CHIRONOMUS NEWSLETTER ON CHIRONOMIDAE RESEARCH
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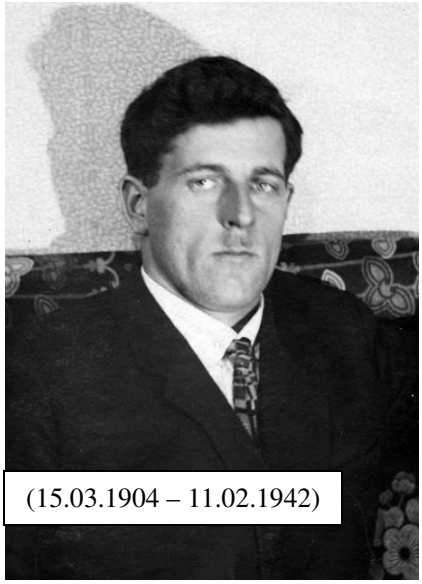
Institute of Biology and Soil Sciences, Far East Branch RAS, Vladivostok, Russia
Russian Dipterological School, St. Petersburg, Russia
Russian Entomological Society

MEMORIAL MEETING OF THE RUSSIAN CHIRONOMIDOLOGISTS ON CENTENARY OF ALEKSEY A. CHERNOVSKY



(15.03.1904 – 11.02.1942)

'During two days, March 15-16th, 2004, the Memorial meeting of Russian chironomists on the centenary of the birth of Aleksey Alekseevitch Chernovsky took place at the Zoological Institute of the Russian Academy of Sciences.

A.A. Chernovsky had a short life but he was a talented freshwater hydrobiologist and chironomid taxonomist, a very kind and real man. All Russian scientists began the study of chironomids after his famous Key book on chironomid larvae of the USSR (1949). Now Russian chironomists continue investigations of chironomids which were started by A.A. Chernovsky. In support of it, 18 scientists from many Russian Institutes situated in Europe, Siberia and 'the Far East presented lectures at the conference. Most of these lectures will be published in a special issue of the "EUROASIAN ENTOMOLOGICAL JOURNAL" in December 2004.

List of papers of the Special Issue (Number 4)

1. BALUSHKINA E.V. Changes in the structure of benthic animal communities under anthropogenic impact on aquatic ecosystems (by the example of small lakes of Leningrad Region).
2. ERBAEVA E.A., SAFRONOV G.P. Chironomidae of the Angara river and its reservoirs.
3. ERMOLAEVA O. V. Comparative karyological analysis of chironomids from Diamesinae and Prodiamesinae subfamilies (Diptera, Chironomidae).
4. ISTOMINA A.G., KIKNADZE I.I. Chironomus bernensis in West Siberia. Karyotype and chromosome polymorphism.
5. KIKNADZE I.I., GUNDERINA L.I. ISTOMINA., A.G, GUSEV V.D., NEMYTIKOVA L. A. Reconstruction of chromosomal evolution in the genus *Chironomus.*
6. KLISHKO O.K. About the new finding of *Paratanytarsus baicalensis* (Tshern.) (Diptera, Chironomidae) in the Upper Amur basin.
7. KRAVTSOVA L.S. Spatial distribution of chironomids in different habitats (Lake Baikal and its tributaries).
8. MAKARCHENKO E.A., MAKARCHENKO M.A. Chironomids of the genus *Rheocricotopus* Thienemann et Harnisch, 1932 (Diptera, Chironomidae, Orthocladiinae) of the Russian Far East.
9. MOROZOVA E.E. Karyotype and chromosome polymorphism of Cryptochironomus obreptans Walk. (Diptera, Chironomidae) from the Volga.
10. NARTSHUK E.P. Chironomid midges – as the most adaptated group of Diptera to aquatic conditions.
11. NAZAROVA L.B., BROOKS S.J. Chironomids in paleoclimatic investigations.
12. PETROVA N.A., MICHAILOVA P.V., CHUBAREVA L.A., SHOBANOV N.A., ZELENTSOV N.I. The system of A.A. Chernovsky [1949] as a base of the cytotaxonomy of the family Chironomidae.
13. POLUKONOVA N.V. To specification of subgenus structure of a genus Chironomus Meigen, 1803 (Diptera, Chironomidae) with description of new subgenus Halochironomus n. subg.
14. SERGEEVA I.V. The revision of the Russian Tanypodinae of the genus *Clinotanypus* Kieffer, 1913 (Diptera, Chironomidae, Tanypodinae).
15. ZORINA O.V. Chironomids of the genus Paratendipes Kieffer (Diptera, Chironomidae, Chironominae) of the Russian Far East.

