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C H I R O N O M U S

MITTEILUNGEN AUS DER CHIRONOMIDENKUNDE

THE 4TH INTERNATIONAL SYMPOSIUM ON CHIRONOMIDAE

compiled by D. R. Oliver

The 4th International Symposium on Chironomidae was held at Carleton University, Ottawa, Canada on August 10–12. It was sponsored by the Research Branch, Canada Department of Agriculture and the Faculty of Science, Carleton University. The Symposium was organized by Dr. D. R. Oliver, Mrs. M. Roussel, Mr. J. A. Downes (all of the Entomology Research Institute, Canada Department of Agriculture) and Dr. A. L. Hamilton (Freshwater Laboratory, Fisheries Research Board, Winnipeg).

A list of the 53 participants attending the Symposium, representing 10 countries, follows:

B. G. Blaylock (U.S.A.)
L. Brundin (Sweden)
V. G. Caspary (Canada)
L. L. and M. C. Curry (U.S.A.)
J. S. Dendy (U.S.A.)
A. E. R. Downe (Canada)
E. J. Fittkau (West Germany)
G. Grodhaus (U.S.A.)
A. L. Hamilton (Canada)
A. D. Harrison (Canada)
H. F. Howden (Canada)
J. Kugler (Israel)
M. A. Learner (Wales)
J. F. McAlpine (Canada)
J. Martin (Australia)
D. Maschwitz (U.S.A.)
R. Matsuda (Canada)
D. Neumann (West Germany)
D. R. Oliver (Canada)
S. S. Roback (U.S.A.)
M. Roussel (Canada)
A. Soponis (Canada)
A. W. Steffan (West Germany)
M. S. Topping (U.S.A.)
B. Warwick (Canada)
D. M. Wood (Canada)
C. Brabin (England)
J. R. Byers (Canada)
H. G. Cooke (U.S.A.)
H. V. Danks (Canada)
M. Dickman (Canada)
J. A. Downes (Canada)
S. Frommer (U.S.A.)
R. E. Hall (England)
D. Hansen (U.S.A.)
J. Hein (U.S.A.)
P. L. Hudson (U.S.A.)
H. Laufer (U.S.A.)
B. Lindeberg (Finland)
E. L. Mansey (Canada)
T. Mason (U.S.A.)
S. Mozley (Canada)
J. H. Mundie (Canada)
R. V. Peterson (Canada)
F. Reiss (West Germany)
D. Rosenberg (Canada)
O. A. Saether (Canada)
J. E. and M. F. Sublette (U.S.A.)
P. E. Thompson (U.S.A.)
J. R. Vockeroth (Canada)
L. Weber (U.S.A.)

The following submitted papers or abstracts but did not attend the Symposium:

P. Albu (Rumania)
P. D. Armitage (England)
V. C. Cure (Rumania)
A. C. Millar (U.S.A.)
T. Rosenberg (Finland)
J. R. B. Alfred (India)
N. Botnariuc (Rumania)
C. Dejoux (Tchad)
T. Petr (Uganda)
J. A. Spence (Canada)

PROGRAM OF THE SYMPOSIUM

Sunday, August 9, evening

An informal reception was held in a common room of the residence at Carleton University.

Monday, August 10

1000 Opening of the Symposium by the Chairman, Professor L. Brundin.

Dr. H. H. J. Nesbitt, Dean of the Faculty of Science, Carleton University, and Dr. W. B. Mountain, Chairman, Entomology Research Institute, Canada Department of Agriculture, welcomed the participants.

1020 First Session - Chairman L. Brundin

Steffan, A. W. - Chironomid biocoenosis in Scandinavian glacier brooks.

Mundie, J. H. - The diel drift of Chironomidae in an artificial stream and its relation to the diel diet of coho salmon fry (Oncorhynchus kisutch (Walbaum)).

Fittkau, E. J. - Ecology and distribution of Amazonian chironomids.

