CHIRONOMUS NEWSLETTER ON CHIRONOMIDAE RESEARCH

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CONTENTS

15th International Symposium on Chironomidae – Annoncement 1
Professor Ernst Josef Fittkau – 75 yeears 2
The Newsletter Grant 13
Current Research 14
Theses 34
Short – Communications 34
List of regional representatives 2002 37
Current Bibliography 40

15TH INTERNATIONAL SYMPOSIUM ON CHIRONOMIDAE 12-14 AUGUST 2003

The 15th International Symposium on Chironomidae will be held at the University of Minnesota in Saint Paul, Minnesota on 12-14 August 2003. It will be sponsored by the Department of Entomology, and Len Ferrington will serve as the organizer and will be the contact person for inquiries. His telephone number is 612-624-3265 and his e-mail address is ferri016@tc.umn.edu

A web page will soon be available with detailed instructions for submitting abstracts, reserving accomodations and to complete and pay for registration. An announcement of the web page will be made through the Chironomidae Web page.

In addition to the scientific schedule, there will be both pre-meeting and post-meeting tours. The pre-meeting tour will be held on Monday, 11 August 2003 and will be free for registered participants (delegates) of the conference. There will be a small fee for spouses and others accompanying the conference delegates. The post-meeting tour will depart from Minneapolis/Saint Paul in the AM on 15 August 2003, and will consist of travel to the Itasca Field Lab in central Minnesota, followed by travel to the Iron Range area of north-central Minnesota then along the North Shore of Lake Superior to the border with Canada, before returning to Minneapolis/Saint Paul by late PM on 19 August 2003. There will be a fee for the post-meeting tour, both for meeting delegates, spouses and other accompanying guests.

The Minnesota State Fair will begin on Thursday, 21 August 2003. The state fair continues for 10 days and is one of the most celebrated social activities of summer in Minneapolis/Saint Paul, with more 2 million people attending the fair. The state fair is an activity that should not be missed and we hope that people attending the International Conference on Chironomidae will try to schedule some extra days in the Twin Cities so that they can attend the fair. For more details contact Len Ferrington.

In order to participate in all meeting activities and also attend the state fair it is recommended that persons arrive by Saturday 9 August 2003 or Sunday 10 August 2003 and stay until at least 23 August 2003.

PROFESSOR ERNST JOSEF FITTKAU – 75 YEARS, 50 YEARS FOR CHIRONOMID RESEARCH

By Martin Spies
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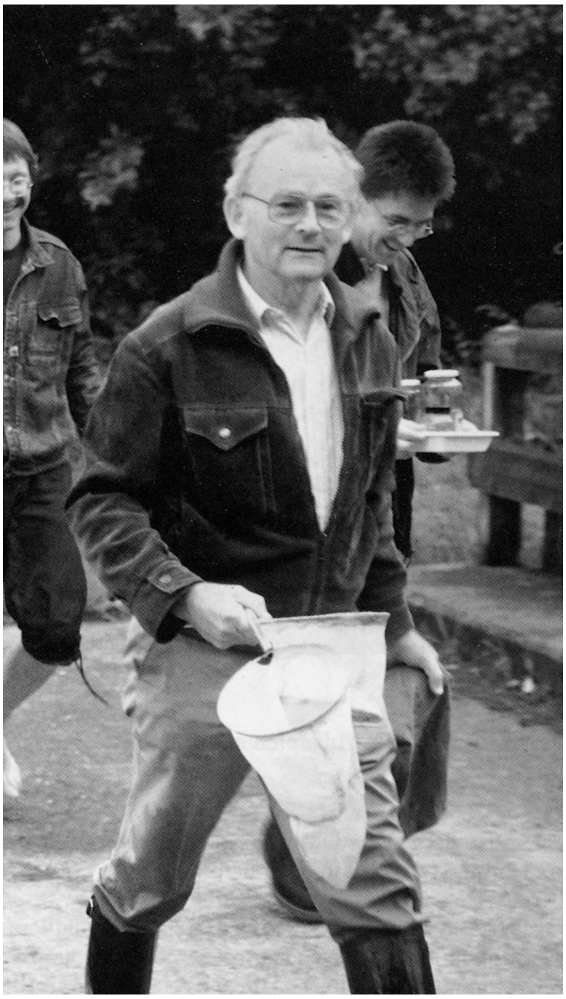

Fig. 1. E. J. Fittkau and students (H. W. Riss, A. Meisl) on a field trip in Bavaria, 1991

This past July, Professor Ernst Josef Fittkau and his family, friends, colleagues and students were able to celebrate his 75th birthday. Fortunately, Professor Fittkau continues to enjoy and pursue his interests in his characteristic energetic manner, therefore this date does not mark any real cutoff in his activities. However, this personal anniversary approximately coincides with another, professional milestone in Fittkau's life: the completion of 50 years of work involving the Chironomidae. Therefore, let us pay tribute here on these occasions by remembering how much Professor Fittkau has given to our group and field of study, and how many of the tools and services we can take advantage of today we really owe to Fittkau and his collaborators.

To begin with, just look at the newsletter you are reading. In its recent form, CHIRONOMUS was revived by Ulrike Nolte and associates, and it is the current editors who deserve our thanks for continuing to produce this useful forum for communications. However, the newsletter was originally created by Fittkau and Friedrich Reiss in 1967, and Fittkau worked as its co-editor through the end of 1984 when CHIRONOMUS went into dormancy after 25 issues and a total of over 200 pages (see Nos 25 and 67a in the list of Fittkau's publications at the end of this article).

Even before editing the first newsletter, Fittkau was one of the initiators of another way to exchange information, that chironomid workers from all around the world have enjoyed ever since as a major attraction and institution in our community: in the fall of 1963 Fittkau sent out the invitations for the first International Symposium on Chironomidae, which then took place at Plön in July of 1964. By now we are looking forward to the fifteenth such meeting, to be hosted by Len Ferrington and colleagues at the University of Minnesota in the summer of 2003.

Knowing Professor Fittkau today, one can assume that meeting others and bridging distances between people or territories have always been enjoyable and rewarding to him in themselves, not just necessary means to a professional end. Nevertheless, it is fair to assume that this inclination was reinforced by positive experience made in his younger years. As a beginning student of biology, he was able to take part in the creation of the Limnologische Fluss-Station Freudenthal – a precursor of the current Max-Planck-Institute at Schlitz – which could only be achieved through the collective effort of its founders overcoming the most adverse post-war circumstances.

The 'down' side of joining this group for Fittkau – lucky for us – was that he was directed away from the molluscs he had wanted to study, and instead had to work himself into the Chironomidae. (However, Fittkau never has been 'converted' completely, as can be seen from his wonderful collection of shells, and from the occasional papers on molluscs recurring here and there among his many publications.) The fauna of the Fulda river, which the Freudenthal group was mainly

Fig. 2. A. Thienemann and E. J. Fittkau at the Max-Planck-Institute in Plön, 1952

studying, was targeted as the topic of Fittkau's doctoral dissertation, and the great August Thienemann agreed to act as his senior advisor. In 1954, Fittkau became Thienemann's assistant at Plön (Fig. 2).

Working on the Fulda river material, Fittkau soon realized that for many taxa the scientific names could not be easily determined, and thus meaningful interpretations of the fauna for ecology, biogeography or other applications were also impossible. The main reasons for this were the largely confused, unrevised state of chironomid nomenclature, which at that time was almost exclusively based on often insufficient descriptions of adult specimens, and the numerous apparent 'incongruences' between the alternative systematic arrangements derived from imaginal or immature stage characters, respectively. On the other hand, in the combined and more detailed study of direct associations of adult and juvenile specimens obtained from his Fulda rearings Fittkau saw the chance to overcome these difficulties and raise the recognition and use of the Chironomidae in limnology to levels in accordance with the group's distribution and importance in aquatic ecosystems (see FITTKAU 1961, publication No. 14). Consequently, Fittkau shifted the focus of his work to taxonomy and systematics, and even changed the topic of his dissertation. The resulting revision of the Tanypodinae (FITTKAU 1959, 1962; Nos 11, 15) was an instant classic in the field, and will remain one of the definitive, basic texts on this third largest of chironomid subfamilies.

This move of Fittkau's from limnology into taxonomy and systematics followed the realization that "if one wants to practice ecology successfully, the mastery of systematics remains prerequisite" (FITTKAU 1961, No. 14). Incidentally, the history of our field is full of colleagues arriving at chironomid studies on such a more or less voluntary detour from their original paths, and not all of these managed to find the way back out to their intended goals.

In Fittkau's case, one influential example of a researcher developing taxonomic knowledge for similar reasons was Lars Brundin, with whom Fittkau was able to study the adults of Chironomidae in 1956 and 1958. And like Brundin, Fittkau acquired very special taxonomic expertise, but has always remained much more than a specialist. To see the best of different worlds he has managed to keep travelling, both physically and in an abstract sense – back and forth between the avid collector's natural fields of dreams and the scientist's optimally equipped laboratory and library, as well as between the lowland jungles of alpha taxonomy and higher elevation sites and towers allowing more general overviews in ecology, biogeography, or natural history. As recurrent a theme as these travels are throughout Fittkau's biography, they may be seen as expressing a strong streak of adventurous curiosity and love for nature in his character. Vice versa, these balanced cycles in Fittkau's activities have certainly kept reinvigorating the convincing enthusiasm for his interests and encouraging tolerance for those of others he has always impressed with in personal meetings, his presentations and publications.

As mentioned above, most of Fittkau's motivation for taking up taxonomy came from the unsatisfactory state of chironomid systematics at the time (but, unfortunately, we can still not claim to have overcome these problems completely). Hence: "Everyone who is working with Chironomidae knows that our knowledge of this dipteran family, especially its systematization, has hardly reached the level that in most other insect orders had been surpassed already about 100 years ago. The described species are in part so poorly worked up that, for example, it is impossible with the existing literature to identify the chironomids of Europe; from other world regions they are mostly known only fragmentarily. Opposite our incomplete knowledge of the taxonomy stands the great importance which the chironomids are increasingly achieving in various research disciplines ..." (FITTKAU & REISS 1967; publication No. 25a). And: "The time seemed to have come, therefore, to bring together in collaboration the forces of all those working on chironomids, in order to help each other, exchange experience, literature and material, and thus succeed in overcoming the difficulties at hand." (FITTKAU 1966b; No. 22).

Thus, in addition to the international meetings and newsletter, Fittkau became one of the driving forces behind several more significant achievements resulting from such collective effort by chironomid workers. In 1976 he co-authored the first comprehensive bibliography of the Chironomidae (publication No. 62), and he was actively involved from the time the idea was first conceived in the production of what must be THE most widely used work on Chironomidae worldwide: the three books with keys and diagnoses for Holarctic genera edited by Torgny Wiederholm (see list Nos 83, 99, 115).

Moreover, Fittkau has worked extensively to provide chironomid researchers and those in related disciplines with new, more and better opportunities to publish their work. For this purpose he founded the scientific journals Amazoniana (in 1968) and Spixiana (1977), and served as the editor or co-editor of several others (e.g. Studies on the Neotropical Fauna, Aquatic Insects), as well as of numerous books, proceedings, journal supplements, etc. For one example of the effects of these activities, see all the papers on Chironomidae published in Spixiana (available on Luc Int Panis' and Ian Walker's Chironomid Home Page:
http://www.ouc.bc.ca/eesc/iwalker/intpanis/
under "Looking for references?").

