CHIRONOMUS

NEWSLETTER OF CHIRONOMID RESEARCH

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No. 5 April, 1993

9th Russian Symposium on Chironomidae in Borok

From the 12th to 16th of October 1992, Russian chironomid researchers met in the town of Borok (Jaroslavl region, Russia). The symposium was held at the Institute of Inland Water Research of the Russian Academy of Science, following the invitation of Dr. A. I. Shilova.

Unfortunately, financial difficulties and bad communication prevented many people from participating in the meeting. Nevertheless, twenty lectures were given and discussed. Interesting research results were presented by young scientists. There were also round-table discussions, nice informal meetings and private talks; pictures were taken as a keepsake.

During the meeting, it was decided to form a Russian Association of Chironomidologists. Dr. N. A. Shobanov has volunteered to take over this responsibility. (address; Institute of Inland Water Research, Russian Academy of Sciences, Box 47, Borok 152 742, Jaroslavl region [Russia])

A report about the participation of Russian colleagues in the 11th International Symposium on Chironomidae in Amsterdam, as well as about the resurrection of the *CHIRONOMUS* newsletter was given by myself. On this occasion, I have invited all chironomid-workers, especially from the Urals and Siberia, the Baltics and the Russian Far East, to actuate their efforts in sending information on their research interests and current studies to their regional represenatives for subsequent publication in *CHIRONOMUS*.

To render the results widely accessible, which were presented and discussed during the meeting, the abstracts of all lectures are given on pages 6 - 10.

If you are interested in further information, feel free to contact me:

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Institute of Ecology of the Volga River Basin
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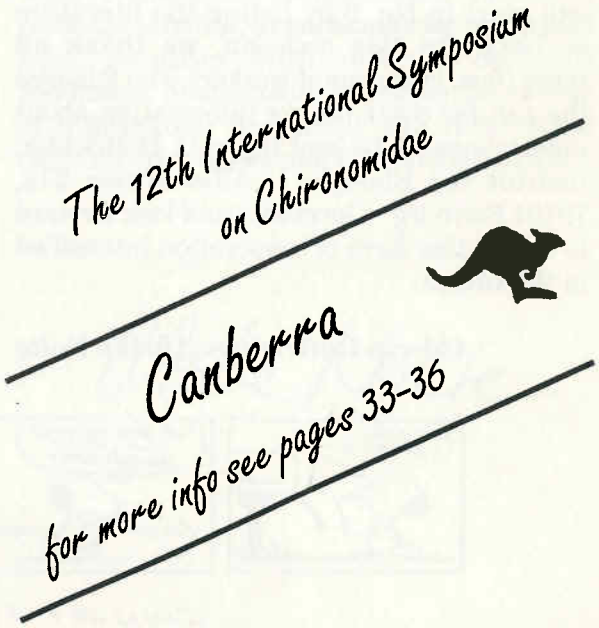
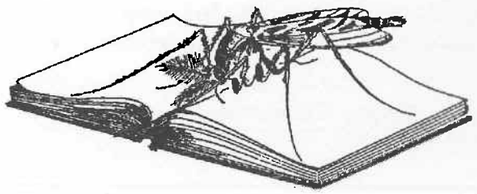


about *CHIRONOMUS*



CHIRONOMUS ' Current Bibliography

Much to our regret we have to inform our readers that a list of chironomid literature published in 1992 could not be included in this issue. This is due to the unfortunate delay in deliberations with the Norwegian editor who, initially, was interested in publishing the revised and updated bibliography (see *CHIRONOMUS* No. 4). Concerning its publication no progress has been made since 1991, thus it was decided to still include all references of 1992 into the coming brochured bibliography. Due to this, *CHIRONOMUS*' Current Bibliography" will start in No. 6 by listing the literature of 1993. On this occasion, we thank all those (few) chironomid workers who followed the call for contributing information about publications (to be sent to Dr. O. Hoffrichter, Institut für Biologie I, Alberstrasse 21a, 79104 Freiburg - Germany) and look forward to seeing this form of cooperation intensified in the future.

Odwin Hoffrichter, Ulrike Nolte

Finances

The newsletter has no money! Unfortunately, so little money has been deposited in the *CHIRONOMUS* account that *CHIRONOMUS* is up to its halters in debts. Yet, the Swedish University of Agricultural Sciences in Uppsala, strictly speaking **Richard K. Johnson**, generously made the printing of this issue possible. On behalf of all chironomid workers interested in our newsletter, the editorial committee of *CHIRONOMUS* gratefully acknowledges this essential support.

When the editorial work of this issue was closed (04.04.93), merely Austria, Argentina, Brazil, Canada, Denmark, Finland, France, Norway (in part) and Sweden have transferred money. In order to reduce expenses we decided to send the newsletter to subscribers via surface mail.

With this, I am appealing to all representatives to please transfer money to the bank account of the *CHIRONOMUS* newsletter. Individuals who will attend the meeting in Canberra are advised to pay directly at the symposium, to save the tremendous international remittance fees.

Ulrike Nolte

CHIRONOMUS Bank Account
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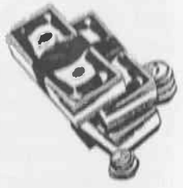

(For a bank transfer use the SWIFT address which is UBNO NOKK)
(If you use checks, please make it payable to *CHIRONOMUS* newsletter, Sparebanken NOR (address as above) in **Norwegian Crowns**!)

... CHIN UP! THE NEXT IS 1st APRIL 1994

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News from our Regional Representatives

With circulating *CHIRONOMUS* No. 4, the newsletter has won representatives for Argentina, Japan, New Zealand and the Far East of Russia:

Mr. Dr. I.K.G. BOOTHROYD, Waikato Regional Council, P.O.Box 4182, Hamilton East, **New Zealand** (Phone: 07 8567184; Fax 07 8568089)

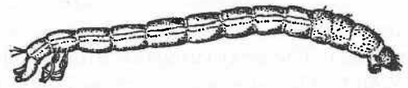
Mr. Dr. Toshio IWAKUMA, National Institute for Environmental Studies, 16-2 Onogawa, Tsukuba, Ibaraki 305, **Japan** (Phone: 0298 51 6111; Fax: 0298 51 4732)

Mr. Dr. Eugenyi A. MAKARCHENKO, Institute of Biology and Pedology, Far Eastern Branch of the Russian Academy of Sciences, 690022 Vladivostok, **Far East of Russia** (Fax: 0423 225 8484)

Ms. Lic. Julieta MASAFERRO, progeba - conicet, Apartado 47, 8400 S.C. de Bariloche, Prov. de Rio Negro, **Argentina** (Phone: 0944 42056; Fax: 0944 23654)

The address of Dr. Carlos DE LA ROSA, our representative for **Central America**, has changed: AID/Costa Rica - RDO, Apartado 825-1200, Pavas San José, Costa Rica (Phone: 047 0176; Fax: +506 47 0148)

Dr. P. MICHAILOVA, the representative for Bulgaria has kindly offered her help in translating Russian contributions into English. I do acknowledge this assistance, as reduction in staff at the Russian Academy of Sciences already affects the number and availabity of interpreters.



On this occasion I wish to thank all regional representatives for their assistance. World wide cooperation, which often means a personal sacrifice, in particular for colleagues from countries with difficult economic conditions, undoubtedly increases the variety of information and helps the resurrected *CHIRONOMUS* to become established again.

Ulrike Nolte

Reports from chironomid meetings

第19届国际昆虫学大会
XIX INTERNATIONAL CONGRESS OF ENTOMOLOGY BEIJING, 1992

From the 28th of June to 4th of July 1992, the 19th International Congress of Entomology was held at the International Convention Centre in Beijing. The theme of the congress was 'Living with Insects'. It was a grand gathering of unprecedented size, with 3554 participants and 400 accompanying persons from 78 nations.

During the conference, 2304 lectures and 1053 posters were presented in 18 sections. Furthermore, 200 symposia and "special interest group sessions" were held. 3650 abstracts have been included into the proceedings. The next congress will be held from 25th to 31th of August 1996 in Florence (Italy).

Professor Ole A. Sæther from the University of Bergen (Norway) and four Chinese chironomid workers attended the "special interest group session" - 'Taxonomy, Morphology, Biology, Ecology, Physiology, and Biogeography of Trichoptera and Diptera' (page numbers in the following research reports refer to the abstracts):

Sæther, O.A. & Wang, X.: *Xiaomyia, Shangomyia* and *Zhoumyia*, three new and unusual genera of Chironomini from oriental China, p. 19.

Wang, X. & Sæther, O.A.: A new species of the "marine" genus *Thalassosmittia* Strenzke & Remmert from the high land of Xizang (Tibet), China, p. 58.

Guo, X.W.: Studies of the chironomid community in Lake Nanhu (south lake). Wuhan, China, p. 20.

Wang, J.C. & Wang, S.D.: Podonominae - A new subfamily record of the Chinese Chironomidae and the description of *Sympotthastia khorensis*, p. 61.

Wang, S.D.: A first study of marine Chironomidae from China, p. 19.

Two further papers on chironomids have been included into the abstract issue, although the authors did not participate the meeting: Maheshwari, G. & Maheshwari, G.: Biosystematic studies of Indian Chironomidae, p. 21; Makarchenko, E.A. & Kerkis, I.E.: Review of Diamesinae from the Holarctic region, p. 19.

After the conference, Prof. Sæther visited the Nankai University in Tianjin and the Institute of Hydrobiology of the Chinese Academy of Sciences in Whuan, where he gave a lecture on 'Benthic Invertebrates as Water Quality Indicators'.

Xinhua Wang
Department of Biology
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Tianjin, 300071 (P.R. China)

The logo shows the Chinese silkworm and the Great Wall of China.

Open Dutch Chironomid Day

On Thursday 28th January 1993 about forty chironomid workers from three countries (the Netherlands, Belgium and Britain) gathered under overcast skies at the University of Amsterdam to participate in a chironomid day. Eight presentations were made in two session, the first concerned with ecological studies and the second with ecotoxicology bias.

The first two talks by **Wouter van de Bund** (University of Amsterdam, Aquatic Ecotoxicology) and **Floor Heinis** (Aquasense) examined the vertical distribution of chironomid larvae in sediments, with particular reference in the latter's presentation to oxygen concentrations and consumption. Later instar stages of most of the species sampled at Lake Maarsseveen I (NL) were found to burrow deeper than early instars of the same species. Larger larvae may be better able to withstand lower oxygen levels due to their lower surface area to volume ratios. The one exception seemed to be *Polypedilum*. Small larvae of this genus were found deeper than early instars of other species. The question of why this should be sparked much debate.

The attractions and disadvantages of the use of pupal exuviae of chironomids and other insect groups for aquatic monitoring was eloquently explained by **Henk Ketelaars** (NV WWB "De Brabantse Biesbosch"). Marc Evrard (UNECED, Namur, Belgium) reported on the successful application of this technique for monitoring river quality in the River Meuse (B). Higher percentages of tolerant species were found downstream of the input of a polluted tributary.

Opposing views on whether the presence of contaminates in sediments causes mouthpart abnormities of chironomids were expressed by **Kees van de Guchte** (RIZA, Lelystad, NL) and **Luc Janssens de Bisthoven** (Kath. Univ. Leuven, B) in the first two talks of the ecotoxicology session. Kees reported that the incidence of deformities seemed to relate better to modifying factors such as temperature, oxygen and substrate particle size than to sediment contaminants such as mineral oil, heavy metals, PCBs and PAH. Only dioxin levels appeared to correlate with deformities. Luc, on the other hand, presented evidence that sediment bound micropollutants do indeed correlate to the incidence of mouthpart abnormalities of chironomid larvae. One thing that both speakers agreed on was that larvae with mouthpart abnormalities appear to develop and emerge normally. This raises the question of whether mouthpart deformities will be of use for biomonitoring of pollution given that there is no evidence that larvae with poor dentistry have a reduced ability to survive and reproduce.

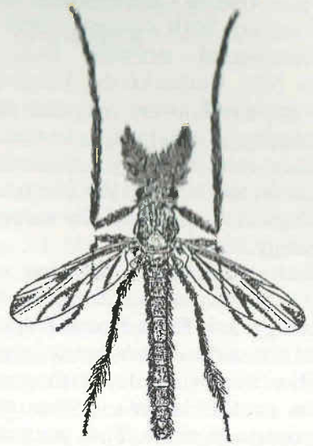
The penultimate presentation concerning the effects of ferric precipitates on *Chironomus riparius* was given by myself. The study relates to the direct addition of ferric sulphate for phosphate inactivation at Rutland Water, Leicestershire (GB). Mortality effects in laboratory experiments can be related to lowering pH by this addition, whilst reduced larval growth and development may be related to dilution of food by ingestion of precipitates.

Jaap Postma (University of Amsterdam, Aquatic Ecotoxicology) rounded off the day with an illuminating talk concerning the effects of cadmium contamination over several generations on *Chironomus riparius*. The results are intriguing, with fluctuations of mortality, numbers of eggs per egg mass and numbers of egg masses per female

occurring at all the test concentrations. At 3 µg/L cadmium, previously recorded as a no effect concentration, extinction of *C. riparius* occurred in the seventh generation. This indicates that studies of this nature over several generations could be very important for reassessing the "safe" levels of contaminants in ecosystems.

Much praise and thanks should go to Michiel Kraak and Wouter van de Bund for organizing what was a very stimulating and constructive meeting. Also thanks to Kees Davids and Michiel Kraak for chairing the sessions and to all those who made presentations. Let there be more of such meetings!

