 species for that state.

In the following list, scientific names are followed by months of collection and by numbers

corresponding to specific collection sites. The months of collection are those known for the species in Oklahoma whether documented by us or reported in the literature. In some instances, collection dates were not given in original collection data. Records taken from the literature are cited at the appropriate species listings. The literature records several species as being collected in Oklahoma, but no additional collection data was provided. Such general records are listed here only if they represent the original literature citation. Also, many older records were reported only as the nearest town in the county of collection with no specific collection location being listed. Nomenclature of higher taxa follows that of Weaver and Morse (1986). Representative specimens of most species identified during the present investigation are deposited at the Florida State Collection of Arthropods. Other specimens are deposited at the INHS, OMNH, UAAM, and Oklahoma Biological Survey.

Collection Sites

1. Adair Co., 5 mi NW Stillwell, Hwy 51, small stream
2. Adair Co., Watts
3. Adair Co., Westville
4. Adair Co., 6 mi W Westville, Hwy 62, small stream
5. Bryan Co., Blue
6. Caddo Co., Hinton
7. Carter Co., Ardmore
8. Cherokee Co., Baron Fork Creek, Hwy 51 bridge
9. Cherokee Co., Bollen Hollow
10. Cherokee Co., Caney Creek
11. Cherokee Co., Cedar Valley Campground, Illinois River
12. Cherokee Co., Tahlequah
13. Choctaw Co., Hugo
14. Comanche Co., Wichita National Forest
15. Creek Co., Keystone State Park, 16 mi WSW Tulsa, Keystone Reservoir
16. Delaware Co., no specific location
17. Delaware Co., Flint
18. Delaware Co., Flint, Flint Creek
19. Dewey Co., Taloga
20. Johnston Co., no specific location
21. Johnston Co., Pennington Creek at Mill Creek
22. Johnston Co., Reagan, Pennington Creek
23. Kiowa Co., Lugert
24. Latimer Co., 6 mi SW Red Oak

25. Latimer Co., Robber's Cave State Park, Ash Creek
26. Latimer Co., Robber's Cave State Park, Rough Canyon
27. Leflore Co., Haw Creek., Hwy 270 bridge
28. Leflore Co., Heavener, Poteau River, Hwy 270
29. Leflore Co., Muse
30. Leflore Co., Ouachita National Forest
31. Leflore Co., Page
32. Marshall Co., Lake Texoma
33. Mayes Co., Strang
34. McCurtain Co., no specific location
35. McCurtain Co., Broken Bow
36. McCurtain Co., Eagletown
37. McCurtain Co., 1.9 mi NNW Glover, Glover River
38. McCurtain Co., Hochatown, Mountain Fork River
39. McCurtain Co., Idabel
40. McCurtain Co., Smithville, Mountain Fork River
41. Murray Co., no specific location
42. Murray Co., Davis, Price's Falls
43. Murray Co., Washita River
44. Murray Co., Sulfur
45. Murray Co., Turner Falls State Park, Honey Creek
46. Oklahoma, no specific location
47. Ottawa Co., Six Mile Creek
48. Ottawa Co., Wyandotte
49. Paine Co., Stillwater
50. Pontotoc Co., Ada, Sheep Creek
51. Pontotoc Co., Roff
52. Pushmataha Co., no specific location
53. Pushmataha Co., Cloudy, Cloudy Creek
54. Rogers Co., Claremore
55. Texas Co., Texoma
56. Tillman Co., Grandfield
57. Wagoner Co., Wagoner
- C. campyla* Ross. April-October. 57 (Gordon 1974), 11, 18, 24
- C. gracilis* (Banks). June. 57 (Gordon 1974)
- C. lasia* Ross. April, June-July, October. 43 (Ross 1938a), 6, 22, 23, 42, 45, 51, 56
- C. minuscula* (Banks). April-June, August-September. 57 (Gordon 1974), 18, 24, 28, 36, 37, 38, 40
- C. oxa* (Ross). May, July, September. 10, 18
- C. pasella* Ross. 46 (Nimmo 1987)
- C. pettiti* (Banks). April-October. 46 (Ross 1944), 57 (Gordon 1974), 6, 10, 18, 21, 22, 24, 26, 31, 35, 42, 44, 45, 50
- C. rossi* (Gordon). April, July, October. 24
- C. smithi* Gordon. 46 (Nimmo 1987)
- C. speciosa* (Banks). 46 (Ross 1944)
- C. sordida* (Hagen). June, September. 46 (Nimmo 1987), 11, 18
- Diplectrona modesta* Banks. May, June. 46 (Ross 1944), 24, 31
- Hydropsyche alvata* Denning. July. 24
- H. arinale* Ross. April, June, August-September. 46 (Ross 1944), 22, 24, 37, 45
- H. betteni* Ross. April, June. 1, 26
- H. orris* Ross. May, July. 46 (Nimmo 1987), 21, 24
- H. reiseni* Denning. March-April, July-August. 45 (Denning 1975)
- H. rossi* Flint, Voshell and Parker. June, August. 11, 18, 24
- H. scalaris* Hagen. June, August. 46 (Ross 1944), 21, 22
- H. simulans* Ross. 46 (Ross 1944)
- Macrostemum carolina* (Banks). June, August. 46 (Wallace 1975), 24, 35, 37
- Potamyia flava* (Banks). April-October. 46 (Ross 1944), 10, 24, 37
- Smicridea fasciatella* McLachlan. April, June, October. 22 (Flint 1974), 46 (Ross 1944)

