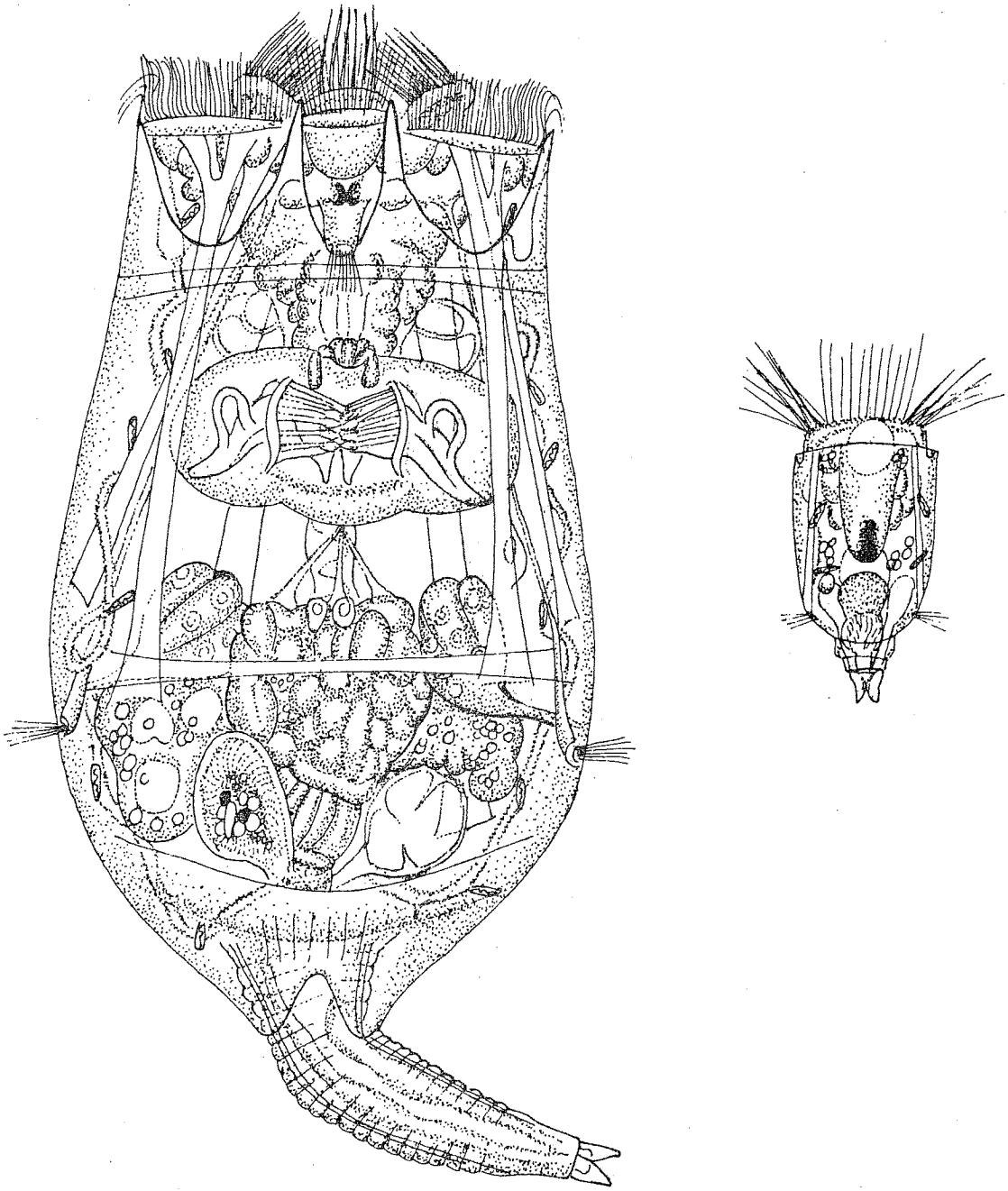
Number 6 Spring, 1983

ROTIFER NEWS

A Newsletter for Rotiferologists throughout the World



Brachionus calyciflorus (Pallas), dorsal aspect of female (left) and male (right). Drawn by Eric D. Hollowday in 1948 and originally published in FRESHWATER BIOLOGY, by W.J. Garnett, 1953, Constables Publishing.

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ROTIFER NEWS is not part of the normal scientific literature (e.g. journals such as ECOLOGY, LIMNOLOGY AND OCEANOGRAPHY, and VERH INTERNAT VEREIN LIMNOL); therefore, it should not be cited as such. ROTIFER NEWS is a newsletter which prints citations of recent published literature, abstracts of papers published elsewhere, news, and notes about work in progress or such items being submitted for publication in regular scientific journals. ROTIFER NEWS is printed twice a year, late spring and late fall. Please send reprints and/or references, news, notes, requests to either:

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PLEASE BE SURE TO INFORM THE EDITORS CONCERNING OTHER INVESTIGATORS WHO MIGHT WISH TO RECEIVE ROTIFER NEWS.

PRODUCTION OF ROTIFER NEWS

A letter quality copy of ROTIFER NEWS is produced at Ripon College from text files using a DEC PDP 11/70 as a text editor and the system programs EDT (editor) and RNO (runoff). (Automatic (computer) formatting results in some problems which we will try to circumvent in future issues (e.g., the lack of accents as found in French, German, Italian, Spanish, etc., and splitting of addresses in the mailing list section.) A memograph reproduction of the copy is then made and printed at Saint Mary's College.

NEWS, NOTES, AND REQUESTS

The editors regret to inform our readers of the recent death of Professor Doctor Udo Halbach (Prof. fur Zoologie und Okologie von 1974) on Easter sunday 1983. The rotifer world and indeed the international scientific community is poorer with the loss of Udo.

Items received by either editor on or before 15 May 1983 have been included in this issue of ROTIFERS NEWS (No. 6), all other items will be published in issue No. 7.

The editors are sorry to inform our readers that we must request help in the mailing of ROTIFER NEWS. As you are well aware, international and even domestic mailing costs are quite high. We are requesting that the readers of ROTIFER NEWS support us in this valuable endeavor by honoring the suggested dues ($ 4.00 US dollars for two years - 4 issues) which are printed on the accompanying questionnaire which follows the last regular page of this issue. We will NOT be able to mail you ROTIFER NEWS No. 7 if you cannot send us the dues (with certain exceptions, see following). Check your mailing label - it indicated whether you have paid or not (an 84 appears to the right of your name if you are paid through 1984). If you cannot send us $4.00 equivalent in US currency just let us know when you return your questionnaire (last page this issue). We understand that this is a problem for some. For many individuals outside of North America an international money order seems the least expensive way to transmit your dues. If this is not a reasonable means of sending currency we will be happy to accept about $4.00 (US equivalent) of mint postage stamps from your country. In the future we will collect dues at the International Rotifer Meetings to assist those that attend.

Please note that we request that you send the money for the dues to Jim Litton and any information to be put into the next issue of ROTIFER NEWS to Bob Wallace. This "double mailing" on your part will save Litton and Wallace the cost and effort of about 25 - 50 letters between our two institutions for every issue we produce.

1. Back issues of ROTIFER NEWS are still available! If you need a back issue (1-5) of ROTIFER NEWS copies are available from Jim Litton. Your comments on any aspect of ROTIFER NEWS is requested by the editors! You may write either one of us in order to let your interests be known.

2. Porriot, R. and Clement, P. ----FILM---- BIOLOGIE DES ROTIFERES D'EAU DOUCE. Film en deux parties: 1. Nage et alimentation. 2. Cycle reproducteur. Realisation S.E.R.D.D.A.V.

(C. Moncel).

Pierre Clement has informed ROTIFER NEWS of the cost of this two reel film on rotifers is 3800 French francs (~$530 US $). Four or more copies of the two-film set is 3300 FF per copy. It is possible to have copies made in another language (other than FRENCH or ENGLISH) if five (5) or more copies are ordered at the same time.

The address to order these films or for more details is:

CNRS Audio-Visuel
Service Diffusion
27 Rue Paul Bert
94204 IVRY
FRANCE

3. W.T. Edmondson's research group has been investigating the effect of volcanic ash on the plankton of two lakes down wind from the volcanic eruption of Mt. St. Helens. So far it appears that the ash has had little effect on the plankton of Soap Lake and Lake Lenore. Edmondson's Lake Washington research is continuing. He reports that the copepod, Epischura is a significant predator on the rotifers in that lake.

