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Abstract

Various issues in taxonomy and nomenclature of Diptera Chironomidae are discussed, in order to formalize and explain scientific names used in the Fauna Europaea database publications. General and specific remarks point out and exemplify the most common causes for erroneous data: insufficient consultation of the primary sources (literature and material), unjustified assumptions of type status, and uncritical handling of untested information. Recommendations are offered on how to avoid or solve such problems, and increase the stability and quality of the chironomid system.

In addition to a number of changes affecting endings of species epithets, authorship, dates of publication, etc., the following acts and recognitions of nomenclature are proposed.

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Paramerina cingulata (Walker, 1856) remains valid in spite of being a junior homonym. *Thienemannimyia geijskesi* (Goetghebuer, 1934) by emendation replaces the incorrect original spelling "Ablasblesmyia Geijkesi". *Diamesa starmachi* Kownacki & Kownacka, 1970 is valid, *D. starmachii* is an incorrect (variant) original spelling. The new substitute name *Cricotopus (Isocladius) maurii* is proposed for *C. (I.) polychaetus* Hirvenoja, 1989, a junior secondary homonym of *C. polychaetus* (Kieffer, 1923). *Dactylocladius longicalcar* Kieffer sensu Thienemann (1926) = *Eukiefferiella gracei* (Edwards, 1929), a misidentification of *Dactylocladius longicalcar* Kieffer, 1911, is selected as the type species of *Eukiefferiella* Thienemann, 1926. *Gymnometriocnemus* and *Pseudosmittia* are available and valid from Edwards (1932). *Limnophyes minimus* (Meigen, 1818) is the valid name for *Camptocladius foenisuga* Potthast, 1914 syn. n. and *C. hexatomus* Potthast, 1914 syn. n. *Metriocnemus cavicola* Kieffer, 1921 is valid, *M.* "martinii" of Thienemann (1921) is a nomen nudum. *Nanocladius dichromus* (Kieffer, 1906) is the valid name for *Chironomus bicolor* Zetterstedt, 1838 (preoccupied by Waltl, 1837). *Orthocladius (Eudactylocladius) almskari* Sæther, nom. nov., replaces the junior primary homonym *O. (Eud.) schnelli* Sæther, 2004. *Paralimnophyes longiseta* (Thienemann, 1919) is the senior synonym of *P. hydrophilus* (Goetghebuer, 1921). *Lindebergia* Tuiskunen, 1984 has been a junior synonym of *Pseudosmittia* Edwards, 1932 since Sæther & Ferrington (2003). Both *Pseudosmittia hamata* (Freeman, 1956) and *P. neohamata* Cranston, 1990 (= *P. hamata* Strenzke, 1960) comb n. are junior synonyms of *P. danconai* (Marcuzzi, 1947). *Zalutschia tornetraeskensis* (Edwards & Thienemann in Thienemann, 1941) is the correct spelling and authorship for the species originally described in *Trissocladius*. *Chironomus (Camptochironomus) subaprilinus* Kieffer, 1918 has been fixed as the type species of *Camptochironomus* Kieffer, 1918 by Goetghebuer (1937). *Chironomus (Lobochironomus) dorsalis* Meigen, 1818 is the valid name for *C. longipes* Staeger, 1839 syn. n., *C. tricolor* van der Wulp, 1874 syn. n., and *C. bequaerti* Goetghebuer, 1921 syn. n. The new substitute name *Cladopelma goetghebueri* is proposed for *Chironomus lateralis* Goetghebuer, 1934 (preoccupied by Walker in Curtis, 1837). *Dicrotendipes septemmaculatus* (Becker) is considered as the valid name for the type species of *Dicrotendipes* Kieffer, 1913: *D. pictipennis* Kieffer, 1913, a junior synonym. *Dicrotendipes pulsus* (Walker, 1856), not *D. objectans* (Walker, 1856), is the valid name for European material previously misidentified as *D. modestus* (Say, 1823). The type species of *Glyptotendipes* Kieffer, 1913 is *Chironomus verrucosus* Kieffer, 1911; a lectotype is designated, and the adult female diagnosed. The three subgenera in *Glyptotendipes* are reclassified; *G. (Caulochironomus)* Heyn, 1993 — type species *Chironomus caulicola* Kieffer, 1913 — is valid; *G. (Heynotendipes)* nom. nov. — type species *Chironomus signatus* Kieffer, 1909 — replaces *G. (Trichotendipes)* Heyn, 1993 (preoccupied by *Trichotendipes* Guha et al., 1985). *Glyptotendipes imbecilis* (Walker, 1856) is used as valid, in this correct original spelling. *Glyptotendipes cauliginellus* (Kieffer, 1913) takes precedence over *G. gripekoveni* (Kieffer, 1913), and becomes the valid name for *Chironomus sparganii* Willem, 1908 (preoccupied by *C. sparganii* Kieffer, 1908), *G. gracilis* Kieffer, 1918, *G. iridis* Kieffer, 1918 syn. n., *G. scirporum* Kieffer, 1924, and *G. discolor* Kieffer, 1926 syn. n. *Kiefferulus* Goetghebuer, 1922 is the valid name for *Tendochironomus* Lenz, 1937 syn. n. *Polypedilum octopunctatum* (Thunberg, 1784), for which a lectotype is designated, is the valid name for *P. quadrimaculatum* (Meigen, 1838) syn. n. The new substitute name *Stempellinella edwardsi* is proposed for *Tanytarsus minor* Edwards, 1929 (preoccupied by Kieffer, 1916). The type species of *Stenochironomus* Kieffer, 1919 is *Chironomus pulchripennis* Coquillett, 1902 by designation of Townes (1945). *Stenochironomus gibbus* (Fabricius, 1794), nomen protectum, is the valid name for *S. parisiensis* (Thunberg, 1784) syn. n., nomen oblitum.

The following names require revisionary clarification, any future use should explicitly include the recent reference after which they are interpreted: *Clunio adriaticus* Schiner, 1856; *Clunio*

balearicus Bezzi, 1913; *Chironomus* "annularius" auctt.; *Chironomus dorsalis* auctt. not Meigen, 1818; *Chironomus pallidivittatus* auctt. not Malloch, 1915; *Chironomus prasinus* auctt. not Meigen, 1804; *Chironomus venustus* auctt. not Staeger, 1839; *Chironomus viridis* Macquart, 1834; *Endochironomus albipennis* (Meigen, 1830); *Endochironomus tendens* (Fabricius, 1775); *Glyptotendipes foliicola* Kieffer, 1918; *Glyptotendipes sigillatus* Kieffer, 1918; *Tendipes abranchius* Kieffer, 1913.

Key words: Chironomidae, taxonomy, nomenclature, bibliography, types, Fauna Europaea

Introduction

In the Fauna Europaea project (Fauna Europaea Service, 2004; http://www.faunaeur.org), funded by the European Commission, expert taxonomists are presently assembling a comprehensive database of the scientific names and distribution of all living multicellular land and freshwater animals known to occur in Europe. These data will be accessible to everyone, with the aim of providing a standard reference for science, government and private organizations, the conservation community as well as educational programs.

During preparation of the data on Diptera Chironomidae, a number of problems in the taxonomy or nomenclature of this group have been discovered or revisited. The necessary nomenclatural acts and explanations are published here, as the database itself is inappropriate for that purpose. Some changes pertaining to certain taxa in the subfamily Orthocladiinae have been published by Sæther & Ferrington (2003).

The present contribution attempts to take but one more step on the trek toward a comprehensive, consistent, and reasonably stable system in Chironomidae. Some open cases necessitate more detailed research into the relevant sources (e.g. see Spies, 2001) than feasible within the scope of the Fauna Europaea project. In addition, the amount of data not yet recognized as requiring improvement undoubtedly is greater than negligible. We sincerely hope that the solutions, explanations and recommendations offered here may help other authors settle more such matters, avoid the creation of similar problems in the future, and thereby further reduce the remaining instability impediment to progress in chironomid taxonomy and systematics. However, readers are asked to apply Summary recommendation 1) below to the present work and the Fauna Europaea database as much as to any other source.

Methods and material

In trying to gain more knowledge and facilitate communication about what is known, taxonomy can rely on but must adhere to the strengths of the scientific method. The most important principle we perceive in this respect is reproducibility, i.e. that results by any author must be obtained and presented in ways allowing other authors to compare them to evidence from their own research. The purpose of nomenclature, as a subdiscipline of taxonomy, is to provide a reasonably stable system of meaningful names to work and

communicate with. This cannot be achieved unless reproducibility is established throughout the procedures employed and down to the elementary data forming the foundation of the system. That is the reason behind the tried and tested tools of the nomenclature trade, such as Linnaean-style scientific names or the principles of priority and typification, all designed as the relatively most easily applicable and transparent measures and building blocks for taxonomic information.

In our specific applications of these tools we have tried to follow, to the best of our knowledge, the fourth edition of the International Code of Zoological Nomenclature (ICZN, 1999). Personally, we do not agree with every single approach or detail in that work. However, it is the only set of guidelines generally available, and scientific reproducibility — and thus stability of nomenclature and progress in taxonomy — can only be achieved within a single reference system, not if every author applies their own personal preferences or selection. Moreover, we hope the present work will show that knowing and applying the Code in detail actually solves more problems than some previous authors had thought possible, and — as it should — leads to far more solutions than new problems.

Wherever feasible, acts and opinions presented below are based on direct examination of the relevant evidence, especially the respective original publication. The significance of the latter as a source for data has been underrated frequently, which in our analysis is one of the most common reasons for incomplete or faulty results. Although a particular original description alone may not be sufficient for taxonomic identification, the information it contains is of primary relevance at least to nomenclature. Nevertheless, some scientific names of Chironomidae have been interpreted from species or specimens for which type status was assumed in spite of insufficient testing against, or even conflict with, the original publication. According to the ICZN Code, "the type series of a nominal species-group taxon consists of all the specimens included by the author in the new nominal taxon (whether directly or by bibliographic reference) ..." (ICZN, 1999: Article 72.4.1). For taxa established before 2000, "any evidence, published or unpublished, may be taken into account ..." (op.cit.: Article 72.4.2) to determine whether an author included a particular specimen prior to the original publication on the taxon. However, published works, especially if printed, are much less open to any kind of subsequent alteration than other sources of taxonomic data. Thus an undated name label or type label, for example, does not necessarily suffice as evidence, especially not if the specimen disagrees with the original description, e.g. in life stage, sex or significant morphological characteristics. Of course, published works can and do contain errors as well, but the latter should not be assumed without evidence. It is the present authors' opinion that major taxonomic interpretations, such as changes in nomenclature, generally should not be made without careful study of the original publication (and other relevant works), nor against any indubitable data contained therein.

The present work contains many direct quotations, some in the form of translations from references published in languages other than English. It has not been feasible to provide bilingual versions in all such instances. Responsibility for translations lies with the first author.

Some bibliographic data were taken from Ashe (1983), Evenhuis (1989, 1997), Borkent & Wirth (1997), or were kindly provided by Odwin Hoffrichter (pers. comm.).

Abbreviations: BMNH = The Natural History Museum, London (UK); DEI = Deutsches Entomologisches Institut, Müncheberg (Germany); ICZN = International Commission on Zoological Nomenclature; IRSNB = Institut Royal des Sciences Naturelles de Belgique, Brussels (Belgium); MNHN = Museum National d'Histoire Naturelle, Paris (France); MS = M. Spies; NHMW = Naturhistorisches Museum in Wien, Vienna (Austria); OAS = O.A. Sæther; ZMUC = Zoological Museum, University of Copenhagen (Denmark); ZSM = Zoologische Staatssammlung München, Munich (Germany).

In the following, after some general remarks, the taxa are discussed in the same systematic sequence as in the Fauna Europaea database, with junior synonyms treated in positions determined by those of their respective valid names. Comments on individual topics or taxa can be located by means of the index.

General remarks

1) Kieffer, Goetghebuer, and Edwards. Kieffer is the author responsible for by far the most chironomid names, valid or otherwise, proposed by anybody in the Palaearctic region (Spies, 2001). However, much of the nomenclature in use by authors in the second half of the 20th century was, and often still is, influenced by interpretations of Goetghebuer and Edwards, especially as put forward in their respective monographs: Edwards (1929), and Goetghebuer in Lindner (e.g. Goetghebuer & Lenz, 1937–1962). For these reasons it is worth addressing the following aspects of those three authors' procedures and legacy.

1a) Jean-Jacques Kieffer. "Kieffer never made permanent preparations of the species described by him, thus there are no >types< of Kieffer species!" (Thienemann in Thienemann & Strenzke, 1951: 10). Nevertheless, a section "Types de Kieffer" has long formed part of the Goetghebuer collection (now at IRSNB), and specimens therein often have been used under the uncritical assumption that they constitute original Kieffer types. In reality, the situation usually is not so simple, each taxon case has to be evaluated individually. The original correspondence between Thienemann and Kieffer (much of which has been preserved at ZSM) shows that Kieffer often did return specimens (in alcohol, as he had received them) which he had identified as the species he described from Thienemann's material. Information in these documents includes collecting data recorded and unique sample codes assigned by Thienemann, as well as new species names entered and sometimes specimen numbers reported by Kieffer (Spies, 2001). These entries allow an exact identification of the type material and type locality in many cases, even if corresponding data in Kieffer's original publication are incomplete or erroneous. Some of this material, documented beyond doubt as original types, has been found at ZSM, on slides prepared at the time or since, or still in the alcohol vial in which Kieffer had returned it.

Goetghebuer reported receiving much material from Thienemann which he considered as specimens "determined by Kieffer" after which the latter "had established his descriptions of new species" (Goetghebuer, 1928: 147), or even as "types de Kieffer" (Goetghebuer, 1936). For any given species name, such material may indeed be typical, but only under the condition that Kieffer had seen it prior to the respective original publication, had returned it to Thienemann, and that the latter had then sent (parts of) it on to Goetghebuer. However, in a number of cases Goetghebuer reported as 'types' specimens of the sex opposite to the one originally described, or otherwise significantly disagreeing with Kieffer's relevant statements. In combination with Thienemann's above-quoted postulate in Thienemann & Strenzke (1951), this shows that identifications of the material sent to Goetghebuer often must have been circumstantial (e.g. by presence in the same sample) rather than individual, or subsequent rather than prior to Kieffer's original description. Consequently, other such misassociations and misidentifications must be reckoned with in any single case. This situation is confounded by Goetghebuer's rudimentary labeling of his "Types de Kieffer", which reflects at most very little of the detail available from Thienemann's documentation and thus in most cases no longer allows verification of provenance. In summary, a general assumption of type status for material in the "Types de Kieffer" collection at IRSNB cannot be made. Instead, specimens are only acceptable as original types of Kieffer species if they do not disagree with data in the respective original publication and other relevant documents such as the Thienemann correspondence and taxonomic register at ZSM.

ICZN (1980) Opinion 1147 has clarified the type status of pupal exuviae and larval skins if there is sufficient evidence for their association with adults described by Kieffer. This has been particularly productive in cases of Kieffer names for which only such immature specimens are known to have been preserved, and a number of studies have taken this approach in trying to solve taxonomic problems (recent examples: Contreras-Lichtenberg, 1999, 2001; Rossaro et al., 2003). We suggest that exuviae whose association is verifiable can also make better name-bearing types even if candidate adult specimens exist, e.g. if species identification is more reliable in the pupal stage. On the other hand, misassociations must also be watched for between different life stages, and — just like with adult specimens — the value of a single exuviae as a name-bearing type very much depends on the taxon in question (e.g. see comments on *Orthocladius rhyacobius* below).

1b) Maurice E.M. Goetghebuer. Comparisons between Goetghebuer's earlier and later works (e.g. 1928 versus 1937 in Goetghebuer & Lenz, 1937–1962) produce the impression that he developed a tendency to be swayed from the results of his own observations by the opinions of Edwards (1929). For an example of this, see the comments below on *Glyptotendipes cauliginellus / gripekoveni*. Apparently, Goetghebuer's mindshift went as far as removing labels identifying the type material of species he had named himself if the latter were subsequently deemed junior synonyms (see Michiels & Spies, 2002 on *Conchapelopia triannulata*). In the Goetghebuer collection at IRSNB there are also specimens labeled as primary types whose attached source data do no match those in the original publication (MS, pers. observ.; and B. Goddeeris, pers. comm. to MS). Therefore,

unspecific type labels are to be trusted even less here than in general, and detailed comparisons with the respective original descriptions are even more critical, before any type recognition of a Goetghebuer specimen is made.

1c) Frederick W. Edwards. The monograph on British Chironomidae by Edwards (1929) still exerts considerable influence on the nomenclature of Palaearctic taxa, either through direct tradition (e.g. Pinder, 1978; Langton, 1991; Langton & Visser, 2003) or indirectly (e.g. via the work of Goetghebuer, see the preceding section; Fittkau, 1962; and others). This is probably partly due to the fact that Edwards had seen more of the extant collections of major 19th century workers (Meigen, Staeger, Zetterstedt, etc.) than most anyone before and after him. However, Edwards usually studied and described specimens in at least mostly pinned condition, believing that "nearly all their characters (except details of hypopygium)" (Edwards, 1929: 282) could be seen this way. Chironomid taxonomists today no longer consider this method sufficient, and Edwards himself realized that some of the 'historic' type specimens he had interpreted would require "a second and more minute examination before they can be accurately placed" (op.cit.: 280). Goetghebuer (1923: 127) had made a similar statement concerning his review of Meigen specimens at MNHN. Unfortunately, there are many cases in which neither Edwards nor others have performed such reexaminations since. Because of this, considerable portions of Palaearctic nomenclature still must be seen as preliminary, not stable, as they show the influence of admittedly incomplete examinations by Edwards and contemporaries, rather than being based on a detailed analysis of the respective relevant publications and type material. Some examples relating to Edwards and discussed below are *Phytochironomus*, *Chironomus dorsalis* Meigen, and *Glyptotendipes sigillatus/foliicola*.

In any such cases, e.g. wherever taxa have not been revised sufficiently, we recommend that nomenclature based on a subsequent interpretation, one that is not directly linked to the original source, be indicated as such clearly. For example, taxonomic names may be supplemented with qualifiers as in, e.g., *'Chironomus prasinus* Meigen sensu Edwards (1929)'. Precise citations like these help minimize confusion and instability of nomenclature, and greatly facilitate the backtracking of information. They have been in use before (not least by Edwards and contemporaries themselves; a more recent example is Pinder, 1978), and are in full accordance with the ICZN Code (e.g. 1999: Article 51.2.1).

2) Authorship and dates. Examinations of the primary literature have turned up a number of works and taxa which so far have been listed with erroneous dates of original publication, taxonomic or bibliographic authorship. The following subsections discuss some general issues with these data, additional examples will be found farther below in the treatments of individual taxa.

2a) Publication date. The exact dates of first public distribution are critical wherever precedence between competing names or acts has to be decided by applying the ICZN Principle of Priority (reversal of the latter is possible only under exceptional, defined conditions, e.g. see the case of *Stenochironomus gibbus* below). This not only determines the valid name among two or more homonyms, synonyms, etc., but may also affect

taxonomic authorship and what constitutes the original type material (see item 2b below). Unfortunately, for a substantial share of the relevant works in chironomid taxonomy and nomenclature the actual publication dates, and thus the order of chronological precedence, must be considered as insufficiently known. The most comprehensive sources for data on the earlier chironomid literature still are Fittkau et al. (1977) and Hoffrichter & Reiss (1981). However, for logistical reasons the authors of those bibliographies often took their data from photocopies or reprints of individual articles, not from original and complete journal or book volumes. Ashe (1983), after a special study of relevant works by Kieffer, corrected several publication dates from the earlier bibliographies. However, exact dates have been determined for some works of Kieffer's only (Ashe, 1983; Ashe & Cranston, 1990), and the general problem with unverified publication dates has not been addressed comprehensively. An ongoing review of Kieffer's works by MS has led to so far 5 more corrections to publication years, and to considerable rearrangements in the chronological sequence (see References below, including the Note). Publication dates are being determined (according to ICZN, 1999: Article 21) from dates of issue in the original works themselves (often given in a separate index to the respective volume, sometimes in a later anniversary summary), from accession records in public libraries, and from other evidence in publications or documents (e.g. letters by Kieffer preserved at ZSM). Judging from the proportion of data requiring correction in the Kieffer bibliography alone, many similar cases must be expected in the chironomid literature, some of which will undoubtedly have effects on nomenclature.

2b) Taxonomic authorship. In the first half of the 20th century, chironomid species often were reared and described from immature specimens by one author, but also described by another author from the adults obtained in these rearings. The separate life stage descriptions sometimes appeared in the same work, sometimes in different publications. The standard example involves Thienemann and his group working on the immature stages, and first Kieffer, later Goetghebuer or Edwards on the adults. However, various other such collaborations are also on record. In a number of these cases the publication priority, and thus relevance to nomenclature, of the contribution on the immatures has been overlooked so far. The status of a scientific name or specimen in zoology does not depend on the life stage involved (ICZN, 1999: Articles 17.3, 72.5). Thus, if all formal conditions are met, and even if this was not intended by the respective authors, names and actions based on immature material can be fully valid and take precedence over those based on the corresponding adults. In such instances, immature specimens may attain original type status even if they are not individually associable with adult types as mandated for other cases by Opinion 1147 of the ICZN (1980). This is especially helpful if the adult specimens are now missing (as they are for many Kieffer species) but the immature stages have been preserved (e.g. in the Thienemann collection at ZSM).

For the following names (given in the respective original combination) we have found immature descriptions to precede those of the adults [dates in square brackets]: Tanypodinae: *Tanypus flavoscutellatus* Goetghebuer, 1919 [not 1921]; Orthocladiinae:

Trichocladius funebris Goetghebuer, 1919 [not 1921], *T. lambertoni* Potthast, 1914 [not Kieffer, 1923], *T. bryophilus* Potthast, 1914 [not Kieffer, 1921], *T. longistilus* Potthast, 1914 [not Kieffer, 1915], *T. niveimanus* Potthast, 1914 [not Kieffer, 1915], *Heterotrissocladius triangulifer* Spärck, 1923 [not (Kieffer, 1924)], *Orthocladius distylus* Potthast, 1914 [not *Dactylocladius distylus* Kieffer, 1915], *Camptocladius foenisuga* Potthast, 1914 [not Kieffer, 1921], *C. hexatomus* Potthast, 1914 [not Kieffer, 1915], *Metriocnemus hirtellus* Goetghebuer, 1919 [not 1921], *M. violaceus* Spärck, 1923 [not Kieffer, 1925], *Cricotopus albicornis* Goetghebuer, 1919 [not 1921], *Orthocladius (Orth.) rivinus* Potthast, 1914 [not Kieffer, 1915], *Metriocnemus stylatus* Spärck, 1923 [not Kieffer, 1924], *Trissocladius nigerrimus* Goetghebuer, 1919 [not 1921]; Chironominae: *Tanytarsus bauseellus* Bause, 1913 [not Kieffer, 1922], *T. boiemicus* Bause, 1913 [not Kieffer, 1922].

Note that Potthast's work was distributed in 1914 as preprinted separates — which qualify as relevant publications (ICZN, 1999: Article 21.8) — before the journal version appeared in 1915. This has been verified from a catalog of all German print publications (Gorzny, 1976–1981) as well as from accession records of several libraries. Similar cases of preprints are Bause (1913), Gripekoven (1913), and Zavřel & Thienemann (1919). The pages with part I of Spärck's (1922–1923) "Beiträge" were issued in 1922, but the date for parts II–IV, which contain the descriptions of new taxa, is 18 April 1923.

Cases in which immature and adult stages were described by different authors in the same publication can be complex, because authorship then depends on the specific circumstances. For example, the names first proposed in Kieffer & Thienemann (1908) have been credited to Kieffer alone, because that is how Thienemann had cited them in his treatment of the immature stages in part II of this work, whereas Kieffer in part I on the adults had presented them as "n. g." and "n. sp.", respectively. On the other hand, taxonomic authorship for *Parametriocnemus boreoalpinus* goes to Gowin & Thienemann (rather than Gowin in Gowin & Thienemann), 1942, because the life stages were described together under one heading, and it is not "clear from the contents that only one" of the joint bibliographic authors "is responsible for the name" (ICZN, 1999: Article 50.1). Similarly, *Eukiefferiella* (now *Tvetenia*) *discoloripes* must be credited to Goetghebuer & Thienemann in Thienemann, 1936(a). The original publication cites only Goetghebuer as the taxonomic author, but it includes a description of the immature stages by Thienemann and an explanation that the species name derives from a letter by Kieffer. Thus, Goetghebuer only supplied the adult description after the fact, and the above-mentioned condition of Code Article 50.1 is not met. On the other hand, Kieffer is not the author of *Tvetenia discoloripes*, because for this it would have to be "clear from the contents" that Kieffer as a "person other than an author of the work" was "alone responsible both for the name ... and for satisfying the criteria of availability other than actual publication" (ICZN, 1999: Article 50.1.1).

As in the preceding example, many incorrect interpretations of such data stem from misleading statements in the original works themselves. For example, a "date of publication specified in a work is to be adopted as correct", but only "in the absence of

evidence to the contrary" (ICZN, 1999: Article 21.2). Unfortunately, much taxonomic literature is still being typeset with seemingly exact dates, but then the actual distribution is delayed, often into the following calendar year. Some recent examples relevant to chironomid nomenclature are: Spixiana Supplement 11 (1986, not "30.xii.1985"; see Epler, 1987 [not 1986]); Netherlands Journal of Aquatic Ecology 26/2-4 (distributed 1993 as printed on the cover, not "1992" as above each paper and on the separate "Errata" sheet); Journal of the Kansas Entomological Society 71/3-4 (1999, not "1998").

