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On selected family-group names in Chironomidae (Insecta, Diptera), and related nomenclature

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Abstract

The most relevant scientific names of subfamilies, tribes, and subtribes with extant members in Chironomidae are tabulated and discussed.

Nomenclature is unified and stabilized, resulting in the following changed spellings or data. Family-group names: Boreoheptagyiini Brundin, 1966; Chironomidae Newman, 1834; Diamesinae Kieffer, 1922; Harrisonini Brundin, 1966; Heptagyiini Brundin, 1966; Macropelopiini Zavřel, 1929; Pentaneurini Hennig, 1950; Podonominae Thienemann & Edwards in Thienemann, 1937; Protanypodini Brundin, 1956; Tanytarsini Zavřel, 1917. Genus-group name: *Zavrelia* Kieffer, Thienemann & Bause in Bause, 1913. Species-group names: *Lasiodiamesa serpentina* Edwards & Thienemann in Thienemann, 1937; *Zavrelia pentatoma* Kieffer & Bause in Bause, 1913.

Applications for rulings by the ICZN will be submitted to try to A) conserve Coelotanypodini Fittkau, 1962 in place of a senior synonym; B) fix the type species of *Orthocladius* van der Wulp, and conserve Orthocladiinae Kieffer, 1911 in place of two senior synonyms; C) fix the type species of *Tanypus* Meigen, and render Tanypodinae available from Kieffer (1906) rather than from Skuse (1889; type genus misidentified); and D) conserve Zavreliina Sæther, 1977 in place of a senior synonym.

Key words: Chironomidae, nomenclature, family-group, subfamily, tribe, subtribe

Introduction

In the literature on Chironomidae, family-group names are rarely cited with additional data such as taxonomic authorship and date of first publication. Recently published overviews (Ashe 1983, Cranston 1995, Sabrosky 1998) do not contain all the relevant information, and differ in many of the details provided. Under the only existing and internationally accepted standard (ICZN 1999), the principles of nomenclature for family-group names are no different from those practised at the genus- or species-group level. A lack of recog-

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nition of this fact among chironomid workers has resulted in several cases of nomenclatural instability, e.g. the use of an invalid name for one of the major subfamilies.

The present study is aimed at clarifying these issues, as well as at providing an up-to-date reference to the most relevant names for chironomid family-group taxa with extant members. However, like any similar work, it should not be mistaken as providing final, unchangeable results. Family-group name proposals, especially those made before 1931, must fulfil relatively few requirements for availability (see Nomenclatural background, item 1, below). It is, therefore, quite possible that some as yet unrecognized proposals exist in the literature, e.g. 'hidden' in regular text of non-classificatory publications, that could successfully compete for priority with those known at this time.

Table 1 contains information on all those available names the present author considers as valid, or as noteworthy for other reasons [names in square brackets]. Further data — e.g. the respective corresponding type genera and their type species, as well as additional (unavailable, invalid, or fossil) family-group names — can be found in Ashe (1983), Sabrosky (1998) and the references cited in those works. However, readers are advised to accept the corrections found necessary in Spies & Sæther (2004) and the present work as a strong caution against uncritical copying of any data from secondary sources.

In the following, unless specified otherwise, references such as "the Code" or "Code Art. 11.7" point to the currently effective rules of nomenclature (ICZN 1999) or individual Articles therein.

Nomenclatural background

1) When working with zoological nomenclature data, at any rank from superfamily to subspecies, it is essential to keep in mind that the formalities of naming and the definitions of taxon concepts to which such names are applied are largely separate issues. A scientific name can be likened to a printed label glued to the outside of a box – under normal circumstances the label will remain unchanged, irrespective of what the box may contain.

Under the internationally accepted Code, the question whether or not a family-group name must be credited to a particular author and publication is answered on formal grounds, such as whether or not it was proposed as a noun in the nominative plural, and unambiguously derived from an available genus name (Code Art. 11.7). For example, "Tanytarsi" of Zavřel (1917b) is sufficient for availability (see Comment 10 below), whereas '*Tanytarsus* group' and similar terms used by various earlier authors are not.

For such decisions it is irrelevant whether the family-group name in question (specifically its ending) was spelled exactly as it is today, or whether the taxonomic definition (description, diagnosis) associated with it at the time is close or identical to the one we hold today. For example, the name Macropelopiini is available from Zavřel (1929), even though its author spelled it "Macropelopiae" and used it for a taxon concept much wider in content than the currently recognized tribe (see Comment 1 below).

Sabrosky (1998) suggested that differences between definitions of family-group taxa treated under the same name could be documented by citing authorship in a format such as "Chironomoidea (Newman 1834) Malloch 1917" (op.cit.: 7). However, this method is not compatible with the nomenclature Code (Art. 51.2), which reserves the use of parentheses exclusively for changed combinations of species- with genus names. Instead, if necessary (see Spies & Sæther 2004), the interpretation of a subsequent author can be cited as, e.g., Chironomoidea Newman, 1834 sensu Malloch (1917), or Macropelopiini Zavřel sensu Fittkau (see Code Art. 51.2.1).

