Numbers 8 and 9 (combined) Fall, 1984

ROTIFER NEWS

A Newsletter for Rotiferologists throughout the World

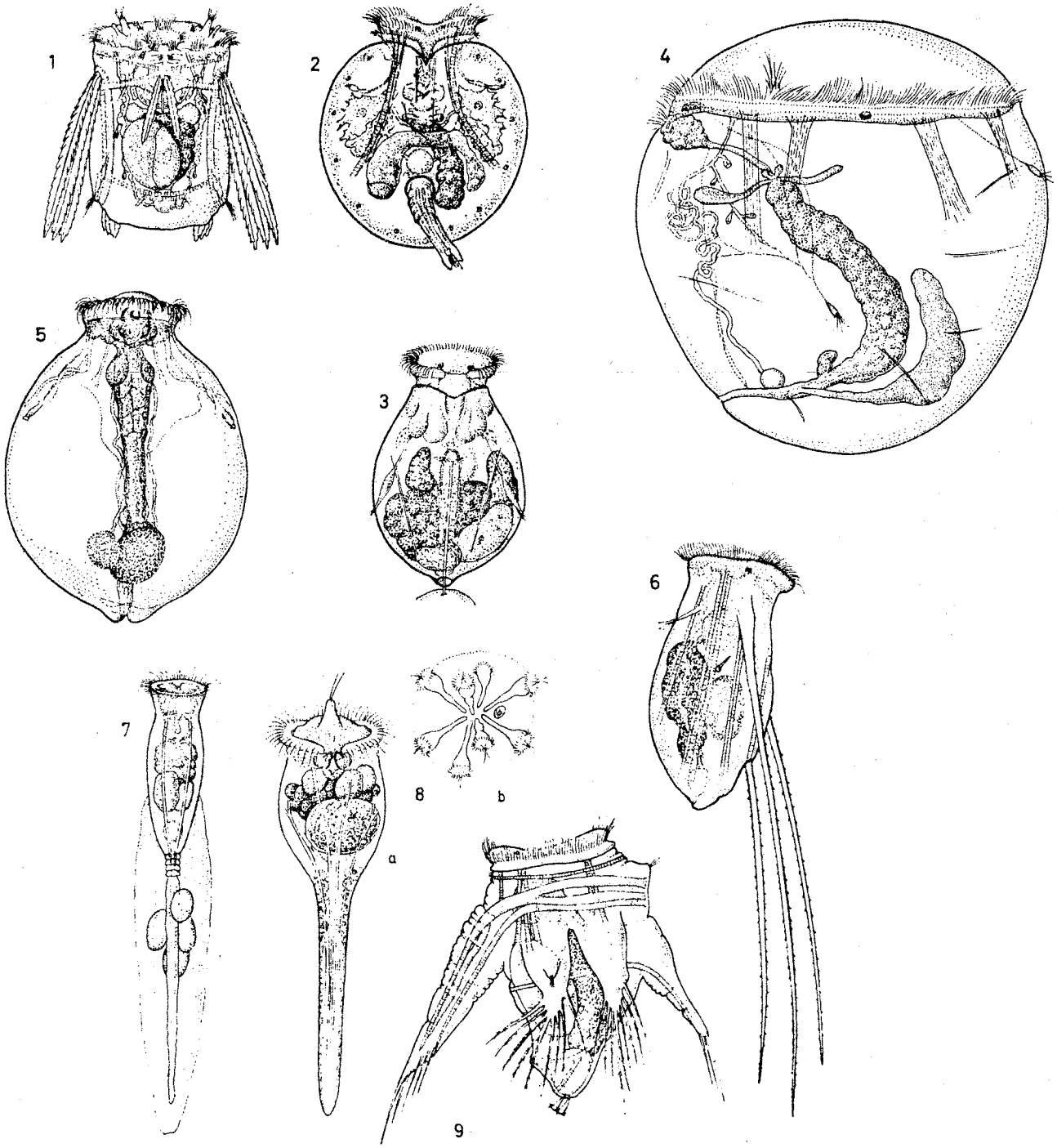

Plate IV from: Ruttner-Kolisko, A. 1974. Plankton Rotifers. Biology and Taxonomy. Die Binnengewässer. Volume XXVI, part 1.

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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 usually printed twice a year (each June and December). 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 have not been able to circumvent (e.g., the lack of accents as found in French, German, Italian, Spanish, and etc.) A memograph reproduction of the copy is then made and printed at Saint Mary's College.

NEWS, NOTES, AND REQUESTS

Items received by either editor on or before 18 September, 1984 have been included in this issue of ROTIFERS NEWS (No.8-9), all other items we be published in issue No. 10

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The editors are sorry to inform our readers that we must require support in the production of ROTIFER NEWS. As you are well aware, international and even domestic mailing costs are quite high. Production costs are also quite expensive. We are requiring that the readers of ROTIFER NEWS support us in this valuable endeavor by paying the triannual dues of $ 15.00 US dollars (three years of ROTIFER NEWS, $5.00 US per year). Mint issue stamps OR currency from your country equal to $15.00 US will be acceptable.

However, workers who wish to receive ROTIFER NEWS but cannot send US$, currency, or mint stamps from their country may continue to receive ROTIFER NEWS if we are so informed. Every reader should PLEASE FIND, FILL OUT, and RETURN THE ENCLOSED QUESTIONNAIRE/ORDER FORM AT THE END OF THIS ISSUE!!

We request that you send your dues and requests for back issues to Jim Litton and materials to be included in the next issue of ROTIFER NEWS to Bob Wallace. This double mailing on your part will save Litton and Wallace about 30 (+) letters between our two institutions for each issue of ROTIFER NEWS that we produce. Readers of ROTIFERS NEWS who wish to may contributions beyond the dues are encouraged to do so !!!! Make all checks, money orders, or postal money orders payable to ROTIFER NEWS.

1. Back issues of ROTIFER NEWS are still available! If you need a back issue (1-7) of ROTIFER NEWS copies are available from Jim Litton at a cost of $1.00 per issue to cover mailing and reproduction (since our supplies are exhausted we must now photo-reproduce the older issues). Your comments on any aspect of ROTIFER NEWS is requested by the editors!

2. A few workers have suggested that we establish an International Rotiferologist Society, IRS. (for our US readers -- "A rose by any other name would smell twice as sweet.") The editors of ROTIFER NEWS welcome comments on this proposal.

3. Bruce J. Russell BioMedia Associates, P.O. box 457, Loomis, CA 95650 has 35 mm color slides of rotifers(and other biological subjects) available for sale at a reasonable cost.

4. Vida Stout has the following work in press:

Stout, V.M. (in press). Seasonal plankton cycles in two adjacent lakes in the South Island, New Zealand. Verh. Internat.

Verein. Limnol 22: . With M.B. Jones, Vida Stout is about to submit (perhaps has by now) a paper entitled:

New records and notes on the occurrence of the marine rotifer Seison in New Zealand waters.

5. Shafique H. Chowdhury (Address: Professor of Zoology, Department of Zoology, University of Chittagong, Chittagong, Bangladesh.) has just complete a 12 month study on the rotifers (species composition and seasonal population dynamics) in three ponds. Some physicochemical factors such as pH, D.O. temperature, and Secchi depth were also recorded. In one pond the vertical distribution was studied.There was no correlation of rotifers with any of the water quality criteria measured, nor with the phytoplankton or other zooplankton.) He also reports presentation of the following papers: The Rotatoria of the river Karnafully-a faunistic study and seasonal fluctuation in their population (3rd National Science Conference, 1978), Some Sessile Rotifera from Chittagong, Bangladesh (7th National Science Conference, 1982), Some new Rotifers from the Southeast Asian Region (8th National Science Conference, 1983), Rotifers of a pond-Species Composition and Seasonal Abundance (8th National Science Conference, 1983). He also reports submitting a paper on "Zooplankton of the Lake Kaptai," as well as in progress "Studies on the Rotatorian Fauna of some ponds and lakes."

6. R.L. Wallace is interested in receiving preserved samples of sessile rotifers. Please include any collection data if available. (Address: Biology Department, 300 Seward street, Ripon College, Ripon, WI, 54971, USA.)

7. D. Soto has the following two papers which are currently in press: Soto, D. 1984. Experimental evaluation of copepod interactions. Vert. Internat. Verein. Limnol. (in press). and Soto, D., Vila, T., and Villalobos, B. 1984. Temporal and spatial distribution of Rotifera in a Chilean reservoir: a possible effect of impoundment hydrodynamics. Hydrobiologia (in press).

8. Ward's Natural Science Establishment, Inc. (Address: 5100 West Henrietta Road, P.O. Box 92912, Rochester, New York, 14692-9012 USA. OR 11850 East Florence Avenue, Santa Fe Springs (L.A.), California, 906070-4490, USA.) Has published a simple dichotomous key to the more common rotifers. The editors believe that it may be of use teaching limnology, invertebrate zoology, or other courses where students may encounter their first rotifer.

9. Paul N. Turner (Address: 6701 Coolridge Road, Camp Springs, MD, 20748, USA.) has in press one paper entitled: "Rotifers in the plankton of Lake Maury, Newport News, Va" and a second work in progress: "Some Rotifers from the Republic of Korea".

10. M. Yufera, A. Rodriguez, and L.M. Lubian have

submitted the following title for publication: "Zooplanktoningestion and feeding behavior of Penaeus kerathurus larave reared in the laboratory." We will give our readers a full citation when this work is published."

11. J.L. Elmore and coworkers have a work in press (Archiv fur Hydrobiologie) entitled "Biological communities of three subtropical Florida lakes of different trophic character.

12. In press is the following work by the late Udo Halbach. Halbach, U., Siebert, M., and Westermayer, M. Okotoxikologische Untersuchungen an Rotatorien: Subletale Effekete von ausgesuchten Referenzchemikalien. Verh. Ges. Okol.

13. Also in press are the following two works by A. Herzig. Herzig, A. (in press). Temperature and life cycle strategies of Diaphanosoma brachyurum: An experimental study on development, growth, and survival. Arch. Hydrobiol. // Herzig, A. (in press). Resting eggs - a source of continuous recruitment for pelagic populations? Verh. Internat. Verein. Limnol. 22.

14. Thomas Nogrady will be spending 1984-85 on sabbatical in the Department of Biology, Queen's University, Kingston, Ontario, K7L 2N6, CANADA. During his sabbatical leave he will undertake a quantitative study of benthic rotifers and will continue his investigations into rotifer neuropharmacology.

Tom offers the following correction to his paper entitled "On some new and rare warm water rotifers" Hydrobiologia 106: 107-114 (1983). "I described Lecane (M.) aliger nov. sp. It turns out, that this is really Lecane spinulifera Edmondson 1934, described originally from the island of Hispaniola. The relevant references are Edmondson (1934), Arch. f. Hydrobiol. 26: 469; and Ahlstrom (1935), Trans. Am. Microsc. Soc. 54:304. I thank Dr. Berzins for calling my attention to these papers. He found the species in Jamaica. A correction will be published in Hydrobiologia.

Recent research by Tom and F. Rahbar. Investigations on cholinergic effects on the feeding of Brachionus calyciflorus show that feeding rate is decreased in a statistically significant manner by muscarinic, ganglionic and neuromuscular blockers alike. This suggests, that rotifers do not show the classicaldivision of muscarinic and nicotinic cholinergic receptors. These effects cannot be inhibited by the simultaneous presence of acetylcholine in the medium, only if acetylcholine is added after the effects set in (about 10 minutes). Acetylcholine itself shows no physiological effect, and it did not change the rate of klinokinesis.

Recent research by Tom and J. Keshmirian. Investigations were successful in reproducing the results of Lindner and Goldman (1964) J. Pharmacol. Exp. Therap. 146:123-128; these authors have shown that acetlcholine causes egg-retention in Philodina

acuticornis, and the animals accumulate 6-8 eggs until they burst. We systematically investigated the effect of cholinergic blockers on this weird phenomenon, and found again, that P. acuticornis could not distinguish either between muscarinic and nicotinic cholinergic drugs, as they were all effective in inhibiting egg retention. However, neuromuscular blockers (like curare) were most active; therefore we propose, that the acetylcholine effect is a sphincter spasm, which is best relieved by muscle relaxants. The involvement of calcium in this phenomenon is under investigation. We also use the same model in looking at the activity of acetylcholinesterase-inhibitor insecticides on rotifers. All these results will be discussed in the Fourth International Rotifer meeting next August.

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T-SHIRTS WITH PICTURES OF ROTIFERS ON THEM ???

14. In an attempt to generate funds for the publication of this non-profit news letter the editors are investigating the possibility of offering T-shirts with line drawing of famous rotifers on them. At present we do not know what the costs would be, but a slight mark-up would be added to the base cost (price + postage) which would all go to the costs of producing ROTIFER NEWS. If anyone is interested they should send us ideas on the types of rotifers and the cost that they would be willing to pay.

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15. R. Grundstrom <Address: Institute of Limnology, Box 557, S-751, 22 Uppsala, SWEDEN.> is currently working with Gastropus stylifer and its use of (dependance on) Uroglena colonies as substrates on which it lays its eggs. He plans to attempt batch cultures and to film this behavior using infra-red video techniques.

16. I. Sammalkorpi has sent ROTIFER NEWS a note on a high density population for Keratella cochlearis. This note is not meant to enter in the competition for the record density, nevertheless it is quite high. In a fish pond in north Finland a July water sample was taken which revealed a K. cochlearis population of 43,000 individuals/liter.

17. A full listing of all the papers published in HYDROBIOLOGIA for the last Rotifer Symposium (III) may be found in this issue of ROTIFER NEWS. Each reference is marked by a * followed by a number. The number is the number which appears in the table of contents of the symposium volume. Further, each paper is noted in the index under the listing "ROTIFER 3" as well as under other keywords as appropriate. In each case the full author's abstract (if one was printed) is given. If the author did not abstract the work the editors have provided as very short summary of the paper. The latter is indicated by the notation (Eds.). It should be noted that not all of the symposium papers

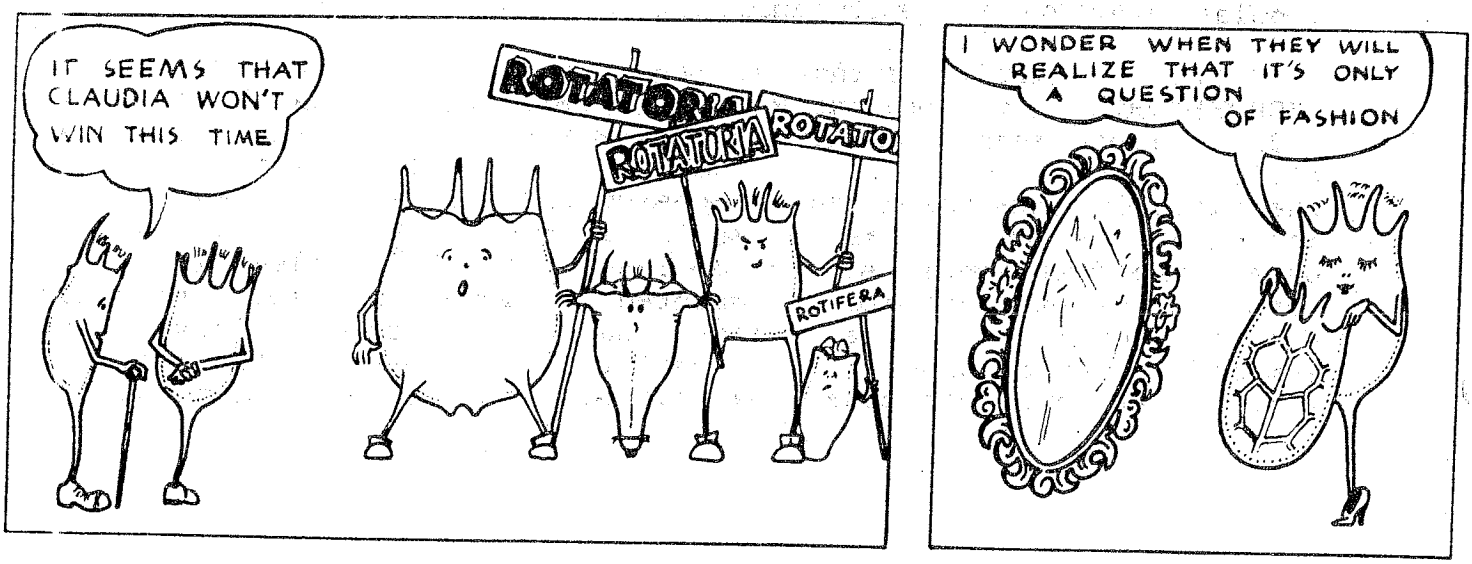
listed in ROTIFER NEWS issue 6 (as papers presented at the symposium) are found in the volume; they were not ready for publication at the time the volume went to press. (The Table of Contents of the symposium volume was printed in ROTIFER NEWS issue 7.) Papers were separated into the following parts. Part One: Taxonomy and Evolution (papers numbered 1-3); Part Two: Geographical Distribution (papers numbered 4-8); Part Three: Culturing and Related Methods (papers numbered 9-14); Part Four: Biochemistry and Aging (papers numbered 15-18); Part Six: Ecology: Laboratory and Field Studies (papers numbered 19-52).

The publishers, Dr W. Junk Publishers (The Hague, Boston, Lancaster), did an excellent job with this volume! The paper is of fine quality, the figures are well done, and the typescript is very readable. The one unfortunate error is that the second editor's name was reported as "R. Starkweather". The actual name of the second editor is Peter Starkweather. For those who know Peter and his work, this error detracts for the over impression one gets from the volume. In spite of this misprint The Biology of Rotifers, (Developments in Hydrobiology 14) should be on the book shelf of every serious rotiferologist, whether amateur or professional.

18. The editors wish to call your attention to the Bermuda Biological Station for teaching and research purposes. They have very excellent facilities and, of course, and an excellent environment. For more information contact the Director at the following address:

Dr. Wolgang Sterrer
Bermuda Biological Station
Ferry Reach 1-15
BERMUDA

19. The editors received some very interesting "Rotifer Cartoons" in the mail. A sample is shown below. We have decided to reprint them for the enjoyment of all readers of ROTIFER NEWS. Does the artist wish to take credit for these illustrations? Many of these have special meaning(s) for those that attended the Third International Rotifer Symposium. Additional cartoons are found at the end of this issue of ROTIFER NEWS.



DESCRIPTIONS OF NEW SPECIES

Francez, A.J. and Pourriot, R. 1984. Remarques taxonomiques sur quelques rotifers des tourbieres avec la description d'une espece et d'une sous-espece nouvelles. Hydrobiologia 109(2):125-130. (Address: Ecologie terrestre et appliquee, Universite de Clermont-Ferrand II, F-63170, Aubiere, FRANCE.) (Language: FRENCH with ENGLISH abstract) (BIOSIS Abstract Number: 78 28260: Taxonomic notes about peat-bog rotifers with a description of one new species and one new subspecies are reported. Variations and problems about some peat-bog rotifers (especially the genera Lecane and Keratella) are discussed. Descriptions of Lepadella quadricurvata nov. sp. and Lepadella koniari arvernae nov. ssp. are added.)

Koste, W. and Robertson, B. 1983. Taxonomic studies of the Rotifera phylum Aschelminthes from a central Amazonian varzea lake Lago Camaeleao Ilha de Marchantaria Rio Solimoes Amazonas Brazil. Amazoniana 8(2): 225-254. (ABSTRACT NUMBER 78 4056) (From the abstract: Four series of plankton samples collected in 1981 were investigated for rotifers: 148 spp. were identified. The number of rotifers increases with the rising water. Three new rotifer species are described: Cephalodella paggia, Lecane marchantaria and Lepadella minoruoides.)