3) In another sizeable set of taxa, the endings of species names had to be changed to match the gender of the respective genus name in the currently accepted combination. For example, it had not been consistently realized that, due to their etymology, *Cladopelma* Kieffer, *Paracladopelma* Harnisch, and *Tribelos* Townes are neutral in gender, whereas *Telmatogeton* Schiner is male. Note that such gender matching is only mandated if the species name "is or ends in a Latin or Latinized adjective or participle in the nominative singular" (ICZN, 1999: Article 31.2). For example, in *Harnischia bicarinata* Brundin the species name is adjectival, thus in combination with *Cladopelma* it changes to *bicarinatum*. On the other hand, in the case of *C. torbara* Lenz, named after Lake Torbara in Italy, "the author of" [the] "species name did not indicate whether he ... regarded it as a noun or as an adjective, ... it may be regarded as either and the evidence of usage is not decisive," [thus] "it is to be treated as a noun in apposition to the name of its genus (the original spelling is to be retained, with gender ending unchanged ...)" (ICZN, 1999: Article 31.2.2). Another example analogous to the latter is *Polypedilum nubifer* (Skuse), which must not be changed to *P.* "nubiferum".

Taxa whose species name endings have been changed are: *Telmatogeton pectinatus* (Deby), *Baeotendipes noctivagus* (Kieffer), *Chironomus nigrocaudatus* (Erbaeva), *Cladopelma bicarinatum*, *C. subnigrum* (Brundin), *C. viridulum* (Linnaeus), *Paracladopelma laminatum* (Kieffer), *P. mikianum* (Goetghebuer), *P. schlitzense* Ringe, *P. nigritulum* (Goetghebuer), *P. obscurum* Brundin, *Tribelos intextum* (Walker).

Comments on individual taxa

Telmatogetoninae

Thalassomya pedisequus (Kieffer, 1906). This junior synonym of *T. frauenfeldi* Schiner was listed by Ashe & Cranston (1990) with the spelling *T.* "pediserua", an apparent lapsus in type-setting (P.S. Cranston, pers. comm.). *Chironomus pedisequus* is the substitute name by Kieffer (1906) for the junior primary homonym *C. pedestris* Wollaston, 1858 nec Meigen, 1830. Etymologically, Kieffer's replacement epithet can only be seen as a noun in apposition, thus its ending does not change with the gender of the genus.

Tanypodinae

Micropelopia Zavřel, 1916, and "Micropelopiae" sensu Thienemann & Zavřel (1916).

Ashe (1983: 35) considered "*Micropelopia* Thienemann in Thienemann & Zavřel, 1916: 599" to be a suprageneric group name, "possibly equivalent to the tribe name Pentaneurini", that "does not have any taxonomic validity". At the same time, he deemed it "possible that a subsequent author has unintentionally created a genus named *Micropelopia* by using" it "as a generic name and including new species in it". Indeed, Vimmer (e.g. 1917a, b; 1927) repeatedly treated *Micropelopia* as a genus ("rodu" in the title of 1917b), including in the formation of several new species names. Thienemann (1936b) listed "*Micropelopia* Th." among the junior synonyms of his interpretation of *Ablabesmyia* Johannsen. However, we are not aware of any references to *Micropelopia* as a valid genus name within the past 50 years, and no type species has ever been designated. Instead, the species groups and species originally or subsequently included by Vimmer are distributed among several currently accepted genera, or they are considered nomina dubia (see Ashe & Cranston, 1990) due to insufficient descriptions and missing type material. Under these circumstances, resurrection of a genus *Micropelopia* would be unproductive and only detrimental to the stability of nomenclature.

As recorded by Ashe (1983), the name *Micropelopia* was first used on page 599 of Thienemann & Zavřel (1916), where Zavřel (not Thienemann) denoted with it a morphological "type" of larvae common to many tanypod species but not coinciding with any single genus concept. This application of the name exactly fits the ICZN Code definition of a "collective group", i.e. "an assemblage of species, or stages of organisms (e.g. eggs or larvae), that cannot be allocated with confidence to nominal genera" (ICZN, 1999: glossary). The applicability of such collective group names obviously is relatively restricted, but they are recognized formally on the genus-group level where they enter into homonymy (ICZN, 1999: Article 23.7). Consequently, *Micropelopia* Zavřel, 1916 is a senior primary homonym to *Micropelopia* Vimmer, 1917 and any other subsequent use of the name at genus level, and all such junior homonyms are permanently invalid.

The derived family-level "Micropelopiae" was called a "subfamily" (Zavřel in Thienemann & Zavřel, 1916: 642), a group ("skupina") of genera (Vimmer, 1917a: 2), or a "sectio" (e.g. Zavřel & Thienemann, 1919). It is not identical to the currently recognized tribe Pentaneurini, because it included species from Natarsiini as well (the "*fulva*-group" of Zavrel & Thienemann, 1919; see Fittkau, 1962). Instead, by current standards "Micropelopiae" represents a super-tribe concept, with its complement, the "Tanypi" of Thienemann & Zavřel (1916), comprising the tribes Tanypini, Coelotanypodini, Procladiini, Anatopyniini, and Macropelopiini. Super-tribes are admissible and fall within the realm of the ICZN Code, although the latter does not regulate how names at this rank are formed (ICZN, 1999: Article 29.2). However, to be an available family-group name "Micropelopiae" would have to be based on an available generic name (ICZN, 1999: Article 11.7.1.1). This condition is not met because *Micropelopia* Zavřel, as a collective group, does not lend itself to such an action. Therefore, the term "Micropelopiae" does not constitute an available scientific name and should not be used.

Macropelopia nebulosa (Meigen, 1804: 21). Ashe & Cranston (1990) gave "23" as the page number in the original publication, but the *Tanypus nebulosus* described there is a junior primary homonym of another *T. nebulosus* on page 21. This homonymy has been solved by Meigen (1818: 57, 58), who effectively acted as the 'First Reviser' (ICZN, 1999) by maintaining the *T. nebulosus* of 1804: 21 as valid (with the junior synonym *T. littoralis* Meigen, 1804: 22), while listing the *T. nebulosus* of 1804: 23 in the synonymy under — i.e. not senior to — *Tanypus punctatus* (Fabricius, 1805). For more on the latter, see comments on *Natarsia punctata* below.

Natarsia punctata (Fabricius, 1805). Fittkau (1962) designated *Chironomus punctatus* Fabricius, 1805 as the type species of *Natarsia* — not *Tanypus punctatus* Meigen, 1804, nor "Chironomus punctatus Meigen, 1804" (Ashe & Cranston, 1990; etc.), an unavailable conglomerate of the two preceding available names. *Tanypus punctatus* Meigen and *Chironomus punctatus* Fabricius are different species: Fabricius (1805: 43) does not refer to Meigen (1804) as he does with other species, and Meigen's description clearly differs from those given by Fabricius (1805) and Fittkau (1962). Meigen (1818: 58) transferred *C. punctatus* Fabricius to *Tanypus*, thereby rendering it a junior secondary homonym of *T. punctatus* Meigen. However, Meigen (1818: 56) simultaneously synonymized *T. punctatus* Meigen with *T. varius* (Fabricius, 1787). As long as the two species were held in *Tanypus* the homonymy was never recognized, and both are now in different genera (the junior in *Psectrotanypus*). Therefore, according to the ICZN Code (1999: Article 59.2), the erstwhile junior secondary homonym does not need to be replaced, and *Natarsia punctata* (Fabricius) remains valid.

Paramerina cingulata (Walker). *Chironomus cingulatus* Walker, 1856 is a junior primary homonym of *C. cingulatus* Meigen, 1830. However, the two homonyms have not been placed in the same genus by any author after 1899 (Walker's species had been transferred to *Tanytarsus* by Theobald, 1892), and no solution to this homonymy was published prior to 2000. Under such circumstances, the fourth edition of the nomenclature Code (ICZN, 1999: Article 23.9.5) now prohibits replacing the junior homonym without applying for an ICZN decision. Consequently, *P. cingulata* (Walker) remains the valid name, its replacement with the junior synonym *P. pygmaea* (van der Wulp, 1874) by Moller Pillot & Beuk (2002) is invalid.

Thienemannimyia carnea (Fabricius). Pinder (1978: fig. 19D) shows the wing of *Th. carnea* with neither of the two crossbands reaching the anterior margin, and the proximal band limited to a small, faint area in the crossvein region but extensive and distinct in the posterior wing half. This disagrees with the pattern described by other authors. Wiedemann in Meigen (1818) — after a specimen in the Fabricius collection — and Fittkau (1962: fig. 97) have both bands running margin-to-margin, and even in Fittkau's contradictory description (op.cit., p. 188: "The proximal band ends with the crossveins") it is the posterior, not the anterior half that is missing (loc. cit.: "The anterior part ... is intensified by membrane pigmentation"). Roback (1966) — although his assumption of a "holotype" was unjustified — verified the wing maculation of the Fabricius specimen as agreeing with Fittkau's figure. There are indica-

tions for unresolved taxonomic complexity in *Th. carnea* and similar species (see the comments below on *Tanypus festivus* and *Th. northumbrica*). A revision is needed to evaluate whether specimens with a wing pattern as shown by Pinder (1978) are conspecific with *Th. carnea* (Fabricius).

Tanypus festivus Meigen, 1838. The adult female was described (and figured: Meigen in Morge, 1975: pl. XII, fig. 9) with the thoracic markings darker than in males of *T. carneus* (Fabricius) sensu Meigen (1818, 1830a; in Morge, 1975: pl. XII, fig. 2), and with the proximal wing band limited to the anterior half of the wing (see above comments on *Thienemannimyia carnea*). The Meigen collection (MNHN) contains a female specimen labeled "*festivus*" by Meigen, which had been misplaced in the "*Chironomus*" rather than the "*Tanypus*" section at some unknown point in time (unpublished observation notes by Edwards from the early 1920s — at BMNH, seen by MS — already list it in the wrong section). This specimen, reexamined by MS, agrees with Meigen's description and figure, except for the proximal wing band which continues to the posterior margin of the wing. However, the posterior part of this band is only very faint on one wing, and the anterior part more distinctly pigmented on both wings. In the notes mentioned above, Edwards made a sketch of the darker of the two wings and identified the specimen as "cf." his concept of *Rheopelopia ornata* (Meigen). In his 1929 monograph he reconsidered, rendering *T. festivus* a variety of *T. carneus*, but "larger and darker, with stronger and more extensive wing-markings". Apparently, this statement was based on the somewhat exaggerated figure in his notes, since the specimen had been returned to MNHN years before. For this reason, neither Edwards nor subsequent authors realized that their concepts of *T. carneus* and *T. festivus* misrepresented, indeed almost reversed Meigen's (1818, 1830a, 1838) wing descriptions for the two species. Fittkau (1962) in turn misinterpreted Edwards' (1929) concept (see comments under *Thienemannimyia northumbrica* below). Cranston (1975) found British material for the two varieties sensu Edwards impossible to separate into two distinct groups, therefore suspected *T. festivus* to not constitute a separate species, but put off formal action until further examination.

In light of the above, it is questionable whether usage referring to *T. festivus* Meigen in recent decades has been consistent in itself and applied to the same taxon as Meigen's. The condition of the proximal wing band covering only the anterior half of the wing has been described for *Tanypus festivus* by Meigen (1838), for (?part of) *Th. carnea* by Fittkau (1962; see separate comments above on that species), and for *Th. pseudocarnea* by Murray (1976). Only a comprehensive revision of these and similar species could show the degrees of intraspecific variation and overlap, and thus whether the condition is taxonomically informative. According to Langton & Visser (2003), no pupae have yet been associated with adults determined as *Th. festiva*. However, there is the morphotaxon *Th.* "sp.? Pe" of Langton (1991), found in the UK, whose exuviae are slightly larger than those of *Th. carnea* and share with only the latter the laterally pointed, acute apex of the thoracic horn (although they differ in other features).

Within the area covered by the Fauna Europaea database, *Th. festiva* has been recorded only from regions in which *Th. carnea* has been found as well. Thus, if the two are in fact separate species, the loss of information from falsely lumping them into one would be greater than the error created by falsely separating them if in reality they are one and the same. For this reason we have kept *Th. festiva* (Meigen) as a separate entity, but note that individual records under this name may not all refer to the same biological species. A revision of *Thienemannimyia* species around *Th. carnea* is needed for clarification.

Thienemannimyia geijskesi (Goetghebuer, 1934). The original spelling "Geijkesi" requires a mandatory change (ICZN, 1999: Article 32.5.2.5) and is thus incorrect. The genus name spellings in the two original combinations, "Ablasblesmyia" and "Ablablesmyia" are "clear evidence" that more than one "inadvertent error, such as a lapsus calami" (ICZN, 1999: Article 32.5.1.1) occurred in Goetghebuer's (1934b) spellings. The name of the person to be honored with the epithet is spelled Geijskes (see e.g. Goetghebuer, 1934c). In accordance with all of the above, the species name has been spelled "geijskesi" (or "Geijskesi") in the vast majority of subsequent references (e.g., Lenz in Goetghebuer & Lenz, 1936; Thienemann, 1936b; Zavřel, 1936; Brundin, 1949; Fittkau, 1962; Fittkau & Reiss, 1978; Langton, 1991). Ashe & Cranston (1990) have introduced the incorrect subsequent spelling "geijeskesi", Sæther et al. (2000) and Langton & Visser (2003) use "geijkesi". However, no treatment of the problem has been found in any nomenclature-relevant publication, that qualifies as an emendation in the sense of the ICZN (1999: Article 33.2), i.e. that cites the incorrect original together with the changed spelling. Consequently, we here propose *Thienemannimyia geijskesi* as the valid name and spelling, and declare incorrect the original "Geijkesi" as well as all other versions (quoted above).

Thienemannimyia northumbrica (Edwards), and *Th. festiva* "n. spec." of Fittkau (1962). Fittkau's (1962) "n. spec." must not be taken as the proposal of a new name, since in the following sentence he explained his intention to reelevate the variety *festiva* Meigen sensu Edwards (1929) to species rank. The single specimen Fittkau based this on — preserved at ZSM and reexamined by MS — does not agree with the descriptions in Meigen (1838) or Edwards (1929), nor even with Fittkau's own. For example, due to the wing pattern it clearly keys out at *Th. northumbrica* rather than *"festiva"* (see Fittkau, 1962: p. 177, couplets 11–13). In fact, comparison with the figures in Edwards (1929: pl. XVII, fig. 1) and Pinder (1978: fig. 19E) shows the wing of Fittkau's specimen to be absolutely identical to that of *Th. northumbrica*. In his discussion of the latter species, Fittkau (1962: 190) states that its hypopygium "most resembles that of *Th. festiva*". No feature Fittkau described for the latter disagrees significantly with Edwards' characterization of *Th. northumbrica*. We therefore consider Fittkau's *Th. "festiva"* a misidentification, but note that even though his specimen is a *Th. northumbrica*, his description is closer to the var. *festiva* of Edwards. This matter has no immediate effect on nomenclature because Fittkau did not create a new available name or taxon concept. Nevertheless, because his work has been the main reason for *Th. festiva* being kept separate (see, e.g., Cranston,

1975), the latter concept is now all the more in doubt (but see above comments on *Tanypus festivus* Meigen).

Peritaphreuusa Becker, 1908, and *Zavrelimyia* Fittkau, 1962. Cranston & Armitage (1988) considered these names as synonymous, believing they had rediscovered two syntypes of *P. flavicollis* Becker, the type species of *Peritaphreuusa*, and that they could identify these beyond doubt as conspecific with *Zavrelimyia nubila* (Meigen, 1830) sensu Fittkau (1962). However, they were "unwilling" to use *Peritaphreuusa* in place of the well-established *Zavrelimyia*, arguing that the former had "remained unrecognised" and "unused since its first proposal". Of the latter two claims only the first is well-founded. As discussed by Fittkau (1962: 253), *Peritaphreuusa* had in fact been used as a valid genus-group name by a number of authors (the first we know of was Vimmer, 1917a). Moreover, limits to its taxonomic content varied (Fittkau, loc. cit.), and all those interpretations were misidentifications if Cranston & Armitage's (1988) type recognition and taxonomic identification are correct.

Becker's (1908) diagnosis hinged on the adult female antenna supposedly exhibiting 12 flagellomeres. This would not have warranted a new genus even at the time, see Kieffer's (1906) diagnosis for his concept of *Ablabesmyia*, but because the number of flagellomeres was (and still is) a feature often used in chironomid diagnostics, authors believing Becker's count applied it in their keys and classifications. This brought together in one genus the species now known as *Ablabesmyia phatta* (Egger), *Guttipelopia guttipennis* (van der Wulp), and *Krenopelopia binotata* (Wiedemann). According to Fittkau (1962), these — plus the possible new species *Krenopelopia* "spec. Alpen" — are the only European Pentaneurini with 12 flagellomeres in the female, whereas all *Zavrelimyia* have only 11. Cranston & Armitage (1988) do not report on the antennae of the Becker specimens, but if their identification is correct, then either the flagellomere number is variable in *Z. nubila*, or there is a separate species, "*Z.* flavicollis", with 12 flagellomeres, or Becker (1908) miscounted (e.g. mistaking the constricted Fm1 for two separate flagellomeres). In the last case, the entire problem with all its reverberations would be the result of a simple observation error. Anyway, workers studying the pupae and larvae (e.g. Zavřel & Thienemann, 1919) soon found that *Ablabesmyia phatta*, *Guttipelopia guttipennis* and *Krenopelopia binotata* could not constitute a natural grouping in a system integrating evidence from all life stages. Goetghebuer in Goetghebuer & Lenz (1936) thus called *Peritaphreuusa* as used at the time artificial and untenable, but he needed no formal solution because he was employing a large-genus classification in which *Peritaphreuusa* fell as a junior synonym. Fittkau (1962), who reorganized the Tanypodinae into the more narrowly defined genera in use today, stated that he might have revived *Peritaphreuusa*, but could not identify it from the previous literature and had been informed that there was no type specimen in the Becker collection. Cranston & Armitage (1988) reported two specimens as lecto- and paralectotype of *P. flavicollis* Becker, but did not discuss the problem with Becker's flagellomere count, and apparently did not test all details described by Becker for other possible discrepancies. For example, the hind leg proportions given by Becker

disagree strongly with those of a probable type specimen of *Tanypus nubilus* in the Meigen collection at MNHN, examined by MS. It is unlikely that Cranston & Armitage misidentified the genus of the Becker specimens. However, according to Fittkau (1962) individual specimens can be difficult to identify in *Zavrelimyia* and related genera. Cranston & Armitage relied exclusively on the wing pattern, but that is not necessarily distinctive, particularly when material has a preservation history as in the case at hand. This applies especially at species level, e.g. to the separation between *Z. nubila* and *Z. barbatipes* (Kieffer), a species also recorded from the Canary Islands.

Cranston & Armitage (1988) and Ashe & Cranston (1990) correctly stated that in synonymy with *Peritaphreuusa Zavrelimyia* could only be made the valid name by an ICZN decision enacting a reversal of precedence (ICZN, 1999: Article 23.9.3). However, no application for such a ruling has ever been made. As long as none is pending or decided upon, *Peritaphreuusa* would be the valid name, and continued use of *Zavrelimyia* would not be in agreement with the ICZN Code. However, it does not seem advisable to consider the type status and identification of the Becker specimens as proven beyond doubt from an incomplete analysis, especially if one is not prepared to accept the consequences of the resulting synonymy. Instead, before acting on nomenclature in this case, the Becker specimens should be reviewed with respect to all details of Becker's descriptions, and in comparison to any other relevant type material such as the Meigen specimen of *Z. nubila*. Until that is accomplished, we propose to maintain *Zavrelimyia* and treat *Peritaphreuusa* and *P. flavicollis* as nomina dubia.

Tipula zonata Fabricius, 1775, and *T. zonata* Schrank, 1803. In the 20th century, *T. zonata* Fabricius was often listed as synonymous with *Psectrotanypus varius* (Fabricius, 1787), but for various reasons the latter, younger name was always used as valid. The assumption of synonymy originated with Goetghebuer (1923), who had identified a specimen sub *Tanypus zonatus* in the Meigen collection (MNHN) as being a teneral ("immature") *P. varius*. The present first author has reexamined this specimen, and redetermined it as *Apsectrotanypus trifascipennis* (Zetterstedt). This agrees with the fact that Fabricius himself, Meigen, and other 19th century authors had consistently differentiated between *Tipula zonata* and *T. varia*. Through Wiedemann, Meigen (1818) had information on and even access to some material from the Fabricius collection. However, unlike in other cases Meigen (1818) did not refer his concept of *Tanypus zonatus* to Fabricius type material rather than just to the literature he cited in the synonymic listing. Consequently, the identity of the Meigen specimen is irrelevant to nomenclature. The Fabricius collection contains a labeled pin but no biological specimen of *Tipula zonata* (see Zimsen, 1964). Thus the latter is considered a nomen dubium, its synonymy with *P. varius* is rejected, and *A. trifascipennis* also remains valid.

Tipula zonata Schrank is a junior primary homonym, therefore invalid, and the biological species involved is unknown due to insufficient description and missing type material.

Diamesinae

Diamesa starmachi Kownacki & Kownacka, 1970. The original publication contains two variant spellings: "*starmachii"* in the title of the paper, "*starmachi"* in the titles of the two plates. Both spellings have been used since then — the former e.g. by Serra-Tosio (1972) and Ashe & Cranston (1990) — but the original authors of the species consistently used *D. starmachi* in subsequent works (the earliest we could find being Kownacki & Kownacka, 1971: fig. 4). According to ICZN (1999: Article 24.2.4), Kownacki & Kownacka (1971) have thereby selected *starmachi* as the correct original spelling, rendering *starmachii* an incorrect (variant) original spelling. Note that this solution is not affected by the fact that no previous edition of the ICZN Code contained such a provision. It is unfortunate that the original publication has to be cited bibliographically with the incorrect spelling in the title, but this is not relevant to the decision either.

Potthastia longimanus Kieffer, 1922(b). This is the original combination and only correct spelling, contrary to Ashe & Cranston (1990) who listed the species as "longimana" and the original genus as "*Diamesa*". Both species name endings have been in use: the original "-us" e.g. after Serra-Tosio (1972) and Langton (1991), the adjectival and feminine "-a" e.g. after Ashe & Cranston (1990). From the original publication, the epithet may be regarded as either a noun in apposition (manus = hand) or an adjective. According to the ICZN Code (1999: Article 31.2.2), the species name "is to be treated as a noun in apposition" in such cases, "the original spelling is to be retained, with gender ending unchanged".

Pseudokiefferiella Zavřel, 1941, *Diplomesa* Zavřel, 1941, and *P. lapponica* (Zavřel, 1941). *Pseudokiefferiella*, credited to Zavřel (1941), is the name in overwhelming, possibly even exclusive use for the past 50 years (after, e.g., Serra-Tosio, 1972; Ashe, 1983; Langton, 1991). As stated by Ashe (1983), *Pseudokiefferiella* of Zavřel (1941a) is a nomen nudum due to the lack of a type species designation, but the name is available from the subsequent reprint edition whose supplement ("Nachtrag") effected *Diplomesa lapponica* as the type species by monotypy. The fact that *Pseudokiefferiella* was named conditionally does not matter (ICZN, 1999: Article 11.5.1). Although the distribution date of Zavřel's separates is not known exactly, priority over Pagast (1947) is established because the latter cited the former with the pagination of the reprint, not that of the journal version. In keeping with previous usage, we date both versions from the same year (Zavřel, 1941a, b), pending further evidence.

Since none of the three taxa in question here had been validated earlier, this is clearly a case of simultaneous publication, because by giving the described species as "*Diplomesa lapponica* n. g., n. sp." Zavřel's (1941b) supplement has made both components of this combination available as well (ICZN, 1999: Article 13.4). *Pseudokiefferiella* and *Diplomesa* were thus published simultaneously and in synonymy. Thienemann (1952) is here considered as the 'First Reviser' (ICZN, 1999: Article 24) who has selected *Pseudokiefferiella* as the valid name. Pagast's (1947) use of *Diplomesa* is not accepted as a first-reviser act, with the justification that,

although he refers to Zavřel (1941b), he did not cite both genus names together (ICZN, 1999: Article 24.2.1). Under the special circumstances of this case, both *Diplomesa* and *D. lapponica* also receive the authorship and date of Zavřel, 1941, not Pagast, 1947 (ICZN, 1999: Articles 50.1, 50.7). A supposed junior homonym "*Pseudokiefferiella* Thienemann, 1952" (Ashe, 1983) does not exist. Thienemann did not propose a new name but simply referred to what he considered to be an available one.

The above solution preserves stability without requiring the application to the ICZN previously deemed necessary (Ashe, 1983; Ashe & Cranston, 1990). *Diplomesa lapponica* Zavřel, 1941 = *Pseudokiefferiella parva* (Edwards, 1932) remains the type species of the genus, and *Pseudokiefferiella* Laurence, 1951 is invalid as a junior homonym.

Orthocladiinae

Brillia flavifrons (Johannsen) and *B. longifurca* Kieffer. Cobo et al. (1995) have presented evidence against the synonymy between these two names, that had been assumed for some years before. Accordingly, all European records of *B. flavifrons* may represent *B. longifurca* instead, but that would have to be verified from the respective material.

Clunio mediterraneus Neumann, 1966. Neumann et al. (1997) argue that *C. adriaticus* Schiner, 1856 and *C. balearicus* Bezzi, 1913 are nomina dubia due to insufficient descriptions and missing type material, and that therefore only *C. mediterraneus* — listed in "questionable synonymy" with both of the above in Ashe & Cranston (1990) — can be used as a valid name.