Curry, L. L. and M. C. Curry - The Chironomidae of the U. S. Virgin Islands.

1400 Second Session - Chairman J. Kugler

Frommer, S. I. and J. E. Sublette - The chironomid fauna of Deep Canyon, Riverside Co., California.

Mozley, S. C. - Maxillary and premental patterns in Chironominae and Orthocladiinae.

Atchley, W. R. and J. Martin - A morphometric analysis of sexual dimorphism in the head capsule of Chironomus larvae (Diptera, Chironomidae).

Thompson, P. E. - Male and female heterogametry in populations of Chironomus tentans.

Topping, M. S. - Giant chromosomes, ecology, and adaptation in Chironomus tentans.

Laufer, H. and K. S. Schin - Hydrolytic enzyme activity in the salivary gland of Chironomus tentans during metamorphosis.

2000 Sherry Party - Compliments of the Faculty of Science, Carleton University.

Tuesday, August 11

0900 Third Session - Chairman J. E. Sublette

Hudson, P. L. - Ecological investigation of chironomids in two Missouri River main stem reservoirs.

Dendy, J. S. - Ecology of midges in experimental ponds.

Mason, W. T. and J. E. Sublette - Collecting Ohio River basin Chironomidae with a floating sticky trap.

Brabin, C. E. - The distribution and life cycles of Chironomidae in thermally polluted Lake Trawsfynydd.

Blaylock, B. G. - The production of chromosome aberrations in Chironomus riparius by tritiated water.

Hamilton, A. L., and O. A. Saether. - The occurrence of characteristic deformities in the chironomid larvae of several Canadian lakes.

1400 Fourth Session - Chairman E. J. Fittkau

Lindeberg, B. - Notes on the delimitation of genera among the Chironomidae.

Saether, O. A. - Nomenclature and phylogeny of the genus Harnischia Kieffer (Diptera, Chironomidae).

Kugler, J. - The development stages of Leptochironomus stilifer Freeman and the characteristics of the genus Leptochironomus.

Hansen, D. - The Nearctic species of Diamesa (Diamesinae).

Harrison, A. D. - A conspectus of the Macropelopini and Pentaneurini (Tanypodinae) of Africa south of the Sahara.

Brundin, L. - Principles of Evolution.

Wednesday, August 12

0900 Fifth Session - Chairman B. Lindeberg

Dordel, J., and D. Neumann - Emergence and copulation in the sexually-dimorphic Clunio.

Hein, J. - Intraspecific and interspecific breeding behavior of Camptochironomus pallidivittatus Malloch.

Neumann, D. - The temporal programming of development in the intertidal chironomid Clunio marinus.

Caspary, V. G. - Swarming and mating of Chironomus riparius (Diptera, Chironomidae).

Grodhaus, G. - Sporadic parthenogenesis in three species of Chironomus.

Cooke, H. G. - The ecology and taxonomy of Ablabesmyia cookei.

Millar, A. C. - Observations on the Chironomidae (Diptera) inhabiting the ecosystem occurring within the leaf axils of two species of Bromeliaceae on St. John, U. S. Virgin Islands.

1400 Business Session

Two invitations were presented for the 5th International Symposium: one from Dr. J. Martin for Melbourne, Australia in 1972 and another from Professor L. Brundin for Abisko, Sweden in 1973. After the discussion of these two invitations, the participants voted to hold the 5th International Symposium in Abisko in 1973.

1440 The Chairman, Professor Brundin, closed the Symposium.

1500 Tour of the Entomology Research Institute

1830 Buffet - Supported by the Research Branch, Canada Department of Agriculture.

Post-symposium excursions

Two excursions were held on Thursday, August 14.

(1) Algonquin Park, Ontario - led by Dr. D. M. Wood and Dr. R. V. Peterson

(2) Gatineau Park, Quebec - led by Dr. J. R. Vockeroth and Mrs. M. Roussel.

