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Anthony J. Iovino  
*University of Arkansas, Fayetteville*

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## A CURSORY EXAMINATION OF THE CHIRONOMIDAE OF ARKANSAS (DIPTERA: INSECTA)

Anthony J. Iovino<sup>1</sup>  
University of Arkansas

### PREFACE

It has been the policy of the Department of Entomology of the University of Arkansas to encourage work of a systematic nature, in order that the insect fauna of Arkansas be better known. In keeping with this policy, the species list herein is presented. It should, however, not be regarded as complete, but a list to which additional species will later be added. Moreover, as the Nearctic fauna of Chironomidae has received little study, the need for work of a regional nature is greatly commanded.

### INTRODUCTION

That the North American fauna of Chironomidae has received little attention is unfortunate, for members of the taxon are everywhere to be found. Terrestrial environments play host to larval midges (Thienemann and Kruger, 1939a, b) as do littoral marine habitats. A number of chironomid larvae thrive in hot springs at temperatures up to 120°F (Brues, 1927, 1928) and some dwell in glacial melt water. Certain cricetopine species, in a supposed obligate association, have been reared from colonies of *Nostoc parmeloides* (Wirth, 1957) and Berg (1949, 1950) has called attention to a number of leaf miners and leaf burrowers feeding on the mesophyll and epidermis of *Potamogeton*.

The majority of immature Chironomidae are to be found in fresh-water situations, both lentic and lotic, in extremes from mountain torrents to the oxygenless waters of deep eutrophic lakes. Most of the forms are tubiculous, while others, such as the majority of the Tanytopodinae, are free-living predators. The size of larval midges coupled with their relatively rapid life cycle and large numbers lends to the family an essential role in energy conversion within aquatic situations. Their importance as fish food organisms has long been realized and there is increasing recognition of their utility as indicator species in water quality surveys.

At sunset, large aerial swarms of adult midges are a frequent sight, the wing beat of the individuals being compounded to create a humming which may be heard for great distances. These large numbers in many areas have initiated retaliation in the form of abatement programs. Fortunately, the adults of the majority of species are innocuous, bearing non-functional mouthparts.

Adult Chironomidae superficially resemble mosquitoes and ceratopogonids, but may be distinguished by lacking a forked medial vein,

<sup>1</sup>Graduate Student, Department of Entomology, University of Arkansas.

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lacking squamiform setae on the wings, bearing a groove on a prominent postscutellum, and possessing lengthened prothoracic legs which are often raised from the substrate when at rest. The larvae bear a complete head capsule which has apposable mandibles. Anterior and posterior prolegs are present and developed to varying degrees, or are completely lacking.

#### METHODS OF COLLECTION, PRESERVATION & STUDY

As adult midges come readily to light, the major collection device utilized was a modified light trap of the New Jersey type. The majority of the determinations herein were based on imaginal instars. During the day, sweeping marginal vegetation along banks proved productive. Immature forms were collected by various techniques including dredging, use of Surber samplers, and washing of aquatic vegetation into a receptacle. Whenever possible, attempts were made to rear larvae to adulthood.

Methods of preserving adults leave much to be desired, as no truly satisfactory method has been devised. Both pinned specimens and specimens in alcohol were utilized. Pinned specimens are satisfactory in that they can be manipulated for study. Specimens collected into alcohol are collected easily and easily stored, but their colors tend to fade, setae and appendages fall off, wing veins become transparent, and they are manipulated with difficulty.

Depending upon the method of collection, two main methods of preparation for study were used. Specimens collected into spirits were mounted on microscope slides. The wings were carefully amputated and flattened under a coverslip which was adhered to the slide by placing four small spots of clear fingernail polish on the corners of the coverslip, after the alcohol had evaporated. This resulted in a dry wing mount. Genital segments of the male were clipped from the abdomen, placed in a 10% solution of caustic potash overnight, washed in warm water, dehydrated and cleared, and mounted on the slide in a resinous medium. Pale terminalia were stained in eosin y or acid fuchsin.