Neil Radford
University of Leicester
England



Abstracts of the lectures held at the symposium in Borok

Chironomid Communities; Biology; Ecology

Zelentzov, N.I. & Shilova, A.I.: On the chironomid fauna in Lithuania, Byeloruss, Ukraine and Moldova.

A species list of Chironomidae from Lithuania, Byeloruss, Ukraine and Moldova is presented for the first time. Approximately 500 imagos were identified, which had been collected between 28.05. and 03.07.1989 from 16 different sites. Out of the 143 species found, Tanypodinae, Orthocladiinae and Chironominae were present with 14, 38 and 91 species, respectively. The latter were present with 67 species of Chironomini and 24 Tanytarsini. For the regions studied, 81 species were recorded for the first time, including 26 species which are novel for the fauna ofthe CIS (Commonwealth of Independent States from the former USSR).

Silina, A.Ye.: Chironomid communities from the Voronezh region.

In emergence samples collected in the Voronezh region (51°60'N, 39°20'E) 66 chironomid species were identified. Chironomids were present in all water bodies studied. Chironomid communities were studied in respect to dominance structure, species diversity, abundance, biomass, and seasonal dynamics of the dominant species. Biogenic losses during chironomid emergence have been assessed preliminarily in different biocoenoses.

Bakanov, A.I. & Zhigareva, N.M.: Chironomid communities associated with macrophytes from lake Nero.

From the heterotrophic lake Nero (57°1'N, 39°3'E), which is densely covered with macrophytes, samples were taken from the benthal and phytal. Chironomids associated with 15 stands of distinct vegetation were sampled. Correlation analyses allowed us to quantify the relation between features of the macroinvertebrate communities and the ground and vegetation. Species diversity of chironomids was mainly affected by the macrophytic species composition. Indices of relative eurytopism for macroinvertebrates, and relative attractiveness of habitats are presented. The species exhibiting most eurytopic valency were *Chironomus* f.l. *plumosus* (benthal) and *Pentapedilum sordens* (phytal). Among the macrophytes, stands of *Myriophyllum spicatum* were most attractive for benthic and of *Butomus umbellatus* for phytophilous chironomids.

Klishko, O.K.: Chironomidae from lake Kenon, a cooling water storage for the Chita thermal power station.

Lake Kenon (52°N, 113°3'E) is situated in the upper reaches of the river Amur in the Transbaikal region. The species composition of a chironomid community from lake Kenon was studied, and its spatial distribution and abundance dynamics. Seasonal and long-term alterations of the biomass and production of chironomids, being dominant in the local benthos, mirror the extent of the eutrophication of the lake. Based on the population of *C. plumosus*, the role of chironomids in decomposing organic matter and self-purification of the lake was assessed, as well as for assimilation of biomass and migration of microelements in the lake.

Sokolova, N.Yu., Izvekova, E.I. & Palij, A.V.: The biology of *Chironomus piger*, Str. and its role in self-purification processes of a river.

The biology of *C. piger* was studied at the site of the sewage discharge from the purification plant of the town of Klin (Moscow region, Sestra river) from 1989 to 1990. Annual mean for larval abundance and biomass ranged from 96,000 (in 1989) to 348,000 ind./m^2 (in 1990), and 0.42 to 1.8 kg/m^2, respectively. The biomass peak of 5.2 kg/m^2 was recorded during fall in 1990. One generation took 21 days or 460 degree-days to develop. There commonly appear five to six generations during one growing season.

An essential finding was an increasing proportion of larvae with a deformed mentum, and a high infection rate by the mermitid *Hydromermis contorta* (22-53%). Oxygen uptake by larvae of *C. piger* was 1.2 times higher than the mean uptake by other chironomid species.

It was calculated that the total population of *C. piger*, which was massed mainly on a 7-km-long section of the river, is capable of processing 71% of the organic load reaching the river.

Systematics - Morphology

Grebenyuk, L.P.: Mouthpart deformities in *Chironomus* larvae at polluted sites of the Latka river (Rybinsk reservoir, Russia).

Mouthpart abnormalities in *C. piger* Str., *C. melanotus* Keyl, *C. obtusidens* Goetgh., *C. luridus* str. and *C. pankratovi* Grebenyuk et al. were studied in larvae from polluted sties of the Latka river with varying contamination levels. Among mentum, mandibles, premandibles, premento-hypopharyngial complex and ventromental plates, the mentum is most vulnerable structure to deformities. In cases of severe abnormalities all these structures were deformed.

Near the input of a polluted tributary (organic wastes), *C. piger* was the most abundant species with a mean density of 170,000 ind./m^2 during several years. It was interesting to see that this polysabrobic species was subjected to most numerous and most variable looking deformities. The number of deformed larvae can easily be compered among different species, whereas there exist essential differences in the character of abnormalities among the taxa. In *C. piger* mainly well chitinized structures were affected together with some mouthparts, while in larvae from other species poorly chitinized structures were deformed. It was concluded that the degree and character of mouthpart abnormalities are useful features in biomonitoring.

Zelentzov, N.I.: Novel species of Orthocladiinae from the genus *Acricotopus* Kieff. from the Transpolar Territory.

Characteristics of the male, female, pupa and IV-instar larva from the novel species *A. maritimus* Zelentzov are presented and discussed. The species was collected on the Danube island (Laptev Sea, Republic of Sakha, the Ust-Lena state reserve (74°N, 125°E), where the larvae inhabit small, shallow (0.5-0.7 m deep) pools. They live among aggregations of filamentous algae, as well as on dark silts. Imagos emerge in the first half of July.

Philinkova, T.N. & Belianina, S.I.: Morphology of two northern species of *Chironomus*..

This is the first presentation of all stages of the metamorphosis of two *Chironomus* species from the Polar Urals: *C. bundatus* sp.n. and *C. wülkeri* sp.n. Both species have been known karyologically from northern Sweden as *C.* sp. 1 and *C.* sp. 2 of the *C. maturus* complex (Wülker 1985: Entomol. Gener. 10: 125-132).

Philinkova, T.N.: Description of two northern species of *Chironomus*

The morphology of two *Chironomus* species (*C.* sp. 1, *C.* sp. 2), collected from the Jamal peninsula (70°N, 70°E), is presented. Data of larvae, pupae and imagos are given. The karyotypes of both species have been described earlier by Wülker from specimens collected in Finland and Sweden.

Karyosystematics

Shilova, A.I.: The genus *Lipiniella* Shilova: systematics, biology, distribution (Chironomidae, Chironominae).

The following five species from the genus *Lipiniella*, presenting different numbers of chromosomes, are presently known: *L. prima* Shil. et al. (L, 2n=8), L. sp. n. (LPI, 2n=8), *L. arenicola* Shil. (LPI, 2n=6), *L. kanevi* Zvereva (L, n=6), and *L. moderata* Kalugina (L,I, 2n=4). The habitats of all species are off-shore zones of large plain rivers, tundra lakes and streams, where they occur from the waters surface down to 2 m, and on silted-up sands. They are frequent in the European part of Russia, in west and east Siberia, and scattered in the Russian Far East.

Zhirov, S.V.: Chironomids from four ponds of different trophic status in the Pskov region.

From four small-sized waters in the Pskov region (57°5'N, 28°E) 13 chironomid species were identified. Karyological methods were employed in morphologically doubtful cases, leading to the first records of *Chironomus miditarsis*, *C. nigricaudatis* and *C. pseudoaberratus* for this region. The karyotypes of the three species are described.

Sergeyeva, L.V.: Morphology and karyotypes of two Tanypodinae from the Volga river.

Morphometric data and karyotypes of *Procladius choreus* Meigen and *Tanypus punctipennis* Meigen from the Volga river and its tributaries in the vicinity of the town of Saratov are presented. For the first time females of *P. choreus* are described by means of polytene chromosomes from salivary gland cells and metaphasal chromosomes from parapharyngeal ganglionar cells (L.IV). 2n=14 and 2n=16 has been found for *P. choreus* and *T. punctipennis*, respectively.

Iliinskaya, N.B. & Petrova, N.A.: Cytodiagnostic for larvae of the *Chironomus plumosus* group.

A cytodiagnostic table for identification of larvae of the *Chironomus plumosus* group was constructed. The novel approach is based on distinct structures of the chromosomes, rather than of the disc sequence. Evaluation of the latter is often hindered due to inversion polymorphism. The specific structure of chromosome IV is of major importance. Chromosome structures were found to be independent from seasonal modification changes and inversion polymorphism. Furthermore, their evaluation render the analysis of disc sequence unnecessary.

Petrova, N.A.: Similarities and differences in the chromosome systems of the families Chironomidae and Simuliidae from the order Diptera.

The studies of polytene chromosomes led to the following results: for Simuliidae 2n=6 (rarely 2n=4); for Chironomidae 2n=16, 14, 12, 8, 6,4. Simuliidae have long chromosomes, bearing resemblance to karyotypes of Orthocladiinae, while in most Chironomidae smaller-sized chromosomes are forming the nucleus. Both families were found to have additional B-chromosomes, the number of which varies from 0 to 8 (2N=6-14) in Simuliidae, and 0 to 2 (2n=8-10) in Chironomidae. In Simuliidae it is based on heterozygous, in Chironomidae on hetero- and homozygous inversions. In

both taxa, sex identification follows the XX-XV type. The karyological similarities detected, allow to unite both families into the superfamily Chironomoidea.

Belianina, S.I.: Cytological complexes of species from the genus *Chironomus* in the world fauna.

Data of 16 cytological complexes from *Chironomus* species are presented. The structure of the genus is discussed by means of karyological features.

Loginova, N.V. & Belianina, S.I.: *Chironomus usenicus*, sp.n. from the *C. plumosus* group.

All stages of metamorphosis, the karyotype and chromosomic polymorphism of *Chironomus usenicus*, a new species collected from the Uzen river (52°N, 42.5°E, Saratov region), are presented and discussed. The karyofund of *C. usenicus* shows seven sequences in the chromosomal arms A,B,C,D,G similar to *C. plumosus*, one sequence in the F-arm similar to *C. agilis* and one sequence in the G-arm similar to *C. behningi*. Additionally the novel species has seven sequences which have been unknown before in all species of the *C. plumosus* group.

Morozova, E.E.: On the diagnostics of species of the *Cryptochironomus defectus* group from the Volga.

Data on karyological examinations of larvae, pupae, and imagos in five species from the *C. defectus* group Kieffer are discussed. 2n=4 spp. have been differentiated as *C. supplicans* Meig. and *C. obreptans* Walk., 2n=6 spp. as *C. albofasciatus* Staeg., *C. psittacinus* Meig. and *C. defectus* Kieff. Particular reference is given to parameters which clearly discriminate the above listed species at the morphological and karyological levels.

Shobanov, N.A.: Karyofund of *Chironomus plumosus*.

(1) The standardization of discs within Maximova's system. Cytophotomaps for all chromosome arms of *C. plumosus* are presented. The regions according to Maximova's system are indicated as well as the discs within the regions. The number of discs in the arms is as follows: A-176, B-244, C-178, D-219, E-103, F-183, G-179.

(2) Inversion-type variants in the arms. The 18 versions established can be assigned as follows: in arm A-4; in B-2, in C-2, in D-5, in E-2, in F-2, in G-1. The three versions (A3, A4, D3) represent complex restructuring without any transitions similar to inversion steps. All versions were mapped according to Maximova's system, including marks of the points of ruptures within the discs. Previously published symbols for indentifying similar versions are compiled.

(3) The intra- and interpopulation polymorphism. An interesting result was that similarity can be much higher between populations which are separated by hundreds or even thousands of kilometres, than between specimens from one sample site. There exist, on the other hand, populations from nearby sites (less than 1 km distance) which have not a single genomic combination in common. The present data give evidence of the absence of the meridional gradient in interpopulation variability of the karyofund.

Phylogenetics

Shobanov, N.A.: Complex restructuring in the ancestor forms of the genus *Chironomus*.

Ecological data in conjunction with palaeontological studies, indicated that the ancestor species of *Chironomus* formed part of the *C. salinarius* type (larva without ventral tubuli) as well as of the cytological complex of the *C. riparius* (=thummi) group. Both have the chromocenter in common. The present-day species from polar regions (e.g. *C. cucini*) are considered to have a close affinity to these ancestor forms.

Shobanov, N.A.: Hypothetic ways and mechanisms of speciation in the genus *Chironomus*.

Species formation is surmised to be associated with the evolution (succession) of ecosystems, and is governed by natural alterations in the hydrochemical and, perhaps, nutrition spectrum.

The initiation of chromosome restructuring

is discussed from the point of view of a contact hypothesis. They occur in the presence of certain redistributions in the DNAs in the prophase of meiosis, under the impact of controlled changes in the intracell medium. A species formation usually is of spasmodic character. Moreover, similar changes occur in many individuals. Therefore, it can be surmised that the formation of one species can occur in different populations and in different periods of time, provided that there are similar evolution (succession) trends of the respective ecosystem. Evolution of organisms follow from diversified structural changes of a genetic, physiological and morphological type

The editorial committee of *CHIRONOMUS* acknowledges the support afforded by the Institute of Ecology of the Volga River Basin (Togliatti) in defraying all expenses for translation and mailing. Special thanks is to **Dr. G. S. Rosenberg**, the Director of the Institute.

CHIRONOMUS Special
FROM THE MUSEUM OF CHIRONOMID CURIOSITIES

The following text gives the essential parts of a notice by **August Thienemann** published in 1909 in WOCHENSCHRIFT FÅR AQUARIEN- UND TERRARIENKUNDE (50: 697-698), which was at that time a well circulated bulletin addressed to amateur naturalists. As this notice deals with one of the best known chironomid species, stressing the significance of rearings to taxonomy, I have chosen it for the *CHIRONOMUS* SPECIAL, hoping you'll enjoy this museum piece as I did when detecting it in Thienemann's literature collection. Thanks is to P. Haase who kindly did the translation, and to F. Reiss for poring over old journals to pick out the original advertisement with which Mr. Johannes Thumm has offered "red midge larvae" for fish food 85 years ago.