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You can find more detail information about the subscription and the Journal here – http://euroentjourn.narod.ru/indexengs.html

This Information was prepared by Eugenyi Makarchenko

The chironomid collection of the Hydrobiological Station Falkau/Black Forest.

By Wolfgang Wuelker

In May 1952 I began working as scientific assistant of the Hydrobiological Station Falkau (later the Limnological Institute of the University of Freiburg, Walter Schlienz-Institut). I was advised to investigate the fauna of the lakes, in the middle of which the Hydrobiological Station was situated. For chironomids, at that time this was possible only with the most appreciated help of Prof. Thienemann and his crew in Ploen.

Previously, members and guests of the Institute (Prof.Dr.H.J.Elster, Frau Dr.H.Hauer-Eichhardt, Dr.J.Lundbeck) had collected over the years 1948-52 as many as 2200 samples, mainly from 7 lakes (Key numbers in brackets): Feldsee near Feldberg, 1109m NN (I), Windgfaellwiher near Altglashuetten, 966m NN (II), Schluchsee, 930m NN (III), Titisee, 846m NN (IV), Ursee near Lenzkirch, 837m NN (V), Mathisleweiher near Hinterzarten, 1000m NN (VI) and Schluechtsee near Rothaus, 914m NN (VII).

During the following years (1952-57) the number of samples in the Black Forest increased to nearly 3000, moreover the collection had been enriched by material from my research trips to Spain (1954), Sudan (1963), USA and Canada (1964), Alps (different years), Kenya (1975), Fennoscandinavia (1956, 1980, 1985), Hungary (1981) and Russia, especially Siberia (between 1989 and 1999).

Today, the material is concentrated on chromosome preparations of the genera Chironomus and Sergentia (about 100 slide boxes), but contains also permanent preparations of larvae, pupal exuviae and adults, examples of parasitic intersexuality and of the structure of imaginal discs, as well as bottled alcohol material (no pinned specimens!). Protocols are present, but not for 1948-1952.

The collection is at present in my private home, but there is the provision for it to be incorporated in the Zoologische Staatssammlung Munich.

I left Falkau in 1962 in favour of a career as zoologist in the University of Freiburg; the Hydrobiological Station in 1971 turned into the Limnological Institute of the University of Konstanz. Nevertheless, I am trying to make the chironomid collection of Falkau ready for use for all interested chironomists.

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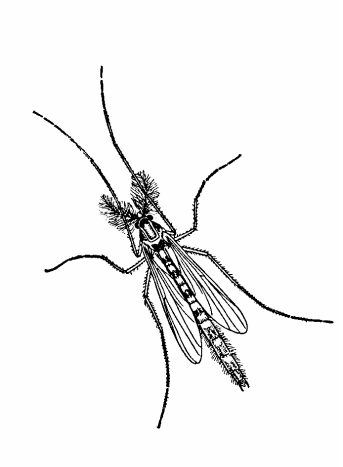

THESES

PHD-THESIS ON "CHIRONOMIDS (DIPTERA, NEMATOCERA) OF TEMPORARY POOLS – AN ECOLOGICAL CASE STUDY" (2004) (IN ENGLISH)