Family-group names published before 1931 can be available even if no taxonomic definition was given other than by inference (see Code Art. 12.2.4), as long as the name of the type genus can be inferred unambiguously, e.g. from the stem of the family-group name proposed (Code Art. 11.7.1.1). For a case in point see Comment 2 below.

2) The availability of names established at any rank in the family group extends to "coordinate" names considered to be established simultaneously at all higher or lower ranks in the group (Code Art. 36.1). For example, along with Eretmopteridae Kellogg, 1900 – the only family-group name proposed explicitly in that publication – the names Eretmopteroidea, Eretmopterinae Eretmopterini, and Eretmopterina are available with the same authorship and date. Even if such coordinate names have never been used as valid, they exist – in dormancy, so to speak – and can become relevant, e.g. by way of synonymy, any time certain circumstances arise. For striking examples see Comment 4.

3) A family-group name is formed by adding the appropriate standardized suffix to the stem of the type-genus name, in rare exceptions to the entire genus name (Code Art. 29.1). The suffix "–idae" signifies a family name, the suffix "–inae" a subfamily name, "–ini" the name of a tribe, and "–ina" that of a subtribe (op.cit.: Art. 29.2).

The stem of a genus name is determined according to Code Art. 29.3. For a name that is or ends in a Classical Greek or Latin word, first the genitive singular of the genus name is formed, and then the genitive case ending is deleted. This is why the stem of *Tanypus* is 'Tanypod–', not 'Tanyp–' (see also Comment 8). For the stems of relevant type-genus names in Chironomidae see Table 1, third column from the left.

4) Family-group names not formed in accordance with these regulations, including incorrect original spellings, must be corrected, unless certain exceptions apply (op.cit.: Arts. 29.4, 29.5). For example, the original spellings "Boreoheptagyini" and "Heptagyini" (both in Brundin 1966) must be emended to Boreoheptagyiini and Heptagyiini, respectively, because all four spellings have been in common use (the two subsequent ones after, e.g., Ashe 1983), thus the two original spellings cannot be maintained as being in "prevailing usage" (under Code Art. 29.5; see also Comments 6, 8).

TABLE 1. Alphabetical list of selected family-group names in Chironomidae, and related information.

Name	Author(s), year	Stem of type genus name	Remarks
Anatopyniini	Fittkau, 1962	Anatopyni–	see Comment 1
Aphroteniinae	Brundin, 1966	Aphroteni–	
Aphroteniini	Brundin, 1966	Aphroteni–	
Boreochlini	Brundin, 1966	Boreochl–	
Boreoheptagyiini	Brundin, 1966	Boreoheptagyi–	see Nomenclatural background, item 4
Buchonomyiinae	Brundin & Sæther, 1978	Buchonomyi–	
Chilenomyiinae	Brundin, 1983	Chilenomyi–	
Chironomidae	Newman, 1834	Chironom–	see Comment 2
Chironominae	Newman, 1834	Chironom–	see Comment 2
Chironomini	Newman, 1834	Chironom–	see Comment 2
Clinotanypodini	Lipina, 1928	Clinotanypod–	ICZN decision required, see Comment 3
[Clunioninae	Kieffer, 1906]	Clunion–	ICZN decision required, see Comment 4
[Clunionini	Kieffer, 1906]	Clunion–	rarely used as valid recently; see Comment 4
Coelopyniini	Roback, 1982	Coelopyni–	
[Coelotanypodini	Fittkau, 1962]	Coelotanypod–	ICZN decision required, see Comments 1, 3
[Corynoneurini	Goetghebuer, 1919]	Corynoneur–	rarely used as valid recently
[Cryptochironominae	Lenz, 1921]	Cryptochironom–	not in use at any rank
Diamesinae	Kieffer, 1922	Diames–	see Comment 5
Diamesini	Kieffer, 1922	Diames–	see Comment 5
Eretmopterinae	Kellogg, 1900	Eretmopter–	ICZN decision required, see Comment 4
[Eretmopterini	Kellogg, 1900]	Eretmopter–	not in use; see Comment 4
Harrisonini	Brundin, 1966	Harrisonin–	see Comment 6
Heptagyiini	Brundin, 1966	Heptagyi–	see Nomenclatural background, item 4
Lobodiamesini	Brundin, 1966	Lobodiames–	
Macropelopiini	Zavřel, 1929	Macropelopi–	see Comment 1
[Metriocnemini	Goetghebuer, 1940]	Metriocnem–	rarely used as valid recently; see Comment 4
Natarsiini	Roback & Moss, 1978	Natarsi–	simultaneously published in Roback (1978)
["Nepaliariae"	Kieffer, 1911]	Nepali–	not in use; nomen dubium (Sæther & Wang 1993: 195); published simultaneously with "Orthocladiariae", effectively synonymized with "Clunionariae" by Kieffer in Thienemann & Kieffer (1916: 551); see also Comment 4