By the way: *C. thummi* Kieffer 1910 is a junior synonym of *C. riparius* Meigen 1804 (Credland, P.F. (1973) - J. nat. Hist. 7: 209-216). Although this is widely known, most unfortunately the invalid name is still frequently used.

Ulrike Nolte

***

"*Chironomus thummi*", "Chironomus langebrückii", and "*Chironomus plumosus*".

A word of enlightenment and an attempt of inspiration by Dr. August Thienemann, 1909.

In the proceedings (November 1909) reported by the Verein får Aquarien-und Terrarienkunde "Salvinia" of Meigen, the following passage is to be found: "Two advertisements

in the "Wochenschrift" give cause for amusement: 1. "Chironomus Langebrückii", 2. "*Chironomus thummi*". Fortunately, we now found "red midge larvae" also in Meißen and gave them the splendid name "Chironomus Meißenia von dem Ochsendrehii" (which is the popular term for a local mountain). "But not for the general public". For if everybody who encounters such a red midge larva would add the place of discovery or perhaps even his name as a variety, it may well be that next year, for the sheer quantity of different kinds, not a single amateur naturalist would be aware that the red midge larva has originally been identified as *Chironomus plumosus*. Such a falsification of varietal names should be nipped in the bud because only beginners think to get something new there".

I take the liberty to note the following in addition: Had the chairman of "Salvinia"

taken a closer look at the advertisements criticized by him, he might perhaps have noticed a difference between the two. After the name "*Chironomus thummi*" appears the hieroglyph "Kieff."; such a supplement is missing for "Chironomus langebrückii".

Someone who originally describes an animal in such a scientifically exact and unequivocal manner that it can be surely recognized according to that description, may also name this new creature. In order to record who named the animal, and to avoid future mistakes (of identity), the describer adds his own name, in full length or abbreviated, to the animal's name. ...Furthermore, it is customary that the name of the discoverer is often immortalized in the name of the animal; i.e., if discoverer and describer are not the same person. After all, the vanity of the naturalist does not go so far that someone creates a memorial to himself in this way! The "red midge larvae" which Johannes Thumm put on the market for the purpose of feeding aquarium fishes, had been raised by himself up to the stage of the pupa and winged insect. We have sent the midges obtained in this way to the best chironomid expert, Professor Dr. J. J. Kieffer of Bitsch, who established that the fish-feed *Chironomus* was a new, still undescribed species. He examined the animals (the description will be published soon) and gave them the name "*Chironomus thummi* Kieff." in honour of their discoverer and breeder.

Mr. Thumm is therefore entirely entitled to call the larvae offered by him *Chironomus thummi* Kieff. To call this "falsification of a varietal name" is, to say the least, somewhat imprudent! It is not Mr. Thumm's fault that other people did not quite recognize the significance of this name. If a trader, who collected his larvae at Langebrück, now thought "What Thumm can do, I can do as well", and christened his animals "Chironomus langebrückii"; and if "Salvinia" considered a still more splendid and longer name for her Meißen animals, then this is simply a regrettable misunderstanding which could have been avoided by a more thorough study of Thumm's advertisement and

better reflection about the meaning of the mysterious word "Kieff."....

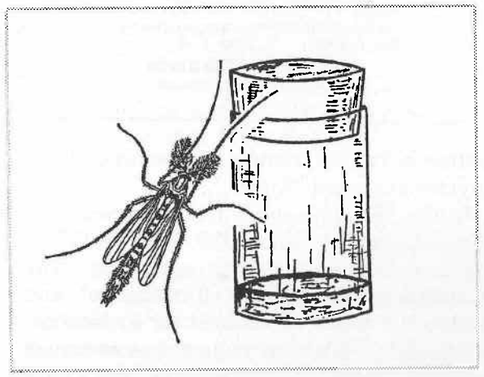
In the "Wochenschrift får Aquarien- und Terrarienkunde" Vol. 1908, p. 176-177, I have published a short essay on "The metamorphosis of the chironomids" and added the words "a request for assistance" to the title. Well, that request has remained without response throughout the large circle of aquarium enthusiasts; solely Mr. Thumm has already sent me about 20 different species of chironomid larvae which I could raise to metamorphosis.

Hence, I am making once more the feeble attempt to express my "request for assistance". I will gladly send a comprehensive, even illustrated guide to anyone who has the intention to engage in the rearing of chironomid larvae.

Or should I really place more emphasis on my request with the hint that the name of the fortunate collector or breeder may perhaps be immortalized in the annals of natural science?

Thienemann

Midge Matters



Rearing is simple: collect live larvae in the field. While in the field, place each larva in a separate 2-4 dram vial with a small amount of water from the habitat, and place a cork or other permeable stopper in it (don't use cotton! Adults lose legs and antennae in it). Maintain an even temperature and return to the lab.

Check vials daily. If you have collected fourth instar larvae, they may pupate, and eventually an adult may emerge. Allow the adult to harden for several hours or a day, and then knock it into the water with a squirt of alcohol. There you have it: an adult with its shed pupal and larval skins! Be sure to add preservative in an adequate strength (70-80% ethanol). Incomplete rearings (larva died in transition to pupa, or pupa died before adult emerged) can also be extremely valuable.

from: **John H. Epler**, 1992
Identification Manual for the Larval
Chironomidae of Florida
(note the ad page 24)

"Potato Mail"

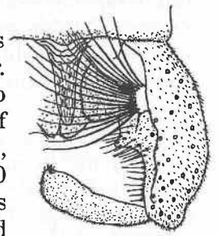
It has occurred to me that the *CHIRONOMUS* newsletter would be the ideal forum for circulating techniques that have been developed by individuals. For instance, I sent some *Chironomus* larvae to Dr. Wolfgang Wülker for identification karyosystematically. I thought I had supplied them with ideal conditions for a comfortable trip to Freiburg; he reported that they arrived "(very) dead"! In his letter he tells me of a technique developed by our Russian colleagues: If a potato is hollowed out and the larvae placed within, they arrive alive and healthy, presumably feeding on the exposed starch within.

Peter H. Langton
Huntingdon, Cambridgeshire
PE17 1YH (England)

Presentation of Current Research and Working Groups

Diamesinae from Japan

Current research by E.A. Makarchenko for a revision of the species distributed in Japan.



In the thirties, the famous chironomid researcher Dr. M. Tokunaga started to study the systematics of Diamesinae from Japan, in describing about 20 new species. Nowadays the Japanese chironomid fauna and its systematics is extensively examined by Dr. M. Sasa and his followers. Thanks to these scientists, further new species of Diamesinae from various regions of Japan have become known to science.

I am preparing a revision of Japanese Diamesinae in the light of the latest achievements in taxonomy and systematics of this subfamily. For this purpose I have analysed the type material kept in the collection of M. Tokunaga which was kindly loaned to me by H. Hashimoto. Moreover, I had the opportunity to visit Japan during spring in 1990 and 1992, where I collected additional material from running waters of the islands Honshú and Hokkaidó. I have done this sampling to obtain material for morphological as well as for karyological investigations. Karyological studies are very important for understanding the systematics of some groups within the Diamesinae, namely of *Pagastia lanceolata* (Tok.) and *P. orientalis* (Tshern.). The karyological analyses were carried out by Dr. I. E. Kerkis from the University of Novosibirsk.

The revision of the subfamily Diamesinae is still far from being completed. However, referring to the literature and our own data, the preliminary list includes 36 species, all of which belong to two of the seven tribes known for Diamesinae: Boreoheptagyiini and Diamesini (Protanypodini have not been found so far). In the near future, the descriptions of the new species recorded in the following list will be published in Japanese journals.

Boreoheptagyiini:
Boreoheptagyia brevitarsis (Tok.)
B. unica sp.n.
B. eburnea (Tok.)
B. nipponica (Tok.)

Diamesini:
Pagastia lanceolata (Tok.), comb.n.
P. nivis (Tok.),
P. angarensis (Linev.),
Pseudodiamesa branickii (Now.),
Ps. stackelbergi (Goetgh.)
Ps. crassipilosa (Tok.)
Ps. yosiii (Tok.)
Sasayusurika aenigmata gen. et sp.n.
Sympotthastia gemmaformis sp.n.
S. takatensis (Tok.) = *S. khorensis* (Makar.) syn.n.
Potthastia longimana K.
P. matunigra (Sasa et Kawai)
P. montium (Edw.)
P. nigatana (Tok.)
P. gaedii (Mg.)
Diamesa alpina Tok.
D. astyla Tok.
D. bertrami Edw.
D. dactyloidea Makar.
D. leona Rob. = *D. breviala* Tok.
D. japonica Tok.
D. matuimpedita Sasa
D. plumicornis Tok.
D. tsutsuii Tok.
D. gregsoni Edw.
D. vernalis Makar. = *D. tsukuba* Sasa syn.n.
Syndiamesa bicolor Tok.
S. shuzemagna Sasa
S. kashimae Tok.
S. oiraoctave Sasa
S. montana Tok.
S. rara ? (Makar.)

One genus and three species are new for science, and eight species are new for Japan. For five species unfortunately only females are known thus these cannot be compared with species collected previously. For *Ps. yosiii* and *D. astyla* there neither exist holotypes nor paratypes, thus specimens of these species, which have yet to be collected, will account for lectotypes.

What are the geographical distribution patterns of Japanese Diamesinae? At present, I am classifying the following four groups:

(i) Endemics and subendemics to Japan (*B. unica*, ?*Ps.yosiii*, S. *aenigmata*, *P. matunigra*, *P. nigatana*, *D. matuimpedita*, ?*D. astyla*, *D. plumicornis*)

(ii) East Palaearctic species (*B. brevitarsis, P. angarensis, D. tsutsuii, D. vernalis*)

(iii) Holarctic distributed taxa (*Ps. branickii, D. leona, D. bertrami, D. gregsoni*)

(iv) Species known from Japan and some regions of Russian Far East. These are *S. takatensis* known from Japan and the basin of the river Amur, *S. gemmaformis* from Hokkaidó and Sakhalin, *D. alpina* from Japan, the Kuril Islands, Kamchatka peninsula and mountain streams of the Magadan region (Arctic Circle); and *S. rara* recorded from the river Kedrovaja (Khasansk region of Primorie, Russia) and Hokkaidó only.

When I had started to investigate the *Pseudodiamesa*-group, which consisted of the genera *Pseudodiamesa* G., *Pagastia* Ol. and *Hesperodiamesa* Subl., its systematics was very entangled. *Pseudodiamesa* included the two subgenera *Pseudodiamesa* s.str. and *Pachydiamesa*, the latter of which with one Nearctic species, *P. arctica* Ol. (Oliver 1959). The first part of my study was to compare males, pupae, and larvae of *Pseudodiamesa* and *Pagastia* by morphology. When I finished this comparison, I decided that *Pagastia* has to be considered as a subgenus of *Pseudodiamesa* (Makarchenko 1989). At the same time, I described two subspecies of *P. orientalis* (Tshern.) from the Russian Far East: *P. orientalis* s.str. for the continental part and *P. orientalis insularis* for Sakhalin and the Kuril Islands. Later, when I had collected Diamesinae in Japan, I found that "my" subspecies *P. orientalis insularis* was identical with the Japanese species *P. lanceolata,* previously described by M. Tokunaga. However, *P. lanceolata* is very close to *P. orientalis* which has been confirmed by karyological studies, by Dr. I. E. Kerkis.

However, the latest karyological investigations of Dr. I. E. Kerkis have changed my point of view about the status of *Pagastia*, and I am now inclined to believe that *Pagastia* must be considered as a separate genus.

As I already have mentioned, the revision of Diamesinae is not finished yet. At present, I am preparing a paper about the systematics of *Pseudodiamesa*, *Pagastia* and *Hesperodiamesa*. It will include new observations as well as a review, by means of which all problems existent around the systematics of this group will be discussed in some detail.

I am grateful to my Japanese friends who assisted me during my collecting trips in Japan and made material of Diamesinae available to me. Their help has made these studies possible. Moreover, my research was partly supported by a fund from the Japan Society for the Promotion of Sciences. Very useful for understanding the systematics of the *Pseudodiamesa*-group was the karyological study by Dr. I. E. Kerkis, and type material of *P. orthogonia*, *H. sequax* and *Ps. nivosa*, generously loaned by Drs. D. R. Oliver and B. Serra-Tosio. Dr. E. Willassen has kindly sent me further material and has discussed some questions on the taxonomy of Diamesinae. I thank these colleagues for their support and interest in my work. Also, I am grateful to Dr. U. Nolte for editing my "Russian" English.

Literature cited:

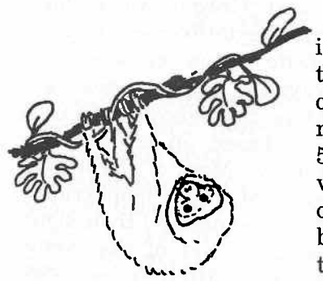
Makarchenko, 1989: Acta Biol. Debr. Oecol. Hung. 2: 265-274.

Oliver, 1959: Palaearctic Ent. Tidskr. 80: 48-64.

