CHIRONOMUS

NEWSLETTER OF CHIRONOMID RESEARCH

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No. 10 **April, 1997**

13th International Symposium on Chironomidae

Dear Colleagues,

The 13th International Symposium on Chironomidae is approaching rapidly. By now the confirmed number of participants is c. 140, and some last minute registrations are expected to come.

The regular **registration fee** is DEM 350.- per person. Concession fees are available to unsallaried colleagues at a rate of DEM 175.- per person. The unfortunate high fees are due to severe, unexpected cuts in state subsidies towards the symposium. The registration fee includes participation in the mid-conference tour to the Black Forest (Sunday, 7 September) and the wine-tasting farewell party (Tuesday, 9 September). However, it does not cover the expenses for the Proceedings volume, which will cost an extra amount of c. DEM 75.- (no concession rate available). The post-conference tour will cost DEM 300.- per person.

Payment should be made directly in Freiburg at the registration desk in order to avoid high international bank fees. Payment in cash (Deutsche Mark), euro-cheques or DEM-traveller-cheques is preferred. Any other form of money transfer has to be charged with an extra fee of DEM 20.-.

Conference contribution: Oral presentations should be designed to fit 10 minutes talk plus 5 minutes discussion. Poster presentations should be prepared to fit a board size of 138 cm (height) times 100 cm (width).

Publication: The Proceedings are planned to be published as a supplement volume of SPIXIANA. Manuscripts have to be delivered at the conference. Length per contribution should be limited to 4 printed pages (c. 55 000 key strokes per page). Costs for exceeding the page limits will have to be charged to the author(s). All papers presented at Freiburg will be included in the Proceedings. Contributions by people not attending the symposium cannot be considered for publication. The Proceedings will have an ISBN, as will the abstract booklet which will be handed over at registration in Freiburg.

The **post-conference** tour will go by touring-bus to Munich leading through the northern piedmont area of the Alpes to see the beautiful lakes and moorlands. It will take 4 days, including 3 over-night accomodations (see *CHIRONOMUS* 9: 7). The tour will be guided by E. J. Fittkau, who will provide all registered participants with detailed information about the tour. Price: DEM 300.- per person, will be collected in cash at the reception.

Easiest **access to Freiburg:** When arriving at Frankfurt Airport look for the railway station within the underground area of the airport. There are Intercity (IC) or Inter-city Express (ICE) trains to Freiburg (via Mainz or Frankfurt). Trains go at hourly intervals, and take 2.5 to 3 hours to reach Freiburg (cost c. DEM 90.-).

When arriving at EuroAirport Basel-Mulhouse-Freiburg, use exit to France!! There is a convenient bus service to Freiburg called "AirBus" (no worries, it won't take off). It goes frequently in one to two hourly intervals, and takes 1 hour to Freiburg. The fare is DEM 20.- per person..

Accomodation: Please make your own reservations. A good option to do so is to contact the tourist information office of Freiburg under the following address:

FIT-Freiburg Incoming and Touristik,
c/o TIBS GmbH,
Yorckstrasse 23,
D-79110 Freiburg,
Phone +49 761 8858145,
Fax +49 761 8858149,
e-mail tibs@rrz.freiburg.de.

There are two low-price categories, named "C " and "D", which are about DEM 100.- per night. (Camping may be a cheaper alternative, also available via TIBS.) The Freiburg Youth Hostel lies in c. 5 km from the conference venue (Address: Kartäuser-strasse 151, D-79104 Freiburg. Phone +49 761 67656; Fax +49 761 60367). It is accessible by public transport.

Freiburg Fund: To support colleagues in dire financial straits, a fund is being set up. All who live under more favourable conditions are asked to contribute and donate to this fund. Your help will be deeply acknowledged by colleagues who otherwise would be excluded from participating in the symposium. For those of you interested in contributing to the fund, please contact and/or send a cheque to Prof. Wolfgang Wülker. The organizing committee thanks you very much for your help in advance.

We hope to see all of you,

Odwin Hoffrichter, **Wolfgang Wülker** and **Ernst Josef Fittkau**

Preliminary Programme:

4 September: 4 p.m. Registration opens, and there will be an informal get-together in the new building of the Institute of Biology of Freiburg University

5 September: 9 a.m. Opening, business of the day, Thienemann lecture, 1st scientific session - break - 2.30 p.m. 2nd scientific session.

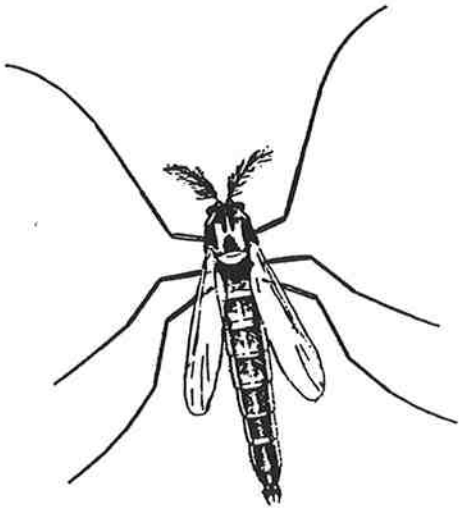
6 September: 9 a.m. 3rd scientific session - break - 3 p.m. 4th scientific session.

7 September: Mid-conference tour to the Black Forest.

8 September: 9 a.m. 5th scientific session - break - 2.30 p.m. 6th scientific session: posters.

9 September: 9 a.m. 7th scientific session - break - 2.30 p.m. 8th scientific session, business session; Evening: farewell-party.

Wednesday to Saturday (10.9.-14.9.): Post-conference tour.



ABSTRACTS - absolutely last call ...

... to all who have failed to submit their abstract, although they intend to present a paper at the Freiburg symposium. Please, send them immediately to O. Hoffrichter. The abstract has to have the format A5 as it will be scanned for being published. The abstract booklet will have an ISBN. All registered participants will receive a copy at the symposium. Additional copies can be purchased for a moderate price (c. DEM 10.). For details contact Odwin Hoffrichter.

ALBERT-LUDWIGS-UNIVERSITÄT FREIBURG
INSTITUT FUER BIOLOGIE I, HAUPTSTR. 1,
D-79104 FREIBURG, Germany [note our new address]

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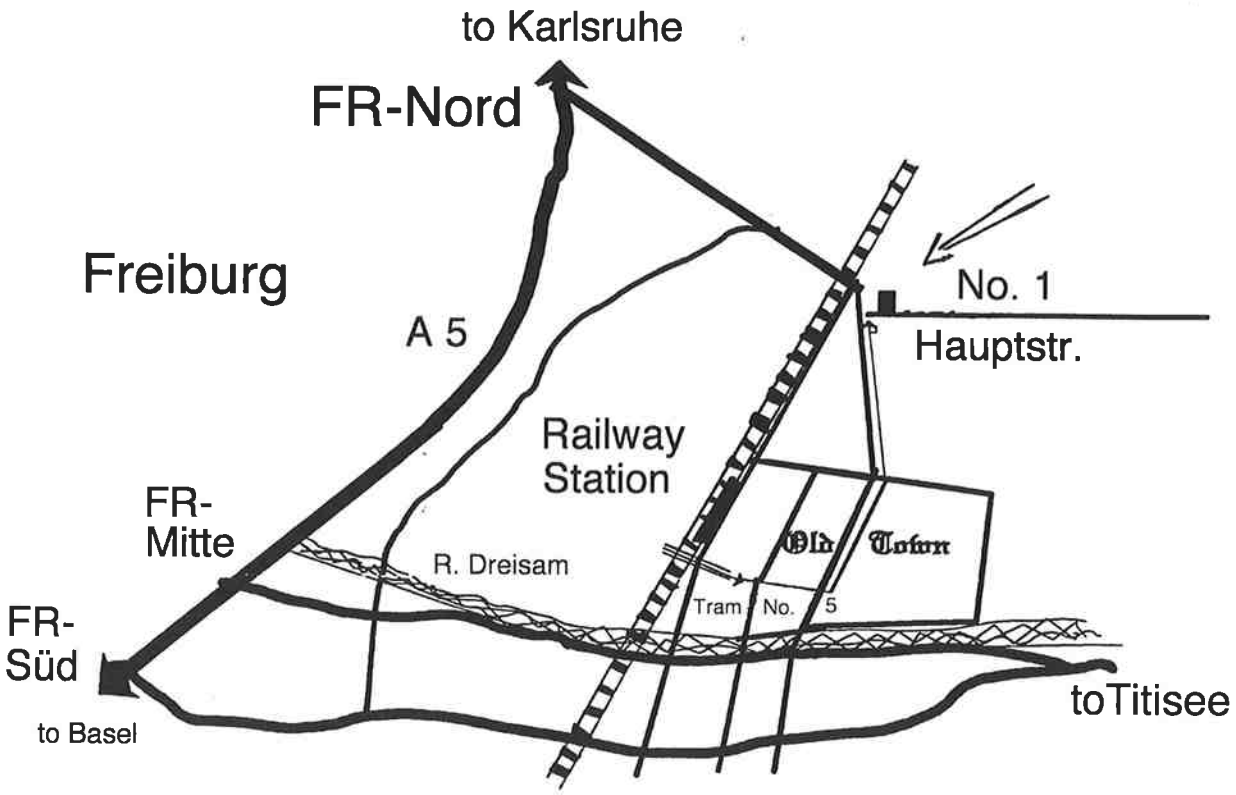
E-mail: hoffrich@ ruf.uni-freiburg.de
Wolfgang Wülker, Fax +49 761 203 2596, Tel. +49 761 202 1194,
E-mail: wuelker@ ruf.uni-freiburg.de
Ernst Josef Fittkau, Münchnerstrasse 9, D-82057 Icking, Phone +49 8178 5721

Internet information about the venue at:
http.//www.ruf.uni-freiburg.de/univ/homeneweng.html
and http:// www.ruf.uni-freiburg.de/regio/english/firstpage.html.

Sketch of access to venue, not drawn to scale.



South of the railway station (currently in reconstruction) at tramway bridge crosses the rails. You may take moving staircase or elevator to reach tram line 5, heading for Hornusstr. Driver sells tickets. Leave at 5th station Haupstrasse.

Short communications

Peculiar swarming behaviour of *Corynoneura* species from a glacial lake in the Himalaya

In the summer 1993, our working group undertook an expedition to Lake Chandertal in the northwest Himalaya to study Chironomidae. The ultra-oligothrophic lake lies c. 4300 m a.s.l. in the remote Lahaul-Spiti Valley. It occupies a shallow trough on the left bank of the Chandra river, into which it drains, and appears to have been formed in the basin of an ancient glacier. The eastern lake shore is littered with debries of the frequent avalanches coming from the Great Himalayan Range with snow capped peaks rising above 6000 m a.s.l. This littoral zone, rich in debries, is the specific habitat of three *Corynoneura* species, namely *C. carinata*, *C. chandertali* and *C. lahuli*, described from this site by Singh & Maheswari (1987).

Most chironomid species go to air to form flying mating swarms. The observed *Corynoneura* species behaved differently and turned out to be excellent water surface dwellers. Imagines were aggregated to groups of 10-15 individuals on a water surface area of about 0.5 m^2, executing fascinating and swift gyrating movements. *C. carinata* showed a clockwise zigzag circular movement, while *C. chandtali* displayed anticlockwise circular motions. *C. lahuli* showed somewhat rectangular gyrating patterns.

During gyration the males appear to chase the female rather furiously until they succeed. The loss of flight capacity can be related to several structural features, such as partial atrophy of the wing muscles, size reduction of antenna and loss of plumose antenna.

We feel this information could support a hypothesis on speciation in Chironomidae due to habitat isolation in remote areas of the northwest Himalaya.

Literature cited:
Singh & Maheswari, 1987. Ann. Entomol. 5: 11-20

Girish Maheshwari & Geeta Maheshwari
School of Entomology, St. John's College
Agra 282 002 (India)

A handy bioassay for genotoxic effects of heavy metals: IV chromosome of *Chironomus riparius*

A cytogenetic working group was founded in early 1995 by **Paraskeva Michailova** (Institute of Zoology, Bulgarian Academy of Sciences, Sofia), **Gabriella Sella, Liliana Ramella** (Department of Animal Biology, Turin University), and **Ninel Petrova** (Institute of Zoology, Russian Academy of Sciences, St. Petersburg). Our research interests are focussed on Chironomidae as a test-system for genotoxic effects caused by heavy metals and other kinds of pollutants. Since 1995 we organized four meetings in Turin and Sofia, each work-shop for a period of two weeks, that enabled us to cooperate. The meetings were possible thanks to fundings from the NATO Scientific Affairs Division, Italian CNR (Çomitato Nazionale Ricerche), Turin University and the Bulgarian Ministry of Sciences Education and Technology.

We studied genotoxic effects of heavy metals on polytene chromosomes of *Chironomus*

riparius Meigen 1804 at two polluted Piedmont sites (Moncalieri on the Po river, and Santena on the Banna river). At both sites, concentrations of Cd, Zn, Cu, Pb, Cr, Mn and Fe were estimated in both sediment and *Chironomus* larvae. The former was done by **Vincenzo Zelano** (Department of Analytical Chemistry, Turin University), and the latter by **Francesco Regoli** (Department of Biomedicine, Pisa University).

In both populations all individuals studied showed various kinds of chromosome rearrangements and functional changes in chromatin activity. Localized DNA underreplications and amplifications were observed, and a high frequency of ectopic pairings and chromosome breakages resulting in deletions and inversions, new puffs and heterochromatin condensation events. The VI chromosome was most affected. Very often deletions of Balbani rings b and c were observed that led to formation of a pompon-like IV chromosome. We hypothesize that these effects were provoked by environmental agents. Heavy metal concentrations (mainly Chromium) were sufficiently high in larvae of both populations to allow us to identify genotoxic effects. However, morphological malformations were not observed. These findings indicate that the appearance of somatic chromosomic aberrations can be considered a more sensitive stress signal than morphological malformations.