Another influential instrument guided by Fittkau to promote the work of chironomid researchers has been the 'chironomid center' first developed in Plön, then moved to Munich when Fittkau became the director of the Zoologische Staatssammlung (ZSM) in 1976. Very few other collections can match the volume and concentration of literature and reference specimens, equipment and knowhow gathered by Fittkau and F. Reiss. Of special merit in this respect is the conservation and introduction into taxonomic practice of the specimens, data files and correspondence from the Thienemann collection. Fittkau was among the first to realize the enormous importance of these materials, and he took part in the tedious but eventually successful process to have its value acknowledged and its use enabled by the International Commission on Zoological Nomenclature (ICZN) (see HIRVENOJA & FITTKAU 1971, list No. 41; ICZN 1980; SPIES 2001).

Numerous colleagues around the world have directly benefited from the chironomid center over the years, either on visits – for a number of which Fittkau secured funding, e.g. from the Max-Planck Society, the German academic exchange service DAAD or the Humboldt Foundation – or by receiving material and information through loans and correspondence. After Professor Fittkau's retirement and Reiss' much too early death, the dipterists now working at ZSM have been trying their best to continue these services.

Professor Fittkau's work as an academic teacher has also served to greatly expand the knowledge and awareness of chironomids, other aquatic insects and the environments they live in. He has given much of his time and opened the resources of the chironomid center and ZSM to around 100 students preparing doctoral dissertations, diploma and other theses under his guidance. A list of those projects completed or started by 1992 can be found on pp. 14-18 of Anonymous (1992).

Parallel to his furthering of chironomid research by attracting and training many new workers, Fittkau has also significantly widened its geographic horizon. Always ready to travel to exotic places, and never returning without interesting specimens, he has been supplying us with a wealth of material that will for a long time remain very hard to work up completely. These collections, along with Fittkau's achievements in general, have prompted many authors of scientific descriptions to name new

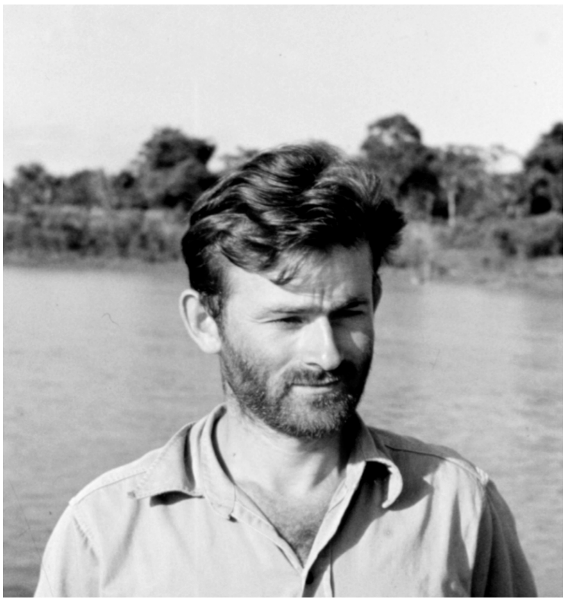

Fig. 3. E. J. Fittkau in Amazônia, ca. 1960

genera and species after him – over two dozen alone in several families of the Diptera, but also members of several other orders of aquatic insects, some Acari and a marine snail. Among Neotropical Chironomidae, "fittkaui" in different generic combinations is the single most frequently occurring species epithet.

Although he has collected on every continent except Antarctica, the one region that stands above all others with respect to Fittkau's attention is the Neotropics, especially the Amazon and adjacent areas. When Fittkau first came to South America in 1960 (see Fig. 3) – on leave from Plön to lead the limnology department of the Instituto Nacional de Pesquisas da Amazônia (INPA) in Manaus – very little was known about chironomids from that region.

Although several dozen species had been named in the preceding 150 years, most of them could not be recognised because their descriptions were insufficient and their type specimens lost or useless. From the tropical Amazon only a handful of species were known, and this lack of a taxonomic foundation was particularly dearly felt in light of the enormous importance and diversity of these ecosystems. To remedy this situation, Fittkau spent the following years (1960-1963, and 1965) to collect a tremendous amount of material and environmental field data. Integrating this extensive first-hand experience with that of others and a wide-ranging scientific background, he then developed a comprehensive understanding of the fauna, functioning, and natural history of these ecosystems. Based on these insights Fittkau has tried for the last several decades to alert the world – from laypeople through science and academia to politics and international organisations – to the special beauties, global value and need for conservation of the Amazon and tropical ecosystems in general. Inspite of everything he has been doing for chironomid research, it is fair to say that he has made those efforts his most important activity, and the proportion this topic has assumed in his publications attests to that (see, e.g., Nos 77, 89, 92, 110, 124, 143).

Fittkau's work on Neotropical Chironomidae in particular reflects all of the means highlighted in the preceding paragraphs, with which he has enhanced research and knowledge on these organisms and their roles in nature. True to his principle of collaboration, he sought from the beginning to find, win over or train fellow workers, especially from South America, and has generously aided and supported everybody willing to share in the necessary tasks. For example, early on he joined forces with Sebastião José de Oliveira, the first Brazilian researcher to study chironomids independently, and the two friends are still enjoying this most long-standing of partnerships (Fig. 4).

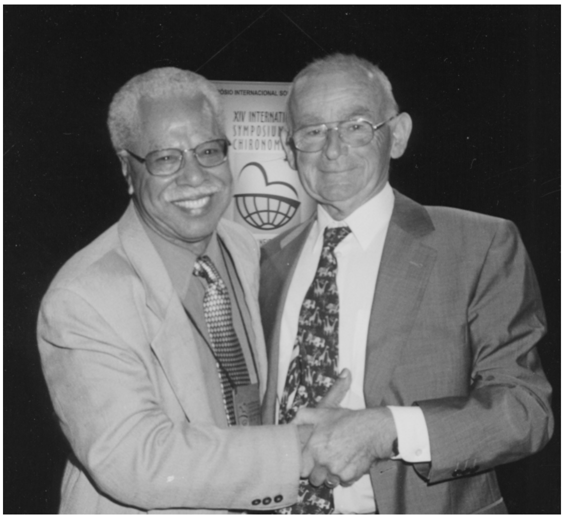

Fig. 4. S. J. de Oliveira and E. J. Fittkau at the International Symposium in Rio de Janeiro, 2000

As the result of this collective effort co-initiated and promoted by Fittkau, our knowledge of the Neotropical chironomid fauna has greatly increased e.g., the number of described species is now close to 800 (author's unpublished data) – and continues to grow faster at this time than in any comparable world region, in large part due to the contributions from a very active and hopefully still growing contingent of workers in South America itself. The entire history and development of research on Neotropical Chironomidae have been lucidly recounted recently by Fittkau himself (2001c, No.157; see also No. 160).

Looking in detail at Fittkau's publications specifically on chironomid topics, we again find numerous most significant contributions to the field. These works range from diagnostic descriptions of single taxa through revisions on various classification levels (e.g. Nos 15, 36, 40, 47, 140) to phylogenetic and comparative examinations of morphological features (e.g. Nos 13, 18, 39), and to faunistic and zoogeographical overviews (e.g. Nos 23+65, 69, 70, 102).

On the desciptive level, Fittkau is the taxonomic author or coauthor of 3 tribes, almost 30 genera, and nearly 100 species – mostly in the Tanypodinae, but also in several other subfamilies. Many of his new taxa have widened our view of just how diverse and exotic chironomid morphology and biology can be (e.g. Nos 7, 16, 27, 54). From his earliest works to this day, Fittkau's descriptions always impress by his eye for discovering previously unobserved morphological details, and by his ability to discern those of diagnostic, classificatory or phylogenetic significance. These capacities may well be related to those of the born and trained field biologist who manages to spot and catch the objects most important to his hunt amid a jungle of distractions. And the same talent and appreciation for details also expresses itself in Fittkau's drawings of always excellent scientific and artistic quality, whose combination of informative clarity and pleasing aesthetics many of us can never dream of matching.

But as much as this attention to detail in observation and presentation is productive and rewarding on its own scale, its main justification to Fittkau again is that it serves the higher purpose of making it easier for others to follow his scientific argument. In a paper on the delimitation of chironomid genera he wrote: "The most noble task for the systematist must be to establish order. The smaller and more cleanly the individual pieces of a mosaic are set, the clearer it becomes. Genera are phylogenetic or monophyletic units. They can contain information not only for the taxonomist, but likewise for those applying them in practice." (FITTKAU 1968a, No. 26). Thus, a method is of little value until it produces results that are shared with and can be reproduced, understood and used by others. And on the next level, specialist sciences like taxonomy should strive to render and keep their data and systems accessible and useful to progress in more interpretive and applied fields.

As Fittkau has acknowledged (2001b, No. 156a) this basic guideline for his systematic work goes back to the early 19th century founders of dipterology, C. R. W. Wiedemann and J. W. Meigen. "I have ... tried to convey this demand ... to colleagues and students for their emulation" (FITTKAU, op. cit.): to develop an "arrangement of genera and species according to such characteristics as can be found more or less easily by other researchers" (WIEDEMANN & MEIGEN 1818, quoted in FITTKAU, op. cit.).

It was thus only fitting that in 2001 the German Society for General and Applied Entomology honored Professor Fittkau's "outstanding accomplishments in taxonomic and ecological work on the Chironomidae ... and his untiring research effort for the Amazon region" by presenting him with the Society's Meigen Medal (see GERSTMEIER 2001).

In his "Memoirs and diary sheets of a biologist", Thienemann (1959: 403) wrote about Fittkau: "I do hope that he will go on to continue my chironomid studies." There cannot be the least bit of doubt that Professor Ernst Josef Fittkau has more than fulfilled Thienemann's wish. True to the legacy of his teacher and predecessor, he has greatly increased not just our factual knowledge of the Chironomidae, but also their appreciation and application in research at large, the geographic areas in which they are being studied, and the numbers of people to whom they are important and fascinating. Moreover, he has been doing his very best to promote all this in the spirit of cooperation and friendship.

Today we can enjoy reaping the benefits from this collaborative environment Fittkau and his contemporaries have sown the seeds for. But let us not take this for granted, as it is not a simple given in all comparable groups of scientists or people, and – like the natural environment we depend on – it is not guaranteed to persist around us without our continued contributions. It is up to us to ensure that this tradition will be carried on.

Acknowledgements

The author is deepy grateful to Professor Fittkau for all support, advice and information given. Drs Roland Gerstmeier and Marion Kotrba are thanked for kindly sharing files used for some of the figures.

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161) SANSEVERINO, A. M., WIEDENBRUG, S. & FITTKAU, E. J. (in press): A new species group in the genus *Tanytarsus* Van der Wulp from the Neotropics. *Proc. 14th Int. Sympos. on Chironomidae*.

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"THE NEWSLETTER GRANT"

Three grants each of US$ 500 will be given to scientists or students from Africa, Asia, the former East European states, and Central and South America to enable them to attend the XV International Symposium on Chironomidae in St. Paul, Minnesota in August 2003. To be considered, the applicant should give a presentation at the symposium, either oral or as a poster.

Applications should be sent to Trond Andersen before December 1, 2002, and the allocation will be decided by December 15. It will be understood that applicants do not get their expenses covered from other sources.

Address for applications: Trond Andersen, Museum of Zoology, Muséplass 3, N-5007 Bergen, Norway. (e-mail: trond.andersen@zmb.uib.no)

CURRENT RESEARCH

NEW COMBINATIONS AND SYNONYMS IN EUROPEAN *Pseudosmittia* GOETGHEBUER AND RELATED GENERA.