E.A. Makarchenko

Institute of Biology and Pedology of the Far East Branch of the Russian Academy of Sciences 690022 Vladivostok, Russia

Macrobenthic fauna of an Amazonian lake impacted by bauxite mining - Lago Batata (Pará, Brazil) a report on a M. Sc. theses currently done by **M. Callisto F. P.**



Lago Batata is located at the right margin of the Trombetas river(1°30'S, 56°20'W), a clear water ecosystem of the Amazonas basin. During ten years (1979-1989), the lake has received the overburden of a bauxite company of approximately 25.000 m^3 per day. Due to this effluent, mainly water and clay, has altered the natural characteristics of Lago Batata, impacting 30% of the lake's total area (8.54 km^2).

The aims of my thesis are, firstly, to compare the macrobenthos of disturbed and undisturbed areas because the benthic community is understood to indicate at best the ecological conditions present in the different parts of the lake. Secondly, I am studying the influence of the flood pulse on the structure and dynamics of macrobenthos, which is a periodical event when the water level of the river Amazonas is rising thus pushing water into its tributaries.

Six stations were established within Lago Batata and four on the impacted area. To record the effect of the inundation pulse, it was necessary to study a second lake undisturbed by human activities because both, the tailings as well as the natural inundation, flushes fine sediment into still water areas. For this, Lago Mussurá was chosen, a lake which is also situated in the basin of the river Trombetas, where two stations were established. From 1990 to 1992 samples were taken three-monthly during the principal moments of the annual flood pulse. Macrobenthos and sediment was taken with a corer apparatus with a cross section area of 0.0125 m^2. The following abiotic variables were measured: (1) In the water column: pH, oxygen saturation, light penetration, conductivity, alkalinity, total phosphate, total nitrogen (2) on the sediment: available phosphate, total nitrogen, and organic matter. Furthermore, the grain size of the sediment cores were analysed. Bauxite effluent, for instance, consisted of silt and clay smaller than 0.062 mm.

My preliminary results indicate that community composition and distribution differed in impacted and natural areas of Lago Batata. There also seem to exist an influence of the flood pulse of the river Amazonas which modified many abiotic parameters, inclusively the grain size composition of the sediment. The principal groups of benthic organisms present were Ephemeroptera, Chironomidae, Oligochaeta, Polychaeta, Nematoda, Ostracoda and Chaoboridae, among which Chironomidae and Ephemeroptera were very abundant in the impacted area. Chironomidae are known to include species which show a broad ecological valency. The mayfly *Campsurus* sp. appeared to attain highest densities in the impacted area, probably because of its capacity to built tubes on fine sediment.

The principal difficulty during my work is the identification of taxa. Almost all keys for aquatic invertebrates are elaborated for temperate waters, thus are rarely applicable to neotropical ecosystems. And, here in Brazil, there are not many people who study benthic communities. So, I would greatly appreciate, if any of the readers of *CHIRONOMUS* could send me references, articles or - if available - keys which serve for identifying tropical genera or species from the taxa named above, but especially for Chironomidae.

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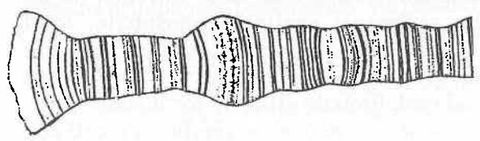


Chironomid research at the Institute of Zoology, Bulgarian Academy of Sciences

A report on current research by **P. Michailova**

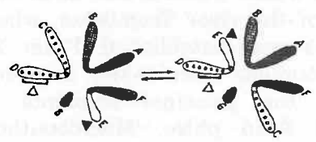
At the Institute of Zoology in Sofia, chironomid research is carried out mainly in the Laboratory of Cytotaxonomy, which belongs to the Department of Taxonomy, Faunistic and Zoogeography. Some work in my lab has been done by undergraduate students on the genera *Chironomus*, *Endochironomus* and *Glyptotendipes*. At present a post graduate student, Mr. Romeo Victorov, is studying the effects of heavy metal pollutants and radionucleotids on chironomids. Our scientific research has to rely on grant funded projects, so we have a small budget which causes many problems with the equipment, chemicals and so on. From time to time I have an assistant.

The main research topics of my working group are cytogenetics, cytotaxonomy and speciation within Chironomidae. To understand phenomena related to cytotaxonomy and karyotype evolution of this family, we combine detailed analyses of the external morphology with cytogenetic analyses and hybridization tests. Morphological studies are based on all instars of metamorphosis, and cytogenetic analyses include routine procedures and differential staining methods. For our hybridization tests, stocks of different chironomid species are employed which have been kept since long time at our laboratory. We have used them to solve problems related to taxonomy and evolution, relations between species and geographically isolated populations, as well as for some experimental studies. It is a pity that because of several problems (mainly financial ones) we won't be able to maintain these stocks at our laboratory.

Because of their exceptional polytene chromosomes, Chironomidae are of particular interest to cytotaxonomic and cytogenetic research. Species from the subfamilies Telmatogetoninae, Diamesinae, Prodiamesinae, Orthocladiinae and Chironominae have been characterized cytotaxonomically by us. The diagnostic value of karyotype features on polytene chromosomes are underlined. Polytene chromosomes are used to construct keys based on comparative karyological analyses. Most of these data have been generalized in the monography "The polytene chromosomes and their significance to the systematics of the family Chironomidae, Diptera" (**Michailova** (1989) Acta Zool. Fennica 186: 1-107).

In the field of speciation within Chironomidae, another focal point of interest, a wide range of aspects have been studied, such as the role of chromosome re-arrangements in speciation, stasipatric speciation, paths of formation of sibling species, interpopulation variants, and introgression and its significance for the sympatric divergence.

Polytene chromosomes of some species are employed for tracing back the microevolutional differentiation of species. These aspects are studied incooperation with colleagues from the Russian Academy of Sciences, from the Institute of Zoology in Sankt-Petersburg, and from the Institute of Cytology and Genetics in Novosibirsk. We look for adaptive mechanisms at the cytogenetic level providing for the existence of isolated populations under different climatic and edaphic conditions. Chromosomal rearrangements which are of importance to the formation, development and preservation of a specific gene pool are followed up.



We welcome correspondence and an exchange of material with workers interested in microevolution processes.

A further significant area of research are studies on the effect of heavy metal (pollution) on genetic systems, in particular on the cytogenetic level. Our studies of natural chironomid populations in conjunction with laboratory experiments have demonstrated that trace metals can induce structural as well as functional modifications to a karyotype.

The peculiarities of their polytene chromosomes make Chironomidae to prospective models to reveal structural and functional organization patterns of the eukaryote chromosome. Application of differential staining methods (C and Q) together with indirect immunofluorescence methods, provides information on the biochemical and molecular organization of polytene chromosomes at the cytological level. We are especially interested in structural and functional aspects of heterochromatin.

The other group at our institute interested in Chironomidae belongs to the Department of Hydobiology. Prof. Dr. B. Russev and his co-workers study benthos and, in particular, chironomid communities, their composition, population dynamics, and role in self-purification processes. At present, however, like in other eastern countries we are confronted with severe problems which negatively affect scientific research in our laboratory, and in the Institute of Zoology as a whole. We do not know what will happen in the next days. In spite of these difficulties, we do all necessary to continue with our studies on Chironomidae.

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Chironomid research in Spain

A report on current research by **N. Prat**

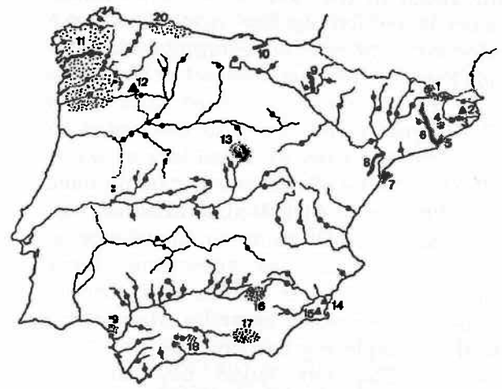

Fig. 1. Areas where chironomid research has been done in Spain. 1-Pyrenean lakes and rivers, 2-Lake Banyoles, 3-Rivers Ter and Sorrreig, 4-Montseny mountains, 5-Urban habitats in Barcelona city, 6-River Llobregat, 7-Ebro Delta, 8-River Matarranya, 9-River Arga in Navarra, 10-River Cadagua in Basque country, 11-River Ulla and Galicia, 12-Lake Sanabria, 13-Rivers in Sierra de Guadarrama, close to Madrid, 14-Laguna de la Mata, 15-Artificial ponds on the campus of Universidad de Murcia, 16-Sierra de Cazorla, 17-Sierra Nevada, 18-Lgunas de Anteguera, 19-Coto Donana, 20-Rivers in Asutrias. Triangles=lentic habitats, The mose studied rivers are highlighted. Circles= reservoirs studies by N. Prat and M. Real. Shaded areas are zones where surveys and/or extensive studies have been performed.

Chironomid research in Spain is quite recent. Apart from the previous studies done by Margalef in the forties, and some surveys made by French colleagues in Coto Donana and Sierra Nevada, more complete studies began with the investigation of Spanish reservoirs twenty years ago. Today, there are three major groups, with other colleagues also devoted to chironomid research in different parts of the country.

The oldest group (with the oldest researcher, of course) is in Barcelona, a city some of you may remember for the Olympic games and the last SIL congress. At present one member of the group (**Narcis Prat**) is studying the chironomids associated with leaves of *Nuphar lutea* in natural wells in the Ebro Delta. This work is done in collaboration with a colleague from the Instituto de Limnologia de la Plata (**Alberto Rodrigues-**

Capitulo). Furthermore, **Maria Rieradevall** who has recently finished her Ph.D. (as announced in the last *CHIRONOMUS* newsletter) is publishing her results on Lake Banyoles, and now studying the chironomids living in urban ecosystems in Barcelona (some results were presented at the last SIL congress). We are also interested in macroinvertebrates as indicators of water pollution. Some of this work is being done in a joint study with **Isabel Munoz**, who has made contributions to knowledge of chironomid fauna in the river Ebro. Following the former studies of N. Prat on the benthos of Spanish resevoirs, **Montserrat Real** is completing her Ph.D. on the same systems. She has found new taxa in addition to those found by N. Prat, and is investigating the relationships between environmental variables and the presence and abundance of profundal benthic communities. All the members of this group have been collecting samples in Lake Sanabria, the largest (although only 2 km long) natural lake in Spain. The chironomids of this lake may be studies in the future (if we find some time between lectures and other activities at the University!). A summary of our research in lakes has been published in a recent issue of the journal Limnetica, the official journal of the Spanish Limnological Association.

In the northwestern part of Spain, **Fernando Cobo** is working had on chironomids, completing the publication of drifting pupal exuviae in rivers from Galicia. Here, he has found several interesting exuviae which he at present is attempting to identify. Recently, he has collaborated with Peter Langton, and obviously Peter enjoyed his trip to Galicia last year! Fernando has two young students, **Jacobo Ramil** and **Maria José Serviá** who are studying the fauna of chironomids from Galicia and northern Portugal. Jacobo is more devoted to faunistic and taxonomic aspects, while Maria José is trying to rear chironomids in the laboratory to perform toxicity tests or produce food for aquarium fishes.

The third group of well established chironomidologists works in Granada, in the southeast, close to the Sierra Nevada mountains. There **Antonia Vilchez** and **Jesús Casas** are studying the taxonomy and ecology of chironomids in rivers and ponds of the area. Antonio is more interested in taxonomy, in particular pupal exuvia: he has collaborated in recent time with French colleague from Toulouse. Jesús is also interested in taxonomy and the symbiotic relationship between chironomids and cyanophyta (he has found a species, *Cricotopus levantinus* that inhabits algae of the genera *Nostoc* and *Rivularia*). As a co-worker of this group, **Dometria Calle** is now completing his Ph.D. on chironomid pupal exuviae drifting in the rivers of Cazorla mountains, an area close to the Sierra Nevada range, but with a more Mediterranean climate. Two students are now doing research with Antonio and Jesús. **José Manuel Casas** is looking for chironomids in ponds of the Sierra Nevada de Antequera - mountains between Granada and Malaga. Studies on these lagoons (with varying salinity and temporality) are of specific interest since, until now, the chironomid research in this area has been centered on rivers and scarcely on lentic habitats (excluding reservoirs, of course). **Duran Ignacio**, studies the taxonomy of an intriguing species *Epoicocladius*; later he will continue to study the population dynamics of this species.

In Madrid, **Oscar Soriano** (working in the Museo Nacional de Ciencias Naturales) is about to complete his Ph.D. on chironomids living in the mountains close to the capital of Spain. Oscar has studied drifting pupae from several rivers, with emphasis on the differences between communities upstream and downstream of reservoirs. In his work he compares the composition and abundance of different species in the drift and benthos. Also in Madrid, but working in the Centro de Estudios del Agua, **Jorge Malo** and **Cabeiel Soler** are working on the ecology and population dynamics of chironomid larvae as well as other macroinvertebrates) from the rivers on the Mediterranean coast and in Asurias.

Finally, in Murcia in southeastern Spain, **Josefa Velasco** has been doing chironomid research on the population dynamics of several species living in small artificial ponds

located on the University campus. In Navvarra, **Maite Jimenez** is completing her Ph.D. on the chironomids of rivers in this area.

Knowledge of chironomids in Spain has certainly progressed in recent years, and the future looks promising due to different, well-established groups at various universities. Due to the rapid economic growth of our country, and the intensive use of our water resources, many interesting habitats, such as wetlands, spring, mountain rivers, and temporary systems are endangered.
Several undescribed species (especially in the south of Spain) are undoubtedly going to disappear in the near future, unless more research is devoted to chironomids. I hope that the effort of my colleagues will serve as a "warning light" for water authorities, and a stimulus for younger generations.