4. In ROTIFER NEWS issue 5, item 8 of the News, Notes, and Requests section we reported a work by R.J. Shiel and W. Koste in which they report a population density of 25,000 individuals per liter of Synchaeta pectinata. This density calculates out to one rotifer per 40 microliters! R. Pourriot has pointed out to us that although the Shiel and Koste report is probably the record for S. pectinata, the apparent absolute record for the phylum was published by Iltis and Riou-Duwat (1971) <Cah ORSTOM, Hydrobiol, V,2,101-112> In that work, Brachionus dimidiatus was reported to reach a density of 600,000 individuals per liter in an African lake. This density calculates out to be one rotifer per ~~1.67~~ 0.6 microliters!

5. Mark White's address was inadvently left off the list of rotifer workers in issue No. 5. It is Department of Zoology, Michigan State University, East Lansing, MI, 48824, USA.

6. We have had only a few responses (and those mixed) concerning the question put to the users of ROTIFER NEWS in the last issue. The question was: Do the users of ROTIFER NEWS wish to have the papers which report the use of rotifers as fish food routinely reported in the list of RECENT LITERATURE? Some of these papers are mearly incidental reports of rotifers in fish guts, others are fairly detailed and specific studies. Perhaps the editors could simply use there judgement in which papers are to be included. Please respond!

7. Charles Hussey wishes to point out to the readers of ROTIFER NEWS that there is an article in NATIONAL GEOGRAPHIC devoted to pond life. This work contains several excellent photomicrographs of rotifers. The author is John Walsh and the citation is Nat. Geogr. (Feb 1979) Vol 155(2):287-292.

8. The following abstracts were copied from Abstracts of Papers for the 46th Annual Meeting of the American Society of Limnology and Oceanography, Inc., 13-16 June, 1983. They appeared to the Editors to be the ones in which the readers of ROTIFER NEWS would be most interested.

(A.) Conyers, J.C. and J.W. Bishop, Potomac Electric Power Co., Washington, D.C. and Univ of Richmond, Richmond, Va. RELATIONSHIPS BETWEEN LACUSTRINE ZOOPLANKTON POPULATION SIZES AND THE OCCURRENCE OF RAIN.

Relationships, between population densities of three zooplankton species and the occurrnece of rain were examined during summer stratification and fall turnover in Westhampton Lake, Richmond, Virginia. The species were a rotifer (Keratella cochlearis), cladoceran (Bosmina longirostris), and copepod (Mesocyclops edax). In summer, the density was greater and more variable for the rotifer, and smaller and less variable for the copepod during rainy compared with dry periods. In fall, the variance in density was less for the rotifer during rainy compared with dry periods. The responces of the populations to rain were not entirely consistent with those that were predicted on the basis of the life histories of the species. The rotifer, the most r-selected species, had the greatest response, but the copepod, the most K-selected species, responded more than did the cladoceran.

(B.) Dorazio, R.M., Division of Biological Sciences and Department of Atmospheric and Oceanic Sciences, University of Michigan, Ann Arbor, Michigan. ANALYZING THE GROWTH AND DECLINE OF POPULATIONS OF THE ROTIFER ASPLANCHNA.

Life-table experiments with laboratory cultures of Asplanchna priodonta were used to establish how this rotifer's intrinsic capacity of increase, r, varies with food density and temperature. Experimental food densities ranged from 1,000 to 10,000 cells per ml of Cryptomonas erosa var reflexa. Expermental temperatures were 15 degree and 20 degrees C. Intrinsic rates of increase were similar among different Cryptomonas densities; however, r, for animals raised at 20 degrees C was significantly greater than that for animals raised at 15 degrees C. Both batch and continuous cultures of Asplanchna were used to evaluate a new method for determining population birth rates. The method uses the population's egg-age distribution to determine whether the population's age distribution is stable and to compute per capita birth rate, b. This estimate of b does not suffer from the biases inherent in traditional egg-ratio models.

(C.) Magnien, R.E. and J.J. Gilbert, Department of Biological Sciences, Dartmouth College, Hanover, New Hampshire. TEMPORAL SUCCESSION IN A ZOOPLANKTON COMMUNITY CONTROLLED BY THE INVERTEBRATE PREDATOR, ASPLANCHNA GIRODI.

The rotifer-dominated zooplankton community of small lake was changed dramatically as a result of predation by the large rotifer, Asplanchna girodi. Populations of Keratella crassa and Synchaeta pectinata, two of the three dominant rotifers, were decimated as predator densities increased. Populations of the third rotifer, Polyarthra dolicoptera, which is predator-resistant, expanded rapidly over the same time period. Predator impact was quantified by estimating instantaneous death rates (d) for potential prey populations via two independent methods. One method provided estimates of prey d's attributed to A. girodi predation by using in situ and laboratory feeding rate studies. The second estimate included all sources of d and was calculated by difference between field estimates for instantaneous rates of birth (b) and increase (r). The congruence between these two estimates of d for K. crassa and S. pectinata indicate that virtually all of their high death rates during the study period were attributable to A. girodi predation. P. dolichoptera populations exhibited very low death rates despite increasing predator densities. The rapid numerical response and selective predation of A. girodi allow this predator to become a significant determinant of zooplankton community structure.

(D.) Starkweather, P.L. and Penelope E. Kellar. Department of Biological Sciences, University of Nevada, Las Vegas, Nevada. CYANOBACTERIA AND ROTIFER DIET: MIXING FOODS GIVES MIXED RESULTS.

Rotifers of the genus Brachionus actively consume a variety of cyanobacteria, even if those potential foods are alternatives to the normal, eucaryotic culture diet. We have measured the response of cohorts of Brachionus calyciflorus to mixed diets, each containing Euglena gracilis as an equal-biomass alternative food combined with one of 4 strains of cyanobacteria. Anabaena flos-aquae (UTEX-1444) neither enhanced nor diminished the survivorship or net fecundity of groups of rotifers to control cohorts fed equal quantities of E. gracilis alone. Another strain (NRC-44-1) of A. flos-aquae, when mixed with the alga, produced higher values for both parameters compared to control groups. When mixed with E. gracilis, a unicellular strain of Microcystis aeruginosa (UTEX-1939) had negligible influence on B. calyciflorus survivorship and fecundity while a conspecific M. aeruginosa (SS-17) showed distinct toxicity through significant reduction in survivorship and reproduction. Thus, the relative nutritional value of a cyanobacteria when presented in a mixed assemblage will depend upon species and strain characteristics of the blue-greens as well as, we suspect, the nature and availability of other suitable foods.

9. The editors request that the more artistic of our readers

submit quality pen and ink line drawings of rotifers for the covers of future issues of ROTIFER NEWS. We are sorry but drawings cannot be returned unless the return postage is included with the work.

10. John Burnes <Address: 4621 Carroll Lane, Corpus Christi, Texas, USA, 78415> requests information concerning culture methods and other relavent information which would be of interest to amateurs.

11. Any rotifer worker interested in obtaining a Rotocompressor should contact Jim Litton. Jim has a supplier, who has the parts to make about ten of these devices. The cost will be $325.00 US (prepaided) plus shipping and insurance.

III rd INTERNATIONAL ROTIFER SYMPOSIUM

The Third international Rotifer Symposium was recently held at Uppsala, Sweden, August 30 through September 4, 1982. The sessions were held at Sunnersta Forsamlingsgard (Parish Hall) close to Sunnersta Herrgard (Youth Hostel) where some of the participants were accomodated. Other participants stayed in Uppsala and communted a short pleasant bus ride to the meeting hall. Everyone shared lunch at the Youth Hostel about 250 meters away from the meeting hall. By our count there were 63 participants from 22 countries: Austria - 2, Australia - 1, Belgium - 1, Canada - 2, France - 1, Finland - 2, India - 1, Israel - 1, Italy - 1, Japan - 2, Kuwait - 1, Norway - 2, Poland - 4, Rumania - 1, Spain - 4, Sweden - 9, Switzerland - 1, United Kingdom - 7, USA - 10, USSR - 5, West Germany - 4, Yugoslavia - 1.

PROGRAM

Following is the program of speakers for the five days of meetings, updated to take account of last minute changes. The times reported are estimates of the actual times. The editors understand that some of the presentations reported here will not be in the volume to be published because of the unavailibility of a manuscript at the time of press. None of the papers delivered at the symposium are reported in this issue under RECENT LITERATURE since all of the titles were not available at the time of production.

MONDAY: August 30

Morning session: Chair T. Nogrady, Canada

0900 - 0945 REVIEW PAPER; R. Porriot, and T. Snell: Resting eggs.
1000 - 1010 E. Lubzens et al: Environmental factors affecting hatching of rotifer (*Brachionus plicatilis*)

resting eggs.

1015 - 1025 J. Gilbert: Endogenous and exogenous controls of tocopherol response in Asplanchna.

BREAK

1045 - 1055 W. Kunicki-Goldfinger: Macromolecular synthesis during embryogenesis of Habrotrocha rosa.

1100 - 1110 C. Ricci: Life histories of some species of rotifera, Bdelloidea.