*4 Koste, W, Shiel, R.J., and Brock, M.A. 1983. Rotifera from Western Australian wetlands with description of two new species. Hydrobiologia 104:9-17. (Address: Ludwig Brill Strass 5, D-4570, Quakenbruck, FEDERAL REPUBLIC OF GERMANY.) (The rotifer fauna of 100 fresh and saline wetlands of southwest Western Australia is documented. A systematic list of 83 recorded taxa is given, with eleven new records for the continent and two new species (Brachionus pinneenaus n. sp. and Lecane boorali n. sp.) described and figured. Species assemblages are distinct from those of eastern Australia, with predominant taxa halophilous or indicative of ephemeral waters. Evolutionary and biogeographical relationships of the Western Australia rotifers are considered.)

Lair, N. and Koste, W. 1984. The rotifer fauna and population dynamics of Lake Studer 2. Kerguelen Archiupelago, New Zealand with description of Filina terminalis kergueleniensis new subsepcies and a new record of Keratella sancta new record. Hydrobiologia 108(1):57-64. (Address: Universite de Clermont-Ferrand II, Equipe D'Hydrobiologie Regionale, B.P. 45, 63170 Aubiere, FRANCE) (Abstract number 77 84318) (From the abstract: F.t. terminalis sp. nova from Lake Studer 2 is described and figured. F.t. kergueleniensis differs from the type in length of bristles and their insertion.)

Nogrady, T. 1983. Some new and rare warm water rotifers. Hydrobiologia 106(2):107-114. (Address: See under news items) (BIOSIS Abstract Number: 77 68323: Two new rotifer species Lecane (=Monostyla) aliger sp. nov. and Proales pugio sp. nov. are

described from the Bahama Islands, Florida and California, USA, and their autecology outlined. Some other rare rotifers are discussed which also prefer subtropical conditions. They are: Epiphanes clavulata, Epiphanes brachionus spinosus, Lecane crepida, and Proalided tentaculatus tentaculatus. The existence of subtropical rotifer associations is discussed and supported by ecological data.>

De Ridder, M. 1983. Ecological and biogeographical studies on rotifers from the Basse Casamance, Senegal, Africa. Rev. Hydrobiol. Africa 16(1):41-56. <Address: see below.> <BIOSIS Abstract Number: 77 60227: Rotifer content was studied in 4 sereis of samples. The first 3 series, collected in Dec. 1975 - Jan 1976, Dec 1976 - Jan 1977, and July - Aug 1977, were from salt, brackish, and freshwaters; the 4 th (Nov - Dec 1980) was from freshwater only. Repartition in the respective biotopes is given for the 143 taxa identified (129 to species level). Among these species, 2 are new to science, 14 are new to Africa: Euchlanis meneta, Colurella sulcata, Lepadella apsida, L. pumilo, L. triba, L. amphitropis, L. heterodactyla, Lecane hasta, Monommata dentala, Notommata glyphura, Trichocerca cavia, T. flagella, Dicranophorus uncinatus, Microcodon clavus and 113 are new to Senegal. Concerning geographical distribution, the species are divided into 4 gourps: cosmopolitan (81 sp.), thermophilous with large distribution (20), tropical-pantropical (20), limited amd/or insufficiently known distribution (6), and 2 new to science. Biogeographical data are given for a series not treated in a previous publication (De Ridder, 1981). The 2 new species (Testudinella kostei and T. subdiscoidea) are described and figured.>

RECENT LITERATURE

The literature cited below has been gleaned from several sources including: BIOSIS (either using BRS or 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 10) which is scheduled for late spring 1984. 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 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 caveat 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.

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. These references have been indexed at the end of RECENT LITERATURE section by using such keywords as the specific species names, predation, salinity, biogeography, etc. Suggestions concerning the index are welcome.

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A

Abel, D.G. and prins, R. 1983. Occurrence and distribution of rotifers in Barren river reservoir, Kentucky, USA. Trans KY Acad Sci. 44(3-4):117-124. <BIOSIS Abstract Number: 77 42029: A study of the spatial distribution and temporal occurrence and diversity of rotifers in relation to certain chemicophysical parameters was conducted in Barren River Reservoir, Kentucky, a monomictic flood contril lake in southcentral Kentucky, from

January 1970 - January 1971. Average rotifer densities, in the main pool and tailwater, ranged from 2 - 565/l. From July through Sepember, densities of rotifers at 6m were significantly different from those at all other depths except 3 m (3m was not significant from the remaining depths). A diel study in July revealed that this vertical pattern persisted over a 24 h period. During other months (also shown in diel studies of April and January) rotifers were generally more uniformly distributed at all depths. Species diversity per sampling date was greatest from June through mid-October (12 species). This period was characterized by low reservoir discharge (50 cfs), decreased turbidity, increased Secchi disc transparencies (a mean of 3m) and increased water temperatures and stratification. A total of 28 species (18 genera) of rotifers were identified during the study. Polarthra sp (3) Keratella sp (5), and Conochilus unicornis were the dominant rotifers; they comprised 75-85% of the population when present. K. cochlearis, P. vulgaris and Kellicottia bostoniensis were most persistent and characteristic of the lake. Keratella americana, Ploesoma sp., Hexarthra mira, K. crassa and Brachionus angularis were warm-water forms. K. quadrata, Kellicotia bostoniensis and Polyarthra minor were-cold water forms.>

Alexis, Y.W. 1982. Variation saisonniere du peuplement zooplanctionique du lac d'Ayame (Cote d'Ivoire). Ann. Univ. Abidjan. Serie E (Ecologie), Tome XV. 103-120.

Alexis, Y.W. 1983. Structure des peuplements de Cladoceres et de rotiferes du lac d'Ayame (Cote d'Ivoire). Ann. Univ. Abidjan. Serie E (Ecologie), Tome XVI.

Alexis, Y.W. 1983. Peuplement zooplactionique d'un lac de barrage de Cote d'Ivoire. Annls. Limnol. 19(1):3-8.

Armengol, J., Moreau, G., and Planas, D. 1983. Short-term evolution of zooplankton communities of two rivers of northern Quebec Canada which experienced a great reduction of flow. Can. J. Zool.61(9):2011-2020. <Address: Department de Biol. Centre de Recherches sur l'Eau, University Laval, QUEBEC, CANADA.> <Language: FRENCH> <BIOSIS Abstract number: 77 82063: A decrease of 86-92% in the flow of two rivers in the James Bay area resulted in a 7.5-9.8 fold increase in the density of zooplanktonic populations and in a 2.5-6.3 fold increase in their biomass. Differential increase of numbers and biomass are attributed to a proportionately higher increase of the protozoans and rotifers. The overall effect of the reduced flow seems to be the same at all stations; local characteristics may modify the responses of the communities. Turbulence, quantity of suspended matter and evolution of the phytoplankton seem to be the major parameters regulating the community responses.>

Ayyappan, S. and Gupta, T.R.C. 1982. Limnology of Ramasamudra tank India. J. Inl. Fish Soc. India 12(2):1-12. <BIOSIS Abstract Number: 77 33987: A study on the seasonal fluctuations of

zooplankton was carried out as part of the investigation on the plankton with reference to hydrography of Ramasamudra Tank, Karkal (The largest perennial water body of Dakshina Kannada, Karnataka). Copepods dominated the zooplankton followed by rotifers and cladocerans.>

B

Barron, G.L. 1983. Structure and biology of a new Harposporium attacking bdelloid rotifers. Can. J. Bot. 61(7): 1875-1878. <Address: see below> <BIOSIS Abstract Number: 77 57116: Harposporium botuliforme is described as a new hypomycete endoparasitic on bdelloid rotifers, Adineta, in soil. The sausage-shaped conidia are ingested by the host, pass through the mastax, and germinate in the lower gut. Filiform germ tubes penetrate the gut wall and produce beaded assimilative hyphae in the body cavity which kill and colonize the host.>

Barron, G.L. 1983. Structure and biology of a new Tolypolcladium attacking bdelloid rotifers. Can. J. Bot. 61(10): 2566-2569.<Address: Dept. Environmental Biology, Univ. of Guelph, Guelph, Ontario, N1G 2W1, CANADA.> <BIOSIS Abstract number 77 89231> <From the abstract: A new species of fungus lodges in the mastax of bdelloid rotifers and germinates to produce assimilative infection hyphae.>

Bell, S.S. 1983. An experimental study of the relationship between belowground struture and meiofaunal taxa. Mar. Biol (Berl.) 76(1):33-40. <BIOSIS Abstract Number: 77 42045: [No mention of rotifers is made in the abstract; no Biosystematic Codes were available to the editors to determine why this reference was included in our BIOSIS search. - editors.>

*45 Berner-Fankhauser, H. 1983. Abundance, dynamics and succession of planktonic rotifers in Lake Biel, Switzerland. Hydrobiologia 104:349-352. <Address: Zoologisches Institut der Universitat, Baltzer. 3, CH-3012 Bern, SWITZERLAND> <Abstract: Twenty species of planktonic rotifers were important in Lake Biel during 1978. Eight species were present throughout the year, four species occurred only in spring and eight species in summer or autumn. Rotifer numbers attained two major maxima, one in May (19.3 10E6 ind/m2) and one in August (16.5 10E6 ind/m2). Predominant genera were Synchaeta, Polyarthra, Conochilus, Asplanchna, and Keratella. Within the genus Synchaeta a succession of different species was observed.>

Birmingham, B.C., Thorndyke, M., and Colman, B. 1983. The dynamics and persistence of the herbicide Aqua-kleen in small artificial ponds and its impact on nontarget aquatic microflora and microfauna. 8 th Annual Aquatic Toxicity Workshop, Guelph, Ontario, Canada, Nov. 2-4, 1981. Can. Tech. Rep. Fish. Aquat. Sci. 0(1151): 12-23. <BIOSIS Abstract Number: 26 69213: No abstract is available>

Blancher, E.C., III. 1984. Zooplankton trophic state relationships in some north and central Florida lakes. Hydrobiologia 109(3):251-264. <Address: Taxonomic Associates Inc., PO Box 8644, Mobile ALA, 36608, USA.> <BIOSIS Abstract Number: 78 33941: Seasonal variations in total abundance were greatest in the eutrophic lakes where rotifers dominated and periodically produced sharp population peaks. The more oligotrophic systems had relatively stable levels of total abundance and were dominated by copepods. Two to seven species of rotifers were dominate at any one time.>

Buckley, L.J., Turner, S.I., Halavik, T.A., Smigielski, A.S., Drew, S.M., and Laurence, G.C. 1984. Effects of temperature and food availablity on growth, survival, and RNA/DNA ratio of larval sand-lance Ammodytes americanus. Mar. Ecol. Prog. Ser. 15(1-2):91-98. <Address: National Oceanic and Atmospheric Administration, National Marine Fisheries Seervice, Northeast Fisheries Center, Narragansett Laboratory, Narragansett, R.I., USA.> <BIOSIS Abstract number: 77 82044: The abstract does not indicate it, but the editors assume that rotifers were used as food for rearing this fish.>

*10 Butler, N.M. 1983. Substrate selection and larval settlement by Cupelopagis vorax. Hydrobiologia 104:317-323. <Address: Department of Biology , Lehigh University, Bethlehem, PA, 18015, USA.> <Abstract: Cupelopagis vorax was sampled for one year with a glass slide sampler. Slides were collected every two weeks and the number and locations of settled individuals noted. Reproductive condition of the collected rotifers was recorded. The population appeared suddenly and rapidly attained peak numbers. C. vorax shows a distinct preference for the underside of horizintally-orientated surfaces. Sexual reproduction occurred when the number of settling individuals was maximum.>

C

*12 Cajander, V.-R. 1983. Production of planktonic Rotatoria in Ormajarvi, an eutrophic lake in southern Finland. Hydrobiologia 104:329-333. <Address: University of Helsinki, Department of Environmental Science, Viikki, 00710 Helsinki 71, FINLAND -- present address: University of Helsinki, Department of Botany, Division of Ecology, SF-00100 Helsinki 10, FINLAND> <Abstract: The production of planktonic rotifers was studied in eutrophic Lake Ormajarvi. Of the total annual production of rotifers (2.9 g org. C/m2 or 231 mg dry weight/m3) 49% was achieved during one month (July) and 88% during 3 months of the summer. The most important producers were Keratella cochlearis (1.2 g C/m2), Asplanchna priodonta (0.8 g C/m2) and Conochilus unicornis (0.6 g C/m2). The P/B ratio for the total rotifer community during the growing season (7 months) was 25.0; monthly P/B values varied between 0.3 and 5.2. The daily P/B values were highest among species of Collotheca. The relations of rotifers to some biotic and abiotic factors (invertebrate predators - Mesocyclops, Cladocera,

planktonic Protozoa and temperature) are briefly discussed.

Canfield, D.E., Jr. and Watkins, C.E., II. 1984. Relations between zooplankton abundance and chlorophyll A concentrations in Florida, USA, lakes. J. Freshwater Ecology 2(4): 335-344. data collected during a limnological survey of 165 Florida lakes were used to examine statistical relations between chlorophyll A concentrations and the abundance of total zooplankton and individual zooplankton taxa, including rotifers. rotifers were most strongly correlated with chlorophyll A concentrations during the summer (r = 0.71).)

Caumette, P., Pagano, M., and Saint-Jean, L. 1983. Vertical distribution of phytoplankton bacteria and zooplankton in a stratified milieu in Bietri Bay Ebrie Lagoon, Ivory Coast: Trophic relations. Hydrobiologia 106(2):135-148. (Address: Centre de Recherches Oceanographiques, B.P. V. 18, Abidjan, COTE D'IVOIRE) (BIOSIS Abstract Number: 77 66183: The zooplankton community (composed of rotifers) was particularly concentrated near the chemocline.)

*7 Chengalath, R. and Koste, W. 1983. Rotifera from northeastern Quebec, Newfoundland and Labrador, Canada. Hydrobiologia 104:49-56. (Address: Invertebrate Zoology Division, National Museum of Natural Sciences, Ottawa, K1A 0M8, CANADA) (One hundred and thirty-one species of rotifers, belonging to 40 genera, are reported from Newfoundland and LABRADOR, Canada. Of these, 101 are new records for the province and 21 are new records for Canada. Some species exhibited distinct differences from the original descriptions and are figured and discussed. Points of interest in species composition and distribution are noted.)

Chowdhury, S.H., 1977. Preliminary report on a new form of Rotatoria from Bangladesh. Bangladesh Journal of Zoology. 5(2):120-130.

*13 Clement, P., Wurdak, E., and Amsellem, J. 1984. Behavior and ultrastructure of sensory organs of rotifers. Hydrobiologia 104:89-104. (Address: Laboratorie Histologie, L.A. CNRS 244, GIS Physiologie, Sensorielle, CMEABG and RCP CNRS 657, Universite Lyon I, 69622 - Villeurbanne, FRANCE) (Abstract: The authors of this paper present information on rotifer behavior and correlate this data to the ultrastructure of rotifer sensory receptor organs - Eds.)

Clepper, M.R. and Snell, T.W. 1984. Regulation of sexual reproduction in rotifer populations. 48 th Annual meeting of the Florida Academy of Sciences, Boca Raton, Florida, USA, March 29-31, 1984. Florida Scientist 47(Suppl. 1): 21. (Address: see Snell below) (BIOSIS Abstract Number: 27 24094)

*23 Cornillac, A., Wurdak, E, and Clement, P. 1983. Photaxis in monochromatic light and microspectrophotometry of the cerebral eye of the rotifer Brachionus calyciflorus. Hydrobiologia 104:191-196. (Address: see above -- Clement) (Abstract: The observed

wavelength-dependent variations in the phototaxis of the rotifer Brachionus calyciflorus inform us only partially about the spectral characteristics of the sensory pigment of the eye, since these variations are also linked to the absorption spectrum of the accessory pigment(s). -- The absence of phototaxis between 420 nm and 500 nm is due to the lack of sensitivity of the sensory pigments at these wavelengths. -- The absence of response between 650 nm and 700 nm is due to a drop in the absorbance of the accessory pigments, which consequently no longer play a screening role at these wavelengths. -- The existence of oriented responses between 350 nm and 420 nm and between 500 nm and 650 nm, is due to the joint intervention of the types of pigments at these wavelengths.)

*24 Coulon, P.Y., Charras, J.P., Chasse, J.L., Clement, P., Cornillac, A., Luciani, A., and Wurdak, E. 1983. An experimental system for the automatic tracking and analysis of rotifer swimming. Hydrobiologia 104:197-202. (Address: Laboratorie d'Automatique de Grenoble, equipe Robotique, L.A. C.N.R.S. 228, R.C.P. 657, FRANCE) (Abstract: An automatic tracking system for rotifer swimming movements is described. The x and y coordinates of the center of gravity of the animal are stored in the computer memory every twelfth of a second. Computer programs were developed to analyze the data and to calculate the average and the standard deviation for the following parameters per unit time: distance traveled, turning angles toward the right and toward the left, distance from the point of departure as the crow flies. Histograms are traced by the computer showing the distribution of these values, as well as their evolution with time. This experimental system is dependable. The first values which we obtained for the swimming speed of rotifers corresponds well with those which are given in the literature. The other parameters had not been measured until now.)

Trecco, V.A. and Blake, M.M. 1983. Feeding ecology of coexisting larvae of American Shad, Alosa sapidissima and Blueback Herring Alosa aestivalis in the Connecticut River, USA. Trans. Am. Fish. Soc. 112(4):498-507. (BIOSIS Abstract Number: American Shad fed mostly on the less abundant crusteceans and immature insects; Blueback Herring larvae usually utilized the numerically dominant rotifers.)

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*8 Dartnall, H.J.G. 1983. Rotifers of the Antarctic and subantarctic. Hydrobiologia 104:57-60. (Address: British Antarctic Survey, Madingley Road, Cambridge, CB3 0ET, ENGLAND) (An assessment of the distribution of rotifers in the Antarctic and subantarctic is attempted.)