I provide a map (thanks to Maria!) showing the different geographical places that I have cited, or where chironomids have been studied in the past. We are ready with our sunscreen and sunglasses to visit our colleague P. Cranston in Australia next year (we still have to collect the money!!). For those interested in knowing more about chironomidologists in Spain, we will be very pleased to provide more details.

Narcis Prat
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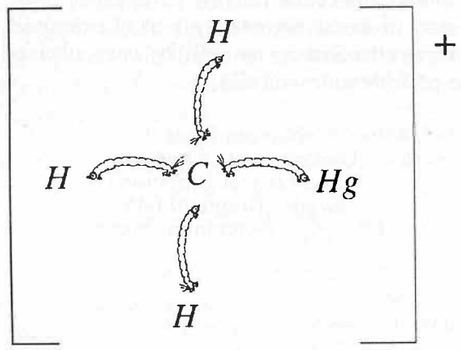
Short Communications

A new research initiative at the Experimental Lakes Area (ELA), northwestern Ontario, Canada

by **D. M. Rosenberg**



The Experimental Lakes Area Reservoir Project (ELARP) seeks to understand two by-products of the creation of reservoirs as part of hydroelectric development: (1) the emission of greenhouse gases (CO_2 CH_4); and (2) the generation and uptake into foodwebs of methyl mercury.

ELARP was begun at the world-famous ELA site in 1991. Coordinated by John Rudd and Carol Kelly (microbiologists at the Freshwater Institute and the University of Maitoba, respectively), the project has grown to include other university, industry, and government people from many parts of Canada and the U.S.A., and representing many different scientific disciplines.

The biogeochemistry and biology of lakes 632 and 979 and their surrounding peatland basins will be studied until July 1, 1993. At that time, Lake 979 will be flooded to mimic reservoir creation. Lake 632 will remain the unflooded, reference lake. Post-flooding studies will continue until 1995.

The macroinvertebrate component of ELARP is of direct interest to readers of *CHIRONOMUS*. Macroinvertebrate studies have taken two directions: (1) elucidation of the role of the benthos as a source of methyl mercury to higher trophic levels such as fish and birds; and (2) changes in the insect fauna of peatlands in response to inundation. Studies of the chironomid fauna are an essential part of these two objectives. First emerging Chironomidae will be monitored to estimate the quantity of methyl mercury available to resident insectivorous birds such as swallows. Second, flooding of the Lake 979 peatland will offer an opportunity to study changes in the unique (and normally stable) chironomid community inhabiting northwestern Ontario peatlands (Rosenberg et al. 1988; Rosenberg et al. submitted), as Lake 979 peatland changes from a semi-aquatic to a fully aquatic state.

For more information on ELARP, please contact the undersigned.

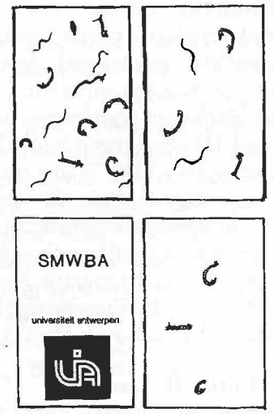
Literature cited:
Rosenberg, Wiens & Bilyi, 1988. Holarctic Ecology 11: 19-31.
Rosenberg, Wiens, Bilyi & Armstrong: Experimental acidification of a poor fen in northwestern Ontario: effects on emergence of Chironomidae (Diptera). Submitted to Can. J. Fish. Aquat. Sci.

David M. Rosenberg
Freshwater Institute
501 University Crescen
Winnipeg, MB R3T 2N6 (Canada)

The use of Split Moving Window boundary analysis on small, artificially ordered, data series from chironomid communities.

by **L. Int Panis**

When sampling chironomid communities to study spatial distribution patterns, the main problem is the number of samples you should take. Taking samples and processing them is usually the most time consuming part of each investigation. In most cases the number of samples is



rather limited. This makes it difficult to use a cluster analysis or multivariate ordination techniques to identify different communities within the sampled habitat. Moreover the interpretation of such an analysis is often subjective.

To overcome these problems, it is sometimes better to look for discontinuities in a series of samples taken along a transect. A useful method for locating boundaries in an ordered dataset was proposed by Cornelius & Reynolds (1991). Their method for Split Moving Window boundary analysis (SMW) consists of placing a window over the beginning of a data series and calculating a dissimilarity index between the two window halves. The data window is then shifted one position along the series until the end is reached. This results in a dissimilarity profile by plotting the index values versus the window midpoint locations. The significance of dissimilarity peaks in the profile is judged by comparing them with the expected mean dissimilarity in the dataset. This value is calculated in a Monte Carlo simulation by repeating all calculations for a large number of datasets in which the original positions of all sampling units in the series are randomized. Peaks extending more than two standard deviations above the expected mean are considered to be significant for a particular dataseries and window width. The width of the window can be chosen by the investigator. Larger window sizes are useful to detect discontinuities in noisy datasets. The data of all vectors in each of the two halves of the window is averaged. This reduces the variability of the expected mean.

We have used this method to locate discontinuities in small artificial data series. We took grab samples in a pond at random locations. Then we ordered the data of these samples according to an environmental factor that might be important to the benthic fauna. Because the actual location at which a sample was taken is not considered, we call this an artificial transect. We have written a computer program (SMWBA) to perform the SMW method Cornelius & Reynolds (1991) on small datasets. We have used this technique with datasets as small as 15 sampling units. The main problem that we have encountered when analysing these datasets is the existence of a "blind zone" at the beginning and the end of the series which is equal in size to half the window width. This is especially annoying in datasets in which the discontinuities are weak relative to the environmental "noise". We would like to know if other investigators have used this technique and what their results are.

SMWBA is written in Microsoft Qbasic (Version 1.0, included with DOS 5.0) so that it can be easily adapted. It allows the user to choose the window width, reorder the data according to any abiotic factor and transform the data. The similarity profile is based on Bray Curtis similarity coefficients (Bray & Curtis 1957) and can be graphically investigated and overlayed with the expected mean and its standard deviation. If anyone is interested in this program please contact me and I will send you a copy.

Literature cited:
Bray & Curtis, 1957: Ecological Monographs 27: 325-349.
Cornelius & Reynolds, 1991: Ecology 72: 2057-2070.

Luc Int Panis
Departement of Biology
University of Antwerp
Universiteitsplein 1
2610 Wilrijk/Antwerpen (Belgium)

Update on A Key to the Pupal Exuvia of West Palaearctic Chironomidae

I was invited by friends to join them walking (collecting!) in Switzerland again last summer. At Lac d'Illiez (2033 m a.s.l.). I found a strong population of *Tanytarsus sinuatus* (Goetghebuer, the species I had expected to find the previous summer at Lac St. Bernard (instead I found there Tanytarsus niger Andersen for the first time); also in the lake and in the nearby seepages I collected exuvia of *Orthocladius* (*Eudactylocladius*) Pel (conspicuous paired median point patches on tergites II-VI/VII; additional characters: the anal macrosetae are equal in size, the points of the posterior transverse bands on tergites II and III are larger laterally than medially, and peds spurii B are quite well developed on segements II and III. Fortunately, a drowned adult male collected with the exuvia confirms the species as *O. mixtus* Holmgren, a species previously known only from north European standing waters (Cranston, P.S. J. nat. Hist. 18: 890).

Peter H. Langton
3 St. Felix Road, Ramsey Forty Foot
Huntingdon, Cambridgeshire, PE17 1YH
(England)

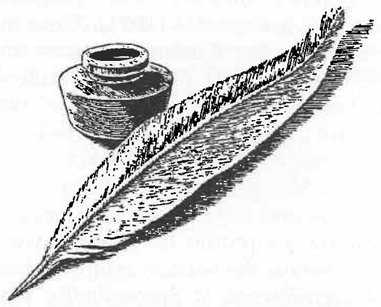
Notice - Board

In Response to *CHIRONOMUS* No. 4

***Derotanypus sibiricus* still in request**

At my request for specimens of *D. sibiricus* Kruglova & Chernosvski 1940, Esa Koskenniemi has kindly provided me with larvae of *Derotanypus* sp. from Mongolia. They differ clearly from those larvae reared from Germany *CHIRONOMUS* No. 4) which, again, gives evidence that this genus occurs at least with two species in the Palaearctics. However, the question is still open whether or not one of these taxa is *D. sibiricus* or whether both are new to science. As the descriptions published on *D. sibiricus* are insufficient, the re-examination of original material is necessary. For this purpose, I am repeating my request to please send material identified as *D. sibiricus* to:

Frank L. Schirmer, c/o Prof. Fittkau
Zoologische Staatssammlung München
Münchhausenstraße 21
D-8000 München 60 (Germany)



Chironomidae from Italy

In addition to the species list given by B. Rossaro (1988: Spixiana 14, 1992: *CHIRONOMUS* No. 4), U. Ferrarese has sent the supplementary list of taxa known to occur in Italy:

Telmatogetoninae:
Thalassomya frauenfeldi Schiner 1856
Orthocladiinae:
Halocladius variabilis (Staeger)
Heterotanytarsus apicalis (Kieffer)
Psectrocladius (*P.*) *fennicus* Storå
Chironominae:
Micropsectra contracta Reiss
Rheotanytarsus reissi Lehmann
Tribelos intextus (Kieffer)

Meetings

International Conference on Ecological Problems of Large River Basins

The Institute of Ecology of the Volga River Basin, Russian Academy of Sciences, is pleased to inform about the international conference on "Ecological Problems of Large River Basins", which will be held in **August - September 1993 in Togliatti, Russia.**

The conference will be dedicated to the 10th Anniversary of the foundation of the Institute of Ecology, which emerged from the former Biological Station.

Well-known hydrobiologists have worked here for many years. Among many others, one can mention Dr. S. M. Liakhov. In close co-operation with Dr. F. D. Mordoukhaj-Boltovsky, he contributed considerable knowledge about Chironomidae from the Volga river basin.

All people interested are welcome to our conference! Our address is:

Institute of Ecology of the Volga River Basin of the Russian Academy of Sciences Togliatti 445003, Russia

12th International Symposium on Chironomidae will be held from the 22nd to 26th of January 1994 at the **CSIRO in Canberra (Down Under).**

For further details and the application form see pages 33 to 36.

Advertisements

Proceedings of the 11th Chironomid Symposium

By the time you receive this newsletter, the Proceedings of the Amsterdam symposium should (finally) be out, containing more than 450 pages packed with the latest in chironomid research. They are published as two extra issues of the **Netherlands Journal of Aquatic Ecology**, and will be sent to all the participants of the Symposium.

For all the people that are interested, it is possible to obtain a copy by sending the order form to **Wouter van de Bund**, and transferring DFL 100 to account nr. 42.35.02.476 of the ABN/AMRO Bank, Amsterdam of Stichting ISCA, Kriuslaan 320, Amsterdam; please ensure that your payment is free of any transfer charges.

See page 36 for order form.

Identification Manual for the Larval Chironomidae of Florida

This comprehensive Manual by **John H. Epler** provides keys to chironomid the genera from six subfamilies, and to species (groups) from 25 genera. The diagnoses given are equipped with many clear line drawings in which diagnostic characters are often accentuated. This as well as the advices given in the introduction are very helpful, in particular to beginners. All diagnoses are supplemented by notes, referring to sample sites of the respective taxon in Florida, but also to special morphological features. The bibliography and checklist of Florida Chironomidae round off the guide.

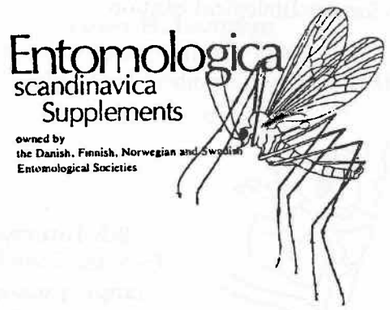
Hard to believe: the 302 thick-paged manual is free of charge! It can be obtained from: Biology Section, Bureau of Laboratories Florida, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, FL 32399-2400 (U.S.A.).

Egg Masses of Chironomidae
by **Ulrike Nolte**

Ent. scand. Suppl. 43: 1-76. 1993; with 47 figures (including 54 photographs and 118 line drawings)

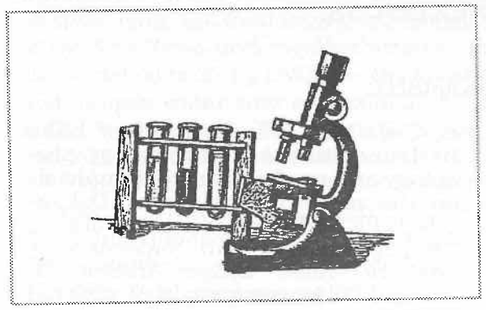
This review paper consists of four main parts:
(1) original data on egg masses of 25 genera (32 species) which are described and documented with photographs;
(2) a review of the literature published from 1713 to 1992 and its critical evaluation concerning the organization patterns present in chironomid egg masses; and
(3) a preliminary key constructed in conclusion of the review.
(4) In the illustrated glossary, definitions of structures are listed. These have been elaborated to analyze the organization patterns of the egg masses previously described, so as to identify equivalent structures, transform all descriptions of egg masses into a comparable data base, and construct the preliminary key.

In order to enhance the accessibility of the widely-scattered literature on chironomid egg masses, figures from original publications are presented wherever possible, so this review provides a documentation as well as a source of new information.