1115 - 1125 Ch. Hussey: Scanning electron microscope studies of rotifers.

1130 - 1140 Ch. King and T. Cannon: Cryopreservation of monogonont rotifers.

LUNCH

Afternoon session: Chair Ch. King, USA

1345 - 1430 A. Ruttner-Kolisko: The significance of mating processes for the genetic constitution and for the formation of resting eggs in monogonont rotifers.

1445 - 1455 M. Serra (presented by M. Miracle): Biometrical analysis of Brachionus plicatilis ecotypes from Spanish lagoons.

1500 - 1510 A. Hillbricht-Ilkowska: The morphological variation of Keratella cochlearis in two basins of Lake Biwa (Japan) differing in respect to temperature and trophic conditions.

BREAK

1535 - 1545 K. Lindstrom: Growth of Keratella cochlearis in relation to some abiotic factors.

1550 - 1600 G.A. Galkovskaja: Morpho-physiological mechanisms of adaptation of experimental populations of Brachionus calyciflorus Pallas to temperature.

1605 - 1615 L.A. Kutikova: Parallelisms in rotifer evolution.

Evening session:

1) P. Clement and R. Pourriot: Presented a film on the reproductive cycle of rotifers. A discussion followed. (See above for information on how to order this film for rental of purchase.)

2) L.A. Kutikova: A general discussion of the topics presented by the various speakers during the day.

TUESDAY: August 31

Morning session: Chair A. Herzig, Austria

0900 - 0945 U. Halbach: Population dynamics of rotifers and its consequence for ecotoxicology.

1000 - 1010 V.-R. Cajander: The productivity/population dynamics of planktonic rotifers in Ormajarvi, a eutrophicated lake in southern Finland.

1015 - 1025 L.K. Matveeva: Community structure of plankton

rotifers in a mesotrophic lake.

BREAK

1045 - 1055 J. Haberman: On the absolute and relative role of rotifers in large eutrophic Estonian Lakes.

1100 - 1110 S. Godenau: and V. Zinevici: Dynamics and production of the Rotatoria from the plankton of some lakes of the Danube delta.

1115 - 1125 H. Berner-Fankhauser: Succession of rotifers in Lake Biel (Switzerland).

Afternoon session: Chair M. Miracle, Spain

1345 - 1430 C. Williamson: Copepod predation on rotifers.

1445 - 1455 S Threlkeld: Seasonal dynamics of rotifer populations influenced by Mysis relicata predation in an oligotrophic lake.

1500 - 1510 W. Hofmann: Interactions between Asplanchna and Keratella cochlearis in Lake Plussee.

BREAK

1530 - 1540 J. Stenson: Changes in the balance between Polyarthra vulgaris and P. dolichoptera, following the elimination of fish.

1545 - 1555 J. Gilbert: Polyarthra escape response: movie and slides.

Evening session: Chair R. Wallace, USA:

General discussion of the topics presented during the day.

WEDNESDAY: September 1

Morning session: Chair M. Sudzuki, Japan

0900 - 0945 H. Dumont: Biogeography of rotifers.

1000 - 1010 H.J.G. Dartnall: Antarctic and subantarctic rotifers.

1015 - 1025 R. Chengalath: On the rotifer fauna of Labrador.

BREAK

1045 - 1055 B.K. Sharma: On Indian species of the genus Brachionus.

1100 - 1110 R. Shiel: Rotifer communities of billabongs in northern and south-eastern Australia.

Afternoon and evening:

1330 - 1900 Sight-seeing (bus and walking) of part of Uppsala, including Carolus Linnaeus's house in Uppsala, old Uppsala, and a visit to the Limnological Institute. Reception at Uppsala University and walking tour of part of the University (including the main Library).

1900 - 2400 Symposium Banquet. Good food, good drink, good entertainment, good friends!

THURSDAY: September 2

Morning session: Chair A. Hillbricht-Ilkowska, Poland

0900 - 0945 M.R. Miracle and E. Vicente: Rotifer plates in anoxigenic layers of meromictic lakes.
1000 - 1010 H. Hirata: Respiration and energy flow of cultured Brachionus plicatilis.
BREAK
1030 - 1040 A. Herzig: Comparative studies on the relationship between temperature and duration of embryonic development.
1045 - 1055 J. Ejsmont-Karabin: Ammonia and inorganic phosphorus excretion by planktonic rotifers.
1100 - 1110 B.A. Makkeya: Production of the rotifer Brachionus plicatilis for aquaculture purposes in Kuwait.

Afternoon session: Chair W. Hofmann, West Germany

1345 - 1430 J. Litton: Marine rotifers.
1445 - 1455 S. Johansson: Dynamics and production of rotifers in a eutrophication gradient in the northern Baltic.
1500 - 1510 G. Tzschaschel: Interstitial rotifers.
1515 - 1525 M. Sudzuki: Occurrences of the Rotifera under natural and experimental conditions in the field.
BREAK
1600 - 1610 P. Cimdins: Rotifer fauna in the high bogs of Latvia.
1615 - 1625 M. Markic: The Rotatoria-Monogononta in the river Drava in Slovenia-Jugoslavia.
1630 - 1640 N. Butler: Population dynamics and settlement of the sessile rotifer, Cupelopagis vorax.

Evening session: Chair J. Green, UK:

General discussion of the topics presented during Wednesday and Thursday.

FRIDAY: September 3

Morning session: Chair J. Gilbert. USA

0900 - 0945 P. Clement and E. Wurdak: Behavior and ultrastructure of sensory receptors in rotifers.
1000 - 1010 A. Cornillac: Phototaxis in Brachionus calyciflorus and Asplanchna brightwelli.
1015 - 1025 E. Wurdak: Sensory receptors related to feeding behavior in Asplanchna brightwelli.
BREAK
1045 - 1055 T. Nogrady: Neurophysiology and neuropharmacology of rotifers.
1100 - 1110 Ch. King: A re-examination of the Lansing effect.
1115 - 1125 A. Luciani: Aging effects on the ciliary beat of Brachionus plicatilis.

Afternoon session: Chair P. Starkweather, USA

1345 - 1430 M. Scott: Rotifer nutrition using monoxenic culture.
1445 - 1455 P. Starkweather and P. Keller: Trophic linkages between blue-green algae and brachionid rotifers.
BREAK
1515 - 1525 R. Grundstrom: Are rotifer populations related to phytoplankton population dynamics in lake Siggeforasjon?
1530 - 1540 L. May: Some factors influencing the seasonal succession of rotifer species in Loch Leven, Scotland.
1545 - 1555 R. Bell and L. Bern: In situ grazing on 3H-thymidine labelled bacterioplankton.
1600 - 1610 R. Wallace and P. Starkweather: Clearance rates of sessile rotifers: in situ determinations.

Evening session: Chair W. Kunicki-Goldfinger, Poland:

General discussion of the topics considered during the day.

SATURDAY: September 4

Excursion (for those staying): Start 0900 from Sunnersta Herrgard, visiting Linnes Hammarby (the house of Carolus Linnaeus), to the ecological field station at Lake Erken.

RECENT LITERATURE

The literature cited below has been gleaned from several sources including: BIOSIS (Dialog file 5), reprints sent to the editors of ROTIFER NEWS by the authors, information provided by various rotiferologists, Zoological Record, etc. The editors wish to thank the many researchers who have taken their time to inform us of relavent materials. We apologize for any incorrect citations which may follow! An attempt is always made to cite works completely and properly. We would like to be informed of any important errors in these citations; corrections will be published in the next issue (Number 7) which is scheduled for late Fall 1983. Please note that ROTIFER NEWS (in its current home) is produced in draft and final forms using a DIGITAL PDP 11/70 computer as a text editor. This device is, unfortunately, not capable of adding the accents found in other languages. We are sorry about this, and agree that it detracts from the overall international flavor of ROTIFER NEWS, but there is little that can be done about it at the present time.

The editors encourage authors to send us reprints so that they can be properly cited and abstracted. Only if reprints are received can we properly annotate the citations. Some of the abstracted material found below has been copied directly from the author's abstract and/or textual material. Other material was copied from DIALOG Biosis file 5, Zoological Record, or specific information provided by the author. Still other material was abstracted by the editors. Since ROTIFER NEWS is not part of the scientific literature (see caveate on page one), but is rather a newsletter providing a service to researchers, we do not believe that this is a infringement on any copyright laws., Whenever the BIOSIS access number was available we have included it with the abstract.

Most, but not all, of the following list of papers have as their major topic some aspect of rotifer biology. We believe that most of the following papers will be of interest to rotiferologists. Some of the papers have been indexed using the keywords of species names, lake names, and a few special keywords such as predation, salinity, and etc.