Das, N.G. and Bhuiyan, A.L. 1982. Studies on some Brachionid rotifers from Daxxa city, India. J. Zool. Soc. India 33(1-2):95-110. (Address: Department of Marine Biology, University of Chittagong,

BANGLADESH.> <BIOSIS Abstract Number: 77 76186: Taxonomic notes including 18 varieties and species of Brachionus from the two ponds and two lakes of Dacca City, Bangladesh are discussed. The forms include the following: B. falcatus, B. falcatus lyratus, B. forficula wierzeiski, B. forficula, B. caudatus persoonatus, B. caudatus, B. quadridentatus, B. quadridentatus brevispina, B. calyciflorus, B. calyciflorus brucei, B. calyciflorus anuriformes, B. calyciflorus spinosus, B. calyciflorus amphiceros, B. angularis, and B. angularis bidens.>

Decosta, J., Janicki, A., Shellito, Wilcox, G. 1983. The effect of phosphorus additions in enclosures on the phytoplankton and zooplankton of an acid lake. Oikos. 40(2):283-294. <BIOSIS Abstract Number: 77 26015: A bag enclosure experiment was conducted in acid Cheat Lake, West Virginia, USA. In some of the bags, a very large population of Keratella cochlearis developed.>

Divanach, P., Kentouri, M. 1983. The influence of initial trophic conditions on oil globule resorption, growth, and survival of Gilt Head Sea Bream, Sparus auratus larave in extensive breeding. Aquaculture. 35(1):43-56. <BIOSIS Abstract Number: 77 42177: [The rotifer Synchaeta triophthalma was used in feeding this fish.>

Dorazio, R.M. 1984. The contribution of longevity to population death rates. Hydrobiologia. 108(3):239-244. <Address: Div. Biological Sciences, University of Michigan, Ann Arbor, Michigan, USA, 48109.> <BIOSIS Abstract Number: 78 25954: The magnitude of a population's death rate depends on the maximum age at death and the intensity or schedule or mortailty of its members. Knowing the maximum possible lifespan that an animal can achieve raised under defined conditions makes it possible to calculate the component of per capita death rate due to longevity alone. This component is most important to slow-growing population of animals with relatively short lifespans. Life-table experiments with 2 rotifer species Brachionus calyciflorus and Proales sordida and a cladoceran Daphnia pulex indicate that the short lifespans of these animals account for moderate proportions (up to 37.2%) of their population death rates. Decomposition per capita death rates into 2 components, one due to maximum length of life and another due to differential mortality of animals of different ages, may thus be a useful way to examine how deleterios processes, such as predation and starvation, limit growth of zooplankton populations.>

*4 Dumont, H.J. 1983. Biogeography of rotifers. Hydrobiologia 104:19-30. <Address: Zoological Institute (Limnology), The State University of Gent, BELGIUM> <The biogeography of rotifers is discussed in light of general biogeographical concepts. It is argued that, in spite of considerable abilities for passive dispersal, vicariance can develop well in this group. Examples selected from the Brachionidae illustrate the high levels of endemicity found in Australia and South America, while the Indian subcontinent and Africa have a predominantly cosmopolitan fauna. An explanation for these patterns is founs in drifting continents

and Pleistocene climatic changes.>

Duncan, A. 1983. The composition, density and distribution of the zooplankton in Parakrama Samudra. Chapter 7 In F. Schiemer, editor, Limnology of Parakrama Samudra - Sri Lanka. Dr. W. Junk Publishers, The Hague, The Netherlands. <ISBN: 90 6193 763 9> <Address: Department of Zoology, Alderhurst, Bakeham Lane, Englefield Green, Surrey, TW20 9TY, UNITED KINGDOM> <Abstract: The composition, density, and distribution of the zooplankton of Parakrama Samudra (Sri Lanka), an irrigation reservior, were studied in March and April 1980. Twenty-four samples from six sites and on four occasions revealed the presence of a zooplankton consisting of rotifers and protozoans, mainly ciliates, and the virtual absence of crustacean zooplankton (apart from Diaphanosoma excisum and Phyllodiaptomus annae in a Ceratophyllum bed). Compared with a previous visit in August and September 1979, the rotifers consisted of a similar but fewer species, attained lower densities (about one-fifth, with an overall density of 664 individuals per litre) and were uniformly distributed in time and space. The protozoans achieved higher densities than this, ranging from 958 to 4,443 individuals per litre, with Lionotus sp. contributing most. The character of the zooplankton in 1980 and its differences from that in 1979 are discussed in relation to flushing rates, dilution, food availability and size-selection predation.>

Duncan, A. 1983. The influence of temperature upon the duration of embryonic development of tropical Brachionus species (Rotifera). Chapter 9 In F. Schiemer, editor, Limnology of Parakrama Samudra - Sri Lanka. Dr. W. Junk Publishers, The Hague, The Netherlands. <ISBN: 90 6193 763 9> <Address: see above> <Abstract: The duration of embryonic development of Brachionus caudatus from the tropical reservoir, Parakrama Samudra (Sri Lanka), was determined at several constant temperatures and compared with data on Brachionus calyciflorus from a neighboring water body. The duration-temperature regressions differed in elevation, but not in slope for 28 degrees C. They predict a duration of embryonic development of 5.67 h for B. caudatus and 10.51 h for B. calyciflorus. The difference lay not in their responses to temperature, since the Q-10 values are similar, but in the leftward shift of the development rate (1/De) - temperature curve for B. caudatus with respect to that for B. calyciflorus. The experimental B. caudatus were smaller (97-127 um in length) than B. calyciflorus (295 um) and were carrying small eggs (0.079-0.148 X 10E6 cubic um compared with 0.641 X 10E6 cubic um for B. calyciflorus). It is suggested that the shorter durations of B. caudatus are due to the smallness of the eggs produced by the small adult females which were characteristic of the planktonic populations inhabiting the lake during the period of investigation. The discussion considers these findings in relation to previously published work on rotifer embryonic development times as well as the possible causes for small eggs.>

Duncan, A. and Gulati, R.D. 1983. A diurnal study of the planktonic rotifer populations in Parakrama Samudra Reservoir. Chapter 8 In F. Schiemer, editor, Limnology of Parakrama Samudra - Sri Lanka. Dr. W. Junk Publishers, The Hague, The Netherlands. <ISBN: 90 6193 763 9> <Address: see above> <Abstract: One station in Parakrama Samudra was samples at four depths in a 1.6 m water column on seven occasions on 1 september 1979. Sixteen species of rotifers were present, of which ten were carrying eggs. Counts revealed changes in the percentage composition of rotifer species as well as in their distribution with depth throughout the day. The abundance of rotifers ranged from 3.78 X 10E6 ind/m2 to 10.04 X10E6 ind/m2, with the lowest values occurring during the early afternoon. Hourly recruitment rates were somewhat constant throughout the day, with a mean value of 0.54 X10E6 m2 +/- 21% and with a daily rate of 14.11 X10E6 m2/d. The greatest losses of rotifers coincided with periods of the day when environmental variables such as temperature and dissolved oxygen concentrations were most extreme but also when light penetrated most deeply. This may have provided good conditions for visual predation by planktonic fish larvae and their feeding may account for more than half of the daily losses or fotifers. Coinciding with this, there are reductions in the percentage of brachionids, Trichocera spp. and Filinia longiseta as well as a reduced presence of larger-sized animals.>

Duncan, A. and Gulati, R.D. 1983. Feeding studies with natural food particles on tropical species of planktonic rotifers. Chapter 10. In F. Schiemer, editor, Limnology of Parakrama Samudra - Sri Lanka. Dr. W. Junk Publishers, The Hague, The Netherlands. <ISBN: 90 6193 763 9> <Address: see above> <Abstract: In order to assess the role of the planktonic rotifers in relation to the dynamics of the ecosystem of Parakrama Samudra, the filtering rates of Brachionus caudatus from Parakrama Samudra and B. calyciflorus from the Milk Factory Tank were measured in natural food particles of less than 33 um, using a radio-tracer technique. The concentration of food was determined as carbon per ml. At 28 degrees C, the hourly filtering rates for B. caudatus ranged from 1.63 to 6.10 ul/ind/h in food concentrations from 6.27 to 2.21 ugC/ml. Assuming continuous feeding and uniformy labelled food, the daily rates were 0.158-0.334 ugC/ind/d. Brachionus calyciflorus had higher filtering rates 16.9-39.7 ul/ind/h, and higher feeding rates, 3.38-7.94 ugC/ind/d at a food concentration of 8.34 ugC/ml, but this species was about 30 times larger by volume than the small B. caudatus from Parakrama Samudra. These results are discussed in the light of experimental information of rotifer feeding on monospecific food available in the literature.>

E

Edmunds, P.C., Williams, D.J., and Carter, J.S. 1975. Zooplankton of the Yadkin River, Davie and Davidson Counties, North Carolina. The ASB Bulletin. 22(2):52. <Address: PES-Zoology, Duke Power Company, Route 4, Box 531, Huntersville, NC, 28078, USA> <Abstract:

Beginning in September 1974, zooplankton collections were begun on the Yadkin River system as part of an environmental survey in the vicinity of the proposed Perkins Nuclear Station. The Yadkin River and its tributary, Dutchman Creek, were sampled montly at six stations. All stations were characterized by turbid water with a high silt content. To date 43 species belonging to 21 genera of zooplankton have been identiifed. Rotifers dominated the zooplankton. Copepods and cladocerans were found in much lower densities. Population densities for all zooplankton were low (usually less than 7 organisms per cubic meter) and exhibited large spatial and temporal variations. The majority of species found were characteristic of the littoral zone. Population density changes and the role that various chemical and physical parameters have on them is discussed.〉

Ejsmont-Karabin, J. 1983. Ecological characteristics of lakes in northeastern Pland vs. their trophic gradient 8. Role of nutrient regeneration by planktonic rotifers and crustaceans in 42 lakes. Ekol. Pol. 31(2): 411-428. 〈Address: Polish Academy of Sciences, Inst. of Ecology, Department of Hydrobiology, 05-150 Lomianki. Dzieskanow, Lesney K. Warsaw, POLAND〉 〈ABSTRACT NUMBER 78 9815〉 〈From the abstract: Rates of P and N regeneration by the zooplankton of 42 lakes representing a trophic and morphometric gradient were analyzed. For unpolluted lakes a high growth of the rate of P and N regeneration was found, as well as a reduction of the turnover time of P and of the value of the P:N ratio in the products of regeneration following an increase in the pool of total P. The imporance is discussed of changes in the internal cycles of P and N, connected withchanges in the trophic conditions of the lakes, to the consequences of the eutrophication process.〉

*29 Ejsmont-Karabin, J. 1983. Ammonia nitrogen and inorganic phosphorus excretion by the planktonic rotifers. Hydrobiologia 104:231-236. 〈Address: see above〉 〈Abstract: Two series of experiments were carried out to determine the relation of the rate of phosphorus and nitrogen excretion by the planktonic rotifers to ambient temperature and individual body weights of these animals. The following formulas describing this relation were obtained:

$$E_P = 0.0154\ W^{-1.27}\ e^{0.096\ T}$$

$$E_N = 0.0879\ W^{-1.01}\ e^{0.088\ T},$$

where E(sub P) and E(sub N) denote the rate of P and N excretion, respectively, in micrograms/mg dry wt/h, W is body weight in micrograms dry weight, and T is temperature in degrees C.〉

Ellsworth, P.M. 1983. Ecological seasonal cycles in a Colorado, USA, mountain pond. J. Freshwater Ecology 2(3):225-238. 〈Address: Department of Biology, Southern Oregon State College, Ashland, Oregon, USA, 97520.〉 〈BIOSIS Abstract Number: 77 58089: A

permanent pond at 3100 m elevation was studied for an entire year to monitor zooplankton populations as they changes seasonally and to associate those changes with biotic and abiotic factors. The rotifers that were present in the summer included, Keratella cochlearis, Conochilus unicornis, and Polyarthra dolichoptera. All limnetic Crustacea dissapeared during ice cover, leaving rotifers as the most successful winter plankters. The posterior spine of K. cochlearis was long in the summer, and short or absent in the winter. This seasonal change in morphology may be a means of reducing mortality due to predation.)

Elmore, J.L., Vodopich, D.S. and Hoover, J.J. 1982. Selective predation by bluegill sunfish (Lepomis macrochirus) on three species of Diaptomus (Copepoda) from subtropical Florida. Journal of Freshwater Ecology 2:183-192.

Epp, R.W. and Lewis, W.M., Jr. 1984. Cost and speed of locomotion for rotifers. Oecologia (Berl) 61(3):289-292. (Address: Department Environment, Population, and Organismic Biology, University of Colorado, Boulder, Colordao, USA.) (BIOSIS Abstract Number: 78 19994: The hypothesis that the ciliary locomotion of rotifers is size limited and that it accounts for a significant portion of the energy budget was investigated using the genera Brachionus and Asplanchna. Speed of movement was measured among clones of different size in Brachionus, which shows little size variation through development. The same tests were done among individuals of different size within a clone of Asplanchna, which shows significant post-embryonic size increase. In both cases, relative speed (body lengths per second) descresed significantly as body size increased. On this basis, an ecological limiting size for ciliary locomotion is proposed. The actual cost of locomotion was measured for Brachionus; it is 62% of total metabolism, even though the theoretical (calculated) power requirements are well below 1% of total metabolism. Ciliary locomotion in the Rotifera thus appears to be extremely inefficient (low ratio of theoretical to actual power requirements). This hypothesis is supported indirectly by the sensitivity of speed to total metabolic rate in Brachionus: both plateau over the temperature range 20-32 degree C and decline in parallel putside this range. Unexpectedly high actual cost of locomotion is proposed as an important disadvantage of the Rotifera, partly offsetting the advantages accruing to them from small body size.)

Evans, W.A. 1984. Seasonal abundances of the psammic rotifers of a physically controlled stream. Hydrobiologia. 108(2):105-114. (Address: Dept. Biology, Union College, Barbourville, KY 40906, USA) (Abstract number 77 90238) (From the abstract: The psammic rotifer community inhabiting the bottom of a 2nd order stream partially under the influenceof acid mine drainage was studied. Thirty-one species of rotifers were found,but abundances were very low (range 0.0-8.6/cm3). Total rotifer density and densitites of major genera differed significantly over time, among sites and between depths in the sediment. Highest densities occurred in the

top 1 cm of sediment during periods of stream stabilityu in the late summer and fall. Some total rotifer densitites were correlated with environmental measruements. A highly variable and unpredicatble environment is thought to keep density and diversity low in this community.>

F

Finney, J.R. and Bennett, G.F. 1984. Susceptibility of early instars of spruce budworm Lepidoptera tortricidae to Heterorhabditis heliothidis Nematoda, Rhabditidae. Can. Entomol. 116(2):285-287. <Address: Dept. Biol. Meml. Univ. Newfoundland, St. John's, Newfoundland, Alb 3X9, CANADA.> <BIOSIS Abstract number: 26 78286: Editors Note: this reference showed up in the BSR search with Rotifera (BC 51600) as a keyword. We do not know why from the title; we have not seen the abstract or the original paper.>

Forsyth, D.J., Downes, M.T., Gibbs, M.M., Kemp, L., McCallum, I. MacKenzie, L., and Payne, G. 1983. Aspects of the limnology of Lake Rotongaio. New Zealand Journal of Marine and Freshwater Research 17:423-435.

Francez, A.J. and Pourriot, R. 1984. Remarques taxonomiques sur quelques rotifers des tourbieres avec la description d'une espece et d'une sous-espece nouvelles. Hydrobiologia 109(2):125-130. <Address: Ecologie terrestre et appliquee, Universite de Clermont-Ferrand II, F-63170, Aubiere, FRANCE.> <Language: FRENCH with ENGLISH abstract> <BIOSIS Abstract Number: 78 28260: Taxonomic notes about peat-bog rotifers with a description of one new species and one new subspecies are reported. Variations and problems about some peat-bog rotifers (especially the genera Lecane and Keratella) are discussed. Descriptions of Lepadella quadricurvata nov. sp. and Lepadella koniari arvernae nov. ssp. are added.>

Fritsch, G. and G. Lysek. 1983. Nematode destroying endoparasitic fungi from woodland soils in Berlin, West Germany. Z. Mykol. 49(2): 183-194.<Address: <ABSTRACT NUMBER 78 3830> <LANGUAGE: GERMAN>

Fukuhara, O. 1983. Development and growth of laboratory reared Engraulis japonica larvae. J. Fish Biol. 23(6):641-652. <Address: Nansei Regional Fisheries Research Laboratory, Ohno, Hiroshima, 739-04, JAPAN.> <BIOSIS abstract number: 77 82245: from the abstract: The development and growth of Japanese anchovy larvae, E. japonica are described from laboratory-reared specimens. Rotifers, Artemia, and copepods were offered to larvae of different sizes.>

Fukusho, K. and Okauchi, M. 1983. Sympatry in natural distribution of the two strains of a rotifer, Brachionus plicatilis. Bull. Natl. Res. Inst. Aquacult. 0(4):135-138. <BIOSIS Abstract Number: 26 50449: No abstract is available.>

G

Galkovskaya, G.A. 198?. Ecological and physiological characteristics of planktonic animals and some problems of early diagnosis of water basin eutrophication. pages 37-46 In "Results and prospects for hydrobiological research in Byelorussia." (Procedings of the session of the All-Union Hydrobiological Society, Byelorussian department, Minsk) USSR. <Language: RUSSIAN> <The editors are unsure of the exact date of this publication.>

*27 Galkovskaya, G.A. 1983. On temperature acclimation in an experimental population of Brachionus calyciflourus. Hydrobiologia 104:225-227. <Address: See above> <Abstract: The influence of parental culture temperature regime on population parameters of offspring was investigated. Fecundity and net reproduction are influenced by the temperature conditions of the previous generation.>

Galkovskaya, G.A., Golovtchits, V.A., Mityanina, I.F. 1983. Possibility of cultivating rotifers of the genus Brachionus at 40 degrees C. Vyestsi Akad Navuk BSSR Syer Biyal Navuk 0(1):105-106. <Language: RUSSIAN> <BIOSIS Abstract Number: 26 15728.>

Galkovskaya, G.A., and Mityanian, I.F. 198?. Parthenogenetic reproductability in the rotifer Brachionus calyciflorus Pallas under high temperatures. 27(2):184-186. <The editors are unsure of the exact date or translation of the Russian journal title of this publication.>

Galkovskaya, G.A., Molotkov, D.V., and Smirnova, I.A. 1983. Changes in zooplankton species composition in the Prypjat River for the last century. pages 6-7, In "Biological basis for development, reconstruction and protection of wildlife in Byelorussia. These of the reports of the V th conference on zoology." December 20-21, 1983, Minsk, USSR. <Language; RUSSIAN.>

Galkovskaya, G.A., Sushchenya, L.M., Mityanina, I.F., and Eremova, N.G. 1983. Features of the formation of temperature adaptations in planktonic animals. Gidrobiol 19(1):70-76. <Language: RUSSIAN> <Address: Institute of Zoology, Acad. Sciences. BSSR, Minsk, USSR.> <BIOSIS Abstract Number: 77 9976: Parameters of growth, development, metabolism of Daphnia and Rotatoria during temperature adaptation were studied under experimental conditions. In successive parthenogenetic generations the temperature adaptations are formed with participation of compensatory, cytogenetic and mutation mechanisms.>

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 Reservior, South Australia. Aust. J. Mar. Freshwater Res. 34(3):489-494. <Address: Department of Botany, University of Adelaide, Box 498, GPO, Adelaide, SOUTH AUSTRALIA> <BIOSIS Abstract Number: 26 1699; no abstract is available to the editors, but the

keywords include the species Ascomorphella volvocicola.>

Gatesoupe, F.-J. 1982. Nutritional and antibacterial treatments of live food organisms: the influence on survival, growth rate, and weaning success of Turbot Scophthalmus maximus. Ann. Zoothech. (Paris) 31(4):353-368. <Address: I.N.R.A., Laboratoire d'Elevage et de nutrition des poissons, Ventre de Recherches, Hydrobiologiques, Saint Pee sur Nivelle, F 64310 Ascain, FRANCH.> <BIOSIS Abstract Number: 76 86703: After ingestionof nutrients and/or antibacterial drugs, live food organisms were fed to turbot (S. maximus) larvae. When the rotifer Brachionus plicatilis was treated with the drug, between 21 and 33% of the [turbot] larvae survived to day 14; survival was quite poor without this treatment. When rotifers were also enriched with nutirents, survival rate of turbot on day 14 was between 36 and 69%. A pathological infection was probably encountered during these experiments, while the dietary value of rotifers would also be implicated in the early survival of turbot.>