To test genotoxic effects of chromium, the most important heavy metal pollutant at the study sites, we established an unpolluted laboratory strain of *C. riparius*. Like in the larvae from our field sites, IV chromosomes of the laboratory strain were very sensitive to Cr treatment, often showing a pompon-like appearance, a somatic pericentric inversion, and a great variability in Balbani rings activity. Hence we tentatively conclude that for its sensitivity and very simple banding pattern, the IV chromosome of *C. riparius* provides a handy laboratory bioassay for genotoxic effects of heavy metal pollutants.

We plan to test for genotoxic effects of other heavy metals and study other populations of *C. riparius* from other polluted sites in Italy, in order to describe the way in which genome mobilization and naturally occurring chromosomal polymorphisms enables *C. riparius* populations to adapt to polluted sediments. The results from these studies will be published in the near future. Results from the cytogenetic analysis of the Moncalieri population have already been published in Michailova et al. 1996 (Genetica 98: 161-178).

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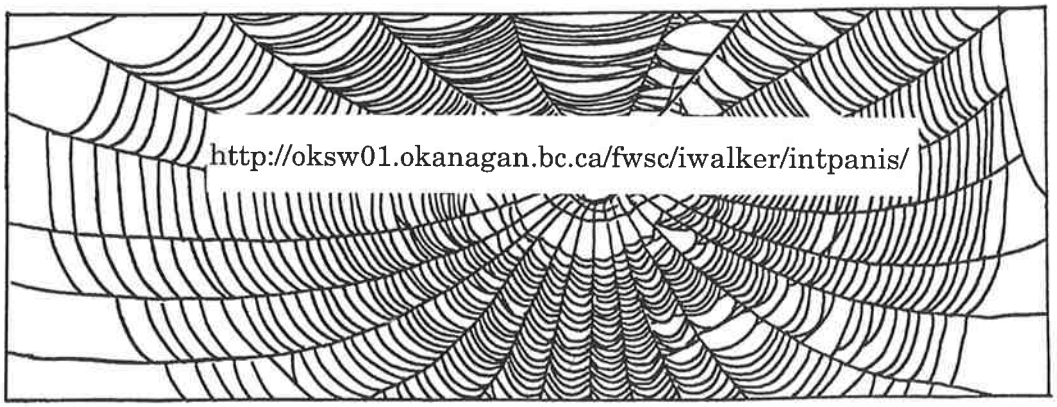
10123 Turin, Italy



Review of karyotypes of Palaearctic Diamesinae and Prodiamesinae

When closely related chironomid larvae cannot be distinguished morphologically, karyological analysis is widely used. In the review, I analysed published as well as original data to find general patterns, specific to these two poorly studied subfamilies.

Currently there are six karyologically studied genera among the 13 described Palaearctic genera of Diamesinae: *Diamesa* Mg. (Kuberskaya, 1979; Michailova, 1989; Petrova, 1980), *Pseudodiamesa* G. (Kuberskaya, 1979, Zacharias, 1984), *Pagastia* Ol. (Kerkis, 1992; Kerkis et al., 1996), *Sympotthastia* Pag. (Kerkis, 1992), *Lappodiamesa* Ser.-Tos. (Kerkis, 1992), and *Potthastia* K. (Makarchenko, Ivanchenko, 1997). In respect to the karyotype structures, the Diamesinae are not homogeneous and can be divided in two groups.

One group includes species of genus *Diamesa*, *Sympotthastia*, *Potthastia* and *Lappodiamesa*. This group has the following traits in common: 2n=8, three pairs are metacentric and one is acrocentric. Three long polytene chromosomes and one short have been detected in the salivary gland cells. Centromeric regions are weakly marked. The karyotype of each species is distinct in number and location of active sections. A nucleolus is commonly present on the IV chromosome (except *D. leona* Rob.), the long polytene chromosomes may have an additional nucleolus. The number of Balbiani Rings vary from one to five. Homologs of polytene chromosomes tightly pair along the entire length of the chromosomes, with the exception of *S. repentina* Mak. and *L. willasseni* Mak. The latter shows indistinct disk pattern in the IV chromosome, appearing like a pompon.

The other group inludes the genera *Pseudodiamesa* and *Pagastia*. They have in common that polytene chromosomes form a chromocenter, a structure that is easily destroyed. As a result we see chromosomal arms, which can be determined as acrocentric chromosomes (2n varied from 6 to 14). So identification of the correct chromosomal number is only possible by means of the metaphase plates. Another difficulty in karyotype analyses of this group is the presence of a pompon-like chromosome, which is thought to be the B-chromosome (Michailova, 1977) or a wandering nucleolus (Petrova, 1983). Prodiamesinae include four known genera, two of which are studied in respect to their karyotypes: *Monodiamesa* K. (Ivanchenko, Kerkis, 1996) and *Prodiamesa* (Michailova, 1977; Kerkis et.al., 1996; Zacharias,1979). Both have 2n=6, their homologs of polytene chromosomes are tightly paired, and the number of active regions is small, comprising one nucleolus and one Balbiani Ring. However, the two genera of this subfamily are clearly distinct in some features: *Monodiamesa* species have three long polytene chromosomes with well marked centromeric regions. *Prodiamesa* species have two long and one pompon-like chromosomes, which form chromocenter. Here the chromosomal number can only be determined by means of the metaphase plates.

Literature cited:
Kerkis, 1992. Netherl. J. Aquat. Ecol. 26: 157-162.
Kerkis, Ivanchenko & Makarchenko, 1996: Cytologia 38: 384-389.
Kuberskaya, 1979. Karyosystematics of invertebrates. - Proc. Zool. Inst. Acad. Sci. USSR. Leningrad: 47-50.
Ivanchenko & Kerkis, 1996. Karyosystematics of invertebrates III. Moscow: 31-32.
Makarchenko & Ivanchenko 1997. Jpn. J. Med. Ent. Zool., in press.
Michailova, 1977. Zool. Beiträge: 387-404.
Michailova, 1989. Acta Zool.Fennica:1-107.
Petrova, 1980. Genetica 52/53: 275-279.
Petrova, 1983. Zool .J. LXII: 69-74.
Zacharias, 1979. Chromosoma 72: 23-51.
Zacharias, 1984. Chromosoma 89: 263-273.

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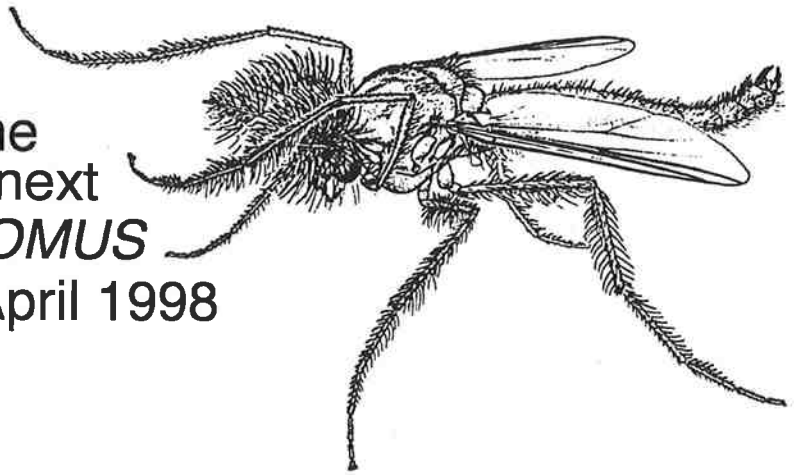
Deadline
for the next
CHIRONOMUS
1st of April 1998



Biodiversity in streams of the *Serra do Cipo* State Park, MG - Brazil
A research project of the Universidade Federal do Minas Gerais

The Serra do Cipo is a mountain range in the central part of Minas Gerais state, south of the Cordilheira do Espinhaco (19-20°S, 43-44°W). Vegetation at higher altitudes (1200-1400 m a.s.l.) is a typical "campos rupestres", in the lower areas (less than 1000m a.s.l.) a typical "cerrado" formation is found. The Serra do Cipo is the watershed of the two most important river basins of Minas Gerais: The Rio Doce and the Rio São Francisco.

The main purpose of this project is to assess the biodiversity of the macrozoobenthos of streams under both natural situations and impacted by man. In the ten selected study streams, very basic research has to be done, as the aquatic fauna of the Serra do Cipo is poorly described and the biodiversity approach is based on faunistic inventories. The project is focusing on the three main benthic groups: Ephemeroptera, Trichoptera and Diptera - in particular Chironomidae - with the aim to obtain information on the use of different food sources.

The most frequent chironomid genera recorded so far are *Cricotopus*, *Corynoneura*, *Ablabesmyia*, *Larsia*, *Chironomus*, *Polypedilum*, *Goeldichironomus*, *Beardius*, *Stenochironomus*, *Nimbocera*, *Thienemanniella*, *Lauterborniella* and a variety of Tanytarsini.

The results of our project will contribute to the ability to assess the stability level of mountain stream ecosystems in central Brazil, and to establish a theoretical and practical framework for a biomonitoring program of the rivers of the State Park of Serra do Cipo. The project is financially supported by CNPq and FAPEMIG. Our working group is very interested in getting into contact with other researchers interested in the biodiversity of chironomid communitites as a tool for environmental management and conservation biology! So, please contact:

Marcos Callisto
Lab. Ecologia de Bentos/Limnologia
Universidade Federal de Minas Gerais, ICB
Cx. P. 486, CEP. 30.161-970
Belo Horizonte, MG, Brasil
Tel: +55 31 448 13 58
Fax: +55 31 441 54 81
e-mail: callisto@mono.icb.ufmg.br

Notice - Board

A practical key to the genera of pupal exuviae of the British Chironomidae

Ronald S. Wilson revised and up-dated the "practical key" of 1982 by R.S. Wilson and J.D. McGill. The new edition expands on the Chironomid Pupal Exuvial Technique (CPET) for monitoring and quality assessment of running waters.

The key presents genera, subgenera and selected species groups of chironomid pupal exuviae, and includes sketch-type illustrations of every feature used in the key. (Aim of the key is the easy identification of pupal exuviae; it is not intended to be a taxonomic work.) The key provides furthermore a list of genera and selected species with CPET pollution tolerance categories and notes on ecology, and an introduction to river assessment using CPET. It is clearly and concisely written, includes practical notes for fieldwork and sample processing, and discusses pros and contras of the method.

A selected bibliography, glossary and index to the genera in the key round off the booklet, which can be ordered for £12 (1-4 copies) or £10 (5 copies or more) from:

Dr Ronald S. Wilson
Mudgley Elms
WEDMORE, Somerset
England BS28 4TH

Non-British customers: Please send either sterling notes, or a sterling cheque drawn on a British Bank, or a eurocheque.
To offset bank charges etc.: If paying by non-British cheque, please add the equivalent of £5 to all cheques less than £100, and £8 to cheques over £100. If enclosing non-British currency notes, please add 2% of total cost.

Database of Brazilian Chironomidae

During the first symposium on Brazilian chironomids, in November 1994, it became evident that chironomid research in Brazil (and other countries of South America) is poorly coordinated. All colleagues expressed the need of a central archive where publications and chironomid material is - or can be stored.

Dr **J. L. Nessimian**, head of the Lab. of Entomology of the Federal University of Rio de Janeiro, has offered time and space for setting up such a database on Brazilian chironomids. To get things going, we certainly rely on your active support. So, if you are interested to contribute in one way or another, please contact:

Angela M. Sanseverino
Universidade Federal do Rio de Janeiro
I. B. - Lab. Entomologia
Cx. P. 68044 / CEP 21944-970
Rio de Janeiro -RJ

Toward a world-wide reference database of Chironomidae names, etc.

Wouldn't You, too, like to be able to use a standard reference for the basic units You work with, the species of Chironomidae? Wouldn't it be nice to have easy access to tools like a list of all the taxa previously reported from the country You work in?

With the recent surge of technology weaving the world-wide web of information links ever more tightly, each member of the scientific community should soon have some way of adding and retrieving bits and (entire schools of) pisces to and from the big pool. And in the group we are studying, the publication of the Neotropical catalog (Spies & Reiss 1996, see page 12 of this issue!) for the first time opens up the possibility of global coverage by unifying the databases for the major world regions currently existing in separate.

Apart from the obvious benefits to individual researchers, institutionalizing such a service within our share of taxonomy could contribute to putting chironomidologists at the forefront of the global movement seriously taking stock of what's left of our planet's biodiversity. And with the system of regional representatives for distribution of the newsletter You are reading, we have already established a structure serving as a model for one possible way of organizing the flow of information to a common taxonomic database without putting all the weight on one central pair of shoulders.

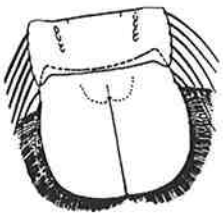
Obviously, there are other shapes such an institution could take, and many aspects have to be considered, such as the financing of initial and year-to-year costs, or means to ensure that the data entered and maintained are as complete and correct as possible.

Therefore, I would hereby like to invite You to participate in the discussions necessary to develop the conditions under which such an effort could be promising, practical, and fruitful for all of us. I intend to take the opportunity provided by the 13th International Symposium at Freiburg, to bring together as many opinions and ideas on this subject as possible, and to then, hopefully, formulate the guidelines by which to proceed.

If You are interested, and are coming to Freiburg, please, try and make some time - maybe on the plane or train while travelling to the meeting - to organize Your thoughts on this proposal, to think about what You would need or expect from such a service, and about what and how You Yourself might be able to contribute. If You will not be able to attend the Symposium, or if You just don't want to wait until then to discuss things, let's exchange opinions by e-mail, using the "Chironomidae-L" listserver as a forum. (If You haven't heard of the latter yet, inquire with Hayley Richards or Peter McEwen of Cardiff, UK: RichardsH@cardiff.ac.uk, Mcewen@cardiff.ac.uk).