TITLES AND ABSTRACTS

Not all of the papers listed here were presented at the Symposium as several were submitted for publication or information only.

Alfred, J. R. B., Madurai University, Madura, India.

On the food of Chironomus tentans (Chironomidae: Diptera) from a shallow fresh water pond in South India.

Study has been made on the feeding of Chironomus tentans from a temporary fresh water pond in South India. It was seen that irrespective of the size of the larvae, the food composition was found to be the same. It was also noted that the larvae were non-selective feeders in that the organisms enumerated in the water were also found in the gut.

Armitage, P. D., Ferry House, Westmorland, U. K.

Some aspects of the ecology of Pagastiella orophilia (Edw.) in the Lake Kuusijärvi, in the south of Finland.

A larval population of Pagastiella orophila was studied over a period of two years in a shallow woodland lake in South Finland. Changes in the populations at two stations, one littoral at a depth of 150 cm and the other in the centre of the lake at a depth of 230 cm, were followed weekly during open water and fortnightly during ice-cover. The winter population density at the 230 station was similar in both years--about 2000-3000/m^2, whereas at 150 the second year's population was significantly low, 500/m^2 as against 3450/m^2 in the first winter. A possible explanation of this is discussed. Peak growing periods were found to occur in spring and autumn coinciding with peak diatom growth. The larvae appeared to feed mainly on pennate diatoms at these times. Feeding intensity in the summer was low and little to no feeding took place in mid-winter. Emergence occurred in June at both stations in 1965 but in 1966 it was delayed a month at the 230 station. The role of temperature and transparency of the water in causing this delay is discussed briefly.

Atchley, W. R. and J. Martin, University of Melbourne, Melbourne, Australia.

A morphometric analysis of sexual dimorphism in the head capsule of Chironomus larvae.

Multivariate discriminatory analyses were performed on 16 larval head capsule characters in several species of Chironomus in order to assess the extent of sexual dimorphism. The degree of sexual dimorphism in the various characters as well as the directionality of the variation patterns is discussed.

Blaylock, B. G., Oak Ridge National Laboratory, Oak Ridge, Tenn., U.S.A.

The production of chromosome aberrations in Chironomus riparius by tritiated water.

Chironomus riparius was used to determine whether an increased frequency of chromosome aberrations could be detected in the progeny of an aquatic organism developing in tritiated water. An increased frequency was detected in larvae whose progenitors had developed either in 500 or 250 uCi/ml of tritiated water (5000 to 2500 times MPC for occupational exposure). The radiosensitivity of C. riparius to acute gamma radiation was determined and compared with the results obtained with tritiated water. It was concluded that chromosome aberrations were produced in these aquatic organisms that developed in tritiated water and that aberrations were passed on to the next generation.

Botnariuc, N., and P. Albu. Institute de Biologie Tr. Savulescu, Bucharest, Rumania.

Chironomids from the Retezat Massif (Southern Carpathians, Rumania)

Brabin, C. E., Liverpool Polytechnic, Liverpool, U. K.

The distribution and life cycles of Chironomidae in thermally polluted Lake Trawsfynydd.

The benthos of the "oligotrophic", thermally polluted lake has been investigated in relation to the horizontal temperature gradient. Species composition and abundance varies markedly, with greatest diversity in cooler regions. Near the effluent from the atomic power station there is a pronounced scarcity of animals, at all depths, which does not appear to be related to oxygen content or thermal pollution. The emergence periods of chironomids common to warm and cool regions is being recorded with emergence traps. These data will be presented at the meeting.

Brundin, L., Swedish Museum of Natural History, Stockholm, Sweden.

Principles of evolution.

Caspary, V. G., and A. E. R. Downe, Queen's University, Kingston, Ontario, Canada.

Swarming and mating of Chironomus riparius (Diptera, Chironomidae).

