CHIRONOMUS Newsletter on Chironomidae Research

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Looks familiar? A nice sample of chironomids from Churchill, Manitoba. © Jay Cossey, Biodiversity Institute of Ontario

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Contributions to *CHIRONOMUS Newsletter on Chironomidae Research* should be submitted per e-mail to: Torbjørn Ekrem: Torbjorn.Ekrem@vm.ntnu.no or Peter H. Langton: PHLangton@kylebegave.fsnet.co.uk. Please use the following formatting: Text in 12 point Times New Roman, first page must include title, name, address and email address of all authors. Headings should be bold faced. Cite relevant references in parentheses without comma between name and year [ex. (Langton 1991)]. List all references alphabetically in the format of the *Current Bibliography* at the end of the manuscript. Tables can be included directly in the text. Text should preferably be submitted as MS Word or rtf files. All figures should be supplied separately as tiff or jpg files.

Would you like to see your picture on the front page? Please send us your favourite midge photograph or drawing (Torbjorn.Ekrem@vm.ntnu.no).

A need for accurate world catalogues

World catalogues and species encyclopaedias are of considerable value in almost all aspects of biological research. Not only can they be *the* source for correct spelling of taxon names and nomenclatorial and taxonomic history, but they often also are significant sources for information on classification, geographical distribution and key literature. The usefulness of species catalogues roughly depends on two major factors: their completeness and their correctness. Incorrect nomenclature can in the worst case confuse contemporary and future communication while incompleteness typically can result in deficient regional species lists and taxonomic reviews. Species catalogues and encyclopaedias come in various forms, both in scope and format. From traditional printed works with focus on taxonomic history and relevant references, to online dictionaries which also include information on biology and genealogical relationships. Although their main goals might be somewhat different, they all rely on well founded taxonomy to give the users what they should expect.

There exist a few online data bases that include Chironomidae species names. Some, like Fauna Europeae (www.fauneur.org), are geographically limited while others aim to include all available taxon names. A relatively recent initiative is ZooBank (www.zoobank.org). ZooBank aims to include all available names in zoology with links to authors, published works containing original descriptions and nomenclatorial acts. For the future, the International Commission on Zoological Nomenclature (ICZN) plans to require mandatory registration of species names in ZooBank for new names to be valid, a requirement that will prevent publication of homonyms and potentially also of taxonomic synonyms. Although the ZooBank data base still is in its infancy, the cooperation with Thomson Scientific (who publishes Zoological Record) has provided the Index to Organism Names (ION, www.organismnames.com), an excellent resource to names taken from the Zoological Record. A third online database to chironomid names that have been developed separately from the above is the Biosystematic Database of World Diptera (BDWD, see www.diptera.org) with more than 250 000 names. BDWD feeds the larger Catalogue of Life (www.catalogueoflife.org) that currently has 1.1 million records, which again supplies the nomenclatorial backbone for Encyclopedia of Life (www.eol.org). This means that an erroneous entry in one database is distributed to other sites and easily can become the adopted name in check lists and faunistic studies. We should perhaps worry about electronically published work records that have not been peer reviewed by taxonomic specialists, but at some point such lists needs to be made available for corrections to be made.

So, how do online world catalogues perform? Although one cannot draw conclusions from a simple search, it might give some indication on both completeness and correctness. I searched the ION and the BDWD with the key word "*Micropsectra*" and got the following result:

ION: 81 name records of which 71 are species names; 10 species names with missing or incomplete author information; complete species names appear to be correct.

BDWD: 150 name records of which 149 are species names, all work records; includes nomina dubia; numerous incomplete or erroneous author names; numerous taxonomic synonyms not registered.

For instance, *Micropsectra sofiae* is registered in both data bases. In ION this species is listed as *Micropsectra sofiae* Stur & Ekrem, 2006 with link to the complete reference.

In BDWD the species is listed as *Micropsctra sofiae* Stur, 2006 with distribution only in Germany and with link to the complete reference. Generally, at least for *Micropsectra*, the ION seem to include too few but more accurate names while the BDWD still have many errors in both nomenclature and distribution. That said, the BDWD entries on *Micropsectra* are all listed as work records and the user is warned when accessing the record. Thus, this magnificent initiative perhaps should not be criticized in this regard. However, a problem can arise when other databases mine the BDWD or the Catalogue of Life for species names and fail to indicate the uncertainty of the data. As an example, the Encyclopaedia of Life lists 81 valid species in *Micropsectra* including for instance *Micropsectra acuta* (correctly placed in *Krenopsectra*) and *Micropsectra groenlandica* (a taxonomic synonym of *M. logani*).

In conclusion I think it is safe to say that the user must be critical when accessing online catalogues of species names, particularly since many such sources have not been through peer review. Good scientific communication relies on a common base in accurate taxonomy and nomenclature and we should do our best to encourage the establishment of an as accurate and complete world catalogue for Chironomidae as possible.

Torbjørn Ekrem *Museum of Natural History and Archaeology, Norwegian University of Science and Technology, Norway. E-mail: Torbjorn.Ekrem@vm.ntnu.no*

DEAR JIM!

Welcome to the elite club of Chironomidologists over 80! Somebody told us that our great forerunner GOETGHEBUER was active in publishing until his 85th year. Somebody may beat this record, but we know in the meantime that this is not easy.

It is now 52 years, since we first met in Vienna. Len Ferrington in his laudation 1998 (J.Kansas.Ent.Soc) pointed out how important this Int. Congres in Limnologie Vienna has been for the progress of our special scientific field. Great promoters (Lars Brundin, Sepp Fittkau) were present and considered International meetings in Chironomidology. Also we discussed our projects; the ladies discussed our children.

One of the outcomes was your invitation to our visit to the USA in 1964. We travelled over the ocean in the big ship „United States“, met at Shafer-Lake in the flat of your brother, bought a Volkswagen-bus, were accompanied by you up to the Great Lakes (driver's licence forgotten in Germany!), crossing the whole continent. We saw Niagara, the Great Lakes, Yellowstone, Grand Canyon and Great Salt Lake, met bears, buffaloes and pelicans - and chironomids! - visited Williams Hilsenhof and Gail Grodhaus and landed up with the Sublette family in Portales enjoying excellent hospitality, which we could only scarcely repay during your visit to the Black Forest in 1972. The Wuelker-family in America comprised Mother and two boys - 7 and 8 years old - who were very expert in getting street maps at the filling stations, but wondered why American Indians were not hunting buffaloes or getting scalps, instead of filling in the gasoline at the filling stations! Recently, these sons - now well settled academians - presented an excellent photo collection of the 1964 trip on my 80th birthday.

This and the following meeting with Jon Martin in 1967 was the begining of international investigations of the genus *Chironomus*, the fruits of which are now present in representative phylogenetic trees of *Chironomus* species. Dear Mary was an important link in this chain of events. She learned about the preparing of chromosomes at Shafer-lake and made after that hundreds of exact preparations- too many yet to identify all of them. I remember a situation where we started to go to dinner in Pueblo, well dressed, and she said „You are looking like twins“. Well, we are possibly scientific twins, but merely dizygotic: both fascinated by midges, but you have made so much of systematics and morphology, I was centered on chromosomes; you were fascinated by Scanning Electron Microscopy, whereas I made more of Transmission Electron microscopy….

Jim Sublette outside his house in Tucson, 2006

We have not met personally since 1985 - you had much to do with big projects, I myself enjoyed retirement with many trips to Siberia. Nevertheless there were many contacts: the time when Mary wrote your manuscript on a type-writer, are over, we have internet, can exchange photos of children and grandchildren, enjoy your annual reports on the widely spread family Sublette, which are all retained in my files.