.....continued on the next page

TABLE 1 continued

Name	Author(s), year	Stem of type genus name	Remarks
[Oreadomyiinae	Kevan & Cutten-Ali-Khan, 1975]	Oreadomyi–	after Sabrosky (1998); originally proposed in Nymphomyiidae; not in use at any rank in Chironomidae
[Orthocladiinae	Kieffer, 1911]	Orthocladi–	ICZN decision required, see Comment 4
[Orthocladiini	Kieffer, 1911]	Orthocladi–	rarely used as valid recently; see Comment 4
Pentaneurini	Hennig, 1950	Pentaneur–	
Podonominae	Thienemann & Edwards, 1937	Podonom–	see Comment 7
Podonomini	Thienemann & Edwards, 1937	Podonom–	see Comment 7
Procladiini	Roback, 1971	Procladi–	name originally proposed for a subtribe (Procladiina)
Prodiamesinae	Sæther, 1976	Prodiames–	
Protanypodini	Brundin, 1956	Protanypod–	see Nomenclatural background, item 3, and Comment 8
Pseudochironomini	Sæther, 1977	Pseudochironom–	
Stempellinina	Shilova, 1976	Stempellin–	ICZN decision required, see Comment 11
Tanypodinae	Skuse, 1889	Tanypod–	ICZN decision required, see Comment 9
Tanypodini	Skuse, 1889	Tanypod–	ICZN decision required, see Comment 9
Tanytarsini	Zavřel, 1917	Tanytars–	see Comment 10
Tanytarsina	Zavřel, 1917	Tanytars–	see Comment 10
Telmatogetoninae	Wirth, 1949	Telmatogeton–	
Usambaromyiinae	Andersen & Sæther, 1994	Usambaromyi–	
[Zavreliina	Sæther, 1977]	Zavreli–	ICZN decision required, see Comment 11

Comments

1) The tanypodine tribes Anatopyniini and Coelotanypodini have been credited to Fittkau (1962) by nearly all chironomid workers on record. Looking in from the outside, Sabrosky (1998) disagreed, ascribing Coelotanypodini to Coffman (1978) and listing Fittkau's (1962) use of this name as a nomen nudum. Sabrosky's reason apparently was that he saw no definition (description, diagnosis) of the tribe in Fittkau's work; for the corresponding requirements in the Code see Art. 13.1. Indeed, there are no differential diagnoses or explicit key couplets for tribes in Fittkau (1962), but this did not keep Sabrosky (1998) from accepting Anatopyniini Fittkau, 1962 as available, based on discussion statements in that work that are comparable to others provided for the remaining tribes. Moreover, in listing Coelotanypodini as available from Coffman (1978), Sabrosky overlooked Roback's (1971: pp. 14–15) diagnosis.

Instead of adopting Sabrosky's inconsistent interpretation, the present author considers Coelotanypodini as being sufficiently defined in Fittkau (1962), at least by couplet 1 of the key to adult males (op.cit.: 80). Consequently, Coelotanypodini as well as Anatopyniini here are considered available from Fittkau (1962). On the junior synonymy of Coelotanypodini see Comment 3.

The name Macropelopiini has been in use after Fittkau (1962), and Sabrosky's (1998) interpretation as a nomen nudum in Fittkau's work is unconvincing for reasons analogous to those mentioned for Coelotanypodini above. However, Macropelopiini is available from Zavřel (1929) already, with only the ending of the original spelling requiring correction according to the Code. Zavřel (op. cit.: 15, 17, 46) used "Macropelopiae" for a family-group taxon (equivalent to a supertribe by today's standards) that included the genus *Macropelopia*.

2) Previous authors on Chironomidae credited this name for the family to Macquart (1838; as "Chironomides"), but there are at least two prior relevant publications: Newman (1834; as "Chironomites"), and Zetterstedt (1837; as "Chironomii"). As explained above in Nomenclatural background, item 1, Chironomidae is available from Newman (1834) in spite of the absence of descriptions in that work for either this family-group taxon or the genus *Chironomus* (which is mentioned as the basis for "Chironomites"). The fact that Newman's proposal was conditional does not affect availability either (Code Arts. 11.5.1, 15.1).

3) According to the widely accepted system of subdivisions within Tanypodinae (after Fittkau 1962, Sæther 1977, Roback 1982), *Clinotanypus* Kieffer and *Coelotanypus* Kieffer are placed in the same tribe. Consequently, family-group names based on these respective type genera are synonyms competing for priority. Therefore, according to the Code, Clinotanypodini Lipina, 1928 (originally proposed as a tribe "Clinotanypi") currently is the valid name, whereas Coelotanypodini Fittkau, 1962 (see Comment 1 above) is a junior synonym; reversal of precedence could be enacted only by the ICZN (under Code Art. 23.9). In light of the fact that Coelotanypodini has been in unanimous use in recent decades, whereas Clinotanypodini has been overlooked (except by Pankratova & Chernovsky in Chernovsky 1949: 174, see also Marshall 1961: 286), an application for an ICZN ruling to conserve Coelotanypodini Fittkau is being prepared by the present author. However, until this application is on record as submitted to ICZN, using the name Coelotanypodini as valid is not sanctioned by the Code.