By restricting the swarming behaviour of Chironomus riparius in a series of five swarm suppression cages, it was found that reduced swarming resulted in fewer matings and less oviposition. With total suppression of swarming no matings occurred. When swarming volume was incrementally reduced vertically or horizontally, it was found that the minimum vertical or horizontal dimension for swarming to occur was 2-3 cm. Autoradiography of labelled spermatozoa indicated the reduced mating and oviposition in these cages. Thus swarming appears to have an epigamic function in C. riparius and is an essential precursor to mating and oviposition.

Cooke, H. G., Elizabeth City State University, Elizabeth City, N. C., U.S.A.

The ecology and taxonomy of Ablabesmyia cookei.

Cure, V. C., Institut de Recherches Alimentaires, Bucharest, Roumania.

Contributions à la connaissance de la faune de Chironomidés (Larves) du Bassin de la Rivière Bistrita dans la zone du Lac de Barrage Bicaz avant, au début et six ans après la Miseen Eau.

Curry, L. L. and M. C. Curry, Central Michigan University, Mount Pleasant, Mich., U.S.A.

The Chironomidae of the U.S. Virgin Islands.

The distribution and ecology of chironomids on the islands of St. John, St. Thomas, St. Croix and Anegada (British) will be discussed. Due to the limitation of fresh water on the islands the midges would appear to be severely restricted. However, they are successfully reproducing to the extent that they are inhabiting man made kettles with water holding capacity for their convenience.

Dejoux, C., Fort-Lamy, Tchad.

Recherches sur le cycle de développement de Chironomus pulcher Wiedemann 1830.

Dendy, J. S., Auburn University, Ala., U.S.A.

Ecology of midges in experimental ponds.

Adult midges emerged from experimental fish ponds at Auburn, Alabama, during all months of the year. The following species emerged during 4 or more months: Psilotanypus bellus, Chironomus crassicaudatus, Cryptotendipes emorsus, Cryptochironomus fulvus, Dicrotendipes nervosus, Glyptotendipes meridionalis, Calopsectra dendyi, C. xanthus. The composition of species in populations emerging from ponds appeared to be influenced more by the proximity of the pond to other bodies of water than by the abundance of solid substrate in the pond.

Dordel, J. and D. Neumann, Zoologisches Institut der Universität, Köln - Lindenthal, Germany.

Emergence and copulation in the sexually-dimorphic Clunio.

The emergence and copulation of intertidal Clunio are correlated with special tidal conditions in such a way that egg deposition, which follows immediately, can take place on the exposed habitat. Clunio has morphological and ethological peculiarities in that the winged male needs only a few seconds for emergence, whereas the wingless female has to be freed from its pupa by a male partner (Hashimoto 1957, 1962). Copulation begins immediately after this, first in a face-to-face position, then in an end-to-end position; this is continued in a short mating-flight. This behavior will be illustrated with a film, taken during studies about the torsion of the postabdomen of the male.

Fittkau, E. J., Max-Planck-Institut für Limnologie, Plön, Germany.

Ecology and distribution of Amazonian Chironomids.

About 500 species of chironomids are known from the Amazon region

of which 10% are Tanypodinae, 4% Orthocladiinae and the remainder Chironominae. Podonominae and Aphroteniinae are absent. The genera Polypedilum (s.l.) and Tanytarsus, each with about 80 species, are especially rich. Chironomus, Stenochironomus, Dicrotendipes, Parachironomus and Cryptochironomus each have about 20 species. Many species belong to undescribed genera related to Riethia-Pseudochironomus. The distribution of the chironomids is determined by the characteristics of the bodies of water which, since there are nearly only lotic habitats and no true lakes, depends upon the geomorphology and geochemistry of the catchment area.

Frommer, S. I., University of California, Riverside, Calif. and J. E. Sublette, Eastern New Mexico University, Portales, N. Mex., U.S.A.

The chironomid fauna of Deep Canyon, Riverside Co., California.