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Alekperov, I.Kh. and Kryuchkov, V.I. 1981. Planktonic infusoria in ponds of the Kura Fish Hatchery, USSR. Gibrobiol Zh 17(2):33-37. <Address: Inst Physiol, Acad Sci Az SSR, Baku, USSR.> <Language: RUSSIAN> <Abstract: Plankton in three fish-rearing ponds were studied. In all 31 species of infusoria were found in the plankton. The bimodal curve with the maxima in spring and autumn reflects the seasonal dynamics of the infurorial plankton amount and biomass. In the population dynamics of the other zooplankton

groups, the cladocera showed two peaks which coincided with infusoria, and the rotifers and copepods peaked 15-20 days after the infusoria. Rotifers and copepods may be removing the infusoria by predation.> <DIALOG: BIOSIS; 74009063>

Ali, A. and Lord, J. 1980. Nontarget aquatic invertebrates. Mosq News 40(4): 564-571.

Ali, A. and Stanley, B.H. 1981. Effects of a new insect growth regulator UC-62644 on target Chironomidae and some nontarget aquatic invertebrates. Mosq News 41(4):692-701. <Address: Univ Fla, IFAS, Agric Res Educ Cent, P.O. Box 909, Sanford Fla 32771.> <DIALOG: BIOSIS; 74001902, Abstract modified by the editors: A new insect growth regulator (IGR) UC-62644 was bioassayed against certain insects and nontarget aquatic invertebrates. In experimental ponds, Rotifera, Cyclops spp., Daphnia spp., Chaoborus sp., and several other insects were affected; however, most of these nontarget organisms recovered within 2-3 weeks after treatment. (There were some exceptions.) Rotifers, ostracods, and oligochaetes in a golf course pond were not affected.>

Amsellem, J. and Ricci, C. 1982. Fine structure of the female genital appartus of Philodina roseola, Rotifera, Bdelloidea. Zoomorphology (Berl) 100(20:89-106. <DIALOG; BIOSIS; Abstract # 75018820: The organization of the female genital apparatus of the bdelloid rotifer Philodina roseola was analyzed by light and EM. It differs from that of the monogononts in several respects: the gonad is paired; in each gonad, the follicular layer completely surrounds the syncytical vitellarium and the cluster of ovocytes; the cytoplasmic bridges between the vitellarium and the immature ovocytes exit but are much narrower; a specialized junction (5-8 nm intercellular space) is extablished between the follicular layer and the whole area of the germo-vitellarium complex. Prelimnary observations about the movements of organelles during ovogenesis were made at an ultrastructural lavel.>

Andreyashkin, Yu G. and Kozlova, I.V. 1981. Structural features of communities of pelagic zooplankton in lakes of various types in the Urals and Transurals, USSR. Ekologiya 0(2):72-78. <Language RUSSIAN> <DIALOG; BIOSIS: Abstract #74074643.>

Arts, M.T., Maly, E.J., and Pasitschniak, M. 1981. The influence of Acilius (Dytiscidae) predation on Daphnia in a small pond. Limnology and Oceanography 26:1172-1175.

Attar, E.N. and Maly, E.J. 1982. Acute toxicity of Cadmium, Zinc, and Cadmium-zinc mixtures to Daphnia magma. Arch Environ Contam Toxicol 11:291-296.

Banse, K. 1982. Mass scaled rates of respiration and intrinsic growth in very small invertebrates. Mar Ecol Prog Ser 9(3):281-298. <DIALOG; BIOSIS: Abstract # 75057725>

Barron, G.L. and Szijarto, E. 1982. Structure and biology of a new Hyphomycete parasitic on rotifers. Canadian Journal of Botany 60(7):1212-1215. <Address: Department of Environmental Biology, University of Guelph, Guelph, Ontario, Canada, N1G 2W1> <Abstract: Phialophora endoparasitica is described as a new hypomycete attacking bdelloid rotifers. Infection is initiated by a conidium with a lobed appendage which lodges in the mastax. Conidia germinate to produce branching chains of turbinate assimilative cells which eventually fill the host. Reproductive hyphae break out at a number of points, produce phialidic conidiogenous cells, and release conidia under water. (Line drawings and light microscope photomicrographs - Eds.)> <DIALOG; BIOSIS; Abstract #: 75062417.>

Barron, G.L. and Szijarto, E. 1982. A new hypomycete parasitic on the ciliated protozoan Vorticella and Opercularia. Canadian Journal of Botany 60(7):1031-1034. <Address: See above> <Abstract: Meria harposporioides is described as a new hypomycete attacking ciliated protozoans. The crescent-shaped conidium attaches to the host pellicle, invades the cell, and produces branching chains of beadlike assimilative hyphae. A unique feature is that assimilated nutrient is passed back out through the original penetration tube to the infective conidium which then produces fertile hyphae and phiaoconidia. This is the first record of a hypomycete attacking ciliated protozoans.> <-(light microscope photomicrographs -Eds)->

Bedier, E. 1981. Pilot scale production of Sea Bass Dicentrarchus labrax fry. 2nd ICES Sym on the Early Life History of Fish: Recent Studies, Woods Hole, Mass, USA, Apr 2-5 1979, Rapp P-V Reun Cons Int Explor Mer 178(0):530-532.

Ben-Amotz, A. and Fishler, R. 1982. Induction of sexual reproduction and resting egg production in Brachionus plicatilis by a diet of salt grown Nannochloris oculata. Mar Biol (Berl) 67(3):289-294. <DIALOG; BIOSIS; Abstract #74083780.>

Berzins, B. 1982. Contribution to the knowledge of Rotatoria of Australia. Limnolog Instit Lund. 35 pp. <Information provided by the author: nova: Aspelta neboisi, Encentrum mnium, Encentrum prosdendrus, Hexarthra barracootica, Lecane bifurca entome, Lecane lunaris australis, Lecane quadridentata arthrodactyla, Lepadella amphitropis victoriensis, Lepadella bunandensis, Lepadella chorea, Lepadella decora, Lophocharis curvata, Macrochaetus australiensis, Mniobia conarus, Mniobia ocypetes, Pompholyx tubulosa, Testudinella munda, Testudinella neboisi.>

Berzins, B. 1982. Die Unterarten von Dissotrocha aculeata (macrostyla). Limnolog Instit Lund 14 pp. 27 fig. <Information provided by the author: Transition from aculeata to macrostyla with 19 n.spp.> <Language: GERMAN>

Berzins, B. 1982. Perifyton och plankton, Ybbarpsan. Linmolog Instit Lund. 33 pp. Mimeogr. <Language: GERMAN>

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Bielanska-Grajner, I. (in press). The ecological succession of plankton rotifers in a new water reservior. Acta Biologica, Zesz Nauk Uniw Sl.

Bielanska-Grajner, I. (in press). Rotifers (Rotatoria) of Paprocanskie Lake (Gorny Slask, Poland). Acta Hydiobiologica, Krakow.

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Blazaka, p., Brandl, Z., and Prochazkova, l. 1982. Oxygen comsumption and ammonia and phosphate excretion in pond zooplankton. Limnology and Oceanography. 27(2):294-303. <DIALOG; BIOSIS; # 74059884.>

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Boltovskoy, A. and Urrejola, R. 1977. Two new species of the genus Keratella, Rotatoria, from Tierra-Del-Fuego Argentina. Limnobios 1(6):181-187. <Language: PORTUGUESE> <Address: Facultad Ciencias Naturles, Museo La Plata Consejo National Investigationes Cientificas Tecnicas, Buenos Aires, ARGENTINA.> <DIALOG: BIOSIS; # 74025278, Abstract modified by the editors: Scanning electron microscope observation was made on two new Rotatoria species (Keratella ona and K. yamana) from Sphagum bogs near Ushuala city. Both species show the anterior dorsal margin with 6 spines. -- Further details are provided in the full abstract.>

Botrell, H., Duncan, A., Gliwicz, Z.M., Grygierek, E., Herzig, A., Hillbricht-Ilkowska, A., Kurosawa, H., Larsson, P., and Weglenska, T. 1976. A review of some problems in zooplankton production studies. Norw J Zool 24:419-456.