4) For more than 50 years the name Orthocladiinae, available from Kieffer (1911), has been used as valid practically unanimously. For much of that time the subfamily has been considered to include both *Eretmoptera* Kellogg and *Clunio* Haliday, the respective type genera of Eretmopteridae Kellogg, 1900 and Clunioninae Kieffer, 1906 (e.g., see Ashe

1983: 5, 17, 22). This practice ignores the synonymy and competition for priority among family-group names resulting if several type genera are placed in a single taxon (see also Comment 3). Consequently, as long as any of the respective type genera *Eretmoptera*, *Clunio*, *Orthocladius*, and *Metriocnemus* are placed in any single subfamily and/or tribe, the respective valid name of the latter is determined by priority. Examples include the following: A) Eretmopterinae currently takes precedence over Orthocladiinae and all other synonyms (behind Eretmopterinae, Clunioninae also has priority over Orthocladiinae); B) relatively few recent authors divided the subfamily into tribes, but in the arrangement by Coffman & Ferrington (1996) Eriopterini would have been valid instead of Clunionini; in the first of two alternative schemes discussed by Sæther (1977), Eriopterini would replace Metriocnemini, and in the second scheme, Eriopterini and Eriopterina would replace Orthocladiini and Metriocnemina, respectively. Note that these hypotheses of Sæther (1977) constitute conditional proposals made after 1960; therefore all involved family-group names that had not been available before are nomina nuda (see Code Art. 15.1; Sabrosky 1998).

Because Eretmopteridae Kellogg was used as valid after 1899, reversal of precedence (under Code Art. 23.9) in this case requires a ruling by the ICZN. Such a solution should include the type species of *Orthocladius* van der Wulp, which has never been fixed (see, e.g., Sabrosky 1998). In light of the long-standing, unanimous usage of the name Orthocladiinae, a formal application to both those effects is being prepared by the present author. However, until this application is on record as submitted to ICZN, using the name Orthocladiinae as valid is not sanctioned by the Code.

5) The original spelling in Kieffer (1922: 23) is "Diamesariae", not "Diamesiariae" as erroneously listed by Sabrosky (1998). The correct authorship and publication-year data for *Diamesa* and its type species, *D. cinerella*, is Meigen in Waltl, 1835.

6) The standard form for a tribe name based on *Harrisonina* Freeman would be "Harrisoninini". Sabrosky (1998) has published this "corrected spelling", but it has not been adopted in any publication on Chironomidae known to the present author. According to Code Art. 29.5, "if a spelling of a family-group name was not formed in accordance with Art. 29.3 but is in prevailing usage, that spelling is to be maintained, ...". Consequently, Harrisonini is considered as the valid name and spelling here. Additional support for this interpretation is provided by the spirit of Code Art. 29.3.1.1 ("If the stem" [of a type genus name] "ends in –id, those letters may be elided before adding the family-group suffixes. ..."). This Article apparently aims at avoiding awkward, 'stammering' names like "Harrisoninini", even though its wording does not explicitly mention applicability to stems ending with '–in'.

7) In the original publication (Thienemann 1937), the subfamily proposal is based in part on diagnoses for the immature stages by Thienemann, and also on characters of the adults

quoted from communications by F.W. Edwards. In one of these quoted statements (op.cit.: p. 79) Edwards used the name "Podonominae". As Thienemann was not alone responsible for the name and for satisfying the criteria of availability (Code Art. 50.1), authorship of Podonominae and any coordinate family-group name must be credited to Thienemann & Edwards.

Analogously, the only species name newly proposed in that work must be listed as *Lasiodiamesa serpentina* Edwards & Thienemann in Thienemann, 1937 (currently considered a junior synonym of *L. gracilis* (Kieffer)), as the diagnosis combines characters of the adult male (described by Edwards) and pupal exuviae (by Thienemann), both observed on individually associated parts of the single type specimen listed.

On the other hand, in keeping with previous interpretations (e.g., Fittkau et al. 1977, Armitage et al. 1995), Thienemann is considered the sole bibliographic author of the 1937 work.

8) Brundin's (1956) original spelling "Protanypini" is incorrect (Code Arts. 29.1–29.3; see also Nomenclatural background, item 3). Recent usage includes both the original and the corrected spelling, the latter having been used, e.g., by Sæther et al. (2000), Langton & Visser (2003), and Sæther & Spies (2004). As the original spelling, therefore, cannot be maintained on the grounds of prevailing usage (see also Comment 6 and Nomenclatural background, item 4), the valid tribe name is Protanypodini. A positive side effect of this recognition is consistency among all family-group names formed from genus names containing "tanypus".