By P.-M. Andreas Dettinger-Klemm

This thesis (371pp, 96 figures and 74 tables) is downloadable at http://archiv.ub.uni-marburg.de/diss/z2004/0076. It is a synopsis of field work (three pools of different habitat permanence were investigated for 5-7 years) and laboratory investigations (main aspects: growth and development in relation to photoperiod and temperature, drought tolerance, parthenogenesis) of the four principal species – *Chironomus dorsalis* sensu STRENZKE (1959) and KEYL & KEYL (1959), *Polypedilum tritum* (WALKER, 1856), *Limnophyes asquamatus* ANDERSEN, 1937 and *Paralimnophyes hydrophilus* (GOETGHEBUER, 1921) – and summarizes our present knowledge of the topic. Taxonomic and morphological aspects of the four typical pool species are also presented (including the description of the larvae and pupae of *L. asquamatus, L. minimus* sensu stricto (MEIGEN, 1818) and *L. natalensis* (KIEFFER, 1914), the definition of three ecotypes in *L. asquamatus* and indications that *Polypedilum tritum* and *P. uncinatum* GOETGHEBUER, 1921, may be synonyms).

An abstract (English and German) of the thesis is available at the above web address. The PDF-document is separated into 14 documents, which can be downloaded separately: document 1 "Contents", document 2 "Preface & Acknowledgements", document 3 "Introduction", document 4 "Materials & Methods", document 5 "Results/The Habitat", document 6 "Results/The Chironomid Community", document 7 "Results/Morphology & Taxonomy", document 8 "Results/ Laboratory Studies", document 9 "Results/Field Study", document 10 "Discussion", document 11 "Summary", document 12 "Zusammenfassung", document 13 "References" and document 14 "Appendix".

Hard copies or a CD-version of the thesis also can be ordered from Andreas Dettinger-Klemm, Plattenhof, D-64560, Riedstadt-Erfelden, Germany (dettingerklemm@aol.com).

A STUDY OF THE FRESHWATER MACROINVERTEBRATE FAUNA OF MADEIRA AND THEIR APPLICATION IN A REGIONAL ECOLOGICAL ASSESSMENT SYSTEM.

Samantha Jane Hughes

Thesis submitted to King's College, University of London, in partial fulfillment requirements of the degree of Doctor of Philosophy; March 2003

Abstract

This is the first comprehensive overview and baseline study of the physicochemical properties and benthic macroinvertebrate fauna of the lotic habitats of the island of Madeira. The findings provide the essential basis for developing monitoring systems for the island's surface waters, in compliance with the Water Framework Directive (2000/60/CE).

Factors shaping local hydrological resources such as geology, orography, climate and vegetation are described as well as the hydrology and physical aspects of the surface waters. Benthic macroinvertebrate-based ecological assessment methods are reviewed together with their limitations when applied to an impoverished island fauna.

Physicochemical and biological hand net samples were taken along physical and pollution gradients at a total of 45 sites in 10 catchments in 1991 and 1997. Classification and ordination revealed physicochemical gradients related to altitude, season and anthropogenic input. A preliminary physicochemical classification system is proposed.

A revised checklist reveals over 25% of the macroinvertebrate fauna to be endemic, illustrating the importance of implementing conservation measures. Samples exhibited low abundance and diversity with several predominant taxa, emphasising the "disharmonic" nature of the macroinvertebrate fauna. Classification and ordination revealed distinct faunal assemblages at sites with good ecological quality and at impacted sites. Sites of intermediate quality at lower elevations are difficult to separate due to seasonal variation, a lack of strong unimodal indicator taxa, the predominance of taxa normally associated with low ecological quality and the restricted distribution of pollution intolerant taxa. These factors limit the direct comparison of chemical quality to ecological quality and also the application of 20 well-established metrics. The Madeiran Biotic Score II, an improved ecological assessment system is proposed which better represents ecological quality at low altitude sites. The Chironomidae is the most diverse macroinvertebrate group on Madeira. Analyses of amalgamated samples of pupal exuviae indicate that upolluted sites are more diverse and with a greater proportion of intolerant taxa than polluted sites. In the light of these findings, comprehensive multimetric monitoring techniques are proposed to include a suite of biological elements.