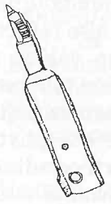
The price for Supplement 43 is US$ 33. Delivery costs are US$ 10 (stamps plus check redemption fee, surface mail), for air mail US$ 12. Payment must be made through bank checks in US Dollars. A name of an US bank must be given on the check. Credit Cards, unfortunately are not accepted. It can be ordered from I. Cederholm, P.O. Box 24, S-240 17 S. Sandby (Sweden).

Research Requests



How to get access to world-wide material of Diamesinae? A call for assistance!

As reported in this edition (see page 13), I am presently concerned with revising the Diamesinae from Japan. I am most interested in this subfamily, so my studies reach further than the systematics of species distributed in the Russian Far East - Japanese region. Dr. E. Willassen and I are planning to do a world-wide revision of Diamesinae. The only way to extent the scope of my studies is to borrow material from as many bio-geographical regions as possible. Thus, I am asking for help from all colleagues who have Diamesinae in their collections, namely males, if they could send me material for the purpose of revision. This will enable me to evaluate the systematics presently valid which, hopefully, will lead to a world-wide revision of Diamesinae. In exchange, I can provide material from the Russian Far East from my collection. I shall be grateful for any cooperation!

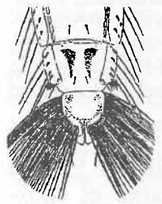


E. A. Makarchenko
Institute of Biology and
Pedology of the Far East
Branch of the Russian
Academy of Sciences,
690022 Vladivostok, Russia

Focus on *Glyptotendipes*

Within the scope of the programme "Species and its Productivity in a given area" which forms part of the UNESCO's programme "Man and Biosphere" complex investigations on the genus *Glyptotendipes* will commence. This decision has been made at the 9th Meeting of chironomid researchers in Borok, 1992.

All colleagues interested in this topic are invited to send suggestions for particular aspects to be studied, as well as to contact me for an exchange of ideas, experiences, publications etc. Information exchange on Chironomidae with ecological valencies similar to *Glyptotendipes* are also welcome.



N. Yu. Sokolova
21 Nezhinskaya
Street, Flat 118
Moscow 119517
(Russia)

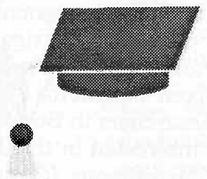
Attention to Ecologists interested in Lowland Streams!

Thirteen small, lowland rivers in the middle reaches of the Volga river (European part of Russia) have been studied for many years. All streams are located in the catchment areas of the Kuibyshev and Saratov reservoirs, which are important water supply systems. Particular attention has been paid to bioindication, composition, distribution, and dynamics of the chironomid communities, as well as to their role in self-purification processes of riverine waters of varying contamination levels. Publications (mainly in Russian) and long-term data from these studies can be obtained from me. Nowadays, the impact of the reservoir's waters on riverine transformations is also under study.

People interested in the above listed aspects, who like to elaborate and conduct international joint research programmes together with our institution are welcome to contact me.

T .D. Zinchenco (address see page 1)

THESES AND DISSERTATONS



THE NETHERLANDS:

Heinis, F. 1993. Oxygen as a factor controlling occurrence and distribution of chironomid larvae. Academisch Proefschrift (Ph.D. thesis), University of Amsterdam, 151 pp. (in English). Supervised by Prof. Dr. J. Ringelberg and Dr. C. Davids, Department of Fundamental and Applied Ecology.

From the Contents - Chapter 2: Factors governing distribution patterns of chironomid larvae in the Maarsseveen Lakes with special emphasis on the role of oxygen conditions. Chapter 3: Micro-environment of chironomid larvae in the littoral and profundal zones of Lake Maarsseveen I. Chapter 4: Relationship between physiological adaptations to unfavorable oxygen conditions of chironomid larvae and their distribution patterns. Chapter 5: Avoidance of low oxygen and food concentrations by the larvae of *Tanytarsus bathophilus* Kieffer. Chapter 6: Impedance conversion as a method of research for assessing behavioral responses of aquatic invertebrates. Chapter 7: Behavioral responses to changing oxygen concentrations of deposit feeding chironomid larvae of littoral and profundal habitats. Chapter 8: Short-term sublethal effects of cadmium on the filter feeding chironomid larva *Glyptotendipes pallens* (Meigen).

Floor Heinis
AquaSense, P.O.Box 41125
NL-1009 EC Amsterdam (The Netherlands)

GERMANY:

Otto, C.-J. 1991. The benthos of Lake Berlauer. Studies on the ecology, phenology and production with emphasis on the merolimnic insects. Doktorarbeit (Ph.D.) theses, University of Kiel, 239 pages (in German). Supervised by Prof. Dr. Klaus Bîttger, Institut für Zoologie, Ohlshausenstrasse 24-26, 2300 Kiel (Germany)

Abstract - Berlauer See is an eutrophic lake in the plains of northern Germany. Its surface area is 1.1 km^2 and its mean depth 9 m (max. 25.6 m). The benthic fauna was studied from 1988 to 1990 by means of emergence (floating traps: 0.5 m^2) and benthic samples (corer: 40.7 cm^2).

Chironomidae were the most diversified and abundant macroinvertebrates. Among the 108 chironomid species recorded, Chironminae were most numerous. All together there ocurred 57 other insect taxa: Trichoptera (35 species), Limoniidae (10), Ephemeroptera (5), Plecoptera (1), Megaloptera (1), Plannipennia (1), Chaoboridae (1). In benthos samples, Oligochaeta were most abundant next to Chironomidae. *Corynoneura lacustris*, *Glyptotendipes signatus*, *Microtendipes confinis*, and *Tanytarsus horni* were recorded the first time for the northern plains ("Zentrales Flachland" ref. to Illies 1978: Limnofauna Europaea), and the subfossil species *Corynocera ambigua* has been rediscovered for the Schleswig-Holstein region.

Benthic insects were most abundant near and in the reed belt, which was also reflected by much higher standing crop values attained in the phytal in comparison to records from the open water. For Chironomini higher proportions were recorded in the phytal, whereas Tanytarsini and Orthocladiinae attained higher densities and biomass values at open water sites.

From unpreserved material collected in emergence traps, dry weight (DW) and energy contents (EC) were determined for the following taxa: Chironomidae DW: 53 species (EC: 24 species), Trichoptera 18 (11), Ephemeroptera 4 (1) and Chaoboridae 1 (1). Based on these data, the total emergence biomass of the four listed taxa together attained in the phytal up to 25.4 g DW/m^2 (~ 452 kJ/m^2), and in open water sites at maximum 4.6 g DW/m^2 (~ 82 kJ/m^2). (For details for Chironomidae see the table below.)

Emergence cycles are reported for Diptera (43 species), Trichoptera (12), Ephemeroptera (3). Annual production (P/B) was estimated for 11 insect taxa, which differed considerably for many individual species in dependence of the sampling site. For the larvae of 8 taxa length to weight relationships (fresh weight) are reported (among others: *Procladius* spp., *Chironomus* spp., *Cryptochironomus* spp., *Glyptotendipes* spp., *Pseudochironomus prasinatus*).

Claus-Joachim Otto
Institut für Zoologie der Universität Kiel
Ohlshausenstrasse 24-26, D-2300 Kiel (Germany)

Spies, M. 1992. On the systematics of the genus *Parachironomus* Lenz (Diptera: Chironomidae) from the Neotropics. Diplomarbeit (M.Sc.thesis), University of Munich, 107 pp. (in German). Supervised by Prof. Dr. E. J. Fittkau and Dr. F. Reiss, Zoologische Staatssammlung München. Published: Spies, M. Fittkau, E. J. & Reiss, F. (in press) The adult males of *Parachironomus* Lenz, 1921, from the Neotropical faunal region (Diptera, Chironomidae). Spixiana.

Stur, E. 1993. Faunistic and ecological studies in epiphytic bromeliads (*Androlepis skinneri* and *Aechmea* sp.) in La Selva, Costa Rica. Diplomarbeit (M.Sc. thesis), University of Munich (Germany), 58 pp. (in German). Supervised by Dr. Rudolf Diesel, Dept. Verhaltensforschung, University of Bielefeld)

Abstract (results concerning Diptera) - During December 1990 and February 1991, relations between biotic and abiotic factors in bromeliad phytotelms were inspected. In the biological reserve La Selva, Costa Rica (10°3'N, 84°W), the annual mean precipitation is about 4000 mm, and one conspicuous floristic aspect are the many epiphytes such as Bromeliaceae. One bromeliad is composed of several separate water-filled phytotelms, also called tanks. In such tanks, frequency and distribution of the fauna were recorded, and the main abiotic parameters were measured. Among the latter, only oxygen saturation varied distinctly from 10% to 140% in the course of 24 hours. The water held in tanks of Aechmea was generally more acid than that in Androlepis, showing a mean pH of 3.2 and 5.2 respectively. Conductivity (Ω^{-1}) was low, not exceeding 30 µS in 75% of all tanks studied. The Androlepis plants inspected had 9 to 27 tanks, which held an amount of 0 to 160 ml water and 5 to 110 ml detritus. The volume of water per tank decreased from the centre to the margin of the bromeliad, whereas the contents of detritus increased. Within an individual plant, the oxygen content increased from the central to the peripheral tanks.

In the 84 tanks investigated, specimens from more than 30 orders (8 phyla) were present. Diptera were among the most numerous, and the most diverse order. Larvae from 10 families were regularly found - Chironomidae, Ceratopogonidae, Culicidae, Chaoboridae, Psychodidae, Tipulidae, Rhagionidae, Stratiomyidae, Syrphidae and Tabanidae - attaining at maximum 380 individuals per tank. It could be shown that within a plant the frequency of Culicidae increased from the outer to the inner tanks. Chironomidae were the most numerous insects, attaining up to 194 larvae per tank. Unfortunately, they could not be studied in detail. However, the genera *Chironomus* and *Polypedilum* (3 spp.) were identified. I have deposited the complete dipteran material at the Zoologische Staatssammlung München (Germany), including imagos of some Chironomidae.

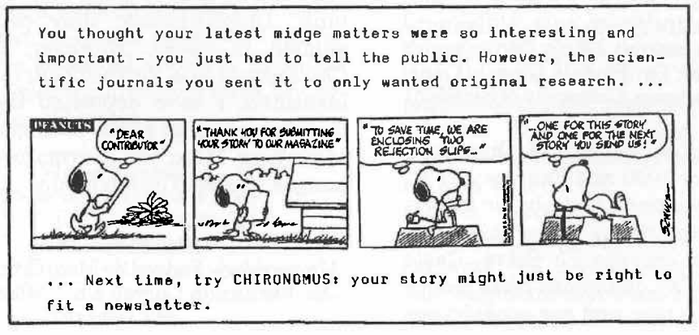
Elisabeth Stur
Universidade Federal de Mato Grosso, Biología
Av. Fernando Correa s/n, 78098 Cuiabá - MT (Brazil)

Bitusík, P., 1991: Using chironomids (Diptera:Chironomidae) for biological assessment of a 180 km long section of the River Hron. Ph.D. thesis, Comenius University, Bratislava, 91 pp. (in Slovak). Supervised by Dr. E. Ertlova and Dr. D. Matis, Zoological Institute, Comenius University, Bratislava.

The chironomid fauna of the River Hron (left tributary of the Danube River and one of the main West Carpathian rivers) was studied using pupal exuviae. From May 1986 to April 1987, samples from 16 sites were taken bi-weekly. Over 70 000 exuviae were collected, and 164 taxa were identified (27 new records for the fauna of Slovakia). Hierarchical classification UPGMA in connection with the Sorensen index and similarity ratio were used for classification of localities and taxa. The epirhitron was characterized by *Parametriocnemus* Pe 1, *Heleniella serratosioi*, *Krenosmittia boreoalpina*, *Rheotanytarsus nigricauda*, and *Micropsectra atrofasciata*-group The lower section of the river was dominated by *Orthocladius rubicundus*, *O. ombubratus*, *Rheocricotopus fuscipes*, *Eukiefferiella brevicalcar*, E. *minor/fittkaui*, *"Rheorthocladius* sp. A", *Tvetenia bavarica*, *T. verralli*, *Nanocladius parvulus*, *O. wetterensis*, *Diamesa cinerella*-group., *D. starmachi*, *M. notescens*, *M. bidentat.*, and *M. contracta/apposita*. These taxa occurred only in the river stretch, or their abundance was highest here, and resulted in this zone being classified as metarhithral. Pollution below the first large town caused a sharp change in taxa composition, with *Parachironomus trichocladius rufiventris*, *C.ricotopus triannulatus*, *C. bicinctus*, *C. tremulus*, and *O. rivicola* predominating. Strong pollution stress did not allow to differentiate the natural zonation of the river (meta-/hyporhithral), but presence of characteristic potamal taxa (*Dicrotendipes nervosus*, *Harnischia fuscimana*, *R. rhenanus*, *Parachironomus* spp. *Diplocladius cultriger* etc.) and the disappearance of rhithral taxa indicated a transition from rhitron to potamon at the most lower river section surveyed. Environmental factors and data obtained about the fish community supported this assumption.

Water quality was evaluated by the proportion of intolerant taxa vs. Menhinick's diversity index and individuals of intolerant taxa vs. Shannon diversity index, respectively. Changes of chironomid assemblages indicated main sources of pollution and followed the changes of water chemistry parameters. Water quality assessment based on relative abundance of taxa was more sensitive than assessment based on presence/absence data and mostly agreed to average values of saprobic indices. Changes in richness of scraper- and filter-feeder taxa corresponded to patterns of the river continuum concept. Collectors were the most abundant group in upper and lower sections of the river. However, taxa richness of scrapers was higher than that of collectors.

Peter Bitusík,
Faculty of Ecology, Technical University,
Masarykova 24, 960 53 Zwolen, Slovakia.