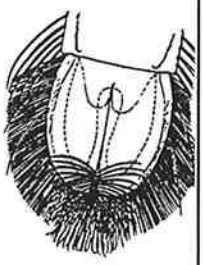
Looking forward to Your comments,

Martin Spies
Schraemelstr. 151, D-81247 Muenchen, Germany
e-mail: spies@zi.biologie.uni-muenchen.de
Fax: +49 89 8107-300



Coelotanypus spp. and *Clinotanypus* spp.

Who is interested and has time to describe reared Coelotanypodini from the Pantanal wetlands?



During my studies on benthic communities of Brazilian lowland streams, I found *Coelotanypus* to be a quite common benthic element. Hence I started to rear this genus, and soon it turned out that I was dealing with at least eight species. There are furthermore two reared *Clinotanypus* species, samples from flood-pools on the riverside (I never found them in the river itself, while *Coelotanypus* spp. lived in both streams and pools). Most species displayed a beautiful, vivid coloration, so I took photographs to record these features which usually disappear in preserved material.

If you have time to describe "my" Coelotanypodini, I shall be happy to provide you with data on the sampling sites, observations on the biology of at least six species, and descriptions of the egg masses of three species. There are photos of the egg masses as well - and all this will form part of the 'information package' I shall happily send to you along with the reared species (L, P, I).

Ulrike Nolte c/o P.S. Cranston
e-mail (effective until Nov. 97):
haase@closer.brisnet.org.au

Promise You will describe and publish them still this millennium ... and they are Yours.

Cranston P.S. 1996. Identification guide to the Chironomidae of New South Wales.
AWT EnSight, West Ryde NSW. 375 pp.
ISBN 0 7310 8850 6

The guide on immature chironomids of Australia begins with an introductory section on slide preparation, morphology of larvae and pupae, and a key to subfamilies. The key itself leads to genera of Podonominae, Aphrotheniinae, Tanypodinae, Diamesinae, Telmatogetoninae, Orthocladiinae and Chironominae, including so far 274 taxa. It largely matches with the 1994-workshop guide (see *CHIRONOMUS* 6: 22).

Knowledge on the immature stages of chironomids of Australia is experiencing an upturn since 1988, when Dr Peter Cranston started to work in Australia, and with this identification guide the state-of-the-art is given. The guide is subject to permanent addition and completion thus presenting both validly named taxa and taxa with preliminary code names, along with the exact sampling sites. This guide is an excellent example for a tool helpful to people interested in a region where on historical grounds no established identification keys exist. While making current knowledge informally available (i.e. no publication for nomenclatural purposes) to a broader community, it enables a conclusive communication about formally non-described species (by means of code names along with figures) and with this, renders the work of both taxonomists and limnologists more effective. The guide costs AUS $ 60.- and can be ordered from:

Australian Water Technologies Pty Ltd
51, Hermitage Road
West Ryde NSW 2114, Australia

Last gap filled

Catalogue and Bibliography of Neotropical Chironomidae
authored by **Martin Spies** and **Friedrich Reiss**

This elaborate catalogue provides a comprehensive inventory of Chironomidae from the Neotropical faunal region, the last major biogeographic zone previously lacking such treatment. Mexico, per definition divided by the Neotropical/Nearctic boundary - which is, however, not exactly defined on a local scale - is covered in its entirety. The resulting slight overlap with the Nearctic catalogue (Oliver et al. 1990, Oliver & Dillon 1994) safeguards against erroneous exclusions of taxa due to the fuzzy boundary definition.

The catalogue contains 709 validly named species and 155 validly named genera in 10 subfamilies. Changes in nomenclature are made for 13 species, involving replacement names, new generic placements, elevations to species level, and new synonymies.

The taxonomic information comprises three parts: (i) In the main catalogue, the information provided with each species name includes taxonomic status, publication data (authorship, date, page number(s)., nomina nuda), variant spellings, the life stage(s) originally described, and the distribution by countries. (ii) A separate listing presents the reported Neotropical distribution and references for those genera so far only recorded through unnamed species. (iii) A detailed commentary on individual taxa explains taxonomic background, problems, and solutions proposed by the authors.

The bibliography gives all titles verified by the authors to contain information on Caribbean, Central and South American Chironomidae, as well as other references cited. Especially useful is the marking of entries containing firsthand data on Neotropical chironomids.

An alphabetical index of treated genera and species names rounds off the catalogue, indicating both, the taxonomic status of names and the page(s) for further details.

Since the catalogue is intended to be updated in the future, all readers are asked to notify the authors of any corrections, additions, or other relevant information.

Literature cited:
Oliver, D.R., Dillon, M.E. & P.S. Cranston 1990. Res. Branch Agriculture Canada, Public. 1857/B.
Oliver, D.R. & M.E. Dillon 1994. Proc. Entomol. Soc. Washington 96: 8-10.

Ulrike Nolte

The exact bibliographic reference is: Spies M. & Reiss F. 1996. Catalog and bibliography of Neotropical Chironomidae (Insecta, Diptera). Spixiana Supplement 22: 61-119.

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Chironomidae-L

Recently I have set up a listserver (accessed via e-mail) dealing with chironomids. This mailing list will provide a means of communication and information exchange among persons interested in chironomids. Both researchers and students will be able to exchange news, ideas and requests on all aspects of chironomid biology. Anyone can subscribe and post to this list. To subscribe send a message with the text:

Subscribe Chironomidae-L
to: Majordomo@cf.ac.uk

At the moment the list has approximately 70 subscribers. Members can expect 1/2 postings per week but hopefully this will increase as the number of subscribers increases. Chironomidae-L is archived and so all previous discussions can be accessed.

I look forward to your input.

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Chironomid homepage
As many of you are well aware, chironomid workers are about as mobile as the midges the are chasing. For current updates on address changes please review the chironomid home-page. Note that even the homepage has a new address (see page 6 and Ian's address on the last page).

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FROM THE MUSEUM OF CHIRONOMID CURIOSITIES

Midge swarms: The smoking old pentagonal tower (Wasmund 1928, after an engraving of 1812)

Illusion of a blaze by swarming chironomids

by Dr Otto Harnisch, 1950

Finally, Thienemann (1924) mentions that according to reports by firemen the illusion of a fire in the Nikolai Church in Plön was caused by swarms of chironomids (14. VII. 1923).

I now had the opportunity to observe myself a case very similar to that described by Thienemann, and would like to report it briefly in the following. On the evening of 6.VI.1948 we were sitting together for a discussion in the vicarage at the Plöner Markt, opposite the Nikolai Church, when at 20.30 hours a policeman came in, reported that the church-tower was on fire and immediately called the fire-brigade. Instantly, my first thought were the chironomid swarms which I read about, but my second thought was that the swarming-time of the main species of our lakes (*Chironomus anthracinus* = *bathophilus*) was over. When I stepped outside and looked up to the church-tower, I was convinced that there was indeed a fire: In the 60 m high spire of the church are several small windows at about 55 m height, and dense clouds of smoke appeared to emerge from these. Only prolonged observations and the aid of binoculars revealed that these clouds did not behave like clouds of smoke. They did not move like clouds of smoke do, but remained comparatively still, drifting a little only now and then in a light breeze of the calm, warm summer evening. In the meantime, several gentlemen, who had undertaken the rather cumbersome tour up the church-tower, also brought the news that there were no signs of a fire and men of the fire-brigade, rushed to the scene, already knew this phenomenon in our town (church and castle) too well to have raised the alarm.

Through the friendly assistance of some safely climbing local boys, I acquired a larger portion of the swarming midges. They were identified as *Tanytarsus gregarius* K. (= *bathophilus* K.) by Dr Strenzke. As far as I know is this the first time that a chironomid, which created the illusion of a fire, could be identified at the species level. This species is found in our lakes, namely in the Großer Plöner See, which is a particularly eutrophic lake. Especially at the time of full circulation, appreciable numbers occur up to a depth of about 20 m. - On the grounds of the described observation and the cases reported earlier, I believe to be able to say that illusion of a blaze by mass-swarming of chironomids are usually caused by smaller species (Tanytarsi, or Orthocladiarien), which prefer to seek out higher swarming marks such as towers. The swarm of the larger species (e.g. *Chironomus*) generally keep at lower levels.

Current Bibliography

[excerpt from: Harnisch O. 1950. Archiv für Hydrobiologie 43: 32-33, kindly translated by P. Haase]

Current Bibliography: 1 Jan. 1996 - 31 Dec. 1996
by **Odwin Hoffrichter**

Preface. Due to the recent removal of the Insitute of Biology of the Freiburg University, and the tasks linked with organizing the 13th International Symposium of Chironomidae, it was not possible to do extensive database search as it was done in earlier issues of this series. Therefore, the following list has to be completed in the next issue.

Supplement to 1995 Current Bibliography

Adámek, Z. and Sukop, I. 1995. Zooplankton and zoobenthos development in ponds stocked with tench fry in mono- and polycultures with herbivorous fish.- *Polskie Archwm Hydrobiol. 42*: 181-186.

Adams, W. J., Biddinger, G. R., Robillard, K. A. and Gorsuch, J. W. 1995. A summary of the acute toxicity of 14 phthalate esters to representative aquatic organisms.- *Envir. Toxic. Chemy 14*: 1569-1574.

Barrett, K. L. 1995. A comparison of the fate and effects of prochloraz in artificial and natural sediments.- *J. aquat. Ecosyst. Hlth 4*: 239-248.

Baudon, C. 1995. *Écologie des Chironomidae (Diptera, Nematocera) d'un marais charentais: structure spécifique, phénologie et densité des populations d'adultes.* - Thése, Univ. Rennes 1, No. 1113. 170 pp.

Becker, D. S., Rose, C. D. and Bigham, G. N. 1995. Comparison of the 10-day freshwater sediment toxicity tests using *Hyalella azteca* and *Chironomus tentans*.- *Envir. Toxic. Chermy 14*: 2089-2094.

Besser, J. M., Kubitz, J. A., Ingersoll, C. G., Braselton, W. E. and Giesy, J. P. 1995. Influences on copper bioaccumulation, growth, and survival of the midge, *Chironomus tentans*, in metal-contaminated sediments.- *J. aquat. Ecosyst. Hlth 4*: 157-168.

Bickerton, M. A. 1995. Long-term changes of macroinvertebrate communities in relation to flow variations: the River Glen, Lincolnshire, England.- *Regul. Rivers Res. Mgmt 10*: 81-92.

Bidawid, N. und Fittkau, E. J. 1995. Zur Kenntnis der neotropischen Arten der Gattung *Polypedilum* Kieffer, 1912. Teil I (Diptera, Chironomidae).- *Entomofauna 16*: 465-534.

Bird, G. A., Schwartz, W. J. and Joseph, D. L. 1995. The effect of 210Pb and stable lead on the induction of menta deformities in *Chironomus tentans* larvae and on their growth and survival. - *Envir. Toxic. Chemy 14*: 2125-2130.

Bitusik, P. 1995. A biological assessment of the Turiec river and its selected tributaries using chironomid pupal exuviae (Diptera, Chironomidae). - *Dipterol. bohemoslov. 7*: 17-26.

Bitusik, P. 1995b. A comparative study of the selected man-made reservoirs in the Banská Stiavnica mine region (central Slovakia) based on chironomid pupal exuviae assemblages (Diptera: Chironomidae).- *Acta Fac. Ecol. Zvolen 2*: 45-52.

Bremle, G. and Ewald, G., 1995. Bioconcentration of polychlorinated biphenyls (PCBs) in chironomid larvae, oligochaete worms and fish from contaminated lake sediment.- *Mar. Freshwat. Res. 46*: 267-273.

Bridcut, E. E. and Giller, P. S. 1995. Diet variability and foraging strategies in brown trout (*Salmo trutta*): an analysis from subpopulations to individuals.- *Can. J. Fish. aquat. Sci. 52*: 2543-2552.

Brown, C. A. and King, J. M. 1995. The effects of trout-farm effluents on benthic invertebrate community structure in rivers in the south-western Cape, South Africa.- *Sth. Afr. J. aquat. Sci. 21*: 3-21.

Brundin, L. † 1995. Från Grimsgöl till Gondwanaland - en smålännings mödor under ett halvsekel som fjädermyggsforskare. (From the Grimsgöl pond to Gondwanaland - endeavours during half a century as student of chironomid midges.)- *Ent. Tidskr. 116*: 1-12. [edited by P. Lindskog] [already published as: Anonymus 1993a. Lars Brundin. 30 May 1907-17 November 1993.- *Cladistics 9*: 357-367. (includes Brundin, L. 1993a From Grimsgöl to Gondwanaland - half a century with chironomids.)] [Probably originally written in 1985]

Camargo, J. A. and García de Jalón, D. 1995. Structural and trophic changes in a riverine

macrobenthic community following impoundment for hydroelectric power generation.- J. *Freshwat. Ecol. 10*: 311-317.

Camargo, J. A. and GarcÌa de JalÛn, D. 1995b. Assessing the influence of altitude and temperature on biological monitoring of freshwater quality: a preliminary investigation.- *Envir. Monit. Assess. 35*: 227-238.

Carter, C. E. and Wood, R. B. 1995. The winter macrobenthos of the Clogh River system, Northern Ireland.- *J. Freshwat. Ecol. 10*: 361-366.

Chépeau, Y. et Le Dréan-Quenec"hdu, S. 1995. Caractéristiques des sites d'alimentation nocture des Avocettes élégantes *Recurvirostra avosetta* dans la presqu'ile guérandaise.- *Alauda 63*: 169-178.

Clements, W. H. and Kiffney, P. M. 1995. The influence of elevation on benthic community responses to heavy metals in Rocky Mountain streams.- *Can. J. Fish. aquat. Sci. 52*: 1966-1977.

Collier, K. J. 1995. Environmental factors affecting the taxonomic composition of aquatic macroinvertebrate communities in lowland waterways of Northland, New Zealand.- N. Z. Jl mar. *Freshwat. Res. 29*: 453-465.