"STUDY OF PHOTOBEHAVIOUR IN CHIRONOMUS RAMOSUS"

(M.Phil Thesis by Mr. Anand A. Babrekar)

The ontogeny of photosensitivity in a holometabolous insect midge Chironomus ramosus was studied. Extracellular electrical activity was recorded from larval and adult photoreceptor organs. We found a progressive increase in photosensitivity, as the development proceeds from larva to adult stage. This is a first report of its kind where developmental profile of photosensitivity in any insect has been described from an ecological context. Chironomid midges have been chosen for this study since developmental stages show ecological transitions. Aquatic bottom dwelling tubicolous larvae metamorphose to a transient pupal stage and subsequently, eclose to terrestrial low-flying adult midges. Unlike larvae , adults were found to be positive phototactic.

We have fabricated special devices and designed novel assays to study photobahevioural responses in different developmental stages. We have also formulated phototactic index (P.I.) for quantitative analysis of photobehaviour. Moreover, the study aimed at finding whether response to intensity and wavelength of light varies in different developmental stages. Interestingly, our study showed a developmetal shift in photobehavioural resopnse during metamorphosis. Early and late larval instars showed variable pattern of photoresponse under shorter and longer wavelength of visible spectrum and the findings have been correlated to their ecological transitions from pelagic to benthic life style. Similarly, P.I. values shifted from positive to negative and vice-versa throughout the life-cycle of Chironomus. Behavoiural data has been corroborated with ERG data. (collaborative work with Dr. Gauri Kulkarni, Biophysics Unit, Dept. of Physics, University of Pune). Our electrophysiological data link sensitivity of developmental stage specific photoreceptor organs of larvae and adults to its ecological adaptations.

Chironomus larvae are known as pests and adults are known for creating a nuisance in human habitats. Adult midges are also medically known for allergic reactions to human. Therefore, we believe that our findings will help in designing 'light-trap' as an effective pest control strategy based on developmental stage specific photosensitivity

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SHORT – COMMUNICATIONS

NEWS FROM INDIA

The study of DIPTERAN TAXONOMY
under TAXONOMIC CAPACITY BUILDING PROJECT of All India Coordinated project on Insect Taxonomy
funded by the Ministry of Environment & Forests, Govt. of India

Drs. P.K.Chaudhuri and A.Mazumdar

Department of Zoology, University of Burdwan

This project is progressing satisfactorily. During the past few years, a good number of ecosystems of the Indian subregion have been explored. A large number of genera and species with life stages have been recorded for the first time in the country. Identification of the insects is still going on. In addition, assessment of riverine water quality using chironomids has been initiated in the laboratory. Chironomid material /publications of

workers around the world are being solicited for the purpose of building a Center for Dipteran Taxonomy .

Dr. Mazumdar has also started an investigation into the cytotaxonomic categorization of the Indian species of *Chironomus* Meigen and *Glyptotendipes* Kieffer. Suggestions / advice or literature on the subject of cytotaxonomy of chironomids will be gratefully acknowledged.

CHIRONOMID RESEARCH AT PUNE UNIVERSITY

Anand A. Babrekar received Prof. V.C.Shah best poster presentation award for the paper entitled "Structural & functional analysis of photoreceptor cells of Chironomus ramosus" at the XXVII All India Cell Biology Conference & International Symposium, Jan 7-10,2004 at Pune, India.

He received his M.Phil in Zoology at Pune University, India in 2003 and worked under the supervision of Dr. B.B.Nath, Reader Department of Zoology, University of Pune, Pune, India. Exerpts of his M.Phil thesis is as follows :

Research papers published in 2003-2004.

1. **Hazra Niladri, Mazumdar, A. & P.K. Chaudhuri, 2003. Life stages of four species of *Polypedilum* Kieffer (Diptera: Chironomidae) with a new species of the genus from Darjeeling-Sikkim Himalayas.** Belgian Entomology Journal 5 (1-2): 125-137 (2003)**.**

2. **Hazra, Niladri, Nath, Saswati & P.K.Chaudhuri, 2003. Genus *Corynoneura* Winnertz (Diptera: Chironomidae) from Darjeeling-Sikkim Himalayas of India with description of three new species.** Ent. Monthly Mag.**,** 139 : 69-82 .