Geiger, J.G. 1983. Zooplankton production and manipulation in striped Bass, Morone saxatilis, rearing ponds. Aquaculture 35(4):331-352. <Address: U.S. Fish and Wildlife Service, Southeastern Fish Cultural Lab., Route 3, Box 86, Marion, ALA 36756, USA.> <BIOSIS Abstract Number: 77 74261: Zooplankton production and survival of striped bass fry were examined in ponds treated either with organic fertilizer (in 1980) or with a combination of organic and liquid fertilizers and inoculated with Daphnia pulex (in 1981). Production of crustacean zooplankton was low, and rotifer populations increased as the number of crustaceans was reduced by predation.>

Gibbons, M.V., Woodwick, F.D., Funk, W.H., and Gibbons, H.L. 1984. Effects of multiphase restoration particularly Aluminum sulfate application on the zooplankton community of a eutrophic lake in eastern Washington, USA. J. Freshwater Ecology 2(4):393-404. <Address: Environmental Sciences Program, Washington State University, Pullman, WA, 99164, USA.> <BIOSIS Abstract Number: 78 18175: The effects of suction dredging of lake bottom sediments and of two stage whole lake aluminum sulfate alum application, were assessed by analyzing population density and biomass fluctuations of zooplankton including rotifers several years before and after the treatments.>

*20 Gilbert, J.J. 1983. Control of sexuality in Asplanchna brightwelli: threshold levels of dietary tocopherol and modification of tocopherol response by exogenous and endogenous factors. Hydrobiologia 104:167-173. <Address: Department of Biological Sciences, Dartmouth College, Hanover, NH, USA 03755> <Abstract: Ingestion of one prey rotifer containing about 0.02 pg tocopherol was sufficient to cause young amictic females to produce a high proportion of mictic daughters. Varying the concentration of emulsified tocopherol and the population density of amictic females suggested that mictic-female induction approached an

all-or-nothing response at relatively high population densities and increased with population density only when population densities were very low. Amictic females hatching from resting eggs were less likely to produce mictic daughters than those hatching from parthenogenetic eggs.>

*31 Godeanu, S. and Zinevici, V. 1983. Composition, dynamics and production of Rotatoria in the plankton of some lakes of the Danube Delta. Hydrobiologia 104:247-257 <Address: Institute of Biological Sciences, Spl. Independentei 296, 77748 Bucharest, Rumania> <Abstract: The Rosu, Puiu, and Porcu lakes from the Danube Delta are lacustrine ecosystems characterized by a particularly great variation of the biotic and abiotic factors. This variation causes the development of a zooplankton reduced from the point of view of number and biomass, but rich from the taxonomic point of view. Its monthly and annual fluctuations can hardly be correlated to the rest of the plankton fauna and microflora. Rotifer production is low, turnover at the level of plankton rotifers being relatively uniform and dependent on water temperature.>

Goddard, K.A. and McDiffett, W.F. 1983. Rotifer distribution and community structure in four habitats of a freshwater marsh. J. Freshwater Ecol. 2(3):199-212. <Address: Department of Biology, Bucknell University, Lewisburg, PA, USA, 17837> <BIOSIS Abstract Number: 77 57974: The planktonic, periphytic (both submerged and emergent vegetation) and benthic rotifer communities of an alkaline freshwater marsh were studied from May 1979 - May 1980. Of 32 species of rotifers recorded, 17 were common. Rotaria rotatoria dominated the four habitats examined throughout the entire study period. A succession of several other species appeared as dominants in concert with R. rotatoria at various times of the year, in various habitats. Significant coefficients of correlation ($P < 0.01$) were found among 9 dominant species, also grouped by factor analysis as responsible for 53.1% of the community variance. Several physical-chemical characteritics correlated significantly ($P < 0.05$) with the marsh rotifer community population ynamics. Diversity and population sizes differed among the benthic, periphytic, and planktonic communities.>

Gray,N.F. 1984. The effect of fungal parasitism and predation on the population dynamics of nematodes in the activated sludge process. Ann. Appl. Biol. 104(1):143-150. <ADDRESS: Environ. Sci. Unit., Trinity College,Dublin 2, Ireland. <BIOSIS ABSTRACT NUMBER 78 9911> <From the abstract: Nematophagous fungi, both predators and endoparasites, were found to be common components of activated sludge. Although rotifers and ciliate protozoa (both potential prey) were also abundant, no fungi were parasitic on these organisms.>

Gulati, R.D. 1983. Zooplankton and its grazing as indicators of trophic stauts in Dutch lakes. Symposium on ecological indicators for the assessment of the quality of air, water, soil, and

ecosystems, Utrecht, Netherlands, October 14-15, 1983. 3(3-4): 343-354. (Address: Limnological Institute, 'Vijverhof' Lab, Rijksstraatweg 6, 3631 AC, Nieuwersluis, THE NETHERLANDS.) (BIOSIS Abstract Number: 27 16069)

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*36 Haberman, J. 1983. Comparative analysis of plankton rotifer biomass in large Estonian lakes. Hydrobiologia 104:293-296. (Address: Limnological Station, Institute of Zoology and Botany, Academy of Sciences of the Estonian S.S.R., 202 454 Rannu, Estonian S.S.R., USSR) (Abstract: The number and biomass of rotifers in large eutrophic lakes in winter, reaches a maximum in spring or summer and decreases to a winter minimum. The dynamics of rotifer participation as part of total zooplankton is opposite to their absolute number: the role of rotifers in zooplankton is great in winter, starts decreasing in spring, reaches a minimum in summer and increases again to its winter maximum. The number and biomass of rotifers is proportional to the trophy of the waterbody, but in thecase of some species this correlation is inverse.)

Halbach, U. 1984. Population dynamics of rotifers and its consequences for ecotoxicology. Hydrobiologia 109(1): 79-96. (ABSTRACT NUMBER 78 9857) (From the abstract: Population dynamics of the rotifers. Brachionus rubens and B. calyciflorus were studied in the field and analyzed by multivariate statistical techniques. There were some correlations, but they are difficult to interpret. Laboratory cultures under various controlled conditions showed sigmoid growth curves with subsequent oscillations around an equilibrium. Its level is determined by food quantity; frequencies and amplitudes of the oscillations increase with temperature. The growth curves are described by deterministic models. Applications of these findings to field conditions is discussed.)

Halbach, U., Siebert, M., Klaus, J., Wissel, C., Beuter, K., und Delion, M. 1981. Die Populationsdynamik von Rotatorien als Bioindikator fur sub-subletale Schadstoffwirkungen am Beispiel von Pentachlorphenol (PCP). Verh. Ges. Okol. Berlin 1980, Bd. IX, 261-267.

Halbach, U., Siebert, M., Klaus, J., Wissel, C., Beuter, K., und Delion, M. 1981. Population dynamics of rotifers as bioassay tool for toxic effects of organic pollutants. Verh. Int. Verein. Limnol. 21:1147-1152.

Halbach, U., Siebert, M., Westermayer, M., and Wissel, C. 1983. Population ecology of rotifers as bioassay tool for ecotoxicological tests in aquatic environments. Ecotoxicology and Environmental Safety 7(5):484-513.

Hayward, B.W. 1983. Protozoa, Rotifera, and marine macroalgae, recent and fossil. Symposium on the New Zealnad Biota - What do we know after 200 years?, Wellington, New Zealand, August 25-26, 1980.

National Museum N.Z. Misc. Ser. 0(7):48-53. <Address: N.Z. Geol. Survey, Dsir, Lower Hutt, NEW ZEALAND.> <BIOSIS Abstract Number: 27 22816.>

Hedgecock, E.M., Sulston, J.E., and Thomson, J.N. 1983. Mutations affecting programmed cell deaths in the nematode Chenorhabditis elegans. Science 220(4603):1277-1279. <Address: MRC Laboratory, Molecular Biology, Hills Road, Cambridge, CB2 2QH, UNITED KINGDON> <BIOSIS Abstract Number: 76 72196: Mutations in two nonessential genes specifically block the phagocytosis of cells programmed to die during development. With few exceptions, these cells still die, suggesting that, in nematodes, engulfment is not necessary for most programmed deaths. Instead, these deaths appear to occur by cell suicide.>

Henriksen, S.A. and Korsholm, H. 1983. A method for culture and recovery of gastro-intestinal Strongyle larvae. Nord. Veterinaermed. 35(11):429-430. <Address: Bulowsvej 13, DK-1870, Copenhagen V., DENMARK> <BIOSIS ABstract number: 26 81366; Although the editors can say why, the keyword rotifer shows up in the biosis code for this paper.>

Hernroth, L. 1983. Marine pelagic rotifers and tintinnids important trophic links in the spring plankton community of the Gullmar Fjord, Sweden. J. Plankton Res. 5(6):835-846. <Address: Kristineberg Marine Biological Station, S-45034 Fiskebackskil, SWEDEN> <BIOSIS Abstarct Number: 77 58051: During the winter and spring of 1981, the dynamics of a marine pelagic rotifer, Synchaeta vorax Rousseslet and tintinnids of the genus Tintinnopsis were studied in the Gullmar Fjord on the Swedish west coast. Although present in Feb. and March, it was not until early April when the surface water temperature exceed 6 degrees C., that the rotifer population started to grow rapidly. Thereafter the population increased exponentially for 6 weeks. Estimates of consumption of phytoplankton by rotifers and tintinnids in their most dynamics phase approximated to that of the phytoplankton production. Lack of data on the amount of detritus available and the number of young rotifers passing the 90 micrometer net are limitations in such calculations. The tintinnids and rotifers are highly important components in the area's spring plankton community. Through high turnover rates they are able to use effectively the spring phytoplankton bloom and thus serve as a link between the primary and the larger secondary producers.>

Herrera, G. and F. Balbontin. 1983. Rate of gut evacuation and feeding incidence in larvae of Sardinops sagax (Musica Pisces Clupeiformes). Rev. Biol. Mar. 19(2): 113-132.< <ABSTRACT NUMBER 78 9838> <LANGUAGE:SPANISH> <From the abstract: The rate of gut evacuation in larvae of different size reared under laboratory conditions was measured using rotifers as food. >

Herzig, A. 1983. The ecological significance of the relationship between temperature and duration of embryonic development in planktonic freshwater copepods. Hydrobiologia 100:65-91. ‹Address: Institut fur Limnologie, Osterreichische Akademie der Wissenschaften, A-5310 Gaisberg 116, Austria.› ‹Abstract: The embryonic development times of six planktonic copepods from Austrian waters (Eudiaptomus gracilis, Arctodiaptomus bacillifer, Arctodiaptomus spinosus, Mixodiatomus kupelwieseri, Cyclops abyssorum, Mesocyclops leuckarti) were determined at constant temperature ranging from 1.4 degrees C to 27.3 degrees C. In most experiments the hatching success was very high, low survival occurring only when experimental temperatures closely approached lower and upper lethal ranges. Developmental times usually decreased with increasing temperatures, retardation in development occurring close to the upper lethal range. The non-linear relationship of development time to temperature is most adequately described by Belehradek's equation, quadratic models using log-transformed data perform almost equally well. Data on embryonic development times of planktonic copepods are summarized and regression equations (Belehradek's equation) for the relationship between duration of development and temperature are presented. Adaptation to temperature and intra- and interspecific differences and similarities in embryonic development times are discussed in the context of geographical distribution and thermal history of various species and populations. The applicability of general curves relating temperature to duration of development is examined and some of the deficiencies in the data are discussed.›

*30 Herzig, A. 1983. Comparative studies on the relationship between temperature and duration of embryonic development of rotifers. Hydrobiologia 104:237-246. ‹Address: See above› ‹Abstract: The embryonic development times of four rotifers from Neusiedlersee (Austria) (Rhinoglena fertoensis, Brachionus calyciflorus, Keratella quadrata, and Polyarthra dolichoptera) were determined at constant temperatures ranging from 0.6 degrees C to 10.5 degrees C. Development times decreased with incrasing temperatures. The curvilinear relationship between temperature and development time was described by Belehradek's equation. Data on embryonic development times of rotifers are summarized and regression equations for the temperature-duration of development relationship are presented. Adaptation to temperature is discussed in the context of thermal history of the various species and populations.›

Herzig, A. and Winkler, H. 1983. Beitrage zur Biologie des Sichlings Pelecus cultratus (L.). Ost. Fischerei 36:113-128.

Hessen, D.O. 1983. Introduction of pike, Esox lucius to a small pond effects on planktivorous fish zooplankton and phytoplankton. Fauna 36(4): 119-124.‹Address: Zoological Inst., Univ. Oslo, P.O. Box 1050, Blindern, N-Oslo 3, NORWAY› ‹ABSTRACT NUMBER 78 1953› ‹Language: NORWEGIAN› ‹From the abstract: The investigations were performed in a small pond near Lillehammer, Southeast Norway.During the spring flood, the pond is connected to lake Mjosa and usually

Jap. J. Limnol. *44*, 2, 93-106, 1983.

Response of Planktonic Rotifers to the Eutrophication Process and to the Autumnal Shift of Blooms in Lake Biwa, Japan. I. Changes in Abundance and Composition of Rotifers

Anna HILLBRICHT-ILKOWSKA

Abstract

The density of planktonic rotifers in Lake Biwa was 100-3,000 ind. $\cdot l^{-1}$ from September to December, 1980. This level is remarkably higher than that reported by YAMAMOTO (1967, 1968) who noted no more than 10-600 ind. $\cdot l^{-1}$, although the northern basin (LBN) has been, in general, regarded as having lower values than the southern basin (LBS). An increase in population density was observed in the following species:

1) Small and fine particle feeders like *Keratella cochlearis*, *Collotheca pelagica*, *Brachionus* species group and *K. quadrata* and

2) graspers such as *Polyarthra vulgaris* and *P. dolichoptera*. The long-term changes may well be evidence for the accelerated eutrophication of Lake Biwa. The actual trophic difference between both basins is reflected in 1) greater abundance of rotifers (maximum value=3,000 ind. $\cdot l^{-1}$); 2) greater contribution of *K. cochlearis* (esp. f. *tecta*=50%); and 3) higher Trophic State Index (75) in the LBS; on the contrary, corresponding values were 300 ind. $\cdot l^{-1}$, f. *tecta*=1% and TSI=46, respectively, in the LBN. During the autumnal shift of the blooms from green algae to diatoms coupled with the autumnal cooling of the water there was a succession of dominant species with food selection of different size particles: *K. cochlearis*, *Polyarthra* spp. *K. quadrata*. In November, a considerable increase in the number of *K. cochlearis* f. *tecta* was recognized.

1. Introduction

The abundance and composition of planktonic rotifers were found to be the good indicators of the trophic state of the lake expressed in terms of the amount of seston suspension or chlorophyll *a* content or phytoplankton biomass (KARABIN, 1980; LANDNER, 1976). The rotifers are mostly suspension feeders filtering or sedimentating the fine particles directly into the mouth via water currents created by cirri. This manner of feeding is usually combined with the active seizing or grasping of the food items sometimes of the same or even greater size than the animal itself. Also the sucking way of feeding is rather widespread among typical planktonic rotifers, *e.g.* family Trichocercidae. Thus the rotifers can utilize particles widely ranging in size from smaller than 3 μm like bacteria and detritus to the larger cells and colonial individuals of algae often up to 100 μm. This is why rotifers are believed to be better adapted to the trophic conditions in the pelagial habitat than the typical filter feeders like cladocerans. Thanks to their more flexible feeding behaviour (*i.e.* filtering and seizing or sucking), they can switch to any changes in the composition of the food suspension. In addition, the rotifers don't seem to suffer from the so-called "clogging" effect of the bigger, filamentous blue green algae or bigger dinoflagellates (GLIWICZ, 1977). Being generally of size smaller than the crustaceans, they are considered to be well protected from the intensive fish predation in the typical pelagial habitat (HILLBRICHT-ILKOWSKA, 1964; HILLBRICHT-ILKOWSKA and WEGLENSKA, 1973).

These circumstances explain why the abundance of the rotifer fauna and its contribution to the whole zooplankton are both increasing with growing abundance and heterogeneity of the total suspension in the pelagial habitat. This trend of changes is observed quite commonly during the eutrophication process in the lowland, temperate lakes (KARABIN, 1980) as well as in

Jap. J. Limnol. *44*, 2, 107-115, 1983.

Response of Planktonic Rotifers to the Eutrophication Process and to the Autumnal Shift of Blooms in Lake Biwa, Japan. II. Changes in Fecundity and Turnover Time of the Dominant Species

Anna HILLBRICHT-ILKOWSKA

Abstract

The egg-female ratio, *i.e.* the ratio of the numbers of amictic eggs to the number of females was analysed for the dominant species, *Keratella cochlearis*, *K. quadrata* and *Polyarthra vulgaris* together with *P. dolichoptera* from September to December 1980 at six stations in the southern part of Lake Biwa. Irrespective of the decrease in water temperature from about 26°C in September to about 6°C in December, there was a considerable increase in the fecundity of these species in November. It was probably the effect of the temporal improvement of the food conditions, *i.e.*, the increased detritus particles and nanoplanktonic algae. The birth rates were calculated as well as the tentative number of parthenogentic generations for each sampling interval and for the whole sampling period; it ranged from 15 to 29 generations for *K. cochlearis*, 12-30 for *P. dolichoptera* and *P. vulgaris*, and 2-12 for *K. quadrata*, varying for each stations.

1. Introduction

In the previous study*, the author described the changes in the abundance and composition of planktonic rotifers at six stations in the southern part of Lake Biwa and in the epilimnion (0-15 m) at two stations in the northern part of this lake from September to December 1980. In this period the water temperature gradually decreased from about 26°C in September to about 6°C in December. The cooling rates calculated for each station and sampling intervals were approximately constant; 0.10-0.14°C per day in the northern basin (LBN), while those in the southern basin (LBS) constantly increased from 0.11-0.15°C per day in September to 0.20-0.26°C per day in December. In November the change of the blooming conditions took place in both basins. Green algae (*Staurastrum dorsidentiferum* and *Pediastrum biwae*) dominant in September and October was replaced by diatoms (*Fragilaria crotonensis*, *Melosira* sp. div.) in December. Also, in November the amount of detritus particles in the seston increased in the LBS. Since there was also an increase of chlorophyll *a* in the seston size fraction below 25 μm (NARITA: unpublished) to the total amount of this pigment; there was also a great increase of nanoplankton algae. The seasonal changes in the abundance of rotifers were analysed as well as the succession of the dominant species and the trophic groups. The trophic groups were distinguished in terms of their manner of feeding (filtering, grasping) and the size and nature of the food particles.