Dedual, M. and Collier, K. J. 1995. Aspects of juvenile rainbow trout (*Oncorhynchus mykiss*) diet in relation to food supply during summer in the lower Tongariro River, New Zealand.- N. Z. Jl mar. *Freshwat. Res. 29*: 381-391.

Den Besten, P. J., Schmidt, C. A., Ohm, M., Ruys, M. M., Berghem, J. W. van and Guchte, C. van de 1995. Sediment quality assessment in the delta of rivers Rhine and Meuse based on field observations, bioassays and food chain implications.- *J. aquat. Ecosyst. Hlth 4*: 257-270.

Dettinger-Klemm, P.-M. A. 1995. Faunistisch-ökologische Untersuchungen an Dipteren aus Tümpeln unter besonderer Berücksichtigung der Culicidae und Chironomidae (Diptera: Nematocera). - *Edn Wiss., Reihe Biol. 14*: 161 pp. Tectum-Verl., Marburg.

Engel, M. 1995b. Die Fliegen und Mücken (Diptera) eines sauren Fichtenforstes in der Eifel und ihre Reaktionen auf Kalkungsmaflnahmen.- *Pollichia-Buch 32*: 283 pp. Bad Dürkheim.

Evrard, M. et Goddeeris, B. 1995. Note sur la présence díune sous-famille de Chironomidae (Diptera), nouvelle pour la faune belge.- *Bull. Annls Soc. r. belge Ent. 131*: 493-498.

Fend, S. V. and Carter, J. L. 1995. The relationship of habitat characteristics to the distribution of Chironomidae (Diptera) as measured by pupal exuviae collections in a large river system.- *J. Freshwat. Ecol. 10*: 343-359.

Frankiewicz, P. (1994) 1995. The daily feeding pattern of stone loach, *Noemacheilus barbatulus* (L.) in the upland Lubrzanka River, Poland.- *Polskie Archwm Hydrobiol. 41*: 269-278.

Garasevich, I. G. i Vasil' kovskaya, O. B. 1995. Izmeneniya gidrokhimicheskogo i gidrobiologicheskogo rezhima maloi reki v protsesse ee melioratsii. (Changes in the hydrochemical and hydrobiological regime of a small river in the process of its melioration.)- *Gidrobiol. Zh. 31, 6*: 35-43.

Gerhardt, A. and Janssens de Bisthoven, L. 1995. Behavioural, developmental and morphological responses of *Chironomus* gr. *thummi* larvae (Diptera, Nematocera) to aquatic pollution.- *J. aquat. Ecosyst. Hlth 4*: 205-214.

Gibert, J., Marmonier, P., Vanek, V. and PlÈnet, S. 1995. Hydrological exchange and sediment characteristics in a riverbank: relationship between heavy metals and invertebrate community structure.- *Can. J. Fish. aquat. Sci. 52*: 2084-2097.

Gorab, E., Garcia de Lacoba, M. and Botella, L. M. 1995. Structural constraints in expansion segments from a midge 26S rDNA.- *J. molec. Evol. 41*: 1016-1021.

Greiffon, F. 1995. *Étude préliminaire des peuplements de Chironomidae (Diptera) comme bioindicatuers de la qualité des eaux de la haute Ariége.*- DESU, Univ. Toulouse. 49 pp.

Gukov, A. Yu. 1995. Donnye zootsenozy i otsenka ekologicheskogo sostoyaniya r. Nizhnei Kolymy. (Bottom zoocenoses and evaluation of the River Low Kolyma ecological state.)- *Gidrobiol. Zh. 31, 4*: 10-14.

Guo, X. 1995. Studies on chironomid communities of Nanhu Lake (South Lake), Wuhan, China.- *J. Huazhong agric. Univ. 14*: 578-585.

Havas, M. and Advokaat, E. 1995. Can sodium regulation be used to predict the relative acid-sensitivity of various life-stages and different species of aquatic fauna?- *Wat. Air Soil Pollut. 85*: 865-870.

Hecky, R. E. and Hesslein, R. H. 1995. Contributions of benthic algae to lake food webs as revealed by stable isotope analysis.- *J. N. Am. benthol. Soc. 14*: 631-653.

Hill, T. D., Duffy, W. G. and Thompson, M. R. 1995. Food habits of channel catfish in Lake Oahe, South Dakota.- *J. Freshwat. Ecol. 10*: 319-323.

Hubenova-Siderova, T., Grozev, G., Hadjinikolova, L., Grozev, G. and Paskaleva, E. 1995. Tench reproduction and biology in pond culture in Bulgaria.- *Polskie Archwm Hydrobiol. 42*: 197-206.

Hudson, P. L., Savino, J. F. and Bronte, C. R. 1995. Predator-prey relations and competition for food between age-0 lake trout and slimy sculpins in the Apostle Island region of Lake Superior.- *J. Gt Lakes Res. 21, Suppl. 1*: 445-457.

Humphries, P. 1995. Life history, food and habitat of southern pigmy perch, *Nannoperca australis*, in the Macquarie River, Tasmania.- *Mar. Freshwat. Res. 46*: 1159-1169.

Il'inskaya, N. B. 1995. Rare chromosome changes in natural populations of *Chironomus plumosus* L. (Diptera, Chironomidae).- *Cytobios 83*: 49-57.

Ingersoll, C. G., Ankley, G. T., Benoit, D. A., Brunson, E. L., Burton, G. A., Dwyer, F. J., Hoke, R. A., Landrum, P. F., Norberg-King, T. J. and Winger, P. V. 1995. Toxicity and bioaccumulation of sediment -associated contaminants using freshwater invertebrates: A review of methods and applications.- *Envir. Toxic. Chemy 14*: 1885-1894.

Irmler, U. 1995. Die Stellung der Bodenfauna im Stoffhaushalt schleswig-holsteinischer Wälder.- *Faun.-ökol. Mitt. Suppl. 18*: 199 pp.

Jana, B. B. and Manna, A. K. 1995. Seasonal changes of benthic invertebrates in two tropical fish ponds.- *J. Freshwat. Biol. 7*: 129-136.

Johnson, D. M., Martin, T. H., Mahato, M., Crowder, L. B. and Crowley, P. H. 1995. Predation, density dependence, and life histories of dragonflies: a field experiment in a freshwater community.- *J. N. Am. benthol. Soc. 14*: 547-562.

Ketelaars, H. A. M. and Frantzen, N. M. L. H. F. 1995. One decade of benthic macroinvertebrate biomonitoring in the River Meuse.- *Neth. J. aquat. Ecol. 29*: 121-133.

Klevets', M. Yu., Man'ko, V. V. i Fedirko, N. V. 1995. (Studies of the Na-Ca- exchange in secretory cell membranes.)- *Dopov. natn. Akad. Nauk Ukrainy 11*: 123-126.

Koskenniemi, E. 1995. The ecological succession and characteristics in small Finnish polyhumic reservoirs.- *Biol. Res. Rep. Univ. Jyväskylä 47*: 1-36.

Kristijanto, A. I. 1995. A field guide to benthic macroinvertebrates of the Awu stream (Central Java, Indonesia). Part 1: Diptera.- *Jber. biol. Stn Lunz 15*: 79-85.

Leichtfried, M. and Shivoga, W. 1995. The Njoro River-Lake Nakuru ecotonal system in Kenya.- *Jber. biol. Stn Lunz 15*: 67-77.

Maamri, A., Chergui, H. et Pattee, E. 1995. Impact des apports végétaux allochthones sur la distribution de la faune benthique dans un cours díeau montagnard marocain, l'Oued Zegzel.- *Écologie 26*: 81-94.

Maloney, R. F. 1995. Effect of the herbicide triclopyr on the abundance and species composition of benthic aquatic macroinvertebrates in the Ahuriri River, New Zealand.- *N. Z. Jl mar. Freshwat. Res. 29*: 505 -515.

Mandych, A. F. and Shilkrot, G. S. 1995. Ladoga and Onega Lakes.- In: Mandych, A. F. (ed.): Enclosed seas and large lakes of Eastern Europe and Middle Asia, pp. 231-273. SPB Acad. Publ., Amst. Marshall, B. E. 1995. Changes in the benthic fauna of Lake Chivero, Zimbabwe, over thirty years.- *Sth. Afr. J. aquat. Sci. 21*: 22-28.

Mastrantuono, L. 1995. The invertebrate community of littoral sandy shores in Lake Albano (Italy): fauna composition and ecological remarks.- Ecol. mediterr. 21: 101-112.

McIntosh, A. R. and Townsend, C. R. 1995. Contrasting predation risks presented by introduced brown trout and native common river galaxias in New Zealand streams.- *Can. J. Fish. aquat. Sci. 52*: 1821-1833.

Mims, S. D., Clark, J. A., Williams, J. C. and Lovshin, L. L. 1995. Food selection by larval paddlefish Polyodon spatula supplied with rice bran to promote production of live foods, with prepared diets, or with their combination in earthen ponds.- *J. Wld Aquacult. Soc. 26*: 438-446.

Morin, A., Rodriguez, M. A. and Nedon, D. 1995. Temporal and environmental variation in the biomass spectrum of benthic invertebrates in streams: an application of thin-plate splines and relative warp analysis.- *Can. J. Fish. aquat. Sci. 52*: 1881-1892.

Müller-Ferch, G. und Mouci, M. 1995. Einfluss der Mahd auf die Reservestoffe und den Insektenbestand von Ackerkräutern.- In: Nentwig, W. und Poehling, H.-M. (eds.): *Agrarökologie 14*: 103 pp. Verl. P. Haupt, Bern, Stuttgart, Wien.

Müllner, A. and Komárek, O. 1995. Preliminarey list of diatom species in the guts of Chironomidae found in the research area "Ritrodat" of the Oberer Seebach.- *Jber. biol. Stn Lunz 15*: 35-36.

Murata, K. 1995. The interaction between spiders and prey insects under the sustainable cultivation: Influence of the paddy field management on the densities of the spiders and the prey insects.- *Acta arachnol. 44*: 83-96.

Nyman, C. 1995. Macrozoobenthos in some rapids in a lowland river in Finland before and after the construction of a hydroelectric power plant.- *Regul. Rivers Res. Mgmt 10*: 199-205.

Oertli, B. and Lachavanne, J.-B. 1995. The effects of shoot age on colonization of an emergent macrophyte (*Typha latifolia*) by macroinvertebrates.- *Freshwat. Biol. 34*: 421-431.

Olson, E. J., Engstrom, E. S., Doeringsfeld, M. R. and Bellig, R. 1995. Abundance and distribution of macroinvertebrates in relation to macrophyte communities in a prairie marsh, Swan Lake, Minnesota.- *J. Freshwat. Ecol. 10*: 325-335.

Ovcharenko, N. A. i Vita, I 1995. Issia singulati sp. n. (*Microspora*, Telomyxidae) - novyi vid mikrosporidii iz lichinok *Chironomus singulatus* Meigen Kievskogo vodokhranilishcha. (Issia singulati sp. n. *(Microspora*, Telomyxidae), a new species of Microsporidia from *Chironomus singulatus* [sic!] Meigen larvae from the Kiev water reservoir.)- Gidrobiol. Zh. 31, 5: 78-83.

Parchuk, G. V. 1995. Zooplankton i zoosirton r. Tisy i ee pritokov v predelakh Ukrainy. (Zooplankton and zoosyrton of River Tisza and ist tributaries within the limits of the Ukraine.)- *Gidrobiol. Zh. 31, 1*: 25-37.

Prena, J. 1995b. Temporal irregularities in the macrobenthic community and deep-water advection in Wismar Bay (Western Baltic Sea).- Estuar. coast.

Shelf Sci. 41: 705-717.

Quack, S. 1995. *Untersuchungen von Ecdysteroid-rezeptoren und Ecdysteroidwirkungen bei verschiedenen Invertebraten.*- Diss., Univ. Düsseldorf. 146 pp.

Rauch, P. 1995. *Charakterisierung des Ecdysteroid-rezeptors in sensitiven und resistenten Klonen der epithelialen Zellinie von Chironomus tentans.*- Dipl.-Arb., Univ. Düsseldorf. 96 pp.

Reid, R. A., Somers, K. M. and David, S. M. 1995. Spatial and temporal variation in littoral-zone benthic invertebrates from three south-central Ontario lakes.- *Can. J. Fish. aquat. Sci. 52*: 1406-1420.

Sagar, P. M. and Glova, G. J. 1995. Prey availabilty and diet of juvenile brown trout (*Salmo trutta*) in relation to riparian willows (*Salix* spp.) in three New Zealand streams.- *N. Z. Jl mar. Freshwat. Res. 29*: 527-537.

Sasa, M. and Nishino, M. 1995. Notes on the chironomid species collected in winter on the shore of Lake Biwa.- *Jap. J. sanit. Zool. 46*: 1-8.

Sasa, M. and Suzuki, H. 1995. The chironomid species collected of the Tokara Islands, Kagoshima (Diptera).- *Jap. J. sanit. Zool. 46*: 255-288.

Schmid-Araya, J. M. and Schmid; P. E. 1995. The invertebrate species of a gravel stream.- *Jber. biol. Stn Lunz 15*: 11-21.

Schmid-Araya, J. M. and Schmid; P. E. 1995b. Preliminary results on diet of stream invertebrate species: the meiofaunal assemblages.- *Jber. biol. Stn Lunz 15*: 23-31.

Stewart, K. M. and Thompson, R. S. 1995. Fluoranthene as a model toxicant in sediment studies with *Chironomus riparius.*- *J. aquat. Ecosyst. Hlth 4*: 231-238.

Sukop, I. and Adámek, Z. 1995. Food biology of one-, two- and three-year-old tench in polycultures with carp and herbivorous fish.- *Polskie Archwm Hydrobiol. 42*: 9-18.