Cricotopus (Isocladius) maurii nom. n. for *C. (I.) polychaetus* Hirvenoja, 1989. The latter is a junior secondary homonym of *C. polychaetus* (Kieffer, 1923) which has been treated as a junior synonym of *C. (Cricotopus) gelidus* (Kieffer, 1922) since Hirvenoja (1973). According to the ICZN (1999: Article 60) the junior homonym must be replaced, because the conditions for reversal of precedence are not met (op.cit.: Article 23.9) and the two homonyms are considered congeneric (op.cit.: Article 59). Therefore we propose the new substitute name *Cricotopus (Isocladius) maurii*, in which the species epithet is formed in honor of Dr. Mauri Hirvenoja.

Cricotopus (Isocladius) trifasciatus (Meigen) and *C. (I.) tricinctus* (Meigen). Panzer (1810; dated after Evenhuis, 1997, and in accordance with Hirvenoja, 1973) published the new species "*Chironomus trifasciatus* Meig." with a description and diagnosis by "Meigen in litt.", and a colour figure. Meigen (1818) redescribed the species, including a diagnosis against his new *Chironomus tricinctus*. Both species were illustrated in Meigen (1830b: plate 10, figs 7, 8), and again by Meigen in Morge (1975: plate VIII, figs 5, 6). A comparison of these references shows that the description of *C. trifasciatus* in Panzer (1810) differs from that in Meigen (1818) but actually fits both species separated in the latter work, and that the figure in Panzer (1810) — contrary to the statement by Hirvenoja (1989) — shows *C. tricinctus*, not *C. trifasciatus* sensu Meigen (1818, 1830b). The artwork for the illustrations in

Panzer (1792–1810) has been credited to J. Sturm, and a number of figures indeed carry inscriptions such as "J. Sturm del.". However, Panzer (1806: Heft 103, species number 11) acknowledges "... Meigen, whose benevolence I am indebted to for a considerable number of most elegant color figures ...". None of the figures of chironomids in Panzer's work identify the respective artist, but a comparison of the styles of the illustrations, especially the included lettering, suggests that the figure given for *C. trifasciatus* in Panzer (1810) was prepared by Sturm, not by Meigen.

Consequently, in order to avoid a reinterpretation of *C. trifasciatus* which would upset the nomenclature in *Cricotopus (Isocladius)* in use at least since Hirvenoja (1973), we hold that Panzer's collection contained both of the above species: the type female(s) sent to and described by Meigen represented *C. trifasciatus*, whereas the specimen figured by Sturm was a *C. tricinctus*. This interpretation is consistent with the fact that Meigen's (1818) material for both species is reported to have come from Baumhauer. Although the treatments in Panzer of *Tanypus cinctus* (1807: Heft 105) and *Chironomus gibbus* (1810) are listed in the synonymy of their respective species in Meigen (1818), not even Panzer's material is mentioned in the case of *C. trifasciatus* and *C. tricinctus*.

Hirvenoja (1989) recognizes the single female under *C. trifasciatus* in the Meigen collection at MNHN as the "holotype", even though this would be problematic because the specimen does not "agree very well with any of the descriptions" of related species by Hirvenoja (1973, 1989), since it combines the larger body size of *Cricotopus polychaetus* Hirvenoja, 1989 with a number of sensilla chaetica on tarsomeres 1 of the mid and hind legs that is slightly higher than known for *C. trifasciatus*. It is highly likely that the MNHN specimen is one from the Baumhauer collection described by Meigen in 1818, not one from the Panzer collection. Therefore, the female at MNHN should not be considered a type specimen (Hirvenoja's holotype assumption is definitely not justified from the original publication).

Eukiefferiella Thienemann, 1926. The type species is here fixed (under ICZN, 1999: Article 70.3) as *E. gracei* (Edwards, 1929), misidentified as *Dactylocladius longicalcar* Kieffer, 1911 in the original designation by Thienemann (1926). This settles a case not closed earlier because the application for an ICZN decision necessary under previous Code editions (see Ashe, 1983) was never submitted.

Thienemann (1926: 325, footnote), in proposing his new genus *Eukiefferiella* with *D. longicalcar* Kieffer as the type species, explicitly based both taxa on characters of the pupa (for the species after Potthast, 1914), not of the adult. An examination of the pupal and larval material (at ZSM) listed sub *D. longicalcar* by Potthast (1914; see also Thienemann, 1912) has revealed the presence of at least three species: *E. gracei*, *E. devonica* (Edwards, 1929), and *E. longicalcar* (a nomen dubium, see separate comments below). However, Thienemann's (1926) diagnosis of the pupal thoracic horn and his specific reference to Potthast's (1914) figure 60a fit only one of these species: *E. gracei* (see also Brundin, 1956). Fixing the latter as the type species preserves *Eukiefferiella* nomenclature as unanimously used for at least about 50 years.

Lehmann's (1972) *Eukiefferiella* "potthasti nov. nom." for *Dactylocladius* "*longicalcar* Potthast, 1914 nec Kieffer, 1911 = *gracei* Edwards, 1929" — besides being unnecessary — was published in synonymy, and is therefore unavailable and without effect on this case.

Eukiefferiella longicalcar (Kieffer, 1911). The original correspondence between Kieffer and Thienemann, as well as Thienemann's personal register of data on chironomid species — both preserved at ZSM (Contreras-Lichtenberg, 2000; Spies, 2001) — show that *Dactylocladius longicalcar* Kieffer was described from a single female reared from a pupa. The exuviae is preserved on a slide at ZSM, the collection data are: Germany, Sauerland, Glör river "at gauging weir", 9.iii.1909, leg. A. Thienemann. This holotype (see ICZN, 1980) exuviae does place the species in *Eukiefferiella* Thienemann, but it is not conspecific with *E. gracei* (Edwards, 1929) to which *D. longicalcar* Kieffer sensu Potthast (1914) has been assumed identical since Brundin (1956) (however, see above comments on *Eukiefferiella* for *D. longicalcar* sensu Thienemann, 1926). Instead, the holotype exuviae runs to the species pair *E. minor* (Edwards, 1929) and *E. fittkaui* Lehmann, 1972 in the keys by Lehmann (1972) and Langton (1991). Langton & Visser (2003) have proposed the first ever character to separate pupae of *E. fittkaui* and *E. minor*: the extent to which the thoracic horn carries fine "setulae". However, the holotype exuviae of *E. longicalcar* is inconclusive in this respect: one thoracic horn resembles the *E. minor* condition, but the other that of *E. fittkaui* with significantly fewer setulae. Kieffer's (1911b) description of the adult female contains features — two long and subequal mid tibial spurs, palpomeres 2–4 at most twice as long as their width — disagreeing with *E. fittkaui*, *E. minor*, and all other known European *Eukiefferiella* (G.A. Halvorsen, pers. comm. to MS). Thus, *E. longicalcar* (Kieffer) remains a nomen dubium.

Eurycnemus crassipes (Meigen in Panzer, 1810). Heft 109 of Panzer (dated 1810 after Evenhuis, 1997) presented two new species of Chironomidae, *Chironomus trifasciatus* (see separate comments above) and *C. crassipes*. In Ashe & Cranston (1990), authorship was credited to Meigen for the former, but to Panzer for the latter. However, as with *C. trifasciatus*, Panzer had given Meigen as the taxonomic author, and quoted the species description and diagnosis from "Meigen in litt.". Meigen (1818) redescribed the species under the name *C. elegans*, without mentioning the earlier description, but several other cases are known in which he felt free to change a name he had proposed before, with or without referring to the earlier work (e.g., *Tanypus dubius* Meigen, 1804 and *T. pusillus* Meigen, 1818; *Diamesa cinerella* Meigen in Waltl, 1835 and *D. waltlii* Meigen, 1838). Speculation as to Meigen's reasons for such changes is irrelevant to nomenclature.

Gymnometriocnemus Edwards, 1932, and *Pseudosmittia* Edwards, 1932. Ashe (1983) and Ashe & Cranston (1990) considered both names as "technically" nomina nuda or invalid, respectively, and rulings by the ICZN as necessary, because the original publication by Goetghebuer (1932b) contains no type species designations for either genus. However, as demonstrated by Spies & Reiss (1996) for *Pseudosmittia*, both genus names have long been available nonetheless. Edwards (1932) had immedi-

ately realized the problem and validated both taxa, describing them by inference (reference to Goetghebuer, 1932b), and designating type species (see Ashe, 1983; Ashe & Cranston, 1990). The equivalent of the relevant ICZN Code Article (1999: 13.1.2) already existed in previous editions (e.g. ICZN, 1961: Article 13(a)(ii)). The availability of *Gymnometriocnemus* and *Pseudosmittia* from Edwards (1932) rather than Goetghebuer (1932b) does not cause any further changes to nomenclature or taxonomy.

Hydrobaenus lunzensis (Thienemann, 1944). The species was described first in Gowin & Thienemann (1942) — the adults by the former, pupa and larva by the latter author — but the name is not available from that publication. The genus was given as "*Diplocladius (Orthocladius)*" and, as can be seen from the discussion (op.cit.: 104), this does not mean that *Orthocladius* was considered a subgenus of *Diplocladius*, but that the coauthors did not agree on generic placement: Gowin suggested *Orthocladius*, Thienemann *Diplocladius*. According to ICZN (1999) Article 11.9.3, to become available a "species-group name must be published in unambiguous combination with a generic name". By not satisfying this condition Gowin & Thienemann (1942) produced a nomen nudum, but the species now known as *Hydrobaenus lunzensis* is available from the earliest subsequent publication in which all requirements are met, Thienemann (1944), in which the larva and pupa are keyed under the name *Diplocladius lunzensis*.

Limnophyes foenisuga (Potthast, 1914), and *L. hexatomus* (Potthast, 1914). Both species names — originally combined with *Camptocladius* — are clearly available from the diagnoses of immature stages in Potthast (1914). Syntype exuviae at ZSM show them to be junior synonyms of *L. minimus* (Meigen).

Limnophyes ploenensis (Thienemann, 1933). The original description from immature stages as "*Camptocladius crescens* Kieffer, 1915, var. ploenensis" is deemed to have established a subspecies according to ICZN (1999) Code Article 45.6.4. Sæther (1990) considered *C. crescens* Kieffer a nomen dubium, but elevated *C. c. ploenensis* to the species level and synonymized part of it (the pupae, not the larvae) with *L. pumilio* (Holmgren). However, the author of *L. ploenensis* can only be Thienemann, because Kieffer was not "alone responsible both for the name ... and for satifying the criteria of availability other than actual publication" (ICZN, 1999: Article 50.1.1).

Limnophyes punctipennis (Goetghebuer, 1919). Sæther's (1990) designation of an adult female as lectotype is invalid, because the original publication described only the eggs and immatures, and an individual association of the female with a syntype exuviae (see ICZN, 1980) was not established. The current species concept under the name *L. punctipennis* (e.g. Sæther, 1990; Langton & Visser, 2003) appears to agree with Goetghebuer's (1919) description of the pupa, but the immature-stage type specimens (Goetghebuer mentions microscope preparations) have not been reexamined. The larva described by Goetghebuer is either a misassociated *Cricotopus* (Sæther, 1990), possibly an earlier instar, or itself a composite of different taxa — the combination of characters given (AR < 1) does not fit any known final-instar larva in *Cricotopus* (e.g. Hirvenoja, 1973).

Mesosmittia Brundin, 1956. An invalid name, see under "Pseudorthocladius" below.

Metriocnemus cavicola Kieffer, 1921. *Metriocnemus* "martinii" of Thienemann (1921) is a nomen nudum, since no description was given along with the name (ICZN, 1999: Article 12). The valid name is *M. cavicola* Kieffer.

Nanocladius dichromus (Kieffer) = *Chironomus bicolor* Zetterstedt, not Waltl. Two identical combinations *Chironomus bicolor* were published in 1838 for different species, one by Meigen, the other by Zetterstedt. Edwards (1929: 351) knew this but could not establish priority and did not propose a solution. In fact, both names were published first in 1837: *C. bicolor* Waltl, 1837 (in Isis 1837/4: 279 — this is the same species as in Meigen, 1838: 7) is available, whereas *C.* "bicolor" of Zetterstedt (1837; in Isis 1837/1) is older but a nomen nudum (no description or equivalent included). Thus, Waltl's combination has priority, and in fact this has long been recognized and implemented: Kieffer (1906: 17 in his world catalog in Wytsman's "Genera insectorum" volume 42) has published *Chironomus dichromus* as a replacement for *C.* "bicolor" of Zetterstedt.

Orthocladius (Eudactylocladius) almskari Sæther, nom. nov. This new substitute name is here proposed for *O. (Eud.) schnelli* Sæther, 2004b which is a junior primary homonym of *O. (Symposiocladius) schnelli* Sæther, 2004a. The substitute name is formed in honor of Øyvind Almskar Schnell, the collector of the type material.

Orthocladius (Orthocladius) excavatus Brundin. Two competing taxonomic interpretations relevant to this name presently exist. The first, after Langton & Cranston (1991), recognizes a single species under the name *O. obumbratus* Johannsen, with *O. excavatus* and others as junior synonyms. The distribution is considered as Holarctic and widespread in Europe, the morphological characters as variable but intergrading without evidence for discrete groupings. On the other hand, Rossaro et al. (2002, 2003) recognize three separate species, with *O. excavatus* and *O. rhyacobius* Kieffer (see separate comments below) considered as distributed throughout Europe, *O. obumbratus* as exclusively Nearctic.

Records under relevant names here are known from 20 European countries. These have to be reexamined in light of the separations proposed by Rossaro et al. in order to determine the respective species distributions and applicable valid names.

Orthocladius (Orthocladius) rhyacobius Kieffer, *O. rhyacophilus* Kieffer, and *O. dispar* Goetghebuer. Langton & Cranston (1991) interpreted all three names from pupal exuviae at ZSM they considered as parts of animals from the respective type series (see ICZN, 1980). They did not study any adult specimen described by Goetghebuer, and "believed" those described by Kieffer to be lost. Because they found the exuviae to be "identical", Langton & Cranston (1991) synonymized the three above names with *O. obumbratus* Johannsen in their broad sense of the latter species. In a change from this interpretation, Rossaro et al. (2003) propose to redissolve *O. obumbratus* sensu Langton & Cranston, recognize *O. excavatus* Brundin and *O. rhyacobius* as separate species, but keep *O. rhyacophilus* and *O. dispar* as junior synonyms of *O. rhyacobius*. As regards the latter three names, this proposal is not well-supported.

Rossaro et al.'s (2003) key to species includes "only species whose adult male and associated pupal exuviae are known", because "some species cannot be identified with consistence as adult male or pupal exuviae alone" (op.cit.: 237). The key consequently requires knowledge of morphological details from both life stages, but many individual couplets use only characters of one stage, thus unassociated male or pupal specimens can be impossible to identify with a species name. Indeed, the supposed type exuviae of *O. rhyacobius*, *O. rhyacophilus* and *O. dispar* cannot be determined. Nevertheless, Rossaro et al. apparently did not look for potentially relevant adult specimens — an unpublished list of chironomid types in coll. IRSNB contains both *O. rhyacophilus* Kieffer and *O. dispar* Goetghebuer — and did not even examine the syntype exuviae of *O. dispar* reported by Langton & Cranston (1991).

In spite of this incomplete information, Rossaro et al. (2003) assume *O. rhyacobius* Kieffer as the name for an adult male morphotype from their own Italian material, characterized by a strongly reduced or absent virga, simply because they see the associated pupae as indistinguishable from the lectotype exuviae of *O. rhyacobius*. This ignores their own above-quoted principle that exuviae without associated adult males should not be relied on for identification. Moreover, Rossaro et al. themselves further disqualify the pupal stage as insufficient for identifications in this particular group of species. They state that "*O. rhyacobius* and *O. decoratus* cannot be easily separated as pupae" (Rossaro et al., 2003: 238), that the pupa of *O. decoratus* (Holmgren) "also cannot be easily separated from other species" (p. 218), "pupal exuviae assigned to *O. obumbratus* in Soponis (1977) could not be distinguished from" *O. rhyacobius* (p. 230), and "pupae associated to males assigned to *O. obumbratus* from the Nearctic region" (ex coll. B.A. Caldwell) "are intermediate between the *O. excavatus* and *O. rhyacobius* ones" (p. 226). In other words, at least four adult male hypopygium configurations interpreted as different species by Rossaro et al. are known to be associated with pupae that cannot be diagnosed alone. Because in the limited material seen by Rossaro et al. two of these perceived adult morphotypes were Nearctic and one (*O. decoratus*) from northern Sweden, the authors simply assume that the males that had emerged from the type exuviae of *O. rhyacobius*, *O. rhyacophilus* (type localities in midwestern Germany), and *O. dispar* (Austria) must all have had the same virga configuration as their own Italian material. However, records under the various names relevant in this case are known from 20 European countries. Rossaro et al. (2003) report seeing male-pupa associations for *O. rhyacobius* (in their sense) only from Italy. This can hardly be considered as sufficient evidence to evaluate variation and distribution, e.g. of the adult male virga condition, in the entire West Palaearctic, or to prove that no more than a single species with this pupal morphotype occurs in central Europe.

In fact, any assumption of synonymy between *O. rhyacobius* and *O. rhyacophilus* (Langton & Cranston, 1991; Rossaro et al., 2003) ignores the evidence from the original publication. Kieffer (1911b) had separated the two species on coloration and also on adult palp proportions, with palpomere 3 ("article 2^{e}", he never counted

Pm 1) shorter than Pm 4 in *O. rhyacobius*, but vice versa in *O. rhyacophilus*. Rossaro et al. (2003) give the palpomere proportions of the species they redescribe, and present no evidence that in any of these intraspecific variation may include both above configurations. Unless there is such wide variation, the Italian species with the reduced virga and Pm 3 > Pm 4 cannot be *O. rhyacobius* Kieffer. Goetghebuer's (1942) description of *O. dispar* is inconclusive in this respect, because it compares the lengths of Pm 3 and 5 (if the latter is a typographical error for Pm 4, then *O. dispar* has the *O. rhyacophilus* condition). There are further potentially significant differences among the three original adult descriptions, e.g. as regards coloration and the male antennal ratio (AR $\geq$ 2 in *O. rhyacophilus*, = 1.25 in *O. dispar*).

In summary, the names *O. rhyacobius* Kieffer and *O. rhyacophilus* Kieffer cannot be based on the single pupal exuviae used by Rossaro et al. (2003) — even though these are formally acceptable as type specimens — if in this group of species that life stage is not alone sufficient for species identification. Rossaro et al.'s (2003) reinterpretation and synonymy under the name *O. rhyacobius* cannot be accepted as proven beyond reasonable doubt (see also Sæther, 2004c). Further revision is necessary to clarify *O. rhyacobius*, *O. rhyacophilus*, and *O. dispar*, and the proper name for Rossaro et al.'s material.

Paralimnophyes longiseta (Thienemann, 1919), and *P. hydrophilus* (Goetghebuer, 1921). The first publication of the name *Camptocladius longiseta* in Thienemann (1919: 30) already presents the same larval features as the key in Thienemann (1921), and calls such larvae "very characteristic". Therefore, Thienemann (1919) is just as sufficient to establish availability as Thienemann (1921) from which the name was recognized so far (e.g. in Ashe & Cranston, 1990). Consequently, *P. longiseta* is the senior synonym of *P. hydrophilus*, not vice versa.

Parametriocnemus boreoalpinus Gowin & Thienemann. The only known record of this species from Germany (see Samietz, 1996) was based on a misdetermination (material reexamined by S. Michiels, pers. comm. to MS).

Parametriocnemus stylatus (Spärck, 1923). Spärck diagnoses the pupal exuviae, his presentation of the new name as *"Metriocnemus" stylatus* Kieff. (quotation marks by Spärck) is tentative, but not ambiguous. Whereas an ambiguous combination precludes availability (e.g., see above comments on *Hydrobaenus lunzensis*), a tentative one does not (ICZN, 1999: Article 11.9.3.4). Therefore, *Parametriocnemus stylatus* is available and valid from Spärck (1923), taking precedence over Kieffer's (1924b) adult description.

"Pseudorthocladius" of Goetghebuer (1932b), *Pseudorthocladius* Edwards, 1932, and *Mesosmittia* Brundin, 1956. Cranston (1975) discussed the respective status of each of these names, concluding that the use of "Pseudorthocladius" sensu Goetghebuer and *Mesosmittia* Brundin was against the rules of nomenclature and could only be validated by a special ICZN decision. These facts have been repeated often (e.g. by Ashe, 1983; Sæther, 1986; Ashe & Cranston, 1990), but no application has been submitted to the ICZN. Nevertheless, the formally incorrect usage has been carried on without known exceptions since Goetghebuer (1943 in Goetghebuer & Lenz,

1940–1950) and Brundin (1956), respectively. Parts of the complex case as perceived by Cranston (1975) etc. are no longer considered problematic: see the above comments on *Pseudokiefferiella*. However, *Pseudorthocladius* has remained available and valid only from Edwards (1932; type species: *Spaniotoma flexuella* Edwards, 1929), not from the nomen nudum produced by Goetghebuer (1932b; no type species designated), nor from Goetghebuer (1943: 73 in Goetghebuer & Lenz, 1940–1950; subsequent type species designation invalid due to Edwards, 1932). *Mesosmittia* Brundin has remained invalid as an unjustified replacement name for and junior objective synonym of *Pseudorthocladius* Edwards which Brundin was seeking to rename — while keeping the same type species — so that "Pseudorthocladius" could be maintained after Goetghebuer.

Compared to previous editions of the nomenclature Code, the current one (ICZN, 1999) places more weight on recent ('prevailing') usage relative to other factors. In our opinion this development is not only positive and will have to be carefully balanced in future Code editions in order to avoid a paradigm shift away from tried and tested principles such as the type-based system. For example, as a composite from the material and interpretations of many authors, usage can never be defined and evaluated as exactly and quickly as well-preserved type material. The corresponding losses in precision and reproducibility of taxonomic data decrease rather than promote a meaningful stability of nomenclature. On the other hand, the current Code's inclination toward usage bodes well for the special case at hand here. To shift application of *Pseudorthocladius* Edwards to what is currently called *Mesosmittia*, and to establish a new name for "Pseudorthocladius" of all authors except Edwards, would seriously destabilize nomenclature even if all chironomid workers were to follow this model from here on. Therefore, in order to finally achieve a formal solution, we are preparing an application for an ICZN ruling to set aside *Pseudorthocladius* Edwards, 1932 and instead accept "Pseudorthocladius" of Goetghebuer (1943) and *Mesosmittia* Brundin, 1956. As long as the case will be under consideration by the Commission, current usage is to be maintained (ICZN, 1999: Article 82).

Pseudorthocladius curtistylus (Goetghebuer, 1921). This was originally published as *Psectrocladius curtistylus*, the combination "Hydrobaenus curtistylus Goetghebuer, 1921" is not an available name of itself, but rather an incorrect taxonomic citation by Laurence (1951) copied by Cranston (1975), Ashe (1983, 1993), Ashe & Cranston (1990: 221 type species data — but the following species record is correct), etc. The correct form is *Hydrobaenus curtistylus* (Goetghebuer, 1921), but Laurence (1951) etc. omitted the brackets.

A related error concerns the data on *Orthocladius curtistylatus* Goetghebuer, 1934, a junior synonym of *Parorthocladius nudipennis* (Kieffer). *P. curtistylatus* is a replacement name for *Orthocladius curtistylus* Goetghebuer, 1933, but the latter is not "a junior primary homonym of *Orthocladius curtistylus* Goetghebuer, 1921" (Ashe & Cranston, 1990). In this taxonomic citation, Ashe & Cranston again omitted the brackets, thereby created a non-existing name, then inevitably made an erroneous interpretation. Edwards (1929) had transferred *Psectrocladius curtistylus*

Goetghebuer, 1921 to *Orthocladius*, thus *Orthocladius curtistylus* Goetghebuer, 1933 was a junior secondary (not primary) homonym at the time it was first published. Both denoted species have since been transferred to other genera, but Goetghebuer's replacement stands as justified when proposed.

Pseudosmittia Edwards and *Lindebergia* Tuiskunen. Sæther & Ferrington (2003) transferred *Lindebergia bothnica* Tuiskunen, 1984, the type species of *Lindebergia*, to *Pseudosmittia*. Although the authors did not state this explicitly, their act has rendered *Lindebergia* a junior synonym of *Pseudosmittia*.

Pseudosmittia danconai (Marcuzzi) and junior synonyms. Sæther & Ferrington (2003) synonymized *Smittia hamata* Freeman, 1956 with *Pseudosmittia danconai* (Marcuzzi, 1947), but did not mention *Pseudosmittia hamata* Strenzke, 1960 or its substitute name (due to secondary homonymy with *P. hamata* (Freeman)), *P. neohamata* Cranston in Ashe & Cranston, 1990. However, as evidenced by Sæther & Ferrington's (2003) records of material studied, these authors had studied type material of both *P. hamata* Strenzke and *S. hamata* Freeman. Comparison of all three original descriptions (Marcuzzi, 1947; Freeman, 1956; Strenzke, 1960) confirms conspecificity. Apparently, and curiously, Freeman and Strenzke had not only encountered the same species in Africa and Europe, respectively, but even assigned identical species epithets (Latin hamatus = hooked) to reflect the characteristic dorso-distal part of the adult male inferior volsella.

Consequently, *P. neohamata* Cranston (= *P. hamata* Strenzke) is treated here as a junior synonym of *P. danconai* (Marcuzzi).

Thienemanniella caspersi Sæther, and *T. partita* Schlee. Schlee (1968: 17) described *T. partita* from a single adult male and based his diagnosis, among other features, on the absence of microtrichia between the eye ommatidia. Caspers & Reiss (1989) found a specimen identical to the description of *T. partita*, except that it did possess eye microtrichia. They could not find the holotype of *T. partita*, which has remained missing despite repeated intensive searches in recent years. Caspers & Reiss proposed the new name *T. similis* for their Turkish specimen, but noted that species separation from *T. partita* might have to be reconsidered once additional material allowed an evaluation of possible variation in the eye microtrichia character. *T. similis* Caspers & Reiss is a junior secondary homonym of *T. similis* (Malloch, 1915) which had been transferred from *Corynoneura* by Sublette (1970). The junior homonym has been replaced with *T. caspersi* Sæther in Sæther & Ferrington, 2003.