The aim of this study is to analyse the changes in fecundity of the rotifer species as well as their turnover time and to compare these changes with the thermic and trophic conditions in the study period, *i.e.*, from September to December in 1980. As is well known from many sources such as EDMONDSON (1965), KING (1967), HALBACH and HALBACH-KEMP (1974) and PILARSKA (1977), the production of the parthenogenetic eggs is mainly governed by the amount of available food, while the development time of these eggs is mainly controlled by temperature (BOTR-

* The response of planktonic rotifers to the eutrophication process and to the autumnal shift of blooms in Lake Biwa, Japan. I. Changes in abundance and composition of rotifers (hereafter referred to as Rep. I).

separated from the lake from early summer onwards. During the summer of study the lake was heavily stocked with smelt fry and the zooplankton community consisted almost exclusively of rotifers and small cyclopoid copepods. In the summer of 1983 several small pike occured in the pond, thus strongly reducing the number of smelt fry. This resulted in a strong increase of cladocera and a decrease of rotifera.>

Higashihara, T., Fukuoka, S., Abe, T., Mizuhara, I., Imada, O., Hirano, R. 1983. Culture of the rotifer Brachionus plicatilis using a microbial flock produced from alcohol fermentation slop. Bull. Jpn. Soc. Sci. Fish. 49(7):1001-1014. <Address: Fermentation research Institute, Agency of Industrial Science and Technology, Yatabe-Machi, Tsukuba, Ibaraki, 305, JAPAN> <Language: JAPANESE> <BIOSIS Abstract Number: 77 52059: The culturing of this rotifer was done using as food a microbial flock produced from alcohol fermentation slop (AFS). AFS was an effective food for the rotifer, which was maintained in the culture broth at a density of over 200 individuals/ml for about 1 month.>

Hillbricht-Ilkowska, A. 1983. Response of planktonic rotifers to the eutrophication process and to the autumnal shift of blooms in Lake Biwa, Japan. I. Changes in Abundance and composition. The Japanese Journal of Limnology 44(1):93-106. <Address: Institute of Ecology, Polish Academy of Sciences, Dziekanow Lesny, 05-150 Lomianki, POLAND> <BIOSIS Abstract Number: 77 17833: This paper was referenced as in press in the last issue. This citation is now up to date -- editors.>

Hillbricht-Ilkowska, A. 1983. Response of planktonic rotifers to the eutrophication process and to the autumnal shift of blooms in Lake Biwa, Japan. II Changes in fecundity and turnover time of the dominant species. The Japanese Journal of Limnology 44(1):107-115. <BIOSIS Abstract Number: 77 17834: This paper was referenced as in press in the last issue. This citation is now up to date -- editors.>

Hillbricht-Ilkowska, A. 1983. Morphological variation of Keratella cochlearis (Gosse) in Lake Biwa, Japan. Hydrobiologia 104:297-305. <Address: see above> <Abstract: The length of the lorica (LL) of Keratella cochlearis cochlearis and of Keratella cochlearis tecta and the length of the posterior spine (PSL) of the latter morphotype were measured in the strongly eutrophic basin and also in the mesotrophic basin of Lake Biwa, Japan, from September to December, 1980. In the population from the mesotrophic basin, the individuals with longer PSL prevail and the tecta forms are extremely rare. The LL values of both morphotypes from one sample do not differ. In December the LL increased to 95 micrometers in both morphotypes from 80 micrometers observed in September, while the PSL values decreased abrubtly in both basins in the middle of this period. It is suggested that the observed increase of LL could be related to the thermic factor, i.e. a steady decrease of water temperature, and the changes of PSL are correlated with the

increase of nannoplankton and detritus aggregates noted in November. In this month an increase in fecundity and in the total numbers of rotifers took place as well (Hillbricht-Ilkowska, in press).>

Hirata, H. and Nagata, W.D. 1982. Excretion rates and excreted components of the rotifer Brachionus plicatilis in culture. Mem. Fac. Fish. Kagoshima University. 31(0):161-174. <Address: Laboratory Aquacultural Physiol. Faculty of Fishery, Kagoshima University, Shimoarata 4, Kagoshima 890, JAPAN.> <BIOSIS Abstract Number: 77 1946: The excretion rates and excreted components of the rotifer Brachionus plicatilis, cultured on the Chlorophycean, Chlorella saccharophila, were measured under constant conditions of: 20 degrees C, 20 ppt salinity and 1 kLx light intensity. Analyses for NH4-N, urea-N, total persulfate N and P04-P were carried out on the resulting experimental water. Rotifer density, fecundity and algal density were exmined as dependent variables. The uptake kinetics of dissolved nutrients by C. saccharophila were also determined as a control. Under the above conditions, B. plicatilis excretes the majority of its dissolved N as ammonium and urea, with urea comprising almost an equal amount of the total N as NH4-N. The rates of excretion by B. plicatilis were high in comparison to other zooplankton excretion rates and dependent on all the tested variables. B. plicatilis most likely plays a very important role in the cycling of nutrients in both natural and artificial ecosystems.>

Hirata, H., Ushiro, M., and Hirata, I. 1982. Ecological succession of Chlorella saccharophila, Brachiouns plicatilis, and autogenous bacteria in culute water. Mem. Fac. Fish. Kagoshima Univ. 31(0):153-160. <Address: see above> <BIOSIS Abstract Number: 77 1945: The ecological succesion of C. saccharophila, B. plicatilis, and autogenous bacteria in culture water was observed for the purpose of analyzing their microcosms and to determine the dietary efficiency of bacteria for the culture of B. plicatilis. B. plicatilis were fed C. saccharophila by using three 1-liter flasks at the beginning of the experiments. Several species of bacteria were observed to grow autogenously in the cultures water. Population densities of C. saccharophila, B. plicatilis, and autogenous bacteria were monitored daily. The behavior of autogenous bacteria was closely observed by observing BGA (bacteria growth ability). BGA was determined by measuring turbidity of population growth of autogenous bacteria which were sampled from the water and cultures in flasks. Evidence for an ecological succession in the flasks was clearly seen. B. plicatilis preferably consumed C. saccharophila during the first few days. Population density of autogenous bacteria gradually decreased after C. saccharophila were consumed. Bacterial density increased again when the population of B. plicatilis finally decreased.>

*10 Hirata, H., Yamasaki, S., Kawaguchi, T., and Ogawa, M. 1983. Continuous culture of the rotifer Brachionus plicatilis fed recycled algal diets. Hydrobiologia 104:71-75. <Address: Faculty

of Fisheries, Kagoshima University, Kagoshima, 890, JAPAN) (A culture system for the rotifer Brachionus plicatilis was designed to maintain higher food conversion rates and stable population densities. Two 200 l plastic tanks were employed in the culture experiments, tank A for 'feedback' culture and tank B for a control culture. The experiments were carried out for 70 days at 24 degrees C, light intensity , 1500 lux, and a photoperoid of L:D 15:9. B. plicatilis were fed once a day on baker's yeast and Chlorella.

Hochberg, F.G. 1983. The parasites of cephalapods. A review. Mem. Natl. Mus. Victoria. 44(0): 109-146. (Address: Dept. Invertebrate Zoology, Santa Barbara, Museum of Natural History, 2559 Puesta Del Sol Rd., Santa Barbara, CA 93105, USA) (Abstract Number 27 10338)

*48 Hofmann, W. 1983. Interactions between Asplanchna and Keratella cochlearis in the Plussee (north Germany). Hydrobiologia 104:363-365. (Adress: Max-Planck-Institut fur Limnologie, Abt. Allgemeine Limnologie, Postfach 165, D-2320 Plon, FRG. (Abstract: Extremely high abundance of Asplanchna priodonta led to a decline in the population of the preferred food species, Keratella cochlearis and subsequently, to the extinction of the predator population. Kellicottia longispina was obviously favoured by the predatory losses of the Keratella. Thus, the interactions between Asplanchna and Keratella influenced the zooplankton community structure.)

Holland, L.E., Bryan, C.F., and Newman, Jr., J.P. 1983. Water quality and the rotifer populations in the Atchafalaya River basin, Louisiana. Hydrobiologia 98:55-69. (Address: Louisiana Cooperative Fishery Research Unit, Louisiana State University, Baton Rouge, LA 70803, USA.) (Abstract: The authors compiled distributional and ecological information on the phylum Rotifera from both flood controlled and uncontrolled reaches of the Atchafalaya River basin, a large river-swamp in the south-central United States. In the minimally altered lower basin a variety of aquatic habitats within a small area resulted in a very diverse rotifer community consisting of an average of 46 taxa. In contrast, only an average of 28 different taxt were collected in leeved upper basin habitats. As a result of cluster analysis we were able to identify rotifer communities associated with areas of similar water quality. Variations in suspended solids, total dissolved solids, and organic carbon were most often significantly associated with variations in rotifer numbers from the lower basin. Seasonal flushing of backwater areas by mainstream waters is very important in maintaining the diversity of these lower basin rotifer communities.) (Editor's note: a total of 71 rotifer taxa were found in 300 samples. Forty-eight of these 71 were sufficiently common to sevre as potentially useful indicators of habitat type.)

★14 Hussey, C.G. 1983. Some historical specimens of rotifers examined by scanning electron microscopy. Hydrobiologia 104:131-134. ‹Address: British Museum (Natural History), London SW7 5BD, ENGLAND› ‹Abstract: Scanning electron micrographs have been prepared of two species of rotifer, Floscularia ringens (Linnaeus, 1758) and Asplanchna priodonta Gosse, 1850, from specimens stored in the collections of the British Museum (Natural History) for over seventy years. It is believed that these include the first scanning electron micrographs of a sessile rotifer.›

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★11 James, C.M., Bou-Abbas, M., Al-Khars, A.M., Al-Hinty, S., and Salman, A.E. 1983. Production of the rotifer Brachionus plicatilis for aquaculture in Kuwait. Hydrobiologia 104:77-84. ‹Address: Kuwait Institute for Scientific Research, PO Box 1638, Salmiya, KUWAIT› ‹Brachionus plicatilis were mass cultured using 10 cubic meter, 15 cubic meter, and 20 cubic meter outdoor concrete tanks. Utilization efficiencies for different food combinations using marine yeast (CAndida sp., MFD-Y-St.03), baker's yeast and Chlorella sp. for rotifer production were evaluated. With either marine yeast or baker s yeast, addition of Chlorella sp., at 0.5 cubic meter algal culture per day per 10 cubic meter culture volume enchaced rotifer production. Under optimum conditions rotiferdensity was maintained at more than 450 individuals/ml.›

★43 Johansson, S. 1983. Annual dynamics and production of rotifers in an eutrophication gradient in the Baltic Sea. Hydrobiologia 104:335-340. ‹Address: Asko Laboratory, Institute of Marine Ecology, University of Stockholm, S-106 91 Stockholm, SWEDEN› ‹Abstract: Spatial and temporal fluctuations in rotifer abundance have been monitored along a trophic gradient in the northern Baltic. The most common rotifer was Synchaeta spp., which had one abundance peak in June and one in September-October. Only during the latter period was the abundance significantly higher in the eutrophic basin compared to the reference area. The annual production of Synchaeta spp. was about double in the eutrophic basin. A positive correlation between Synchaeta spp. biomass and phytoplankton biomass was obtained during the autumn, but not during the early summer peak, although the phytoplankton community was dominated by the same species. Keratella quadrata, K. cochlearis, and K. cruciformis were most abundant in August-September, and all three species had increased abundance in the eutrophic basin.›

Juario, J.V., Duray, M.N., Duray, V.M., Nacario, J.F., and Almendras, J.M.E. 1984. Induced breeding and larval rearing experiments with milkfish. Aquaculture 36(1-2):61-70. ‹Address: Aquacutlure Department, Southeast Asian Fisheries Development Center, P.O. Box 256, Iloilo City, PHILIPPINES.› ‹BIOSIS Abstract number: 77 82251: from the abstract: Milkfish larvae were reared successfully to

metamorphosis using only Chlorella-fed rotifers during the first 10 days. Survival rates were greatly improved when, aside from Chlorella and Chlorella-fed rotifers, Isochrysis galbana and Tetraselmis chuii were added to the tanks.)

Karabin, Andrzej *K*

Kajak, Z. 1983. Ecological characteristics of lakes in northern Poland vs. their trophic gradient 7. Variations in the quantitative and qualitative structure of the pelagic zooplankton - Rotatoria and crustacea in 42 lakes. Ekol. Pol. 31(2):383-410.(Address: Dept. Hydrobiology, Inst. Hydrobiology, Inst. Ecology. Pol.Acad. Sci., Dziekanow Lesny Near Warsaw, 05-092 Lomianki, POLAND) (ABSTRACT NUMBER 78 9814) (From the abstract: Changes in species structure and changes in numbers and biomass of Rotatoria and Crustacea in lakes varying as to trophic state, morphometry, and degree of pollution were analyzed. Based on changes in the dominance of partiuclar species in the biomass of communities, ecological groups of organisms were distinguished among Rotatoria and Crustacea, characteristic of lakes of a low and high trophic state. The numbers, and to a smaller extent the biomass, of Rotatoria increased as the trophic state increased, but such a relation was not observed in the Crustacea.)

Kajak, Z. 1983. Ecological characteristics of lakes in northern Poland vs. their trophic gradient 12. Dependence of chosen indices of structure and functioning of ecosystems on trophic status and mictic type of 42 lakes. Ekol. Pol. 31(2):495-530. (Author's address: Dep. Hydrobiology, Inst. Ecology, Polish Acad. Sci. Dziekanow Lesny, 05-092 Lomianki, Poland) (ABSTRACT NUMBER 78 9991) (From the abstract: Polymictic lakes have a higher trophic state than dimictic ones, mainly because more nutrients are returned from the sediments to the water. The biomass of phytoplankton and of rotifers increases to the highest P concentrations in polymictic lakes, and reaches much higher values than in dimictic ones)

Kaki, Ichi N., Kamata, S.I., Uchida, K., and Imai, S. 1982. Studies on livestock excreta disposal by aerated lagoon comparison of protozoa and metazoa in extended aeration. Bull. Nippon Vet. Zootech. Coll. 0 (31):127-135. (BIOSIS Abstract Number: 77 39159: The metazoa found in the sewage pond were Philodina sp. and nematodes.)

Kanazawa, A., Teshima, S.-I., Inamori, S., Sumida, S., and Iwashita, T. 1982. Rearing of larval Red Sea Bream, Chrysophyrus major and Ayu Plecoglossus altivelis with artificial diets. Mem. Fac. Fish Kagoshima Univ. 31(0):185-192. (Address: Laboratory of Fish Chemistry, Faculty or Fishery, University of Kagoshima, 4-50-20, Shimoarata, Kagoshima 890, JAPAN.) (BIOSIS Abstract Number: 77 1947: from the abstract: The combination of rotifers and one of the artificial diets discussed in the paper gave good growth and high survival rates for larvae of both fish.)

Kentouri, M. and Divanach, P. 1983. Behavior and biology of striped Sea Bream, Lithognathus mormyrus, larvae sparidae in rearing conditions. Ann. Zootech. (Paris).32(2):135-152. <Language: FRENCH> <Address: Biological Station, Marine Lagunaire, BOSC Prolonge, F342000 Sete. FRENCH> <BIOSIS Abstract Number: 77 10143; from the abstract; feeding was always diversified, but mainly composed of four types of food, including rotifers.>

*15 King, C. E. 1983. A re-examination of the Lansing Effect. Hydrobiologia 104:135-139. <Address: see below> <Abstract: The Lansing Effect, simply stated, is that the offspring of old parents tend to have shorter lifespans than the offspring of young parents and in both cases these tendencies are transmitted to successive generations. This statement is difficult to justify from Lansing's data because of the variation in mean lifespan that was observed from one generation to the next. A more precise statement of the Lansing Effect is that isogenic lines derived from young parents tend to persist for more generations than lines derived from old parents. Lansing considered aging to be the result of a factor that was transmitted from mother to offspring via the eggs. He proposed that this factor influences longevity and also alters the pattern of reproduction. Members of short-lived lines derived from old parents reproduced earlier and at higher rates in succeeding generations. In contrast, members of long-lived lines derived from young parents delayed initial reproduction to later age classes in succeeding generations. These proposals are examined using a life table analysis of Lansing's data. The results suggest that the Lansing Effect in Philodina citrina is not due to aging, but rather is the direct result of the changes in fecundity patterns. Accordingly, it would seem prudent to regard the Lansing Effect with some skepticism until more is known about its physiological basis.>

*12 King, C.E., Bayne, H.B., and King, A.E. 1983. Cryopreservation of monogonont rotifers. Hydrobiologia 104:85-88. <Address: Department of zoology, Oregon State University, Corvallis, OR 97331, USA.> <Abstract: Development of techniques to maintain viable rotifer clones in a frozen state would preserve the genotype and reduce routine maintenance for those clones not being actively studied. To this end we have frozen Brachionus plicatilis in dimethyl sulfoxide at concentrations ranging from 6% to 18%. Survival rates decreased as the endpoint temperature was reduced from -20 degrees C to -45 degrees C, but did not decrease when the temperature was further reduced to -197 degrees C (liquid nitrogen). Only 2% of the individuals survived freezing in liquid nitrogen. [Over 70% survival was reported for a storage temperature of -20 degrees C in 6% DMSO - Eds.]>

Koste, W. 1984. Das Radertier-Portrat: Trichotria tetractis und verwandte Arten. Mikrokosmos 4:113-118. <Address: see following> <Language: GERMAN> <From the abstract: Unser langjahriger Mitarbeiter Dr. Walter Koste beschreibt in seinem Radertier-Portrat diesmal Vertreter der Gattung Trichotria, die

ihn, wie er in seinem Begleitbrief schrieb, seit seiner Primanerzeit an Ritterpanzer erinnern. man kann diese Radertiere in allen sauberen gewassern finden.›

Koste, W. and Robertson, B. 1983. Taxonomic studies of the Rotifera phylum Aschelminthes from a central Amazonian varzea lake Lago Camaeleao Ilha de Marchantaria Rio Solimoes Amazonas Brazil. Amazoniana 8(2): 225-254.‹Address: Ludwig-Brill-Str. 5, D-4570 Quakenbrueck, WEST GERMANY› ‹ABSTRACT NUMBER 78 4056› ‹From the abstract: Four series of plankton samples collected in 1981 were investigated for rotifers: 148 spp. were identified. The number of rotifers increases with the rising water. Three new rotifer species are described: Cephalodella paggia, Lecane marchantaria and Lepadella minoruoides.