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When one of us (0. A. S) was on sabbatical with the other at the University of Kansas a revision of the genus *Pseudosmittia* Goetghebuer was started and a preliminary manuscript describing and re-describing nearly 100 species assignable to the genus was completed. Due to various circumstances, including a change of venue for one of us (L. C. F) from Lawrence, Kansas, to the University of Minnesota in St. Paul, Minnesota, the publication date has been delayed. Recently, however, one of us (0. A. S.) was requested to summarize the chironomids in the Fauna Europaea project, a database which will include all terrestrial and aquatic animals of Europe with their distribution in respective countries. Further information is obtainable on http://www.faunaeur.org. The database will eventually result in a variety of publications for the different groups, but new synonyms and combinations known to us should not be introduced in the data base, and we believe it is not desirable to use knowingly wrong names and combinations in the data base. We thus find it necessary to publish a list of the types which will cause changes to the nomenclature of the European species. We have examined the type material of most relevant museums, but a few remain to be investigated. Here we are listing only new combinations, new synonyms, new *nomina dubia* or other changes relative to the catalogue by Ashe & Cranston (1990).

The following abbreviations for collections are used:

BMNH: The Natural History Museum (British Museum, Natural History), London. England

IRSN: Institute Royal de Science Naturelles de Belgique, Bruxelles, Belgium.

NMS: Natur-Museum Senckenherg, Frankfurt Am Main, Germany.

ZMB: Museum of Zoology, University of Bergen, Norway.

ZMH: Zoological Museum, University of Helsinki, Finland.

ZMO: Zoological Museum. University of Oslo, Norway.

ZSM: Zoologisches Staatssammlung, Munich, Germany.

New generic placements

Dactylocladius albipennis Goetghebuer, 1921: 85
[= *Pseudosmittia albipennis* (Goetghebuer) comb. n.] Holotype male in IRSN.

Orthocladius (Dactylocladius) brevifurcatus Edwards, 1926: 781
[= *Pseudosmittia brevifurcata* (Edwards) comb. n.] Types in BMNH.

Lindebergia bothnica Tuiskunen, 1984:121
[= *Pseudosmittia bothnica* (Tuiskunen) comb. n.] Holotype male in ZMH.

Smittia lacunarum Goetghebuer, 1931: 217
[= *Bryophaenocladius lacunarum* (Goetghebuer) comb. n.] Holotype male in IRSN.

Smittia (Pseudosmittia) terrestris Goetghebuer, 1943: 109
[= *Bryophaenocladius terrestris* (Goetghebuer) comb. n.] Holotype female in IRSN.

New synonyms

Pseudosmittia amamibifurca Sasa, 1990: 132 (=*Pseudosmittia mathildae* Albu, 1968, *syn. n.*)

Pseudosmittia antillaria Sæther, 1981: 29 [= *Pseudosmittia forcipata* (Goetghebuer, 1921) *syn. n*.] Holotype male in ZMB.

Pseudosmittia arenaria flava Strenzke, 1960: 419 (= *Pseudosmittia arenaria* Strenzke, 1960, *syn. n.*) Holotype female in NMS.

Smittia avicularia Goetghebuer, 1950: 13 [= *Pseudosmittia trilobata* (Edwards, 1929) *syn. n.*] Holotype male in IRSN.

Smittia brachyptera Goetghebuer, 1934: 389 [= *Pseudosmittia conjuncta* (Edwards, 1929) *comb. n.*] Holotype male in IRSN.

Pseudosmittia brevitarsis Brundin, 1947: 40 (= *Pseudosmittia ruttneri* Strenzke & Thienemann 1942, *syn. n.*). The type could not be located.

Spaniotoma (Smittia) curticosta Edwards, 1929: 364 [= *Pseudosmittia albipennis* (Goetghebuer, 1921) *syn. n.*] Holotype male in BMNH.

Smittia hamata Freeman, 1956: 355 [= *Pseudosmittia danconai* (Marcuzzi, 1947) *syn. n.*] Holotype male in NMS. Paratypes in BMNH also examined.

Pseudosmittia linguata Caspers & Reiss, 1989: 128 (= *Pseudosmittia nishiharaensis* Sasa & Hasegawa, 1988: 247). Holotype male in ZSM.

Pseudosmittia kurobaokasia Sasa & Okazawa, 1992a: 57 (= *Pseudosmittia ruttneri* Strenzke & Thienemann, 1942. *syn. n.*)

Smittia longitibia Goetghebuer, 1933: 29 [= *Pseudosmittia nanseni* (Kieffer, 1926) *syn. n.*] Holotype male in ZMO.

Pseudosmittia mediocarinata Caspers & Reiss, 1989: 132 [= *Pseudosmittia nanseni* (Kieffer 1926) *syn. n.*] Holotype male in ZSM.

Smittia oxoniana Edwards, 1937: 146 not Edwards, 1922:204 (= *Pseudosmittia ruttneri* Strenzke & Thienemann, 1942 *syn. n.*)

Spaniotoma (Smittia) recta Edwards, 1929: 362 [= *Pseudosmittia oxoniana* (Edwards), Edwards, 1922, not Edwards, 1937, *syn. n.*]

Pseudosmittia schachti Caspers & Reiss, 1989: 130 (= *Pseudosmittia ruttneri* Strenzke & Thienemann, 1942, *syn. n.*) Holotype male in ZSM. Paratype male misidentified *P. oxoniana* (Edwards).

Spaniotoma (Smittia) scotica Edwards, 1929: 363 [= *Camptocladius stercorarius* (De Geer, 1776) s*yn. n.*] Holotype female in BMNH.

Smittia (Orthosmittia) subrecta Goetghebuer, 1942: 112 [= *Parakieffèriella coronata* (Edwards, 1929) *syn. n.*] Types in IRSN.

Pseudosmittia togadistalis Sasa, Watanabe & Arakawa,1992: 233 [=*Pseudosmittia gracilis* (Goetghebuer, 1913) *syn. n.*]

Pseudosmittia togarisea Sasa & Okazawa, 1992b: 160 [=*Pseudosmittia oxoniana* (Edwards, 1922) *syn. n.*]

Pseudosmittia togasitea Sasa & Okazawa, 1992b: 161 [=*Camptocladius stercorarius* (De Geer, 1776) *syn. n.*]

Pseudosmittia togativea Sasa & Okazawa, 1992b: 162 [=*Camptocladius stercorarius* (De Geer, 1776) *syn. n.*]

Smittia triappendiculata Goetghebuer, 1931: 216 [= *Pseudosmittia forcipata* (Goetghebuer, 1921) *syn. n.*] Holotype male in IRSN.

Negation of synonymy

Pseudosmittia triplex Strenzke, 1950: 301. Valid species and not a synonym of *P. forcipata* (Goetghebuer, 1921) as stated in Ashe & Cranston (1990). Holotype male in NMS.

New status

Pseudosmittia virgo montana Strenzke, 1950: 303 (= *Pseudosmittia montana* Strenzke *stat. n.*) Holotype male with pupal exuviae in NMS.

Nomina dubia

Camptocladius flaviventris Kieffer, 192la: 289, *nomen dubium.* The type could not be located.

Camptocladius hexalobus Kieffer, 1924: 395 (= *Pseudosmittia hexalobus* Kieffer, *nomen dubium*). Type lost. A likely senior synonym of either *P. trilobata* or *P. obtusa.*

Camptocladius longicrus Kieffer, 1921b: 100, *nomen dubium.* Type lost. A pupal exuviae from NMS is marked type, but collected in 1941 and thus wrongly marked.

Pseudosmittia restricta Brundin, 1956: 170, *nomen dubium.* The type could not be found. The species cannot belong in *Pseudosmittia* if the description is correct as a distinct scutal hump is present and the genitalia differ from all other known species.

Smittia (Pseudosmittia) tenebrosa Goetghebuer, 1943: 109 [= *Pseudosmittia tenebrosa* (Goetghebuer) *nomen dubium*]. Holotype male in IRSN. Mounted between two plastic strips on a pin and ruined in attempt of remounting. Probably a synonym of *P. simplex* Strenzke & Thienemann.

Camptocladius trifoliatus Kieffer, 1924: 73, *nomen dubium.* The type could not be located.

Smittia (Pseudosmittia) vicana Goetghebuer, 1943: 110 [= *Pseudosmittia vicana* (Goetghebuer), *nomen dubium*]. The female holotype supposedly in IRSN could not be found.

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CHIRONOMIDAE TYPES IN THE MUSEUM OF ZOOLOGY, BERGEN

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The International Project Collection at the Museum of Zoology, University of Bergen, contains the holotypes of 239 species of Chironomidae, and paratypes of an additional 133 species, Table 1. More than 1750 slides with type material are housed in the collection. Most of the types belong in the subfamilies Orthocladiinae and Chironominae, but types of Usambaromyiinae, Podonominae, Tanypodinae, Buchonomyiinae, Diamesinae and Prodiamesinae are also represented.

Inquiries about the Chironomidae in the International Project Collection should be addressed to Trond Andersen.

Table 1. Chironomidae species with types deposited in the International Project Collection at the Museum of Zoology in Bergen.

Abbreviations: HT = holotype, PT = Paratype, m = male, f = female, p = pupae, l = larvae.

type-no	**genus**	**species /** note	**author / reference**	**type**	**sex / stage**
	USAMBAROMYIINAE				
155	*Usambaromyia*	*nigrala*	Andersen et Sæther, 1994a	HT, PT	m, f
	PODONOMINAE				
	Lasiodiamesa	*brusti*	Sæther, 1969	PT	m, f, p, l
	Nepodonomus	*similis*	Chaudhuri et Ghosh, 1981	PT	m
	TANYPODINAE				
	Ablabesmyia	*maculitibialis*	Chaudhuri et al., 1983	PT	m
	Clinotanypus	*vomerus*	Chaudhuri et Debnath, 1984	PT	m
	Pentaneurella	*katterjokki*	Fittkau et Murray, 1983	PT	l
	Tanypus	*grandis*	Chaudhuri et al., 1984	PT	m, f
	Tanypus	*lucidus*	Chaudhuri et al., 1984	PT	m
	Tanypus	*tenebrosus*	Chaudhuri et al., 1984	PT	m
	BUCHONOMYIINAE				
178	*Buchonomyia*	*brundini*	Andersen et Sæther, 1994b	HT, PT	m
	Buchonomyia	*burmanica*	Brundin et Sæther, 1978	PT	f
	DIAMESINAE				
	Diamesa	*freemani*	Willassen et Cranston, 1986	PT	m, f, p, l
	Diamesa	*fonticola*	Sæther, 1969	PT	f, p, l
106	*Diamesa*	*khumbugelida*	Sæther et Willassen, 1987	HT, PT	m, f
103	*Diamesa*	*kohshimai*	Sæther et Willassen, 1987	HT, PT	m, f, p
83	*Diamesa*	*lupus*	Willassen, 1985	HT, PT	m, f, p
105	*Diamesa*	*praecipua*	Sæther et Willassen, 1987	HT, PT	m, f
82	*Diamesa*	*saetheri*	Willassen, 1985	HT, PT	m, f, p, l
81	*Diamesa*	*serratosioi*	Willassen, 1985	HT, PT	m, f
104	*Diamesa*	*yalavia*	Sæther et Willassen, 1987	HT, PT	m, f, p
114	*Lappodiamesa*	*boltoni*	Sæther et Willassen, 1988	HT, PT	m, f, p, l
	Protanypus	*hamiltoni*	Sæther, 1975a	PT	m, p, l
	Protanypus	*ramosus*	Sæther, 1975a	PT	m, f, p, l
	Protanypus	*saetheri*	Wiederholm, 1975	PT	m
	PRODIAMESINAE				
40	*Compteromesa*	*oconeensis*	Sæther, 1981a	HT	m