For features used in identification, the reader is referred to Freeman (1955), Johannsen and Townes (1952) and Fittkau (1962). Immature forms are treated by Roback (1957).

#### NOMENCLATURE

In this paper, the terminology of Freeman (1955-1958) is essentially employed. Within the Tanypodinae, the tribal classification of Fittkau (1962) is employed.

Presently, much confusion exists in chironomid taxonomy. The controversy concerned with the Meigen names of 1800 and 1803 is well known. Within the Orthocladiinae the terminology is in a particularly confused state. Edwards (1929) set rather wide generic limits defining

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numerous subtaxa within the group and many later authors have not agreed with this "large genus concept." Within the group exists a high degree of morphologic intergrade and a revision is greatly needed. Fittkau's work on the Tanypodinae demands a reexamination of the Nearctic types.

Complex synonymies have been produced by the renaming of earlier described European species, a difficulty imposed by a ubiquitous faunal element. The lack of association between larval and imaginal instars, moreover, has produced confusion. Further confusion is generated by the schism which exists between European and American workers in setting generic limits, for most European workers rely heavily upon immature characteristics while British and American workers have placed emphasis upon adult characters in their study.

## SCOPE OF THE STUDY

The material examined is from three sources which include personal collections, museum collections, and collections from contributors. Collections were made from the following Arkansas counties: Benton (1)\*\*, Carroll (2), Washington (3), Crawford (4), Pulaski (5), Lonoke (6), Searcy (7), Desha (8) and Arkansas (9). Only the described species of Chironomidae are listed, the apparently new species being reserved for further study. A study made by Sublette (1956), has yielded several species of midges. Species given by him and not collected by the author will appear with an asterisk.

## Arkansas Chironomidae

## Chironomidae (Tendipedidae)

## Subfamily: Tanypodinae (Pelopiinae)

## Tribe: Coelotanypodini

Genus: *Coelotanypus* KiefferSpecies: *concinnus* (Coquillett) 1, 2, 7*scapularis* (Loew) 1, 2, 3*tricolor* (Loew) 5, 6

## Tribe: Pentaneurini

Genus: *Pentaneura* PhilippiSubgenus: *Pentaneura* PhilippiSpecies: *flavifrons* (Johannsen)\* 1, 2, 3*planensis* Johannsen 4, 3*pilosella* (Loew) 1, 4, 3Genus: *Ablabesmyia* JohannsenSpecies: *aequifasciata* (Dendy & Sublette) 8, 9*rhamphe* Sublette 1, 3, 4, 8

## Tribe: Macropelopiini

Genus: *Procladius* Skuse

\*\*Counties are designated by number in the list.

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Subgenus: *Procladius* Skuse  
Species: *culiciformis* (Linnaeus) 1, 3

Subgenus: *Psilotanypus* Kieffer  
Species: *bellus* (Loew) 1, 2, 3, 5, 6

Tribe: Tanypodini  
Genus: *Tanypus* Meigen  
Species: *punctipennis* Meigen 3

Subfamily: Diamesinae  
Genus: *Diamesa* Wlthl  
Species: *fulva* Johannsen 3

Subfamily: Orthocladiinae  
Tribe: Orthocladiini  
Genus: *Brillia* Kieffer  
Species: *flavifrons* (Johannsen) 1, 5, 6, 8, 9

Genus: *Nanocladius* Kieffer  
Species: *alternantherae* Dendy & Sublette 8

Genus: *Cricotopus* Wulp  
Species: *absurdus* (Johannsen) 2, 3, 7  
*bicinctus* (Meigen) 1, 3  
*remus* Sublette 1, 9

Genus: *Cardiocladius* Kieffer  
Species: *sp. near obscurus* (Johannsen)\* 3

Genus: *Orthocladius* Wulp  
Species: *spp.\** 3

Tribe: Metriocnemini  
Genus: *Metriocnemus* Wulp  
Species: *sp. near lundbeckii\** Johannsen 3