9) When Skuse (1889) established the name Tanypodinae (originally: "Tanypina"), he misidentified the type genus. Latreille (1810) had designated *Tipula cincta* Fabricius, 1775 as the type species of *Tanypus* Meigen, and Meigen (1818) had reported this as a misidentification (by Latreille after Meigen 1804) for which he established the new name *Tanypus punctipennis* Meigen, 1818. The only species Skuse (1889) included in *Tanypus*, *T. mastersi* Skuse, 1889, does not belong in the same genus or tribe as *T. punctipennis*, but is considered a Macropelopiini incertae sedis (Bugledich et al. 2004).

For several decades, most authors have accepted *T. punctipennis* as the type species of *Tanypus*, but in fact this matter is unresolved. There is some confusion concerning details of the names involved (e.g., see Sabrosky 1998), and no ICZN decision has been issued as would have been necessary under the rules in effect until 1999. As of 1 January 2000, the Code would allow the type species to be fixed without a Commission decision. However, on the family-group level, "if stability or universality is threatened, or confusion is likely to be caused, ... by the discovery that the type genus was misidentified (that is, interpreted in a sense other than that defined by its type species), the case is to be referred to the Commission for a ruling" (Code Arts. 65.2, 65.2.1).

The Code apparently leaves at the discretion of the applying author, what detailed consequences of such an ICZN decision he/she may be seeking to achieve. Therefore, in order

to remedy the instability on multiple levels of nomenclature in this case, the present author is preparing to ask the Commission to fix *Tanypus punctipennis* Meigen as the type species of *Tanypus* Meigen, and suppress "Tanypina" of Skuse (1889), thereby rendering Tanypodinae available from Kieffer (1906).

10) The earliest publication known to the present author as containing a relevant family-group name formed from *Tanytarsus* is Zavřel (1917b; "Tanytarsi", e.g. in key on p. 12). Zavřel (1926: p. 4, footnote 1) quoted from a "communication personnelle de Kieffer (1918)" in which the latter had credited Zavřel with having divided "Chironomariae" into "Chironomariae sensu stricto" and "Tanytarsariae", and had offered characters separating the adults of the two groups. In spite of this opinion voiced in the letter to Zavřel, Kieffer apparently never adopted a formal name such as "Tanytarsariae" in his own works, but either used no classificatory equivalent of Tanytarsini, or treated the corresponding taxon under '*Tanytarsus* group' or a similar term.

The dating of Tanytarsini from Zavřel (1917b) is supported by the following facts. A) None of Zavřel's earlier publications on Chironomidae contains such a family-group name; notably, none is found in Zavřel (1917a; sequencing of the 1917 titles follows Zavřel, 1926), a list of new species recorded from Bohemia and Moravia, with quotes from taxonomic comments by Kieffer. B) In Zavřel's correspondence with Thienemann (partially preserved at ZSM), the name "Tanytarsi" first appears in a letter written by Zavřel on 10 September 1918.

As a result of Opinion 616 (ICZN 1961), the "Official List" of family-group names in zoology carries Tanytarsini as available from Goetghebuer (1938); see also Sabrosky (1998). However, a name or nomenclatural act is not rendered unchangeable by its inclusion in an Official List; instead, all "aspects of its status derive from the normal application of the Code" (Art. 80.6.2). Consequently, "Tanytarsi" of Zavřel (1917b) is not barred from taking precedence over "Tanytarsini" of Goetghebuer (1938); it is merely corrected to receive the proper tribe-name suffix.

11) The genera *Stempellina* Thienemann & Bause and *Zavrelia* Kieffer & Bause have always been placed in the same subdivision of the tribe Tanytarsini, for which the subtribe name Zavreliina has been in almost unanimous use since Sæther (1977). Consequently, family-group names based on these respective type genera are synonyms competing for priority. Therefore, according to the Code, Stempellinina Shilova, 1976 (pp. 20, 63, 250, 251; original spelling: "Stempellini", corrected by Pankratova 1983: 12) currently is the valid name, whereas Zavreliina Sæther, 1977 is a junior synonym. Stempellinina Shilova has not been in use, but reversal of precedence (under Code Art. 23.9) in this case requires a ruling by the ICZN. An application for the conservation of Zavreliina Sæther is being prepared by the present author. However, until this application is on record as submitted to ICZN, using the name Zavreliina as valid is not sanctioned by the Code.

Authorship for *Zavrelia* here is credited to Kieffer, Thienemann & Bause in Bause (1913), and that for *Z. pentatoma* to Kieffer & Bause in Bause. In that work, the new genus and species are based not only on the respective adult-stage characterizations quoted from personal communication by Kieffer, but also on descriptions and key couplets for the larva and pupa by Bause. Thus, Kieffer was not "alone responsible both for the name ... and for satisfying the criteria of availability other than actual publication" (Code Art. 50.1.1). Thienemann is considered a taxonomic coauthor of *Zavrelia* by the same logic as has been widely accepted for all other genus-group names established in Bause (1913); see Ashe (1983). However, Thienemann is not a coauthor of *Z. pentatoma*, because the latter name is not mentioned in the summary by Thienemann and Bause in Bause (1913: 118–120), which is considered to have established the genus-group names. As a consequence of the present authorship recognitions, larvae (from Germany; leg. Lauterborn) and pupae (3 specimens of unspecified provenance from Bohemia and/or Moravia; leg. Zavřel) of *Z. pentatoma* seen by Bause (1913) are syntypes, as are the adult specimens (leg. Lauterborn, ex coll. De Meijere) Bause had sent to Kieffer (op.cit.: p. 74).