	Monodiamesa	*depectinata*	Sæther, 1973	PT	m, p, l
244	*Monodiamesa*	*mariae*	Andersen, 1996b	HT, PT	m, f
	Monodiamesa	*prolilobata*	Sæther, 1973	PT	m
	Monodiamesa	*tuberculata*	Sæther, 1973	PT	l
100	*Odontomesa*	*ferringtoni*	Sæther, 1985b	HT, PT	m
99	*Odontomesa*	*fulva nearctica*	Sæther, 1985b	HT, PT	m, p, l
	ORTHOCLADIINAE				
	Acamptocladius	*reissi*	Cranston et Sæther, 1982	PT	m, p
25	*Antillocladius*	*antecalvus*	Sæther, 1981c	HT, PT	m, f
45	*Antillocladius*	*arcuatus*	Sæther, 1982	HT	m
46	*Antillocladius*	*pluspilalus*	Sæther, 1982	HT	m
	Antillocladius	*scalpellatus*	Wang et Sæther, 1993a	PT	m
301	*Antillocladius*	*skartveiti*	Andersen et Contreras-Ramos, 1999	HT	m
	Antillocladius	*zhengi*	Wang et Sæther, 1993a	HT	m
93	*Apometriocnemus*	*fontinalis*	Sæther, 1985h	HT	m
	Baeoctenus	*bicolor*	Sæther, 1976	PT	m, f
	Boreosmittia	*inariensis*	Tuiskunen, 1986 *in* Tuiskunen & Lindeberg 1986	HT, PT	m
	Botryocladius	*grapeth*	Cranston et Edward, 1999	PT	p
	Botryocladius	*mapuche*	Cranston et Edward, 1999	PT	p
	Brillia	*bifasciata*	Wang et al., 1994	HT	m
	Brillia	*laculata*	Oliver et Roussel, 1983	PT	m
	Brillia	*retifinis*	Sæther, 1969	PT	m
374	*Bryophaenocladius*	*bicolor*	Wang, Sæther et Andersen, 2002	HT, PT	m
375	*Bryophaenocladius*	*cristatus*	Wang, Sæther et Andersen, 2002	HT, PT	m
127	*Bryophaenocladius*	*faegrii*	Schnell, 1991	HT, PT	m, f, p, l
376	*Bryophaenocladius*	*flagelligus*	Wang, Sæther et Andersen, 2002	HT	m
340	*Bryophaenocladius*	*imberbus*	Andersen et Schnell, 2000	HT, PT	m
	Bryophaenocladius	*longipenis*	Ghosh et Chaudhuri, 1983	PT	m
	Bryophaenocladius	*manifestus*	Ghosh et Chaudhuri, 1983	PT	m
341	*Bryophaenocladius*	*mazumbaiensis*	Andersen et Schnell, 2000	HT, PT	m
51	*Bryophaenocladius*	*psilacrus*	Sæther, 1982	HT	m
377	*Bryophaenocladius*	*spinicaudus*	Wang, Sæther et Andersen, 2002	HT, PT	m
351	*Bryophaenocladius*	*thaleri*	Willassen, 1996	HT	m
342	*Bryophaenocladius*	*usambarensis*	Andersen et Schnell, 2000	HT	m
	Chaetocladius	*crassisaetosus*	Tuiskunen, 1986 *in* Tuiskunen & Lindeberg 1986	PT	m
	Chaetocladius	*ligni*	Cranston et Oliver 1988	PT	p, l
	Chaetocladius	*muliebris*	Tuiskunen, 1986 *in* Tuiskunen & Lindeberg 1986	PT	m
	Chaetocladius	*oliveri*	Sæther, 1969	PT	m, f
	Chaetocladius	*orientalis*	Chaudhuri et Ghosh, 1982	PT	m
30	*Compterosmittia*	*dentispina*	Sæther, 1981c	HT, PT	m, f
	Compterosmittia	*clavigera*	Sæther, 1982	HT	m
49	*Compterosmittia*	*virga*	Wang, 1998	PT	m
157	*Colosmittia*	*clavata*	Andersen et Sæther, 1993a	HT	m
	Cricotopus (*Cricotopus*)	*bifurcatus*	Cranston et Oliver, 1988	PT	m
27	*C.* (*Cricotopus*)	*canditibia*	Sæther, 1981c	HT	m
	C. (*Cricotopus*)	*mackenziensis*	Oliver, 1977	PT	m, l
	C. (*Cricotopus*)	*macraei*	Sæther, 1971	PT	m, f
28	*C.* (*Cricotopus*)	*nudisquama*	Sæther, 1981c	HT	m
26	*C.* (*Cricotopus*)	*pilocapsulus*	Sæther, 1981c	HT, PT	m, f
	C. (*Cricotopus*)	*tenuisetosus*	Chaudhuri et Ghosh, 1980	PT	m
	C. (*Cricotopus*)	*myriophylli*	Oliver, 1984	PT	m, f, l
245	*Diplosmittia*	*beluina*	Andersen, 1996a	HT	m
101	*Diplosmittia*	*carinata*	Sæther, 1985e	HT, PT	m
246	*Diplosmittia*	*forficatus*	Andersen, 1996a	HT	m
34	*Diplosmittia*	*harrisoni*	Sæther, 1981c	HT, PT	m, f
174	*Doitrix*	*amegabei*	Sæther et Andersen, 1996	HT	m
	Doitrix	*dillonae*	Cranston et Oliver, 1988	PT	m

	Doitrix	*ensifer*	Sæther et Sublette, 1983	PT	m
56	*Doitrix*	*hamiltoni*	Sæther et Sublette, 1983	HT, PT	m
173	*Doitrix*	*longipes*	Sæther et Andersen, 1996	HT	m
74	*Doitrix*	*parcivillosa*	Sæther et Sublette, 1983	HT, PT	m, p, l
55	*Doitrix*	*villosa*	Sæther et Sublette, 1983	HT, PT	m, p, l
39	*Doncricotopus*	*bicaudatus*	Sæther, 1981b	HT	m, p, l
	Eukiefferiella	*changbaiensis*	Wang et Halvorsen 2002	PT	m, f
	Eukiefferiella	*paucunca*	Sæther, 1969	PT	m, p
	Eukiefferiella	*vitracies*	Sæther, 1969	PT	m
	Euryhapsis	*cilium*	Oliver, 1981	PT	m, f
	Euryhapsis	*fuscipropes*	Sæther et Wang, 1992	PT	m
219	*Georthocladius*	*amakyei*	Sæther et Andersen, 1996	HT	m
72	*Georthocladius*	*curticornus*	Sæther et Sublette, 1983	HT, PT	f, p, l
75	*Georthocladius*	*fimbriosus*	Sæther et Sublette, 1983	HT	m, l
220	*Georthocladius*	*longicalcaneum*	Sæther et Andersen, 1996	HT, PT	m
	Georthocladius	*platystylus*	Sæther et Sublette, 1983	PT	m
57	*Georthocladius*	*triquetrus*	Sæther et Sublette, 1983	HT	m
79	*Gymnometriocnemus*	*acigus*	Sæther, 1983c	HT	m, f, p
	Hanocladius	*longipes*	Sæther et Wang 2002	PT	m
166	*Heleniella*	*nebulosa*	Andersen et Wang, 1997	HT	m, f
92	*Heleniella*	*parva*	Sæther, 1985i	HT, PT	m
	Heterotanytarsus	*nudalus*	Sæther, 1975b	PT	m, f, p
	Heterotanytarsus	*perennis*	Sæther, 1975b	PT	m, p, l
129	*Heterotrissocladius*	*boltoni*	Sæther, 1992c	HT, PT	m, f, p, l
115	*Heterotrissocladius*	*brundini*	Sæther et Schnell, 1988b	HT, PT	m, f, p, l
	Heterotrissocladius	*changi*	Sæther, 1975c	PT	m, f, l
	Heterotrissocladius	*cooki*	Sæther, 1975c	PT	m
	Heterotrissocladius	*hirtapex*	Sæther, 1975c	PT	m, f, p, l
	Heterotrissocladius	*latilaminus*	Sæther, 1975c	PT	f, p, l
	Heterotrissocladius	*oliveri*	Sæther, 1975c	PT	m, f, p, l
	Hydrobaenus	*conformis*			
		labradorensis	Sæther, 1976	PT	m, l
	Habrobaenus	*hudsoni*	Sæther, 1977b	PT	m
122	*Hydrobaenus*	*kondoi*	Sæther, 1989b	HT, PT	m, f, p, l
	Hydrobaenus	*laticaudus*	Sæther, 1976	PT	m
	Hydrobaenus	*martini*	Sæther, 1976	PT	m
	Hydrobaenus	*pilipodex*	Sæther, 1976	PT	m, l
	Hydrobaenus	*spinnatis*	Sæther, 1976	PT	m, f
121	*Hydrobaenus*	*travisi*	Sæther, 1989b	HT, PT	m
	Hydrobaenus	*virgo*	Sæther, 1976	PT	f
158	*Ionthosmittia*	*caudiga*	Sæther et Andersen, 1995	HT, PT	m
154	*Lerheimia*	*aviculata*	Andersen et Sæther, 1993b	HT	m
152	*Lerheimia*	*scopulata*	Andersen et Sæther, 1993b	HT, PT	m
153	*Lerheimia*	*villangulata*	Andersen et Sæther, 1993b	HT	m
123	*Limnophyes*	*aagaardi*	Sæther, 1990	HT, PT	m
112	*Limnophyes*	*anderseni*	Sæther, 1990	HT, PT	m
119	*Limnophyes*	*angelicae*	Sæther, 1990	HT	m
113	*Limnophyes*	*bidumus*	Sæther, 1990	HT, PT	m, f, p
	Limnophyes	*bullus*	Wang et Sæther, 1993b	PT	m, f
	Limnophyes	*carolinensis*	Sæther, 1990	PT	m
108	*Limnophyes*	*doughmani*	Sæther, 1990	HT	m
109	*Limnophyes*	*edwardsi*	Sæther, 1990	HT, PT	m, f, p, l
	Limnophyes	*er*	Sæther, 1985c	PT	m
126	*Limnophyes*	*gelasinus*	Sæther, 1990	HT	m
	Limnophyes	*hastulatus*	Sæther, 1975d	PT	m
	Limnophyes	*hudsoni* **1)**	Sæther, 1975d	PT	m, f
	Limnophyes	*inanispatina*	Langton et Moubayed, 2001	HT	m, p
	Limnophyes	*lobiscus*	Sæther, 1990	PT	m
120	*Limnophyes*	*madeirae*	Sæther, 1990	HT	m
	Limnophyes	*margaretae*	Sæther, 1975d	PT	m
	Limnophyes	*ninae*	Sæther, 1975d	PT	m
	Limnophyes	*nudiradius* **2)**	Sæther, 1975d	PT	m