In Europe, *T. partita* has been reported from Austria, France, Germany (including the type locality), and Italy. However, all 15 slide-mounted adult males in coll. ZSM previously determined as *T. partita* possess eye microtrichia. This includes all representatives of the abundant material reported by Ringe (1974) and Siebert (1980), as well as a specimen from Lunz, Austria, leg. Caspers 1970. In effect, we are presently unaware of any specimen exactly matching the character combination described from the holotype of *T. partita*. On the other hand, Schlee's (1968) observation cannot be discounted, as this habitually meticulous worker certainly double-checked a condition he explicitly noted as exceptional in *Thienemanniella*. A few

other species with bare or only pubescent eyes have since been described in the genus (Hestenes & Sæther, 2000). In the Fauna Europaea database we are therefore listing both *T. partita* and *T. caspersi* from western Europe. However, all material identified earlier as *T. partita* should be reexamined with regard to the eye microtrichia.

Zalutschia tornetraeskensis (Edwards & Thienemann in Thienemann, 1941). In the recent literature, two spellings of the species epithet have been in use: "tornetraeskensis" (e.g. in Sæther et al., 2000; Langton & Visser, 2003), and "tornetraskensis" (e.g. in Ashe & Cranston, 1990). The original publication, Thienemann (1941), also contains two spellings: "tornetraeskensis" (op.cit.: e.g. pp. 102, 174), and "torneträskensis" (e.g. pp. 211–215). No subsequent publication is known in which the correct original spelling has been selected according to the "Principle of the First Reviser" (ICZN, 1999: Article 24.2). Thienemann (1944, 1954) gave the name as "torneträskensis", but this does not constitute valid selection under Code Article 24.2.4, because that spelling is incorrect under Article 32.5, due to the mark-bearing vowel "ä". In order to stabilize nomenclature, *Trissocladius tornetraeskensis* is here selected as the correct original spelling.

Authorship of the species is credited to Edwards & Thienemann — according to ICZN (1999: Article 50.1) — because Thienemann (1941) provided a diagnostic description of the pupa along with that of the adult stages he quoted from a letter by Edwards. Consequently, both the adult specimens seen by Edwards and the pupae and exuviae of Thienemann's constitute parts of the syntype series.

Throughout Thienemann's (1941) work, the species name is combined with that of the genus *Trissocladius*, except within the quotation from Edwards' letter, where the name is given as "*Orthocladius torneträskensis*". However, this does not constitute ambiguous original combination as in the case of *Hydrobaenus lunzensis* (see above), because, unlike Gowin in the latter case, Edwards was not a bibliographic coauthor of Thienemann (1941), and the section containing Edwards' description bears a heading unambiguously stating the combination as "*Trissocladius torneträskensis*". In summary, the species name is available as *Trissocladius tornetraeskensis* Edwards & Thienemann in Thienemann, 1941.

Chironominae

"Monstrella" of Chernovskij. An unavailable name: a nomen nudum in Zhadin (1940); a name not proposed as valid (ICZN, 1999: Article 11.5) in Chernovskij (1949). Ashe's (1983) interpretation is imprecise, because "Monstrella" could be seen as described in Chernovskij (1949) through the inclusion of a single valid species. However, Chernovskij decidedly placed the latter in *Cryptochironomus*; and did not use "Monstrella" as a valid genus name, but made a reference merely to the earlier nomen nudum.

Chironomus (Camptochironomus) Kieffer. The subgenus *Camptochironomus* is in need of a comprehensive revision. However, contrary to Ashe (1983) and Ashe & Cranston (1990), the type species has been fixed.

Kieffer (1918a: 38, 45) erected *Camptochironomus* and included two species denoted by the available names *Chironomus aprilinus* Meigen, 1818 (see separate comments on that name below) and *C. subaprilinus* Kieffer, 1918(a). Kieffer (1918b: 114) again published *Camptochironomus* as if new, including the above two species plus *C. flavofasciatus* Kieffer, 1918(b), and proposed the latter as the type species. However, according to publication precedence (Ashe, 1983; confirmed here), *C. flavofasciatus* is not an originally included species and thus is ineligible as type species (ICZN, 1999: Article 67.2).

Kieffer (1918a) apparently had doubts whether his interpretation of *C. aprilinus* Meigen (first made in Kieffer, 1911a: 20, 41) was correct. However, his alternative reference to the species as "*aprilinus* (Meig. ?) Kieff." (Kieffer, 1918a: 45) did not create a separately available name that could be counted among the nominal species originally included in *Camptochironomus*. It also does not qualify as an "expressly stated misidentification" according to ICZN (1999) Article 69.2.4, thus the type species of the subgenus cannot be considered fixed under that Article either.

Still later, Kieffer (1921a) became convinced that his earlier treatments of *Chironomus aprilinus* Meigen had been misidentifications, and published the new name *Camptochironomus atrofasciatus* for the species he had seen (which he also referred to by the unavailable name "*Camptochironomus aprilinus* Kieff.").

Goetghebuer (1921: 133, footnote) proposed "*C. atrofasciatus* Kief. (*aprilinus* Kieff.)" as the type species for *Camptochironomus*. However, Kieffer's misidentification — regardless of the form in which its name is quoted — is not an originally included nominal species according to ICZN (1999) Article 67.2. Consequently, it is ineligible as the type species of *Camptochironomus*, and therefore Goetghebuer's (1921) designation is invalid. For the same reason, Goetghebuer's (1937: 21 in Goetghebuer & Lenz, 1937–1962) listing of *Tendipes (Camptochironomus)* "*aprilinus* Kieff. nec Meig. = *tentans* Fabr." does not constitute a valid type species designation either.

However, Goetghebuer (1937: loc. cit.) at the same time placed an originally included nominal species, *C. (C.) subaprilinus* Kieffer, in synonymy with the ineligible names (*C.* "aprilinus Kieffer", *C. tentans* Fabricius) that he used to denote the type species. The other originally-included species was placed elsewhere (op. cit., p. 21: "*Tendipes* sens. strict.", p. 24: "*aprilinus* Meig. nec Kieffer 1911"). With this act, Goetghebuer (1937) met the specific conditions in ICZN (1999) Article 69.2.2, thereby fixing *Chironomus (Camptochironomus) subaprilinus* Kieffer, 1918 as the type species of the subgenus *Camptochironomus* Kieffer, 1918. This interpretation has been unequivocal under all editions of the nomenclature Code (e.g. see ICZN, 1961: Article 69(a)(iv)).

The identity of *C. subaprilinus* is another matter. The original description (Kieffer, 1918a) does not allow identification at a level lower than subgenus, and even suggests mixed material (e.g., male body length 7.5 mm, wing vein RM black — female 6 mm, RM pale, three variant leg color patterns). Of the single male and 6 females listed by Kieffer (1918a), 2 syntype females are known to have been pre-

served (see Blech & Rohlfien, 1987, but "Holotypus" and "Paratypus" assignments not justified from the original publication). Unfortunately, these do not belong in *Camptochironomus*, but are *Cryptochironomus redekei* (Kruseman, 1933), identified using Sæther (1977), Rodova (1978), and Goetghebuer in Goetghebuer & Lenz (1937–1962).

In the DEI collection there is also a complete male labeled "*Camptochironomus subaprilinus* K." in handwriting indistinguishable from Kieffer's (compared to his letters to Thienemann at ZSM), and with printed labels "Kieffer det." and "Curland / Dr. C. Siebert / Libau". Its morphology matches both Kieffer's original description of *C. subaprilinus* (excepting the thread-like processes supposed to protrude posterolaterally from the seventh abdominal tergite), and the current diagnosis for the male of *C. (Camptochironomus) tentans* Fabricius (e.g. Pinder, 1978; Shobanov et al., 1999, but see discussion of the latter diagnosis under *C. tentans* below).

In summary, the extant parts of the name-bearing type series of *C. subaprilinus* Kieffer, the type species of the subgenus *Camptochironomus* Kieffer, belong to a different genus, but another specimen exists that was determined by Kieffer, is taxonomically informative, and fits his original diagnoses for both the species and the subgenus. Consequently, in order to stabilize nomenclature in *Camptochironomus*, we are preparing an application to the ICZN to set aside the preserved syntypes of *C. subaprilinus*, and designate as neotype the above-mentioned male in coll. DEI.

Chironomus (Camptochironomus) flavofasciatus Kieffer, 1918. The type material (from west-central Turkey) has been lost in a fire at the Hungarian National Museum (L. Papp, Budapest, pers. comm. to MS). Shilova (1969) keyed a plausible interpretation of the species, gave a new illustration of the male hypopygium, and recorded occurrence in the "central belt" of the western former Soviet Union, stretching from north of Kiev in the Ukraine east toward Saratov (Russia) and Oral (Kazakhstan). However, Shilova & Shobanov (1996) do not mention *C. flavofasciatus*, and Shobanov et al. (1996) list it as a nomen dubium but refer only to Shilova (1957) and Ashe & Cranston (1990), omitting Shilova (1969). Based on Kieffer (1918b) and Shilova (1969), *C. flavofasciatus* possibly is a good species after all.

Chironomus (Camptochironomus) pallidivittatus of authors, not Malloch. Hein & Schmulbach (1971) observed that "*C. pallidivittatus* as recognized in Europe is not the same species as described by Malloch (1915)", "the names *C. tentans*" [Fabricius, 1805; addition by present authors] "and *C. pallidivittatus* are synonymous and the epithet, *pallidivittatus*, is not available for the ... populations" [recently denoted with that name]. The reason given was that Edwards (1929), whose interpretation of the name has been followed by most subsequent authors, gave "a hypopygium figure that differs from the hypopygium of the lectotype". Hein & Schmulbach suggested that the "name *C. pallidivittatus* should be conserved and a neotype, which fits Edwards' description, should be designated." However, no such action has ever been validly implemented (an ICZN decision would be required), and the species name has remained based on the lectotype (at the Illinois Natural History Survey). Hirvenoja (1998a) consequently reported his European material as "*Chironomus*

(Camptochironomus) sp." or "*C. (C.) pallidivittatus* auctt.". However, other works inadequately reflect the situation. For example, in the most recent overview of Holarctic *Camptochironomus* systematics (Shobanov et al., 1999), the works by Hein & Schmulbach (1971) and Hirvenoja (1998a) are not mentioned, and the name-bearing type of *C. pallidivittatus* Malloch was apparently not examined, resulting in considerable likelihood that *C. (Campt.) dilutus* Shobanov et al., 1999 actually is a junior synonym of *C. pallidivittatus*. See also the comments on supposed synonyms of *C. tentans* below.

Chironomus (Camptochironomus) tentans Fabricius, and suggested synonyms. The name-bearing lectotype of *C. tentans* Fabricius (at ZMUC) is an adult female whose genitalia, according to Hirvenoja (1998a, and pers. comm. to MS), conform to the morphology outlined under this name in Sæther (1977). However, the latter author had used material from North America where, according to Shobanov et al.(1999), *C. dilutus* Shobanov et al. occurs in place of the Palaearctic *C. tentans*. On the other hand, Shobanov et al. have not provided placement for the darkly pigmented Nearctic specimens reported by earlier authors (e.g. Malloch, 1915; Townes, 1945) as *C. tentans* and decidedly fitting the diagnosis for that species (not that for *C. dilutus*) by Shobanov et al. (1999). The necessary revision of *Camptochironomus* should resolve this issue.

Recently published synonymies for *C. tentans* Fabricius, 1805 (see Ashe & Cranston, 1990; Shilova & Shobanov, 1996; Shobanov et al., 1999) have repeatedly included one or all of the names *C. vernalis* Meigen, 1804, *C. grandivalva* Shilova, 1957, and *C. hungaricus* Szító & Ferenc, 1969. Meigen (1818) listed *C. vernalis* under (!) the younger *C. tentans*, but if this synonymy were accepted, the ICZN Principle of Priority could nonetheless shift validity to the older name. Here, in light of the insufficient original description and the absence of extant type material, *C. vernalis* Meigen is considered a nomen dubium. *Chironomus grandivalva* Shilova and *C. hungaricus* Szító & Ferenc were listed as synonyms of *C. tentans* by Shilova & Shobanov (1996), without explanation. For *C. grandivalva*, this action may be seen as a reinterpretation of Shilova's own material, even though earlier (Shilova, 1969) she had confirmed the species as separate after finding additional material. However, *C. hungaricus* was synonymized from literature alone, without examination of type specimens (N.A. Shobanov, pers. comm. to MS). Furthermore, the result contradicts the accepted species diagnoses in *Camptochironomus* (e.g. Shilova, 1957, 1969), according to which the original description of *C. hungaricus* points not to *C. tentans*, but to *C. pallidivittatus* of authors (not Malloch). This is especially significant because the latter species is currently without a valid name (see separate comments above). The type material of *C. hungaricus* has been destroyed (A. Szító, pers. comm. to MS). Until the necessary revision is accomplished, we consider *C. hungaricus* a nomen dubium.

Chironomus (Chironomus) "annularius" of authors, not De Geer. Many publications since the 18th century have mentioned species names in *Tipula* or *Chironomus* variously spelled "annularis", "annularia", "annularius" or "annulatus". At least four different

biological species are involved, and these, the spellings of their names, and authorship data frequently have been mixed and confused. The name *Chironomus* "annularius", as currently used, most often is referred to Meigen (1818) — but see also Meigen (1804: 12 sub "annulatus") — who is considered (e.g. by Lindeberg & Wiederholm, 1979; Ashe & Cranston, 1990) to have misidentified *Tipula annularis* De Geer, 1776 (see separate comments below). The entire problem might never have arisen if Meigen had seen a copy of De Geer's (1776) original publication. However, at least in 1804 and 1818 he knew that work only in the German translation by Goeze (1782) who had shortened De Geer's description significantly, added comments of his own, and introduced the incorrect subsequent spelling *Tipula* "annularia". The publication history of all involved names and spellings is so complex that several individual occurrences each appear to allow more than a single status interpretation within ICZN (1999) regulations. For example, both De Geer's (1776) and Goeze's (1782) works could be discounted generally as not applying consistently binominal nomenclature (ICZN, 1999: Article 11.4), but that would wreak havoc on the many insect groups in which De Geer names have long been used as valid (in the Chironomidae, *Camptocladius stercorarius* and *Microtendipes pedellus* would be affected). It is not feasible to discuss all involved details here, but whichever way we have turned them, we have not found an acceptable interpretation that would render *Chironomus* "annularius" a separate scientific name available from Meigen or any subsequent author.

Kieffer (1911a: 30) apparently was the first to distinguish a species *C.* "annularius Meigen", until then the epithet had been considered a mere altered spelling of *T. annularis* De Geer (e.g., see Kertész, 1903; Kieffer, 1906). Subsequent authors (e.g., Goetghebuer, 1921, 1928; Kruseman, 1933; Goetghebuer & Lenz, 1937–1962; Strenzke, 1959) maintained this separation, but applied *C.* "annularius" to concepts with varying descriptions and synonymies. Edwards (1929; see also Johannsen, 1926) found a specimen of De Geer's to represent a species different from "*C.* annularius (De G.) Goet.". Pinder (1978) effectively assumed a total of three involved species by further distinguishing between "*C.* annularius (De Geer) sensu Edwards" (spelled "*C.* annularis" in the legend to fig. 143) and "*C.* annularius Meigen, sensu Strenzke". Langton & Visser (2003) instead consider the latter two as conspecific, which suggests that "*C.* annularius auctores" denotes a single species.

Ashe & Cranston (1990) also assumed a single species, and recommended that "the oldest available synonym should be used once it is confirmed from the type material that it is identical with annularius authors". They listed two available names as possible synonyms: *C. horni* Kieffer, 1918(a) and *C. absconditus* Kieffer, 1926. The original description of *C. horni* differs significantly from those of *C.* "annularius" by Meigen or recent authors (e.g. Strenzke, 1959), for further remarks see under *C. prasinus* Meigen below. As regards *C. absconditus*, the original description (Kieffer, 1926), while insufficient for identification, resembles recent characterizations of *C.* "annularius" in general, but differs in some details. For example, Kieffer described the superior volsella as "linear, straight, except for the distal quarter which

is curved and gradually narrowed to a point", whereas Strenzke (1959) calls it "rather strongly arched, usually with a bulbous widening distal of the middle, and with knob-like tip". Thienemann's notes (at ZSM) on the original sample of *C. absconditus* (from Poland, "Jungfernsee" near Pelczyce = "Bernstein", 12.ix.1918) show that a single adult, unassociated with other life stages, was described by Kieffer. This holotype has been missing since Kieffer's time (its description was published posthumously), and apparently has never been examined by any other author. Under these circumstances we see no basis for using *C. absconditus* as the valid name for *C.* "annularius" auctores.

No specimens labeled "annularius" by Meigen are known to have been preserved (holdings of NHMW should be checked for material ex coll. Wiedemann reported by Goetghebuer, 1932a), nor is there any other generally accepted material standard to which recent application of the name could be tied. Strenzke's material sub *C.* "annularius" at ZSM is not mono-specific. The single-species hypothesis is weakened also by several discrepancies between the published descriptions: e.g. Meigen (1804) versus Meigen (1818), Kieffer (1911a) versus Goetghebuer (1921), Andersen (1949) versus Thienemann & Strenzke (1951); see also Thienemann (1950: 103–105), and compare the hypopygium illustrations in Goethebuer & Lenz, 1937–1962; Strenzke, 1959; and Pinder, 1978). Reports on the larval habitat differ as well, including small freshwater bodies, the profundal of lakes, and elevated-salinity conditions such as the Baltic Sea littoral. In addition, the occurrence records are numerous and widely spread geographically (at least Pan-Palaearctic; see also Johannsen, 1905). The conspecificity of all this material appears highly unlikely, yet it has all been reported as *C.* "annularius". A comprehensive revision would be necessary to evaluate the number and relations of species involved.

Thus, material falling within this complex cannot be identified yet with any valid name. Future references to such material should unmistakeably reflect this situation and specify the source used for identification, by applying a name format analogous to, e.g., *Chironomus* "annularius" sensu Strenzke (1959). If possible, specimens should be compared with material determined by the reference used, because the single most confusing factor in this case — as in so many others — have been interpretations based on the literature alone.

In the Fauna Europaea database, design constraints beyond the control of the present authors prevent an adequate representation of such complex problems; all representations of *C.* "annularius" as anything other than an unavailable and invalid name must be seen as artificial and irrelevant.

Chironomus (Chironomus) aprilinus Meigen, 1818. This was published first by Meigen (1818) as a junior synonym of *C. (Camptochironomus) tentans* Fabricius. Meigen (1830a) dissolved this synonymy and gave a separate description for *C. aprilinus*. According to ICZN (1999: Article 11.6.1), the name "dates from its first publication as a synonym" because "it had been treated before 1961 as an available name and ... adopted as the name of a taxon." Although the validity of the name *C. aprilinus* has not been in doubt, the earlier date is significant in restricting the type series to mate-

rial Meigen had received from von Hoffmannsegg before the 1818 publication. This might include specimens ex colls. von Winthem or Wiedemann seen by Goetghebuer (1932a) at NHMW, if their provenance can be documented as required.

Chironomus (Chironomus) "dorsalis" of authors, not Meigen. Since Martin & Sublette (1972: 1), it is evident that the various applications of this name in the subgenus *C. (Chironomus)* — e.g. see the overview in Thienemann & Strenzke (1951: 3) — have all been misidentifications of *C. (Lobochironomus) dorsalis* Meigen (see separate comments below). However, the vast and complex publication history and the corresponding material have not been revised. Thus it remains to be determined how many biological species are encompassed by *C. (C.)* "dorsalis" of authors, and what the respective oldest available names would be. Candidates are not necessarily limited to those listed in Ashe & Cranston (1990), e.g. see Lindeberg & Wiederholm (1979). Langton & Visser (2003) assume a single species which they refer to Strenzke (1959), but the latter cites earlier authors. Andersen (1949; sub "*C. dorsalis dorsalis* Meig.) apparently was the first to have applied the name to a species with adults as described by Strenzke (1959), and with larvae of the *C.* "*plumosus* type" (abdominal segment VII lateral tubules present). In contrast, previous authors (e.g. Kieffer, 1911a; Goetghebuer, 1912, 1921, 1928; Edwards, 1929; Kruseman, 1933; Goetghebuer 1937 in Goetghebuer & Lenz, 1937–1954) had treated *C.* "dorsalis" Meigen as possessing adult male superior volsellae of stout "S-type" (Strenzke, 1959) as in the *C. riparius* Meigen/*thummi* Kieffer species complex, and larvae of the *C.* "*thummi* type" (abdominal segment VII lateral tubules absent; see Goetghebuer, 1928).

Until the case has been revised thoroughly, specimens falling within *C. (C.)* "dorsalis" of authors cannot be linked with any valid name. Future references to such material should reflect this situation unmistakeably and specify the source used for identification, by applying a name format analogous to, e.g., *Chironomus* "dorsalis" sensu Strenzke (1959). If possible, specimens should be compared with material determined by the reference used, not just identified from the literature.

In the Fauna Europaea database, design constraints beyond the control of the present authors prevent an adequate representation of such complex problems; all representations of *C. (C.)* "dorsalis" as anything other than an unavailable and invalid name must be seen as artificial and irrelevant.

Chironomus (Chironomus) piger Strenzke, 1956. The name is available from Strenzke in Keyl & Strenzke (1956), taking precedence over Strenzke (1959).

Tipula annularis De Geer, 1776. In the original publication, De Geer (1776) gave *T. plumosa* Linnaeus, 1758 in the synonym list under his newly-proposed name, and indirectly reasoned that the latter was more descriptive of the species' morphology. *Tipula annularis* De Geer thus is available but invalid as an unnecessary substitute name (Persson et al., 1984) and a junior objective synonym. Edwards (1929; see also Johannsen, 1926) identified what he considered "De Geer's type in Stockholm" as "a male *C. plumosus*". This specimen still exists (seen by MS) and definitely belongs into the *C. plumosus* complex, although the exact position among the

numerous, often karyology-based taxa now recognized in that group is unclear. However, its type status has been negated (T. Pape, Stockholm, pers. comm. to MS) on the grounds that the type material of senior and junior objective synonyms is by definition identical.

Tipula "annularia" of Goeze (1782) is an incorrect subsequent spelling (not an emendation, see ICZN, 1999: Article 33, specifically 33.5), and thus not available separately. Although this spelling is in current usage, it is applied to a different taxon (see above comments on *Chironomus* "annularius" of authors), not "attributed to the publication of the original spelling" (ICZN, 1999: Article 33.3.1), and thus does not become correct under this Article.

Chironomus flaveolus Meigen. The first description (Meigen, 1818) was based on a single male from Germany (near Aachen) and a female ex coll. Megerle (from Austria?). Meigen (1830: 243) reported finding more specimens, but called the species variable ("... welche etwas abändert") and synonymized *C. flavicollis*, the female of which he had described as separate and quite different in 1818. Goetghebuer (1923) examined the best-preserved specimen in the Meigen collection at MNHN, a male complete with hypopygium. Subsequently, he treated *C. flaveolus* either as a questionable synonym of *C. plumosus* (L.) (Goetghebuer, 1928), or as a 'variety' of the latter (Goetghebuer in Goetghebuer & Lenz, 1937–1962; see also Lenz, 1954 in that same work). In recent decades, *C. flaveolus* and *C. flavicollis* have been considered nomina dubia (e.g. by Ashe & Cranston, 1990).

The Meigen specimen seen by Goetghebuer and reexamined by MS lacks only the gonostyli and fore tarsomeres 3–5, and appears to be conspecific with *C. bernensis* Klötzli, 1974 (the anal point is not constricted basally as Goetghebuer's opinion implies). However, it differs from Meigen's (1818) description in that the postnotum is brown like all remaining thoracic markings (not distinctly darker and "black"), and especially from Meigen's illustrations (1830b: pl. 5, fig. 3; in Morge, 1975: pl. III, fig. 2) in that the tips of the femora are pale but the bases of the tibiae dark (rather than vice versa as in Meigen's figures), and the abdomen shows brown bands across the middle of the tergites (rather than at their ends). Therefore we do not interpret this male as a syntype of *C. flaveolus*, but as likely to have been collected and misdetermined later.

No sufficiently complete original specimens of *C. flaveolus* or *C. flavicollis* are known to have been preserved, and thus we consider it unjustified to change nomenclature in European *Chironomus* by resurrecting *C. flaveolus* as valid rather than dubious.

Chironomus (Chironomus) prasinus Meigen, and *C. horni* Kieffer. The specimen series labeled *C. prasinus* in the Meigen collection at MNHN includes a nearly complete male that fully agrees with Meigen's descriptions (1804, 1818) and figures (1830b: pl. 4, fig. 6; in Morge, 1975: pl. III, fig. 7). This indubitable syntype differs from the recent interpretation of *C. prasinus* (after Pinder, 1978; see also Lindeberg & Wiederholm, 1979) in the abdominal pigment pattern (there are pronounced, dark tergite crossbands as described by Meigen) and hypopygium configuration (e.g., the dorsal

horizontal part of the anal point is slightly narrowed subbasally, not tapered from base to tip). Edwards (1929) — who had examined the Meigen specimen (unpublished observation notes seen by MS; see also Goetghebuer, 1923) — regarded *C. prasinus* as rather close to *C. plumosus* (L.), whereas the species treated by Pinder (1978) evidently belongs in a different section of the genus. The placement and status of *C. prasinus* Meigen among the many species currently considered to constitute the *C. plumosus* complex remains to be determined.