Sumer, S. 1995 (1994)a. Natural and artificial nutrition for grayling (*Thymallus thymallus* (L.), 1758) fry.- *Polskie Archwm Hydrobiol. 41*: 279-284.

Takeshita, N. and Kimura, S. 1995. Feeding habit of a cyprinid fish *Hemibarbus barbus* in the Chikugo River, Kyushu, Japan.- Nippon Suisan Gakkaishi 61: 860-867.

Tittizer, T., Leuchs, H. and Banning, M. 1995. The consequences of river impoundments for the macrozoobenthos - demonstrated at the example of the River Danube in Germany.- *Miscnea zool. hung. 10*: 73-84.

Valeeva, F. S. 1995. *Lokalínaya dekompaktizatsiya politennykh khromosom pod vliyaniem tsiklogeksimida. (Cycloheximide-induced local decompactization of polytene chromosomes.)*- Dokl. Akad. Nauk 343: 272-274.

Valentin, S., Wasson, J. G. and Philippe; M. 1995. Effects of hydropower peaking on epilithon and invertebrate community trophic structure.- *Regul. Rivers Res. Mgmt 10*: 105-119

Vallenduuk, H. J., Wiersma, S. M., Moller Pillot, H. K. M. en Velden, J. A. van der 1995. Determinatietabel voor larven ven het genus *Chironomus* in Nederland. (Key for larvae of the genus Chironomus in The Netherlands.)- Direct. *-Gen. Rijkswaterstaat, Rijksinst. Iintegraal Zoetwaterbeheer Afvalwaterbehandeling (RIZA), Werkdoc. 95.121X.* Dordrecht. 31 pp.

Waitzbauer, W., Fraberger, R., Hube, S., Jehle, R., Kasper, B., Klewein, D., Lindinger, G., Moser, J., Nimmervoll, H., Pflügl, C. und Raab, R. 1995. Terrestrisch-ökologischer Vergleich eines Fichten-Eschenforstes und einer Windbruchfläche in Lunz/See (N) 1993.- *Jber. biol. Stn Lunz 15*: 121-131.

Wallace, J. B., Webster, J. R. and Meyer, J. L. 1995. Influence of log additions on physical and biotic characteristics of a mountain stream.- *Can. J. Fish. aquat. Sci. 52*: 2120-2137.

Way, C. M., Burky, A. J., Bingham, C. R. and Miller, A. C. 1995. Substrate roughness, velocity refuges, and macroinvertebrate abundance on artificial substrates in the lower Mississippi River.- *J. N. Am. benthol. Soc. 14*: 510-518.

Wayland, M. and Boag, D. A. 1995. Fate of carbofuran and its effects on aquatic macroinvertebrates in Canadian prairie parkland ponds.- *Ecotoxicology 4*: 169-189.

Weber, G. und Prescher, S. 1995. Die Mücken und Fliegen eines klärschlammgedüngten Ackers.- In: Nentwig, W. und Poehling, H.-M. (eds.): *Agrarökologie 15*: 100 pp. Verl. P. Haupt, Bern, Stuttgart, Wien.

Whiles, M. R. and Wallace, J. B. 1995. Macroinvertebrate production in a headwater stream during recovery from anthropogenic disturbance and hydrologic extremes.- *Can. J. Fish. aquat. Sci. 52*: 2402-2422.

Yamamoto, M. 1995b. Redescription of *Einfeldia pagana* (Meigen, 1838) (Diptera, Chironomidae) from Japan.- *Jap. J. syst. Ent. 1*: 235-238.

Yamamoto, M. 1995c. A new species of the subgenus *Glyptotendipes* from Hokkaido, Japan (Diptera, Chironomidae).- *Jap. J. syst. Ent. 1*: 239-242.

Yamamoto, M. 1995d. A description of the female genitalia of *Kiefferulus umbraticola* (Yamamoto) (Diptera, Chironomidae).- *Jap. J. Ent. 63*: 577-578.

Yamamoto, M. 1995e. New record of a non-biting midge (Diptera, Chironomidae) from Japan.- *Jap. J. Ent. 63*: 721-722.

Current Bibliography 1996

Alexander, S. A., Hobson, K. A., Gratto-Trevor, C. L. and Diamond, A. W. 1996. Conventional and isotopic determination of shorebird diets at an inland stopover: the importance of invertebrates and *Potamogeton pectinatus* tubers.- *Can. J. Zool. 74*: 1057-1068.

Ali, A. 1996. Komary-zvontsy (Diptera, Chironomidae): ikh vredonosností i mery regulyatsii chislennosti. (Chironomid midges (Diptera, Chironomidae) as pests and their management.)- *Zool. Zh. 75*: 1653-1667.

Ali, A., Lobinske, R. J. and Chaudhuri, P. K. 1996. Long-term (1980-94) population trends of pestiferous Chironomidae (Diptera) along a lakefront in central Florida.- *J. Am. Mosquito Control Ass. 12*: 106-111.

Andersen, T. and Sæther, O. A. 1996. New species and records of *Beardius* Reiss et Sublette (Diptera: Chironomidae).- *Annls Limnol. 32*: 33-44.

Anderson, J. T. and Smith, L. M. 1996. A comparison of methods for sampling epiphytic and nektonic aquatic invertebrates in playa wetlands.- *J. Freshwat. Ecol. 11*: 219-224.

Angradi, T. R. 1996. Inter-habitat variation in benthic community structure, function, and organic matter storage in 3 Appalachian headwater streams.- *J. N. Am. benthol. Soc. 15*: 42-63.

Anwand, K. und Valentin, M. 1996. Über die Ernährungsbiologie von *Orconectes limosus* (Raf.) (Crustacea).- *Limnologica 26*: 83-91.

Ball, S. L. and Baker, R. L. 1996. Predator-induced life history changes: antipredator behavior costs or facultative life history shifts?- *Ecology 77*: 1116-1124.

Barbour, M. T., Gerritsen, J., Griffith, G. E., Frydenborg, R., McCarron, E., White, J. S. and Bastian, M. L. 1996. A framework for biological criteria for Florida streams using benthic macroinvertebrates.- *J. N. Am. benthol. Soc. 15*: 185-211.

Baurén, G., Jiang, W-Q., Bernholm, K., Gu, F. and Wieslander, L. 1996. Demonstration of a dynamic, transcription-dependent organization of pre-mRNA splicing factors in polytene nuclei.- *J. Cell Biol. 133*: 929-941.

Bazzanti, M., Baldoni, S. and Seminara, M. 1996. Invertebrate macrofauna of a temporary pond in Central Italy: composition, community parameters and temporal succession.- *Arch. Hydrobiol. 137*: 77-94.

Beckett, D. C., Green, B. W., Thomas, S. A. and Miller, A. C. 1996. Epizoic invertebrate communities on upper Mississippi River unionid bivalves.- *Am. Midl. Nat. 135*: 102-114.

Belyanina, S. I. i Durnova, N. A. 1996. Kariotipicheskie formy *Glyptotendipes gripekoveni* Kieffer (Diptera, Chironomidae) iz vodoemov Saratovskoi oblasti. (Karyotypic forms of *Glyptotendipes gripekoveni* Kieffer (Diptera, Chironomidae) from reservoirs of the Saratov region.)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 7-9. Izd. Bot. Sada mosk. Univ., Moskva.

Belyanina, S. I. i Filinkova, T. N. 1996. Morfologiya i kariotipy trekh simpatricheskikkh vidov roda *Chironomus* (Diptera, Chironomidae) iz Zapolyar'ya. (Morphology and karyotypes of three sympatric species of the genus *Chironomus* (Chironomidae,. Diptera) from trans-polar region.) - *Zool. Zh. 75*: 701-712.

Belyanina, S. I. i Polukonova, N. V. 1996. Karifond *Chironomus riparius* Meigen (Diptera, Chironomidae). (The karyopool of *Chironomus riparius* Meigen (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 10-12. Izd. Bot. Sada mosk. Univ., Moskva.

Berger, W. K. and Uhrik, B. 1996. Freeze-induced shrinkage of individual cells and cell-to-cell propagation of intracellular ice in cell chains from salivary glands.- *Experientia 52*: 843-850.

Bergersen, R. 1996. Sticklebacks from Greenland.- *J. Fish Biol. 48*: 799-801.

Besser, J. M., Giesy, J. P., Kubitz, J. A., Verbrugge, D. A., Coon, T. G. and Braselton, W. E. 1996. Assessment of sediment quality in dredged and undredged areas of the Trenton Channel of the Detroit River, Michigan USA, using the sediment quality triad.- *J. Gt Lakes Res. 22*: 683-696.

Bitusik, P. 1996. Some chironomids (Diptera, Chironomidae) new to Slovakia.- *Biológia, Bratisl. 51*: 583-584.

Blaustein, L., Friedman, J. and Fahima, T. 1996. Larval Salamandra drive temporary pool community dynamics: evidence from an artificial pool experiment.- *Oikos 76*: 392-402.

Bleeker, E. A. J., Buckert-de-Jong, M. C., Geest, H. G. van der and Kraak, M. H. S. 1996. Toxicity of nitrogen-containing polycyclic aromatic hydrocarbons (NPAH) to the midge *Chironomus riparius* (Diptera).- *Proc. Sect. exp. appl. Ent. Neth. ent. Soc. 7*: 197-202.

Botts, P. S., Patterson, B. A. and Schloesser, D. W. 1996. Zebra mussel effects on benthic invertebrates: physical or biotic?- *J. N. Am. benthol. Soc. 15*: 179-184.

Bournaud, M., Cellot, B., Richoux, P. and Berrahou, A. 1996. Macroinvertebrate community structure and environmental characteristics along a large river: congruity of patterns for identification to species or family.- *J. N. Am. benthol. Soc. 15*: 232-253.

Brinkman, M. A. and Duffy, W. G. 1996. Evaluation of four wetland aquatic invertebrate samplers and four sample sorting methods.- *J. Freshwat. Ecol. 11*: 193-200.

Brooke, L. T., Ankley, G. T., Call, D. J. and Cook, P. M. 1996. Gut content weight and clearance rate

for three species of freshwater invertebrates.- *Envir. Toxic. Chemy 15:* 223-228.

Brown, C. A. 1996. Macroinvertebrate community patterns in relation to physico-chemical parameters measured at two land-based trout farms affecting streams in the south-western Cape, South Africa.- *Arch. Hydrobiol. 138*: 57-76.

Brown, D., Thompson, R. S., Stewart, K. M., Croudace, C. P. and Gillings, E. 1996. The effect of phthalate ester plasticisers on the emergence of the midge (*Chironomus riparius*) from treated sediments.- *Chemosphere 32*: 2177-2187.

Brunkow, P. E. and Collins, J. P. 1996. Effects of individual variation in size on growth and development of larval salamanders.- *Ecology 77*: 1483-1492.

Burton, G. A. Jr., Ingersoll, C. G., Burnett, L. C., Henry, M., Hinman, M. L., Klaine, S. J., Landrum, P. F., Ross, P. and Tuchman, M. 1996. A comparison of sediment toxicity test methods at three Great Lake Areas of Concern.- *J. Gt Lakes Res. 22*: 495-511.

Caldwell, B. A. 1996. Two new Nearctic species of small Orthocladiinae (Diptera: Chironomidae) with notes on ecology.- *Hydrobiologia 328*: 1-7.

Caldwell, J. P. 1996. The evolution of myrmecophagy and its correlates in poison frogs (Family Dendrobatidae).- *J. Zool. 240*: 75-101.

Canfield, T. J., Dwyer, F. J., Fairchild, J. F., Haverland, P. S., Ingersoll, C. G., Kemble, N. E., Mount, D. R., La Point, T. W., Burton, G. A. and Swift, M. C. 1996. Assessing contamination in Great Lakes sediments using benthic invertebrate communities and the sediment quality triad approach.- *J. Gt Lakes Res. 22*: 565-583.

Caput, K., Kerovec, M., Tavc'ar, V., Mihaljevic;, Z., Bukvic;, I. and Plenkovic;-Moraj, A. 1996. Macroinvertebrate diversity on various artificial substrates.- 31. *Konf. Int. ArbGem. Donauforsch., Limnol. Ber. Donau 1996, 1*: 237-240.

Casas, J. J. 1996. Environmental patchiness and processing of maple leaf litter in a backwater of a mountain stream: riffle area vs. debris dams.- *Arch. Hydrobiol. 136*: 489-508.

Casas, J. J. and Vilchez-Quero, A. 1996. Chironomid assemblages of three endoreic karstic lagoons (southern Spain) determined by collection of pupal exuviae: importance of the water mineralization and sediment characteristics.- *Int. Revue ges. Hydrobiol. 81*: 555-564.

Ceretti, G. and Nocentini, A. M. 1996. Notes on the distribution of some macrobenthonic populations (Oligochaeta and Diptera Chironomidae) in the littoral of a few small lakes in northern Italy.- *Memorie Ist. ital. Idrobiol. 54*: 109-124.

Chaloner, D. T. and Wotton, R. S. 1996. Tube building by larvae of 3 species of midge (Diptera: Chironomidae).- *J. N. Am. benthol. Soc. 15*: 300-307.

Chaudhuri, P. K. and Das, S. K. 1996. *Chironomus incertipenis* Chaudhuri, a new name for *Chironomus niger* Chaudhuri, Das & Sublette (preoccupied) (Diptera: Chironomidae).- *Orient. Insects 30*: 154.

Chiba, T. and Yajima, H. 1996. (On the behaviour of the pole cells in the centrifuged *Chironomus samoensis* egg.)- *Proc. Arthropod. embryol. Soc. Japan 31*: 51-52.

Colbo, M. H. 1996. Chironomidae from marine coastal environments near St. John's, Newfoundland, Canada.- *Hydrobiologia 318*: 117-122.

Contreras-Lichtenberg, R. 1996. Contribution to the knowledge of female west palaearctic *Glyptotendipes* Kieff. (Diptera, Nematocera, Chironomidae).- *Hydrobiologia 318*: 17-23.