This is not a scientific laudatio - Len Ferrington performed this in 1998 excellently. It is more a certification of a long friendship with you and dear Mary, who sadly failed to reach our new decade by a few days. We all wish you courage and strength to withstand all your health problems and have as much a positive life as possible. I remember you saying: "It is always better to be a big fish in a small pond than a small fish in a big pond". You are certainly the big fish in the big pond!

Heartily Yours, Wolfgang
May 2008

To Work With ENMU's Sublette

German Zoologist Here To Help in Insect Research

A zoologist from the University of Freiburg, Germany, arrived at Eastern New Mexico University this week to compare notes in an intercontinental study of non-biting gnats.

Dr. Wolfgang Wuelker and his family will spend two weeks in Portales while he works with Dr. James E. Sublette, head of the biology department at Eastern, as part of their three-year study of the Chironomid (midge) family of insects.

GERMAN VISITOR — Dr. Wolfgang Wuelker of the University of Freiburg, Germany, examines an insect specimen held by Dr. James Sublette, head of the biology department at Eastern New Mexico University. Dr. Wuelker will spend two weeks at Eastern working with Dr. Sublette in their three-year study of midges, non-biting gnats. The research is sponsored by a $45,738 federal grant. See story on page

Dr. Sublette is principal investigator in the study which is financed by a grant of $45,738 from the National Institutes of Health, U.S. Department of Health, Education, and Welfare.

The study was undertaken to determine if many species of midges in North America have been properly identified with European names. Correct identification of North American varieties will be a vital step in public health programs to control the insects, which have become serious pests in many areas.

The zoologists said control programs are sought in Florida, California, and the north-central United States where giant swarms of midges cause an allergic reaction in many persons and are often a foreign agent in public water supplies.

Dr. Sublette and his family traveled to Indiana in July where they began several weeks of work with the Wuelkers. The Sublettes returned to Portales for the opening of the fall semester while the Wuelkers continued their travel through the northwestern U.S. and to Portales via California.

The zoologists' orginal meeting was in 1959 when they discovered their similar specialization during on International Congress of Limnology at Vienna, Austria.

Dr. Ulrich Hollstein, assistant professor in chemistry at Eastern, and Dewayne Ikenberry, special instructor in biology, are also investigators under the federal grant.

Student assistants working on the midget study are Larry Schimmel, Westfield, N. Y., and John Stangle, Portales.

The United States' "better connection between the theoretical and the practical" is a source of surprise for Dr. Wuelker.

Dr. Wuelker noted that while the University of Freiburg is more than 500 years old, 30-year-old Eastern seems more anxious to relate research projects to public needs.

"In Europe," he explained, "the university prides itself on dealing with theory while the technical high schools emphasize the practical aspects."

Accompanying Dr. Wuelker on his three - month United States tour are his wife and two sons, aged seven and eight.

German schools are in session, but the Wuelker children aren't enjoying a complete vacation. "Each morning they ring the school bell and my wife (a former teacher) gives them lessons for the day," Dr. Wuelker said.

Facsimile from *Portales New Tribune*, fall 1964.

JEHOSHUA KUGLER
1. FEBRUARY 1916 - 24. OCTOBER 2007

Born in Chortkov, Galicia, Ukraine, which at that time was part of the Austria/Hungry Empire, Jehoshua Kugler grew up in Czernowitz, Romania. After graduating from secondary school in 1934 he received a scholarship from the Hebrew University in Jerusalem and emigrated to Palestine. After four years he completed his majorwith a M.Sc. in Zoology with minors in Botany and Geology. In his thesis he treated the ”Vespiformes of Jerusalem“, supervised by Prof. F. S. Bodenheimer. Kugler started his academic career at an agronomy school. In addition he became lecturer at a teacher training college. In 1954 he was appointed Lecturer in Zoology at the new founded university in Tel Aviv. In 1960 he obtained his PhD from Hebrew University with his dissertation "A taxonomic and faunistic study of the tachinid flies of Israel“. He was an excellent teacher and supervisor for many students. Kugler was appreciated by many different experts within and outside the University for his broad expertise, including the Fauna of Palestine Committee at the Israel Academy of Sciences and Humanities. Upon retirement in 1988 he continued his teaching activities as Professor Emeritus and kept his working space at the university, which he used until few days before his death.

Jehoshua Kugler. Photo courtesy of E. J. Fittkau

Jehoshua Kugler was an exceptional taxonomist and entomologist. He developed a general idea on the Entomofauna of his country hardly matched by anybody else in Israel. He had broad knowledge of different animal groups and cooperated in their revisional studies by others.. He contributed with his many-sided knowledge by editing and compiling the insect volume of the voluminous encyclopaedia “Plants and Animals of the Land of Israel” in which half of the contributions were written by him. He also co-authored numerous publications of the fauna of the country. The focal point of his research was for a long time the Tachinidae (Diptera). Later, after 1980, the Diptera were placed in the background as he started to dedicate himself to the ant fauna of the region.

Kugler’s interest in chironomids began in connection with his research on the insect fauna of Lake Tiberius which started in 1963. By the end of the first year he had already collected 30 different species with a light trap, and he was particularly interested in knowing how many African fauna elements lived in this continuously warm lake. In the beginning of 1964 he asked me for support in the processing of this chironomid material. In my answer, I invited Kugler to the 1. International Chironomidae Symposium that was to be held the same year at the Max-Planck Institute for Limnology in Plön. He came and presented his first work on chironomids. In 1966, I was able to arrange for a three month research fellowship for Kugler, but the armed conflict in Palestine prevented him travelling. His visit to Plön was first feasible after the second chironomid symposium in Helsinki in 1967. In the meantime, Friedrich Reiss had joined me in Plön. Our time together with Kugler was highly appreciated and the start of a long lasting friendship. The chironomids were now, second to the tachinids, Kugler’s main research focus. His participation at the third Chironomidae Symposium emphasized this and his interest in chironomids remained vital also later in his career. Whenever he got the chance he would visit us in Plön and later in Munich. It was a particular pleasure for us to meet him and his wife at the Chironomidae Symposium in Ottawa and later in Freiburg. It was probably his open mind, his wide knowledge also outside of his professional field, and not the least his omnipresent sense of humour that characterised him.

Jehoshua was a magnificent person, scientist and father. His wife Ida, a gifted painter, also grew up in the Romanian town of Czernowitz with

German as her mother tongue. Her family miraculously survived the German occupation and the chaos at the end of the war. In 1945 she was part of an immigrant group on a small ship that ran the blockade and sailed to Palestine. She met Jehoshua, then a biology student in Tel Aviv, they were married in 1947; later they had two children. Jehoshua reported happily about his four grandchildren and three great grandchildren.

– We have lost a good friend and colleague.

E. J. Fittkau
Professor Emeritus
Icking, Germany

Suzy and I visited Israel twice, once back in 1968 and then again in 1983. I keep saying that I would like to return at least one more time so as to get a glimpse of all the progress made by the State.

On both visits I spent a considerable amount of time collecting insects and trying to be a good ambassador for the University of California at Riverside and especially for the museum. Had I met Jehoshua Kugler on my first visit I certainly would have recognized him on the flight to Ottawa in August 1970 for the 4th International Symposium on Chironomidae which both you (Jim Sublette, editor's note) and I and the Kuglers attended. On the flight it so happened that the Kuglers sat immediately behind me and I remember taking note of the fact that he ordered Coca Cola without any ice. I do this myself now in order to get more Coke and less water.