Chironomus pilipes Meigen, 1818 and *C. intermedius* Staeger, 1839 have been carried as synonyms of *C. prasinus* Meigen since the 19th century (e.g. van der Wulp, 1877; Kertész, 1903; Ashe & Cranston, 1990), but this has not been based on examination of type material, thus both names are treated as nomina dubia here. No original specimens of *C. pilipes* are known from any collection. Syntypes of *C. intermedius* are preserved at ZMUC (Meier, 2002) and BMNH (unpublished list of types, 1996, seen by MS).

If none of the above potential synonyms applies, the valid name for *C. prasinus* sensu Pinder nec Meigen may be *C. horni* Kieffer, 1918(a). Kieffer reported his material to have come from Poland and Hungary, that of a darker-colored, unnamed variety from Poland and Lithuania. Some of these specimens have been preserved at DEI (Blech & Rohlfien, 1987) and the Hungarian National Museum in Budapest (L. Papp, pers. comm. to MS), respectively. The only useful specimen in the DEI series — a male lacking just one each antenna and wing — matches the exact collecting data given by Kieffer (1918a) for the nominotypical variety of *C. horni* (printed label: "Lazarettschiff: / zug Danzig 3 / Frisches Haff / W. Horn 18.8.15"). Its morphology agrees with the original description. The overall color pattern fits better with Kieffer's "Var.", but the observer's impression of it was found to be lighting-, aspect-, and medium-dependent, e.g. all colors became distinctly deeper upon rehydrating the pinned specimen in a humid chamber, the thoracic vittae appeared darker when viewed from dorsal than from the side, and lighter in alcohol than in the dry state. Therefore, and because the darker variety has never been given a separate scientific name, the DEI male is here interpreted as a syntype of *C. horni* (the "Holotypus" and "Paratypen" assignments by Blech & Rohlfien, 1987 are not justified from the original publication). However, the decision on whether to resurrect *C. horni* Kieffer as a valid name must await examination of the Hungarian material, and detailed comparisons with *C. prasinus* sensu Pinder (1978) nec Meigen, 1804.

Owing to the above circumstances, Fauna Europaea database entries contain the artificial, not available name "*C. prasinus* Pinder", and individual distribution records are listed as doubtful, as it cannot be determined which of them refer to *C. prasinus* Meigen instead.

Chironomus (Chironomus) venustus Staeger, 1839, and *C. venustus* Staeger sensu Pinder.

Recent use of the name *C. venustus* largely follows Pinder (1978; see also Lindeberg & Wiederholm, 1979), who applied it to adult male specimens with a hypopygium similar to that in *C. cingulatus* Meigen. However, all six males sub *C. venustus* in the Staeger collection (at ZMUC, examined by MS), on which the hypopygium is

preserved, carry superior volsellae of stout "S-type" (Strenzke, 1959) as in the *C. riparius* Meigen/*thummi* Kieffer species complex. Edwards (1929), who had seen the Staeger collection, indeed treated *C. venustus* as a variety of *C.* "dorsalis" Meigen (see separate discussion above), a species he described with an adult male superior volsella "as in *C. riparius*" (op.cit.: 384). However, this was abandoned after Andersen (1949) had reinterpreted *C.* "dorsalis" Meigen, and followed Goetghebuer's (1937 in Goetghebuer & Lenz) treatment of *C. venustus* as a variety of *C. cingulatus*, instead of examining the Staeger specimens to which he should have had access (Andersen, 1949: 3).

Although additional syntypes of *C. venustus* Staeger expected to be kept at Lund, Sweden (see Staeger, 1839; Zetterstedt, 1850: 3497) remain to be studied, the present authors consider it unlikely that any of them disagree with the series at ZMUC and fit the species keyed and illustrated by Pinder (1978). Consequently, use of the name *C. venustus* sensu Pinder nec Staeger must be discontinued, and (an)other valid name(s) be found or created for such material. Usage after Pinder (1978) or Lindeberg & Wiederholm (1979) does not extend to works based on the immature stages, e.g. see Langton & Visser (2003).

Chironomus venustus Staeger is a junior primary homonym of *C. venustus* Wiedemann, 1828 that has not been replaced. Only the junior homonym has been in use, the senior one is a nomen dubium due to insufficient description and missing type material. The requirements for reversal of precedence (ICZN, 1999: Article 23.9.1) possibly can be met. However, in recent usage *C. venustus* Staeger either has been misidentified (see above), or treated as a junior synonym (see Lindeberg & Wiederholm, 1979). Moreover, definitive species identification from the type series would require a comprehensive revision of the voluminous and difficult *C. riparius* Meigen/*thummi* Kieffer species complex, and even then may be impossible on morphological adult characters alone (Strenzke, 1959; Lindeberg & Wiederholm, 1979). As long as this situation is not improved upon, *Chironomus venustus* Staeger should not be used as valid, nor a substitute name be proposed for it.

Chironomus (Lobochironomus) dorsalis Meigen, 1818, *C. longipes* Staeger, 1839, *C. tricolor* van der Wulp, 1874, and *C. bequaerti* Goetghebuer, 1921. The Meigen collection at MNHN contains a nearly complete male labeled "*dorsalis*" by Meigen, and fragments (without abdomina) of two more specimens. In the early 1920s, Goetghebuer and Edwards at the same time reviewed different parts of the Meigen collection (Goetghebuer, 1923; Edwards, unpublished observation notes at BMNH seen by MS). Of the series on *C. dorsalis*, Goetghebuer (1923: 126) saw only "unusable debris", whereas Edwards found the complete male to be identical with "*C. (Einfeldia) longipes*, Staeg. (*becquaerti*, Goet.)" (Edwards, 1929: 385). However, Edwards questioned this specimen's type status and did not act on nomenclature, claiming that Meigen's (1818) original description "agrees better" with Goetghebuer's (1921) interpretation of a species in the subgenus *C. (Chironomus)* (see separate comments above on *C. (C.)* "dorsalis" of authors). Townes (1945: 112) disagreed with Edwards' reading of Meigen's description, and transferred *C. dorsalis* Meigen to

Einfeldia (then still treated as a subgenus), with *C. longipes* Staeger as a junior synonym. However, Townes did not provide a solution for *C.* "dorsalis" of authors: his implicit claim of identity with *C. riparius* Meigen misquotes Edwards (1929). This probably contributed to rejection by some subsequent authors, even if their arguments were flawed. Goetghebuer (1951) maintained that Edwards had found Meigen's (1818) description to fit better with *C.* "dorsalis" of authors than with *C. longipes* Staeger. While there is some truth to that — details and a possible explanation are given below — it was decidedly not what Edwards (1929) had written. However, even after Martin & Sublette (1972: 1) had communicated Wülker's reexamination of the MNHN material, and with the latter specimens accepted as types, neither Townes' action nor the species were recognized as valid, instead *C. dorsalis* Meigen was treated as a nomen dubium in *Einfeldia* (see Ashe & Cranston, 1990).

Johannsen (1926) and Goetghebuer (1932a) report specimens of "*C. dorsalis* Meigen" from the von Winthem collection at NHMW (Vienna). Although these may have been determined by Meigen (Johannsen's 1926 general assumption for "many" von Winthem specimens is no proof), that most likely would not have happened prior to Meigen's work on the von Winthem collection, which began with his visit in 1823 (Meigen in Morge, 1974; Steyskal, 1974). There is no mention of von Winthem in Meigen's (1818) original description which instead suggests that the material used had been collected by the author himself near his home. The list of Nematocera types at NHMW by Contreras-Lichtenberg (1998) includes no *C. dorsalis*, and the von Winthem specimens are not considered here as type material. Johannsen (1926) identified them as belonging into *Chironomus* s. str., but reported their fore tarsi as "sparsely but distinctly long haired". Therefore, although Goetghebuer (1932a) listed them among the NHMW material of *C.* "dorsalis", they do not fit even his own concept for that taxon.

Contrary to Edwards (1929), the male syntype he saw — reexamined by MS — is in perfect agreement with Meigen's description (1818) and figures (1830b: pl. 5, fig. 5; in Morge, 1975: pl. IV, fig. 9). It differs from *C. (C.)* "dorsalis" sensu Edwards (1929) or Strenzke (1959): for example, the syntype wing lacks the darkening of the RM region, and the fore tibia the basal darkening. The syntype hypopygium matches fully that of *C. (Lobochironomus) longipes* as understood currently (e.g. Pinder, 1978; Hirvenoja, 1998b).

However, some coloration differences exist between the original descriptions of *C. dorsalis*, *C. longipes*, *C. tricolor* van der Wulp, 1874, and *C. bequaerti* Goetghebuer, 1921, that have to be accounted for in considering all four names to be synonymous. Meigen (1818) described the abdomen as pale yellow with pale brown bands across the middle of the tergites. Staeger (1839) gave the abdomen of the holotype female (preserved at ZMUC) as black. Van der Wulp's (1874) males carried blackish transverse spots or bands on several otherwise light green tergites from TII to posterior. Goetghebuer (1921) had the male abdomen light green with tergites II–IV each showing a blackish transverse band a little behind the anterior tergite margin, tergites V–VIII entirely black; the female abdomen was described with terg-

ite I and possibly II green, TIII darkened, TIV–VIII blackish. The abdomen of the male syntype of *C. dorsalis* Meigen — macerated and slide-mounted by W. Wülker over 30 years ago — shows distinct traces of bands across tergites II–IV, but not on the more posterior tergites. The dark appearance of the male posterior abdominal segments described by Goetghebuer may have been caused by tissues or objects inside the segments rather than by tergite pigmentation, a phenomenon often observed in Chironomidae. Although the female abdomen was not figured or described specifically by Meigen, the preserved parts of the syntype female appear darker than on their male counterparts, perhaps accounting for differences between Meigen's (male) and Staeger's (female) descriptions.

The thorax and leg coloration patterns do not significantly differ among the four descriptions: thorax ground color light (yellowish to greenish), vittae and preepisternum reddish or "rusty" (Meigen, v.d.Wulp) yellow, postnotum black (Meigen), blackish (v.d.Wulp, Goetghebuer) or brownish (Stæger); legs darkened only at the joints.

No other western Palaearctic species placed presently in *C. (Lobochironomus)* or *Einfeldia* (see Hirvenoja, 1998b; Sæther et al., 2000) comes close in color pattern to the above four descriptions. These also agree in noting the especially elongate fore tarsi: *C. dorsalis* (?male) fore ta_{1-5} combined = 5 x fore ti length; *C. longipes* female LR_1 = 2, fore ta_{1-5} combined > 5 x fore ti length; *C. tricolor* (male) LR_1 = almost 2; *C. bequaerti* (?male) LR_1 = 1.75, fore ta_{1-5} combined = approx. 4.5 x fore ti length.

Here, all four descriptions are interpreted to refer to a single species, the valid name for which thus becomes *Chironomus (Lobochironomus) dorsalis* Meigen, 1818. Synonymy between *C. longipes* and *C. bequaerti* had been accepted before (e.g. Ashe & Cranston, 1990). Kruseman's (1933) synonymization of *C. tricolor* with *C. longipes*, based on examination of a type specimen of the former, appears to have been overlooked. If any part of the new synonymy is less certain than the others, then it is that of *C. longipes* which was described only from a single female. The holotype should be examined (within a revision of adult females in *Einfeldia*), as should any material of "*C. dorsalis* Meig." sensu Staeger (1839: 564). However, even if *C. longipes* in the sense of its original author turned out to be another species (or a nomen dubium), that would affect neither the validity of *C. (L.) dorsalis* Meigen, nor the identity of the latter with the species concept sub *C. longipes* of recent authors.

Cladopelma goetghebueri nom. n. for *Chironomus lateralis* Goetghebuer, 1934(a). The latter is a junior primary homonym of *C. lateralis* Walker in Curtis et al., 1837. According to the ICZN (1999: Article 57.2) the junior homonym must be replaced; the conditions for reversal of precedence are not met (op.cit.: Article 23.9). Therefore we propose the new substitute name *Cladopelma goetghebueri*.

Corynocera Zetterstedt, 1837, and *C. ambigua* Zetterstedt, 1837. As shown by Andersson (1961), both taxa were validly published first by Zetterstedt (1837). A contrary statement by Ashe (1983) is incorrect.

Dicrotendipes Kieffer, 1913. *Dicrotendipes pictipennis* Kieffer, 1913 is the type species of *Dicrotendipes* by monotypy, but the valid name for this species is uncertain.

Freeman (1957) treated *Dicrotendipes* as a subgenus of *Chironomus* Meigen, considered the resulting combination *C. (D.) pictipennis* (Kieffer) as preoccupied by *C. pictipennis* Philippi, 1865, and substituted the junior homonym with what he regarded as its oldest available synonym, *C. (D.) pilosimanus quatuordecimpunctatus* (Goetghebuer, 1936). This substitution appears to have been unnecessary, because Edwards (1931) had removed the grounds for secondary homonymy by synonymizing *C. pictipennis* Philippi with *Tanypus punctipennis* Meigen, 1818. Nevertheless, Freeman's (1957) act stands "unless the substitute name is not in use" (ICZN, 1999: Article 59.3), and as long as the substitute name "is regarded as a synonym" (op.cit.: Article 60.2.1) of the junior secondary homonym. In recent publications, *Dicrotendipes quatuordecimpunctatus* (Goetghebuer) has been used as valid by some authors (e.g. Contreras-Lichtenberg, 1986, 1988; Langton & Visser, 2003). However, Cranston & Armitage (1988) treated it as a subspecies of *D. septemmaculatus* (Becker, 1908), and Epler (1988) as a junior synonym of *D. septemmaculatus*, whereas Harrison (1993) called its status a matter of "controversy".

A comprehensive revision is required to develop a well-founded and stable solution for the taxonomy and nomenclature of all scientific names involved. In the preliminary interpretation adopted here (see separate comments under *D. septemmaculatus* below), the valid name of the type species is *D. septemmaculatus* (Becker).

Dicrotendipes pulsus (Walker, 1856), and *D. modestus* (Say, 1823). These were treated as synonymous for twenty years after Epler (1983; see also Contreras-Lichtenberg, 1986). Langton & Visser (2003) have dissolved this synonymy, considering all European records of *D. modestus* sensu Contreras-Lichtenberg (1986) and Langton (1991) to be a species different from the Nearctic *D. modestus* (Say). For the European species they use the name *D. objectans* (Walker, 1856), erroneously assuming priority for this over *D. pulsus* because the former had been described on the lower-number page in Walker (1856) (P.H. Langton, pers. comm. to MS). However, the ICZN Code does not recognize ‘page priority’. Instead, according to the "Principle of the First Reviser" (ICZN, 1999: Article 24.2.), Edwards (1929) has effectively selected *Chironomus pulsus* Walker as taking precedence over the simultaneously published synonyms *C. objectans* and *C. dispessus*. Subsequent to Edwards’ action, *Dicrotendipes* (earlier "*Limnochironomus*") *pulsus* was the species’ name in exclusive use in Europe for over 50 years until the synonymization with *D. modestus* (e.g. see Goetghebuer & Lenz, 1937–1962; Fittkau & Reiss, 1978). Therefore, upon dissolution of synonymy with *D. modestus* (Say), its valid name is *D. pulsus* (Walker).

Dicrotendipes septemmaculatus (Becker). As discussed for *Dicrotendipes* Kieffer above, recent authors have disagreed on whether some of the synonyms listed under *D. septemmaculatus* (Becker, 1908) by Epler (1988) should be treated as separately valid. Under various names, specimens have been reported from a large area stretching from the Azores across the Mediterranean region, Asia Minor and South Asia to South Africa and Australia, respectively. The necessary comprehensive revision is

far beyond the scope of the present work, but an appropriate arrangement has to be found at least for those Mediterranean records intralimital to the Fauna Europaea (i.e. excluding North Africa, most of Turkey, and the Near East).

As far as we have been able to determine, all European records belong to a single species: *D. septemmaculatus* (Becker). Within the morphological definition for the taxon sensu lato (Freeman, 1957 sub *Chironomus (Dicrotendipes) pilosimanus* Kieffer; Epler, 1988 sub *D. septemmaculatus*), this species is diagnosed as follows. Pupa with frontal tubercle little longer than frontal seta; tergal conjunctives III/IV to V/VI (Contreras-Lichtenberg, 1988: description and fig. 1F; Langton & Visser, 2003: species diagnosis. Not conjunctives IV/V to VI/VII as in Contreras-Lichtenberg, 1988: table 1; Harrison, 1993: table 2; Langton & Visser, 2003: key couplet 228a) armed with extensive, dense fields of clear, elongate chaetulae. Adult male fore tarsi with at most few, scattered setae long enough for BR_1>4 (see Sæther, 1980; but include setae on all fore tarsomeres, not only those on ta_1); without a continuous beard from tip of ta_1 to $ta_{3(-4)}$, consisting of many setae with BR 5–8.

This interpretation of *D. septemmaculatus* (Becker) differs from that of recent authors on the subject (except Harrison, 1993), who followed Cranston & Armitage (1988) in considering the male fore tarsus as 'bearded' in this species. Cranston & Armitage had examined the holotype female (the only original type specimen) of *D. septemmaculatus* from Tenerife, and interpreted its "beard ratio of 3 on fore tarsomere 1, and 4 on fore tarsomere 2" as an indication for the presence of a beard in the male. However, this assumption — and the resulting synonymization of the fully bearded *D. pilosimanus pilosimanus* Kieffer, 1914 sensu Freeman (1957) — were not based on any life-stage associations, nor tested by comparing relevant material including both adult sexes, e.g. the type series of *D. pictipennis* Kieffer (male without tarsal beard) and *D. pilosimanus*.

Much of the confusion in this case stems from such problems of material and methods. Fore tarsi as well as their beard setae break off easily, thus conclusive evaluation of the original condition often is difficult or impossible. Comparisons have been hampered further by the lack of a suitable and historically consistent definition of what constitutes presence of an adult tarsal beard, and by some descriptions lacking detail. If only presence/absence of a beard is recorded (as in Freeman, 1957; Contreras-Lichtenberg, 1986), not even the recent common standards for "beard" and "BR"="bristle ratio" (Sæther, 1980) serve to distinguish between the character states expressed on male tarsi in the present case. Following the definitions in Sæther (1980), a few individual setae long enough for a BR of about 4.5 (as in some *D. septemmaculatus*) result in 'presence' of a beard no less than does an extensive seam of many bristles with BR up to 6.5 (as in *D. pilosimanus* according to Kieffer, 1914; Harrison, 1993).

As far as we have been able to re-examine, all material underlying European records of *D. septemmaculatus* sensu lato (e.g. Reiss 1978, 1989; Contreras-Lichtenberg, 1986) fits the diagnosis given for *D. septemmaculatus* (Becker) above. We are

unaware of any adult specimen with a full fore tarsal beard, and all pupal specimens possess relatively short frontal tubercles in combination with armed conjunctives. Peter H. Langton (Coleraine, pers. comm. to MS) confirms that European material in his collection matches *D. septemmaculatus* as interpreted here; entries in Langton & Visser (2003) under other names were based on literature records only.

Contreras-Lichtenberg (1986, 1988, 1989) proposed characters to separate *D. quatuordecimpunctatus* (Goetghebuer) from *D. septemmaculatus* (Becker) in the larval, pupal, adult male and female stages. However, no type specimens were examined, and the various life-stage material sub *D. quatuordecimpunctatus* was not associated. Re-examination of specimens at ZSM reported under either species name by Contreras-Lichtenberg (op.cit.) shows no difference in tarsal beard condition. For example, on both pharate males (from Kenya and Algeria) whose associated pupal and larval skins were described sub *D. septemmaculatus* (Becker) (Contreras-Lichtenberg, 1988; the specimen from Algeria reported erroneously as being female), the tarsal setae are no longer than on a male from Kenya, Naivasha (the type locality of the 'unbearded' *D. pictipennis* Kieffer), reported sub *D. quatuordecimpunctatus* (Goetghebuer) (Contreras-Lichtenberg, 1986). The feature suggested by Contreras-Lichtenberg (1989) as diagnostic in the adult female — relative size of the ventrolateral lobe of gonapophysis VIII — is unreliable, as pressure during slide-mounting may lead from one supposed character state to the other (Harrison, 1993). Details of the larval frontal apotome proposed as unique to *D. septemmaculatus* (see Contreras-Lichtenberg, 1988: table 1) are due to mounting artefacts or overinterpretation, and apply variously to only one or the other of the two associated specimens (at ZSM, reexamined by MS). Pupal exuviae sub *D. quatuordecimpunctatus* (not reexamined here) were described with the frontal tubercles distinctly longer than the frontal setae, and with all tergal conjunctives unarmed (Contreras-Lichtenberg, 1986, 1988). However, association of these exuviae with other life stages is not beyond doubt; they could belong to another species (see below).

Harrison (1993) redescribed *D. pilosimanus* Kieffer (from the type series as well as fresh material from Ethiopia and southern Africa), with the male foretarsi fully bearded and the pupal tergal conjunctives bare of "shagreen", but the samples included no direct pupa-male association. Contrary to this description, all seven exuviae at ZSM (sample data matching those in Harrison, 1993) carry the conjunctive armament described by Contreras-Lichtenberg (1988), consisting of clear chaetulae, not sclerotized shagreen points. However, P.H. Langton (unpublished, pers. comm. to MS) is holding southern African pupa-male associations possessing the character combination described by Harrison (1993).

The ZSM collection includes a slide with a male and an exuviae that are not directly associated but from the same sample: Ethiopia, Bale mountains, lake outlet, surface drift, 6.iv.1976, leg. v. Erdecker. The male foretarsus is fully bearded (BR nearly 8), the exuviae has the conjunctives armed. It is not known whether this circumstantial association and those in the samples of Contreras-Lichtenberg (1986) and Harrison (1988) mean that two species, *D. septemmaculatus* and *D. pilosimanus*, occur syn-

topically in the respective areas, or whether they represent actual pupa-male character combinations that could require the recognition of additional separate species.

As long as no comprehensive revision including all type- and otherwise relevant material has been accomplished, definitive nomenclature decisions are not possible. However, as placement is needed for the type species of *Dicrotendipes* Kieffer (see separate comments above), the present authors suggest the following, conservative working hypotheses until more information becomes available: 1) *D. septemmaculatus* (Becker, 1908) and *D. pilosimanus* Kieffer, 1914 are separately valid, with the morphological diagnoses as provided above; 2) synonymy of other names in the complex is maintained after Epler (1988), with the exception of *Chironomus hirtitarsis* Johannsen, 1932 for which the original description (adult male with distinct tarsal beard) suggests synonymy with *D. pilosimanus.*

Endochironomus sensu lato. Grodhaus (1987) has revised the Nearctic members of this group of taxa, and reclassified it into four genera two of which he newly erected. A comprehensive revision is needed for the Palaearctic fauna. The most recent catalog (Ashe & Cranston, 1990) — published after but written before Grodhaus' work — interprets 8 names as valid, 11 as synonyms, 4 as "questionable" synonyms, and 14 as nomina dubia. For an additional relevant name see the comments on *Chironomus sparganii* Kieffer below, others may have been filed in Ashe & Cranston's (1990) several extensive sections with "nomina dubia". In selected cases — including some previous nomina dubia — assignments to genera have been assumed since (e.g., Cranston et al., 1989; Sæther et al., 2000), following Grodhaus (1987). However, the latter were explicitly tentative as Grodhaus (1987: 206) did not "wish to create more confusion by formally assigning any Palaearctic species" he had not revised. Thus, for the vast majority of all these names the current status still is not based on a thorough evaluation integrating the original description, type material, and recent use. Therefore, the nomenclature as presentable at this time (e.g. in the Fauna Europaea database) is by necessity incomplete and somewhat tentative.

Endochironomus albipennis (Meigen, 1830), and *E. tendens* (Fabricius, 1775). Although for both of these names probable type specimens in satisfactory condition apparently exist (Goetghebuer, 1923: 127; Zimsen, 1964; Fittkau & Reiss, 1976), these have never been examined in sufficient detail (all of their preserved parts remain on pins). Fabricius never offered more than eight words of description. Meigen's respective observations — two for each species, mostly regarding adult coloration (1818: 34, 1830a: 244 and 248; in Morge, 1975: pl. V, figs. 3 and 6) — partially contradict each other and are not really diagnostic. Subsequent treatments have varied with the respective author's interpretation of the preceding literature. At times the two names were considered synonymous (e.g. Goetghebuer, 1923, 1928) or doubtfully separate (Meigen, 1818; Brundin, 1949). Other authors separated them, but provided no precise criteria (Edwards, 1929; Goetghebuer, 1937 in Goetghebuer & Lenz, 1937–1962). Current usage assumes separate species, but delimitations are not always clear and not unanimous. In western Europe, Pinder (1978) discounted the previous distinction of the adults by coloration and instead employed relative

size of the male anal point, but in light of his illustrations this is less than convincing. Langton & Visser (2003) clearly separate two pupal morphotypes, but the names *E. albipennis* and *E. tendens* are tied exclusively to adult type material. Langton & Visser (2003) report using "linked adult males" for identification, but even if this means individual associations, the species concepts in detail remain uncharacterized (the reference quoted by Langton & Visser, "Langton & Pinder, 2003", has not been published). Moreover, two other species of *Endochironomus* sensu stricto thought to occur in the West Palaearctic (e.g. by Sæther et al., 2000), *E. oldenbergi* Goetghebuer and *E. stackelbergi* Goetghebuer, are not keyed in Pinder (1978) or Langton & Visser (2003). The latter authors claim the pupa of *E. stackelbergi* to be unknown, although Pankratova (1983) — a work listed among the references in Langton & Visser — keys it as similar to but distinguishable from that of *E. albipennis*. Thus, *E. stackelbergi* sensu Pankratova (1983) would key to *E. albipennis* in Langton & Visser (2003). In eastern Europe and Russia, usage of the names *E. albipennis* and *E. tendens* has followed the treatment of all life stages by Kalugina (1961), but although an English translation of this work has been published (see References below), Kalugina's criteria for distinguishing the adults have not been adopted in the West (e.g. Pinder, 1978).