Genus: *Smittia* Holmgren  
Species: *aterrima* (Meigen) 1, 3, 7, 8, 9

Tribe: Corynoneurini  
Genus: *Corynoneura*  
Subgenus: *Thienemanniella* Kieffer  
Species: *sp.\** 3

Subfamily: Chironominae  
Tribe: Chironomini  
Genus: *Chironomus* Meigen  
Subgenus: *Chironomus* Meigen  
Species: *attenuatus* Walker 1, 2, 3, 4, 5, 6, 7, 9  
*chelonina* (Townes) 1, 3  
*crassicaudatus* Malloch 5, 6  
*fulvipilus* Rempel 3  
*plumosus* (Linnaeus) 5, 6  
*stigmaterus* Say 1, 4, 7

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- Subgenus: *Cryptochironomus* Kieffer
  - Species: *carinatus* (Townes) 8
  - emorsus* (Townes) 8
  - fulvus* Johannsen 1, 2, 3, 4, 7
  - galeator* (Townes) 4, 6
  - monochromus* Wulp 1, 2, 3, 8
  - nigrovittatus* Malloch 1, 3, 8, 9
- Subgenus: *Dicrotendipes* Kieffer
  - Species: *fumidus* Johannsen 1, 2, 3, 5, 6, 9
  - neomodestus* Malloch 1, 2, 3, 4, 5, 6
- Subgenus: *Endochironomus* Kieffer
  - Species: *nigricans* Johannsen 1, 2, 3, 5, 7
  - subtendens* (Townes) 3
- Subgenus: *Kiefferulus* Goetghebuer
  - Species: *dux* Johannsen 1, 2, 3, 4, 6, 8, 9
- Subgenus: *Tribelos* Townes
  - Species: *jucundus* Walker 1, 2, 3, 4
- Subgenus: *Xenochironomus* Kieffer
  - Species: *xenolabis* Kieffer 1, 3, 6
- Genus: *Microtendipes* Kieffer
  - Species: *pedellus* (DeGeer) 1, 3, 7, 8
- Genus: *Glyptotendipes* Kieffer
  - Subgenus: *Phytotendipes* Goetghebuer
    - Species: *lobiferus* (Say) 1, 2, 3, 4, 5, 6, 8
    - meridionalis* Dendy & Sublette 1, 3
    - paripes* (Edwards) ? 5
- Genus: *Paratendipes* Kieffer
  - Species: *albimanus* (Meigen) 1, 2, 3
- Genus: *Polypedilum* Kieffer
  - Subgenus: *Polypedilum* Kieffer
    - Species: *aviceps* Townes 1, 2, 3, 8, 9
    - digitifer* Townes 1, 2, 3, 4, 6, 9
    - fallax* (Johannsen) 1, 2, 3
    - halterale* (Coquillett) 1, 2, 3
    - illinoense* (Malloch) 1, 2, 3
    - nigritum* Townes 1, 3
    - obtusum* Townes 1, 2, 3
    - ontario* (Walley) 1, 2, 3, 6, 7
    - trigonus* Townes ? 3
- Genus: *Pseudochironomus* Malloch
  - Species: *aix* Townes 1, 2, 3
  - chen* Townes 1
  - fulviventrís* (Johannsen) 1, 8
  - pseudoviridis* (Malloch) 1, 2, 3, 7
  - rex* Hauber 2, 3
  - richardsoni* Malloch 1, 3

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- Genus: *Stenochironomus* Kieffer  
 Species: *macateei* (Malloch) 1, 3
- Tribe: Tanytarsini  
 Genus: *Micropsectra* Kieffer  
 Species: *nigripila* (Johannsen) 1, 2, 3
- Genus: *Tanytarsus* Wulp  
 Subgenus: *Tanytarsus* Wulp  
 Species: *buckleyi* Sublette 8, 9  
           *confusus* Malloch ? 9  
           *neoflavellus* Malloch 6, 8  
           *xanthus* Sublette ? 9
- Subgenus: *Cladotanytarsus* Kieffer  
 Species: *viridiventris* Malloch 1, 2, 3, 6, 8, 9

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