Convey, P. and Block, W. 1996. Antarctic Diptera: Ecology, physiology and distribution.- *Eur. J. Ent. 93*: 1-13.

Copeland, R. S., Okeha, W. and Corbet, P. S. 1996. Treeholes as larval habitat of the dragonfly *Hadrothemis camarensis* (Odonata: Libellulidae) in Kakamega Forest, Kenya.- *Aquat. Ins. 18*: 129-147.

Corkum, L. D. 1996. Responses of chlorophyll-a, organic matter, and macroinvertebrates to nutrient addition in rivers flowing through agricultural and forested land.- *Arch. Hydrobiol. 136*: 391-411.

Cranston, P. S. and Hardwick, R. A. 1996. The immature stages and phylogeny of Imparipecten Freeman, an Australian endemic genus of wood-mining chironomid (Diptera).- *Aquat. Ins. 18*: 193-207.

Cranston, P. S. and Nolte, U. 1996. *Fissimentum*, a new genus of drought-tolerant Chironomini (Diptera: Chironomidae) from the Americas and Australia.- *Ent. News 107*: 1-15.

Das, R. and Handique, R. 1996. Hemoglobin in *Chironomus ramosus* (Insecta, Diptera): An electrophoretic study of polymorphism, developmental sequence and interspecific relationship.- *Hydrobiologia 318*: 43-50.

Death, R. G. 1996. The effect of patch disturbance on stream invertebrate community structure: the influence of disturbance history.-*Oecologia 108*: 567-576.

DeNicola, D. M. and Hoagland, K. D. 1996. Effects of solar spectral irradiance (visible to UV) on a prairie stream epilithic community.- *J. N. Am. benthol. Soc. 15*: 155-169.

Dettinger-Klemm, P.-M. A. und Bohle H. W. 1996. überlebensstrategien und Faunistik von Chironomiden (Chironomidae, Diptera) temporärer Tümpel.- *Limnologica 28*: 403-421.

Di Giovanni, M. V., Goretti, E. and Tamanti, V. 1996. Macrobenthos in Montedoglio Reservoir, central Italy.- *Hydrobiologia 321*: 17-28.

Dudgeon, D. 1996. The influence of refugia on predation in a Hong Kong stream.- *Arch. Hydrobiol. 138*: 145-159.

Dukerschein, J. T., Gent, R. and Sauer, J. 1996. Recovery of macroinvertebrates by screening in the field: a comparison between coarse (1.18 mm) - and fine (0.60 mm)-mesh sieves.- *J. Freshwat. Ecol. 11*: 61-65.

Dutta, T. K., Ali, A., Mazumdar, A. and Chaudhuri, P. K. 1996. Chironomid midges of *Harnischia complex* (Diptera: Chironomidae) from the Duars of the Himalayas, India.-*Eur. J. Ent. 93*: 263-279.

Dutta, T. K., Mazumdar, A. and Chaudhuri, P. K. 1996. Two new species of *Paratendipes* Kieffer (Diptera: Chironomidae) from the Duars of the Himalayas of West Bengal, India.- *Entomon 21*: 49-54.

Eckmann, R: and Imbrock, F. 1996. Distribution and diel vertical migration of Eurasian perch (*Perca fluviatilis* L.) during winter.- *Annls zool. fenn. 33*: 679-686.

Egyházi, E., Ossoinak, A., Pigon, A., Holmgren, C., Lee, J. M. and Greenleaf, A. L. 1996. Phosphorylation dependence of the initiation of productive transcription of Balbiani ring 2 genes in living cells.- *Chromosoma 104*: 422-433.

Enghoff, H. 1996. Historical biogeography of the Holarctic: area relationships, ancestral areas, and dispersal of non-marine animals.- *Cladistics 11*: 223-263.

Englund, G. and Olsson, T. 1996. Treatment effects in a stream fish enclosure experiment: influence of predation rate and prey movements.- *Oikos 77*: 519-528.

Epler, J. H. 1996. New species of *Oukuriella* (Diptera: Chironomidae) from Costa Rica.- *Hydrobiologia 318*: 3-11.

Epler, J. H. 1996b. A new species of *Dicrotendipes* (Diptera: Chironomidae) from Costa Rica.- *Hydrobiologia 318*: 13-15.

Ferrington, L. C. Jr. and Pehofer, H: E. 1996. Instar distribution and biomass of Chironomidae larvae in Lago El Junco, Isla San Cristobal, the Galapagos.- *Hydrobiologia 318*: 123-133.

Fiesl, C. and Weilguni, H. 1996. Vertical distribution of the macrozoobenthos and sediment structure in the main channel of a large deep river, the Danube at river-kilometre 1889,9.- *Arch. Hydrobiol. Suppl. 113*: 411-416.

Filinkova, T. N. i Belyanina, S. I. 1996. *Chironomus obensis* sp. n. (Chironomidae, Diptera) iz raiona nizhnei Obi. (*Chironomus obensis* sp. n. (Chironomidae, Diptera) from the lower Ob River region.)- *Zool. Zh. 75*: 1095-1101.

Filinkova, T. N. i Belyanina, S. I. 1996b. Kariotipy severnykh vidov *Chironomus* i *Camptochironomus* (Diptera, Chironomidae). (Karyotypes of northern species of *Chironomus* and *Camptochironomus* (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 71-73. Izd. Bot. Sada mosk. Univ., Moskva.

Flecker, A. S. 1996. Ecosystem engineering by a dominant detritivore in a diverse tropical stream. - *Ecology 77*: 1845-1854.

Foeckler, F., Lindner, S. and Burmeister, E. G. 1996. Compilation of determination-literature for aquatic macroinvertebrates of Central Europe.- *Int. Revue ges. Hydrobiol. 81*: 25-61.

Frankiewicz, P., Dabrowski, K. and Zalewski, M. 1996. Mechanism of establishing bimodality in a size distribution of age-0 pikeperch, *Stizostedion lucioperca* (L.) in the Sulejów Reservoir, Central Poland.- *Annls zool. fenn. 33*: 321-327.

Franquet, E. 1996. *Occupation d'un espace fluvial par les Diptères Chironomidés à l'aval du Rhône: répartition des espèces selon la nature du substrat et les conditions de débit.*- Thèse, Univ. Lyon 1. 128 pp. Franquet, E. and Pont, D. 1996. Pupal exuviae as descriptors of the chironomid (Diptera: Nematocera) communities of large rivers.- Arch. Hydrobiol. 138: 77-98.

Franz, M. 1996. Präparation und Mikroskopie von Zuckmücken. Plädoyer für eine systematisch schwierige Tiergruppe und ihre Bearbeiter.- *Mikrokosmos 85*: 77-82.

Galas, J., Bednarz, T., Dumnicka, E., Starzecka, A. and Wojtan, K. 1996. Litter decomposition in a mountain cave water.- *Arch. Hydrobiol. 138*: 199-211.

Garnier, P. 1996. Microhabitat use and diet of 0+ cyprinid fishes in a lentic, regulated reach of the River Great Ouse, England.- *J. Fish Biol. 48*: 367-382.

Gendron, J. M. 1996. *Les Chironomidès (Diptera) de l'Aude, rivière méditerranéenne des Pyrénées orientales. Impact d'une crue catastrophique.*- Thèse, Univ. Toulouse. 196 pp.

Ghioni, C., Bell, J. G. and Sargent, J. R. 1996. Polyunsaturated fatty acids in neutral lipids and phospholipids of some freshwater insects.- *Comp. Biochem. Physiol. 114B*: 161-170.

Gorab, E., Botella, L. M., Quinn, J. P., Amabis, J. M. and DÌez, J. L. 1996. Ku-related antigens are associated with transcriptionally active loci in *Chironomus* polytene chromosomes.- *Chromosoma 105*: 150-157.

Govedich, F., Oberlin, G. and Blinn, D. W. 1996. Comparison of channel and hyporheic invertebrate communities in a southwestern USA desert stream.- *J. Freshwat. Ecol. 11*: 201-209.

Grimm, R. and Kiesewetter, B. 1996. Ecological study on the ditches and tideways of the Wedeler Marsch and on the Fährmannssander Watt.- *Arch. Hydrobiol. Suppl. 110*: 215-262.

Groenendijk, D., Postma, J. F. and Admiraal, W. 1996. Influence of drift on population dynamics of metal exposed and reference populations of the midge *Chironomus riparius*.- *Proc. Sect. exp. appl. Ent. Neth. ent. Soc. 7*: 203-208.

Grubbs, S. A. and Cummins, K. W. 1996. Linkages between riparian forest composition and shredder

voltinism.- *Arch. Hydrobiol. 137*: 39-58.

Grumiaux, F. and Dhainaut-Courtois, N. 1996. Benthic macroinvertebrate communities of the Canal Grand Gabarit, Aa River, and the canalized Aa River in the north of France.- *J. Freshwat. Ecol. 11*: 131-138.

Grzybkowska, M., Temech, A. and Dukowska, M. 1996. Impact of long-term alternations of discharge and spate on the chironomid community in the lowland Widawka River (Central Poland).- *Hydrobiologia 324*: 107-115.

Gupta, A. 1996. Heavy metals in water, periphytonic algae, detritus, and insects from two streams in Shillong, Northeastern India.- *Envir. Monit. Assess. 40*: 215-223.

Hamburger, K., Lindegaard, C. and Dall, P. C. 1996. The role of glycogen during the ontogenesis of *Chironomus anthracinus* (Chironomidae, Diptera).-*Hydrobiologia 318*: 51-59

Harvey, E. and Miller, T. E. 1996. Variance in composition of inquiline communities in leaves of *Sarracenia purpurea* L. on multiple spatial scales.- *Oecologia 108*: 562-566.

Hardwick, M. L. and Giberson, D..J. 1996. Aquatic insect populations in transplanted and natural populations of the purple pitcher plant, *Sarracenia purpurea*, on Prince Edward Island, Canada.- *Can. J. Zool. 74*: 1956-1963.

Harrison, A. D. 1996. Chironomidae from Ethiopia, Part 3. Chironomini, with description of a new species (Insecta, Diptera).- *Spixiana 19*: 43-87.

Havens, K. E., Bull, L. A., Warren, G. L., Crisman, T. L., Phlips, E. J. and Smith, J. P. 1996. Food web structure in a subtropical lake ecosystem.- *Oikos 75*: 20-32.

Hildrew, A. G. 1996. Whole river ecology: spatial scale and heterogeneity in the ecology of running waters.- *Arch. Hydrobiol. Suppl. 113*: 25-43.

Hirabayashi, K. and Hayashi, H. 1996. Seasonal variation of *Chironomus nipponensis* (Diptera) voltinism in the deep mesotrophic Lake Kizaki, Japan.- *Arch. Hydrobiol. 138*: 229-244.

Hodkinson, I. D., Coulson, S. J., Webb, N. R., Block, W., Strathdee, A. T., Bale, J. S. and Worland, M. R. 1996. Temperature and the biomass of flying midges (Diptera: Chironomidae) in the high Arctic.- *Oikos 75*: 241-248.

Hoffman, R. T., Schmidt, E. R. and Case, S. T. 1996. A cell-specific glycosylated silk protein from *Chironomus thummi* salivary glands. Cloning, chromosomal localization, and characterization of cDNA.- *J. biol. Chemy 271*: 9809-9815.

Hogg, I. D. and Williams, D. D. 1996. Response of stream invertebrates to a global-warming thermal regime: an ecosystem-level manipulation.- *Ecology 77*: 395-407.

Howell, E. T., Marvin, C. H., Bilyea, R. W., Kauss, P. B. and Somers, K. 1996. Changes in environmental conditions during *Dreissena* colonization of a monitoring station in eastern Lake Erie.- *J. Gt Lakes Res. 22*: 744-756.

Hubert, W. A., LaVoie, W. J. IV and DeBray, L. D. 1996. Densities and substrate associations of macroinvertebrates in riffles of a small, high plains stream.- *J. Freshwat. Ecol. 11*: 21-26.

Hudson, L. A. and Ciborowski, J. J. H. 1996. Spatial and taxonomic variation in incidence of mouthpart deformities in midge larvae (Diptera: Chironomidae: Chironomini).- *Can. J. Fish. aquat. Sci. 53*: 297-304.

Humpesch, U. H. 1996. Case study - the River Danube in Austria.- *Arch. Hydrobiol. Suppl. 113*: 239-266.

Huryn, A. D. 1996. An appraisal of the Allen paradox in a New Zealand trout stream.- *Limnol. Oceanogr. 41*: 243-252.

Ingersoll, C. G., Haverland, P. S., Brunson, E. L., Canfield, T. J., Dwyer, F. J., Henke, C. E., Kemble, N. E., Mount, D. R. and Fox, R. G. 1996. Calculation and evaluation of sediment effect concentrations for the amphipod *Hyalella azteca* and the midge *Chironomus riparius*.- *J. Gt Lakes Res. 22*: 602-623.

Int Panis, L., Goddeeris, B. and Verheyen, R. 1996. On the relationship between vertical microdistribution and adaptations to oxygen stress in littoral Chironomidae (Diptera).- *Hydrobiologia 318*: 61-67.

Int Panis, L., Goddeeris, B. and Verheyen, R. F. 1996b. On the spatial distribution and respiratory environment of benthic macroinvertebrates in ponds.- *Hydrobiologia 319*: 131-136.

Istomina, A. G., Kiknadze, I. I. i Vostrova, L. G. 1996. Kariologicheskii analiz vidov roda *Polypedilum* Kieffer (Diptera, Chironomidae) (Karyological analysis of the genus *Polypedilum* Kieffer (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 35-37. Izd. Bot. Sada mosk. Univ., Moskva.

Ivanchenko, O. V. i Kerkis, I. E. 1996. Kariotipy khironomid podsemeistva Prodiamesinae (Diptera, Chironomidae). (Karyotypes of chirono,mids of the subfamily Prodiamesinae (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 31-32. Izd. Bot. Sada mosk. Univ., Moskva.