	Limnophyes	*orbicristatus*	Wang et Sæther 1993b	PT	m
	Limnophyes	*palleocestus*	Wang et Sæther, 1993b	PT	m
	Limnophyes	*paludis*	Armitage, 1985	PT	m
	Limnophyes	*recisus*	Sæther, 1975d	PT	m
	Limnophyes	*roquehautensis*	Langton et Moubayed, 2001	HT	m
110	*Limnophyes*	*schnelli*	Sæther, 1990	HT, PT	m
	Limnophyes	*spatulosus* **3)**	Sæther, 1975d	PT	m
	Limnophyes	*spinigus*	Sæther, 1990	PT	m
111	*Limnophyes*	*torulus*	Sæther, 1990	HT	m
	Limnophyes	*verpus*	Wang et Sæther, 1993b	PT	m
29	*Lipurometriocnemus*	*glabalus*	Sæther, 1981c	HT, PT	m, f
47	*Lipurometriocnemus*	*vixlobatus*	Sæther, 1982	HT	m
156	*Lobosmittia*	*basilobata*	Sæther et Andersen, 1993	HT	m
	Lopescladius	*fittkaui*	Sæther, 1983b	PT	m, p
	Lopescladius	*verruculosus*	Sæther, 1983b	PT	p
86	*Mesosmittia*	*acutistylus*	Sæther, 1985d	HT	m
355	*Mesosmittia*	*annae*	Andersen et Mendes, 2002b	HT, PT	m
234	*Mesosmittia*	*cristaga*	Sæther, 1996	HT	m
357	*Mesosmittia*	*halata*	Andersen et Mendes, 2002b	HT, PT	m
358	*Mesosmittia*	*hirta*	Andersen et Mendes, 2002b	HT	m
356	*Mesosmittia*	*glabra*	Andersen et Mendes, 2002b	HT, PT	m
87	*Mesosmittia*	*lobiga*	Sæther, 1985d	HT	m
88	*Mesosmittia*	*mina*	Sæther, 1985d	HT	m
89	*Mesosmittia*	*patrihortae*	Sæther, 1985d	HT, PT	m
90	*Mesosmittia*	*prolixa*	Sæther, 1985d	HT, PT	m
91	*Mesosmittia*	*tora*	Sæther, 1985d	HT	m
144	*Metriocnemus*	*acutus*	Sæther, 1995	HT	m
118	*Metriocnemus*	*brusti*	Sæther, 1989a	HT, PT	m, p, l
145	*Metriocnemus*	*calvescens*	Sæther, 1995	HT	m
	Metriocnemus	*carmencitabertarum*	Langton et Cobo, 1997	HT, PT	m, f, p, l
147	*Metriocnemus*	*caudigus*	Sæther, 1995	HT, PT	m
145	*Metriocnemus*	*dentipalpus*	Sæther, 1995	HT	m
149	*Metriocnemus*	*exilacies*	Sæther, 1995	HT, PT	m
148	*Metriocnemus*	*intergerivus*	Sæther, 1995	HT, PT	m, f
143	*Metriocnemus*	*wangi*	Sæther, 1995	HT, PT	m
312	*Molleriella*	*calcarella*	Sæther et Ekrem, 1999	HT, PT	m, f
	Nanocladius	*anderseni*	Sæther, 1977a	PT	m, f, p, l
	Nanocladius	*crassicornus*	Sæther, 1977a	PT	p
	Nanocladius	*incomptus*	Sæther, 1977a	PT	m, f
	Nanocladius	*minimus*	Sæther, 1977a	PT	m, p
	Nanocladius	*spiniplenus*	Sæther, 1977a	PT	p
102	*Oliveridia*	*hugginsi*	Ferrington et Sæther, 1987	HT, PT	m, f, p
	O. (Euorthocladius)	*ashei*	Soponis, 1990	PT	m, p,l
	O. (Euorthocladius)	*rousselae*	Soponis, 1990	PT	m, p,l
	Parachaetocladius	*imberbus*	Sæther et Sublette, 1983	PT	m
38	*Paracricotopus*	*glaber*	Sæther, 1980	HT, PT	m, f, p, l
177	*Parakiefferiella*	*minax*	Ferrington et Sæther, 1994	HT	m
	Parametriocnemus	*vespertinus*	Sæther, 1969	PT	m
184	*Paraphaenocladius*	*crassicaudatus*	Sæther et Wang, 1995	HT, PT	m
188	*Paraphaenocladius*	*exagitans longipes*	Sæther et Wang, 1995	HT, PT	m
189	*Paraphaenocladius*	*impensus contractus*	Sæther et Wang, 1995	HT, PT	m
187	*Paraphaenocladius*	*innasus*	Sæther et Wang, 1995	HT, PT	m
182	*Paraphaenocladius*	*irritus longicostatus*	Sæther et Wang, 1995	HT	m
186	*Paraphaenocladius*	*pusillus*	Sæther et Wang, 1995	HT, PT	m
186	*Paraphaenocladius*	*proprius*	Chaudhuri et Sinharay, 1987	PT	m
183	*Paraphaenocladius*	*pseudirritus nearcticus*	Sæther et Wang, 1995	HT, PT	m
	Phycoidella	*dentolatens* **4)**	Sæther, 1971	PT	l
279	*Physoneura*	*paulseni*	Stur et Andersen, 2000	HT, PT	m
53	*Platysmittia*	*fimbriata*	Sæther, 1982	HT	m
	Platysmittia	*bilyji*	Sæther, 1985g	PT	f
	Plhudsonia	*acuticauda*	Sæther, 1992a	PT	m, p
44	*Plhudsonia*	*partita*	Sæther, 1982	HT, PT	m, p

235	*Propsilocerus*	*sinicus*	Sæther et Wang, 1996	HT, PT	m, f, p
76	*Pseudorthocladius*	*amplicaudus*	Sæther et Sublette, 1983	HT	m
60	*Pseudorthocladius*	*clavatosus*	Sæther et Sublette, 1983	HT	m, f
67	*Pseudorthocladius*	*comans*	Sæther et Sublette, 1983	HT	m
63	*Pseudorthocladius*	*curticornus*	Sæther et Sublette, 1983	HT	m, p
58	*Pseudorthocladius*	*destitutus*	Sæther et Sublette, 1983	HT	m
77	*Pseudorthocladius*	*lunatus*	Sæther et Sublette, 1983	HT	m
66	*Pseudorthocladius*	*macrovirgatus*	Sæther et Sublette, 1983	HT, PT	m
78	*Pseudorthocladius*	*morsei*	Sæther et Sublette, 1983	HT	m
65	*Pseudorthocladius*	*paravirgatus*	Sæther et Sublette, 1983	HT	m
59	*Pseudorthocladius*	*rectilobus*	Sæther et Sublette, 1983	HT	m
61	*Pseudorthocladius*	*tricanthus*	Sæther et Sublette, 1983	HT	m, p
62	*Pseudorthocladius*	*uniserratus*	Sæther et Sublette, 1983	HT, PT	m, p, l
64	*Pseudorthocladius*	*virgatus*	Sæther et Sublette, 1983	HT, PT	m, p
68	*Pseudorthocladius*	*wingoi*	Sæther et Sublette, 1983	HT	m
48	*Psilometriocnemus*	*cristatus*	Sæther, 1982	HT, PT	m, f, p, l
	Quiniella	*lii*	Wang et Sæther, 1998	PT	m
97	*Rheocricotopus*	*amplicristatus*	Sæther, 1985f	HT, PT	m
96	*Rheocricotopus*	*conflusirius*	Sæther, 1985f	HT	m
98	*Rheocricotopus*	*effusoides*	Sæther, 1985f	HT	m, f, p, l
	Rheocricotopus	*eminellobus*	Sæther, 1969	PT	f
	Rheocricotopus	*himalayensis*	Chaudhuri et Sinharay, 1983	PT	m
	Rheocricotopus	*kenorensis*	Sæther, 1969	PT	m
	Rheocricotopus	*nemoacrostichalis*	Chaudhuri et Sinharay, 1983	PT	m
	Rheocricotopus	*pauciseta*	Sæther, 1969	PT	m
116	*Rheocricotopus*	*reduncus*	Sæther et Schnell, 1988a	HT, PT	m, p
117	*Rheocricotopus*	*unidentatus*	Sæther et Schnell, 1988a	HT, PT	m, f, p, l
	Rheocricotopus	*valgus*	Chaudhuri et Sinharay, 1983	PT	m
	R. (Psilocricotopus)	*calviculus*	Wang et Sæther, 2001	HT	m
95	*Rheosmittia*	*halvorseni* **5)**	Cranston et Saether, 1986	HT, PT	m, f
54	*Saetheriella*	*amplicristata*	Halvorsen, 1982	HT, PT	m, f
50	*Stilocladius*	*clinopecten*	Sæther, 1982	HT, PT	m, f, p
80	*Sublettiella*	*calvata*	Sæther, 1983c	HT	m
120	*Tavastia*	*cristacauda*	Sæther, 1992b	HT	m
	Thalassosmittia	*montana*	Wang et Sæther, 1993c	PT	m
94	*Thienemannia*	*pilinucha*	Sæther, 1985a	HT	m
269	*Thienemanniella*	*boltoni*	Hestenes et Sæther, 2000	HT, PT	m, f, l
270	*Thienemanniella*	*lobapodema*	Hestenes et Sæther, 2000	HT, PT	m, p
36	*Thienemanniella*	*sanctivincenta*	Sæther, 1981c	HT, PT	m, f, p
35	*Thienemanniella*	*semifimbriata* **6)**	Sæther, 1981c	HT, PT	m, f, p
347	*Thienemanniella*	*taurocapita*	Hestenes et Sæther, 2000	HT, PT	m, f, p, l
	Tokunagayusurika	*taihuensis* **7)**	Wen, Zhou et Rong, 1994	PT	f
149	*Tokyobrillia*	*anderseni*	Sæther et Wang, 1992	HT, PT	m
52	*Unniella*	*multivirga*	Sæther, 1982	HT, PT	m
107	*Vivacricotopus*	*ablusus*	Schnell et Sæther, 1988	HT	m, p
	Xylotopus	*burmanensis*	Oliver, 1985	PT	m
	Zalutschia	*lingulata lingulata*	Sæther, 1976	PT	m, f
	Zalutschia	*lingulata pauca*	Sæther, 1976	PT	m, f, p, l
	Zalutschia	*pusa*	Sæther, 1976	PT	f, p
	Zalutschia	*trigonacies*	Sæther, 1976	PT	m, f, p, l
	Zalutschia	*vockerothi*	Sæther, 1976	PT	m, p
	CHIRONOMINAE	**Chironomini**			
359	*Axarus*	*froelichi*	Andersen et Mendes, 2002a	HT, PT	m
170	*Beardius*	*aciculatus*	Andersen et Sæther, 1996	HT, PT	m
171	*Beardius*	*lingulatus*	Andersen et Sæther, 1996	HT, PT	m
	Beardius	*parcus*	Reiss et Sublette, 1985	PT	m
172	*Beardius*	*triangulatus*	Andersen et Sæther, 1996	HT, PT	m
	Cyphomella	*gibbera*	Sæther, 1977a	PT	m, p
248	*Friederia*	*villosa*	Sæther et Andersen, 1998	HT, PT	m
	Harnishia	*turgidula*	Wang et al., 1993	HT	m
84	*Oschia*	*dorsenna* **8)**	Sæther, 1983a	HT, PT	m