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Brandorff, G.-O., Koste, W., and Smirnov, N.N. 1982. The composition and structure of rotiferan and crustacean communities of the lower Rio Nhamunda, Amazonas, Brazil. Studies on Neotropical Fauna and Environment 17(3):69-121. <Abstract: The crustaceans and rotifers of 17 samples from the plankton and 3 from the littoral from lakes

of the lower Rio Nhamunda, an affluent of the Amazon were studied. 145 Taxa of rotifers and 46 of crustaceans were found: Two rotifers and three crustaceans are new to science: Keratella americana nhamundaiensis, Euchlanis triquetra nhamundaiensis, Echinisca superaculeata, E. sioli, and E. mira. In the taxonomical part 24 rotiferan and 22 crustacean taxa are described in more detail, drawings of them given, and some remarks made about the geographical distribution. In the biocenotical part the conditions of dominances were studied: Brachionus zahniseri and Keratella americana within the rotifers and Bosminopsis deitersi and Oithona amazonica within the crustaceans are the dominant species in the pelagial. In the littoral Synchaeta stylata and Streblocerus pygmaeus were found to be dominant. The species diversity and also the evenness is higher within the rotifers than in the crustaceans. By means of an index of similarity dendrograms were drawn where groups of lakes can be differentiated by using the similarity between crustaceans. The proportion of neotropical species in relation to pantropical and cosmopolitan species is lowest in the rotifers, higher in the cladocerans and highest in the copepods at 100%. -(Tables, line drawings, light microscope photomicrographs, -Eds.)->

Brock, M.A. and Shiel, R.J. 1983. The composition of aquatic communities in saline wetlands in Western Australia. Hydrobiologia. (in press). <This work lists the plankton of saline lakes (3%) in W.A. Only two rotifers are common, Brachionus plicatilis and Hexarthra fennica. Assemblages in lower salinities are unlike those of eastern Australia.>

Buchner, H. 1982. Untersuchungen uber die Bedingungen der Heterogonen Fortpflanzungsarten bei den Radertieren. II. Uber die Bedingungen der Parthenogenese bei Brachiouns urceolaris. Arch Hydrobiol/Suppl 64(3):399-441. <Language: GERMAN> <Author's Abstract: The production of mictic females of Brachinous urceolis was inhibited by low temperature, low population density, and occasionally by a shift of algal diet from Kirchneriella to Stichococcus. However, it was impossible to sustain parthenogenesis for prolonged periods of time. During six years of constant environmental conditions favouring parthenogenesis, mictic and amictic phases alternated at irregular intervals. Therefore one has to assume that mixis is not exclusively determined by environmental factors but may occur spontaneously. The six tested clones differed in their rates of mixis. Also lines of the same clone showed marked differences. Such differences arise, when lines are cultured at warm temperatures for long time: The initial high rate of mixis declined gradually toward complete amixis. The rate of this decline differed significantly in some of the lines. Apparently the eggs lost their capacity for mictic determination. This was never observed in lines kept at low temperature. The loss was reversible: Transferring the warm lines to cold conditions restored the capacity for mixis within several months.> <DIALOG; BIOSIS; Abstract #:75072944>

Bushnell, J.H., Butler, N.M., and Pennak, R.W. 1982. Dynamics of alpine flowages. Univ of Colorado, Inst of Artic and Apline research, Occasional papers, 37:124-132.

Butler, N.M. 1982. Seasonal aspects of settlement and reproduction of the sessile rotifer, Cupelopagis vorax. (Abstract) J Colo-Wyo Acad Sci (in press).

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Carey, A.G., Jr., and Montagna, P.A. 1982. Arctic sea ice faunal assemblage 1st approach to descripton and source of the under ice meiofauna. Mar Ecol Prog Ser 8(1):1-8. <DIALOG; BIOSIS; Abstract # 74059907.>

Cathey, D.D., Parker, B.C., Simmons, G.M., Jr., Yongue, W.H., Jr., and Van Brunt, M.R. 1981. The microfauna of algal mats and artifical substrates in southern Victoria land lakes of Antarctica. Hydrobiologia 85(1):3-16 <DIALOG: BIOSIS; # 74038162, Abstract modified by the editors: The first microfaunal colonization study of continental lakes in Antarctica is reported. Protozoans, rotifers, tardigrades, and nematodes constituted the microfaunal community in all lakes.>

Ceccherelli, V.U. and Ferrari, I. 1976. Analysis of a multi annual series of zooplankton collections in the valleys of Comacchio Italy. Boll Pesca Piscic Idrobiol 31(1-2): 27-36.

Chengalath, R. and Hann, B.J. 1981. Two new species of Alona (Chydoridae, Cladocera) from western Canada. Can J Zool 59:377-389.

Chengalath, R. and Hann, B.J. 1981 A new species of Chydorus (Cladocera, Chydoridae) from Ontario, Canada. Trans Am Microsc Soc 100(3):299-238.

Chengalath, R. 1982. A faunistic and ecological survey of the littoral Cladocera of Canada. Canadian Journal of Zoology. 60(11):2668-2682. <Address: Invertebrate Zoology Division, National Museum of Nat Sci, Ottawa, Ont, Canada K1A 0M8.> <From the Authors abstract: A total of 356 samples were collected and analysed from all the provinces and Northwest Territories of Canada. Nearly 2000 microscopic slides, mostly identified to the level of species, representing the littoral Cladocera of Canada were prepared. The samples, slides, and sorted populations are deposited in the Invertebrate collection of the National Museum of Natural sciences, Ottawa, and form an objective standard for the indification of these animals for the interested biologist. During this study, 80 taxa of littoral cladocerans were recorded which includes all the species reported from Canada so far. Of these, three species are new to science.>

Chengalath, R. and Koste, W. (in Press). Rotifera from northwestern Quebec, Newfoundland, and Labrador, Canada. Hydrobiologia.

Chimney, M.J., Winner, R.W., and Seilkop, S.K. 1981. Prey utilization by Chaoborus punctipennis in a small eutrophic reservoir. Hydrobiologia. 85(3):193-200. <DIALOG; BIOSIS; Abstract # 74045521 modified by the editors: The purpose of this research was to characterize the food habits and preferences of Chaoborus punctipennis in a small, eutrophic reservoir which supports a rather depauperate number of species of zooplanktors. The paper by Brooks and Dodson (1965) triggered a flurry of studies on aquatic predators and their ability to discriminate between available prey species. Although the original work dealt with vertebrate predators, it has become increasingly apparent that invertebrate predators may also exhibit considerable selectiivty in choosing between prey categories. -- Brachionus caudatus and Trichocerca similis were eaten. Rotifers comprised 67% of all prey items identified in the crops of 4th instar larvae.>

Chowdhury, S.H. and Bhouyain, A.M. 1981. The rotatorian genera Brachionus and Platyias from the river Karnaphuli India. Bangladesh J Zool 9(2): 113-124. <DIALOG; BIOSIS; Abstract #: 75065573: Descriptions of the following species are included in the text: Brachionus diversucornis, Brachionus forficula, Brachionus calyciflorus, Brachionus caudatus apsteini, Brachionus quadridentatus, Brachionus falcatus, Brachionus angularis, Platyias quadricornis, Platyias patulus.>

Cimdins, P. 1980. The rotifer (Rotatoria) fauna in the surroundings of Cesis and Kemeri. In. The Fauna and Ecology of the Latvian's SSR Invertebrates. Riga pp 45-48. <Language: RUSSIAN> <12 biotopes, 236 species are reported. The pH varied from 3.6 to 8.6.>

Cimdins, P. 1981. Rotifers as bioindicators of Saprobity. In. Hydrobiologic Regime of Small Rivers Under Conditions of Anthropogenic Influence. Riga pp 74-106. <Language RUSSIAN> <A list of 111 rotifer species is used to determine the saprobic state in small rivers of the Baltic area.>

Cimdins, P. 1982. The rotifer fauna of two Trapa Natans Lakes. In. fauna, Protection, and Rational Use of the Latvian's SSR Invertebrates. <Language RUSSIAN>

Coates, L.J., Roff, J.C., and Markle, D.F. 1982. Freshwater components in the diet of the marine neustonic fish Urophycis tenus. Environ Biol Fishes 7(1):69-72. <Address: Dept Zool, College of Biol Sciences, Univ of Guelph, Guelph, Ontario N1G 2W1, Canada.> <Abstract: Stomach content analysis of a neustonic marine juvenile white hake (U. tenuis (Mitchill)), revealed the presence of an unusual).70 mm bolus, consisting of a freshwater rotifer, Keratella cochlearis and several species of freshwater phytoplankton (DIALOG; BIOSIS: Abstract: #: 74008950 for

details).>

Champ, P. 1978. Estimation of secondary plankton production judging from data on primary production. Cah O R S T O M Ser Hydrobiol 12(2):173-175.