In 1983 I did meet with him at Tel-Aviv University where I have an old friend, Prof. Dan Gerling. At that time I met Dr. Amnon Freidberg, an outstanding faunist and an authority of Tephritidae and other families who has often worked at the Smithsonian as a guest. We collected together on that visit. On my first visit Suzy and I took a crane fly in Ein Gedi that was later described by Charles P. Alexander. It was named after me although I forget the name. I did spend some time on that visit with Jehoshua and he was kind enough to give me some ants for UCR's collection. I'm not certain as to whether he gave me any midges. I know that his interests were broad - he published a paper with my friend Dan on a world survey of insects on Tamarisk. Dan did a great part of the collecting for that paper. As you know he was also quite interested in the Tachinidae and traveled to Europe to study materials and to compare with his own findings. During those days there were a good number of Israelis whose ties to Europe meant that they were fluent in tongues such as German, Russian, and in Kugler's case I guess Romanian. I wish I could say more. He certainly was very accommodating to me and Suzy.

Saul I. Frommer
Senior Museum Scientist
Riverside, UC, USA

My first personal meeting with Dr. Kugler was at the chironomid symposium in Ottawa, although we had previously corresponded. He and his wife, Ida, were there and my late wife, Mary, and I had a delightful evening talking with them and the others at the evening social. While Dr. Kugler spoke excellent English his wife, Ida, was most comfortable speaking in German. My poor skills in this language made me mostly a listener to the conversations which she and Sepp Fittkau and Frieder Reiss were having. Dr. Kugler and I found a common interest in the seminal work which his major professor, Dr. Bodenheimer, had published on "Insects as Human Food". During the years in which I taught a course in General Entomology I would refer to Dr. Bodenheimer's work and the pleasure I had at meeting one of his students. Dr. Kugler kindly sent me some of the examples of the midges from his Lake Tiberius studies which were of considerable interest as they contained Tanytarsini which Mary and I were actively studying at the time. While the mermithologists benefited by his later interests in the ants of Israel, chironomid studies were diminished by his no longer having an active role in the field. It gives me pleasure to know that one of my granddaughters is now studying at Hebrew University in Jerusalem where two of the entomological pioneers of Israel studied and worked.

James E. Sublette
Professor Emeritus
Scottsdale, AZ, USA

Jehoshua Kugler's publications on Chironomidae

Kugler, J. 1966. Vorläufige Mitteilung über die Chironomidenfauna des Tiberiassees. – In: Verh. 1. Int. Symp. Chironomidae, Plön 25.-27.7.1964. *Gewäss. Abwäss*. 41/42: 70-84.

Kugler, J. 1968. Chironomidenforschung in Israel. – *Chironomus* 1: 16-17-84.

Kugler, J. 1971. The developmental stages of *Leptochironomus stilifer* (Diptera: Chironomidae) and the characters of the genus *Leptochironomus*. – *Can. Entomol.* 103: 341-346.

Kugler, J. 1978. Chironomidae and Trichoptera. – In: Serruya, C. (ed.): *Lake Kinneret*. Monogr. Biol. 32; Dr. W. Junk, The Hague; pp. 369-376.

Kugler, J. and Chen, H. 1968. The distribution of chironomid larvae in Lake Tiberias (Kinneret) and their occurrence in the food of fish in the lake. – *Israel J. Zool*. 17: 97-115.

Kugler, J. and Reiss, F. 1973. Die *triangularis*-Gruppe der Gattung *Tanytarsus* v.d.W. (Chironomidae, Diptera). – *Entomol. Tidskr*. 94: 59-82.

Kugler, J. and Wool, D. 1968. Chironomidae (Diptera) from the Hula Nature Preserve, Israel. – In: *Second Int. Symp. on Chironomid Research, Helsinki 1967. Annls. Zool. Fenn*. 5: 76-83.

Wool, D. and Kugler, J. 1968. Laboratory culture of chironomid species from the Hula Nature Preserve, Israel. – *Second Int. Symp. on Chironomid Research, Helsinki 1967. Annls. Zool. Fenn.* 5: 153-154.

Wool, D. and Kugler, J. 1969. Circadian rhythm in chironomid species (Diptera) from the Hula Nature Preserve, Israel. – *Annls. Zool. Fenn.* 6: 94-97.

A WORLD CATALOGUE OF CHIRONOMIDAE (DIPTERA)

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Introduction

A World Catalogue of Chironomidae (Diptera) is being compiled and is at an advanced stage of preparation. The Catalogue will be in four parts. **Part 1** (Subfamilies Aphroteniinae, Buchonomyiinae, Chilenomyiinae, Diamesinae, Podonominae, Prodiamesinae, Tanypodinae, Telmatogetoninae and Usambaromyiinae); **Part 2** (Subfamily Orthocladiinae), **Part 3** (Subfamily Chironominae) and **Part 4** (Fossil Taxa, Supplement, Summary (of Parts 1-4) and Cumulative Taxonomic Index).

It is intended to publish Part 1 in early Summer 2009 in time for the Chironomid Symposium in China on the 6-10 July 2009, Part 2 in 2010, Part 3 in 2011 and Part 4 in 2012. The Manuscripts for Parts 2, 3 and 4 will be available for consultation at the Chironomid Symposium in China. The pagination will be sequential from Part 1 through to Part 4 and it is estimated that the entire publication will be at least 1,200 pages. The cut-off date for inclusion of information will probably be Spring 2009 with Part 4 including a Supplement covering the period 2009 to 2012. Apart from the catalogue section each part will include an introduction, summary, bibliography and an alphabetical taxonomic index while Part 4 will also include a cumulative taxonomic index. Progress on the 'World Catalogue of Chironomidae (Diptera)' will be reported in future issues of the Chironomus Newsletter.

In order to ensure accuracy of the information presented all the chironomid literature from 1758 to early 2009 which includes new taxa will be checked. A number of species have already been detected, including a few Kieffer species, which are missing from several of the published catalogues. At the present time there is no accurate total of the number of valid species or synonyms. This is despite the fact that there are published catalogues for each region but all have different publication dates and cut-off dates for inclusion of data and some taxa recognised as valid in one catalogue may be synonymized in a another catalogue.

In order to ensure both a high quality product at a reasonable price the Catalogue will be published by The Irish Biogeographical Society in A4 format. At present the plan is to produce 200 printed copies and 200 CD copies (though additional CD copies can be produced if necessary). A definite price cannot yet be given but the expected price for each part is likely to be in the range of 35 to 50 Euro.

Part 1 currently (late August 2008) fills about 260 pages and the original taxonomic data for just over half (52%) of all the **1,806** taxa (includes valid taxa, synonyms, nomen dubia, etc.) have been checked. The text is at present in '12 point New York' which is larger and easier to proof read that the final text which will probably be printed in '13 point Times'. The current ratio of valid genera to valid species for each of the subfamilies in Part 1 is as follows:- Buchonomyiinae (**1:3**), Aphroteniinae (**3:8**), Podonominae (**15:152**), Usambaromyiinae (**1:1**), Tanypodinae (**56:578**), Chilenomyiinae (**1:1**),Telmatogetoninae (**2:38**), Diamesinae (**21:213**) and Prodiamesinae (**4:21**). There are therefore **104** valid genera and **1,015** valid species at present included in Part 1 but these numbers are likely to fluctuate to some degree over then next 10 months as newly published taxa and synonymies are incorporated into the text. The first draft of the taxonomic index to Part 1 has now been completed.

Part 2 (Subfamily Orthocladiinae) is very advanced at 271 pages with all the data from published catalogues incorporated as well as a considerable amount of additional data. It is not yet possible to give an estimate of the numbers of valid genera and species but this information will be available in December 2008.