Family Polycentropodidae

Species List

Suborder Annulipalpia

Infraorder Curvivalpia

Superfamily Hydropsychoidea

Family Hydropsychidae

Ceratopsyche bifida (Banks). May-September. 46 (Ross 1944), 21

C. bronta (Ross). June. 8, 11, 18

Cheumatopsyche burksi Ross. June, August. 24

Cernotina calcea Ross. May-July, September. 45 (Ross 1938a), 22, 24, 35

C. oklahoma Ross. June. 45 (Ross 1938a)

C. spicata Ross. May-August. 24, 45 (Ross 1938a), 50

Cyrnellus fraternus (Banks). May-August. 46 (Ross 1944), 18, 23, 24, 55

Neureclipsis crepuscularis (Walker). June-August. 46 (Nimmo 1986), 24, 37

Nyctiophylax affinis (Banks). April-October. 46 (Ross 1944), 8, 11, 24, 26

Phylocentropus placidus (Banks). April-July. 25, 26, 28

Polycentropus centralis (Banks). April-August. 46 (Ross 1944), 10, 17, 18, 24, 26, 31, 35
P. cinereus Hagen. April-June. 46 (Ross 1944), 11
P. confusus Hagen. June. 18
P. crassicornis Walker. April-June. 24
P. flavus Banks. 46 (Nimmo 1986)
P. nascotius Ross. 46 (Nimmo 1986)

Family Psychomyiidae

Psychomyia flavida Hagen. April, June-July, October. 46 (Ross 1944), 4, 11, 18, 21, 24

Superfamily Philopotamoidea

Family Philopotamidae

Chimarra angustipennis Banks. June-August. 46 (Ross 1944)
C. aterrima Hagen. March-April, June, October. 46 (Armitage 1983), 4, 17, 18, 24
C. feria Ross. March-October. 22, 31, 45, 50 (Ross 1941), 24, 26, 27, 35, 45
C. obscura (Walker). April-October. 46 (Ross 1944), 8, 10, 11, 17, 18, 21, 22, 24, 29, 35, 37, 40, 45, 50
Wormaldia moesta (Banks). April-May. 24
W. strota Ross. April-June. 31 (Ross 1938b), 24, 53

Infraorder Spicipalpia

Superfamily Hydroptiloidea

Family Glossosomatidae

Agapetus illini Ross. April-June. 4, 10, 11, 18, 21, 24, 25, 26, 35, 38
Protoptila lega Ross. August. 37
P. maculata (Hagen). June. 18
P. tenebrosa (Walker). 46 (Nimmo 1974)