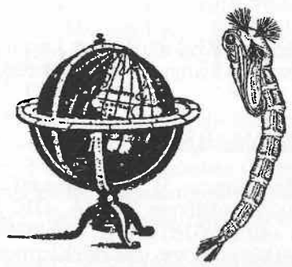


DIRECTORY OF CHIRONOMID WORKERS

The following list adds to the Directory started in issue No. 4 of *CHIRONOMUS*. To achieve a world-wide Directory of Chironomid Workers we encourage all workers, that have not done so, to send information to their regional representative or to:

Don Oliver or Mary Dillon
CLBRR, Agriculture Canada
K.W. Neatby Building, C.E.F.
Ottawa, ON, K1A OC6 (Canada)
Fax +1 613 995 1823

Please use the form on the last page of this newsletter.



ARGENTINA

Mr. Diego **Añon Suarez**, M.Sc., Universidad del Comahue (CRUB), Box 1336, 8400 Bariloche. Phone: +54 94423374. Interests: Taxonomy, benthic ecology.

Ms. Julieta **Masaferro**, M.Sc., PROGEBA - CONICET, Box 47, 8400 Bariloche. Phone /Fax: +54 94442056. Interests: Paleolimnology, taxonomy, holocene.

Ms. Analia C. **Paggi**, Ph.D., Instituto de Limnología "Dr. R.A. Ringuelet", Box 712, 1900 La Plata, Bs.As., Phone/Fax: +54 21 844687. Interests: Taxonomy, benthic ecology.

BELGIUM

Dr. N. De **Pauw**, Laboratory for Biological Research in Aquatic Pollution, J. Plateaustraat 22, B–9000 Gent. Fax: +32–91–644199. Interests: Water quality assessment.

BRAZIL

Mr. Marcos Callisto **de Faria Pereira**, (M.Sc. student), Biología, Lab. Limnología, Bloco A, C.P. 68020, Universidade Federal de Rio de Janeiro, Cidade Universitária, 21.941 Rio de Janeiro - RJ. Interests: benthic ecology.

Ms. Ulrike **Nolte**, Ph.D., Universidade Federal de Mato Grosso (UFMT), Box 3091, 78060-200 Cuiabá - MT. Phone/Fax: +55 65 627 2902. Interests: chironomid communities, life history, feeding ecology, small waters, running waters, egg masses.

Mr. Sebastiao José de **Oliveira**, Ph.D., Dept. of Entomology, Head of the Entomological Collection, Instituto Oswaldo Cruz, Av. Brasil, 4365, 2104-900 Rio de Janeiro - RJ. Phone: +55 5984342. Interests: Taxonomy

Mr. Frank L. **Schirmer**, M.Sc. (Ph.D. student) address until Nov. 1993: Instituto de Biociàncias, Universidade Federal de Mato Grosso (UFMT), Av. Fernando Correa s/n, 78090 Cuiabá - MT. Fax: +55 65 627 2902; afterwards: Zoologische Staatssammlung, Münchhausenstraße 21, D-8000 München 60 (Germany). Interests: Taxonomy, in particular Tanypodinae.

Ms. Mirian A. **da Silva Serrano**, M.Sc., (Ph.D. student) Instituto de Biociàncias, Universidade Federal de Mato Grosso (UFMT), Av. Fernando Correa s/n, 78090 Cuiabá - MT. Fax: +55 65 627 2902. Interests: Taxonomy

Ms. Elisabeth **Stur**, M.Sc. (Ph.D. student) address until Dec. 1994: Instituto de Biociàncias, Universidade Federal de Mato Grosso (UFMT), Av. Fernando Correa s/n, 78090 Cuiabá - MT. Fax: +55 65 627 2902; permanent address: Richard-Strauß-Straße 4, D-8078 Eichstätt (Germany). Interests: chironomid communities, zonation of intermittent tropical streams.

Ms. Alice Mihiyo **Takeda**, Ph.D., Av. Colombo 3690, 87020-900 Maringa - PR. Interests: the Paraná River.

BULGARIA

Dr. Parasakeva **Michailova**, Associate Professor, Institute of Zoology, Rouski 1, Bulgarian Academy of Sciences, Institute of Zoology, Sofia 1000. Tel: +395 2 88 28 97. Interests: Cytotaxonomy, speciation and evolution of Chironomidae.

CANADA

Miss Donna **Bedard**, Sediment Scientist, Water Resources Branch, Ontario Ministry of the Environment, 125 Resources Road, Etobicoke, ON, M9P 3V6. Tel: (416) 235–5970. Fax. (416) 235–6091. Interests: Bioassessment of contaminated sediments using lethal and sublethal endpoints of *C. tentans* larvae.

Mr. Bohdan **Bilyj**, Consultant, 12 Westroyal Rd., Etobicoke, ON, M9P 2C3. Tel: (416) 241–8612. Interests: Chironomid systematics.

Dr. Landis **Hare**, INRS–Eau, C.P. 7500, Sainte–Foy, PQ, G1V 4C7. Tel: (418) 654–2640. Fax: 654–2562. Interests: Ecotoxicology, ecology, taxonomy.

Dr. W.F. **Warwick**, Research Scientist, National Hydrological Research Institute, 11 Innovation Boulevard, Saskatoon, SK, S7N 3H5. Tel: (306) 975–5739. Fax: (306) 975–5143. Interests: Contaminant effects of chironomid communities.

Ms Susan **Wilson**, Ph.D. Candidate, Biology Department, Queen's University, Kingston, ON, K7L 3N6. Tel: (613) 545–6193. Fax: (613) 545–6617. Interests: Paleolimnology of saline lakes.

CHINA

Mr. Xianwu **Guo**, Fisheries Department, Huazhong Agriculture University, Wuhan, 430070. Interests: Ecology and systematics.

Mr. Bingchun **Ji**, Biology Department, Nankai University, Tianjin, 300071. Interests: Systematics.

Mr. Yiran **Ouyang**, Zhejiang Fisheries University, Zhoushan, Zhejiang Province. Interests: Ecology.

Mr. Jilin **Wang**, Fisheries Institut of Qinghai Province, Xining, 810012. Interests: Systematics.

Mr. Juncai **Wang**, Central Station of Environmental Monitoring, Liaoning Province, Shenyang, 110031. Interests: Biological monitoring.

Mr. Shida **Wang**, Institute of Hydrobiology, Academia Sinica, Wuhan, 430072. Interests: Systematics and ecology.

Mr. Xinhua **Wang**, Biology Department, Nankai University, Tianjin, 300071. Interests: Ecology and systematics.

Mr. Jingsong **Yan**, Nanjing Institut of Geography, Academia Sinica, Nanjing, 210008. Interests: Systematics and ecology.

Mr. Cangjiang **Ye**, Northwest Plateau Institut of Biology, Academia Sinca, Xining, 81000. Interests: Systematics.

Mr. Zuohun **Xie**, Dalian Fisheries College, Dalian, 116024, Liaoning Province. Interests: Systematics.

Mr. Leyi **Zheng**, Biology Department, Nankai University, Tianjin, 300071. Interests: Systematics.

DENMARK

Mr. Simon B. **Leonhard**, Bio/Consult, Johs. Ewaldsvej 42–44. DK–8230 Åbyhøj. Tel: +45 96251811. Fax: +45 8625173. Interests: Benthic ecology, use of chironomids in water quality assesment.

Dr. Pétur M. **Jónasson**, Freshwater Biological Laboratory, University of Copenhagen, 51 Helsingørsgade, DK–3400, Hillerød. Tel: +45 42267600. Fax: +45 48241476. Interests: Population dynamics and production of zoobenthos.

Mr. Jorgen Erik **Larsen**, 16 Østeralle, DK–8300, Odder. Interests: Life cycles of lentic chironomids.

Dr. Claus **Lindegaard**, Freshwater Biological Laboratory, University of Copenhagen, 51 Helsingørsgade, DK–3400, Hillerød. Tel:+45 42267600. Fax: +45 48241476. Interests: Population dynamics and production of zoobenthos.

Dr. Bo Vest **Pedersen**, Institute of Population Dynamics, University of Copenhagen, 15 Universitetsparken, DK–2100 Copenhagen. Tel: +45 35321312. Fax: +45 35321300. Interests: Chromosomal polymorphism in *Chironomus*.

FRANCE

Dr. Yannick **Delettre**, Station Biologigue de Paimpont, Université de Rennes I, F–35380, Plélan–le–Grand. Interests: All ecological aspects of terrestrial Chironomidae.

Mr. **Gendron**, Professor, Laboratoire d'Hydrobiologie, Université Paul Sabatier, 118, route de Narbonne, F–31.062, Toulouse Cedex. Tel: 61556730. Fax: 61556096. Interests: Ecology, running waters.

Dr. Henri **Laville**, Laboratoire d`Hydrobiologie, Université Paul Sabatier, 118, route de Narbonne, F–31062, Toulouse Cedex. Tel: 61556730. Fax: 61556096. Interests: Ecology, taxonomy biogeography, biological indicators, Mediterranean basin, running waters.

Dr. Joel **Moubayed**, Environnement counsel. Les Muriers, Bat A 3, Impasse Enclos de l`Herbette, 34000, Montpellier. Tel: (033) 67220533. Interests: Aquatic insects, taxonomy, ecology.

Dr. B. **Serra–Tosio**, Laboratoire de Biologie Alpine (Zoologie et Hydrobiologie), Université Joseph Fourier, F–38041, Grenoble Cedex. Tel: 76514600. Interests: Taxonomy, phylogeny, biography, ecology, Chironomidae, Diamesinae.

Mr. Jean **Verneaux**, Professor, Institut des Sciences et Techniques de l`Environnement, Laboratoire d`Hydrobiologie, Université de Franche–Comté, Place Leclerc, F–25030 Besançon. Tel: 81665738. Interests: Biology, ecology, taxonomy, structure and functioning of aquatic ecosystems.

Ms Valérie **Verneaux**, Student, Institut des Sciences et Techniques de l`Environnement, Université de Franche–Comtè, Place Leclerc, F–25030 Besançon. Tel: 81665738. Interests: Taxonomy, biology, ecology, structure and functioning of aquatic ecosystems.

Dr. Jean–Gabriel **Wasson**, CEMAGREF, 3 bis, quai Chauveau F–69336, Lyon Cedex. Tel: 72208787. Fax: 78477875. Interests: Benthic macroinvertebrates, ecology, running waters and lake typology.

GERMANY

Dr. Christian **Frank**, Laboratorium für Angewandte Biologie und Ökologie, Dornstadter Weg 15, 7900 Ulm – Jungingen. Tel: 0731–68777. Fax: 0731–68704. Interests: Ecology, bioindicators, energy metabolism.

Dr. Dietrich **Neumann**, Professor, Zoologisches Institut, University of Köln, Weyestal 119, D 5000 Köln 41. Tel: 221–470–3100. Fax: 4705171. Interests: Ecophysiology (biorhythms, biomonitoring), macrozoobenthos research in running waters.

INDIA

Dr. Geeta **Maheswari**, Research Scientist, School of Entomology, F–519, Kamala Nagar, Agra – (v.p.) PIN–282005. Interests: Biosystematics and behavioural ecology.

MEXICO

Mr. Javier **Alocer**, EPIP Research Associate, Interdisciplinary Research Unit for Health & Education Sciences, Environmental Conservation & Improvement Project, Universidad Nacional Autonoma de Mexico, Calle 15, #51 San Pedro de los Pinos, Mexico, D.F. 03800. Tel: (525) 271–3738. Fax: (525) 277–1829. Interests: Benthic macroinvertebrate community ecology, saline lakes.

Dr. Claude **Dejoux**, OSTROM, Calle Homero, 1804–1002 Col. les Morales, 11510 Mexico City (D.F.). Tel: (52) 5 395.1085. Fax: (52) 5 395 4227. Interests: Ecology and taxonomy of macroinvertebrates, running waters, tropical lakes, west and central Africa, Andes.

NEW ZEALAND

Dr. Ian K. G. **Boothroyd**, Environmental Resource Scientist, Environment Waikato, P.O. Box 4010, Hamilton East. Tel: 07 8567184. Fax: 07 8568089. Interests:: Population ecology, taxonomy, systematics, chironomids as indicators of pollution and habitat quality.

PHILIPPINES

Ms Zenaida Batac **Catalan**, Lecturer, Institute of Environmental Science and Management, The University of the Philippines at Los Banos, College, Laguna. Interests: Taxonomy, bioassay, biological indicator.

RUSSIA

Dr. E. Vl. **Balushkina**, Zoological Institute, Russian Academy of Sciences, Universitetskaja nab. 1, 199034 Sankt–Peterburg.

Dr. M.A. **Filippova**, Institute of Cytology and Genetics, Siberian Branch, Russian Academy of Sciences, 630090 Novosibirsk.

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Dr. L.I **Gunderina**, Institute of Cytology and Genetics, Siberian Branch, Russian Academy of Sciences, 630090 Novosibirsk.

Dr. A.G. **Istomina**, Institute of Cytology and Genetics, Siberian Branch, Russian Academy of Sciences, 630090 Novosibirsk.

Dr. I.E. **Kerkis**, Institute of Cytology and Genetics, Siberian Branch, Russian Academy of Sciences, 630090 Novosibirsk.

Dr. I.I. **Kiknadze**, Institute of Cytology and Genetics, Siberian Branch, Russian Academy of Sciences, 630090 Novosibirsk.

Dr. O.K. **Klishko**, Institute of Natural Resources, Siberian Branch, Russian Academy of Sciences, 674014 Chita.