Part 3 (Subfamily Chironominae) is moderately advanced at 155 pages and currently includes nearly all the data from published catalogues and a small amount of additional data. When complete this is likely to be the largest of the four parts. An estimate of the numbers of valid genera and species will be available in May 2009.

Part 4 (Fossil species) is moderately advanced at 50 pages in relation to the fossil part only as it is obviously not yet possible to prepare the Summary (of data in Parts 1 to 4), the Supplement (2009-2012), or the Cumulative Taxonomic Index. The fossil taxa present their own unique

problem in that only a relatively small proportion are adequately described and correctly placed. Many species are clearly assigned to the wrong genera but will have to remain there until the type specimens have been re-examined and their placement re-assessed. Some genera and species have been placed in the Chironomidae but may not actually belong there and others have been removed from the Chironomidae and assigned to other families. The fossil catalogue will be arranged under several different categories or headings to reflect these probems.

Format

Within a subfamily all the genera (and subgenera within a genus) are arranged alphabetically as are the species (and subspecies) within a genus. Although tribes are recognised in some subfamilies (i.e. Podonominae, Tanypodinae, Diamesinae and Chironominae) their use is avoided in the main catalogue but referred to in the introductory section. Generic and species synonyms are arranged by date priority.

Examples of a generic entry showing a valid genus (**Telmatogeton**) and a junior synonym (*Halirytus*) and a species entry showing a valid species (**japonicus**) and a junior synonym (*gedanensis*) are as follows:

Genus **TELMATOGETON** SCHINER

TELMATOGETON SCHINER, 1866: *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien* **16**: 931. Type-species: *Telmatogeton sanctipauli* Schiner, 1866 (as "'St. Pauli"), by original designation and monotypy.

HALIRYTUS EATON, 1875: *Entomologist's Monthly Magazine* **12**: 60. Type-species: *Halirytus amphibius* Eaton, 1875, by monotypy.

japonicus TOKUNAGA, 1933: *Philippine Journal of Science* **51**: 95 (*Telmatogeton*). Type-locality: (Japan) "Karo, Tottori Prefecture". - Distr.: **NE**: Canada (Newfoundland), USA (Florida, Louisiana, New York, South Carolina, Texas); **PA**: Azores, Belgium, China (Shandong), Denmark, Germany, Iceland, Ireland, Japan, Madeira, Netherlands, Norway, Poland, Sweden; **OR**: China (Zhejiang); **AU**: Australia (New South Wales, South Australia, Victoria, Western Australia); **OC**: Hawaiian Islands.

gedanensis SZADZIEWSKI, 1977: *Polskie Pismo Entomologiczne* **47**: 177 (*Telmatogeton*). Type-locality: (Poland) "Baltic Sea, Gdańsk Bay, shore in Gdynia-Orłowo".

From the above examples: uppercase/lowercase bold is used to indicate a valid **GENUS**/**species** and uppercase/lowercase italics to indicate a *GENUS*/*species* synonym. This is followed by the author(s) name(s) in capitals, the year, journal or book (title in full in italics), volume (in bold), page number and for species the original genus. For genera (and subgenera) the type-species and the type of designation is given. For species (and sub-species) the type-locality information is given in quotes (and whenever possible is based on information on the holotype). It is remarkable how frequently the country is not specified in the type-locality data but if the country is mentioned elsewhere in the paper round brackets around the country name precede the quoted type-locality data; if the country is not clearly specified anywhere in the paper square brackets are used around the country name. For questionable synonymies the species name is preceded by a question mark in bold.

There is no single chironomid species known from all zoogeographical regions. However, the distribution information is presented in the following logical and closest zoogeographical relationship sequence: Antarctica (**AN**); Neotropical (**NT**); Nearctic (**NE**); Palaearctic (**PA**); Afrotropical (**AF**); Oriental (**OR**); Australasian (**AU**) and Oceanian (**OC**). Distribution information is intended to be as comprehensive as possible and for some larger countries (e.g. Australia, Canada, India, Russia, USA) or boundary countries which straddle two zoogeographical regions (i.e. Mexico (Nearctic & Neotropical), China (Palaearctic & Oriental), Indonesia (Oriental & Australasian) and Japan (mostly Palaearctic except that the Ryuku Archipelago south of 29 degrees N latitude is in the Oriental region)) the states, regions, provinces or islands where a species is recorded are given in alphabetical sequence in parentheses after the country name. The distribution of a species will

identify which of the regions of these countries it is known from as the above example of **japonicus** shows that it is known from both Palaearctic China and Oriental China.

For all the literature cited it is intended to try an include the date of publication of each reference. The bibliography for each part will be checked to determine which publications do not exists in Ireland either as a reprint, photocopy or run of a journal. When this analysis is complete colleagues will be asked to provide a reprint, photocopy or pdf.file of all of those papers of theirs which we are missing. For some older literature that we lack, inter-library loans will be requested, and for other items the senior author expects to be in London from the 1-20 September 2008 (in the British Library and at various libraries in The Natural History Museum) where photocopies will be obtained. For some obscure literature which is difficult to obtain it may be necessary to contact some colleagues for photocopies. The senior author will make contact by e-mail or post with all chironomid colleagues involved in research which includes taxonomy, systematics, distribution, checklists or similar topics and who are likely to have recently published or "in press" data relevant for inclusion to the World Chironomid Catalogue. To resolve some difficult taxonomic, nomenclatoral or other problems which may arise the relevant colleagues will be consulted for their opinions.

Relevant recent or new literature which is available as a **pdf.file** should be sent as an e-mail attachment to : *patrick.ashe@upcmail.ie*

or if only available as **printed reprints or photocopy** should be posted to: Dr PATRICK ASHE, 33 Shelton Drive, Terenure, Dublin 12, IRELAND.

INVITATION AND FIRST ANNOUNCEMENT

XVII INTERNATIONAL SYMPOSIUM ON CHIRONOMIDAE
JULY 6-10, 2009, NANKAI UNIVERSITY, TIANJIN, CHINA

Dear colleagues

The 17th Symposium on Chironomidae will be held at Nankai University in Tianjin, China, during July 6-10, 2009. It will be sponsored by the Life Science College, Nankai University, and Dr. Xinhua WANG will serve as the symposium organizer.

A web page will soon be available with detailed instructions for offering the symposium information.

On behalf of the Symposium Committee, I am pleased to invite you to visit China and attend the Symposium at Nankai University. I also hope that you will distribute this symposium information to colleagues and friends who may be interested in the conference. We believe your attendance will be a significant contribution to the development of the study of chironomids. We hope that your visit to China in 2009 will be a memorable one.

Looking forward to meeting you all at Nankai University, China, in 2009.

Best regards

Xinhua WANG

June, 16, 2008 in Nankai University

PS) For inquiries, please contact Dr. Xinhua Wang at **xhwang@nankai.edu.cn,**

Tel. +86 22 23508389, and Fax. +86 22 27828145

XVII International Symposium on Chironomidae

July 6-10, 2009, Nankai University, Tianjin, China

Location

17th International Symposium on Chironomidae will be held on the Campus of Nankai University, Tianjin City where about 120 km east of Beijing.

Presentations

The official language of the conference will be in English. The symposium will cover all aspects of chironomid midges. Oral and poster presentations of research related to Chironomidae are invited. "Power point" presentation format will be available and encouraged. Oral presentations should be no longer than 20 minutes including 5 minutes discussion. Participants requiring additional audiovisual equipment should notify in advance.