To summarize the situation: 1) the true number of West Palaearctic species within *Endochironomus* Kieffer sensu stricto, and diagnostic characters to identify these in any life stage, appear far from established; and 2) published records under any name in this complex are not certain to represent the same and only one species. Until Palaearctic *Endochironomus* sensu lato, and specifically *E. albipennis* and *E. tendens*, have been revised thoroughly, all classifications of these taxa such as the one in the Fauna Europaea database are by necessity incomplete and partially tentative.

Ashe & Cranston (1990) gave several synonyms and "questionable" synonyms under *E. albipennis* or *E. tendens*, as well as a number of "nomina dubia in *Endochironomus*" sensu lato (see separate comments above). These listings largely followed the opinion of Goetghebuer (1937 in Goetghebuer & Lenz, 1937–1962) which was based only on characters of the adults (mostly coloration). However, it has long been known (Thienemann, 1954; Lenz, 1955, 1957 in Goetghebuer & Lenz, 1937–1962; Kalugina, 1961) that significant evidence from the immature stages draws large parts of Goetghebuer's synonymies into question. Thienemann and Lenz misidentified *E. tendens* (Fabricius), but pupal morphology in their *E.* "signaticornis group" — strongly reduced taeniae in a posterior section of the anal lobe fringe — corresponds to what is currently understood as *E. tendens* (after both Kalugina, 1961 and Langton & Visser, 2003). Consequently, any names referable to pupae with this morphology cannot be placed as junior synonyms under *E. albipennis*. As Thienemann (1954) and Lenz (1955) acknowledge, misassociations of life stages always have to be reckoned with in such cases. Nevertheless, exuviae verifiable as directly associated with the adults originally described are type material (ICZN, 1980). In the context of the Fauna Europaea database it has not been possible to review all names to be clarified here. However, using the original correspon-

dence between Thienemann and Kieffer, and Thienemann's personal species register (both preserved at ZSM), type exuviae could be recognized for the following names:

— *Tendipes nymphoides* Kieffer, 1911**;** 2 syntype exuviae (both male) from Germany, Westphalia, Heilenbecke reservoir, reared from larvae building cases attached to an impoundment wall, larvae taken 1.vi.1909, leg. A. Thienemann, on slide at ZSM;

— *Chironomus longiclava* Kieffer, 1913**;** holotype male exuviae from Germany, Westphalia, Werse river at Stapelskotten, "Karpfenruhe" island, in *Stratiotes*, v.1911, leg. H. Gripekoven, on slide at ZSM;

— *Chironomus miki* Kieffer, 1915; 2 syntype exuviae (1 male, 1 female) from Denmark, Fursø (a lake), reared from larvae in chalk encrustations on *Potamogeton*, larvae taken 24.viii.1912, leg. A. Thienemann, on slide at ZSM. Note that Kieffer did not properly record the data received from Thienemann (original correspondence at ZSM), and presented *C. miki* in Kieffer (1915a) rather than in the paper on Danish material (1915b) along with *C. danicus* which had come from the same sample (see below).

— *Chironomus danicus* Kieffer, 1915; holotype female exuviae from same sample as syntypes of *C. miki* (see above), on slide at ZSM.

In Pankratova (1983) and Langton & Visser (2003), the exuviae of *T. nymphoides* and *C. miki* key to *E. albipennis*, those of *C. longiclava* and *C. danicus* to *E. tendens*. In the Fauna Europaea database, the necessarily preliminary arrangement retains previous synonymies proposed consistently, and based on both adult and immature characterizations.

Chironomus sparganii Kieffer, 1908, and *C. sparganii* Willem, 1908. Willem (1908: 699–700, and 701) described the larvae and pupae of two different species found mining in *Sparganium ramosum*. To the first species a scientific name was assigned as "the *Chironomus* to which Mr. J.-J. Kieffer gives the name *C. sparganii* further below". The second species was not named because Willem believed to have reared adults of only the first species. Kieffer (1908), in a separate paper published simultaneously with Willem's in the same journal issue, described adult male and female characters under "*Chironomus sparganii* n. sp.".

Thienemann (1954: 88) quoted from a letter he had received from Kieffer in 1918, in which the latter had written that the immatures of *C. sparganii* sensu Willem (1908) and the adult male of *C. sparganii* sensu Kieffer (1908) could not be conspecific, the former being a *Glyptotendipes*, the latter an *Endochironomus* (sensu lato, originally described with a 13-segmented antennal flagellum). Obviously, Willem's rearing method was not precise enough to establish reliable immature-adult associations. However, as first observed by Goetghebuer (1912), the second set of immatures Willem (1908) had described from his *Sparganium* samples conforms with what is currently understood as *E. tendens* (see separate comments on that name). On the other hand, Kieffer's (1908) descriptions under *C. sparganii* partially disagree with *E. tendens* (fore tarsal beard absent, thoracic markings blackish brown in

both sexes), and are insufficient to ensure that his type series was monospecific. For example, it cannot be ruled out that only the male Kieffer described was an *Endochironomus*, whereas the female a *Glyptotendipes*. Searches (e.g. by Contreras-Lichtenberg, 1999) for original material of either Willem's or Kieffer's have not been successful. Under these circumstances there is no proof that Willem's material contained only two species, nor that Kieffer's type series contained only one, nor specifically that *C. sparganii* sensu Kieffer (1908) is synonymous with *E. tendens*.

Contreras-Lichtenberg (1999: 379) treated "*C. sparganii* Kieffer" as a *Glyptotendipes* (see comments on *G. iridis* below), but was apparently unaware that there are in fact two simultaneously published species and homonyms, and that a solution had already been achieved. Thienemann (1954: 88) has acted as the 'First Reviser' in the sense of ICZN (1999: Article 24) by stating that *Chironomus* "*sparganii* Kieff. 1908" is a species different from "*sparganii* Kieff. Willem 1908", and by selecting — in quoting from Kieffer's letter — the former as taking precedence. This solution entails minimal additional consequences for nomenclature. With the original description insufficient and the type material missing, *C. sparganii* Kieffer is a nomen dubium and does not interfere with any valid name. For the junior primary homonym, the author of the name is not Kieffer, because the conditions of ICZN (1999) Article 50.1.1 are not satisfied. As an invalid junior homonym, *C. sparganii* Willem, 1908 upsets no nomenclature. Contreras-Lichtenberg (1999) considered the illustrations in Willem (1908) as sufficient to recognize the species. Accepting this, the name becomes a new subjective synonym of *Glyptotendipes cauliginellus* (Kieffer) (see comments on that species below).

Glyptotendipes Kieffer, 1913. "The taxonomy of the genus *Glyptotendipes* has been confused since its establishment ..." (Heyn, 1993). Here, we address selected nomenclatural issues at genus-group level (items 1 to 3 below). Palaearctic species names and their synonyms are commented on thereafter.

1) The type species of *Glyptotendipes* Kieffer, 1913 is not *G. sigillatus* Kieffer, 1918(a) (here considered a nomen dubium, see separate comments below). Kieffer's attempts at making this designation (1913a: 255, footnote; 1913e: 197) are invalid because in both publications *G. sigillatus* is a nomen nudum. Only species with names already available at the time are eligible for type species fixation (ICZN, 1999: Article 67.2.1). This has been part of the International Rules of Zoological Nomenclature at least since 1913 (e.g. Richter, 1927; ICZN, 1961).

Kieffer (1913a) wrote: "Auf die *Chironomus*-Arten, bei denen die Tergite 2–6 mit einem länglichen, benabelten Eindruck versehen sind, gründe ich die neue Gattung *Glyptotendipes*; Type: *G. sigillatus* Kieff." (Upon those species of *Chironomus*, in which tergites II–VI are equipped with an elongate, naveled impression, I found the new genus *Glyptotendipes* ..."). While the morphological description in this statement is applied to a single genus, and thus sufficient to make *Glyptotendipes* available, the same is not true for *G. sigillatus*. The applicable Articles in the ICZN (1999) Code require the new taxon to be defined individually (in the singular), viz. Article 12: "... every new name published before 1931 must ... be accompanied by a

description or definition of the taxon ..."; Article 12.2.6: "a combined description or definition of a new nominal genus and a single new nominal species ...". For the same reason, the remark on the genus in Kieffer (1913e: 197) did not make *G. sigillatus* available either, but mention of *G. verrucosus* (Kieffer, 1911) — see below — confirms that at least one species denoted with a previously available name had been known to Kieffer (1913a) when he proposed the genus. Consistent with the above, *G. sigillatus* indeed always has been dated from 1918, not from 1913 (e.g. Contreras-Lichtenberg, 1999, 2001).

According to Code Article 67.2.2 (ICZN, 1999), since *Glyptotendipes* was established in Kieffer (1913a) without included nominal species, only "the nominal species that were first subsequently and expressly included" are eligible for type species fixation. Kieffer (1913e: 197) has met this requirement, even if unintentionally, by transferring *Chironomus verrucosus* Kieffer, 1911(c): 128+140 to *Glyptotendipes*. This has fixed *C. verrucosus* Kieffer as the type species by subsequent monotypy (ICZN, 1999: Article 69.3).

Throughout Kieffer (1911c), *Chironomus* is the name used for that genus, but the chapter on the latter (op.cit.: 127) begins with a note by Kieffer stating that "the name *Chironomus*, Meig., which has been employed in this work, must be replaced with *Tendipes*, Meig., which is older and has the right to priority." The ICZN (1999) Code contains no specifics on how to determine the respective original name combination under such circumstances. However, since the species affected in Kieffer (1913a) have been cited always as originally described in *Chironomus* (e.g., Sharp, 1912: 354; Chaudhuri et al., 2001), we consider *Chironomus verrucosus* to be the original combination.

2) The above type-species recognition has no effects on genus-level taxonomy, because *C. verrucosus* actually was the first species in which Kieffer ever observed the characteristic marks on the adult abdomen that later led him to erect *Glyptotendipes* (his 1911c term for such a mark was "verrue" = wart, hence the epithet "*verrucosus*"). However, the identity of the type species has consequences on the subgenus level, settling long-standing disagreement between authors, and repeated changes to nomenclature (see Heyn, 1993 — especially table 1 — and works referred to there; Contreras-Lichtenberg, 2001). The arrangement presented here restores the name of the nominotypical subgenus to the morphological concept proposed originally by Kieffer, i.e. the presence of a mark on adult abdominal tergite II (see also separate comments on *Glyptotendipes sigillatus* below).

The number and identity of the biological species Kieffer (1911c) described under the name *Chironomus verrucosus* cannot be determined from the original description alone. Prof. P.K. Chaudhuri (Burdwan, India) has examined several specimens from the National Zoological Collections of India (Calcutta), including at least one probable syntype (coll. Nr. 9945/19, an adult male from India: Calcutta), but considers their condition insufficient to answer the questions at hand (pers. comm. to MS, March 2004). However, there are also two syntypes at BMNH (a nearly complete adult female, designated lectotype below, and parts of a male). Examination of the

latter two specimens (by MS) shows the type series of *Chironomus verrucosus* Kieffer, 1911, and the corresponding description, to be a mixture of at least two species (the material came from five samples: two from Kumaon at 1500m a.s.l. on the southern flank of the Himalayas northeast of Delhi, and three from Calcutta at about sea level near the Ganges delta). Of the male syntype at BMNH (India, Calcutta, 26.v.1907, leg. N. Annandale), only part of the head (without antennae), the thorax (without wings), 1 full and 1 partial mid leg, 1 hind leg without the tarsus, and abdominal segments I–III are preserved (pinned). The body size is significantly smaller than that of the female lectotype, the coloration is lighter (mostly brown rather than blackish-brown and with 'ashen' mesonotum as in the lectotype and as described by Kieffer, 1911c), the mediodorsal 'notch' in the antepronotum is much wider and deeper than in the lectotype, and the abdominal tergal marks are elongate oval and with the median longitudinal rib described by Kieffer, rather than 'horse-shoe'-shaped (Cranston et al., 1989) as in the lectotype. However, both specimens possess a tergal mark on TII as described in the original publication.

In the taxonomic group containing *G. verrucosus*, adult females make useful name-bearing type specimens, because the species can be distinguished by unique character combinations (e.g. Sæther, 1977; Rodova, 1978; Contreras-Lichtenberg, 1996, 1999). Therefore, in the interest of stability in the nomenclature of *Glyptotendipes* Kieffer, and considering the type species status and the mixed type specimen series, a lectotype for *Chironomus verrucosus* Kieffer, 1911 is designated here, as follows: adult female (on slide, dissected, in Euparal, at BMNH); collection data on label: "INDIA: Kumaon, / Bhim Tal, 4,500', / 22–27.IX.1906. / N. Annandale, ex Brunetti coll. / BM1927-184"; oldest label (handwritten in black ink on brownish, thin, irregularly cut paper; whether by Kieffer or Brunetti is impossible to determine as their handwriting was very similar, see Horn & Kahle, 1935–1937): "Chiron / verrucosus / Kief.".

The lectotype of *Glyptotendipes verrucosus* (Kieffer) matches no species concept currently held in the western Palaearctic. From the characterizations in Sæther (1977), Rodova (1978), and Contreras-Lichtenberg (1996, 1999), the species most similar overall are *G. barbipes* (Staeger, 1839) and *G. paripes* (Edwards, 1929). However, the respective descriptions of either species in the quoted works differ in some details, for example the lobes of female gonapophysis VIII. According to Sæther (1977), *G. paripes* has the ventrolateral lobe smaller than the dorsomesal one, whereas according to Contreras-Lichtenberg (1996, 1999) the ventrolateral lobe is considerably larger. Apparently, no female syntype from Staeger's or Edwards' respective material has been examined by the above-quoted authors. At any rate, the character combination of *G. verrucosus* differs from each of their respective concepts of *G. barbipes* or *G. paripes*.

The original description of *G. verrucosus* (Kieffer, 1911c) is matched by the lectotype female where applicable, except that the head and scapus are not lighter than the overall body color, flagellomere 1 is about twice as long as wide (not "globular"), and there is no "small brown spot" in front of each posterolateral thoracic vitta

(on the dry specimen, the dorsal humeral regions appeared darker than the neighboring ashen pruinosity, possibly due to abrasion, but those areas were not small). From the lectotype, the female of *G. verrucosus* can be characterized as follows:

Antenna with 6 flagellomeres; AR = 0.35. Frontal tubercle length x width 20 x 11 µm. Clypeal setae confined to a pair of medially separate, oval, raised areas (similar to those in Rodova, 1978: fig. 21A, sub *G.* "*pallens*", but with different shape and more setae). Antepronotal lobes strongly developed on either side of relatively narrow dorsomedian 'notch' (similar to Heyn, 1993: fig. 1L rather than 1D or 1H). Wing length estimated as approx. 3.6 mm; R_{2+3} as dark as neighboring veins. Fore femur with the distal 1/4 as dark as ti and ta, proximal 3/4 lighter; LR_1 = 1.51; length ratio fore ta_2/ta_3 = 1.22. Abdominal tergal mark lengths increasing from TII to TVI; mark length ratios TIII/II = 1.22, TVI/II = 1.68, TVI/IV = 1.32, TVI/V = 1.22; mark on TII covers about 0.25 of tergite length, on TIII–V about 0.35, on TVI 0.43. Genitalia generally similar to Contreras-Lichtenberg (1996: fig. 5, sub *G. barbipes*); sternite VIII setae near ventromedian ends of gonocoxapodeme more densely set than on remainder of sternite; gonapophysis VIII with 'ventrolateral' lobe smaller than 'dorsomesal' lobe (ventral end of base of 'dorsomesal' lobe located at mesal corner of sternite VIII, thus 'dorsomesal' lobe base extends farther ventrad than entire 'ventrolateral' lobe), apodeme lobe slightly longer and darker than 'ventrolateral' lobe, distally with numerous projecting microtrichia; gonocoxite IX with 4–5 setae; segment X with 7–8 lateral setae in partially double row; postgenital plate a little-defined, large, wide triangle, ratio basal width/length about 1.2.

Kieffer published two subsequent treatments (1911d: 343, 1913e: 140 + pl. XI, fig. 11) of *C. verrucosus*, reporting on additional male specimens from the (lecto)type locality (Kumaon). It cannot be ascertained at this time whether these belong to the same species as the lectotype female. However, the figure of the male hypopygium — although apparently not drawn from a type specimen — seems consistent with placement in *G.* (*Glyptotendipes*), e.g. the superior volsella shows the straight midsection and hooked apex considered characteristic of this subgenus (Contreras-Lichtenberg, 2001 sub *G.* (*Phytotendipes*)).

3) Resulting from the above type species recognition and identification, the subgeneric nomenclature in *Glyptotendipes* Kieffer, 1913 is as follows:

a) *G. (Glyptotendipes)* Kieffer, 1913(a) — type species *Chironomus verrucosus* Kieffer, 1911 (by subsequent monotypy in Kieffer, 1913e). Syn. *Phytotendipes* Goetghebuer, 1937 (see Heyn, 1993).

b) *G. (Caulochironomus)* Heyn, 1993 — type species *Chironomus caulicola* Kieffer, 1913 (by original designation). As recognized by Contreras-Lichtenberg (1999: 361), Heyn's (1993: 136) two type species designations for *G. (Caulochironomus)* and *G. (Trichotendipes)* Heyn (see below) have the species names switched to the respective opposite subgenus. Heyn also gave "*Tendipes*" as the genus name in both type species combinations, whereas in the original combinations it is *Chironomus*. In addition, *Chironomus signatus* was published first in 1909, not in "1911". How-

ever, the contents of Heyn (1993) clearly show these errors to be mere lapsûs calami, the respective identity of the type species is beyond any doubt. Therefore, in accordance with or analogy to ICZN (1999) Code Articles 67.6 and 67.7, we hold that stability is best served by considering both *Caulochironomus* and *Trichotendipes* Heyn as available from Heyn (1993).

c) *G. (Heynotendipes)* nom. nov. for *G. (Trichotendipes)* Heyn, 1993 (preoccupied by *Trichotendipes* Guha et al., 1985) — type species *Chironomus signatus* Kieffer, 1909 (by designation of Heyn, 1993). See above remarks on *G. (Caulochironomus)*. We had offered Dr. Heyn the opportunity to propose a substitute name here, but did not receive one from him.

Results from larval karyology (Hirvenoja & Mchailova, 1991) may mean that one or both of the subgenera *Glyptotendipes* and *Caulochironomus* are not monophyletic as currently defined. However, the above classification changes only the subgenus names, not the traditional morphological diagnoses (see Heyn, 1993; Contreras-Lichtenberg, 1999, 2001). Note, though, that treatments of the adult female stage in the last two works frequently (but not consistently) misuse the term "Antenne" (antenna) where the otherwise used "Antennengeißel" (antennal flagellum) is meant, which may lead to misunderstandings regarding the number of flagellomeres present in a particular taxon. According to the respective original descriptions, and to Townes (1945), Rodova (1978), and the measurement data in Contreras-Lichtenberg (1999), the females of all known species in *G. (Glyptotendipes)* have 6 flagellomeres. In *G. (Caulochironomus)* there usually are only 5, but Rodova (1978) reports intraspecific variation sub *G. caulicola*, with flagellomere 1 sometimes more or less clearly divided. Contreras-Lichtenberg (2001) describes 6 flagellomeres from a single female sub *G. foliicola*, but see the separate comments on that name below. Contreras-Lichtenberg (2001) does not diagnose the adult female of *G. (Heynotendipes) signatus*. However, both the original description (Kieffer, 1909) and Rodova (1978, sub *G. varipes* which Contreras-Lichtenberg synonymizes with *G. signatus*) describe the antennal flagellum as 5-segmented. This — in addition to the general morphological similarity of the lectotype of *G. verrucosus* with females in *G. (Glyptotendipes)* — convinces us that the type species does not belong in the same subgenus as *G. signatus*.

The genus name *Tendochironomus* Lenz, 1937, listed as a junior synonym of *Glyptotendipes* in Ashe (1983), does not appear in the above classification because the type species, *Chironomus (Phytochironomus) tumidus* Johannsen, 1932 belongs in *Kiefferulus* Goetghebuer rather than in *Glyptotendipes* (P.S. Cranston, pers. comm. to MS, based on examination of a syntype of *C. tumidus* at BMNH, and of immature-stage specimens at ZSM from the original sample rearing). Thus, *Tendochironomus* becomes a junior synonym of *Kiefferulus*. See also the remarks on *Phytochironomus* below.

Phytochironomus Kieffer, 1921. Contrary to Kieffer's usual procedure, none of the earliest three publications mentioning *Phytochironomus* (see Kieffer, 1921b–d) presents it as 'n. gen.' or similar. It is conceivable that a manuscript with the intended original

description remained unpublished (there are references to such manuscripts in correspondence between Thienemann and Kieffer, although *Phytochironomus* is not specifically implied in these). Two of these earliest publications (Kieffer, 1921b, d) are keys to genera, in which no species names are combined with *Phytochironomus*. In Kieffer (1921c), the adult male and female of the newly proposed species *P. philippinarum* are described and diagnosed as "close to *tainanus* Kieff." (originally *Tendipes tainanus* Kieffer, 1912; from Taiwan, also described as male and female). Thus, *Phytochironomus* is available from Kieffer (1921b), but only a species listed in Kieffer (1921c), the first subsequent publication using available species names in explicit combination with the genus, is eligible for type species fixation (ICZN, 1999: Article 67. 2.2.

In Kieffer (1921b), only the male adult is keyed and, according to the footnote on the first page, the lack of an asterisk behind the genus name indicates that the latter was based not only on 'exotic', i.e. at least in part on Palaearctic material. However, the first Palaearctic species to be published — *P. aequalis* Kieffer and *P. zavrelianus* Kieffer — did not become available until 1922. In Kieffer (1921d), both adult sexes are keyed, and the female antenna in *Phytochironomus* is said to have six flagellomeres. This obviously represents the African *P. fractilobus* Kieffer, 1923 — described in part 3 of the series begun with Kieffer (1921d) — but disagrees with both Asian species included in Kieffer (1921c) which had been described with only 5 flagellomeres. Other character states given for *Phytochironomus* in Kieffer (1921b, d) also exclude *T. tainanus* and *P. philippinarum*, most significantly the shape of the male inferior volsella. However, if instead the character pulvillar shape is used as a criterion, the grouping of species included in *Phytochironomus* at the time comes out different from the above: the pulvilli were reported as narrow in *P. philippinarum* and the African *P. kribiicola* Kieffer, 1923, but wide in the remaining species. All of this suggests that Kieffer's taxonomic concept named *Phytochironomus* in 1921 included species from more than one of the genera recognized today. In fact, of those names still used as valid *P. kribiicola* presently is placed in *Dicrotendipes* (after Epler, 1988), *P. aequalis* in *Glyptotendipes* (see separate comments below), whereas *P. fractilobus* and *P. tainanus* are in *Kiefferulus* (after Cranston et al., 1990) — although with the exception of *P. aequalis* these placements apparently are not based on unambiguously original type material.

Since Edwards (1929) and Goetghebuer (1937 in Goetghebuer & Lenz, 1937–1962), *Phytochironomus* usually has been considered a junior synonym of *Glyptotendipes*. This appeared plausible from the Palaearctic species included subsequently by Kieffer (see, e.g., the original description of the gonostylus of *P. aequalis*). However, Ashe (1983) noted that the identity of the two Asian species exclusively eligible for type species fixation was uncertain. Nevertheless, he maintained the synonymy (Ashe, 1983, 1993). Contreras-Lichtenberg (1999) repeated this, overlooking that meanwhile Heyn (1993) had designated *P. philippinarum* Kieffer, 1921 as the type species — against the warning by Ashe (1983) that this should not be done without studying the type material. If Kieffer's (1921c) refer-

ence to *Tendipes tainanus* is not accepted as an "express" inclusion (ICZN, 1999: Article 67.2.2) in *Phytochironomus* — Kieffer did not transfer the species explicitly — then *P. philippinarum* has been the type species by subsequent monotypy (ICZN, 1999: Article 69.3) all along, and Heyn's (1993) designation was obsolete. An earlier designation by Townes (1945: 144) is doubly invalid, because *P. aequalis* was not among the first subsequently included species, nor — as Townes claimed — the only species included when proposed (*P. zavrelianus* was included in the same work). In any case, under ICZN regulations *P. philippinarum* Kieffer, 1921c has been validly fixed as the type species of *Phytochironomus* Kieffer, 1921b.

As noted above, there are indications from the original and sole description by Kieffer that *P. philippinarum* is not a *Glyptotendipes*, and Johannsen's (1932) interpretation points in the same direction. If confirmed, this could threaten a disturbing change to current nomenclature. We are unaware of any type material of *P. philippinarum* in the museums known to hold Kieffer specimens. The collection of C.F. Baker's, from whom Kieffer had received the material described, is at the U.S. National Museum of Natural History, but no specimens of *P. philippinarum* have been found (F.C. Thompson, pers. comm. to MS). Under these circumstances, both *Phytochironomus* and *P. philippinarum* should be treated as nomina dubia.