Curry, M.G., Everitt, B., and Vidrine, M.F. 1981. Haptobenthos on shells of living fresh water clams in Louisiana, USA. Wasmann J Biol 39(1-2):56-62. <Address: Jefferson Parish Environ Dev, Control Dep, 3330 N Causeway Blvd, Room 303, Metairie, La 70002.> <DIALOG: BIOSIS; # 74030794, Abstract modified by the editors: Haptobenthos reported from the shells of living freshwater unionid clams in Louisiana included many different taxa of sessile organisms including several unidentified sessile rotifers.>

Dad, N.K. and Pandya, V.K. 1982. Acute toxicity of two insecticides to the rotifer Brachionus calyciflorus. Int J Environ Stud 18(3-4):245-246. <DIALOG; BIOSIS; Abstract #75015069>

Davis, R.C. 1981. Structure and function of 2 antarctic terrestrial moss communities. Ecol Monogr 51(2):125-144. <Address: British Antartic Survey, Natural Environ Res Council, madingley Road, Cambridge, CB3 OET, UK.> <DIALOG; BIOSIS # 74067232, Abstract modified by the editors: Two bryophyte-dominated communitites in the maritime Antarctic were analysed in term of the transfer and standing crops of organic matter within them. Rotifers were part of the community and thus were included in the study.>

De Deckker, P. and Geddes, M.C. 1980. Seasonal fauna of ephemeral saline lakes near the Coorong Lagoon South Australia. Aust J Mar Freshw Res 31(5):677-700.

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Dussart, B.H., Fernando, C.H., Matsumura-Tundisi, T., and Shiel, R.J. 1983. A review of systematics, distribution and ecology of tropical freshwater zooplankton. Hydrobiologia (in press). <Review of studies conducted in Africa, the Americas, Asia, Australia.>

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Eloranta, P. 1982. Note on the morphological variation of the rotifer species Keratella cochlearis in one eutrophic pond. J Plankton Res 4(2):299-312. <DIALOG; BIOSIS: Abstract # 75040485: Morphological variation of Keratella cochlearis (Gosse) were monitored during two years in a eutrophic pond in central Finland.

Nine different taxonomic forms were found during the study. A very significant negative correlation was found between water temperature and total length of this species var tecta. Some forms (var hispida and irregularis series) were found only during warm water seasons. The lorica structure of different morphs was also studied by SEM techniques.

Emmerson, W.D. 1980. Ingestion growth and development of Penaeus indicus larvea as a function of Thalassiosira weissflogii cell concentration. Mar Biol (Berl) 58(1):65-74.

Evans, W.A. 1982. Abundances of micrometazoans in 3 sandy beaches in the island area of western Lake Erie, Ohio, USA. Ohio J Sci 82(5):246-251. <Address: Dept of Biology, Union College, Barbourville, Ky, 40906, USA> <DIALOG; BIOSIS; Abstract #: 75063299: During August 1978 the interstitial micrometazoa of 3 beaches on Kelley's Pelee and South Bass Island in the western basin of Lake Erie were sampled. Representatives of the following taxa were found: Acarina, Cladocera, Copepoda, Ostracoda, Gastrotricha, Oligochaeta, Rotifera, Tardigrada, and Turbellaria. The South Bass community was numerically dominated by turbellarians, the Pelee community by rotifers, and the Kelley's community by rotifers and gastrotrichs. Densities of the 4 most abundant rotifer genera (Trichocera, Lecane, Wierzjskiella, and Cephalodella) varied among beaches and as a function of position and depth.>

Fagade, S.O. 1982. The food and feeding habits of Sarotherodon galilaeus from a small lake. Arch Hydrobiol 93(2):256-263. <DIALOG; BIOSIS # 74067210, Abstract modified by the editors: Rotifers were found to be used as food by this fish.>

Ferguson, A.J.D., Thompson, J.M., and Reynolds, C.S. 1982. Structure and dynamics of zooplankton in closed systems with special reference to the algal food supply. J plankton Res 4(3):523-544.

Foran, J.A. and King, R.H. 1982. A regression analysis of the summer population dynamics of Polyarthra vulgaris in a northern Michigan, USA, bog lake. Hydrobiologia 94(3): 237-246. <Address: Dept of Environmental Engineering, A.P. Black Hall, Univ of Fla, Gainesville, Fla, USA> <DIALOG; BIOSIS; Abstract #: 75063377: The population dynamics of a planktonic rotifer (P. vulgaris) were examined in a brown water, acid lake in northern Michigan, USA. Predation by Chaoborus punctipennis and low food (Navicula spp. and Cyclotella spp.) concentrations were the main factors limiting P. vulgaris populations of all factors examined. A hypothesis for zooplankton limitation by an invertebrate predator is supported.>

Fukusho, K. and Iwamoto, H. 1981. Polymorphosis in size of the rotifer Brachionus plicatilis cultured with various foods. Bull Natl Res Inst Aquacult 0(2):1-10. <Language: JAPANESE> <DIALOG; BIOSIS; Abstract # 75033649: Using L-type (a strain) rotifer, B. plicatilis with initial size of 263.2 +/- 14.4 microns in lorica

length and 169.7 +/- 9.7 microns in width, influences of various foods on the size and shape was examined to obtain the basic information for genetic improvement of the rotifers as food for fish larvae.>

Ganf, G.G., Shiel, R.J., and Merrick, C.J. 1983. Parasitism: the possible cause of the collapse of a Volvox population in Mount Bold Reservoir, South Australia. Aust J Mar Freshwater Res (in press). <This paper describes parasitism of Volvox tertius (?) by the rotifer Ascomorphella volvocicola.>

Gatto, M. and Ricci, C. (in press). Age structure and density dependence in the dynamics of a population of Philodina roseola. Proc IV Simposio di Dinamica di Popolazioni, Parma, October 1981.

Gliwicz, Z.M., Hillbricht-Ilkowska, A., and Weglenska, T. 1978. The contribution of fish and invertebrate predation to the elimination of zooplankton biomass in two Polish lakes. Verh Internat Ver Limnol 20:1007-1011.

Golcz, A. 1981. Phytoplankton and zooplankton of the lower sector of the River Odra, Poland, in the years 1974 to 1977. Acta Hydrobiol 23(3):227-242. <DIALOG; BIOSIS: Abstract # 74082071.>

Grygierek, E. and Wasilewska, B.E. 1982. The effect of Foschlor organic phosphorus acid esters on zooplankton and benthos of fish ponds. Ekol Pol 29(2):257-270. <DIALOG; BIOSIS; Abstract # 75038205: In most cases Foschlor (insecticide) applied in ponds at 1 mg/l destroyed the fauna used by fish as food. Zooplankton (rotifers and crustaceans) died abundantly in the first 24 hours after introduction of the poison.>

Gunter, D.D. and Knight, L.A., Jr. 1978. Observations of the rotifer Sinantherina semibullata from Ross Barnett reservoir, Mississippi, USA. Egypt J Microbiology 13(1-2):99-106. <Address: Dept anatomy, University of Mississippi, Med Center, Jackson, Mississippi, USA, 39216.> <DIALOG; BIOSIS; # 74025276, Abstract: S. semibullata (Thorpe) were collected from littoral areas of Ross Barnett Reservoir, Mississippi. Most occurred in quiet, clear waters in the vicinity of dense growths of Myriophyllum sp., Brasenia sp. and other aquatic macrophytes. Colonies of 25-40 individuals were either free-swimming or attached. Trophi appeared to lack homogeneity. The 2 rows of cilia on the corona were unequal. There was a wave-like movement of the outer row of cilia directed counterclockwise; the inner row was directed clockwise. Trunk constructures and structures in the developing eggs were noted.>

Haberman, J. 1978. Seasonal dynamics of the pelagic zooplankton of Lakes Peipus-Pskov and Vortsjarv and factors determining it. Hudrobiolgilised Uurim 7:20-49.

Haq, S., Abbas, M., and Siddiqui, M.S. 1981. The population density and food of Esomus danricus (Pisces cyprinidae) of a derelict water ecosystem in North India. Indian J Ecol 8(1):96-101. <Address: Zool Dept, Aligarh Muslim Univ, Aligarh 202001, India> <Abstract: Other food items of this fish included rotifers, but phytoplankton constituted the bulk of the total food intake of the fish. --eds, after DIALOG: BIOSIS; 74008935>

Hann, B.J. and Chengalath, R. 1981. Redescription of Alonella pulchella Herrick, 1884 (Chydoridae, Cladocera), and a description of the male. Crustaceana (Leiden), 41:249-262.

Harman, D. 1981. The aging process. Proc Natl Acad Sci USA 78(11):7124-7128. <Address: Univ Neb, Coll Med, Dept Med, Omaha, Neb 68105.> <This work is a review of aging and apparently contains information on quite a few different organisms. Rotifers are mentioned in the following context: Their life span is increased when diets are used which lower the free radical production. --eds.> <BIOSIS; 74009982>

Heller, M.P. and Katz, H.M. 1982. Composition and density of phytoplankton and zooplankton communities in the lower Green River, Kentucky, USA 1978-1979. Trans Ky Acad Sci 43(3-4):109-118. <DIALOG; BIOSIS; Abstract # 75017251>

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Herzig, A. 1981. Auswirkungen der thermischen Beeinflussung auf das Zooplankton. IN: Humpesch et al. (Eds). Okologische Auswirkungen der thermischen Beeinflussung. Bundesministerium fur Land- und Forstwirtschaft (Sektion IV), Wasserwirtschaft - Wasservorsorge - Forschungsarbeiten, pp:112-166. <Language: GERMAN>

Herzig, A. 1983. Experimental studies on temperature-dependence of embryonic, postembryonic and resting egg development, growth and survival of Diaphanosoma barchyurum Lieven (Cladocera, Crustacea). Oikos (in press).