Johnson, D. M., Martin, T. H., Crowley, P. H. and Crowder, L. B. 1996. Link strength in lake littoral food webs: net effects of small sunfish and larval dragonflies.- *J. N. Am. benthol. Soc. 15*: 271-288.

Kajak, Z. and Dusoge, K. 1996. Substantial increase of *Chironomus* abundance obtained in field experiment.- *Int. Revue ges. Hydrobiol. 81*: 469-480.

Kangur, K. and Kangur, A. 1996. The composition and seasonal changes in the diet of ruffe (*Gymnocephalus cernuus*) in Lake Vırtsjärv.- Eesti Teaduste Akad. *Toimetised Biol. [=Proc. Eston. Acad. Sci. Biol.] 45*: 1-14.

Kangur, K. and Kangur, A. 1996b. Feeding of of ruffe (*Gymnocephalus cernuus*) in relation to the abundance of benthic organisms in Lake Vırtsjärv (Estonia).- *Annls zool. fenn. 33*: 473-480.

Kerovec, M., Caput, K., Mihaljevic;, Z., Bracko, L. and Plenkovic;-Moraj, A. 1996. The effect of different types of artificial substrates on the density of macroinvertebrates.- *31. Konf. Int. ArbGem. Donauforsch., Limnol. Ber. Donau 1996, 1*: 245-248.

Kido, M. H. 1996. Diet and food selection in the endemic Hawaiian amphidromous goby, *Sicyopterus stimpsoni* (Pisces, Gobiidae).- *Envir. Biol. Fishes 45*: 199-209.

Kiknadze, I. I., Aimanova, K. G., Andreeva, E. N., Salova, T. A. i Lopatin, O. E. 1996. Kariotip i khromosomnyi polimorfizm *Camptochironomus pallidivittatus* (Diptera, Chironomidae). (Karyotype and chromosome polymorphism of *Camptochironomus pallidivittatus* (Diptera, Chironomidae).)- *Zool. Zh. 75:* 1041-1053.

Kiknadze, I. I., Aimanova, K. G., Istomina, A. G. i Siirin, M. T. 1996. Tsitotasksonomiya i khromosomnaya evolyutsiya sibirskikh vidov roda *Chironomus* (Diptera, Chironomidae). (Cytotaxonomy and chromosomal evolution in Siberian *Chironomus* species (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 37-39. Izd. Bot. Sada mosk. Univ., Moskva.

Kiknadze, I. I., Butler, M. G., Aimanova, K. G., Gunderina, L. I. and Cooper, J. K. 1996. Geographic variation in the polytene chromosome banding pattern of the Holarctic midge *Chironomus* (*Camptochironomus*) *tentans* (Fabricius).- *Can. J. Zool. 74*: 171-191.

Kiknadze, I. I., Istomina, A. G., Gunderina, L. I., Salova, T. A., Aimanova, K. G. i Savvinov, D. D. 1996. Kariofondy khironomid kriolitozony Yakutii: Triba Chironomini. (Karyofunds of chironomids of the cryolite zone of Yakutia: tribe Chironomini.)- *Nauka, Novosibirsk*. 166 pp.

Kleinevoss, K., Topp, W. und Bohac, J. 1996. Buchen-Totholz im Wirtschaftswald als Lebensraum für xylobionte Insekten.- *Z. ökol. Natursch. 5*: 85-95.

Kline, J. L. and Wood, B. M. 1996. Food habits and diet selevtivity of the brown bullhead.- *J. Freshwat. Ecol. 11*: 145-151.

Kondo, S. 1996. Life cycle of *Hydrobaenus kondoi* Saether (Chironomidae) at the middle reaches of the Kiso River, Japan.- *Hydrobiologia 318*: 79-84.

Lang, C. et Reymond, O. 1996. Le zoobenthos comme indicateur des perturbations díorigine humaine dans deux lacs de montagne.- *Revue suisse Zool. 103*: 851-858.

Laville, H. et Serra-Tosio, B. 1996. Additions et corrections à l'inventaire des Chironomidés (Diptera) de France depuis 1990.- *Annls Limnol. 32*: 115-121.

Lester, P. J., Mitchell, S. F. and Scott, D. 1996. Substrate and shade: mechanisms of willow tree influence on the macroinvertebrate community of Heeney Creek, South Island, New Zealand.- *Arch. Hydrobiol. 136*: 145-158.

Lezzi, M. 1996. Chromosome puffing: supramolecular aspects of ecdysone action.- In: Gilbert, L. I., Tata, J. R. and Atkinson, B. G. (eds.): Metamorphosis. *Postembryonic reprogramming of gene expression in amphibian and insect cells*, pp. 145-173. Acad. Pr., San Diego, N. Y., Boston, Lond., Sydney, Tokyo, Toronto.

Liber, K., Call, D. J., Dawson, T. D., Whiteman, F. W. and Dillon, T. M. 1996. Effects of *Chironomus tentans* larval growth retardation on adult emergence and ovipositing success: Implications for interpreting freshwater sediment bioassays.- *Hydrobiologia 323*: 155-167.

Liber, K., Schmude, K. L. and Corry, T. D. 1996. Effects of the insect growth regulator diflubenzuron on insect emergence within littoral enclosures.- *Envir. Ent. 25*: 17-24.

Litvinov, A. G. and O'Gorman, R. 1996. Biology of Amur sleeper (*Perccottus glehni*) in the delta of the Selenga River, Buryatia, Russia.- *J. Gt Lakes Res. 22*: 370-378.

Lopez, C. C., Nielsen, L. and Edström, J.-E. 1996. Terminal long tandem repeats in chromosomes from *Chironomus pallidivittatus*.- *Molec. cell. Biol. 16*: 3285-3290.

Lott, J. P., Willis, D. W. and Lucchesi, D. O. 1996. Relationship of food habits to yellow perch growth and population structure in South Dakota lakes.- *J. Freshwat. Ecol. 11*: 27-37.

Maridet, L., Philippe, M., Wasson, J. G. and Mathieu, J. 1996. Spatial and temporal distribution of macroinvertebrates and trophic variables within the bed sediment of three streams differing by their morphology and riparian vegetation.- *Arch. Hydrobiol. 136*: 41-64.

Martin, J. 1996. An annotated bibliography of the cytogenetics of the Chironomidae (Diptera).- *Occ. Pap. syt. Ent. 10*: 1-209.

Martin, J., Hoffman, R. and Case, S. T. 1996. Identification of divergent homologs of *Chironomus tentans* sp185 and its Balbiani ring 3 gene in Australasian species of *Chironomus* and *Kiefferulus*.- *Insect Biochem. molec. Biol. 26*: 465-473.

Matagi, S. V. 1996. The effect of pollution on benthic macroinvertebrates in an Ugandan stream.- *Arch. Hydrobiol. 134*: 537-549.

Mathooko, J. M. 1996. Rainbow trout (*Oncorhynchus mykiss* Walbaum) as a potential natural "drift sampler" in a tropical lotic ecosystem.- *Limnologica 26*: 245-254.

McLachlan, A. J. and Neems, R. M. 1996. Is flight architecture determined by physical constraints or by natural selection?: the case of the midge *Chironomus plumosus*.- *J. Zool. 240*: 301-308.

Michailova, P. V. 1996. Cytotaxonomy of Chironomidae (Diptera) from Lake Shabla (Bulgaria): Cytogenetic evidence for introgressive hybridization.- *Hydrobiologia 318*: 25-42.

Michailova, P., Petrova, N., Ramella, L., Sella, G., Todorova, J. and Zelano, V. 1996. Cytogenetic characteristics of a population of *Chironomus riparius* Meigen 1804 (Diptera, Chironomidae) from a polluted Po river station.- *Genetica 98*: 161-178.

Michelsen, V. 1996. Neodiptera: New insights into the adult morphology and higher level phylogeny of Diptera (Insecta).- *Zool. J. Linn. Soc. 117*: 71-102.

Miller, M. P. and Hendricks, A. C. 1996. Zinc resistance in *Chironomus riparius*: evidence for physiological and genetic components.- *J. N. Am. benthol. Soc. 15*: 106-116.

Morozova, E. E. 1996. Kariotipicheskoe i morfologicheskoe izuchenie volzhskikh vidov *Cryptochironomus* ex gr. *defectus* (Diptera, Chironomidae). (Karyotypic and morphological study of Volga species of *Cryptochironomus* ex gr. *defectus* (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 49-51. Izd. Bot. Sada mosk. Univ., Moskva.

Moser, D. C. and Minshall, G. W. 1996. Effects of localized disturbance on macroinvertebrate community structure in relation to mode of colonization and season.-*Am. Midl. Nat. 135*: 92-101.

Murray, D. A. 1996. Records of Chironomidae (Diptera) in Ireland: twenty-nine species new to the Irish fauna.- *Bull. Ir. biogeogr. Soc. 19*: 195-201.

O'Halloran, S. L., Liber, K., Schmude, K. L. and Corry, T. D. 1996. Effects of diflubenzuron on benthic macroinvertebrates in littoral enclosures. - *Archs envir. Contam. Toxic. 30*: 444-451.

Olson, M. H. 1996. Ontogenetic niche shifts in largemouth bass: variability and consequences for first-year growth.- *Ecology 77*: 179-190.

Palmer, M. A., Arensburger, P., Martin, A. P. and Denman, D. W. 1996. Disturbance and patch-specific responses: the interactive effects of woody debris and floods on lotic invertebrates.- *Oecologia 105*: 247-257.

Pawlowski; J., Szadziewski, R., Kmieciak, D., Fahrni, J. and Bittar, G. 1996. Phylogeny of the infraorder *Culicomorpha* (Diptera: Nematocera) based on 28S RNA gene sequences.- *Syst. Ent. 21*: 167-178.

Payne, B. S. and Miller, A. C. 1996. Life history and production of filter-feeding insects on stone dikes in the lower Mississippi River.- *Hydrobiologia 319*: 93-102.

Penttinen, O.-P., Kukkonen, J. and Pellinen, J. 1996. Preliminary study to compare body residues and sublethal energetic responses in benthic invertebrates exposed to sediment-bound 2,4,5-trichlorophenol.- *Envir. Toxic. Chemy 15*: 160-166.

Petermeier, A., Schöll, F. und Tittizer, T. 1996. Die ökologische und biologische Entwicklung der deutschen Elbe. *Ein Literaturbericht.- Lauterbornia 24*: 1-95.

Petrova, N. A. i Il'inskaya, N. B. 1996. Osobennosti inversionnogo polimorfizma prirodnykh populyatsii *Camptochironomus tentans* Fabricius iz Severo-Zapada Rossii (Diptera, Chironomidae). (Features of inversion polymorphism in the natural populations of *Camptochironomus tentans* Fabricius from north-western part of Russia (Diptera, Chirtonomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 56-58. Izd. Bot. Sada mosk. Univ., Moskva.

Pillard, D. A. 1996. Assessment of benthic macroinvertebrate and fish communities in a stream receiving storm water runoff from a large airport.- *J. Freshwat. Ecol. 11*: 51-59.

Plénet, S., Hugueny, H. and Gibert, J. 1996. Invertebrate community responses to physical and chemical factors at the river/aquifer interaction zone II. Downstream from the city of Lyon.- *Arch. Hydrobiol. 136*: 65-88.

Pöpperl, R. 1996. The structure of a macroinvertebrate community in a northern German lake outlet (Lake Belau, Schleswig-Holstein) with special emphasis on abundance, biomass and secondary production.- *Int. Revue ges. Hydrobiol. 81*: 183-198.

Polukonova, N. V. 1996. Novye posledovatel'nosti diskov khromosom v kariofonde *Chironomus curabilis* Beljanina, Sigareva, Loginova (Diptera, Chironomidae). (New chromosome banding patterns in the karyopool of *Chironomus curabilis* Beljanina, Sigareva, Loginova (Diptera, Chironomidae).- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 62-64. Izd. Bot. Sada mosk. Univ., Moskva.

Postma, J. F., Nugteren, P. van and Buckert-de Jong, M. B. 1996. Increased cadmium excretion in metal-adapted populations of the midge *Chironomus riparius* (Diptera).- *Envir. Toxic. Chemy 15*: 332-339.

Quinn, J. M., Hickey, C. W. and Linklater, W. 1996. Hydraulic influences on periphyton and benthic macroinvertebrates: Simulating the effects of upstream bed roughness.- *Freshwat. Biol. 35*: 301-309.

Rathburn, J. E., Huellmantel, L. L., Tracy, M., Smith, V. E. and Ahlgren, K. 1996. Rapid sediment assessment: indicator analysis and screening analysis approaches.- *J. Gt Lakes Res. 22*: 523-533.

Reckendorfer, W., Keckeis, H., Winkler, G. and Schiemer, F. 1996. Water level fluctuations as a major determinant of chironomid community structure in the inshore zone of a large temperate river.- *Arch. Hydrobiol. Suppl. 115*: 3-9.

Ree, H. I., Lee, S. H., Kim, Y. K., Jeon, S. H., Chang, J. K. and Kim, Y. S. 1996. (Identification and characterization of allergens of *Chironomus flaviplumus* adults (Chironomidae, Diptera).)- *Kor. J. Parasit. 34*:

Reizopoulou, S., Thessalou-Legaki, M. and Nicolaidou, A. 1996. Assessment of disturbance in Mediterranean lagoons: an evaluation of methods.- *Mar. Biol. 125*: 189-197.

Ristola, T., Pellinen, J., Leppänen. M. and Kukkonen, J. 1996. Characterization of Lake Ladoga sediments. I. Toxicity to *Chironomus riparius* and *Daphnia magna*.- *Chemosphere 32*: 1165-1178.

Rovira, C. and Edström, J.-E. 1996. Centronmeric polymerase III transcription units in *Chironomus pallidivittatus*.- *Nucleic Acids Res. 24:* 1662-1668.