Preliminary Schedule

July 5 (Saturday): Arrival and registration; social gathering in the evening

July 6 (Sunday): Scientific sessions, symposium banquet

July 7 (Monday): Scientific sessions

July 8 (Tuesday): Mid-conference tour: Tianjin sightseeing (Riverboat Cruise)

July 9 (Wednesday): Scientific sessions

July 10 (Thursday): Post meeting excursion (one day): Beijing sightseeing

Accommodations

Accommodations and the meals will be available in Mingzhuyuan guesthouse of Nankai University. Each double room with bathroom and cable TV. Please indicate if you wish a single room or prefer to share with someone in particular.

Fees (provisional)

Delegates: **360** Euro (€), includes transportation between airport and Nankai University, 5 nights' accommodations, all meals from dinner of July 5 to breakfast of July 10, abstracts and published proceedings.

Spouse and accompanying persons: **260** Euro (€). **Children** under 10 free.

Optional post-meeting excursion: (one day) **40** Euro (€).

International Travel

Delegates can choose 2 International Airports for arrival and departure：

Beijing Capital International Airport

Tianjin International Airport: (Seoul, Korea; Nagoya, Japan and Hong Kong).

Spouse and accompanying person's program

We are presently considering a separate program for spouse and accompanying persons including sightseeing and shopping trips in Tianjin, depending on how many accompanying persons are going to attend.

Second circular

The second circular will show the symposium speakers and titles, detailed program, preparation of abstracts, costs, meals and accommodations, local weather and travel.

Registration Form
XVII International Symposium on Chironomidae
July 6-10, 2009, Nankai University, Tianjin, China

Surname: **First name:**

Gender: **Country:**

Institution:

Full Address:

Phone: **FAX:**

E-mail:

Research field:

Presentation
□ Oral communication; □ poster; □ none

Post-meeting Excursion (optional) □ Beijing tour or □ No.

Please mark if an official invitation letter is needed (□ Yes, □ No)

Accompanying Person(s):

Please fill in and return this form to the following address as early as possible, the deadline is before the end of November, 2008.

Prof. Dr. Xinhua WANG
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CHIRONOMID RESEARCH AT THE UNIVERSITY OF BURDWAN

The research project, TAXONOMY OF DIPTERA, under the aegis of All India Coordinated Project on Taxonomy (AICOPTAX) funded by the Ministry of Environment & Forests, Govt. of India under Prof. P. K. Chaudhuri & Dr. A Mazumdar implemented in 2002, has been extended for another term of five years. This project has completed its first phase very satisfactorily. During the past few years, a good number of ecosystems of the Indian subregion have been explored. A large number of genera and species with life stages have been recorded for the first time in the country. Identification of the insects is still going on. In addition, assessment of water quality using chironomids will be initiated very soon in the laboratory. Several students are trained in various aspects of taxonomy as a part of a program of capacity building for the project.

Dr. Niladri Hazra has joined as Reader in the Department of Zoology, the University of Burdwan in November, 2007. Dr. Hazra, a worker in chironomids who was a faculty member in Balurghat College, West Bengal, has resumed working on the chironomids of sub Himalayan West Bengal.

Dr. A. Mazumdar was invited to work as Visiting Scientist at The University of Florida, IFAS, MREC, Apopka, USA, for a period of six months (June–December 2007) with Professor Arshad Ali. He worked on the intra and inter-specific competition of the chironomids *Glyptotendipes paripes* and *Chironomus crassicaudatus*. They also worked on a) isolation and purification of genomic DNA from single/several adult(s) of the pestiferous midge, *Glyptotendipes paripes*, b) amplification and purification of the mitochondrial gene cytochrome oxidase I (COXI) of *Glyptotendipes paripes* and c) analysis of the sequences of COXI obtained from *G. paripes* populations collected from natural and artificial lakes. Work done: The adult midges were collected fresh and frozen at -80 degrees. The genomic DNA was isolated by using Promega kit with slight modifications. The DNA sample was checked on agarose electrophoresis. The DNA was isolated and purified from the gel. The genes COXI and COXII were amplified through PCR and using universal as well as specific primers. The quality of DNA was checked on agarose gel. The COXI & COXII sequences were ligated using the pGEM system. The bacterial colony was selected and a midiprep was done. The COXI & COXII sequences were isolated and purified from the plasmid. The quantity of DNA was measured and the genes were sequenced (by UF central facility) for further analyses. The sequences will be aligned and compared with other *G. paripes* populations obtained from different lakes.

New Chironomidologists

Dr. N. HAZRA
Department of Zoology
University of Burdwan
Burdwan 713 104
West Bengal, India.
Email hazra.niladri@gmail.com
Area of research: Taxonomy, Biodiversity, Ecology and Zoogeography of Chironomidae.

Mr. N. DAS
Department of Zoology
Kalimpong College (North Bengal University)
Kalimpong, India.
Area of research: Systematics and Biology of orthoclad midges of the Himalayas of West Bengal, India.

Dr. T. MIDHYA
Professor
Department of Zoology
Presidency College
Kolkata 700 073, West Bengal, India.
Area of research: Polytene chromosomes of the chironomid midges (Cytotaxonomy).

Dr. S. CHATTOPADHYAY
Department of Entomology
Faculty of Forestry
B.A.University, Ranchi, Jharkhand.
Area of research: Biology and larval behaviour of chironomids.

Dr. G. K. SAHA
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University of Calcutta
34 Ballyganj Circular Road
Kolkata 700 019, West Bengal, India.
Area of research: Ecology of chironomids and chironomid related allergy studies.

Abhijit Mazumdar, Department of Zoology, University of Burdwan, Burdwan, 713 104, India. Email: abhijitau@rediffmail.com

DOES ENVIRONMENTAL TEMPERATURE VARIATION AFFECT BODY SIZE OF TWO LOTIC TANYTARSINI (DIPTERA: CHIRONOMIDAE) FROM THE NEOTROPICS?

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Introduction

In general, variation in the environmental temperature encountered by early life stages of ectotherms during their development results in differential final adult body size, with larger adults found in habitats with lower average temperatures (temperature–size rule; e.g. Atkinson 1994; Chown and Gaston 1999). This phenomenon has been observed in different groups of organisms, including fishes, amphibians, arthropods, mollusks, protists, and bacteria (reviewed by Atkinson 1994).

Aquatic insects that live in the temperate zone may experience different developmental temperatures, with cold seasons alternating with warmer seasons (Wolda 1988). The window of opportunity to grow and reproduce may occur for a few months of the year and their body size usually decreases from spring to summer (Sweeney and Vannote 1981). Among Chironomidae (Diptera), increase in body size is in general restricted to larvae, particularly second to fourth instars, and temperature constitutes a major controlling factor (Tokeshi 1995). For example, Menzie (1981) demonstrated in an experimental study that the growth rate of *Cricotopus sylvestris* Fabricius larvae is increased at higher temperatures. Other factors such as food availability (Vodopich and Cowell 1984) and intraspecific competition (McLachlan 1983) are also known to affect chironomid larval growth. Kobayashi (1998) studied the emergence of *Procladius choreus* Meigen in central Japan and determined that body size and male genital structure lengths were negatively correlated to environmental temperature. In the Neotropics, Strixino and Trivinho-Strixino (1985) also found a negative relationship between temperature and body mass for a tropical chironomid species (*Chironomus sancticaroli*), but under laboratory controlled conditions.