Collections of material, principally adults, taken over the past decade were reviewed. Many new species and distributional records are recorded. The habitats represented are considered an extreme for existence of the group.

Hamilton, A. L., and O. A. Saether, Fisheries Research Board, Winnipeg, Manitoba, Canada.

The occurrence of characteristic deformities in the chironomid larvae of several Canadian lakes.

Severely deformed chironomid larvae have been collected in Lake Erie and two lakes in the Okanagan valley of British Columbia. Deformed larvae had very aberrant mouth parts and the head capsules were usually heavily pigmented. In most cases both the head capsule and body wall were many times thicker than in normal specimens. These deformities are apparently caused by pollutants and it is speculated that agricultural and/or industrial chemicals may be responsible.

Hansen, D., University of Minnesota, Saint Paul, Minn., U.S.A.

The Nearctic species of Diamesa (Diamesinae).

In this revision of the Nearctic species of the genus Diamesa (Diamesinae), the author recognizes as valid and describes some thirty-three species. Nine of these are new, and one is a new Nearctic record of a European species. "D." parva and two new related species are not here included in Diamesa. Several species recorded or originally described from Greenland or northern Canada are now known to also occur in the western United States, and known ranges of other species are extended considerably. A review of adult anatomy is also included as part of the revision.

Harrison, A. D., University of Waterloo, Waterloo, Ontario, Canada.

A conspectus of the Macropelopini and Pentaneurini (Tanypodinae) of Africa south of the Sahara.

This is a preliminary report on a revision of the Tanypodinae of Africa south of the Sahara based mainly on the collection of imagines in the British Museum (Natural History). It has been possible to re-examine most known species, in addition to studying new species, and to classify them according to the scheme proposed by E. J. Fittkau. Most species fit into his genera but a few new ones will have to be erected. The distribution of species is discussed.

Hein, J., Wisconsin State University, Oshkosh, Wis., U.S.A.

Intraspecific and interspecific breeding behavior of Camptochironomus pallidivittatus Malloch.

Camptochironomus pallidivittatus imagos mated on solid substrate in the field and laboratory. The interval between copulation and oviposition was variable, whereas the interval between emergence and oviposition was constant. In crosses of C. pallidivittatus males with females of C. tentans and C. crassicaudatus, a small percentage of the resulting egg masses contained viable eggs. In the reciprocal combination, no viable eggs were produced. On the basis of behavior and morphology, it is speculated that the North American and European populations are conspecific. However, neither population has morphological features consistent with the lectotype.

Hudson, P. L., Bureau of Sport Fisheries and Wildlife, Yankton, S. D., U.S.A.

Ecological investigations of chironomids in two Missouri River main stem reservoirs.

Benthic research has been carried on in Lewis and Clark Lake (113 km^2) and Lake Francis Case (377 km^2) since 1962 and 1966, respectively. Chironomids dominate both reservoirs numerically and dominate the biomass in Lake Francis Case. Taxonomic problems have limited past studies to the family level but recent extensive rearings and adult collections have shown 79 species thus far. Topics to be discussed include distribution and abundance, migration and recolonization relative to water level fluctuation, diurnal migration, and parthenogenesis.

Kugler, J., Tel-Aviv University, Tel-Aviv, Israel.

The development stages of Leptochironomus stilifer Freeman and the characteristics of the genus Leptochironomus.

The taxon Leptochironomus was suggested by Pagast (1931, Folia Zool. Hydrobiol., 3 : 199) for one of his groups of Chironomus. Until the description of Leptochironomus paraderibae Laville and Tourenq (1967, Annals Limnol., 3 : 185) which was based on adults and pupae, only the developmental stages of Leptochironomus tener Kieffer were known. The study of larvae, pupae and adults of Cryptochironomus stilifer Freeman in Israel showed that this species also belongs to Leptochironomus. The knowledge acquired from the study of the three species made it possible to define Leptochironomus as a well-characterized genus.

Laufer, H., and K. S. Schin, University of Connecticut, Storrs, Conn.