References

Andersen, T. & Sæther, O.A. (1994) *Usambaromyia nigrala* gen. n., sp. n., and Usambaromyiinae, a new subfamily among the Chironomidae (Diptera). *Aquatic Insects*, 16, 21–29.

Armitage, P.D., Cranston, P.S. & Pinder, L.C.V. (Ed) (1995) *The Chironomidae. The biology and ecology of non-biting midges*, Chapman & Hall, London etc, xii, 572 pp.

Ashe, P. (1983) A catalogue of chironomid genera and subgenera of the world including synonyms (Diptera: Chironomidae). *Entomologica scandinavica Supplement*, 17, 1–68.

Bause, E. (1913) Die Metamorphose der Gattung *Tanytarsus* und einiger verwandter Tendipedidenarten. Ein Beitrag zur Systematik der Tendipediden. *Archiv für Hydrobiologie Supplement-Band*, 2, Lieferung 1, 1–128. [First published as a preprinted separate of the 1914 journal version.]

Brundin, L. (1956) Zur Systematik der Orthocladiinae (Dipt., Chironomidae). *Reports from the Institute of Freshwater Research, Drottningholm*, 37, 5–185.

Brundin, L. (1966) *Transantarctic relationships and their significance, as evidenced by chironomid midges, with a monograph of the subfamilies Podonominae and Aphroteniinae and the austral Heptagyiae*. Kungliga Svenska VetenskapsAkademiens Handlingar, Fjärde Serien, 11, No. 1, 472 pp., 30 pls.

Brundin, L. (1983) *Chilenomyia paradoxa* gen. n., sp. n. and Chilenomyiinae, a new subfamily among the Chironomidae (Diptera). *Entomologica scandinavica*, 14, 33–45.

Brundin, L. & Sæther, O.A. (1978) *Buchonomyia burmanica* sp. n. and Buchonomyiinae, a new subfamily among the Chironomidae (Diptera). *Zoologica scripta*, 7, 269–275.

Bugledich, E.-M., Cranston, P.S. & Martin, J. (2004) Chironomidae. *In*: Wells, A., Beesley, P., Houston, K., Tsang, K., Ross, G. & Iqbal, M. (Eds.), *Australian Faunal Directory*, Internet database at http://www.deh.gov.au/biodiversity/abrs/online-resources/fauna/afd/ [visited Feb. 2005].

Chernovsky, A.A. (1949) *Opredelitel' lichinok komarov semeistva Tendipedidae*. Opredeliteli po faune SSSR, Izdavaemye Zoologicheskim Institutom Akademii Nauk SSSR, 31, Izdatel'stvo Akademii Nauk SSSR, Moscow + Leningrad (St. Petersburg), 186 pp. [English translation in Marshall 1961.]

Coffman, W.P. (1978) Chironomidae. *In*: Merritt, R.W. & Cummins, K.W. (Eds.), *An Introduction to the Aquatic Insects of North America*, Kendall/Hunt, Dubuque, Iowa, pp. 345–376

Coffman, W.P. & Ferrington, L.C., Jr. (1996) Chironomidae. *In*: Merritt, R.W. & Cummins, K.W. (Eds.), *An introduction to the Aquatic Insects of North America. Third edition*, Kendall/Hunt, Dubuque, Iowa, pp. 635–754.

Cranston, P.S. (1995) Systematics. *In*: Armitage, P.D., Cranston, P.S. & Pinder, L.C.V. (Eds.), *The Chironomidae. The biology and ecology of non-biting midges*, Chapman & Hall, London etc., pp. 31–61.

Fabricius, J.C. (1775) *Systema entomologiae, sistens insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus*, Kortius, Flensburg + Leipzig, [32] + 832 pp.

Fabricius, J.C. (1805) *Systema antliatorum secundum ordines, genera, species adiectis synonymis, locis, observationibus, descriptionibus*, K. Reichard, Brunswick, xiv + [15] + 372 + [4] + 30 pp.

Fittkau, E.J. (1962) Die Tanypodinae (Diptera: Chironomidae). (Die Tribus Anatopyniini, Macropelopiini und Pentaneurini). *Abhandlungen zur Larvalsystematik der Insekten*, 6, 1–453.

Fittkau, E.J., Reiss, F. & Hoffrichter, O. (1977) *A bibliography of the Chironomidae, Gunneria*, 26, 1–178.

Goetghebuer, M. (1919) Observations sur les larves et les nymphes de quelques Chironomides de Belgique. *Annales de Biologie lacustre*, 9, 51–78.

Goetghebuer, M. (1938) 13c. Tendipedidae (Chironomidae). b) Subfamilie Tendipedinae (Chironominae). A. Die Imagines. In: Lindner, E. (Ed) *Die Fliegen der Palaearktischen Region*, 3, Lieferung 118, E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, pp. 73–128, pls. 15–19.