Sæther, O. A. 1996. Afrotropical records of the orthoclad genus *Mesosmittia* Brundin (Insecta, Diptera, Chironomidae).- *Spixiana 19*: 289-292.

Sæther, O. A. and Kristoffersen, L. 1996. Chironomids with "M-fork". A reevaluation of the wing venation of the *Corynoneura*-group (Insecta, Diptera, Chironomidae).- *Spixiana 19*: 229-232.

Sæther, O. A. and Wang, X. 1996. Revision of the orthoclad genus *Propsilocerus* Kieffer (= *Tokunagayusurika* Sasa) (Diptera: Chironomidae). - *Ent. scand. 27*: 441-479.

Sander, K. 1996. Variants of embryonic patterning mechanisms in insects: Hymenoptera and Diptera.- *Semin. Cell dev. Biol. 7*: 573-582.

Schlacher, T. A. and Woolridge, T. H. 196. Patterns of selective predation by juvenile, benthivorous fish on estuarine macrofauna.- *Mar. Biol. 125*: 241-247.

Schneider, D. W. and Frost, T. M. 1996. habitat duration and community structure in temporary ponds.- *J. N. Am. benthol. Soc. 15*: 64-86.

Schnell, Ö. A. and Willassen, E. 1996. The chironomid (Diptera) communities in two sediment cores from Store Hovvatn, S. Norway, an acidified lake.- *Annls Limnol. 32*: 45-61.

Schönborn, W. 1996. Algal aufwuchs on stones, with particular reference to the *Cladophora*-dynamics in a small stream (Ilm, Thuringia, Germany): production, decomposition and ecosystem reorganizer.- *Limnologica 26*: 375-383.

Sempeski, P.and Gaudin, P. 1996. Size-related shift in feeding strategy and prey-size selection in young grayling (*Thymallus thymallus*).- *Can. J. Zool. 74*: 1597-1603.

Sergeeva, I. B. 1996. Osobennosti stroeniya kariotipov tanipodin (Diptera, Chironoimidae). (Structural peculiarities of the karyotypes of Tanypodinae (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 64-67. Izd. Bot. Sada mosk. Univ., Moskva.

Serrano, M. A. S. and Nolte, U. 1996. A sit-and-wait predatory chironomid from tropical Brazil - *Fittkauimyia crypta* sp. n. (Diptera: Chironomidae). - *Ent. scand. 27*: 251-258.

Sherk, T. and Rau, G. 1996. Emergence of Chironomidae from Findley Lake in the coniferous forest of the Cascade Mountains after early and late thaws.- *Hydrobiologia 318*: 85-101.

Shobanov, N. A. 1996. Morfologiya i kariotip *Chironomus anthracinus* (Diptera, Chironomidae). (Morphology and kariotype of *Chironomus anthracinus* (Diptera, Chironomidae).)- *Zool. Zh. 75*: 1505-1516.

Shobanov, N. A. 1996b. Kariotip i morfologiya lichinki *Chironomus oculatus* sp. n. (Diptera, Chironomidae). (Kariotype and larva morphology of *Chironomus oculatus* sp. n. (Diptera, Chironomidae).)- *Zool. Zh. 75*: 1668-1675.

Smit, H., Velde, G. van der and Dirksen, S. 1996. Chironomid larval assemblages in the enclosed Rhine-Meuse Delta: spatio-temporal patterns in an exposure gradient on a tidal sandy flat.- *Arch Hydrobiol. 137*: 487-510.

Spies, M. and Reiss, F. 1996. Catalog and bibliography of Neotropical and Mexican Chironomidae (Insecta, Diptera).- *Spixiana Suppl. 22*: 61-119.

Steffens, W., Geldhauser, F., Gerstner, P. and Hilge, V. 1996. German experiences in the propagation and rearing of fingerling pikeperch (*Stizostedion lucioperca*).- *Annls zool. fenn. 33*: 627-634.

Steinhart, M. 1996. Die Chironomiden-Sukzession (Insecta, Diptera) auf überschwemmungsflächen des Unteren Odertales.- *TagBer. 1995 Dt. Ges. Limnol.*: 710-714.

Stigare, J., Lajic, S., Holst, M., Pigon, A. and Egyházi, E. 1996. The salivary gland 42-kDa phosphoprotein is a single-stranded DNA-binding protein with characteristics of the epithelial casein kinase N42 in *Chironomus tentans*.- *Molec. cell. Biochem. 141*: 35-46.

Stoichev, S. 1996. On the chironomid fauna from Bulgarian inland waters.- *Lauterbornia 25*: 117-123.

Stuijfzand, S. C., Shen, D., Helms, M. and Kraak, M. H. S. 1996. Effects of pollution in the River Meuse on the midge *Chironomus riparius*.- *Proc. Sect. exp. appl. Ent. Neth. ent. Soc. 7*: 211-216.

Suedel, B. C., Deaver, E. and Rodgers, J. H. Jr. 1996. Experimental factors that may affect toxicity of aqueous and sediment bound copper to freshwater organisms.- *Archs envir. Contam. Toxic. 30*: 40-46.

Suedel, B. C., Deaver, E. and Rodgers, J. H. Jr. 1996b. Formulated sediment as a reference and dilution sediment in definitive toxicity tests.- *Archs envir. Contam. Toxic. 30*: 47-52.

Svensson, J. M. and Leonardson, L. 1996. Effects of bioturbation by tube-dwelling chironomid larvae on oxygen uptake and denitrification in eutrophic lake sediments.- *Freshwat. Biol. 35*: 289-300.

Swift, M. C., Canfield, T. J. and La Point, T. W. 1996. Sampling benthic communities for sediment toxicity assessments using grab samplers and artificial substrates.- *J. Gt Lakes Res. 22*: 557-564.

Takamura, K. 1996. Changes in sex ratio of chironomid imagines from rice field waters.- *Arch. Hydrobiol. 135*: 413-421.

Tavares-Cromar, A. F. and Williams, D. D. 1996. The importance of temporal resolution in food web analysis: evidence from a detritus-based stream.- *Ecol. Monogr. 66*: 91-113.

Thiehl, R. 1996. The impact of fish predation on the zooplankton community in a southern Baltic bay.- Limnologica 26: 123-137.

Timm, T., Kangur, K., Timm, H. and Timm, V. 1996. Macrozoobenthos of Lake Peipsi-Pihkva: taxonomical composition, abundance, biomass, and their relations to some ecological parameters.- *Hydrobiologia 338*: 139-154.

Timm, T., Kangur, K., Timm, H. and Timm, V. 1996b. Macrozoobenthos of Lake Peipsi-Pihkva: long-term biomass cchanges.- *Hydrobiologia 338*: 155-162.

Tockner, K. 1996. Colonization experiments for biomonitoring riparian communities of a large regulated river, the Danube (Austria).- *Arch. Hydrobiol. Suppl. 113*: 433-442.

Tockner, K. and Bretschko, G. 1996. Spatial distribution of particulate organic matter (POM) and benthic invertebrates in a river-floodplain transect (Danube, Austria): importance of hydrological connectivity.- *Arch. Hydrobiol. Suppl. 115*: 11-27.

Tokeshi, M. and Reinhardt, K. 1996. Reproductive behaviour in *Chironomus anthracinus* (Diptera: Chironomidae), with a consideration of the evolution of swarming.- *J. Zool. 240*: 103-112.

Vazquez-Nin, G. H. and Echeverria, O. M. 1996. The polytene nucleus in morphological, cytochemical, and functional studies of messenger RNA transcription, processing, and transportation.- *Eur. J. Histochem. 40*: 7-16.

Velden, J. A. van der, Moller Pillot, H. K. M., Vallenduuk, H. J. and Wiersma, S. M. 1996. The occurence of *Chironomus balatonicus* (Diptera: Chironomidae) in The Netherlands.- *Ent. Ber., Amst. 56*: 14-15.

Ventura, M. and Harper, D. 1996. The impacts of acid precipitation mediated by geology and forestry upon upland stream invertebrate communities.- *Arch. Hydrobiol. 138*: 161-173.

Visa, N., Alzhanova-Ericsson, A. T., Sun, X., Kiseleva, E., Björkroth, B., Wurtz, T. and Daneholt, B. 1996. A pre-mRNA-binding protein accompanies the RNA from the gene through the nuclear pores and into polysomes.- *Cell 84*: 253-264.

Visa, N., Izaurralde, E., Ferreira, J., Daneholt, B. and Mattaj, I. W. 1996. A nuclear cap-binding complex binds Balbiani ring pre-mRNA cotranscriptionally and accompanies the ribonucleoprotein particle during nuclear export.- *J. Cell Biol. 133*: 5-14.

Wang, L., Zimmer, K., Diedrich, P. and Williams, S. 1996. The two-story rainbow trout fishery and its effect on the zooplankton community in a Minnesota lake.- *J. Freshwat. Ecol. 11*: 67-80.

Wallace, J. B., Grubaugh, J. W. and Whiles, M. R. 1996. Biotoc indices and stream ecosystem processes: results from an experimental study.- *Ecol. Applic. 6*: 140-151.

Wang, L., Zimmer, K., Diedrich, P. and Williams, S. 1996. The two-story rainbow trout fishery and its effect on the zooplankton community in a Minnmesota lake.- *J. Freshwat. Ecol. 11*: 67-80.

Warren, P. H. and Spencer, M. 1996. Community and food-web responses to the manipulation of energy input and disturbance in small ponds.- *Oikos 75*: 407-418.

Werner, M.-G., Mehner, T. and Schultz, H. 1996. Which factors influence the diet composition of age-0 ruffe (*Gymnocephalus cernuus* [L.]) in the Bautzen Reservoir (Saxony, Germany)?- *Limnologica 26*: 145-151.

Whiteman, F. W., Ankley, G. T., Kahl, M. D., Rau, D. M. and Balcer, M. D. 1996. Evaluation of interstitial water as a route of exposure for ammonia in sediment tests with benthic macroinvertebrates.- *Envir. Toxic. Chemy 15*: 794-801.

Wildhaber, M. L. and Schmitt, C. J. 1996. Hazard ranking of contaminated sediments based on chemical analysis, laboratory toxicity tests, and benthic community composition: prioritizing sites for remedial action.- *J. Gt Lakes Res. 22*: 639-652.

Wilson, R. S. 1996. *A practical key to the genera of pupal exuviae of the British Chironomidae (Diptera: Insecta)*. Fully revised February 1996 with an account of the CPET method of water quality monitoring.- Wedmore. 98 pp.

Wisniewski, J. R. and Grossbach, U. 1996. Structural and functional properties of linker histones and high mobility group proteins in polytene chromosomes.- *Int. J. devl Biol. 40*: 177-187.

Wolfram, G. 1996. Distribution and production of chironomids (Diptera: Chironomidae) in a shallow, alkaline lake (Neusiedler See, Austria).- *Hydrobiologia 318*: 103-115.

Wright, C. A., Ferrington, L. C. Jr. and Crisp, N. H. 1996. Analysis of chlordane-impacted streams using chironomid pupal exuviae (Diptera: Chironomidae).- *Hydrobiologia 318*: 69-77.

Wülker, W. F. 1996. *Chironomus pilicornis* Fabricius,

1787 and *C. heteropilicornis* sp. n. (Diptera: Chironomidae) in Fennoscandian reservoirs karyosystematic and morphological results.- *Aquat. Ins. 18*: 209-221.

Wurtz, T., Kiseleva, E., Nacheva, G., Alzhanova-Ericsson, A., RosÈn, A and Daneholt, B. 1996. Identification of two RNA-binding proteins in Balbiani ring premessenger RNP granules and the presence of these proteins in specific subsets of nuclear ribonucleoprotein particles.- *Molec. cell. Biol. 16*: 1425-1435.

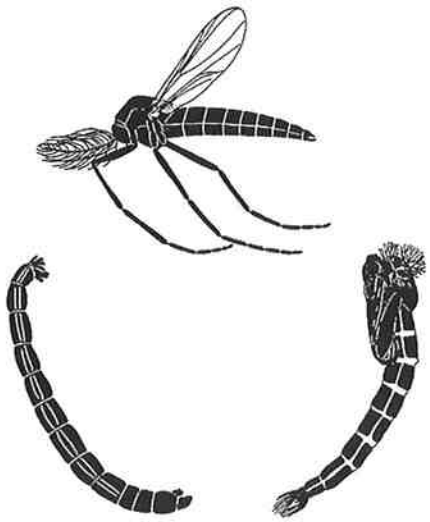
Yamamoto, M. 1996. Synonymic notes on two Japanese *Chironomus* (Diptera, Chironomidae).- *Jap. J. Ent. 64*: 56.

Yule, C. M. 1996. Spatial distribution of the invertebrate fauna of an aseasonal tropical stream on Bougainville Island, Papua New Guinea.- *Arch. Hydrobiol. 137*: 227-249.

Zamora-Munoz, C. and Alba-Tercedor, J. 1996. Bioassessment of organically polluted Spanish rivers, using a biotic index and multivariate methods.- *J. N. Am. benthol. Soc. 15*: 332-352.

Zettler, M. L. and Bick, A. 1996. The analysis of small- and mesoscale dispersion patterns of *Marenzelleria viridis* (Polychaeta: Spionidae) in a coastal water area of the southern Baltic.- *Helgol. Meeresunters. 50*: 265-286.

Zhirov, S. V. 1996. Sverkhchislennye khromosomy (B-khromosomy) v kariotipe komara-zvontsa *Chironomsus annularius* Meigen (Diptera, Chironomidae). (Supernumerary chromosomes (B-chromosomes) in the karyotype of *Chironomus annularius* Meigen (Diptera, Chironomidae).)- In: Gokhman, V. E. i Kuznetsova, V. G. (eds.): *Kariosistematika bespozvonochnykh zhivotnykh 3*: 29-31. Izd. Bot. Sada mosk. Univ., Moskva.



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