	Microchironomus	*clarilatus*	Guha et Chaudhuri, 1981	PT	m
311	*Nilothauma*	*acre*	Adam et Sæther, 1999	HT	m
263	*Nilothauma*	*anderseni*	Adam et Sæther, 1999	HT	m
261	*Nilothauma*	*ankasense*	Adam et Sæther, 1999	HT	m
260	*Nilothauma*	*burmeisteri*	Adam et Sæther, 1999	HT, PT	m
257	*Nilothauma*	*duminola*	Adam et Sæther, 1999	HT, PT	m
264	*Nilothauma*	*flabellatum*	Adam et Sæther, 1999	HT, PT	m
258	*Nilothauma*	*fuscina*	Adam et Sæther, 1999	HT	m
262	*Nilothauma*	*insolita*	Adam et Sæther, 1999	HT	m
	Nilothauma	*harrisoni*	Adam et Sæther, 1999	PT	m
265	*Nilothauma*	*kakumense*	Adam et Sæther, 1999	HT	m
310	*Nilothauma*	*mergae*	Adam et Sæther, 1999	HT, PT	m
	Nilothauma	*sasai*	Adam et Sæther, 1999	PT	m
259	*Nilothauma*	*verrucum*	Adam et Sæther, 1999	HT, PT	m
267	*Paranilothauma*	*strebulosa*	Adam et Sæther, 2000	HT	m
	Polypedilum	*insolitum*	Chaudhuri et al., 1981	PT	m
	Polypedilum	*nudiceps*	Chaudhuri et al., 1981	PT	m
	Polypedilum	*obscurum*	Chaudhuri et al., 1981	PT	f
254	*P. (Cerobregma)*	*bulbocaudatum*	Sæther et Sundal, 1999	HT, PT	m
255	*P. (Cerobregma)*	*subulatum*	Sæther et Sundal, 1999	HT	m
256	*P. (Cerobregma)*	*volselligum*	Sæther et Sundal, 1999	HT, PT	m, f
371	*P. (Tripodura)*	*akani*	Bjørlo, 2002 *in* Vårdal et al. 2002	HT, PT	m
366	*P. (Tripodura)*	*amplificatus*	Bjørlo, 2002 *in* Vårdal et al. 2002	HT, PT	m
365	*P. (Tripodura)*	*chaelum*	Vårdal, 2002 *in* Vårdal et al. 2002	HT	m
372	*P. (Tripodura)*	*dagombae*	Bjørlo, 2002 *in* Vårdal et al. 2002	HT	m
369	*P. (Tripodura)*	*ewei*	Bjørlo, 2002 *in* Vårdal et al. 2002	HT, PT	m
370	*P. (Tripodura)*	*ogoouense*	Bjørlo, 2002 *in* Vårdal et al. 2002	HT	m
367	*P. (Tripodura)*	*patulum*	Bjørlo, 2002 *in* Vårdal et al. 2002	HT	m
368	*P. (Tripodura)*	*spinalveum*	Vårdal, 2002 *in* Vårdal et al. 2002	HT, PT	m
275	*P. (Uresipedilum)*	*acutulum*	Oyewo et Sæther, 1998	HT	m
278	*P. (Uresipedilum)*	*anderseni*	Oyewo et Sæther, 1998	HT, PT	m
274	*P. (Uresipedilum)*	*dossenudum*	Oyewo et Sæther, 1998	HT, PT	m
277	*P. (Uresipedilum)*	*gladysae*	Oyewo et Sæther, 1998	HT, PT	m
273	*P. (Uresipedilum)*	*harrisoni*	Oyewo et Sæther, 1998	HT	m
276	*P. (Uresipedilum)*	*kakumense*	Oyewo et Sæther, 1998	HT, PT	m
272	*P. (Uresipedilum)*	*plautum*	Oyewo et Sæther, 1998	HT, PT	m
271	*P. (Uresipedilum)*	*spinibojum*	Oyewo et Sæther, 1998	HT, PT	m
	Robackia	*pilicauda*	Sæther, 1977a	PT	m
85	*Saetheria*	*hirta*	Sæther, 1983a	HT	f, p, l
	Shangomyia	*impectinata*	Sæther et Wang, 1993	PT	f
251	*Xestochironomus*	*aisenensis*	Andersen et Kristoffersen, 1998	HT, PT	m, f
252	*Xestochironomus*	*laselvensis*	Andersen et Kristoffersen, 1998	HT	m
	Xiaomyia	*aequipedes*	Sæther et Wang, 1993	PT	m
	Zhouomyia	*plauta*	Sæther et Wang, 1993	PT	m
	CHIRONOMINAE	**Pseudochironomini**			
247	*Manoa*	*tangae*	Andersen et Sæther, 1997	HT, PT	m, f
	Pseudochironomus	*articaudus*	Sæther, 1977a	PT	m
	Pseudochironomus	*badius*	Sæther, 1977a	PT	m
	CHIRONOMINAE	**Tanytarsini**			
	Cladotanytarsus	*multispinulus*	Guha et al., 1985	PT	m
	Neostempellina	*thienemanni*	Reiss, 1984a	PT	m
	Parapsectra	*mendli*	Reiss, 1983	PT	m
317	*Rheotanytarsus*	*abonae*	Kyerematen, 2000 *in* Kyerematen et al. 2000	HT	m
313	*Rheotanytarsus*	*acuminatus*	Kyerematen et Sæthe,r 2000	HT, PT	m
319	*Rheotanytarsus*	*aquilus*	Kyerematen et Sæther, 2000	HT, PT	m
320	*Rheotanytarsus*	*atrius*	Kyerematen et Sæther, 2000	HT, PT	m
336	*Rheotanytarsus*	*baculus*	Kyerematen et Andersen, 2002	HT, PT	m
329	*Rheotanytarsus*	*beccus*	Kyerematen et al., 2000	HT	m
338	*Rheotanytarsus*	*buculicaudus*	Kyerematen, 2000 *in* Kyerematen	HT, PT	m

			et al. 2000		
	Rheotanytarsus	*calakmulensis*	Kyerematen et Andersen, 2002	PT	m
346	*Rheotanytarsus*	*contrerasi*	Andersen et Sæther, 2000 *in* Kyerematen et al. 2000	HT, PT	m, p
322	*Rheotanytarsus*	*digitatus*	Kyerematen et Sæther, 2000	HT, PT	m
334	*Rheotanytarsus*	*falcatus*	Kyerematen et al., 2000	HT, PT	m, f
328	*Rheotanytarsus*	*falcipedus*	Kyerematen et al., 2000	HT, PT	m
337	*Rheotanytarsus*	*foliatus*	Kyerematen et Andersen, 2002	HT, PT	m
342	*Rheotanytarsus*	*guanacastensis*	Kyerematen et Andersen, 2002	HT, PT	m
341	*Rheotanytarsus*	*hanseni*	Kyerematen et Andersen, 2002	HT, PT	m
323	*Rheotanytarsus*	*jongkindi*	Kyerematen et Sæther, 2000	HT	m
321	*Rheotanytarsus*	*kjaeranderseni*	Kyerematen et Sæther, 2000	HT, PT	m, f, p, l
333	*Rheotanytarsus*	*koraensis*	Kyerematen et al., 2000	HT, PT	m
326	*Rheotanytarsus*	*kuantanensis*	Kyerematen et al., 2000	HT, PT	m
338	*Rheotanytarsus*	*kusii*	Kyerematen et Andersen, 2002	HT	m
316	*Rheotanytarsus*	*longicornus*	Kyerematen et Sæther, 2000	HT	f, p
339	*Rheotanytarsus*	*minusculus*	Kyerematen, 2000 *in* Kyerematen et al. 2000	HT	m
339	*Rheotanytarsus*	*nuamae*	Kyerematen et Andersen, 2002	HT	m
	Rheotanytarsus	*orientalis*	Moubayed, 1989	HT	m
330	*Rheotanytarsus*	*pallidus*	Kyerematen et al., 2000	HT, PT	m
	Rheotanytarsus	*pantanalensis*	Andersen et Kyerematen, 2001	PT	m
331	*Rheotanytarsus*	*phaselus*	Kyerematen et al., 2000	HT	m
314	*Rheotanytarsus*	*plerunguis*	Kyerematen et Sæther, 2000	HT, PT	m
343	*Rheotanytarsus*	*ramirezae*	Kyerematen et Andersen, 2002	HT, PT	m, p
315	*Rheotanytarsus*	*remus*	Kyerematen et Sæther, 2000	HT	m
324	*Rheotanytarsus*	*sessilipersonatus*	Kyerematen et al., 2000	HT	m
340	*Rheotanytarsus*	*scutulatus*	Kyerematen et Andersen, 2002	HT, PT	m
325	*Rheotanytarsus*	*soelii*	Kyerematen et al., 2000	HT	m
344	*Rheotanytarsus*	*subtilis*	Kyerematen et Andersen, 2002	HT, PT	m
124	*Rheotanytarsus*	*thailandensis*	Moubayed, 1990	HT	m
335	*Rheotanytarsus*	*thunesi*	Kyerematen et Andersen, 2002	HT, PT	m
318	*Rheotanytarsus*	*transversus*	Kyerematen et Sæther, 2000	HT, PT	f, p
327	*Rheotanytarsus*	*verticillus*	Kyerematen et al., 2000	HT	m
266	*Seppia*	*trifurca*	Ekrem et Sæther 1999	HT, PT	m
	Skutzia	*gaianii*	Andersen, 2000	PT	m
353	*Tanytarsus*	*ankasaensis*	Ekrem, 2001	HT	m
364	*Tanytarsus*	*calorifontis*	Ekrem, 2002	HT, PT	m, p
	Tanytarsus	*elisabethae*	Ekrem, 2001	PT	m, f, p, l
	Tanytarsus	*harei*	Ekrem, 2001	PT	m
304	*Tanytarsus*	*kakumensis*	Ekrem, 1999	HT	m
351	*Tanytarsus*	*mancospinosus*	Ekrem et Reiss, 1999 *in* Ekrem et al. 1999	HT, PT	m, f, p, l
	Tanytarsus	*minimus*	Guha et al., 1985	PT	m
	Tanytarsus	*minutipalpus*	Ekrem et Harrison, 1999	PT	m, f
	Tanytarsus	*monospinosus*	Ekrem et Reiss, 1999	PT	m
305	*Tanytarsus*	*pseudocongus*	Ekrem, 1999	HT, PT	m
306	*Tanytarsus*	*saetheri*	Ekrem, 1999	HT, PT	m
307	*Tanytarsus*	*spiesi*	Ekrem, 1999	HT	m
308	*Tanytarsus*	*superpenicillatus*	Ekrem, 1999	HT, PT	m
125	*Tanytarsus*	*thaicus*	Moubayed, 1990	HT, PT	m, p
309	*Tanytarsus*	*tossai*	Ekrem, 1999	HT, PT	m
	Tanytarsus	*tumultuarius*	Ekrem et Reiss, 1999	PT	m
352	*Tanytarsus*	*usambarae*	Stur et Ekrem, 2000	HT, PT	m
	Virgatanytarsus	*ansatus*	Reiss, 1984b	PT	m

Notes

The following species has been synonymised or placed in other genera:

1) *L. hudsoni* Sæther, 1975 was synonymised with *L. minimus* (Meigen) by Sæther (1990).

2) *L. nudiradius* Sæther, 1975 was synonymised with *L. natalensis* (Kieffer) by Sæther (1990).

3) *L. spatulosus* Sæther, 1975 was synonymised with *L. brachytomus* (Kieffer) by Sæther (1990).

4) *Phycoidella* Sæther, 1971 is a junior synonym of *Acamptocladius* Brundin (Cranston & Sæther 1982)

5) *Rheosmittia halvorseni* Cranston & Sæther, 1986 belongs in *Krenosmittia* Thienemann & Krüger (Tuiskunen & Lideberg 1986).

6) A separate genus *Onconeura* Andersen et Sæther has been erected for *T. semifimbriata* Sæther, 1981 and new, related species (Andersen & Sæther, in press).

7) *Tokunagayusurika* Sasa, 1978 is a junior synonym of *Propsilocerus* Kieffer (Sæther & Wang 1996).

8) *Oschia* Sæther, 1983 is a junior synonym of *Kloosia* Kruseman (Cranston et al. 1989).