Hydrolytic enzyme activity in the salivary gland of Chironomus tentans during metamorphosis.

We investigated changes in the hydrolytic enzymes, acid phosphatase and ribonuclease, in the salivary gland of Chironomus tentans since these lysosomal enzymes may participate in hormonally stimulated tissue breakdown. Quantitative assays revealed sixfold increases in the specific activity of these enzymes during pupation while the protein content of the gland was decreasing. These increases cannot be accounted for by decreased protein but may represent an activation, accumulation, or synthesis which seems to be important in gland breakdown at metamorphosis.

Lindeberg, B., University of Helsinki, Helsinki, Finland.

Notes on the delimitation of genera among the Chironomidae.

Some aspects of the characterization and delimitation of the chironomid genera are presented. The size and composition of the taxa and different types of splitting are discussed, with examples from Chironomus. Some opinions regarding the practical value of the category subgenus are weighed. Ideas about the relationship between phylogeny and classification are put forward, and some problems concerning the ecological characterization of genera are discussed.

Mason, W. T., Federal Water Quality Control Laboratory, Cincinnati, Ohio and J. E. Sublette, Eastern New Mexico University, Portales, N. Mex., U.S.A.

Collecting Ohio River basin Chironomidae with a floating sticky trap.

A floating sticky trap, designed for the surveillance of insect populations, was tested at a pond, lake and stream in the Cincinnati, Ohio vicinity during 1969-70. The one foot square plexiglass collecting surface was floated on pontoons four inches above and horizontal to the water's surface. Weekly collections found the trap to be biased for weak flying insects such as most Chironomidae. Ekman grabs collected at the time of each sticky trap collection showed little relationship between species and number of larvae in the bottom and adults retained on the sticky surface. While it is, recognized that the trap did not produce quantitative results, the technique has merit for specialized faunistic surveys. Chironomidae collected at Cincinnati are listed preliminary to more detailed description of Ohio River Basin faunae.

Millar, A. C., Central Michigan University, Mt. Pleasant, Mich., U.S.A.

Observations on the Chironomidae (Diptera) inhabiting the ecosystem occurring within the leaf axils of two species of Bromeliaceae on St. John, U.S. Virgin Inslands.

On St. John, U.S. Virgin Islands, the leaf axils of 2 species of Bromeliaceae were sampled for Dipteran larvae. One-half of the collections were made from the axils of Tillandsia utriculata, restricted almost entirely to the dry, coastal portions of the island, and the other half from Aechmea lingulata, found in the moist mountainous regions. Three species of Chironomidae representing 3 subfamilies and 3 genera, including 5 other families of nematocerous larvae. Though all species of dipterans were found throughout the island, the Chironomidae and Ceratopogonidae were restricted to the dry areas, and the Culcidae were found predominantly from Aechmea lingulata, on Bordeaux Mountain.

Mozley, S. C., University of Toronto, Toronto, Ontario, Canada.

Maxillary and premental patterns in Chironominae and Orthocladiinae (Diptera, Chironomidae).

The maxillae and prementa of Trissocladius grandis (Kieff.), Chironomus anthracinus Zett. and a Tanytarsini species near Lauterbornia are figured and the fine details of their external morphology are discussed. The results of a review of larvae in other genera in the Chironominae and Orthocladiinae are briefly stated to illustrate the value of these morphological characters in comprarisons among higher taxa within the Chironomidae.

Mundie, J. H., Fisheries Research Board, Nanaimo, B. C., Canada.

The diel drift of Chironomidae in an artificial stream and its relation to the diel diet of coho salmon fry (Oncorhyncus kisutch (Walbaum)).

Comparison of diel drifting adults, larvae, and pupal exuviae of Chironomidae (mainly Cricotopus) in a channel with the diel diet of coho fry shows that chironomid material makes up a greater proportion of the total diet than of the total drift. The proportions of adults, exuviae and larvae in the diet differ from those in the drift, at different times in the diel cycle, and appear to be determined by the visibility of the organisms, by a feeding rhythm of the fish, and by satiation of the fish on that further utilization of the drift is limited.