In tropical areas, many aquatic insects tend to emerge continuously throughout the year (Resh and Rosenberg 1984). Although changes in temperature through the entire year are slight when compared to temperate ones, some regions, such as southeast Brazil, may experience a variability of 25.0°C in air temperature within a year (EMBRAPA). This range is comparable to temperate areas during the period of growth and reproduction (i.e. from spring to fall). In this paper we assessed if is there a relationship between body size and environmental temperature within populations of two Tanytarsini (Chironomidae: Chironominae) species from southeastern Brazil. The two undescribed species used in this study belong to the speciose Neotropical genus *Caladomyia* Säwedal (Reiff 2000) hereafter named *Caladomyia* sp. 1 and *C.* sp. 2. These two new species will be completely described (with larvae, pupae and males) in a forthcoming paper.

Materials and methods

Since chironomid adults are short-lived and most do not feed, we collected floating exuviae of emerged adults, assuming that the size of the pupae reflects all energetic gains of larval development. According to Coffman and de La Rosa (1998), the advantages offered by the collection of pupal exuviae are well documented and include: all species emerge at the water surface, the exuviae remain floating for at least a

day, large numbers of specimens can be rapidly collected, and species from all microhabitats are included.

We worked within Fazzari Stream, a first order forested stream located in the State of São Paulo in southeastern Brazil (21°59'S - 47°54'W, ~910 m a.s.l.). Regional climate is humid subtropical, with a wet summer and dry winter. The dry season extends from June to August and the wet season, from September to May. Annual rainfall and mean temperature are around 1,595 mm and 21.7°C, respectively. We made surface samples in three stream segments with similar riffle/pool areas from April 2004 to March 2005. At each segment (10-20m) we took surface samples (20min. effort) using a hand net (200µm mesh size) to collect natural accumulation of floating pupal exuviae from behind stream flow blocks (e.g. logs). We also used drift nets (200µm mesh size) to intercept exuviae that were possibly induced to drift through the main current by any disturbance caused during hand netting. Water temperatures were measured concurrently with sampling.

The material was sorted in the laboratory and chironomid exuviae counted and mounted on slides in Hoyer's solution. We measured the abdominal length of male pupae by measuring the distance from the anterior margin of tergite I to the tip of the anal lobe. We used data from the sampling dates in which at least two well preserved male pupae of each species were present. Since we do not have data on minimum and maximum water temperature, we used minimum and maximum air temperatures from the EMBRAPA SUDESTE Meteorological Station, located approximately 5 km from Fazzari Stream. Temperature-body size relationship was analyzed using Ordinary Least Squares (OLS) linear regressions. Statistical tests adopted a critical probability value of 0.05.

Results

From the 17 sampling dates between May/2004 and March/2005 we measured 40 specimens of *C.* sp. 1 and 42 of *C.* sp. 2 that met our criteria. Both the smallest (2.09 mm) and the largest (2.45 mm) specimens of *C.* sp. 1 were collected in August 2004, whereas the smallest specimen of *C.* sp. 2 (2.37 mm) was collected in March 2005 and the largest (3.22 mm) in June 2004. Maximum and minimum air temperature varied from 16.0 (July 2004) to 32.0°C (August 2004) and from 7.0 (August 2004) to 20.0°C (February 2005) respectively. Water temperature varied from 14.4 °C in October 2004 to 21.6°C in March 2005.

In both species body size was not related to any of the environmental temperatures: water temperature (*C.* sp. 1: $N = 40$, $P = 0.403$, Fig. 1a; *C.* sp. 2: $N = 42$, $P = 0.256$, Fig. 1b), maximum air temperature (*C.* sp. 1: $P = 0.626$, Fig. 1c; *C.* sp. 2: $P = 0.124$, Fig. 1d), and minimum air temperature (*C.* sp. 1: $P = 0.224$, Fig. 1e; *C.* sp. 2: $P = 0.103$, Fig. 1f).

Discussion

The correlation between temperature and body size found by Kobayashi (1998) for chironomids, and by others for many ectotherms was not found in our one-year study. In both *Caladomyia* sp. 1 and *C.* sp.2, body size was not related to environmental temperature variation.

Most cases in which a negative relationship between temperature and body size was identified occurred in laboratory studies, where temperatures were controlled (see Atkinson 1994). However, environmental temperature is not constant in most aquatic habitats and exhibits a daily cycle sometimes with broad amplitude (Pétavy et al. 2001). Moreover, since other factors such as food availability and biological interactions are known to influence body size relationships, studies on natural patterns of body size relationships could add complementary information for extrapolations from responses in the laboratory (Belk and Houston 2001). This is especially true for tropical regions where there is a continuous input of falling detritus, like leaves, woody debris and fruits in streams (Henry et al. 1994).

Kobayashi (1998) used mean monthly air temperatures as the explanatory variable in his regression models. These temperatures had an amplitude variation of 20°C (range: 12.0 - 32.0°C) during the periods when adults emerged, which occurred from April to December (8 months). Both species used in our study emerged continually throughout the year. We used three measures of environmental temperature, maximum and minimum air temperature, and water temperature, as predictor variables with an amplitude variation of 16, 13 and 7.2°C respectively. Hence, the natural temperature variation which *C.* sp. 1 and *C.* sp.2 experienced is comparable to the variation, during the periods when adults emerged, of Kobayashi's study. However, larvae that stay over the winter in temperate regions experience much lower temperatures than the lowest