Dr. Eugenyi A. **Makarchenko**, Chief, Laboratory of Freshwater Hydrobiology, Biology and Pedology of the Far Eastern Branch, Russian Academy of Sciences, 690022 Vladivostok – 22. Interests: Taxonomy, systematics, biology,distribution, Podonominae, Diamesinae, Prodiamesinae, Orthocladiinae, mountain rivers and streams.

Dr. Marina A. **Makarchenko**, Researcher, Laboratory of Freshwater Hydrobiology, Biology and Pedology of the Far Eastern Branch, Russian Academy of Sciences, 690022 Vladivostok – 22. Interests: Larvae, river ecosystems.

Dr. N.A. **Petrova**, Zoological Institute, Russian Academy of Sciences, Universitetskaja nab. 1., 199034 Sankt–Peterburg.

Dr. Valentina I. **Proviz**, Limnological Institute, Russian Academy of Sciences, Ulan-Batorskaya 3, 664033 Irkutsk. Fax: +7 95 420 2106. Interests: Karyosystematics, morphology.

Dr. A.I. **Shilova**, Institute of Biology of Inland Waters, Russian Academy of Sciences, Jaroslavl' district, Nekous rayon 152742, Borok.

Dr. N.A. **Shobanov**, Institute of Biology of Inland Waters, Russian Academy of Sciences, Jaroslavl' district, Nekous rayon 152742, Borok.

Dr. N.I. **Zelentsov**, Institute of Biology of Inland Waters, Russian Academy of Sciences, Jaroslavl' district, Nekous rayon 152742, Borok.

SLOVAKIA

Dr. Peter **Bitusík**, Assistant Professor, Faculty of Ecology, Technical University, Masarykova 24, 96053, Zvolen. Tel: 42 85 22312. Interests: Biological assesement of flowing waters based on chironomids.

SWITZERLAND

Dr. Brigitte **Lods–Crozet**, Laboratoire d'Ecologie et de Biologie Aquatiques, 18 chemin des Clochettes, University of Genèva, CH–1206 Genèva. Tel: 0227057100. Fax: 0027894989. Interests: Ecology, benthos of lakes, biological indicators.

UNITED STATES OF AMERICA

Mr. Arshad **Ali**, Professor of Aquatic Entomology and Ecology, Central Florida Research and Education Center, University of Florida, 2700 East Celery Avenue, Sanford, FL 32771–9608. Tel: (407) 330–6735. Fax: (904) 392–2643. Interests: Ecology and control of pestiferous Chironomidae.

Mr. Michael W. **Heyn**, Entomologist, Toxikon Environmental Sciences, 106 Coastal Way, Jupiter, FL 33477. Tel: (407) 744–3476. Fax: (407) 575–2497. Interests: Systematics of *Glyptotendipes*.

Mr. Martin **Spies**, Research Entomologist, Orange County Vector Control District, P.O. Box 87, Santa Ana, CA 92702. Tel: (714) 971–2421. Interests: Systematics, taxonomy, nuisance species and control.

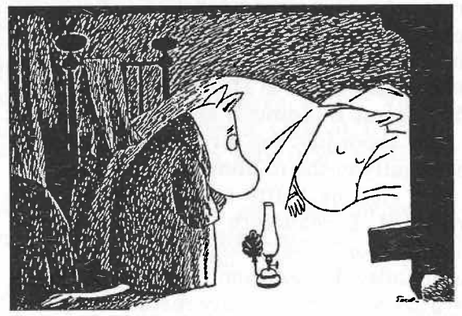
The 12th International Symposium on Chironomidae
Canberra, Australia; 22nd - 26th January 1994

Abstract by **1st November 1993**

You may use up to 500 words, in English. If possible deliver in a popular word processed form (tell us which) or in ASCII (Export) format on any sized diskette (DOS or Mac). For typewritten abstracts, please use a new ribbon to ensure legibility when scanned into the computer.

... about the following items, please fill in the form on page 36.

Accommodations (Overseas visitors only)



Please inform where you intend to stay (see accompanying information given on pages 34-35, concerning in the range available; Please make your own reservations, citing "The 12th International Symposium on Chironomidae").

Optional formal dinner

University House (US $ 40 / Aus $ 50), including wine, not included in registration fee).

Do you have any dietary restrictions?

Post-Conference excursion

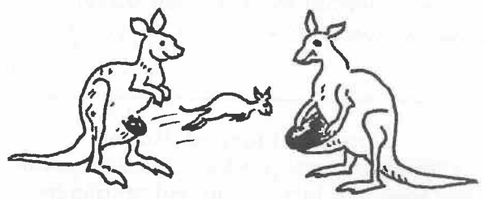
There will be an optional full-day excursion to a pristine river (the Shoalhaven), and a sub-coastal montane "Gondwanan" forest (with summer-cool streams and terrestrial leeches). Packed lunch and an evening meal in a historic village.

Cost US$50/Aus$80 to include transport and meals.

Interested?

There may be a demand for a longer duration excursion, to include the coast (ozone-absorption, surfing, fishing, but too far south for the reef). Please indicate your interest, but remember it is peak tourist season for the locals.

The 12th International Symposium on Chironomidae, Canberra, Australia, 22nd - 26th January 1994



Collecting permits

.... are required from each State, and separately for National Parks and State Forests. Permits must be obtained to export specimens. A most important control is that holotypes described from Australian material "must" be returned to Australia - this is a condition of export permission.

Weather

January in Canberra is hot (often mid- 30 °C, rarely higher). At an elevation of 600 m asl and without atmospheric pollution, the UV radiation is strong. Bring and wear (outdoors), a broad-rimmed hat and use factor 15 blockout on exposed skin and lips. The humidity is low although rain can fall in any month (annual average 700 mm). The summer temperature drops at night to a comfortable 15°C, or so - outdoor evening eating requires additional clothing. After wet winters, mosquitoes can be a minor outdoor irritant - in a hot year they are scarce. They carry no disease in Canberra, but in other parts of the country some airborne viruses are known: malaria is absent.

For those travelling more widely in Australia, January is monsoonal in the north, and climate and travelling conditions may be very difficult in the Kimberley, Northern Territory and northern Queensland. For those who wish to sample more Gondwanan areas, south-eastern mainland and Tasmania have pleasant summers. The southern part of Western Australia and South Australia have Mediterranean climates and are hot and dry in January (their excellent wineries are well worth visiting at this time).

Canberra

... is the federal capital, a cosmopolitan town of 300,000 people, predominantly working in the public service. The city is filled with green spaces, native bush and low-density suburbs with a compact central district a short walk from the University and CSIRO. Other edifices such as Museums, Art Galleries, Parliament Building(s) are scattered along a lake shore just too far apart for walking (especially in the midday sun).

The city, as befits a town full of well-travelled bureaucrats and international ambassadors, has restaurants of every nationality. Prices from very cheap-eats to Hyatt-style but generally restaurant prices are much less than for equivalent quality in Europe.

Options for Accommodations

(please, make your own reservations)

UNIVERSITY HOUSE
Contact: Lynn Gunn
Postal Address: University House, GPO Box 1535, Canberra City, ACT 2601 Phone: (06) 249-5211; Fax: (06) 249-5252

Rates: $75/night single, $87/night double (this is the group rate if the Conference is quoted).
Meals: Breakfast available in Boffins *Bistro:* $8.50 Continental, $12.50 Full *Breakfast:* Both the cafeteria and Bistro are open for Lunch and Dinner.
No deposit required; but a charge will be made if not cancelled.

Location: 10 minutes pleasant walk across the Australian National University campus from student halls (see below) and CSIRO.

BRUCE, BURTON AND GARRAN HALLS
Contact: Maria Powell

Postal Address: Burton and Garran Hall, GPO Box 813, Canberra City, ACT 2601
Phone: (06) 267-4700; Fax: (06) 267-4450

Rates: Bed and Breakfast - $33/night single, $51/night double (Bruce Hall). Full Board - $42.50/night single, $88/night double (Bruce Hall). Deposit equivalent to 1 nights accommodation required.

Location: 10 minutes pleasant walk across the Australian National University campus to University House, two minutes from CSIRO.

CANBERRA MOTOR VILLAGE
Postal Address: Canberra Motor Village, GPO Box 300, Canberra, City, ACT 2601
Phone: (06) 247-5466; Fax: (06) 249-6138

Rates: single; $37-73 per night for accommodation ranging from Caravans - Cabins - Motel; double Motel, with cooking facilities, $94 per night.
There are restaurant facilities available for Breakfast, Lunch and Dinner. Breakfast ranges from $5.50 - $9.
A deposit equivalent to 1 nights accommodation is required. Accommodation rates in January are high season.

Location: Set in semi-natural bushland, about 15 minutes pleasant walk from CSIRO, another 5-10 minutes to Australian National University campus venues.

CANBERRA YHA HOSTEL
Postal Address: 191 Dryandra St., O'Connor, ACT 2601
Phone: (06) 248-9155; Fax:(06) 249-1731

Rates: $15/night/person (4 share dorm), twin room $18-19.
Meals: Kitchen facilities
Deposit 25% of total accommodation cost or credit card number.

Location: 5 minutes further from CSIRO /University than Canberra Motor Village.

Registration

Wild fluctuations in exchange rates make it difficult to predict for January 1994. However, the registration fee will be US$100 or Aus$150 for employed scientists, US$60 or Aus$85 for "*bona fide*" students and unsalaried scientists. Accompanying persons have the option of the full social programme at a cost of US$30 or Aus$40. You may speculate in your choice of currency for the bank draft, but please make it payable to the "12th Chironomid meeting". Cheques may be sent directly to Peter Cranston or deposited in the "12th International Symposium on Chironomidae" account, with the CSIRO Co-Operative Credit Society Ltd, Black Mountain Laboratories, Black Mountain, ACT 2602. Registration includes a reception, mid-conference excursion and barbecue. Costs of the post-conference excursion will be collected during the conference.

Abstract by 1st November 1993; for details see page 33.

Registration form:

I wish to participate in the 12th International Symposium on Chironomidae.

TITLE..... SURNAME .....
GIVEN NAMES .....
ADDRESS .....
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No. of accompanying person(s).....

I shall give a paper / poster (circle as appropriate)

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Special requirements for presentation.....
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Where do you intend to stay?.....
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Please identify your payment enclosed:

Registration (US$/Aus$) .....

Formal dinner (US$/Aus$) .....

For the formal dinner, any dietary restrictions?
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Are you interested in a Post-Conference-Tour?

Yes ☐ No ☐

For details see page 33.

Please send the completed form to: **Dr. Peter S. CRANSTON**, Division of Entomology, CSIRO, P.O. Box 1700, Canberra, ACT 2601 - Australia (Phone: + 61 6 2464282; Fax +61 6 2464000)

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I would like to receive the Proceedings of the XIth Symposium on Chironomidae; I have transfered DFL 100 to account nr 42.25.02.476 of the ABN/AMRO Bank, Amsterdam, The Netherlands.

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1st of April 1994

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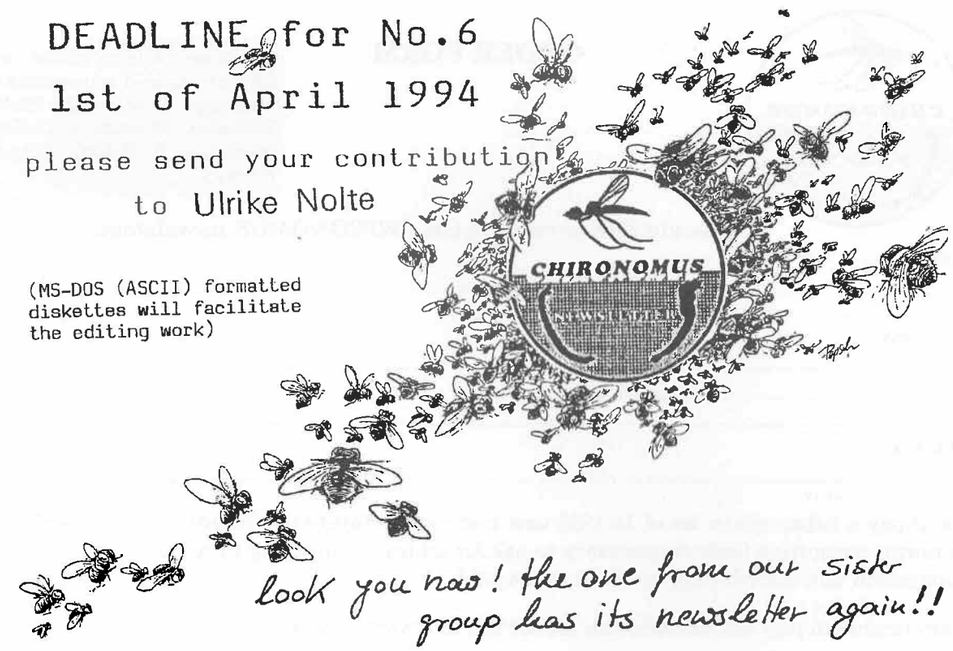

look you now! the one from our sister group has its newsletter again!!

CHIRONOMUS Newsletter

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Directory of chironomid workers: (see page 29)
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Centre for Land and Biological Research
Resources, Agriculture Canada,
K.W. Neatby Building, Ottawa,ON, K1A 0C6.
Fax: + 1 613 995-1823

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Please send your completed form to your regional representative, OR to either **Dr. Don R. Oliver** or **Ms. Mary Dillon**, CLBRR, Research Branch, Agriculture Canada, K.W. Neatby Bldg., C.E.F., Ottawa-Ontario K1A OC6, Canada. Fax: (613) 995-1823.