*4 Koste, W, Shiel, R.J., and Brock, M.A. 1983. Rotifera from Western Austrlian wetlands with description of two new species. Hydrobiologia 104:9-17. ‹Address: Ludwig Brill Strass 5, D-4570, Quakenbruck, FEDERAL REPUBLIC OF GERMANY.› ‹The rotifer fauna of 100 fresh and saline wetlands of southwest Western Australia is documented. A systematic list of 83 recorded taxa is given, with eleven new records for the continent and two new species (Brachionus pinneenaus n. sp. and Lecane boorali n. sp.) described and figured. Species assemblages are distinct from those of eastern Australia, with predominant taxa halophilous or indicative of ephemeral waters. Evolutionary and biogeographical relationships of the Western Australia rotifers are considered.›

Kristensen, R.M. 1982. The first record of cyclomorphosis in Tardigrada based on a new genus and species from arctic meiobenthos. Z. Zool. Syst. Evolutionsforsch 20(4):249-270. ‹Address: Institute of Comparative Anatomy, University of Copenhagen, Universitetsparken 15, DK-2100, Copenhagen 0, DENMARK› ‹ BIOSIS Abstract Number: 76 88529; [At the end of the abstract the following comment is found which relates the paper to rotifers in a comparative sence. Are there comments from readers? -editors.] "This type of cyclomorphosis in Tardigrada and Collembola concerns the individual, not succeeding generations as in rotifers , cladocerans, and copepods."›

Kristensen, R.M. 1983. Loricifera: a new phylum with aschelminthes, characters from the meiobenthos. Z. Zool. Syst. Evolutionsforsch. 21(3):163-180. ‹Address: See above› ‹BIOSIS Abstract Number: 78 44423: A new phylum, LORICIFERA, in the Animal Kingdom is described from the meiobenthos. All stages of the type species Nanatoricus mysticus gen. et sp. nov. are from shelly gravel, Roscoff, France (25-30 m depth) and Fort Pierce, Florida, USA (15 m depth).›

*2 Kutikova, L.A. 1983. Parallelism in the evolution of rotifers. Hydrobiologia 104: 3-7. ‹Address: Laboratory of freshwater and experimental hydrobiology, Zoological Institute of the USSR Academy of Sciences, Moscow, USSR.› ‹Parallelism in the evolution of rotifers is revealed in the repeated appearance, reduction, consolidation, or enlargement of common structures as well as by left-right handedness. A possible phylogenetic scheme of rotifer evolution is given.›

L

Laal, A.K. 1984. Ecology of planktonic rotifers in a tropical freshwater pond in Patna Bihar India. Indian J. Anim. Sci. 54(3): 291-294. <Address: CIFR Unit, DR Beatson, Rd. Khamjarpur, Bhagalpur, Bihar 812 001, INDIA> <Abstract number 27 8798>

Lair, N. and W. Koste. 1984. The rotifer fauna and population dynamics of Lake Studer 2. Kerguelen Archiupelago, New Zealand with description of Filina terminalis kergueleniensis new subsepcies and a new record of Keratella sancta new record. Hydrobiologia 108(1):57-64. <Address: Universite de Clermont-Ferrand II, Equipe D'Hydrobiologie Regionale, B.P. 45, 63170 Aubiere, FRANCE> <Abstract number 77 84318> <From the abstract: F.t. terminalis sp. nova from Lake Studer 2 is described and figured. F.t. kergueleniensis differs from the type in length of bristles and their insertion.Notholca Jugosa is also found in the plankton of the subarctic lake. K. sancta was found again. Population dynamics appear to be dependent on changes in temperature and chlorophyll content. The relative contribution of these three species to community biomass from their numerical abundance and measured volumes was estimated.>

Lannergren, C. and Ovstedal, D.O. 1983. A limnological investigation of the Tarn Syslaktjonn, western Norway. Holarct Ecol. 6(2):211-220. <Address: Tjarno Marine Biological Laboratory, P.O. Box 2781, S-452 00, Stromstad, SWEDEN> <BIOSIS Abstract Number: 76 86540: An investigation covering hydrography, chemistry, vascular and cryptogamic plants, N-fixation, phytoplankton biomass and production, and zooplankton was carried out from April - November 1976 in a tarn in western Norway. Large numbers of rotifers were found during the summer.>

*41 Lindstrom, K. 1983. Changes in growth and size of Keratella cochlearis (Gosse) in relation to some environmental factors. Hydrobiologia 104:325-328. <Address: Institute of Limnology, Box 557-S-751 22 Uppsala 1, SWEDEN> <Abstract: Keratella cochlearis (Gosse) was cultured non-axenically in Carefoot medium diluted with Erken water at 5, 15, and 20 degrees Cwith rhodomonas minuta (Skuja) as a food alga. The rotifer reached ca. 120 ind./ml, having a generation time of 2-7 days, a Q(subl0)-value of ca. 2, and at the lowest temperature >20% longer posterior spines. When co-cultured with Chlorella sp., at 0-30 mg Ca/l and 1.6 meq NaHC03/l in mediumL 11 at 20 degrees C, the maximum generation time and individual numbers were 3-4 days and up to 100 ind./ml, respectively. Animal numbers increased in relation to nutrient multiples, up to two multiples, of the culture medium L 16. Growth and length were reduced, although the width increased above two multiples of this culture medium. The trace metal tolerance was broad and increased additions of a metal mixture (L 11) slightly increased the lenght of the orifers. No major changes in the length were observed when HC03 or Ca were varied in the

culture medium (L 11), although a decrease in the lengrh was noted in old cultures.)

Litton, J.R. Jr. 1983. Effect of alpha-tocopherol (vitamin E) on the lifespan of the bdelloid rotifers Pleuretra, Rotaria, Habrotrocha, and Philodina. Am. Zool. 23(4):1007 (Address: Department of Biology, Saint Mary's College, Notre Dame, IN 46556 USA) (BIOSIS Abstract Number: 27 3728)

Lovik, J.E. 1984. Zooplankton succession in Lake Jarenvatnet an eutrophic lake in Southeast Norway. Fauna (Oslo). 37(1):26-33. (Language: NORWEGIAN) (Address: Norwegian Institute Water Res., PO Box 333, Blindern, N-Oslo 3, NORWAY) (BIOSIS Abstract Number: 78 42299: Fourteen species of rotifers were recordes in the plankton of Lake Jarenvatnet. Kellicottia longispina was dominating in the spring and Asplanchna priodonta and Keratella quadrata were the most abundant species in summer. Size-selective pressure by fish seemed to be a main factor in determining the species composition and seasonal succession.)

*16 Luciani, A., Chasse, J.-L., and Clement, P. 1983. Aging in Brachionus plicatilis: the evolution of swimming as a function of age at two different calcium concentrations. Hydrobiologia 104:141-146. (Address: Laboratoire d'Histologie et de Biologie tissulaire, CNRS: LA 244, RCF 657, Universite Lyon I, 69622, FRANCE) (Abstract: The swimming movements of young, middle-aged and old Brachionus plicatilis females, raised in calcium-sufficient and calcium-deficient culture media were recorded automatically. Computer analysis and statistical treatment of the results show that: 1) The middle-aged females swim faster than the young and the old females. In comparison to the middle-aged and the young, old females turn less often and nearly always towards the right, and they do not travel as far from their point of departure as the others. 2) When the concentration of calcium in the medium is nearly zero, the swimming speed of middle-aged and old females is slower than that of middle-aged and old females raised in the presence of sufficient amounts of calcium.)

M

*47 Maemets, A. 1983. Rotifers as indicators of lake types in Estonia. Hydrobiologia 104:357-361. (Address: Institute of Zoology and Botany, Estonia S.S.R. Academy of Sciences, Tartu, USSR.) (Abstract:Data on the pelagic rotifer fauna in 10 Estonian lakes accumulated for 20 years, as well as published data are analysed. It is possible to distinguish three main indicator groupes among rotifers: (1) for oligo- and mesotrophic lakes; (2) for meso- and eutrophic lakes; (3) for eutrophic lakes.) (Species for each group are listed in the original abstract and discussed in the paper. -- Eds.)

Magnien, R.E. and Gilbert, J.J. 1983. Diel cycles of reproduction and vertical migration in the rotifer Keratella crassa

and their influence on the estimate of population dynamics. Limnology and Ocreanography 28(5):957-969. <Address: Office of Environmental Programs, Division of Technical Analysis, Maryland Department of Health and Mental Hygiene, 201 Preston Street, Baltimore, MD, 21201 USA> <BIOSIS Abstract Number: 77 66052: Diel cycles of reproduction and vertical migration were observed in the rotifer K. crassa. Egg-hatching synchrony was pronounced during summer when 73-93% of the eggs hatched during a 6-7 hour period. Reproductive synchrony was evident before the egg development stage and may have arisen during oogenesis in response to diel changes in lake temperature. Vertical migration was generallt upward at night and downward during the day. These movements differed in timing for ovigerous and nonovigerous females. Ovigerous animals reached their lowest and highest positions in the water column about 4 and 6 h later than nonovigerous animals. This differential migration produced diel changes in the depth profile of egg ratio. These findings of egg-hatching synchrony and vertical migration have important implications for studies of zooplankton population dynamics. In the two years of this study, sampling at different times of day produced daily variations in egg ratios and calculated instantaneous birth rates that approached an order of magnitude.>

Malakhov, V.V. 1982. The structure of nervous system of the posterior body end in a free-living marine nematode Pontonema vulgare and the problem of the principal plan of the nervous system structure in nematodes. Zool. Zh. 61(10):1481-1491.> <Language: RUSSIAN> <Address: Inst. Develop. Biology, Academy Sciences USSR, Moscow, USSR.> <BIOSIS Abstract Number: 76 80766: [No mention of rotifers is made in the abstract, but a comparison is made to Gastrotricha. The descriptors and Biosystematic codes include the follwoing keywords - Gastrotricha, comparative, morphology, homology, embryogenesis, Rotifera.]>

Malatkow, D.V. 1983. Growth and development features of winter populations of planktonic rotifers of the genus Asplanchna of Lake Yuzhnyi Volos. Vyestsi Akad. Navuk BSSR Syer Biyal Navuk 0(1):83-85. <Language: BYELORUSSIAN> <BIOSIS Abstract Number: 26 15653.>

Malone, B.J. and McQueen, D.J. 1983. Horizontal patchiness in zooplankton populations in two Ontario, Canada, kettle lakes. Hydrobiologia 99(2):101-124. <Address: Department of Biology, York University, 4700 Keele St., Downsview, Ontario, M3J 1P3, CANADA.> <BIOSIS Abstract Number: 77 9955: Horizontal distribution of zooplankton were investigated in two kettle lakes in southern Ontario. In Tory Lake a set of random samples at 1 m depth showed that Skistodiaptomus oregonensis and copepod nauplii were overdispersed (patchy). In Lake St. George a 20 point grid sampled at each of 0.5, 2, 4, and 6 m showed the Polyarthra spp., Keratella cochlearis, Asplanchna spp., Daphnia galeata mendotae, Bosmina longirostris, Eubosmina coregoni and copepod nauplii were all patchy in terms of both vertical and horizontal distributions. Contour diagrams showed that the patches tended to be comprised of

unique groups of species. This was confirmed by principal components analysis which showed that Polyarthra spp. and K. cochlearis occurred together, that d. g. medotae was found in a unispecies patch and that B. longirostris and E. coregoni were together. None of the zooplankton patches correlated with chlorophyll a measurements. There are four basic types of patches occurring in lakes and theat there are at least 16 identifiable forces which might cause these distributions. The patch types are: large scale (> 1 km diameter), small scale, caused by wind-induced water movement, Langmuir circulation, aggregations and swarms, potentially caused by biotic factors.>

*28 Markic, M. 1983. The Rotatoria-Monogononta of the River Drava in Slovenia, Yugoslavia. Hydrobiologia 104:229-230. <Address: Pedagogical Academy, University of Maribor, Koroska c. 160 62000 Maribor, YUGOSLAVIA> <Abstract: The Maibor section of the River Drava, dammed by two power stations, was sampled fortnightly between March 1970 and September 1976. Sixity-two species of rotifers were found in twelve locations comprising open water and vegetated areas -- from the author's introduction, Eds.>

Marozow, A.M. 1983. Thermal resistance and development rate of Brachionus calyciflorus Pall. in relation to temperature. Vyestsi Akad. Navuk BSSR Syer Biyal Navuk. 0(1):93-95. <Language: BYELORUSSIAN> <BIOSIS Abstract Number 26 17369.>

Marshall, J.S., Parker, J.I., Mellinger, D.L., and Lei, C. 1983. Bioaccumulation and effects of Cadmium and zinc in a Lake Michigan, USA, plankton community. Can. J. Fish. Aquat. Sci. 40(9):1469-1479. <Address: Ontario Ministry Envir., Dorset Res. Centre, Box 39, Dorset, Ontario, P0A 1E0, CANADA.> <BIOSIS Abstract Number: 77 63952: Secondary, indirect effects included significant increases of a few populations, including Bosmina and Keratella cochlearis, for Zn additions of 15 and 30 micrograms/L.>

Matlock, G.C. and Garcia, M.A. 1983. Stomach contents of selected fishes from Texas USA bays. Contrib. Mar. Sci. 26(0):95-110. <Address: Coastal Fish. Branch, Texas Parks and Wildlife Dep., 4200 Smith Sch. Rd. Austin, TX, 78744, USA> <BIOSIS Abrtract Number: 77 74103: Small fish also consumed rotifers.>

*46 Matveeva, L.K. 1983. Community structure of planktonic rotifers in a mesotrophic lake. Hydrobiologia 104:353-356. <Address: A.N> Severtsov Institute of Animal Evolutionary Morphology and Ecology, Academy of Sciences of the U.S.S.R., Leninskii pr., 33, Moscow, 117071, USSR> <Abstract: Seasonal changes of species diversity (H(sub r) and average spatial overlap (O(sub jk) of planktonic rotifers in a mesotrophic lake were examined with respect to their dependence on habitat diversity (H(sub h) and on a predator (Asplanchna herricki). H(sub r)was positively correlated with the density of A. herricki and with H(sub h). In the absence of A. herricki there was no correlation

between H(sub r) and H(sub h). O(sub jk) was negatively correlated with the density of A. herricki and with H(sub h); the correlation between O(sub jk) and H(sub h) was independent of the presence of the predator.>

Matveeva, L.K. 1983. Seasonal changes in numbers of planktonic rotifers and their vertical distributions. pages 37-61 In N.N. Smirnov (ed). Biocoenosises of the mesotrophic Lake Glubokoye. Nauka, Moscow, USSR. <Language: RUSSIAN> <Author's Abstract: During the period of 1965 to 1970 mesotrophic Lake Glubokoye (Moscow region) has undergone a 2-3 fold increase in Secchi disk transparency and change in water coloration (loss of yellow-brown color) without a change in primary production. Planktonic rotifers were studied in 1976-1978 and again in 1980. The following species, reported in the lake in 1951, were not found: Pompholyx sulcata and Trichocerca capucina. Species not reported in 1951, but found in 1976-1978, 1980 are: Gastropus stylifer, Synchaeta pectinata, Euchlanis dilatata, Ascomorpha ecaudis, and Asplanchna herricki. For the compared periods, density maxima of Kellicottia longispina, Keratella cochlearis, Polyarthra, and Conochilis "shifted" from the epilimnion to the metalimnion. Vertical distribution and seasonal changes in the population densities of Gastropus stylifer, Asplanchna priodonta, Polyarthra, Keratella cochlearis, K.hiemalis, Conochilus, Kellicottia longispina, and Filinia terminalis were also studied in 1979-1978, 1980.>

*39 May, L. 1983. Rotifer occurrence in relation to water temperature in Loch Leven, Scotland. Hydrobiologia 104:311-315. <Address: Institute of Terrestrial Ecology, 78 Craighall Road, Edinburgh, Scotland.> <Abstract: Many rotifer species in Loch Leven show a distinct seasonality in occurrence. This appears to be primarily an effect of temperature. While some species seem to be eurythermal, other species show a well-defined range of temperature preference, outside which they are unable to maintain populations. Within this range, there is a close correlation between food availability and rotifer abundance.>

LeMilinaire, C., Gatesoupe, F.J., and Stephan, G. 1983. Quantitative approach to N-3 long chain polyunsaturated fatty-acid requirement of Turbot larvae, Scophthalmus maximus. C.R. Seances Acad Sci Ser III Sci. Vie. 296(19):917-920. <BIOSIS Abstract Number:77 34118: Turbot larave were fed on rotifers (Brachionus plicatilis) which had been suplimented with fatty acids.>

*9 Minkoff, G., Lubzens, E., and Kahan, D. 1983. Environmental factors affecting hatching of rotifer (Brachionus plicatilis) resting eggs. Hydrobiologia 104:61-69. <Address: Israel Oceanographic and Limnological Research, Haifa, ISRAEL> <Hatching experiments were carried out on a population of Brachionus plicatilis (Dor strain) resting eggs produced in batch laboratory cultures under controlled conditions and then stored for

at least one month at 4 degrees C in the dark. Light was found to be obligatory for termination of dormancy. Over the temperature range of 10-30 degrees C (at 9.0 parts per thousand salinity), hatching was optimal (40-70%) at 10-15 degrees C and decreased linearly with the rise in incubation temperature. Resting eggs incubated over a salinity range of 9-40 parts per thousand (at 15 degrees C) showed optimal hatching at 16 parts per thousand. Incubation of resting eggs in distilled water permitted normal embryonic development, but neonates died at eclosion. Presence of algae, Chlorella stigmatophora (0.5 X 10E6 cells/ml), was found to aid hatching.>

*32 Miracle, M.R. and Vicente, E. 1983. Vertical distribution and rotifer concentrations in the chemocline of meromictic lakes. Hydrobiologia 104:259-267 <Address: Department of Ecology and Department of Microbiology, Faculty of Biological Sciences, University of Valencia, Burjasot, Valencia, SPAIN> <Abstract: The vertical distribution of planktonic rotifers has been analysed in relation to season in several meromictic lakes; a coastal lagoon with sea-water intrusion and three dissolution lakes from two karstic system. Two species Filinia hofmanni and a form of Anuraeopsis fissa have been found to be more or less restricted to the chemocline or adjacent strata any time they occurred. Many species common in the upper water layers developed large populations near or in the chemocline and more strikingly in summer. Some species had two vertical maxima (one in the surface or the chemocline and another near the chemocline), while others successively shifted their maxima between the upper layers and the chemocline. It is hypothesized that these rotifers are either very versatile or are differentiated as ecotypes, one of them adapted to the chemocline environment. This distribution in a peculiar fluctuating, anoxic, H2S-rich environment poses questions about the biology of those rotifers which there develop extraordinary populations.>

N

Nalepa, T.F. and Quigley, M.A. 1983. Abundance and biomass of the meiobenthos in nearshore lake Michigan USA with comparisons to the macrobenthos. J. Great Lakes Res. 9(4):530-547. <Address: Natl. Oceanic Atmospheric Adm., Great Lakes Environmental Res. Lab., 2300 Washtenaw Ave., Ann Arbor, Mich. 48104, USA.> <BIOSIS Abstract Number: 77 74115: The abundance of nematodes and rotifers was not consistently related to sampling depth.>

Neill, W.E. 1984. Regulation of rotifer densities by crustacean zooplankton in an oligotrophic montane lake in British Columbia, Canada. Oecologia. 61(2):175-181. <Address: Institute Animal Resources, Dept. Zoology, University of British Columbia, Vancouver, B.C. V6T 1W5, CANADA> <BIOSIS Abstract number 78 9870: To examine the relative demographic effects of predation and competition for food in rotifers during spring and summer in an

oligotrophic lake, predator and competition densities and food supplies were experimentally altered inside large enclosures. Abundances of rotifer species were prositively correlated with experimental densities of 4 th instar Chaoborus trivittatus larvae, a major crustacean predator in 1976. Experimental alteration of the densities of Daphnia rosea and Diaptomus leptopus and D. Kenai in 1978 produced highly significant increases in rotifer biomass only under Daphnia removal, but not under copepod removal. Inorganic fertilizer additions to enclosures in 1978 and 1979 revealed minimal rotifer increases unless pulsed additions were large or Daphnia were also excluded. Large demographic responses of rotifers to low fertilizer loading in the absence of Daphnia confirmed the pre-eminence of competitive food limitation in preducing rotifer scarcity in summer.>

Nelson, F.K., Albert, P.S.M., Riddle, D.L. 1983. Fine structure of the Caenorhabditis elegans secretory excretory system. J. Ultrastruct. Res. 82(2):156-171. <Address: Division of Biological Sciences, Tucker Hall, University of Missouri, Columbia, Mossouri, 65211, USA.> <BIOSIS Abstract Number: 76 72896: [The ultrastructural details of the secretory and excretory system of this nematode are discussed. Rotifer is a keyword which appears in the Biosystematic Codes - editors.]