Goetghebuer, M. (1940) 13g. Tendipedidae (Chironomidae). f) Subfamilie Orthocladiinae. A. Die Imagines. In: Lindner, E. (Ed) *Die Fliegen der Palaearktischen Region*, 3, Lieferung 137, E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, pp. 1–24, pls. 1–3.

Hennig, W. (1950) *Die Larvenformen der Dipteren. 2. Teil*, Akademie-Verlag, Berlin, 458 pp., 10 pls.

ICZN = International Commission on Zoological Nomenclature (1961) Opinion 616. *Tanytarsus* van der Wulp, 1874 (Insecta, Diptera); designation of a type-species under the plenary powers. *Bulletin of Zoological Nomenclature*, 18, 361–362.

ICZN (1999) *International Code of Zoological Nomenclature. Fourth Edition*, International Trust for Zoological Nomenclature, London, xxix + 306 pp.

Kellogg, V.L. (1900) An extraordinary new maritime fly. *Biological Bulletin*, 1, 81–87.

Kevan, D.K.McE. & Cutten-Ali-Khan, F.E.A. (1975) Canadian Nymphomyiidae (Diptera). *Canadian Journal of Zoology*, 53, 853–866.

Kieffer, J.J. (1906) Diptera. Fam. Chironomidae. *In*: Wytsman, P. (Ed.) *Genera Insectorum*, 42, 78 pp., 4 pl.

Kieffer, J.J. (1911) Les chironomides (Tendipedidae) de l'Himalaya et d'Assam. *Records of the Indian Museum*, 6, 319–349.

Kieffer, J.J. (1922) Chironomides de la Nouvelle-Zemble. *In*: Holtedahl, O. (Ed.), *Report of the scientific results of the Norwegian Expedition to Novaya Zemlya 1921*, 2, Videnskapsselskapet, Oslo, 24 pp.

Langton, P.H. & Visser, H. (2003) *Chironomidae exuviae – a key to pupal exuviae of the West Palaearctic Region*, CD-ROM, Expert Center for Taxonomic Information, Amsterdam.

Latreille, P.A. (1810) *Considérations générales sur l'ordre naturel des animaux composant les classes des crustacés, des arachnides et des insectes; avec un tableau méthodique de leurs genres, disposés en familles*, F. Schoell, Paris, 444 pp.

Lenz, F. (1921) [1.x.] Chironomidenpuppen und -larven. Bestimmungstabellen. *Deutsche Entomologische Zeitschrift*, 1921(3), 148–162. [Also contained in a separate version (+31.12.1921): *Die Metamorphose der Chironomus-Gruppe. Morphologie der Puppen und Larven*, Dissertation, Christian-Albrechts-Universität, Kiel, [2] + 15 + [3] pp.]

Lipina, N.N. (1928) *Lichinki i kukolki khironomid. Ekologiya i Sistematika*, N.K.S. Nauchnuy Institut Ruibnogo Khozyaistva, 179 + IV pp.

Macquart, J. (1838) *Insectes diptères nouveaux ou peu connus. Tome premier. – 1re partie*, Roret, Paris, 207 pp., 14 pls.

Marshall, K.E. (Ed) (1961) *Identification of larvae of the midge family Tendipedidae (Opredelitel' lichinok komarov semeistva Tendipedidae) by A.A. Chernovskii. Izdatel'stvo Akademii nauk SSSR 1949*, National Lending Library for Science and Technology, Boston Spa, Yorkshire, UK, 300 pp.

Meigen, J.W. (1804) *Klassifikazion und Beschreibung der europäischen zweiflügligen Insekten (Diptera Linn.). Erster Band, erste Abtheilung*, K. Reichard, Brunswick, xxviii + 152 pp., 8 pl.

Meigen, J.W. (1818) *Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten. Erster Theil*, F.W. Forstmann, Aachen, xxxvi + 3332 + [1] pp., 11 pl.

Newman, E. (1834) Attempted division of British insects into natural orders. *Entomological Magazine*, 2, 379–431.

Pankratova, V.Ya. (1983) *Lichinki i kukolki komarov podsemeistva Chironominae fauny SSSR (Diptera, Chironomidae = Tendipedidae)*. Opredeliteli po faune SSSR, Izdavaemye Zoologicheskim Institutom Aka-