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REARING TANYPODINAE, TELMATOGETONINAE AND ORTHOCLADIINAE IN BRAZIL – AN EMPIRICAL APPROACH.

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This text reflects my experience in rearing chironomids in Brazil.

Just after sorting, the larvae were isolated in small vials in order to be sure about the associations. The vials stayed open and as soon as the larvae became pupae, the larval exuviae was fixed and the pupa transferred to a larger container with a lower superficial tension (provided by the superficial area) so they could emerge. The vials suggested by EPLER (1995; 2001) and by MERRIT, RESH & CUMMINS (1996) weren't efficient for most of the chironomids I've tried unsuccessfully to rear.

Transport from field to laboratory:

I've got good results with isolated larvae in ice coolers to keep the temperature low. The water level in the vials must be low so it facilitates gas exchange and prevent mechanical shock, and a substratum should be provided for the larvae (avoiding extra stress).

Temperature in the laboratory:

Most chironomids live well at room temperatures, even the ones collected in streams. The main problem is not the temperature, but the water level which is related to oxygen. I've reared some fast-flowing chironomids with very low water levels in the vials.

Association of the larvae with the environment:

The chironomids associated with soft substrata, as a whole, need at least a fine layer of substratum where they can move and build their tubes. Coelotanypodini and Procladiini don`t build tubes, but they arrange the sediment into "paths" in which they can hide.

The chironomids associated with submerged vegetation and macrophytes need an appropriate substratum to live on. An easy way to solve this problems is to incorporate some small leaf pieces to serve as substratum for the larvae.

Most of orthoclads live in streams, springs and other fast flowing waters. One easy way to rear them is by keeping them in small vials with shallow water, another way is by placing them in a flowing water system with enough oxygen. Many orthoclads live in "non-aquatic" environments (some are semi-aquatic, semi-terrestrial, terrestrial or marine) in these special environments, rearing methods must be as similar as possible to the environments where they were collected.

In streams and fast flowing waters the larvae must be sorted as soon as possible, these environments are generally very rich in oxygen and the larvae are very demanding in this parameter. The vials must be with little water, generally when full of it, the relationship of depth to surface area is such that there isn't enough oxygen provided. Another way to do this is keeping the animals in flowing water.

Larvae of slow flowing to standing waters are, generally, more resistant to oxygen depletion, some can survive in very low concentrations of oxygen, like *Chironomus*. Most of these animals require a fine layer of sediment in the bottom of the vial. Some animals from standing waters and pools live on macrophytes, stones, dead leaves and submerged trunks, for them the best was to take a piece of leaf to set in the vials with the larvae.

Phytotelmata are generally good sources for chironomids. I've collected some chironomids in the leaf axils of bromeliads, and the best results were obtained by washing the substratum with a sieve as soon as it was taken from the leaf. Washing can be conducted with filtered water. Also, the animals might be placed in a white tray, sorted and isolated in the field. For more about phytotelmata chironomids see FRANK (1983).

The mining chironomids, like *Stenochironomus*, should never be taken out of their places; most of them aren't able to continue mining after they have been taken out. One way to solve this problem is to keep some submerged trunks and leaves in the laboratory (emergence trails) and wait till the animals emerge. More information on the Chironomidae associated with submerged trunks in Brazil have been provided by TRIVINHO-STRIXINO & STRIXINO (1998).

To feed or not to feed? That is the question

If one wants to rear animals from the early instars, one must feed the larvae. But, on the other hand, if all one wants to do is to rear some adults, fourth instar larvae isolated in small containers will generally pupate and some of these will emerge without having been fed. But some comments are required: Even some prepupae larvae of tanypods and orthoclads aren't able to pupate without feeding, or they aren't able to emerge, and I prefer to feed the larvae to get better results.

Terrestrial Environments:

Part of the environment must be sampled as a whole, with part of the substratum. When working with mosses on rocks and trunks, the moss must be taken off without damaging the animals, knives help sometimes.

Once sampled, the material must be handled very carefully in order not to kill the larvae. The mosses must be cut into pieces so they fit well in Petri dishes, paying attention to the height of the sample, with scissors one may cut off the top and bottom of the moss.

Dead leaves may be very good for chironomids, so collecting them must be a good choice. They can be used to collect live material to rear, so the entire sample must be placed in Petri dishes to rear. As soon as the adults dry their wings, they are killed and the pupal and larval exuviae found. The more time one leaves before looking for the exuviae, the more difficult it is to find them, since the exuviae might sink.

Terrestrial chironomids don't need to be replaced after pupating, they can emerge in small dishes. When using closed vials don't forget to open it daily!

One clever method that helps sorting the pupal exuviae is to fill up the Petri dishes with water. Some pupal exuviae will float, but not all of them, so that`s an alternative to be used after trying to find the exuviae under a stereomicroscope. This method does not damage the larvae nor the pupae, they can survive in water up to 3 hours: if not found within that time after flooding the sample, it is not worth continuing the search. Sometimes the larvae must be sorted and isolated to be sure about the associations with pupa and adults, especially when working with more than one species in the same genera. In *Bryophaeocladius*, *Gymnometriocnemus* and *Antillocladius* the larval exuviae can easily be found near the pupal exuviae or the pupa itself. My own experience with these genera shows that one can only be sure about the associations just when working with isolated material, because very often I found two or more species in the same sample.

How to obtain a sterile terrestrial sediment:

Most of the terrestrial orthoclads I've reared lived among mosses and tree trunk lichens, which can be easily sterilised of insects by putting some water and letting it dry for a week and repeat the dehydration twice more. This will provide a sterile substratum on which the larvae might be reared.. But pay attention to drought tolerant larvae! Most of the drought tolerant larvae don't die with this method, then I sorted the substratum under a stereomicroscope to be sure there was only one larva in each vial.

Marine environment:

The only marine larvae I found and tried to rear was *Thalassomyia*, but none was successfully reared. The water dried out too fast so no larvae could survive. I haven´t tested the filter-aquarium suggested by BAY, 1967.

Supporting cultures:

Algae. Algae are needed to feed many larvae, specially when one has third instar larvae and has to rear them till adult. Many algae can be good sources for chironomids. One must choose the algae according to the aims. I've chosen to cultivate three different species: *Ankistrodesmus*, *Scenedesmus* and *Chlamydomonas*.

Rotifera. Some rotifers might be collected with the substratum, and they can be cultivated adding some organic nutrients, such as dried leaves and rice grains, to filtered water. Sometimes benthic colonial species are better to feed the larvae.

Oligochaeta. These animals might be easily cultivated. Those associated with leaves might be cultivated with some detritus and leaves from the place where they were collected. This is a good source of food for chironomids since one single specimen might be enough food for about 7 tanypods. The animals must be cut into pieces before being given to the chironomids and must be offered in pots. This method both protects the chironomids from the Oligochaeta mucus, which attaches to the mouth and kills the larvae; and prevents water pollution since the extra food is taken out immediately.

Chironomus spp. Some egg masses can be got in lakes. Some species have been cultivated as laboratory insects, and the first and second instars are very good food sources for third and fourth instar tanypods.

Importance of Isolated material:

Quite often there are more than one species of the same genus living in the same habitat, so rearings are from isolated larvae; this method will ensure correct associations of the adults with the larval and pupal exuviae. I've already found seven species of the same genus in the littoral zone of one lake (*Labrundinia*).

Another way to ensure associations without isolating, is to get larvae from egg masses or pregnant females, for those, the methods described by BRANCH (1923), CREDLAND (1973), EDWARD (1963) BIEVER (1965)and DOWNE & CASPARY (1973) work very well.

Notes on the reared material:

Orthocladiinae

Antillocladius, *Bryophaenocladius*, *Gymnometriocnemus* and Orthocladiinae new Genus (being described by Morraye & Sæther). No additional food is required for these larvae. They feed on the sediment and substratum. All species I've already reared fed on sediment and decomposed lichens and bryophytes. Very often there are more than one species of *Bryophaenocladius* in the same sample, so be sure there is only one larva in the vial.

Corynoneura, *Onconeura* (Andersen & Sæther, in press) and *Thienemanniella*. This are very easy to rear as the larvae feed on flavoured fish food. One must pay attention to how much is required, and be sure it won't decompose and waste the water oxygen (specially by *Thienemanniella*). The *Corynoneura*-group and some other genera build transparent cocoons for the pupa. Taking the pupa out of these cocoons can be very difficult without damaging the pupa, so the entire dish where the larva became pupa must go into the bigger container. Some animals of this group emerge in the vials suggested by EPLER (1995), but many *Thienemanniella* don't.

Cricotopus. The larvae become adult if fed with periphyton attached to roots and submerged leaves, which must be taken with the collection of the larvae.

Ichthyocladius. These animals live on catfish and must stay there till the adults emerge. Each fish may have only one larva on it (to prevent wrong associations) and must stay in an isolated aquarium with a net covering. The fish must be fed with periphyton and one doesn't have to be worried about feeding the orthoclads. As soon as the pupae emerge, the adults must be killed, the pupal exuviae will remain on the water surface and the larval exuviae will remain in the cocoon attached to the fish.

Tanypodinae

Ablabesmyia. These larvae may be fed with dead chironomid larvae, small living larvae and pieces of Oligochaeta. I've already reared larvae from second instar till adults feeding them only with Oligochaeta.

Coelotanypus and *Clinotanypus*. Most of the larvae were fed with sediment detritus and first instar of Chironomini.

Conchapelopia and *Pentaneura*. The larvae were fed with Oligochaeta only.

Fittkauimyia. These animals generally won't finish the development without being fed with other chironomids or Oligochaeta.

Labrundinia. The only way to rear these animals was with feeding them with algae and colonial benthic rotifers. I've got some animals from eggs to adults feeding them this way.

Larsia. Many species of this genus can be fed only with parts of Oligochaeta.

Monopelopia. This is a difficult genus that can feed on live animals or on detritus. All species I've reared from Phytotelmata fed on detritus and some drops of detritus were sufficient to get adults from second instar larvae.

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[*Editorial comment: I have been very successfully using the techniques described here for a quarter of a century. Although I described the technique in my PhD thesis, embarrassingly I never got around to publishing them. Humberto has done us a service by recording these techniques in print. PHL*]

CHIRONOMIDS AND THEIR BUCCAL DEFORMITIES FOUND IN MAGDALENA RIVER CATCHMENT (COLOMBIA) AND THE DELICACY OF SPATIAL SCALES IN THE TROPICS.

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The present study investigated the chironomid fauna from three stretches of the river Magdalena basin: the mouth lagoons at Santa Marta, the floodplain lakes of the middle sector at Mompox and the river Bogotá up to its headwater.

The biological communities of the Ciénaga de Santa Marta have been studied already for some decades, owing to the severe anthropogenic impacts on this extensive aestuary lagoon system at the Caribbean coast of Colombia. To aid recuperation water is diverted from the Magdalena river through artificial channels which causes a high sediment import and, consequently, an accumulation of particle-bound toxic substances, predominantly heavy metals (PERDOMO 1998). However, concentration of heavy metals in sediments was only slightly increased in comparison to other tropical sites (NAZAROVA et al. in press), but still five to ten times lower than in the middle stretch of the river Rhine (STEGGER et al. 2002).

Macroinvertebrate samples were taken from sediments and plant surfaces. The chironomid communities (21 species/morpho-species) were dominated by *Goeldichironomus carus*, *G. devineyae*, 3 species of *Chironomus*, 1 species of *Larsia*, and a non-identified tanypodid species. The occurrence of *Fissimentum desiccatum* is worth mentioning. The frequency of buccal deformities found in larvae was 21 percent in average, which represents a conspicuously high proportion (NAZAROVA et al. in press).