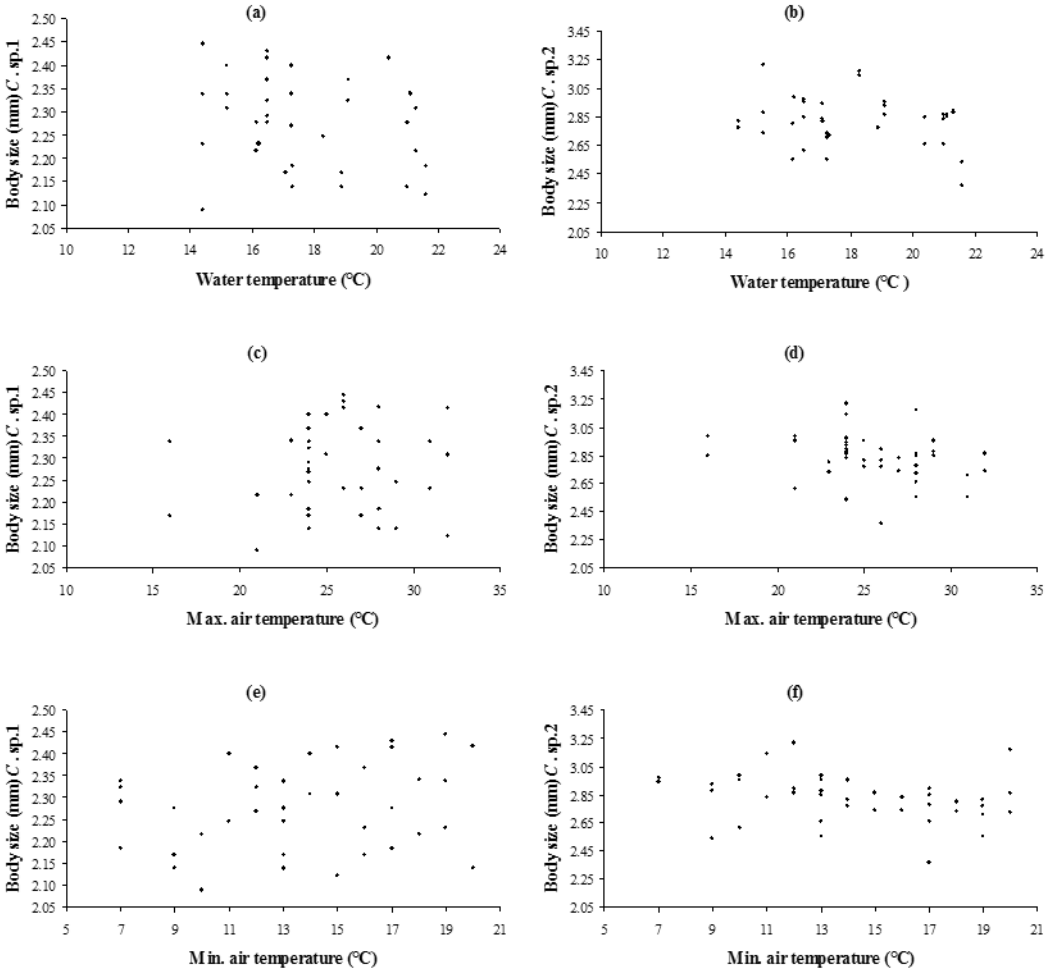

Figure 1. Relationships between environmental temperatures and body size. (a) water temperature and ***C.* sp. 1**, (b) water temperature and ***C.* sp. 2**, (c) maximum air temperature and ***C.* sp. 1**, (d) maximum air temperature and ***C.* sp. 2**, (e) minimum air temperature and ***C.* sp. 1**, (f) minimum air temperature and ***C.* sp. 2**.

temperature of our study region (7.2°C). Differently from these temperate regions where larval development is interrupted during the winter season, our study area assures development of the larvae to continue even in the coldest season. So, probably the lowest temperature which the larvae of these tanytarsine taxa experienced during the period of our study was not so cold to control their development affecting their body size.

Acknowledgments

We thank Professor Cláudio G. Froehlich for his suggestions on a draft of this manuscript. This study was partly funded by the Conselho Nacional de Desenvolvimento Científico e Tecnológico, CNPq.

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FIRST RECORD OF CHIRONOMIDAE LARVAE (INSECTA: DIPTERA) AS PARATENIC HOST OF GORDIOIDEA IMMATURES (NEMATOMORPHA: GORDIOIDA) IN AN ATLANTIC FOREST STREAM, BRAZIL

Fabio Laurindo da Silva[1], Fabio de Oliveira Roque[2] & Alaíde Aparecida Fonseca Gessner[1]

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Although immature and/or adult chironomids are known to be parasitized by a variety of taxa including mermithid nematodes, water mites, fungi, microsporidians and Hymnoptera parasitoids (Steffan 1967; Tokeshi 1995; Roque & Trivinho-Strixino 2006), they have not been reported as a paratenic host for Nematomorpha larvae, popularly known as horsehair worms or hairworms.

Here we report the occurrence of *Beardius* and *Endotribelos* larvae (Diptera: Chironomidae: Chironominae) as paratenic hosts of Gordioidea (Nematomorpha: Gordioida) for the first time. The larval specimens were collected with a Surber sampler in a small stream in the Brazilian Atlantic forest, Boracéia, State of São Paulo, Brazil (S 23°39'14" W 45°53'28"). The organisms were deposited in the collection of the Laboratório de Entomologia Aquática da Universidade Federal de São Carlos, SP, Brazil. Four larvae of Gordioidea were present in *Beardius* and 65 in *Endotribelos*; in both cases, the hairworms were concentrated in the median region of the larval body (figure 1), being sampled one specimen of each genus.

The four stages of nematomorph life history are: egg, preparasitic larva that hatches from the egg, parasitic larva (dominant stage) that develops within an invertebrate and free-living aquatic adult. The main hosts are representatives of the insect orders Coleoptera and Orthoptera. Other host groups include spiders (Araneae), myriopods (Diplopoda and Chilopoda), crustaceans, and leeches (Poinar 1991).

The paratenic host is a kind of intermediate host where, after hatching, the preparasitic larvae are ingested by a small-bodied invertebrate or vertebrate host. The parasite burrows into the tissue of this paratenic host but then encysts and does not develop further. Only when the paratenic host is eaten by a predator or omnivore does the parasite continue its development. The diversity of paratenic hosts is great, extending from trematodes to vertebrates (Poinar 1991).

Acknowledgements

We would like to thank the State of São Paulo Research Foundation that sponsored this work within the BIOTA/FAPESP – The Biodiversity Virtual Institute Program (www.biotasp.org.br).

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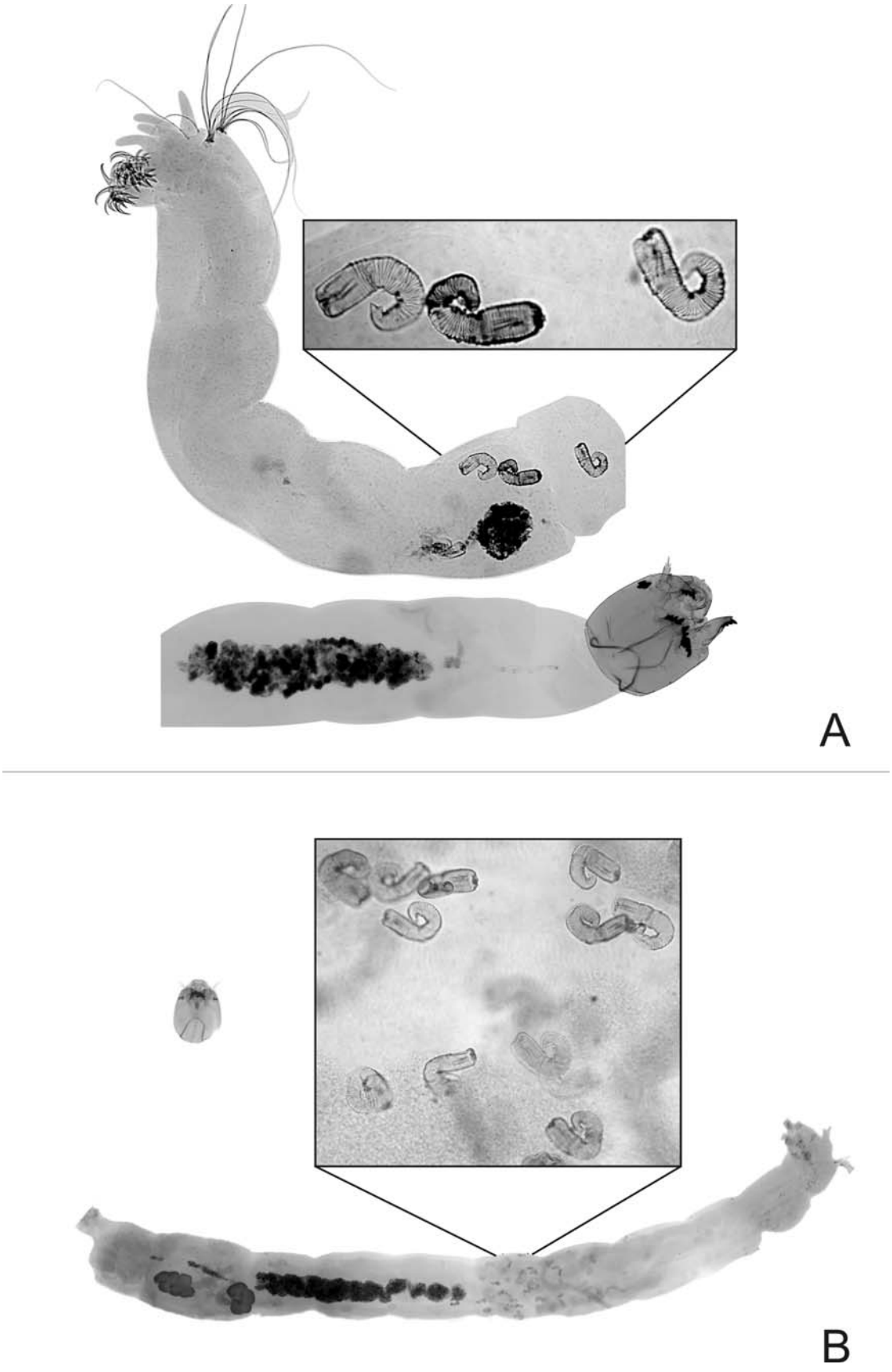


Figure 1. Chironomidae larvae: A) *Beardius*, B) *Endotribelos* as paratenic hosts of immature Gordioidea.