Family Hydroptilidae

Dibusa angata Ross. April. 46 (Blickle 1979), 38
Hydroptila ajax Ross. June-July. 46 (Ross 1944), 21
H. albicornis Hagen. 46 (Blickle 1979)
H. amoena Ross. June 45 (Ross 1938a)
H. angusta Ross. June-August. 46 (Blickle 1979), 10, 18, 21
H. armata Ross. May-July, October. 46 (Blickle 1979), 10, 21, 22, 24
H. consimilis Morton. June-July. 46 (Blickle 1979), 21
H. grandiosa Ross. April-September. 46 (Harris et al. 1991), 11, 18, 24, 26, 37, 38
H. hamata Morton. April-October. 46 (Blickle 1979), 10, 21, 24, 37, 38, 45

H. icona Mosely. May, July. 21
H. melia Ross. Ross. June. 45 (Ross 1938a)
H. perdita Morton. June-October. 10, 11, 18, 24
H. protera Ross. June. 45 (Ross 1938a)
H. sandersoni Mathis and Bowles. June. 26
H. spatulata Morton. August. 37
H. vala Ross. April-May. 46 Ross (1944), 24
H. virgata Ross. April-June. 46 (Ross 1944), 8, 24, 26
H. wausbesiana Betten. April-October. 46 (Harris et al. 1991), 21, 24, 37
Ithytrichia clavata Morton. June. 46 (Ross 1944), 28
Mayatrachia ayama Mosely. June. 46 (Harris et al. 1991), 45, 50
M. ponta Ross. May-June. 22, 45 (Ross 1944), 41 (Wiggins 1977)
Neotrichia edalis Ross. June. 22 (Ross 1941)
N. minutisimella (Chambers). 46 (Ross 1944)
N. okopa Ross. June-July, September. 46 (Ross 1944), 18, 21
N. vibrans Ross. September. 18
Ochrotrichia anisca (Ross). May-June. 38 (Ross 1941), 8, 10, 18, 24
O. eliaga (Ross). June. 18
O. nigritta (Banks). 46 (Ross 1944)
O. potomus Denning. 46 (Denning 1947)
O. spinosa (Ross). June. 45 (Ross 1938a)
O. stylata (Ross). June-July. 45 (Ross 1938a), 21
O. tarsalis (Hagen). June. 46 (Blickle 1979), 42, 45
O. weedleae Ross. April-May. 53 (Ross 1944), 24, 26
Orthotrichia aegerfasciella (Chambers). April-October. 46 (Harris et al. 1991), 10, 24, 26, 37
O. cristata Morton. 46 (Ross 1944)
Oxyethira aculea Ross. June-July. 45 (Ross 1941), 21
O. coercens Morton. April, June, August. 46 (Blickle 1979), 24, 37
O. dualis Morton. May. 10
O. glasa Ross. June. 45 (Ross 1941)
O. pallida (Banks). April-October. 46 (Ross 1944), 10, 18, 21, 22, 24, 45
O. zeronia Ross. April-October. 21, 24, 26
Paleagapetus celsus Ross. 46 (Blickle 1979)
Stactobiella delira (Ross). April. 46 (Blickle 1979), 38
S. palmata (Ross). 46 (Ross 1944)

Superfamily Rhyacophiloidea

Family Rhyacophilidae

Rhyacophila kiamichi Ross. April-June. 53 (Ross 1944), 10, 24, 26

R. lobifera Betten. 46 (Ross 1944)

Suborder Integripalpia

Infraorder Plenitentoria

Superfamily Limnephiloidea

Family Brachycentridae

Brachycentrus occidentalis Banks. June. 49 (Flint 1984)

Micrasema rusticum (Hagen). April-May. 46 (Ross 1944), 24, 38, 53

M. wataga Ross. 46 (Harris *et al.* 1991)

Family Lepidostomatidae

Lepidostoma ozarkense Flint and Harp. April. 26 (Flint and Harp 1990)

L. togatum (Hagen). May-June, August. 24

Family Limnephilidae

Ironoquia punctatissimus (Walker). September-November. 9, 24

Limnephilus taloga Ross. June. 19 (Ross 1938a)