With respect to these findings more samples were investigated from oxbow lagoons of the river Magdalena and from the river Bogotá, which accounts for a major part of the contamination by domestic and industrial waste water introduced into the basin. Over both reaches heavy metal concentrations in the sediments varied over a wide range, reflecting moderate to high contamination (NAZAROVA et al. in press), i.e. comparable to river Rhine sediments (STEGGER et al. 2002).

In the warm lowland stretches chironomid communities (16 sp./msp.) were dominated by several species of *Chironomus*, *Goeldichironomus* and *Beardius*. In contrast to the significantly high level of organic and heavy metal contamination deformity frequencies ranged from 1.3 to 9 percent only.

In the temperate highlands, species of *Polypedilum*, *Parachironomus*, as well as orthocladiids (*Limnophyes*, *Orthocladius* etc.) dominated the community (24 sp./msp.). Likewise to the above, deformity frequencies varied between 2.0 and 8 percent.

The results nearly force the conclusion that the frequency of buccal deformities in chironomid larvae cannot be explained by a simple correlation with heavy metal concentrations in the studied area. As a first approach, two reasons for this can be assumed: Firstly, heavy metals represent only one of the possible stressors which may induce deformities (NAZAROVA et al. 2001, VERMEULEN 1995, WARWICK 1988). Actually there are no data about other agents in the region, and far less do we know about the role of synergisms on a small spatial scale (e.g. the coincidence with oxygen depletion, sediment particle structure etc.). After all, organic contamination and thus high heterotrophic activity, is a crucial factor that determines the structure of the benthic community in streams and rivers of the investigated region (RISS et al. in press). Secondly, the study itself covers a large spatial scale which stretches over distinct climatic and biogeographic zones. And above all, environmental conditions between the extreme sites are hardly comparable due to the temperature gradient of 18°C on the annual average.

In spite of these restrictions, bioindicative assessments like the present one, continue to be of great interest for national environmental agencies and so may provide a certain financial basis for more specific work. Regarding this topic, the focus of interest should aim more on synergistic processes in the microhabitat, and be restricted to one biogeographic region, as was mentioned above. Even if political conditions in the country complicate the realization of such projects, a descriptive approach provides a small, but valuable insight into ecological and physiological processes and by this a useful didactic tool for scientific education.

This work was presented on the 'International South American Congress of Limnology - Neolimnos 2002' in Leticia/Colombia with financial support of the DFG.

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THESES

PHD-THESIS ON FAUNA, SYSTEMATICS AND DISTRIBUTION OF CHIRONOMIDS OF THE TRIBE CHIRONOMINI (DIPTERA, CHIRONOMIDAE) OF SOUTH PART OF THE RUSSIAN FAR EAST (2002) (IN RUSSIAN)

by Oksana V. Zorina
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The taxonomic revision of chironomids of tribe Chironomini is given for the south of Russian Far East for the first time. As a results 123 species from 33 genera are recognized; 11 species and 1 subgenus (*Miscellanea*) new to science are described; 11 species are recorded for the Palaearctic for the first time; 1 subgenus and 38 species are registered for Russia for the first time; 69 species are collected for Russian Far East for the first time. The names of 2 species are shown to be synonyms. Descriptions of previously unknown of female of 10 species and the male of 1 species are given. Preimaginal and imaginal systems of the tribe Chironomini are compared and consolidated using literature and original data on the metamorphosis of 51 species that are distributed in the south of the Russian Far East. Diagnoses and keys to 33 genera and 123 species of Chironomini are given for three stages of metamorphosis. Distribution of chironomids of the tribe Chironomini in regions of the south of the Russian Far East is reported. The types of distribution of 123 species are analyzed. Seventy-four species are recorded in the Palaearctic and 44 species occur in the Holarctic. Text 542 pages, Figures – 133, References – 188.

SHORT-COMMUNICATIONS

NEW NAME FOR *Thienemanniella similis* CASPERS & REISS, 1989 NOT MALLOCH, 1915

By O. A. Sæther
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Caspers & Reiss (1989) described a new species, *Thienemanniella similis,* from Turkey. That name is preoccupied by *Thienemanniella similis* (Malloch) originally described as *Corynoneura similis* (Malloch 1915: 413). The species is redescribed by Hestenes & Sæther (2000: 113).

Thienemanniella caspersi is hereby proposed as a replacement name.

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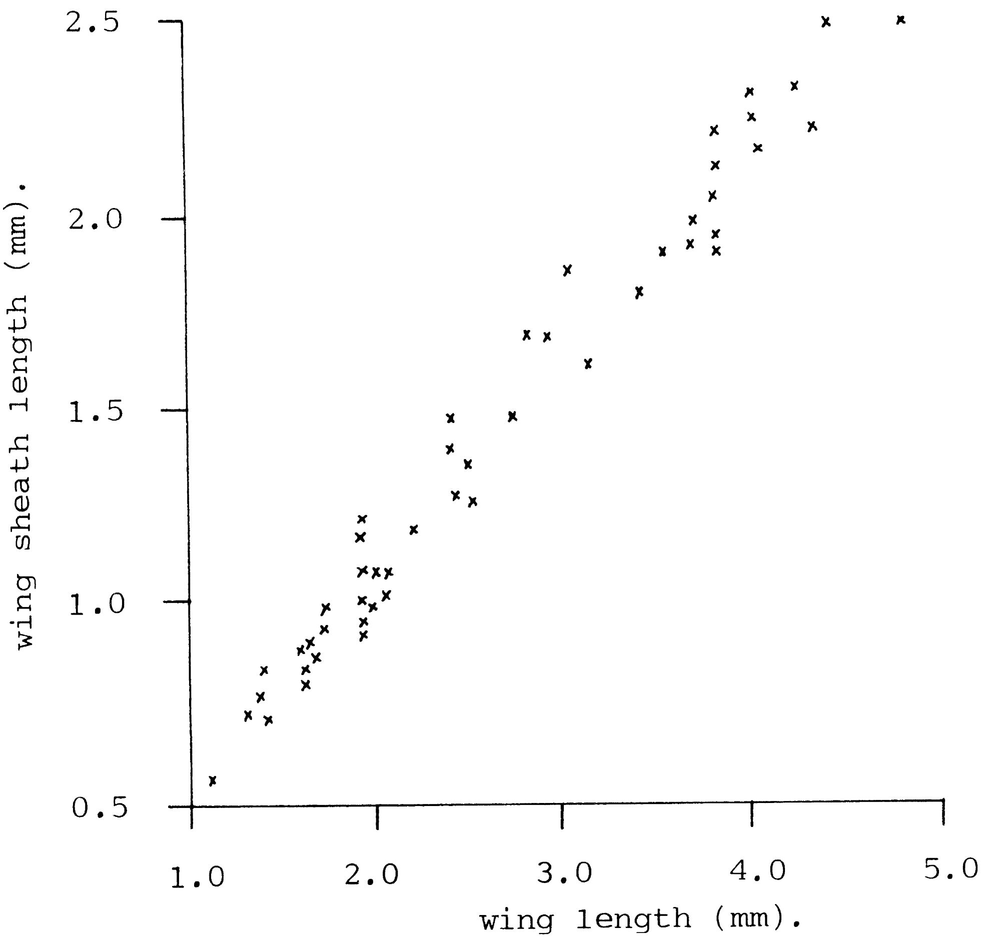
WL/WShL=1.9 or thereabouts

Peter H. Langton

In my Key to pupal exuviae of British Chironomidae (1984), I provided a graph of the relationship between the lengths of the pupal wing sheath and adult wing (data obtained from reared specimens belonging to the Tanypodinae, Orthocladiinae and Chironominae). I continue to find this useful, so I reprint the graph here for those who may not have seen the original.



Xth BALBIANI RING WORKSHOP IN VARNA, BULGARIA

By P. Michailova
Institute of Zoology, Sofia, Bulgarian Academy of Sciences

he Xth Balbiani Ring workshop was held on August 31 - September 4, 2001 in Varna - the third largest city in Bulgaria, the queen of the Bulgarian Black Sea coast. 27 participants were received at Xth Workshop by the host Prof.P. Michailova in the famous International House of Scientists " Fr.Joliot - Curie", St. Constantine, Varna. Institute of Zoology, laboratory of " Cytotaxonomy and Evolution" with the Bulgarian Academy of Sciences organized this jubilee Balbiani Ring Workshop, the first in the new century. Twenty years ago prof. I.I. Kiknadze and her collaborators organized in Novosobirsk the first Symposium on " Organization and expression of tissue specific genes" having as a main topic the so called Balbiani Ring structure of the chromosomes in a particular group of insects (Diptera), especially the family Chironomidae. Later, these Symposia were renamed Balbiani Ring Workshop. Every two years such workshops have been held in different countries in the world where molecular and cytological aspects of Balbiani Ring structure as well as a wide spectrum of problems such as heterochromatin, repetitive DNA, molecular and karyotype evolution, were discussed.

Workshop, looking at the poster

Director of the Institute of the Zoology, Corr. member Prof. V. Golemansky opened the Xth Balbiani Ring workshop by a welcome address done by him and by the President of the Bulgarian Academy of Sciences, Acad. I. Yuhnovski.

Prof. Kiknadze prepared the Balbiani Ring workshop's history lecture "From gene to genome". Famous specialists came from USA, Brazil, Canada, Russia, Germany, Italy and Bulgaria to participate in the workshop. A total of 25 papers directly concerning Balbiani ring structure were presented during the workshop. They were presented in four sessions: Gene and amplification, Gene structure and evolution, Transposable elements and variability, Chromosome structure and evolution.[1]

The program of the workshop offered sessions dealing with general progress at contrasting levels: from molecules to whole organisms, from biodiversity to evolution. The abstract book of the BR workshop appeared before the workshop.

The workshop offered the opportunity for old friends to meet again, for colleagues from different countries to make new contacts and to develop new ideas.

For one day all participants enjoyed the Bulgarian nature and customs, visiting the Botanical garden in north Bulgaria - Balchik and a typical Bulgarian village.

View at the Botanical Garden, Balchik

We discussed the possibilities of the next BR workshop. Different opinions were considered: either to be a workshop at the next Chironomidae Symposium which will be in USA, or to be a workshop at the next congress of the European Society for Evolutionary Biology (ESEB).

We believe that Xth BR workshop was successful and fruitful and all foreign guests had a pleasant stay in the beautiful ancient resort on the Black sea coast - St. Constantine

[1] Abstracts referring to Chironomidae: see Current Bibliography

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For changes and updates please visit the Chironomidae – Homepage and the List of Regional Representatives at:

http://www.sci.ouc.bc.ca/fwsc/iwalker/intpanis/director.html#REGREP

Deadline for CHIRONOMUS 16 is the 1st of July 2003

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by Odwin Hoffrichter

This listing is compiled, as usual, from many sources: databases, tables of contents of journals, references and citations of papers, autopsy of many periodicals, lists provided by authors (thanks to you!). One important source is always the Zoological Record (ZR). During the last years, Chironomidae references from the ZR volumes invariably yielded between 200-300 records, about one tenth of which used to be new, i.e. they had not been retrieved by other means. Nevertheless, not all titles of a particular year can be reported the following year, therefore, the current titles are preceded by supplementary of the earlier year (2 years at most). For older titles, go to the chironomid home page (http://www.ouc.bc.ca/fwsc/iwalker/intpanis/). As before, only printed titles are reported here. Online publications should be retrieved differently, in particular, check the chironomid home page for eventual references.

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