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(Biosystematics and Ecology of Chironomids)

10. Dr. Rishi Das,
Department of Zoology, Tinsukia College,
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(Ecology and Biochemistry of haemoglobin of Chironomids).

RED LIST OF ENDANGERED CHIRONOMID SPECIES OF BAVARIA (GERMANY)

By Drs. Claus Orendt & Nicola Reiff

It was with considerable astonishment that I received a copy of this work through e.mail. Not that receiving it by e.mail was an astonishment, nor that the authors had so kindly sent it me, but the very thought that there was anywhere in the world so advanced in the recording of its chironomids and habitat evaluation that chironomid species could be listed to any degree of confidence as endangered was….but then, this list is about Bavaria, a state where both data sets are far advanced (perhaps only for the Black Forest Region of Germany and for Holland is there a similar data base from which to generate such a list). Claus Orendt and Nicola Reiff are to be commended on submitting this work to the scrutiny of the chironomist fraternity: anyone who has collected in Bavaria and has information that will be of use to the authors is encouraged to send it to them. Freshwater habitats are particularly under threat by an expanding human population and industry; data like these may save more of them from destruction. It is worth looking at, not just to see what can be done, but also to check out the list – you will find species there that you have not encountered (perhaps not even heard of!) and some that will surprise you, as did to me the listing of *Metriocnemus eurynotus* as endangered (in Britain it is the most widespread and frequent midge of winter-time).
Copies may be obtained (in German or English) on http://www.orendt-hydro.de/roteli.htm

Editorial comment by Peter H. Langton

Pink *Chironomus* exuviae!

By Peter H. Langton

In the English language the colour pink is used to describe a number of character states: physiological ("in the pink", i.e. in good health); sociological ("pink with embarrassment"), psychological ("seeing the world through rose tinted spectacles") and is the colour favoured for young girls. All quite interesting, perhaps, and nothing really to do with the report I am about to begin.

Earlier this year I was on a day's outing with the family by the sea in Donegal (Ireland). The sun shone brightly and there was little air movement – caps, factor 16, sunglasses – in fact a great day to be out in the open by the sea. Yes, this is also a bit of a digression, but the weather here in the north of Ireland gets a bad press and it's nice to record just how pleasant it can be. Being a bit past the youthful enthusiasm for building sand castles, I happily kept overall watch from a distance turning over stones and other discarded objects from the building plot nearby. Amongst these artefacts I came across a large plastic bucket (diameter about 40cm.) half-full of water (about 20cm deep). The water

was clear, there were a few small leaf fragments in the bottom and some chironomid larval galleries. Floating at the edge was a number of Chironomus exuviae, bright pink in colour. I have some considerable experience of Chironomus pupal exuviae and never encountered bright pink ones before: at the very least, surely, a species new to Ireland…perhaps even to science… As soon as I was able after returning home, I had one under the microscope: strange…the exuviae weren't pink at all - nothing other than Chironomus piger! The pink colour was due to the exuviae being full of the alga Haematococcus pluvialis. I refer you back to the state of the water: transparent, uncoloured. All explanations that have occurred to me seem inadequate: surely chironomid exuviae cannot be such efficient nets; they frequently contain small animals and algae, but I have always considered this fortuitous. The time exuviae remain afloat is but one or two days: it seems unlikely that the conditions inside the exuviae are such that an algal cell or two would generate such a large population in the time. My best suggestion is that the algae are trapped in the meniscus at the edge of the water where the exuviae congregate and here the algae are scooped up when the water is agitated by a breeze…any better suggestion?

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by Odwin Hoffrichter

This listing is compiled, as usual, from many sources: databases, tables of contents of journals, references and citations of papers, autopsy of many periodicals, lists provided by authors (thanks to you!). Because titles of a particular year are not fully retrieved the following year, the current titles are preceded by supplements to the two preceeding years. Only printed titles are reported here. Online publications should be retrieved elsewhere, in particular, check the chironomid home page for eventual references.

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