Hettler, W.F. and Powell, A.B. 1981. Egg and Larval fish production at the National Marine Fisheries Service, Beaufort Laboratory, Beaufort, North Carolina, USA. 2nd ICES Sym on the Early Life History of Fish: Recent Studies, Woods Hole, Mass, USA, Apr 2-5 1979, Rapp P-V Reun Cons Int Explor Mer 178(0):501-503.

Hillbricht-Ilkowska, A. 1977. Trophic relations and energy flow in pelagic plankton. Pol ecol Studies 3(1):3-98.

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Hillbricht-Ilkowska, A. 1983. Morphological variation of Keratella cochlearis (Gosse) (Rotatoria) in Lake Biwa (Japan). Hydrobiologia (Haag) (in press).

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<Language:GERMAN.> <DIALOG: BIOSIS; 74001607, Abstract: The species composition of 58 zooplankton samples from 9 lakes in the Eifel was examined. Although an evaluation of the results is difficult because of the limited material, the number of copepod and cladoceran species seemed to be lower in the oligotrophic than in the eutrophic lakes. The rotifer fauna of the eutrophic lakes was characterized by some species typical of eutrophic conditions. For some taxa (Eudiaptomus graciloides, Keratella cochlearis, Trichocera Formenkreis similis-birostris, and Filinia terminalis), the relationship between population parameters (body length, morphological characteristics) and lake conditions were discussed.>

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Ivanova, Z.A. 1980. Electivity in the nutrition of current year carp Cyprinus carpio and degree of consumption of combined food mixtures in pond fish farms in Siberia Russian-SFSR, USSR. Vopr Ikhtiol 20(3):498-507.

Kajak, Z. and Jadwiga, R. 1979. The feeding of Chaoborus flavicans (Diptera, Chaoboridae) and its predation of lake zooplankton. Int Rev Gesamten Hydriobiol 64(3):361-378.

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modified by the editors: Rotifers found in these experimental sewage lagoons were classified into two genera (Rotaria sp. and Lecane.).>

Kanetsuna, Y. 1973. On the relation between the plankton and the salinity of the waters in the Hokuriku district, Japan. Japanese J Limnol 34(1):24-34. <Language: JAPANESE with ENGLISH summary>

Karamchandani, S.J. and Mishra, D.N. 1980. Preliminary observations on the status of silver carp Hypophthalmichthys molitrix in relation to catla in the culture fishery of the Kulgarhi Reservoir, India. J Bombay Nat Hist Soc 77(2):261-270. <Address: Central Inland Fish Res, Sub-Stn, Allahabad, INDIA> <DIALOG; BIOSIS; # 74023666, Abstract modified by the editors: In the guts of silver carp, the zooplankton (21.04%) was made up almost entirely of rotifers (20.81%). The growth of silver carp was rapid in the early period, i.e., up to 25 mo., when the plankton was abundant and silver carp could feed voraciously on rotifers. The growth of silver carp declined in the later period, i.e., the following 25-50 mo., when rotifers were poorly represented in the plankton.>

Kartasheva, N.V. and Lebedeva, L.I. 1981. Structure and quantity of the zooplanktonin Rybinsk reservoir Russian-SFSR, USSR, depending on the zinc and chromium concentrations. Gidrobiolo Zh 17(2):76-82. <Address: Mosc State Univ, Moscow, USSR> <Language: RUSSIAN> <Abstract: The effect of Zn and Cr concentrations on the natural association of Rybinsk reservior zooplankton was studied in 16 cubic meter water bodies. The values of substance concentrations corresponded to the values to the maximum permissible concentrations (MPC) or multiple values of MPC for water bodies used for sanitary and domestic purposes. The effect of Zn and Cr on the quanity of rotifers and copepods was described satisfactorily by the linear dependence. The higher concentrations of compounds evoked a fall in animal weight, changes in age composition of main groups and reduction of the species number. Rotifers were the most sensitive to higher concentrations of Zn and Cr as their number lowered sharply 24 hrs after the beginning of the experiment.> <BIOSIS: DIALOG; 74021393>

Kasprzak, P. and Ronneberger, D. 1982. Vergleichende Untersuchungen zur Dynamik des Zooplanktons im Stechlinsee, Nehmitzsee und Haussee 1978/1979. Limnologica (Berlin) 14(2):263-295. <Address: Akademie der Wissenschaften der DDR, Forschungszentrum fur Molekularbiologie und Medizin, Zentralinstitut fur Mikrobiologie und experimentalle Therapie Jena - Abteilung Limnologie - DDR-6900 Jena, Beutenbergstr. 11.> <Language: GERMAN> <From the authors abstract: During 1978/79 the zooplkankton community (rotifers, crustaceans) of three lakes of different trophic state was investigated. Seven taxa of Cladocera, 7 copepods and 32 of rotifers were found. The species composition in the three lakes is very similar. During long periods of the year the filter feeders Daphnia cucullata, Daphnia hyalina, Kellicottia longispinsa, Keratella cochlearis, and Polyarthra dolichopter dominate. The

vertical maximum of rotifer development falls down from the surface of the lakes during circulations period. The phytoplankton composition compared with rotifer developemnt suggest the eating of nannoplankton especially by these animals.>

Kentouri, M. and Divanach, P. 1982. Behavior and prey selection of Striped Sea Bream, Lithognathus mormyrus larvae reared in poly specific and pluri-dimensional food conditions. C R Seances Acad Sci Ser III Sci Vie 294(17):859-862. <Language: FRENCH> <DIALOG; BIOSIS; Abstract # 75040444>

Kies, L. 1980. The presence of endophytic bacteria in Colacium vesiculosum Euglenophyceae and their loss during long-term culturing of the alga. Mitt Inst Allg Bot Hamb 17(0): 13-18. <DIALOG; BIOSIS: Abstract #: 71028921: In 1970, a strain of the epizoic C. vesiculosum (Euglenophyceae) was isolated from the rotifer Keratella cochlearis tecta and a culture was established.

King, C.E. and Snell, T.W. 1977. Sexual recombination in rotifers. Heredity 39:357-360.

King, C.E. and Snell, T.W. 1977. Genetic basis of amphoteric reproduction in rotifers. Heredity 39:361-364.

King, C.E. and Snell, T.W. 1980. Density-dependent sexual reproduction in natural populations of the rotifer Asplanchna girodi. Hydrobiologia 73:149-152.

Kinsten, B. and Olsen, P. 1981. Impact of Mysis relicta introduction on the plankton of two mountain lakes, Sweden. Inst Freshwater Res Drottningholm Rep 0(59):64-74. <Address: Inst Limnol, S-751 22 Uppsala, Sweden.> <From the DIALOG; BIOSIS, Abstract # 74038150: Mysis relicta was introduced to 2 Swedish mountain lakes, Lake Mesvattnet and Lake Smavattnet, in 1971. Dense Mysis populations were established in the 2 lakes about 1974-75. The mean summer phytoplankton biomass increased considerably in both lakes during the course of development of the Mysis populations. In Lake Mesvattnet the composition of zooplankton changed rather drastically after the increase in density of the Mysis population. Both the cladocerans Eubosmina longispina and Holopedium gibberum became almost extinct: rotifers increased considerably. In Lake Smavattnet increased numbers of rotifers and a tendency to decreasing numbers of Eubosmina and Holopedium were recorded.>

Kitajima, C., Tsukashima, Y., Fujita, S., Watanabe, T., Yone, Y. 1981. Relationship between uninflated swimmbladders and lordotic deformity in hatchery rearded Red Sea Bream Pagrus major. Bull Jpn Soc Sci Fish 47(10):1289-1294. <Address: Aquacult Res Lab, Nagasaki Prefectual Inst Fish, Nomozaki, Nagasaki 851-05, Japan> <Language: JAPANESE> <From the abstract provided from DIALOG; BIOSIS; #74009068 we determined that part of this work is concerned with the nutritional quality of rotifers for this fish species.>

Klein-MacPhee, G. 1981. Effects of stocking density on survival of laboratory cultured summer flounder Paralichthys dentatus larvae. 2nd ICES Sym on the Early Life History of Fish: Recent Studies, Woods Hole, Mass, USA, Apr 2-5 1979, Rapp P-V Reun Cons Int Explor Mer 178(0):505-506.