Neumann, D., Zoologisches Institut der Universität, Köln-Lindenthal, Germany.

The temporal programming of development in the intertidal chironomid Clunio marinus.

The emergence times of most European Clunio populations are correlated with certain conditions of low tide which occur in the habitat at a particular time of day only every 15 days. This temporal programming of development is determined by the combination of two different endogenous rhythms; a semilunar rhythm which controls the beginning of pupation and a circadian rhythm which controls the diurnal emergence time. The paper summarizes the known characteristics of these two physiological clocks and their adaptation to different tidal and photoperiodic conditions in the field.

Petr, T., Makerere University, Kampala, Uganda.

Establishment of chironomids in a large tropical man-made lake.

Rosenberg, T., University of Helsinki, Helsinki, Finland.

Variability of taxonomic characters in natural populations of Tanytarsus heudensis, Goetgh. (Diptera, Chironomidae) in Finland.

The variation of some morphological characters in adults and pupal exuvia of Tanytarsus heudensis GOETGH. (T. usmaensis PAGAST sensu REISS pers. comm.) in populations from some lakes and from brackish water in Finland was studied in order to check the homogeneity of the material. Significant differences were found in LR_I, wing length, AR, LR_{III} and LR_{II} of males. In pupal exuvia the number of hairs of the anal lobes of both sexes shows a considerable variation, and the length of the spine comb of dorsal tergites III-VI are also different in various populations. On the base of a mathematical analysis of the data it is concluded that the differences observed do not indicate the existence of more than one species among the material studied.

Saether, O. A., Fisheries Research Board, Winnipeg, Man., Canada

Nomenclature and phylogeny of the genus Harnischia Kieffer (Diptera, Chironomidae).

Evidence is presented indicating that Harnischia Kieffer in the sense of Lenz is correct. Harnischia sensu Beck & Beck then becomes a synonym of Cryptocladopelma Lenz (which, however, is formally a nomen nudum). Synonyms of the genus Harnischia are given. Corrections and additions to the descriptions of Harnischia curtilamellata (Mall.) (syn. H. pseudosimplex Goetgh. syn. nov.) are given. The genus Harnischia is characterized and the phylogeny of the Harnischia complex discussed.

Spence, J. A., and C. H. Fernando, University of Waterloo, Waterloo, Ont., Canada.

Non-sedentary behaviour in the ecology of chironomid larvae.

The planktonic activity of 1st instars is well known. A short planktonic phase associated with a positive phototaxis is usual in 1st instar larvae, particularly amongst those chironomids which deposit all their eggs in one or a few egg masses or strings. Some 1st instars, however, show no positive phototaxis. It can be related to critical ecological factors such as population density, availability of food, oxygen concentration and to other not yet understood micro-habitat requirements of larvae.

Steffan, A. W., J. Gutenberg-Universität, Mainz, Germany.

Chironomid biocoenosis in Scandinavian glacier brooks.

Scandinavian glacier brooks have been investigated for the occurrence of chironomid larvae and pupae. Comparisons with animal associations in other freshwater sources of the same area proved that there are two different types of biocoenoses. The different morphological and physiological adaptations af the members of these biocoenoses are pointed out. Furthermore, information will be given about the food sources and possible predators of the chironomid larvae of the two biocoenosis types.

Thompson, P. E., University of Georgia, Athens, Georgia, U.S.A.

Male and female heterogametry in populations of Chironomus tentans.