Niebla, A.M.L., Rivera-Aquero, F. 1982. Mycological analysis of a faculative stabilization deposit of sewage of Almoloya Del Rio, State of Mexico. Rev. Latinoam. Microbiol. 24(1):59-67. <Address: Lab. Microbiology, Escuela Quimica, University Salle, Benjamin Franklin, Mexico 18, DF, MEXICO> <Language: SPANISH> <BIOSIS Abstract Number: 77 65088>

Nogrady, T. 1983. Some new and rare warm water rotifers. Hydrobiologia 106(2):107-114. <Address: See under news items> <BIOSIS Abstract Number: 77 68323: Two new rotifer species Lecane (=Monostyla) aliger sp. nov. and Proales pugio sp. nov. are described from the Bahama Islands, Florida and California, USA, and their autecology outlined. Some other rare rotifers are discussed which also prefer subtropical conditions. They are: Epiphanes clavulata, Epiphanes brachionus spinosus, Lecane crepida, and Proalided tentaculatus tentaculatus. The existence of subtropical rotifer associations is discussed and supported by ecological data.>

*18 Nogrady, T. and Alai, M. 1983. Cholinergic neurotransmission in rotifers. Hydrobiologia 104:149-153. <Address: Concordia University, Loyola Campus, Montreal, Quebec, CANADA.> <Abstract: The presence of acetylcholinesterase and choline acetyltransferase, enzymes involved in acetycholine metabolism, has been shown in twelve species of rotifers. Both enzymes have been visualized by histochemical staining in live animals, and acetylcholinesterase was also isolated by acrylamide gel electrophoresis. All the known ganglia of rotifers as well as some sensory nerve endings have been found to contain these

enzymes. Preliminary experiments aimed at the detection of norepinephrine and tyrosinase, an enzyme involved in catecholamine metabolism, were unsuccessful.>

O

Ovander, E.N. 1983. Seasonal succession of dominant Rotifera in a central Ukrainian water body, UUSR. Vestn Zool. 0(4):34-39. <Address: I.I. Shmalgauzen Inst. Zool. Acad. Sci UKR, SSR, Kiev, USSR.> <Language: RUSSAIN> <BIOSIS Absrtact Number: 78 9904: Twenty nine Rotifera species were recorded at the surface level of the littoral zone in June - September 1980. Seasonal frequency of occurrence was studied. The succession replacement of dominant species caused seasonal population patterns. Two distinct peaks were established. Qualitative and quantitative seasonal changes in Rotifera development are caused by biotic, as well as by abiotic facotrs. Food is the most significant factor; other factors affect seasonal successions indirectly.>

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DePaggi, S.J. 1982. Argintine Rotifera fauna. 3. Some new records for the country found in the PArana Medio River environments. Neotropica (La Plata) 28(80):117-124. <BIOSIS Abstract Number: 77 20138: Seven taxa of Rotifera Sinantherina spinosa, Testudinella reflexa, Testudinella greeni, Lecane stenroosi stenroosi, Ascomorpha klementi, Brachionus quadridentatus mirabilis, and Wolga spinifera are new records for Argentina. All the taxa are described and illustrated. T. greeni and W. spinifera are new records for Neotropical America.>

Pascula, E. and Yufera, M. 1983. Crecimiento en cultivo de una cepa de Brachionus plicatilis O.F. Muller en funcion de la temperatura y la salinidad. Investigacion Pesquera 47(1):151-159. <Address: Instituto de Investigaciones Pesqueras de Cadiz, Puerto Pesquero, S/N Cadiz.> <Language: SPANISH with ENGLISH Abstract> <From the Abstract: The influence of temperature and salinity on the population growth of a small-sized strain (Bs) of Brachionus plicatilis growing in culture has been studied. The range of values tested were 15 -43 degrees C for temperature and 0 -80 g/l for salinity. The populations of rotifers grew well between 20 and 40 degrees C. The highest instantaneous growth rates were obtained at 35 degrees C. The maximum densities and yields were attained at 30 and 35 degrees C. Therefore, this strain can be considered as a warm-water form. In cultures carried out at 24 degrees C, the highest instantaneous growth rates were found at salinities below 36 g/l, though gradually adapted rotifers can grow between 2 and 50 g/l of salt. It confirms that, as in other strains of this species, this rotifer is a euryhaline organism, with preference for mesohaline environments. The seasonal occurrence of natural populations in salt-ponds (SW Spain) during the summer and the results obtained on laboratory popualtions, suggest the adaptability of this organism to tropical environments. This characteristic allows its outdoor culture in this region with high

yields.>

Pejler, B. 1983. Zooplanktic indicators of trophy and their food. Nordic Symposium on forest water ecosystems, Farna, Sweden, Sept 28- Oct 2, 1981. Hydrobiologia 101(1-2):111-114.

*17 Plasota, K., Plasota, M., and W.J.H. Kunicki-Goldfinger. 1983. Macromolecular synthesis during embryogenesis of Habrotrocha rosa Donner I. replication of DNA. Hydrobiologia 104:147-148. <Address: Institute of Microbiology, University of Warsaw, Nowy Swiat 67,00-046 Warsaw, POLAND> <Abstract: DNA synthesis was inhibited during embryogenesis of Habrotrocha rosa with mitomycin C and hydroxyurea. Inhibition of DNA replication in early stages of embryogenesis, at the beginning of organogenesis, just after cavitation of the stomodeum, resulted in a complete inhibition of further development. After this stage of enbryogenesis development was insensitive to inhibition of DNA replication.>

Pourriot, R. 1983. Reproductive strategies in rotifers. C.R. Seances Acad. Sci. Ser. III Sci. Vie. 296(13):1109-1112. <Address: Lab. Zoologie, L.A. 258, 46, Rue d'Ulm, 75230 Paris, Cedex 05. FRANCE.> <BIOSIS Abstract number: 77 81981: Based on the data obtained in Brachionus calyciflorus and Notommata copeus, an interpretation is given of the reproductive strategies of rotifers which underlines the close dependence between the food supply and the demographic character.>

*26 Pourriot, R. and Snell, T.W. 1983. Resting eggs in rotifers. Hydrobiologia 104:213-224. <Address: see above> <Abstract: The biology of resting eggs of monogonont rotifers is reviewed, covering the literature published since the last major review by Gilbert (1974). The topics examined include resting egg production, morphology and species specificity, hatching, and evolutionary significance. Four major determinants of resting egg production are identified: mictic female production, male activity and fertility, female susceptibility to fertilization, and fertilized female fecundity. Recent work in these four areas is discussed as well as resting egg production in natural populations. Resting egg morphology, particularly shell structure and internal organization, is compared among species. Recent reports on the control of resting egg hatching in the laboratory are examined and the importance of temperature, light, diet, and salinity is reviewed. Two hatching patterns are contrasted, the first where eggs hatch at regular intervals over extended periods and the second where hatching is synchronized to some environmental cue. A latent period after resting egg formation, during which no hatching occurs, is defined for several species. The adaptive features of resting eggs are outlined including their contribution to genetic variability through recombination, their provision for environmental escape by dormancy, and their colonizing function resulting from their ease of dispersal. The type of cue utilized to initiate mictic female production as well as the pattern of resting egg hatching is related to environmental predictability.>

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*38 Radwan, S. and Paleolog, A. 1983. Notes on the rotifers of coal mine water in Eastern Poland. Hydrobiologia 104:307-309. (Address: Academy of Agriculture, Department of Zoology and Hydrobiology, Akademicka 13, 20-934 Lublin, POLAND) (Abstract: The species composition and quantitative structure of the rotifer fauna was investigated in a reservior containing coal mine water. Only nine, mainly planktonic species of rotifers, were found. Two of these were dominating: Brachionus angularis and B. rubens. They are typical indicators of eutrophic waters. Chlorides and sulfates may have an influence on the occurrence and quantitative structure of rotifer assemblages in the investigated reservior.)

Raisanen, G.A. and Applegate, R.L. 1983. Prey selection of Walleye, Stizostedion vitreum fry in an experimental system. Prog. Fish Cult. 45(4):209-214. (Address: Mammoth Creek Fish Hatchery, Hatch, Utah, USA(84735.) (BIOSIS Abstract Number: 78 26231: The rotifer Asplanchna sieboldi was selected against by fry of this fish. Brachiouns sp. was not eaten.)

*1 Ricci, C. 1983. Rotifera or Rotatoria?. Hydrobiologia 104:1-2. (Address: Dipartimento di Biologia, Laboratorio di Ecologia, Via Celoria 26, 20133, Milano, ITALY) (By the priority rule of nomenclature the correct name for the phylum is Rotifera - Eds.)

*21 Ricci, C. 1983. Life histories of some species of Rotifera Bdelloidea. Hydrobiologia 104:175-180. (Address: see above) (Abstract: Nine species of Rotifera Bdelloidea have been cultured under laboratory conditions. The species were collected from two different environments: one group from water courses, the other from terrestrial mosses. Life tables have been determined and population dynamics parameters have been calculated. The characteristics of the life history seem to be related to the natural environmental conditions of the species. The patterns of reproductive output may develop as adaptations to different selective pressures: species from unpredictable enviroments face the probability of leaving no young at all, while species from stable enviroments are less conservative in their energy budget. Life characteristics are discussed from the point of view of adaptive strategies.)

De Ridder, M. 1983. Ecological and biogeographical studies on rotifers from the Basse Casamance, Senegal, Africa. Rev. Hydrobiol. Africa 16(1):41-56. (Address: see below.) (BIOSIS Abstract Number: 77 60227: Rotifer content was studied in 4 sereis of samples. The first 3 series, collected in Dec. 1975 - Jan 1976, Dec 1976 - Jan 1977, and July - Aug 1977, were from salt, brackish, and freshwaters; the 4 th (Nov - Dec 1980) was from freshwater only. Repartition in the respective biotopes is given for the 143 taxa identified (129 to species level). Among these

species, 2 are new to science, 14 are new to Africa: Euchlanis meneta, Colurella sulcata, Lepadella apsida, L. pumilo, L. triba, L. amphitropis, L. heterodactyla, lecane hasta, Monommata dentala, Notommata glyphura, Trichocerca cavia, T. flagella, Dicranophorus uncinatus, Microcodon clavus and 113 are new to Senegal. Concerning geographical distribution, the species are divided into 4 gourps: cosmopolitan (81 sp.), thermophilous with large distribution (20), tropical-pantropical (20), limited amd/or insufficiently known distribution (6), and 2 new to science. Biogeographical data are given for a series not treated in a previous publication (De Ridder, 1981). The 2 new species (Testudinella kostei and T. subdiscoidea) are described and figured.>

De Ridder, M. 1984. A review of the rotifer fauna of the Sudan. Hydrobiologia 110(0):113-130. <Address: Zoological Institute, State Univeristy of Ghent, Ghent, BELGIUM.> <BIOSIS Abstract Number: 27 24182.>

Roper, D.S., Simons, M.J., and Jones, M.B. 1983. Distribution of zooplankton in the Avon Heathcote estuary, Christchurch, New Zealand. N.Z. J. Mar. Freshwater Res. 17(3):267-278. <Address: Department of Zoology, University of Canterbury, Christchurch 1, NEW ZEALAND> <BIOSIS Abstract Number: 77 74080: Two species of rotifer of freshwater origin were also found.>

*22 Ruttner-Kolisko, A. 1983. The significance of mating processes for the genetics and for the formation of resting eggs in monogonont rotifers. Hydrobiologia 104:181-190. <Address: Biological Station Lunz, Austrian Academy of Science, A-3293, Lunz a. See, AUSTRIA> <Abstract: Crossbreading experiments with three geographically distinct strains (E, S, and L) of the rotifer Brachionus plicatilis have been carried out in an attempt to elucidate the apparent male sterility of the strain L, which is unable to produce resting eggs. The nine crossing possibilities of the three stains have been investigated in 27 experiments. The results refute the concept of male sterility. L-males copulate successfully with mictic as well as amictic females of strains E and S. Fertilized amictic E and S females produce defective resting eggs, which have only one thin shell and which disintegrate after deposition. L-females cannot, as a rule, be fertilized. Moreover, crosses between strain E and S are successful only in one direction; the reciprocal crosses failed. To explain the present results a hypothesis is suggested that the thickness of the body wall of newborn females differs in the three stains, and between mictic and amictic individuals. A sequence of gradually increasing body wall thickness of all types of females involved, together with a comparably increasing penetration ability of the males of strain E, S, and L explains the success or failure of all crosses, including the unilateral corss E X S.>

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Sardella, L.D. and Carter, J.C.H. 1983. Factrors contributing to coexistence of Chaoborus flavicans and Chaoborus punctipennis Diptera Chaoboridae in a small meromictic lake. Hydrobiologia 107(2):155-164. (Address: Dept. Biology, Univ. of Waterloo, Waterloo, Ontario N2L 3G1, CANADA) (Abstract number 77 90216) (From the abstract: The fourth instar diet consists almost entirely of rotifers.)

Sartory, D.P. 1981. Some planktonic Brachionid rotifers from South African impoundments. J. Limnol. Soc. sth. Afr. 7(1):29-36. (Address: Hydrological Research Institute, Department of Water Affairs, Forestry and Environmental Conservation, Private Bag X313, Pretoria, Republic of South Africa.) (From the Abstract: From a survey of zooplankton samples from 73 South African impoundments, 16 species of rotifers of the family Brachionidae were identified. Of these eight were of the genus Brachionus and four of the genus Keratella. The most frequently encountered brachionid rotifers were Keratella tropica (found in 35 of the 73 impoundments), Brachionus calyciflorus (24 impoundments) and Brachionus falcatus (21 impoundments). All the species encountered are illustrated.)

Schiemer, F., Bobek, M., Gludovatz, P., Loeschenkohl, A., Zweimueller, I., and Martinetz. 1982. Trophic interactions in the pelagic zone of Lake Hafner, Carinthia, Austria. Oesterr Akad. wiss. Math-Naturwiss Kl. Sitzungsber. Abt. I. 191(5-10):209-230. (Address: Inst Zool. Univ. Wein, Althanstr. 14, AUSTRIA.) (BIOSIS Abstract number: 78 1991: from the abstract: The larvae of Chaoborus flavicans feed predominantly on Bosmina longirostris (76%) and rotifers (20%).

*19 Scott, J.M. 1983. Rotifer nutrition using supplemented monoxenic cultures. Hydrobiologia 104:155-166. (Address: Dunstaffnage Marine Research Laboratory, Oban, SCOTLAND) (Abstract: The evolution of rotifer feeding/nutrition studies is discussed together with their relevance to ecological observations. Aseptic conditions and initially synxenic cultures are regarded as a basis for nutritional work. The marine rotifer Encentrum linnhei requires the amino acid dl-tryptophane as a supplement to the food-alga Brachiomonas submarina. Observations on feeding rotifers in natural water samples, together with the morphology of their feeding mechanisms, show Encentrum to be an omnivore; a natural source of tryptophane is suggested. Vitamin B12 and thiamine requirements of Encentrum and Brachionus plicatilis are examined and evidence shown for the quantitative control of the former vitamine by the rotifer's food algae. Axenic cultivation of rotifers is discussed and restricted growth of Brachionus reported under such conditions.)

Seinhorst, J.W. 1982. The distribution of cysts of Globodera rostochiensis in small plots and the resulting sampling errors. Nematologica 28(3):285-297. (BIOSIS Abstract Number: 77 38324: The ediotrs do not have the BIOSIS keyword codes available to them

on this record. We assume that the keyword Rotifera is in the Biosystematic Code for this paper.>

*35 Serra, M. and Miracle, M.R. 1983. Biometric analysis of Brachionus plicatilis ecotypes from Spanish lagoons. Hydrobiologia 104:279-291. <Address: Departamento Ecologia, Fac. Ciencias Biologicas, Universidad de Valencia, Valencia, SPAIN> <Abstract: Univariate comparisons and several multivariate statistical analyses have been performed to study the morphometric variability of B. plicatilis. Both laboratory clones kept under constant conditions and natural populations from different Spanish lagoons and differenttimes of the year have been compared. The results show that not only size, but also allometric coefficients are influenced by environmental factors. However, an important genetic component in the variation of shape and size has been visualized. A clear North-South ordination of the population of the differnt lagoons and an important dispersion between their summer populations as well as great differences due to seasonal variation became apparent by the multivariate statistical analysis used.>

Sharapova, L.I. and Orolova, N.R. 1982. Zooplankton diurnal dynamics on the shore of the upper part of the Kapchagai Reservoir, Kazakh-SSr, USSR. Izv. Akakd. Nauk. Kaz-SSR ser Biology 0(4):36-41. <Language: RUSSIAN> <Address: S.M. Kirov Kaz State University, Alma-Ata, USSR.> <BIOSIS Abstract Number: 77 390: from the abstract: Zooplankton diurnal dynamics was studied in the Kapchagai Reservoir in April, June and August 1977. Taxa (78) were recorded including the following rotifer species: Brachionus diversicornis diversicornis, B. quadridentatus zernovi, Platyias quadricornis brevispinus, Dipleuchlanis propatula, Macrochaetus altamirai intermedius, Lepadella ovalis, Lecane cornuta, and L. c. rotunda. Horizontal and vertical movements of zooplankters were due to the diurnal rhythm of underwater illumination.>

*5 Sharma, B.K. 1983. The Indian species of the genus Brachionus (Eurotatoria: Monogononta: Brachionidae). Hydrobiologia 104:31-39. <Address: Department of Zoology, North-Eastern Hill University, Shillong-793014, INDIA> <The different species and infraspecific categories of the genus Brachionus, so far reported or described from India, are reviewed. Their distribution and taxonomic validity are discussed. Remarks are made on the ecology and epizoic nature of various species.>

Sharma, B.K. and Sharma, S. 1984. A note on some eurotatoria from Panjab State India. Hydrobiologia (109(3):279-282. <Address: Department of Zoology, North-eastern Hill University, Shillong - 793014, Meghalaya, INDIA.> <BIOSIS Abstract Number: 27 24180.>

Sharma, M.P. and Dattagupta, A.K. 1983. Response of some fresh water metazoans to DDT. Proc. Indian Acad. Anim. Sci. 92(1):19-30. <Address: Department of Zoology, Kurukshetra University, Kurukshetra 132 119, INDIA.> <BIOSIS Abstract Number:

77 63964: Asplanchna brightwelli reponded to higher concentrations of DDT with an LC50 as high as 2218 ppb.>

Shiel, R.J. 1983. The genus Brachionus (Rotifera: Brachionidae) in Australia with a description of Brachionus kostei new species. R. Soc. Victoria Proc. 95(1-2):33-38. <Address: see below> <BIOSIS Abstract Number: 77 36033: Brachionus kostei sp. nov. from waters of the Goulburn River, Victoria, is described and figured. It has affinities with the B. urceolaris group. B. forficula is also described and figured and is a new record for Australia. This Queensland species shows minor variations from the typical form. Species (22) and subspecies/varieties (22) of Brachionus from Australian waters are listed with known distributios.>

*6 Shiel, R.J. and Koste, W. 1983. Rotifer communities of billabongs in northern and south-eastern Australia. Hydrobiologia 104:41-47. <Address: Botany Department, University of Adelaide, Adelaide, S. AUSTRALIA> <Diversity and equitability of rotifer communities from billabongs (oxbows or cut-off meanders) in northern and southeastern Australia are compared. In both areas littoral taxa predominated in open water. Diversity values (Shannon-Wiener, H') were higher than recorded for tropical assemblages elsewhere. Up to 80 rotifers species co-occurred in Northern Territory billabongs. Brachionids notably were absent; there was an apparent displacement to tropical assemblages into temperate Australia.>

Siegfried, C.A. and Kopache, M.E. 1984. Zooplankton dynamics in a high mountain reservior of southern California, USA. Calif. Fish Game. 70(1):18-38. <Address: Biological Survey, N.Y.S. Museum Science Service, Albany, N.Y., USA.> <BIOSIS Abstract number: 77 82082: from the astract: The dynamics of the zooplankton community of eutrophic Big Bear Lake was studied from Dec. 1976 - Nov. 1978. The zooplankton community was dominated by the rotifer Keratella cochlearis in the spring: the copepod Diaptomus franciscanus in early summer; and by the cladocerans Daphnia pulicaria and Ceriodaphnia quadrangula for the remainder of the year. Littoral rotifers, cladocerans, and copepods were commonly collected with the zooplankton, reflecting the shallow, weedy conditions of Big Bear Lake. Predator-prey and competitive interactions work to structure the zooplankton community composition while phytoplankton productivity and water quality conditions interact with these processes to determine population levels.