Klimowicz, H. 1976. [Manual for prompt evaluation of the process of sewage treatment with activated sludge. Part II. Rotifers.] Gaz Woda i Technika Sanitarna 12:331. <Language: POLISH> <Rotifer species found in activated sludge are presented.>

Klimowicz, H. 1978. [River planktonic organisms and their value in water cleaness control.] Gospodarka Wodna 11:336. <Language: POLISH>

Klimowicz, H. 1979. [On the necessity of testing the penetration of plankton through the instalations for water treatment.] Gaz Woda i Technika Sanitarna 10:309. <Language: POLISH>

Klimowicz, H. 1980. [On appearance of organisms in polluted water.] Gospodarka Woda 11:316. <Language: POLISH>

Klimowicz, H. 1981. [Correct control of water cleaness by presence of organisms withstanding different kinds of pollution is due to standarizing of methods.] Gaz Woda i Technika Sanitarna 3:62. <Language: POLISH>

Klimowicz, H. 1981. [Water organisms - bioindicators of water pollution.] Gaz Woda i Technika Sanitarna 4:87. <Language: POLISH>

Koste, W. and Jose de Paggi, S.J. 1982. Rotifera of the superorder Monogononta recorded from Neotropics. Gewasser und Abwasser 68/69:71-102.

Koste, W. and Shiel, R.J. 1983. Morphology, systematics and ecology of new monogonont Rotifera from the Alligator Rivers region, Northern Territory. Trans R Soc S Aust (in press). <This is an extension of Koste's (1981) work of the same title. Records three new taxa among 76 recorded species, examines effect of dry season extremes on floodplain rotifer communities, and compares assemblages to those of the wet season.>

Koste, W., Shiel, R.J., and Brock, M.A. 1983. Rotifera from Western Australia wetlands with descriptions of two new species. Hydrobiologia. (in press). <Community composition of ephemeral and permanent waters in Western Australia are described. Brachionus pineenaus and Lecane boorali are described and figured. Evolutionary and biogeographical relationships of Western Australia rotifers are considered.>

Kurihara, Y. 1978. Studies of the interaction in a microcosm. Science Rep Tohoku Univ (Biol) 37(3):161-177.

Lauth, J. and Rosen, B. 1982. Observations on variations in the lateral antennae aperatures of soft bodied and loricate pelagic rotifers. Micron 13(1):55-56.

Lebedeva, L.I. and Gerasimova, T.N. 1981. Growth breeding and production of Philodina roseola, Rotatoria, Bdelloida, upon individual cultivation. Zooh Zh 60(11):1614-1620. <Language: RUSSIAN> <DIALOG; BIOSIS; Abstract # 75034416: The growth, breeding [reproduction], production, and life span of a freshwater rotifer, Philodina roseola, were studied by means of individual cultivation at 20 degrees C and a Chlorella vulgaris concentration of 0.5 X 10E6 cells/ml or raw wt., 0.16 mg/ml. Average life span was 48.4 days; generation time 4 days. The females lay 45 eggs during the breeding [reproductive] period. Adult weight is 28 times that of a newly hatched rotifer. Growth curves for linear and weight increases were constructed.>

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Leetham, J.W., McNary, T.J., Dodd, J.L., and Lauenroth, W.K. 1982. Response of soil nematodes, rotifers and tarigrades to three levels of season-long sulfur dioxide exposures. Water, Air and Soil Pollution 17(4):343-356. <DIALOG; BIOSIS; Abstract # 75007370: Soil nematode, rotifer, and tardigrade were sampled in filed plots of native northern mixed prairie in southeastern Montana (USA) from 1977-1979.>

Lemly, A.D. and Dimmick, J.F. 1982. Growth of young of the year and yearling centrarchids in relation to zoolpankton in the littoral of some lakes. Copeia 1982(2):305-321. <Address: Dept Biology, Wakeforest Univ, Winston-Salem, NC, USA.> <DIALOG; BIOSIS # 74067218, Abstract modified by the editors: Rotifers were not found to be important food for these fish.>

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50 FINLAND.> <DIALOG; BIOSIS; # 74054636, Abstract: EDTA and oxalic acid in concentration of about 0.5mM immobilized several microzooplankton organisms in Baltic Sea water (salinity 5-7 permill.). Both agents can be used to narcotize ciliates and some rotifers (Synchaeta spp.).>

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Luczak, J., Rybak, M., and Ranke-Rybicka, B. 1980. Aquatic organisms present in tap water. Pocz Panstw Zakl Hig 31(3):319-325.

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Makarov, Yu N. and Golodetskii, L.A. 1980. Larval development of the black sea Prawn Palaemon adspersus Crustacea Decapoda in the laboratory. Zool Zh 59(3):375-382.

Markevich, G.I. and Koreneva, E.A. 1981. Method of preparation of rotifer Mastaxes for electron microscopy. Zool Zh 60(10):1562-1564. <Language: RUSSIAN> <Address: Inst Biol Inland

Waters, Acad Sci USSR, Borok, USSR.> <DIALOG; BIOSIS; Abstract # 74054253: A Nucleopore filter was used for the isolation of the mastax and its mounting plate. The method is simple, convient and allows conservation of an almost natural position of the mastax skeletal parts.>

Mathias, J.A. and Li, S. 1982. Feeding habits of Walleye Stizostedion vitreum and juveniles comparative laboratory and field studies. Trnas Am Fish Soc 111(6): 722-735. <DIALOG; BIOSIS; Abtsract #: 75079219>

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rotifer plankton and its biomass in six lakes of the Eastern Rift Valley of Kenya is discussed. The lakes can be divided into two groups: the low conductivity slightly alkaline lakes Naivasha, Oloidien and the Winam Gulf of Lake Victoria; and the high conductivity, highly alkaline-saline lakes Nakuru, Elmenteita and Bogoria. The former three show a qualitatively rich, typical warm water rotifer association dominated by Brachionids and Filinia. The saline soda lakes are dominated by several populations of Brachionus dimidiatus, which can reach enormous numbers. The taxonomy and biometry of this species was subjected to statistical analysis. Some interesting and rare species are described: Anuraeopsis coelata, Lepadella triptera f. deconincki, Trichocerca gracilis and T. mus. The chemical limnology of the lakes is discussed and compared with other soda lakes in Central Africa, Europe and North America.> <Photomicrographs and line drawings -Eds.>

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Pourriot, R. 1982. Effects de l'intensite d'eclairement et de la longueur d'onde sur l'eclosion des oeufs de duree de Brachionus rubens Ehr. (en coll avec J. Blanchot). C R Acad Sci ser III (295): 122-125. <Language: FRENCH>

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Ricci, C. (in press). Adaptive strategies in Rotifera Bdelloidea. Proc IV Simposio di Dinamica di Popolazioni, Parma, October 1981.

deRidder, M. 1981. Some considerations on the geographic distribution of rotifers. Hydrobiologia 85(3):209-225. <DIALOG: BIOSIS: Abstract #74047372: In the course of investigations on the systematics and zoogeography of rotifers 48% of all taxa treated showed a limited distribution. -- Several genera were considered, Eds.>

deRidder, M. 1981. Rotifera. volume 11, part 4. Hydrobiological survey of the Lake Bangweulu Luapula River basin. Brussels, Belgium: Cercle Hydrobiologique de Bruxelles.

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of the plesiomorphic design of the Gastrotricha pharynx is given. As a model for muscle cell evolution, the author postulates a monociliated, cross-striated myoglanduloepithelial cell as the original muscle cell design within the Gastrotricha. Other pharnyx organizations and evolutionary affinities are discussed.>

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Ruttner-Kolisko, A. und Kronsteiner, E. 1978. Laboratoriumsversuche uber die Wirkung von Wechseltemperaturen auf die Fortpflanzung von Planktonrotatorien, Jber Biol Stat Lunz 1:129-133. <Language: GERMAN> <Growth and egg development data are presented for Hexarthra fennica.>

Ruttner-Kolisko, A. und Kronsteiner, E. 1979. Autokologische Parameter von Rotatorien aus extremen Biotopen. Jber Biol Stat Lunz 3:111-114. <Language: GERMAN> <Ecological data are presented for Epiphanes brachionus and Brachionus inermis.>

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Ruttner-Kolisko, A. 1982. Genetische Experimente mit 3 verschiedenen Stammen von Brachionus Plicatilis II. Jber Biol Stat Lunz 5:129-137. <Language: GERMAN> <Further crossing experiments with Brachionus plicatilis have been carried out. The fertility of a sterile strain has been confirmed with by microscopical investigation as well as by crosses with two other fertile strains. Analysis of the daily offspring of these crosses revealed a fact, entirely new to the biology of monogonont rotifers: amictic females can be fertilized by males belonging to an alien population; they produce a kind of abortive resting eggs. A hypothesis is suggested based on the thickness of the female body wall and on the insemination power of the male.>

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