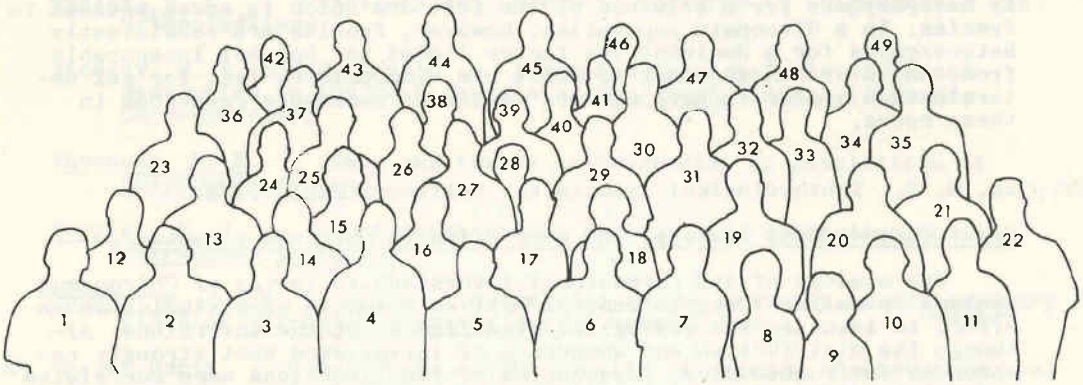
Populations of Chironomus tentans from Iowa and Wisconsin show a persistent polymorphism for inversion sequences of chromosome 1 which are associated with sex. Male larvae from Iowa populations are invariably heterozygous for a sequence of the left arm which is never present in females. In a Wisconsin population, however, females are consistently heterozygous for a dominant sex factor linked to, but not inseparable from, an inversion sequence of right arm. Two primary loci for sex determination appear to have evolved different dominance relations in these races.

Topping, M. S., Ichthyological Associates, Holtwood, Pa., U.S.A.

Giant chromosomes, ecology, and adaptation in Chironomus tentans.

The ecology of and chromosomal inversions in larvae of Chironomus tentans in saline lakes in central British Columbia were studied in an effort to identify the ecological significance of the inversions. Although the distribution and abundance of larvae were most strongly related to water chemistry, frequencies of the inversions were correlated moderately with only interspecific relationships. Therefore, if inversions are units of coadapted genes with particular evolutionary importance and if the inversions studied contain genes controlling primarily larval characteristics, then apparent ecological adaptation of the species may not be of the utmost evolutionary significance.

CHIRONOMUS-Mitteilungen aus der Chironomidenkunde. - Erscheint mehrmals jährlich. Herausgegeben von E.J. FITTKAU und F. REISS, Max-Planck-Institut für Limnologie, Abt. Tropenökologie, 232 Plön, Postfach 165, Deutschland (BRD).



1. J.S. Dendy
2. J.E. Sublette
3. Mrs. M.F. Sublette
4. S. Mozley
5. H.G. Cooke
6. L. Brundin
7. D.R. Oliver
8. Mrs. M. Roussel
9. Mrs. E.L. Mansey
10. E.J. Fittkau
11. D. Hansen
12. S. Frommer
13. A.L. Hamilton
14. D. Rosenberg
15. P.L. Hudson
16. H.V. Danks
17. J. Kugler
18. Mrs. J. Kugler
19. F. Reiss
20. H. Laufer
21. J.H. Mundie
22. D. Maschwitz
23. V.G. Caspary
24. Mrs. J. Hein
25. J.A. Downes
26. Mrs. R.E. Hall
27. P.E. Thompson
28. Mrs. M.C. Curry
29. S.S. Roback
30. J.R. Vockeroth
31. A.D. Harrison
32. W.T. Mason
33. Mrs. W.T. Mason
34. C. Brabin
35. M.A. Learner
36. A.W. Steffan
37. J. Hein
38. R.E. Hall
39. L.L. Curry
40. B. Lindeberg
41. B. Warwick
42. Mrs. B.G. Blaylock
43. B.G. Blaylock
44. O.A. Saether
45. D. Neumann
46. L. Weber
47. M.N. Charlton
48. J. Martin
49. G. Grodhaus