Glyptotendipes (Caulochironomus) aequalis (Kieffer). Hirvenoja & Michailova (1991) redescribed *G. aequalis* based in part on the sole pupal exuviae reported by Lenz (in Goetghebuer & Lenz, 1937–1962), and designated this specimen as the neotype. However, this exuviae undoubtedly is part of the holotype, as evidenced by Thienemann's unique sample identifier ("Insula") on the label with the exuviae, and a remark on his corresponding register sheet (at ZSM) that only two adults emerged from this sample rearing: one *G. aequalis*, the other an *Endochironomus*. Hirvenoja & Michailova (1991: fig. 1G, and p. 93) placed this exuviae at one end of a rather wide range of morphological variation, but saw no grounds for taxonomic separation anywhere in their material. On the other hand, the uniformity in their larval karyology results could be due to the corresponding specimens having come from only one of the several populations represented in their morphological data. Contreras-Lichtenberg (2001) and Langton & Visser (2003) apparently did not examine this holotype for their interpretation of *G. aequalis*, and they do not discuss the issue of variation raised by Hirvenoja & Michailova (1991). Some of the latter may be related to body size — the holotype being at the very short end of the range of exuvial lengths reported by Hirvenoja & Michailova — but this does not cover differences such as the absence of the "extensive small granulation" (Langton & Visser, 2003) on the thorax. Also noteworthy here is an apparent discrepancy in adult male morphology: Hirvenoja & Michailova (1991) and Contreras-Lichtenberg (2001) describe the superior volsella as apically strongly hooked (and apparently invariably so), whereas Kieffer (1922d) gave it with the "distal half weakly curved, apex slightly narrower". In the original determination letter (at ZSM) exchanged with Thienemann, Kieffer placed *G. aequalis* "close to *C. scirpi*" Kieffer, 1915, for which Contreras-Lichtenberg (2001) indeed describes the superior volsella as only "curv-

ing", not hooked, and "distally abruptly narrowed". In summary, further information is required to evaluate whether all specimens reported recently sub *G. aequalis* are conspecific among themselves and with Kieffer's species. If so, then intraspecific variation in *Glyptotendipes* pupal characters and the resulting overlap between taxa demand closer attention, specifically as regards the critical importance of the tergal plate configuration to current separations on the subgenus and species levels (but see general remarks on *Glyptotendipes* above).

Glyptotendipes foliicola Kieffer, 1918, and *G. sigillatus* Kieffer, 1918. Unassociated material of four life stages from a variety of sources has been treated by Contreras-Lichtenberg (2001) under the one name *G. foliicola*, with *G. sigillatus* as a junior synonym. However, both names probably have been misapplied by most authors other than Kieffer due to insufficient attention to the original descriptions and material.

The two names were made available by Kieffer (1918a), in a key to all species of *Glyptotendipes* known to him at that time. The adult males were separated on body size, presence/absence of a fore tarsal beard, and the fore LR, the female was described for *G. sigillatus* only. Additional distinguishing features were given elsewhere: for *G. foliicola* in Kieffer (1911a: 27–28, sub "*Tendipes niveipennis* Zett.", see below); for *G. sigillatus* in Kieffer (1922d). Goetghebuer's later (1937 in Goetghebuer & Lenz, 1937–1962) tentative suggestion of synonymy (with a "?") ignored the differences described by Kieffer. In fact, if Kieffer's characterizations of *G. sigillatus* are applied to Goetghebuer's key (op. cit.), the species runs not to *G. foliicola*, but to *G. pallens* (Meigen). Nevertheless, and despite Goetghebuer's own doubts about the synonymy (see also Ashe & Cranston, 1990), only the name *G. foliicola* has since been in use. Contreras-Lichtenberg (2001) refers the synonymy to Goetghebuer (not mentioning the question mark he had attached), and again does not account for its discrepancy with Kieffer's descriptions. This is all the more astonishing since Thienemann (1954), Lenz (1957 in Goetghebuer & Lenz, 1937–1962), and Heyn (1993) had already pointed out the resulting problem with subgenus assignments discussed above under item 2 of the general remarks on *Glyptotendipes*. The interpretation of *G. sigillatus* by Goetghebuer and Contreras-Lichtenberg implies an adult abdominal tergal mark pattern incompatible with Kieffer's original diagnoses both for the genus (1913a) and for *G. sigillatus* (1918a; and see especially Kieffer, 1922d). For example, contrary to Kieffer's statements, TII would be without a mark in the interpretation of Contreras-Lichtenberg (2001: subgeneric assignment of *G. foliicola* syn. *G. sigillatus*, and key to subgenera).

Applying Kieffer's (1918a, 1922d) descriptions of the adult male of *G. sigillatus* to the keys in Contreras-Lichtenberg (1999, 2001), the unequivocal result is *G. glaucus* (Meigen). This agrees with the above determination after Goetghebuer (1937), who had considered *G. glaucus* a mere variety of *G. pallens*. It conflicts with Contreras-Lichtenberg's (2001) identification of a male she interpreted as an original type specimen of *G. sigillatus*, but this latter recognition is in doubt. Earlier, Contreras-Lichtenberg (1999: 360) had reported two supposed syntypes from MNHN (Paris),

a male and a female, but noted that the collector's name ("Surcouf") on the label with the male specimen is not the one given by Kieffer (1922d: "Keilin"). Probably for this reason Contreras-Lichtenberg attached a "lectotype" label to the female specimen, but no type label to the male (Ekrem, 2000). In a subsequent paper, Contreras-Lichtenberg (2001) does not report on this label she had attached, does not discuss the conflicting collector's data again, but proceeds to list the male as "Holotypus", the female as "Paratypus". The latter recognitions contradict her own earlier labeling and are unjustified, because Kieffer never published such a distinction within the type series of *G. sigillatus*.

The description of the male of *G. foliicola* (syn. *G. sigillatus*) in Contreras-Lichtenberg's (2001) sense is incompatible with Kieffer's (1918a, 1922d) descriptions of *G. sigillatus*. For examples, see Kieffer (1922d) on the abdominal tergal marks (especially those on T II, V and VI), and compare the descriptions regarding frontal tubercles (Kieffer, 1922d and Goetghebuer, 1937: absent / Contreras-Lichtenberg, 2001: present). Contreras-Lichtenberg's (2001) description is based on at most two specimens. Her list of material studied gives the "Holotypus" of *G. sigillatus* as "genadelt" (pinned), but two males sub *G.* "*foliicola*" ex coll. DEI as "Mikropräparat". This may mean that the male of *G. sigillatus* at MNHN either is incompletely preserved or has not been slide-mounted and examined in all details. However, if her identification of the MNHN male is correct, then the discrepancies with Kieffer's descriptions and collecting data discount this specimen as being an original type of *G. sigillatus*. The latter name still could be based on the MNHN female, whose sampling data match those in Kieffer (1922d) and which Contreras-Lichtenberg — contrary to her 2001 publication — has labeled "lectotype". However, Contreras-Lichtenberg (1999, 2001) provides no keys or species-level diagnoses for the adult female stage, and her description sub *G. foliicola* ("n = 1") apparently is again based on a specimen ex coll. DEI, whereas the MNHN syntype has not been analyzed in detail. To further confound the situation, the male(s) and the females Kieffer (1918a, 1922d) described as *G. sigillatus* had come from entirely different samples and obviously were regarded as conspecific based on overall coloration only. This cannot be considered reliable, especially since the females were described as significantly smaller (6–7 mm versus 8 mm in the male), and their antennal flagella as 5-segmented, whereas all species in which the adult tergite II carries the *Glyptotendipes* mark have the female flagellum 6-segmented (see the above general remarks on the genus, item 3). Therefore, Kieffer's (1918a) type series of *G. sigillatus* may have contained two different species possibly even belonging to different subgenera.

In light of all of the above, Contreras-Lichtenberg's interpretation of *G. sigillatus* Kieffer cannot be accepted as a reliable, final solution, and the name remains dubious. Neither the "lectotype" label with the female at MNHN, nor Ekrem's (2000) reporting of it constitutes a formally valid designation (see the above comments on *Glyptotendipes candidus*), and further examination is necessary to decide whether such a designation would actually be productive.

Contreras-Lichtenberg's (2001) interpretation of *G. foliicola* Kieffer is unconvincing too; in fact there is no taxonomic concept under this name that is both consistent among authors and properly tied to Kieffer's original description and material. Although Kieffer did not propose "*G. niveipennis* Zett. var. *foliicola*" until 1918, his reference there to "(*niveipennis* Kieff. 1911)" shows that this was no more than a new varietal name applied to material already described earlier, and the latter had been stated (Kieffer, 1911a: 28) to have come from Goetghebuer. This has been confirmed by Thienemann (1954: 96), and particularly by Goetghebuer (1912: 11, 1921: 36), who specified the type locality in Belgium. In spite of this, Hirvenoja (1990) and Contreras-Lichtenberg (1997, 2001) discuss *G. foliicola* exclusively on the basis of material ex coll. DEI, collected in eastern Germany or Latvia. The facts that this material was determined — it is not known when — as *G. foliicola* by Goetghebuer (not by Kieffer!), and that it is preserved in the same museum (DEI) as the Horn material reported on by Kieffer (1918a), are entirely insufficient to assume any relevance to nomenclature for these specimens. The tentative or attempted neotype designations by Contreras-Lichtenberg (1997, 2001) are invalid because they failed to conform to the precise and strict requirements for such actions by the ICZN (e.g., 1999: Article 75). Instead, according to the available evidence, only specimens from Belgium seen already by Kieffer (1911a) constitute the type series of the "var. *foliicola*".

Whether any of this Goetghebuer material still is preserved is unclear; Contreras-Lichtenberg (2001) examined no Belgian specimens of *G. foliicola* from IRSNB.

If one applies the detailed descriptions of the immature stages in Goetghebuer (1912) to the keys in Contreras-Lichtenberg (2001), the resulting determination is *G. caulicola* (Kieffer, 1913), not *G. foliicola* sensu Contreras-Lichtenberg. However, some character states given by Goetghebuer (1912) do not match (see also Kalugina, 1975), and Goetghebuer (1928) and Lenz (1957 in Goetghebuer & Lenz, 1937–1962) clearly separated *G. caulicola* and *G. foliicola*.

Contreras-Lichtenberg (1997: 286, 2001: 427) refers to a line of publications after Kieffer (1918a), which she believes to have established *G. foliicola* as an unambiguously defined species ("eindeutig definierte Art"). However, with the possible exception of Goetghebuer *in* Goetghebuer & Lenz (1937–1962), none were based on examinations of original specimens, and Contreras-Lichtenberg herself apparently did not compare material of any of those authors either. Moreover, Hirvenoja (1990) presented evidence that the species seen by British authors (e.g. Edwards, 1929; Pinder, 1978; Langton, 1991) may differ from Kieffer's "var. *foliicola*".

Contreras-Lichtenberg admits (2001: 428) that for the immature stages she had no reliably associated ("kein mit Sicherheit zuordenbares") material. For the larva she follows Kalugina (1979), but that work describes no other life stage. The pupa is described after Langton (1991), again only from the literature, and again without association (Langton did not state how he had arrived at the assigned species name). The length of pupal exuviae given (Langton, 1991: "6.5 mm") is too short to accommodate adults of the size range 6–9 mm described by Kieffer (1918a). Without links

via at least the pupal stage, not even adult specimens of opposite sex can be considered as associated definitively (see the above comments on the possibly mixed type series of *G. sigillatus*). The females Contreras-Lichtenberg (2001) lists as her material are linked to the males by at most circumstantial evidence, the only specimens analyzed (op.cit., p. 428: 2 males, 1 female marked as "Mikropräparat") are from three different samples. In addition, an adult female antenna with 6 flagellomeres (Contreras-Lichtenberg, 2001) disagrees with Kieffer (1911a) and Rodova (1978) who had described only 5.

Summarizing the evidence on *G. foliicola*, the possibility remains that it deserves separate species status, but almost certainly it has not been properly interpreted. It seems unlikely that the unassociated life stages treated under this name by Contreras-Lichtenberg (2001) all belong to a single species, and even less that the latter is *G. foliicola* Kieffer.

Due to all of the above, the synonymy between *G. sigillatus* and *G. foliicola* is unacceptable. Note here also that Kieffer (e.g. 1918a), Goetghebuer and others repeatedly gave characters plausibly differentiating the two species. However, even in the hypothetical case that *G. sigillatus* Kieffer, 1918 and *G. foliicola* Kieffer, 1918 eventually ended up as synonyms, the senior synonym would be *G. sigillatus*, not *G. foliicola*. The former was established as a species, whereas "*G. niveipennis* Zett. var. *foliicola*" takes only subspecies rank from the original publication (ICZN, 1999: Article 45.6.4). If simultaneously published names of different rank are considered synonymous, since 1 January 2000 the one proposed at the higher rank automatically takes precedence (ICZN, 1999: Article 24.1), thus invalidating Contreras-Lichtenberg's (2001) selection of *G. foliicola* as the senior synonym of *G. sigillatus*.

In summary, *G. sigillatus* Kieffer and *G. foliicola* Kieffer both should be treated as nomina dubia, at least until type specimens have been examined in detail. Reliable, individual life stage associations would be needed to achieve unequivocal matches with a type of either adult sex of *G. sigillatus*, or with type specimens of any stage of *G. foliicola*. In addition, the material reported sub *G. foliicola* by recent (e.g. British and Russian) authors needs to be revised to determine the species involved and their respective valid names.

Despite this chaotic situation, the Fauna Europaea database must in some way refer to the various records published over the past decades. Unfortunately, we had no practical alternative to listing them as doubtful under the artificial, not available, name "*G. foliicola* Contreras-Lichtenberg".

Glyptotendipes (Caulochironomus) imbecilis (Walker, 1856), and *Chironomus viridis* Macquart, 1834. Contreras-Lichtenberg (2001) does not report having searched for type material of *C. viridis*, but interprets the name after specimens (det. Schiner from Austria, a single hypopygium det. Goetghebuer, det. Rossaro from Italy) that are without direct relevance to nomenclature. However, it is obvious from the literature that different authors had interpreted *C. viridis* Macquart quite differently, e.g. see Kieffer (1918a) versus Edwards (1929), and that Contreras-Lichtenberg's sampling was too small to reflect this diversity. Previously, both *Glyptotendipes viridis*

(Macquart) and *G. imbecilis* (Walker) had been in use as valid (e.g. Ashe & Cranston, 1990), and differentiated clearly by some authors (e.g., Walker, 1856; Kieffer, 1918a; Goetghebuer, 1937 in Goetghebuer & Lenz, 1937–1962; Kalugina, 1975). For example, Kieffer and Goetghebuer interpreted *G. viridis* as a species without a tarsal beard in the male, whereas Contreras-Lichtenberg (2001) presents it as bearded and combines as junior synonyms taxa whose descriptions differ in this character (e.g. *G. imbecilis, G. severini* bearded, *G. candidus, G. leucoceras* not bearded). Contreras-Lichtenberg neither discusses those concepts of earlier authors, nor offers suggestions on where to place their material that hardly all can be conspecific. Only a comprehensive revision could show the number and respective characteristics of species reported as *G. viridis* (Macquart) by various authors, and establish the optimal solution (and type specimen, if applicable) for this name. As long as that has not been accomplished, the evidence does not justify using *G. viridis*, a name of varied usage based on no extant type specimen, as a senior synonym of *G. imbecilis*, a name also in use and long based on an apparently informative type series (and now on a lectotype after Contreras-Lichtenberg, 2001).

In the Fauna Europaea database, we have therefore kept records under both names separate, but have listed those under *G. viridis* as doubtful to reflect their dubious identity.

Note that, as observed by Contreras-Lichtenberg (2001), the original spelling by Walker was "*imbecilis*". On the other hand, according to ICZN (1999) Article 33.3.1, an incorrect subsequent spelling that is in "prevailing usage" becomes the correct spelling. However, the explanation of prevailing usage in the ICZN (1999) Code glossary is too imprecise for practical application. Moreover, in recent publications used as data sources by other authors in the Palaearctic, the spelling of the species name has varied between the original "*imbecilis*" (e.g. Pinder, 1978; Contreras-Lichtenberg, 2001) and the subsequent spelling "*imbecillis*" (e.g. Ashe & Cranston, 1990; Langton, 1991; Sæther et al., 2000). We interpret this as evidence against any one usage being ‘prevailing’ in this case, and therefore use the original spelling, *Glyptotendipes imbecilis*.

Chironomus candidus Kieffer. The lectotype mentioned in Contreras-Lichtenberg (2001) has not been designated validly, because the requirements of ICZN (2003) Declaration 44 have not been fulfilled. The latter has been issued as an amendment to ICZN (1999) Article 74.7.3, and applies (as the Article did) to all lectotype designations published after 31 December 1999. As a result, these and future lectotype designations are valid only if they "contain an express statement of deliberate designation" (ICZN, 2003). For example, a designation reading "lectotype hereby designated" is accepted as sufficient, whereas a form such as "lectotype: specimen X" is not. A lectotype designation thus cannot be validated by entering it on a specimen label, nor by simply quoting from such a label. The aim of the above ICZN Article and Declaration is to rule out lectotype designations for mere curatorial convenience. Instead, they should only be made upon "revisionary or other taxonomic work to enhance the stability of nomenclature" (ICZN, 2003).

None of the known preserved specimens (Contreras-Lichtenberg, 2001: 234) can be accepted as an original type of *Chironomus candidus* Kieffer. The adult males at IRSNB apparently disagree with the original description in the tarsal beard character (see above discussion of *Glyptotendipes imbecilis*), and do not carry source data. Documentation on the exuviae at ZSM is insufficient as well, especially in light of the general ambiguity concerning material by H. Gripekoven (see discussion of *Glyptotendipes cauliginellus* below). Consequently, the present authors treat *C. candidus* Kieffer as a nomen dubium.

Chironomus candidus Kieffer "var. versicolor" (nomen nudum). Contreras-Lichtenberg (2001) lists a specimen labeled with this unavailable varietal name (different from *C. versicolor* Kieffer, 1909) among the supposed "paralectotypes" of *C. candidus* Kieffer (see above comments on that species). However, the specimen is not mentioned in the original publication (Kieffer, 1913c), was collected much later (correspondence between Thienemann and Kieffer, at ZSM), and thus cannot possess any type status.

Chironomus leucoceras Kieffer. The status of exuviae at ZSM considered as syntypes by Contreras-Lichtenberg (2001) is doubtful, for the same reasons as given in the above discussion on *Chironomus candidus*. Interpretation of *C. leucoceras* as possessing an adult male tarsal beard would contradict the original description. The present authors treat *C. leucoceras* Kieffer as a nomen dubium.

Glyptotendipes (Caulochironomus) scirpi (Kieffer, 1915), *G. fodiens* (Kieffer, 1924), etc. Goetghebuer & Lenz (1937–1962), Thienemann (1954), and Ashe & Cranston (1990) all listed *G. scirpi* and *G. fodiens* in unquestioned synonymy, but used the junior name as valid (the latter was also used in Sæther et al., 2000). Langton (1991), Contreras-Lichtenberg (2000, 2001), and Langton & Visser (2003) used *G. scirpi* instead.

The synonymy is not based on type material, and thus less than certain given the chaotic state of taxonomy in *Glyptotendipes*. The "holotype" recognitions for *Phytochironomus fodiens* Kieffer, 1924 and *P. fodiens* var. *fossor* Kieffer, 1924 by Contreras-Lichtenberg (2001) are invalid, because Kieffer described both sexes of both varieties and designated no single name-bearing type for either. However, if syntype status is assumed for such "Types de Kieffer" specimens (for a discussion of this see the General remarks, item 1a, above), then Contreras-Lichtenberg should have examined also the material sub "*Phytochironomus scirpi*" reportedly present in the same collection (unpublished list by W. Wülker at ZSM, seen by Contreras-Lichtenberg, 1999: 362). Her "syntype" recognitions for *P. latifrons* Kieffer, 1924 also are invalid, because "larvae" (not larval skins) cannot be types of species described from reared adults, and because for the pupal exuviae listed the documentation is too imprecise to associate them with individual Kieffer types (ICZN, 1980).

In addition to the above, Contreras-Lichtenberg's (2001) treatment of *G. scirpi* lacks references to the original description and type locality (given, e.g., by Thienemann, 1954: 96), lists *Tendipes hypogaeus* erroneously as a junior synonym (see separate comments on that name), lacks the greater part of the adult male description (op.

cit.: 436), and in claiming the adult female to be "unknown" overlooks that Kieffer (1924b) had described it for both ‘varieties’ of *P. fodiens*.

Although Contreras-Lichtenberg (2001) has not put the matter to rest, there is no hard evidence at this time against the synonymy between *G. scirpi* and *G. fodiens* that has been assumed for a long time. Therefore, in the interest of stability, no change to nomenclature is proposed here.

Tendipes hypogaeus Kieffer, 1913. Contreras-Lichtenberg (2000) synonymized this with *G. mancunianus* (Edwards), but then (2001: 433 and 437) listed the name as synonymous both under *G. scirpi* (Kieffer) and under *G. viridis* (Macquart). The last of these three synonymies apparently represents the author’s current opinion. It is based on "three of four pupal exuviae belonging to the syntypes" (Contreras-Lichtenberg, 2001: 437), but this recognition is not justified. Neither the literature (Kieffer, 1913d; Gripekoven, 1913; Thienemann, 1919, 1954) nor the Thienemann documents at ZSM contain exact data on the sample(s) from which the adults described by Kieffer derived. The slide with the four exuviae seen by Contreras-Lichtenberg was labeled by Gripekoven whose description under *T. hypogaeus* (1913: 70–71) shows that he misapplied the name to a species of *Polypedilum*, represented by the fourth exuviae on the slide. The three *Glyptotendipes* exuviae instead were labeled "*candidus*". Gripekoven’s mistake was reported by Thienemann (1954: 96), who pointed to another, single exuviae he assumed to be associated with "the imago described by Kieffer" as *T. hypogaeus*. However, this assumption of a holotype is refuted by Kieffer’s (1913c) description of an adult body size range ("7–8 mm"), and the exuviae mentioned by Thienemann has not been found. All other slides in the Thienemann collection labeled "*T. hypogaeus*" by Gripekoven contain also the same *Polypedilum* species as above (*P. sordens*), whereas the *Glyptotendipes* species — if any are also present — differ between those slides.

Consequently, since neither adult nor immature specimens have been found that can be recognized as types or at least as present in the type sample, *Tendipes hypogaeus* Kieffer cannot be identified and must be treated as a nomen dubium.

Glyptotendipes (Glyptotendipes) cauliginellus (Kieffer, 1913), and *G. gripekoveni* (Kieffer, 1913). Contreras-Lichtenberg (1999, 2000) "confirmed" these as synonymous, and used *G. gripekoveni* as the valid name without determining publication priority. Her 1999 reference list gave the publication establishing *G. gripekoveni* (this is Kieffer, 1913c in both Contreras-Lichtenberg’s and our sequence) as having appeared on 5 July. Only the year was given, however, for the work containing the original description of *G. cauliginellus* (this is Kieffer, 1913b in our sequence, "1913e" of Contreras-Lichtenberg, 1999), even though the exact date can be obtained much more easily, as it was printed in the journal volume. Although for Kieffer (1913c) only a library receipt date is known, this must be used in deciding priority between the two publications, because it has remained the earliest verifiable one (ICZN, 1999: Article 21.3) despite intensive searching by Ashe (1983), O. Hoffrichter (pers. comm. to MS), and MS. Consequently, if the synonymy by Contreras-

Lichtenberg is accepted, *G. cauliginellus* takes precedence over *G. gripekoveni*.

On the other hand, the synonymy was based on pinned specimens in the "Types de Kieffer" collection at IRSNB, carrying no documentation other than species name labels. The status of such specimens as original Kieffer types is questionable in general (see General remarks, item 1a, above). At least as regards *G. gripekoveni* the case is confounded by the unusual volume and heterogeneity of the type series. The adults of either species had come from mass rearings by Gripekoven (1913). For *G. gripekoveni*, both Kieffer (1913c) and Gripekoven (1913) described several (unnamed) varieties along with the nominotypical form. For *G. cauliginellus*, Kieffer (1913b) treated only the male sex, giving no indication of a large or diverse specimen series, whereas Gripekoven again listed material from many different samples. Moreover, on the original letter sheet (preserved at ZSM) with which Kieffer returned his determinations of Gripekoven's material, Kieffer noted that in the individual alcohol vials sent to him "all the imagines reared from the respective plant were mixed". The same is true also for most of Gripekoven's slides with pupal exuviae, preserved at ZSM. Consequently, although on several slides "*cauliginellus*" or "*gripekoveni*" in Gripekoven's handwriting appears among the names on the respective label, no individual exuviae can be verified as part of one of the animals described by Kieffer (as would be mandated for type recognition by ICZN, 1980).

Another problem with Contreras-Lichtenberg's (1999) interpretations in this case is that Gripekoven (1913) and all authors identifying immature stages from his descriptions had distinguished clearly between the larvae and pupae of *G. cauliginellus* and *G. gripekoveni*. For example, Lenz in Goetghebuer & Lenz (1937–1962) even recognized separate species groups named after these two species. One critical character this classification employed lies in the relative lengths of the epaulettes on the pupal abdominal tergites, especially those on TV and VI. Applying this to Contreras-Lichtenberg's (1999) interpretation, it becomes evident that *G. gripekoveni* sensu Gripekoven (1913) etc. is a species different from *G. gripekoveni* sensu Contreras-Lichtenberg (or Langton, 1991; etc.). On the other hand, what Contreras-Lichtenberg calls *G. gripekoveni* (= *G. cauliginellus*) does appear to be the same as *G. cauliginellus* sensu Gripekoven.

Goetghebuer (1928) maintained the previous separation between the two species names even though he had seen the specimens that Contreras-Lichtenberg (1999) proposes as respective "lectotypes" and as conspecific. However, Goetghebuer's mind apparently changed by 1937 (in Goetghebuer & Lenz, 1937–1962) — see General remarks, item 1b, above — and since then most authors have recognized only one species (in spite of Lenz's completely different classification, see above). Therefore, the long-term stability of nomenclature would not be well served by reintroducing separation, especially since this would mean assigning *G. gripekoveni* to a taxonomic concept different from the one in recent use (e.g. after Pinder, 1978; Langton, 1991). However, if the species concept sensu Contreras-Lichtenberg (1999) and the synonymy between *G. cauliginellus* and *G. gripekoveni* are accepted, then the earlier published *G. cauliginellus* becomes the valid name.