SHORT COMMUNICATIONS

Proceedings of the 16th international chironomid symposium in Madeira

The proceedings from the chironomid symposium in Madeira have now been sent to press and will soon be available as a supplement of the ***Boletim do Museu Municipal do Funchal (Natural History)***. The book contains 28 contributions from 75 different authors and totals 230 pages. A hard copy and a CD-ROM of the proceedings will be shipped to all participants as soon as they come off of the press. All articles will be downloadable from the symposium website in PDF format. Institutions can order additional copies of the proceedings from:

The Editor of Scientific Publications. Museu Municipal do Funchal (História Natural). Rua da Mouraria, 31, 9004-546 FUNCHAL, Madeira, Portugal. E-mail: mmf@cm-funchal.pt

Full reference:
Hughes, S.J. & Khadem, M. (Editors). 2008. Proceedings of the 16th international chironomid symposium. Boletim do Museu Municipal do Funchal (História Natural), Supplement 13: 1-230.

Contents:

Lencioni, V., Marziali, L. & Rossaro, B., Hyporheic chironomids in alpine streams.

Maasri, Alain, Stéphanie FAYOLLE & Evelyne FRANQUET, Epilithic chironomid community structure: is it a matter of algae?

Meltser Nikolay, Yechezkel Kashi & Meir Broza, Does polarized light guide Chironomids to navigate toward water surfaces?

Salmon Abdo Al-Shami, Che Salmah Md Rawi, Siti Azizah Mohd Nor & Abu Hassan Ahmad, Distribution and Abundance of Chironomidae (Diptera) In Tropical Rice Agroecosystem.

Syrovátka Vít & Karel Brabec, The response of chironomid larvae to hydraulic conditions: *Synorthocladius semivirens* (DIPTERA: CHIRONOMIDAE) in two different rivers.

Tóth, M., Móra, A., Kiss, B., Dévai, Gy., Chironomid communities in different vegetation types in a backwater Nagy-morotva of the active floodplain of River Tisza, Hungary.

Heiri, O & André F. Lotter, Chironomidae (Diptera) in Alpine lakes: a study based on subfossil assemblages in lake surface sediments.

Serieyssol, C.A., Edlund, M.B. & Ferrington, L.C., Namakan Lake: a challenging lake for paleolimnological studies.

Stefan Engels, Sjoerd J.P. Bohncke, Johanna A.A. Bos, Karin Helmens & Oliver Heiri, Chironomid-based inferences of local and regional environmental change during the early Middle Weichselian in Northeast Finland.

Bouchard, Jr. R.W. & L.C. Ferrington, Jr., Determination of Chironomidae thermal preferences and thermal partitioning among closely related taxa in a Minnesota stream using surface floating pupal exuviae.

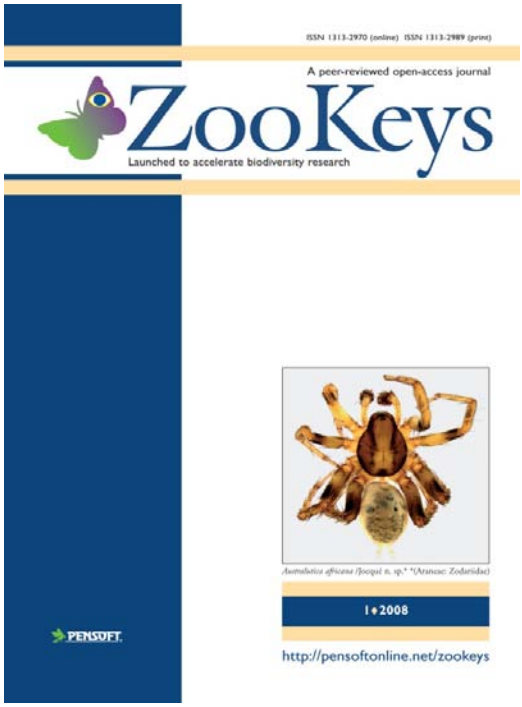
Sherk, Truman & Greg H. Rau, Emergence of *Ablabesmyia monilis* (Diptera: Chironomidae) from Findley Lake during warm and cold years

Caldwell, B. A., *Cricotopus oceanicus* (Packard), a new synonym of *Halocladius variabilis* (Staeger, 1839).

Langton, Peter H., A structural hermaphrodite *Micropsectra* (DIPTERA: CHIRONOMIDAE).

Trivinho-Strixino Susana & Giovanni Strixino, A new species of *Pelomus* Reiss, 1989 (DIPTERA: CHIRONOMIDAE) from Southeastern Brazil, with the description of immature stages.

FOR THOSE WHO WANT THEIR WORK RAPIDLY KNOWN TO THE WORLD!



Scientific publisher Pensoft Publishers has launched a new open-access journal – *ZooKeys* – on systematic zoology. The journal will be published both online and in print. Journal's website and the first published issues may be viewed at www.pensoftonline.net/zookeys

ZooKeys is a peer-reviewed, open-access, rapidly disseminated journal launched to accelerate research and free information exchange in taxonomy, phylogeny, biogeography and evolution of animals. The journal seeks to apply the latest trends and methodologies in publishing and preservation of digital materials to meet the highest possible standards of the cybertaxonomy era.

ZooKeys will publish papers in systematic zoology containing taxonomic/faunistic data on any taxon of any geological age from any part of the world with no limit to manuscript size. The journal will consider for publishing works on topics such as new descriptions of taxa, if they are accomplished with proper diagnoses, keys and/or revision of at least at species group level; taxonomic revisions of extant (or "recent") and fossil animal groups; checklists and catalogues; phylogenetic and evolutionary analyses; papers in descriptive and/or historical biogeography; methodology papers; data mining and literature surveys; monographs, conspecti, atlases; and collections of papers, Festschrift volumes, conference proceedings. Author Guidelines may be found at http://pensoftonline.net/zookeys/index.php/journal/about/submissions or downloaded as PDF-file at http://pensoftonline.net/ZooKeys-author-guidelines.pdf

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The procedure started last year to include the actual year in the listings of the current bibliography seems to meet with the readers' interest. So apart from supplements to the last two preceding years the publications of the present year are shown: one citation per day yet, which gives the average speed of publishing with regard to chironomids. At the beginning, a number of Turkish titles are repeated in correct orthography that was defective in *Chironomus Newsletter 20* last year: one letter was consistently omitted in transforming a doc file into a pdf, rendering the words fragmentary. The compilation was achieved, as usual, from many sources: databases, tables of contents of journals, references and citations of papers, inspection of many periodicals, lists provided by authors (thanks to you!). In particular, publisher issued search alerts proved to be rich in results. As a rule, only printed titles are reported here with the occasional, but obviously increasing, exception of online-only journals (PLoS or BioMed Central journals e.g.). Titles announced "in press", even with available DOI numbers, are not considered before printing. In general, online information should be retrieved elsewhere; best check the chironomid home page for eventual references regularly, or use individual websites with a host of chironomid-related data.

Corrections to Chironomus Newsletter 20

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