demii Nauk SSSR, 134, Izdatel'stvo <<Nauka>>, Leningrad (St. Petersburg), 296 pp.
Roback, S.S. (1971) The adults of the subfamily Tanypodinae (= Pelopiinae) in North America (Diptera: Chironomidae). *Monographs of the Academy of Natural Sciences of Philadelphia*, 17, 1–410.
Roback, S.S. (1978) The immature chironomids of the eastern United States III. Tanypodinae-Anatopyniini, Macropelopiini and Natarsiini. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 129, 151–202.
Roback, S.S. (1982) The immature stages of some Australian Tanypodinae (Diptera), with some notes on the adults. *Journal of the Australian Entomological Society*, 21, 147–160.
Roback, S.S. & Moss, W.W. (1978) Numerical taxonomic studies on the congruence of classifications for the genera and subgenera of Macropelopiini and Anatopyniini (Diptera: Chironomidae: Tanypodinae). *Proceedings of the Academy of Natural Sciences of Philadelphia*, 129, 125–150.
Sabrosky, C.W. (1998) [Bibliography by Thompson, F.C., Evenhuis, N.L. & Sabrosky, C.W.] Family-group names in Diptera. PDF file on CD-ROM, *Diptera Data Dissemination Disk*, 1, North American Dipterists' Society, Washington, D.C., [11] + 576 pp. [Print version 1999 (not seen by present author, but reported on the CD to be identical in text content): *Myia*, 10, 1–576.]
Sæther, O.A. (1976) Revision of *Hydrobaenus*, *Trissocladius*, *Zalutschia*, *Paratrissocladius*, and some related genera (Diptera: Chironomidae). *Bulletin of the Fisheries Research Board of Canada*, 195, i–vi, 1–287.
Sæther, O.A. (1977) Female genitalia in Chironomidae and other Nematocera: morphology, phylogenies, keys. *Bulletin of the Fisheries Research Board of Canada*, 197, i–viii, 1–209.
Sæther, O.A., Ashe, P. & Murray, D.A. (2000) Family Chironomidae. *In*: Papp, L. & Darvas, B. (Eds.), *Contributions to a manual of Palaearctic Diptera (with special reference to the flies of economic importance). Appendix*, Science Herald, Budapest, pp. 113–334.
Sæther, O.A. & Spies, M. (2004) Chironomidae. *In*: Fauna Europaea Service (Ed.) *Fauna Europaea*, internet database at http://www.faunaeur.org [visited Feb. 2005].
Sæther, O.A. & Wang, X. (1993) *Xiaomyia*, *Shangomyia* and *Zhouomyia*, three new and unusual genera of Chironomini from Oriental China (Diptera: Chironomidae). *Entomologica scandinavica*, 24, 185–195.
Shilova, A.I. (1976) *Khironomidy Rybinskogo Vodokhranilishcha*, Izdatel'stvo <<Nauka>>, Leningrad (St. Petersburg), 252 pp.
Skuse, F.A.A. (1889) Diptera of Australia. Part VI. — The Chironomidae. *Proceedings of the Linnean Society of New South Wales, Second Series*, 4, 215–311, pls. I–XIV, XIV bis, XV– XXIX.
Spies, M. & Sæther, O.A. (2004) Notes and recommendations on taxonomy and nomenclature of Chironomidae (Diptera). *Zootaxa*, 752, 1–90 [freely downloadable at http://www.mapress.com/zootaxa/2004f/zt00752.pdf].
Thienemann, A. (1937) Podonominae, eine neue Unterfamilie der Chironomiden (Chironomiden aus Lappland I.). Mit einem Beitrag: Edwards, F.W.: On the European Podonominae (adult stage). *Internationale Revue der gesamten Hydrobiologie und Hydrographie*, 35, 65–112.
Thienemann, A. & Kieffer, J.J. (1916) Schwedische Chironomiden. *Archiv für Hydrobiologie, Supplement-Band*, 2, Lieferung 3, pp. 483–553, pls XVII, XVIII.
Waltl, J. (1835) Neue Arten von Diptern [sic!] aus der Umgegend von München, benannt und beschrieben von Meigen, aufgefunden von Dr. J. Waltl, Professor der Naturgeschichte in Passau. *Faunus* (Gistel's), 2, 66–72.
Wirth, W.W. (1949) A revision of the Clunionine midges with descriptions of a new genus and four new species (Diptera: Tendipedidae). *University of California Publications in Entomology*, 8, 151–182.
Zavřel, J. (1917a) Seznam nových Českých a Moravských Chironomid. *Časopis České Společnosti Entomologické (=Acta Societatis Entomologicae Bohemiae)*, 14(1–2), 12–16.
Zavřel, J. (1917b) O dýchání a dýchacích ústrojích larev Chironomid. *Rozpravy České Akademie Věd a Umění, Třída 2 (Mathematicko-Přírodnická)*, 26(3), 1–26.
Zavřel, J. (1926) >>Tanytarsus connectens<<. *Spisy Vydávané Přírodovědeckou Fakultou Masarykovy University (=Publications de la Faculté des Sciences de l'Université Masaryk)*, 65, 1–47 + two-page Table I. [In French, with verbatim quotes in other languages.]
Zavřel, J. (1929) Larvy a kukly pakomárů. (Chironomidae). *Zprávy komise na přírodovědecký v výzkum Moravy a Slezska. Oddělení zoologické*, 18, pp. 1–52.
Zetterstedt, J.W. (1837) Conspectus familiarum, generum et specierum dipterorum, in fauna insectorum Lapponica descriptorum. *Isis* (Oken's), 21, 28–67.