Pycnopsyche lepida (Hagen). October. 24

P. subfasciata (Say). October. 24

Superfamily Phryganeoidea

Family Phryganeidae

Agrypnia vestita (Walker). June-July, September-October. 24

Ptilostomis ocellifera (Walker). May-July. 24 (Bowles *et al.* 1990), 26

P. postica (Walker). April-July, September. 24 (Bowles *et al.* 1990)

Infraorder Brevitentoria

Superfamily Leptoceroidea

Family Leptoceridae

Ceraclea ancylus (Vorhies). March-June. 46 (Harris *et al.* 1991), 24, 26, 28, 53

C. cancellata (Betten). April-June. 46 (Harris *et al.* 1991), 8, 11, 24, 28

C. diluta (Hagen). 46 (Harris *et al.* 1991)

C. flava (Banks). June-July. 10, 18

C. maculata (Banks). April-June, August-September. 46 (Harris *et al.* 1991), 18, 24

C. nepha Ross. April-June. 53 (Ross 1944), 24, 26

C. punctata (Banks). May-June, August. 11, 24, 37

C. resurgens (Walker). 46 (Ross 1944)

C. tarsipunctata (Vorhies). April-June. 8, 24

C. transversa (Hagen). April-June. 46 (Harris *et al.* 1991), 24-26

Leptocerus americanus (Banks). April-May. 24

Nectopsyche candida (Hagen). May-June, August. 46 (Haddock 1977), 24

N. exquisita (Walker). May-June. 46 (Haddock 1977), 24-28

N. pavidata (Hagen). May-September. 46 (Harris *et al.* 1991), 11, 18, 24, 37

N. spiloma Ross. May-September. 46 (Haddock 1977), 10, 21

Oecetis avara (Banks). June-September. 46 (Harris *et al.* 1991), 8, 11, 18, 21, 37

O. cinerascens (Hagen). April-June, August-October. 46 (Harris *et al.* 1991), 24, 26, 45

O. ditissa Ross. April-July, September. 46 (Harris *et al.* 1991), 21, 24, 28

O. eddlestoni Ross. May-August. 24, 28, 35, 37, 38, 40

O. inconspicua (Walker). April-October. 46 (Ross 1944), 10, 11, 18, 21, 24, 26, 28

O. nocturna Ross. May-July. 38 (Ross 1966), 24

O. persimilis (Banks). May, August. 24, 37

Setodes oxapia (Ross). June. 46 (Ross 1938c), 8, 11

Triaenodes dipsius Ross. April-June. 24

T. flavescens Banks. 46 (Harris *et al.* 1991)

T. ignitus (Walker). June, September. 46 (Harris *et al.* 1991), 18

T. injustus (Hagen). May, July, September. 46 (Harris *et al.* 1991), 24

T. marginatus Sibley. April-June, August. 24

T. pernus Ross. 35 (Ross 1944)

T. tardus Milne. April-June, August-October. 46 (Ross 1944), 24

T. tridentatus Ross. May. 52 (Ross 1938a)

Family Molannidae

Molanna ulmerina Navas. July. 46 (Ross 1944), 35

Family Odontoceridae

Marilia flexuosa Ulmer. June, August-September, November. 8, 10, 11, 18, 47

Superfamily Sericostomatoidea

Family Helicopsychidae

Helicopsyche borealis (Hagen). April, June-October. 46 (Harris *et al.* 1991), 4, 8, 10, 11, 18, 21

H. limnella Ross. May. 40

H. piroa Ross. August. 37

Acknowledgements

We sincerely thank Karl Stephan for graciously supplying us with a large number of caddisfly

collections. We also thank the INHS, OMNH, and UAAM for allowing us access to their insect collections. Special thanks goes to Allison Brigham, Caryn Vaughn, and Ed Lisowski for their collecting efforts. Chris Carlton and Richard Leschen also provided us specimens. Steve Moulton and Chad McHugh kindly reviewed earlier drafts of this manuscript.

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