The proposal (Contreras-Lichtenberg, 1999: 378) of *G. gripekoveni* Kieffer, 1913 as a "nomen conservandum" was intended to counteract the priority of *Chironomus sparganii* Kieffer (see separate comments above). Apart from being unnecessary, this action also failed to meet the ICZN Code requirements (e.g., Article 23.9.1), and therefore is invalid.

Glyptotendipes gracilis Kieffer. The distinction by Contreras-Lichtenberg (1997) between a "holotype" and "paratype" is not justifiable from the original publication. Due to her assumption of a type series, the "holotype" recognition cannot be accepted as an automatic lectotype designation either (ICZN, 1999: Article 74.6). The specimens were and remain syntypes.

Glyptotendipes iridis Kieffer, 1918. Contreras-Lichtenberg (1997, 1999) considered this a junior synonym of *G. pallens* (Meigen), based on a specimen reportedly labeled "*iridis* K. var." interpreted as the "Holotypus" because it was the only available specimen labeled as *Glyptotendipes iridis* by Kieffer (Contreras-Lichtenberg, 1997: 285: "... das einzige verfügbare von Kieffer als *Glyptotendipes iridis* bezeichnete Exemplar"). This argument is not logical. The assumption of a holotype (not justifiable from the original publication) is contradicted by Contreras-Lichtenberg's own implication that Kieffer (1918a) had seen more than one specimen (at least one each of the nominotypical form and a variety). On the other hand, if the variety had been discovered later (it is not mentioned in Kieffer, 1918a), then such a specimen cannot be an original type. Moreover, although Contreras-Lichtenberg realized that Kieffer (1918a) had proposed *G. iridis* as a "n. nov." for material he had earlier determined as "*sparganii* Kieff. var.", she did not recognize the connection to that material even after she had examined the latter (see below, and Contreras-Lichtenberg, 1999: 379). In addition, she overlooked a number of published statements on the case (e.g. Thienemann, 1919: 42; Thienemann, 1954: 88; Lenz, 1957 in Goetghbuer & Lenz, 1937–1962). Consequently, the synonymy of *G. iridis* with *G. pallens* is unfounded.

In reality, all available evidence — most specifically a letter from Kieffer quoted by Thienemann (1954: 88, footnote 16; see comments on *Chironomus sparganii* Kieffer above) — shows that Kieffer (1918a) proposed the name *Glyptotendipes iridis* for what he (Kieffer, 1911a: 37–38) had earlier misidentified as "*T. sparganii* Kieff." (see also the above comments on this name). The corresponding immature stages formed part of the material described under "*Tendipes sparganii* Kieffer" by Gripekoven (1913). The latter author and Thienemann (1954: 88–89) gave detailed collecting data for this material, the original correspondence between Thienemann and Kieffer (preserved at ZSM) clarifies that Kieffer saw three female adults.

Contreras-Lichtenberg (1999: 379) treats several larvae and a pupal exuviae from one of the type samples of *G. iridis* ("Ziegelei in *Iris*"). The documentation for the exuviae (in coll. ZSM) is not specific enough to recognize it as part of one of the animals in Kieffer's type series according to ICZN (1980), but sufficient to make it eligible as a prospective neotype. Contreras-Lichtenberg identified all these specimens as "*G. gripekoveni*" (Kieffer, 1913). Because she considered the latter species and *G. cauliginellus* (Kieffer, 1913) to be synonymous, her determination agrees

with that of Lenz in Goetghebuer & Lenz (1937–1962). Consequently, *G. iridis* Kieffer, 1918 here is returned to junior synonymy with *G. cauliginellus* (see separate comments above), as placed by Lenz (op. cit.).

Glyptotendipes scirporum Kieffer, 1924. Contreras-Lichtenberg (1999: 379) claimed the publication date of this species to have been given incorrectly in Ashe & Cranston (1990), changed it from 1924 to 1922, but in the references section listed Kieffer's work in question as 1924 (Contreras-Lichtenberg, 1999: 379). The exact date of appearance of Kieffer (1924a) has been verified independently by Ashe (1983) and MS. The "Holotypus" recognition by Contreras-Lichtenberg (op. cit.) is in error as well: the original publication does not justify that assumption, and in the determination letter exchanged with Thienemann Kieffer recorded having seen 2 males.

Glyptotendipes discolor Kieffer. According to Kieffer (1926), Thienemann's register notes, and correspondence between the two workers (at ZSM), the type series consists of two animals, a male and a female. The original sample had been a rearing by Thienemann from larvae mining in *Sparganium* (Germany, Holstein, Preetzer Kirchensee, larvae taken 11.vii.1918, adults emerged vii–viii.1918). An alcohol vial from the Thienemann collection labeled with his sample identifier ("Preetz Sparganium") was seen by Contreras-Lichtenberg (1999), but she misrepresented and misinterpreted its contents. Instead of 3 adult males, 1 female and 5 exuviae (as stated by Contreras-Lichtenberg) it contained 1 male with exuviae attached, 3 females, and 5 exuviae (1 male, 4 female). If Kieffer's adult specimens are added to the latter count, the numbers of exuviae in total and in either sex perfectly match the corresponding numbers for the adults. We consider coincidence an unlikely cause for this, and thus accept the single unattached male exuviae as associated with the missing male syntype adult. It remains uncertain, however, which of the female exuviae belongs with the missing female syntype adult. The syntype male exuviae has been slide-mounted and identified as *G. cauliginellus* (sub "*G. gripekoveni*", see above comments on these names) by Contreras-Lichtenberg, of which *G. discolor* Kieffer thus becomes a junior synonym.

Tendipes stagnicola Kieffer, 1911. Thienemann's taxonomic register and his correspondence with Kieffer (at ZSM) show the species to have been described from a single female adult, the holotype exuviae was seen by Contreras-Lichtenberg (1999). The latter author's lectotype designation of an adult female at IRSNB is thus obsolete, but this specimen may be part of the holotype (see, however, the above General remarks, item 1a). The original sample data are: Germany, Thuringia, Thüringer Wald near Waltershausen, Otterbachteich, reared from larvae in *Spongilla* encrustations, larvae taken 26.iii.1910, adult emerged late iv.1910, leg. A. Thienemann.

Tendipes fossicola Kieffer, 1912. The documentation on the material Contreras-Lichtenberg (2000) lists as "possibly belonging to the syntypes" is insufficient for primary type recognition, although a male or male pupal exuviae could be designated as neotype, should that become necessary in the future (ICZN, 1980).

Tendipes flavipalpis Kieffer, 1913. Contreras-Lichtenberg (1999: 374) lists this as a junior synonym of *G. glaucus* (Meigen), but on the following page states that she labeled

the newly designated lectotype and paralectotype "*Glyptotendipes pallens*". Below this, she claims in turn to have labeled two slides with associated immature stages "*Glyptotendipes glaucus*". Instead, the labels by Contreras-Lichtenberg on the latter slides (at ZSM) read "*Glyptotendipes pallens*", and a reexamination (by MS) using her 1999 keys and the one in Langton (1991) has shown this labeling to be correct. Contreras-Lichtenberg (pers. comm. to MS) has confirmed that her (1999) placement of *Tendipes flavipalpis* under *G. glaucus* was a lapsus, and that instead it is a junior synonym of *G. pallens*.

The designation of a lectotype for *Tendipes flavipalpis* by Contreras-Lichtenberg (1999) conflicts with notes on the original sample in Thienemann's register (at ZSM, seen by Contreras-Lichtenberg). On the relevant sheet, a single adult is stated to have emerged from this rearing (Germany, Eifel, Meerfelder Maar, E shore, larvae in dead *Phragmites* stems, taken 14.viii.1911, adult emerged 18.viii., leg. A. Thienemann). The holotype exuviae (with a Thienemann label underneath another by Gripekoven, 1913) is preserved at ZSM. The origin of the two specimens in coll. "Types de Kieffer" (IRSNB) is not documented precisely, and thus their type status is uncertain (see comments under General remarks, item 1a).

Chironomus norderneyanus Kieffer, 1913. The designation of an adult male as lectotype by Contreras-Lichtenberg (1999) is invalid, because Kieffer (1913c) had described only the female. The same applies to the pupal exuviae ex coll. Thienemann also reported by Contreras-Lichtenberg. The label on the slide was written by Gripekoven (not Thienemann as Contreras-Lichtenberg claims), whose identification of the exuviae (1913) is thus also doubtful. No type material is known to have been preserved. *G. norderneyanus* should be treated as a nomen dubium.

Glyptotendipes (*Heynotendipes*) *signatus* (Kieffer). *Chironomus signatus* Kieffer, 1909 is a junior primary homonym of *C. signatus* van der Wulp, 1859. However, the two names have not been used in the same genus after 1899 (the senior homonym had been transferred to *Tanytarsus* by van der Wulp, 1874). Therefore, *G. signatus* (Kieffer) need not and must not be replaced without an application to the ICZN (see 1999 Code: Article 23.9.5.).

According to Kieffer (1909) and his entry on the original determination letter (at ZSM) exchanged with Thienemann, the species was described from a single female. The holotype exuviae is preserved at ZSM, and therefore a similarly labeled adult male (for both specimens see Contreras-Lichtenberg, 2001) is ruled out as a type by its sex.

Parachironomus Lenz. Freeman & Cranston (1980) have synonymized *Kribiocryptus* Kieffer, 1921 and *Nilomyia* Kieffer, 1921 under *Parachironomus* Lenz, 1921. However, according to publication priority, names in Kieffer (1921b; June) would take precedence over names in Lenz (1921; October). Therefore the long-standing and unanimous use of *Parachironomus* as the valid genus name is in conflict with ICZN (1999) regulations. As in the case involving *Demicryptochironomus* Lenz, 1941 and *Schadinia* Lipina, 1939 (see Ashe, 1983; Ashe & Cranston, 1990), application for an ICZN ruling is required to validate *Parachironomus* Lenz.

Paratanytarsus tenuis (Meigen). *Chironomus tenuis* Meigen, 1830 is a junior primary homonym of *C. tenuis* Macquart, 1826, but it need not and must not be replaced without a decision by the ICZN, because the two species have not been considered congeneric after 1899 (ICZN, 1999: Article 23.9.5.), since van der Wulp (1874) had transferred *C. tenuis* Meigen to *Tanytarsus*.

Polypedilum (Polypedilum) octopunctatum (Thunberg), and *P. quadrimaculatum* (Meigen). C.P. Thunberg, one of the last students of Linné's, gave a brief description (1784: 26), including the wing pattern, of *Tipula* "8punctata" from Paris, France. The spelling of the species epithet does not conform to nomenclature regulations and must be changed to *octopunctata* (ICZN, 1999: Article 32.5.2.6). Fragments of two type specimens have been preserved at the Uppsala University Museum of Evolution. One consists of only some leg parts of an unidentified ceratopogonid. The other — a complete thorax with one wing and parts of the head (all now slide-mounted) — is conspecific with *Polypedilum quadrimaculatum* (Meigen, 1838). The postero-proximal wing spot is larger than figured by Meigen (in Morge, 1976: pl. CCCIII, fig. 1), but Goetghebuer's (1928: 90) redescription calls the shape and extent of this spot variable, and his illustration (op.cit.: fig. 122) shows the condition exactly as on the Thunberg syntype. Since no Meigen material of *P. quadrimaculatum* is known to have been preserved, and recent use of this name followed Goetghebuer, the synonymy with *P. octopunctatum* is justified.

In light of the mixed type series, a lectotype of *Tipula octopunctata* Thunberg, 1784 is here fixed as follows: Uppsala University Museum of Evolution, Zoology; Thunberg coll. Nr. 19268; on microscope slide (dissected, in Euparal), along with paralectotype (coll. Nr. 19290).

Stempellina bausei (Kieffer). Kieffer (1911a) originally published the name as "*Tanytarsus (Calopsectra) bauri*", with a dedication "to Mr. Baur, who has studied the early stages of this insect" (op.cit.: 46). Subsequent publications (e.g. by Bause, 1913, the person Kieffer had meant) and Kieffer's correspondence with Thienemann (at ZSM) leave no doubt that the spelling of the species epithet resulted from a lapse of memory. Nevertheless, this alone does not render "bauri" an incorrect original spelling, because there is no clear evidence for an inadvertent or "typographical error" (Ashe & Cranston, 1990) "in the original publication itself, without recourse to any external source of information" (ICZN, 1985: Article 32(c)(ii); 1999: 32.5.1). However, the subsequent spelling "*bausei*", with authorship given as "Kieffer, 1911"(a), has been in unanimous use since Bause (1913), and thus is accepted as the correct spelling according to ICZN (1999) Code Article 33.3.1.

Stempellinella edwardsi nom. n. for *Tanytarsus minor* Edwards, 1929. Kieffer in Thienemann & Kieffer (1916) described a "*Tanytarsus curtimanus* var. *minor*". The name of this pre-1961 ‘variety’ is available at species-group level according to the ICZN Code (1999: Article 45.6.4). Consequently, *T. minor* Edwards, 1929 is a junior primary homonym and must be replaced (ICZN, 1999: Article 57.2); the conditions for reversal of precedence are not met (op.cit.: Article 23.9). We are therefore proposing the new substitute name *Stempellinella edwardsi*.

The first publication of "*T. curtimanus* var. *minor*" in Kieffer (1915c) — cited by Ashe & Cranston (1990: 346) — is a nomen nudum, since it does not include a description.

Edwards (1929) published two names simultaneously for the species in question here: he called it "*T. (S.) minor*, sp. n." in the description (op.cit: 420), but "*T. (S.) minusculus*, sp. n." in the legend to figure 15k (op.cit: 417). Although subsequent authors used only *T. minor*, no formal determination of precedence under the "Principle of the First Reviser" (ICZN, 1999: Article 24.2.2) appears to have been published. However, *T. minusculus* of Edwards cannot be validated either due to homonymy with *T. minusculus* Kieffer, 1922(c).

Stenochironomus Kieffer. The type species is *Chironomus pulchripennis* Coquillett, 1902 by subsequent designation of Townes (1945). An ICZN decision, as considered necessary by Ashe (1983) and Ashe & Cranston (1990), is not required. Borkent's (1984) argument for *Stenochironomus gibbus* (Fabricius, 1794) as the valid name of the type species does not conform to the ICZN Code.

Kieffer in Kieffer & Thienemann (1919: 44) described *Stenochironomus* with two originally included nominal species denoted by the available names *Tipula flexilis* Linné, 1767, and *C. pulchripennis* Coquillett. Kieffer (1922c) — referred to by Borkent (1984) — attempted to designate the type species as: "*S. fasciatus* Geoffr. (*flexilis* auct. non L.)". Neither of these names denotes an originally included nominal species — *S.* "flexilis auct." is not even available — thus Kieffer's designation is invalid. The same applies to Goetghebuer (1937 in Goetghebuer & Lenz, 1937–1962) who wrote: "Type: *St. gibbus* Fabr.", and further below quoted Kieffer's (1922c) above-cited type species term in the synonymy under *S. gibbus*. This present interpretation of eligibility for type species fixation has been the only one possible under all editions of the nomenclature Code (e.g. see Article 69 in ICZN, 1961, 1999). The possibility for a subsequent author to fix the type species in the sense of an inadvertent (not deliberate) misidentification by the original author has only existed since 1 January 2000 (ICZN, 1999: Article 70.3; see comments above on *Eukiefferiella* Thienemann).

Apart from this formal reason for ruling out *Tipula fasciata* Geoffroy in Fourcroy, 1785 as the type species of *Stenochironomus*, even its assignment to the genus is doubtful. Geoffroy (1764), then still without giving a scientific name, described it as having the thorax and legs entirely yellowish green, whereas he made quite detailed remarks on darkened body parts in several other species. Borkent (1984) redescribed *S. gibbus* as with at least some thorax (and usually noticeable leg) pigmentation. Such differences in coloration have led Kieffer (1922c) and other authors to reject the synonymy assumed earlier between *Tipula flexilis* L. and *T. gibba* Fabricius, and they are just as significant here. Moreover, Borkent (1984) states that the type material of *Tipula fasciata* Geoffroy is missing. We therefore consider *T. fasciata* Geoffroy a nomen dubium, and Kieffer's (1922c) and Goetghebuer's (1937) interpretation of it a misidentification. The name is unavailable anyway as a junior primary homonym of both *T. fasciata* Scopoli, 1763 and *T. fasciata* Linné, 1767.

With the earlier attempts at fixing the type species of *Stenochironomus* having failed as shown above, Townes' (1945) designation of one of the originally included nominal species, *Chironomus pulchripennis* Coquillett, is valid. See Borkent (1984) for authors who followed Townes' opinion. Since *S. pulchripennis* has been in use as a valid name, and in the same subgenus as *S. gibbus* (see Borkent, 1984), there are no further consequences to the taxonomy or nomenclature of the genus.

Stenochironomus (Stenochironomus) gibbus (Fabricius), and *Tipula parisiensis* Thunberg.

Thunberg (1784: 26) described the adult female of a chironomid he named *Tipula parisiensis* after the type locality (in France). A type specimen preserved (pinned) at the Uppsala University Museum of Evolution, complete except for some leg segments, is undoubtedly conspecific with *Stenochironomus gibbus* (Fabricius, 1794). The only visible difference from the redescription in Borkent (1984) is that the fore femur is dark in little more than the distal 0.5 of its length (Borkent, 1984: at least 0.76).

Although *Tipula parisiensis* Thunberg, 1784 is a senior subjective synonym of *T. gibba* Fabricius, 1794, the name *Stenochironomus gibbus* (F.) has been in unanimous, frequent and widespread use, and is thus here maintained as valid under ICZN (1999) Article 23.9.2. Both conditions of Article 23.9.1 are met:

23.9.1.1 — We have found *T. parisiensis* Thunberg mentioned only once in the literature after 1899, in Bezzi (1908), whereas it is absent from all other works known to us, including the comprehensive catalogs of Kertész (1903), Kieffer (1906), Ashe & Cranston (1990), and Serra-Tosio & Laville (1991). Bezzi (1908) argued that species should and could be recognized from original publications such as Thunberg's even where the original type material is lost, and indeed he interpreted *T. parisiensis* correctly. However, he did not use it "as a valid name" (ICZN Article 23.9.1.1), for example, he called the species "probably identical with" *Tipula* "*flexilis* L.", 1767, in which case *T. parisiensis* would have been invalid as a junior synonym;

23.9.1.2 — The Article's requirement, that the junior synonym must have been "used for a particular taxon, as its presumed valid name, in at least 25 works, published by at least 10 authors in the immediately preceding 50 years and encompassing a span of not less than 10 years", is met for *Stenochironomus gibbus* (Fabricius) by the following list of works: Freeman (1957), Lenz (1957 in Goetghebuer & Lenz, 1937–1962), Kalugina (1958), Reiss (1968), Rodova (1971), Sæther (1977), Fittkau & Reiss (1978), Pinder (1978), Rodova (1978), Albu (1980), Ashe (1983), Pankratova (1983), Borkent (1984), Cure (1985), Cranston et al. (1989), Ashe & Cranston (1990), Langton (1991), Zelentsov & Shilova (1994), Serra-Tosio & Laville (1991), Bitušík (1996), Samietz (1996), Chandler (1998), Lods-Crozet (1998), Sæther et al. (2000), Laville & Langton (2002), Moller Pillot & Beuk (2002).

The list of citations in the preceding paragraph contains several national or regional catalogs of chironomid taxa. However, these are not of the kind to be excluded under ICZN (1999) Article 23.9.6 ("... mere listing in an abstracting publication, or in a nomenclator or other index or list of names must not be taken into account ..."). Instead, their contents show that the data included had been critically evaluated by

the respective author(s), thus all of them constitute primary taxonomic works that are fully relevant here.

Synendotendipes "abranchius (Kieffer)" of Lenz (1955). The brief description by Lenz (1955) was based not on type material, but on fresh rearings of his own. Comparison of the latter also was not made to the original description (Kieffer, 1913d), but only to the short excerpt in Goetghebuer (1937 in Goetghebuer & Lenz, 1937–1962). Lenz (1955) stated that his adult male did not agree in all features with the female as rendered by Goetghebuer, but applied Kieffer's species name anyway. Ashe & Cranston (1990) listed *Tendipes abranchius* Kieffer as a nomen dubium. Grodhaus (1987) recognized Lenz's adult male and immatures as a *Synendotendipes*, but added: "It is doubtful whether *abranchius*, which was based on a female specimen, is a valid name." In spite of the above, Sæther et al. (2000) and Langton & Visser (2003) used *S. abranchius* (Kieffer) as valid for the species outlined by Lenz (1955). Comparing all features in Kieffer's original description to Grodhaus (1987), a definite generic assignment is not possible, *Tribelos* appears about as likely as *Synendotendipes*. Note here that Grodhaus' key misrepresents the full ranges of variable characters he gives in the individual species descriptions. For one example significant here, not all female antennae in *Tribelos* show signs of fusion between flagellomeres 1 and 2.

No type material for *Tendipes abranchius* Kieffer has been found in any collection. We therefore consider this a nomen dubium, and Lenz's (1955) interpretation a misidentification. However, no new name for the latter is proposed here, because the necessary revision of Palaearctic *Endochironomus* sensu lato (see separate comments above) might link the species to an existing available name.

Tanytarsus monticola Goetghebuer, 1934. A junior primary homonym of *T. monticola* Edwards, 1929, but both are currently junior synonyms of valid names placed in different genera. A replacement name would only become necessary if the junior homonym were taken out of synonymy.

Tanytarsus latiforceps Edwards in Thienemann, 1941. Taxonomic authorship of this species is here credited to Edwards alone, not to Edwards & Thienemann. The significant difference to the case of *Zalutschia tornetraeskensis* (see above), which was described in the same work (Thienemann, 1941), is that Thienemann's brief treatment of the pupa of *Tanytarsus latiforceps* explicitly calls this life stage "inseparable from the other *Calopsectra* species" (op. cit.: 235). Post-1930 proposals of new species must "be accompanied by ... characters that are purported to differentiate the taxon" (ICZN, 1999: Article 13.1.1). Therefore, and in analogy to the Code "Example" given below Article 50.1.3, Edwards was "alone responsible both for the name ... and for satisfying the criteria of availability other than actual publication" (op.cit.: Article 50.1.1). For this reason Thienemann's (1941) use of "*Calopsectra latiforceps*" as the valid name — instead of "*Tanytarsus latiforceps*" as in Edwards' description quoted by Thienemann — constitutes a subsequent change in combination. The species name is available and valid as *Tanytarsus latiforceps* Edwards in Thienemann, 1941.

The above interpretation is not necessarily the only one possible under the current ICZN Code. However, it best preserves nomenclature stability as it maintains data in the form used by nearly all previous authors (e.g. Ashe & Cranston, 1990; Langton & Visser, 2003).

Summary recommendations

1) Authors in chironomid taxonomy referring to previously published data are urged to study the originals of the relevant publications whenever possible. Copying uncritically from secondary sources can perpetuate errors or cause new ones. Even the highest-quality catalogs or revisions are not 100% free of faulty data, and the same is true for any author's own earlier works. Errors and the resulting instability to nomenclature are best minimized by returning to the primary sources: the original publications and type specimens.
2) The above applies analogously to taxon concepts formed from non-typical specimens or secondary literature versus those based on direct examination of type material. However, if there is significant conflict between respective data from the relevant publication and supposed type material, decisions should be based on the former, unless there is evidence for them to be in error. Specimens and labels are much less reliable to have remained in their original condition than a printed work meeting the publication requirements of the ICZN (1999). Therefore, examination of supposed type material cannot substitute for study of the original description. For an optimal interpretation, both these primary sources must be analyzed in detail and documented to be in reasonable agreement.
3) If a copy of the original work (or the type material) is unobtainable, follow a reliable secondary source produced by consulting the applicable original publication and/or specimens.
4) Always state data sources as completely and precisely as possible, for example the keys or descriptions from which taxon identifications have been obtained (see also General remarks, section 1c, last paragraph). This maintains information value even after name changes or corrections of mistakes in the data.
5) In new taxon descriptions, evaluate all characters considered diagnostic for related taxa by previous authors, and report on them in a way that facilitates comparisons.
6) Before changing or forming a scientific name of Latin or Ancient Greek derivation, authors not well-versed in these languages should consult an expert, to minimize the need for subsequent corrections mandated by the rules of nomenclature. New names can be formed without Latin or Ancient Greek derivation. Every new scientific name should be accompanied by a clear statement of its etymology including, as applicable, its language origin, gender, and grammatical category (noun, adjective or participle).

7) Avoid citing unseen references, or if necessary identify the secondary source from which the citation is taken, thus allowing evaluation of data reliability.
8) Ensure works relevant to nomenclature carry an accurate, clearly identifiable publication date, avoid distribution with erroneous publication dates printed, or supply a prominent subsequent correction.
9) Ensure methods and presentation are reproducible, and published acts and proposals contribute to a scientifically meaningful stability in taxonomy and nomenclature.

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Note. Verified exact publication dates and/or previously assumed but erroneous years are given in square brackets following the correct year in parentheses. Symbols: * = British Museum library receiving date stamp, ** = date on copy at Bavarian State Library, Munich, + = earliest demonstrable day of existence (i.e. only the month or year have been verified).

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Index

1) Persons and general terms

Entries of personal names refer to comments on their methods, type material, etc., references to taxonomic authors are not included.

2) Names for taxa

Names given in **boldface** are valid and fully recognized (this excludes nomina dubia); names not set in *italics* are not available. In references to subgenera the respective genus name is omitted. Each species name is listed only once, in combination with a single genus name, whereas in the text several different combinations may occur (e.g. with the original and the current genus name, respectively).

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