Skoptsov, V.G. and Krupennikova, T.V. 1982. Role of plankton feeding fish in the formation of the structure of a plankton community in a lake. Ekologiya 0(5):41-46. <BIOSIS Abstract Number: 77 17767: Qualitative and quantitative development of zooplankton was studied in Lake Bol'shoe. The principal zooplankton included Asplanchna herricki and other species.>

Sladecek, V. 1983. Rotifers as indicators of water quality. Hydrobiologia 100(0):169-202. <Address: Department of Water Technology, Trojanova 13, Prague 2, CZECHOSLOVAKIA> <BIOSIS Abstract Number: 26 62290: no abstract available>

Snell, T.W., Bieberich, C.J., and Fuerst, R. 1983. The effects of green and blue-green algal diets on the reproductive rates of the rotifer Brachionus plicatilis. Aquaculture 31:21-30. <Address: Division of Science, University of Tampa, Tampa, Florida 33606, USA.> <Abstract: The reproductive rate of the rotifer Brachionus plicatilis cultured on a variety of diets was investigated. Uniagal and mixed diets of the green alga Chlorella and the blue-green alga Schizothriz were compared. Rotifer reproductive rate was found to be an average of 2.7 times higher on a mixed diet of Chlorella and Schizothrix than on either Chlorella or Schizothrix as a unialgal diet. Enhancement of rotifer reproductive rate was not observed on a mixed diet of Chlorella and Dunaliella compared with a unialgal diet of Chlorella. Ingestion of Schizothrix was shown not to be required for enhancement of rotifer reproduction. It was further shown that the enhancing factor is a heat labile substance.>

Snell, T.W., Burke, B.E., and Messur, S.D. 1983. Size and distribution of resting eggs in a natural population of the rotifer Brachionus plicatilis. Gulf Res. Rep. 7(3): 285-288. <Address: See above> <BIOSIS Abstract Number: 26 64124: no abstract is available>

Snell, T.W. and Carrillo, K. 1984. Body size variation among strains of the rotifer Brachionus plicatilis. Aquaculture 37(4):359-368. <Address: see above> <BIOSIS Abstract Number: 78 28030: An investigation of body size variability among 13 strains of the rotifer B. plicatilis was conducted under controlled laboratory conditions. Lorica lenghts ranged from 123-292 micrometers and lorica widths from 114-199 micrometers. An 85% increase in lorica length was recorded as females grew from birth to adulthood. Manipulation of rotifer size by culture conditions was investigated for various salinities, diets, and temperatures. In extreme cases, diet and salinity produced a 15 % and 11% change in lorica lenght, respectively. A factorial ANOVA analysis of variance of temperature X salinity X stain effects demonstrated that strain is the most important factor determining lorica size.>

Snell, T.W. and Hawkinson, C.A. 1983. Behavioral reproductive isolation among populations of the rotifer Brachionus plicatilis. Evolution 37(6):1294-1305. <Address: see above> <BIOSIS Abstract Number: 77 76184: Behavioral reporductive isolation among populations of the brackish-water rotifer Brachionus plicatilis is examined from a variety of perspectives. Male mating preferences differ between spatially separated populations from the same local area and geographically separate populations from different biogeographical regions. No mating preferences could be detected among temporally separated

populations from the same bay. An examination of male and female contributions to this behavioral reproductive isolation revealed that each sex makes an approximately equal contribution. As predicted by several authors, a comparison of sympatric and allopatric populations showed that sympatric populations were more strongly isolated than allopatric ones. Asymmetries in male mating preferences were recorded among several populations. These asymmetrical mating preferences are discussed with regard to current theory and an alternative explanation is proposed.)

*50 Starkweather, P.L. and Kellar, P.E. 1983. Utilization of cyanobacteria by Brachionus calyciflorus: Anabaena flos-aquae (NRC-44-1) as a sole or complementary food source. Hydrobiologia 104:373-377. (Address: Department of Biological Sciences, University of Nevada, Las Vegas, NV, 89154, USA) (Abstract: The rotifer Brachionus calyciflorus can utilize the cyanobacterium Anabaena flos-aquae as either a sole or supplementary food source in a laboratory culture. positive population growth rates accompany food densities of 10 or 100 micrograms dry weight/ml, but slightly negative rates are found at a lower density (1.0 micrograms/ml). These results are consistent for rotifers feeding on two strains of A. flos-aquae, UTEX-1444 and NRC-44-1, with slightly enhanced survivorship and reproduction with the latter food. A 1:1 mixture (by dry weight) ot Euglena gracilis and A. flos-aquae (NRC-44-1) produces survivorship comparable to that of control rotifer cohorts fed E. gracilis alone, but elicits significantly greater fecundity and population growth rates than found with the control food suspension at the same biomass density.)

*33 Stenson, A.E. 1983. Changes in the relative abundance of Polyarthra vulgaris and P. dolichoptera, following the elimination of fish. Hydrobiologia 104:269-273. (Address: University of Goteborg, Department of Zoology, Box 25059, S-400 31 Goteborg, SWEDEN) (Abstract: Two rotifers, Polyarthra vulgaris and P. dolichoptera, may have different temeprature and oxygen optima. In addition, they consume similar foods including Chryptomonadales and Crtsomonadales, P. dolichoptera disappeared from the plankton after experimental elimination of fish from a small lake. This disappearance may have been caused by a change in temporal availability of suitable food species (e.g. crysomonads) during early spring. A lack of food during this peroid, when the water was still cold, may have influenced the competitive balance between the two Polyarthra species.

Storch, V., Staehlin, W., and Juario, J.V. 1983. Effect of different diets on the ultrastructure of hepatocytes of Chanos chanos fry (Chanidae, Teleostei): an electron microscopic and morphometric analysis. Mar Biol (Berl.) 74(1):101-104. (Address: Zoologisches Institute, University im Neuenheimer Feld 230, 6900, Heidelberg 1, FEDERAL REBUBLIC GERMANY.) (BIOSIS Abstract Number: 76 86241: The hepatocytes of milkfish fry offered different arificial diets (carbohydrates-, lipid-, protein-orientated) and

live food (Artemia sp., Brachiouns plicatilis) differ considerably both qualitatively and quantitatively as was shown by means of transmission electron microscopy and planimeter. Food deprivation, also, resulted in ultrastructural alterations of milkfish fry hepatocytes. Thus, this cell types might be used as an indicator of quality and quantity of food in teleosts.>

Strel'nikova, A.P. and Ivanova, M.N. 1982. Smelt, Osmerus eperlanus, (Osmeridae) feeding in the Rybinsk Reservoir, RissianSFSR< USSR, during early ontogeny. Vopr. Ikhtiol. 22(3):401-407. <Language: RUSSIAN> <BIOSIS Abstract Number: 76 78744: On the first days of changing to external feeding, smelt larvae used only Rotifers and juvenile Copepoda.>

Sudzuki, M. 198?. Protozoans in the marine beach interstices IX. psammobiont Testacea from Abidjan, Cote d'Ivoire, West-Africa. Japanese J. Protozoology 16(1):8. <Language: JAPANESE> <The editors are unsure of the correct date of this publication.> <Address: see below.>

Sudzuki, M. 1983. Incertae Sedis. I. Strange Animalcules from a garden pond in Penang, Malaysia. Hihon Daigaku 15:173-176. <Address: see below.>

*44 Sudzuki, M., Watanabe, K., Suzuki, K., and Narita, K. 1983. Occurrence of Rotifera in the field under natural and intentionally-changed conditions. Hydrobiologia 104:341-347. <Address: Biological Laboratory, Nihon Diagaku-University, Omiya-shi, Saitama-ken, JAPAN> <Abstract: A comparison of popluation dynamics under conditions with those under intentionally-changed ones was carried out at one Lake and five outdoor pools. In Lake Numasawa, dominant rotifers under natural conditions for the past two years were Polyarthra triqla, Kellicottia longispina, Ploesoma truncatum, Asplanchna priodonta, and Filinia longiseta. Keratella hiemalis, K. cochlearis, K. valga tropica, Brachionus caudatus, and Ascomorpha saltans appeared sporadically. Three months after the start of circulation of part of the lake water by a water power plant no remarkable changes were observed as far as the seasonal and vertical distribution of dominant rotifers are concerned. In five pools with different kinds and ratios of covering by such macrophytes as Eichornia and Lemna or reed screen, three types of rotifer communities were found. Type I: in which both densities and frequencies were generally reduced in proportion to the ratio of covering either with macrophytes or reed screens. Type II: in which densities and frequences were increased by covering either with macrophytes or reed screens. Type III: in which no precise correlation was found between occurrences of the rotifers and ratio of covering.>

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Taggart, C.T. 1984. Hypolimnetic aeration and zooplankton distribution: a possible limitation to the restoration of cold

water fish production. Can. J. Fish. Aquat. Sci. 41(1):191-198. <Address: Department of Biology, McGill University, 1205 Avenue Docteur Penfield, Montreal, Quebec, CANADA, H3A 1B1.> <BIOSIS Abstract Number: 78 26267: The rotifer Filinia longiseta was the only zooplankter present, as isolated populations, in both the epilimnion and hypolimnion during the summer.>

*49 Threlkeld, S. 1983. Empty loricas and the dynamics of Kellicottia longispina in a subalpine, oligotrophic lake. Hydrobiologia 104:367-372. <Address: Biological Station, University of Oklahoma, Kingston, OK, 73439, USA.> <Abstract: The seasonal dynamics of Kellicottia longispina in Lake Tahoe and an isolated embayment of Lake Tahoe, Emerald Bay, were investigated for an 18-month period in 1977-79. Population birth and death rates were similar in the two systems, although productivity and Mysis relicta densities were higher in Emerald Bay. The timing of population changes were also similar. A major population increase in late winter 1978 was preceded by an increase in egg ratio; the subsequent spring decline of K. longispina was concurrent with decreased birth rates and increased death rates. Empty loricas of K. longispina were occassionally abundant in the plankton samples and seemed to result from K. longispina deaths when densities were high and when egg ratios were declining; it is possible that population senescence was responsible for the high densities of empty loricas observed. A potentially important predator, M. relicta, defecates K. longispina remains in compact fecal pellets; however, it is unlikely that the observed empty loricas resulted from Mysis-related deaths.>

Tseng, W.Y. and Poon, C.T. 1983. Hybridization of Epinephelus sp. Aquaculture 43(1-2):177-182. <Address: Marine Science Laboratory, Department of Biology, Chinese University of Hong Kong, Shatin, N.T. Hong Kong.> <BIOSIS Abstract Number: 26 1737; no abstract is available to the editors. The keyword "Rotifera" is found in the descriptors and Biosystematic codes for this paper.>

Tzean, S.S. and Barron, G.L. 1983. A new predatory Hypomycete capturing bdelloid rotifers in soil. Can. J. Bot. 61(5):1345-1348. <Address: Institute Botany, Academia Sinica, Taipei, TAIWAN.> <BIOSIS Abstract Number: 77 49126: Cephaliophora naviculoris sp. nov., a hypomycete capable of capturing bdelloid rotifers by using specialized adhesive pegs, is described. Canoe-shaped conidia are produced synchronously on ovoid- to club-shaped ampullae theat arise more or less directly from the vegetative hyphae. In the presence of rotifers conidia develop short, adhesive appendages by which they attach to the host cuticle. After adhesion, germination and penetration occur and tortuous assimilative hyphae develop in the host. Vegetative hypahe from parasitized rotifers break out to the exterior and produce adhesive pegs which catch additional rotifers.>

*34 Tzschaschel, G. 1983. Seasonal abundance of psammon rotifers. Hydrobiologia 104:275-278. <Address: Institut fur Biologie II (Zoologie) der RWTH Aachen, Kopernikusstr. 16, D-5100 Aachen, FRG> <Abstract: Zonation and abundance dynamics of interstitial rotifers in a semilotic beach of the North Sea island of Sylt were studied in 1975/76. The 13 species investigated prefer the damp sand of the beach slope. The sand flat is only sparsely inhabited. Rotifers only live in oxygen-rich sands. Neither the black sulphite layer in the sand flat nor the groundwater in the beach slop is populated. The family Colurellidae perfers warm temperatures in mid-summer, the family Proalidae colder temperatures in spring and autumn. Incontrast to these two families that can be found in different frequences all year round, the family Dicranophoridae occurs only in the cold seasons and disappears in mid summer. Possibilities of maintaining the life cycle during these months are discussed.>

U

Unger, P.A. and Lewis, W.M., Jr. 1983. Selective predation with respect to body size in a population of the fish Xenomelaniris venezuelae, Atherinidae. Ecology 64(5):1136-1144. <BIOSIS Abstract Number: 77 25902: The smallest fish selected the rotifer Brachionus calyciflorus as food.>

V

Vancil, J.E. 1983. A method for the laboratory culture of the planktonic rotifer Keratella cochlearis. Hydrobiologia 107(1):47-50. <Address: Dept. Natural Sciences and Mathematics, Texas College, Tyler, TX 75702, USA> <Abstract number 77 84095> <From the abstract: Procedures for the continuous laboratory culture of K. cochlearis in a defined medium and upon an algal food are described. Culturing success appers to be a function of food availability as well as composition. This availability requirement is satisfied by the use of test tubes and inverted titration plate concavities as culture vessels. The satisfactory culture medium contains an NH3 compound as a N source.>

Vareschi, E. and Jacobs, J. 1984. The ecology of Lake Nakuru, Kenya. 5. Production and consumption of consumer organisms. Oecologia 61(1):83-98. <Address: Zool. Inst of the University of Muenchen, Seidlstr. 25, D-8000 Muenchen 2, FDR.> <BIOSIS Abstract number: 77 90297: from the abstract: Rotifers (Brachionus dimidiatus and B. plicatilis), although not especially significant in biomass, had the highest production rates (1.7 kJ/cubic m/day) due to a very short juvenile phase (circa 2 days) and fast production of very large eggs (~ 1/day). Consumption rates were corresponding high (11.3 kJ/cubic m/day), comparable only to those of the lesser flamingo. Copepods almost matched rotifers in 1972/1973, but vanished from the lake in the following years.>

Vareschi, E. and Vareschi, A. 1984. The ecology of Lake

Nakuru Kenya. 4. Biomass and distribution of consumer organisms. Oecologia 61(1):70-82. <Address: Zool. Inst. of the Univ. of Muenchen, Seidlstr 25, D-8000 Muenchen 2, FRG.> <BIOSIS Abstract number: 78 1959: from the abstract: Brachionus plicatilis and Brachionus dimidiatus were both found.>

Vodopich, D.S. and Cowell, B.C. 1984. Interaction of factors governing the distribution of a predatory aquatic insect. Ecology 65(1):39-52. <Address: Biology Department, Baylor University, Waco, Texas, 76798, USA.> <BIOSIS Abstract number 77 90226: from the abstract: Feeding selectivity by Procladius culiciformis was positive for chironomids, ostracods, and cladocerans, and negative for rotifers.>

Vollestad, L.A. 1983. Distribution, growth, and food or roach, Rutilus rutilus fry in the eutrophic Lake Arungen, Southeast Norway. Fauna (Oslo) 36(1):18-24. <BIOSIS Abstract Number 77 25373: Rotifers increased in importance during summer and autumn.>

W

*51 Wallace, R.L. and Starkweather, P.L. 1983. Clearance rates of sessile rotifers: In situ determinations. Hydrobiologia 104:379-383. <Address: Biology Department, Ripon College, 300 Seward Street, Ripon, WI 54971-0248, USA.> <Abstract: Clearance rates of three sessile and four free-swimming rotifer species from a small acid bog-pond were measured using in situ techniques. Three radioactively labeled cell types, an alga (Chlamydomonas), a bacterium (Enterobacter = Aerobacter), and a yeast (Rhodotorula) were used as tracers. Clearance rates (using yeast) ranged from < 1.0 to > 250 microliters/animal/h depending on species. Ptygura crystallina, Ptygura pilula, Floscularia conifera, and an unidentified bdelloid ingested all three foods with substantial variation in clearance rates among species and cell type. There was an insignificant error (<0.3%) in clearance rate associated with non-ingestive uptake of radioactivity. Among the free-swimming taxa, Lecane sp. had a clearance rate of <0.5 microliters/animal/h on yeast, while another Lecane sp. and Trichotria tetractis did not ingest that cell type.>

Walz, N. 1983. Individual culture and experimental population dynamics of Keratella cochlearis, Rotatoria. Hydrobiologia 107(1):35-46. <Address: Zool. Inst. Univ. Muenchen, Seidlstr. 25, D-8000 Muenchen 2, FRG.> <BIOSIS Abstract number: 77 84094: A new culture method for K. cochlearis made it possible to study isolated animals and to investigate the population dynamics of his pelagic rotifer species. The duration of principal developmental stages diminishes continuously with temperature. Decreased survival was associated with a reduced duration of individual fecundity. The age distribution of the population shifted toward younger age intervals with higher temperatures. Growth rates had an optimum at 15 degrees C; the population dynamics, while lower for K. cochlearis than for some

other rotifers, agreed well with field data.>

Walz, N. 1983. Continuous culture of the pelagic rotifers Keratella cochlearis and Brachionus angularis. Arch. Hydrobiol. 98(1):70-92. <BIOSIS Abstract Number: 77 35810: Continuous cultures of K. cochlearis and B. angularis were held in a 2 stage chemostat. No steady state was achieved. While Keratella reached higher individual densities than Brachionus its filtration rate and its maximal birth rate, which in both species depended on food input, was much lower. Keratella better used the ingested energy for its reproduction. In contrast to the r-strategist Brachionus, Keratella was a K-strategist. The relation of data from continous cultures to field study data was discussed.>

Watanabe, T. Tamiya, T., Oka, A., Hirata, M., Kitajima, C., and Fujita, S. 1983. Improvement of dietary value of live foods for fish larvae by feeding them on omega-3 highly unsaturated fatty-acids and fat soluable vitamins. Bull. Japan. Soc. Sci. Fish. 49(3):471-480. <Address: Laboratory Fish Nutrition, Tokyo University, Fisheries, Konan 4, Minato, Toyko 108, JAPAN.> <BIOSIS Abstract Number: 76 79042: Experiments were conducted to improve the dietary value of live foods, such as rotifers, Artemia nauplii and Moina, by allowing them to feed on omega-3 HUFA (highly unsaturated fatty acid) and fat soluble vitamins by the direct method. In experiments conducted on a small scale, rotifers were found to take up lipids very easily from the emulsion. The direct method was effective for improving the dietary value of live foods in the same manner as the indirect method.>

Watkins, C.E., Shireman, J.V., and Haller. W.T. 1983. Influence of aquatic vegetation upon zooplankton and benthic macroinvertebrates in Orange Lake Florida, USA. J. Aquat. Plant Manage. 21(2):78-83. <Address: Center Aquatic Weeds, 7922 N.W. 71 St. Gainesville, FL, USA 32601.> <BIOSIS Abstract Number: 78 26078: Rotifers were found in the non-vegated limnetic area of this study.>

Williamson. C.E. 1983. Behavioral interactions between a cyclopoid copepod predator and its prey. J. Plankton Res. 5(5):701-712. <Address: Department of Biology, Williams Hall No.31, Lehigh University, Bethlehem, PA, 18015, USA> <BIOSIS Abstract Number: 77 66066: Behavioral observations on the predatory interactions between Mesocyclops edax and several different types and sizes of prey revealed that prey size alone was less important than other specific morphological and behavioral characteristics of the prey in deterring successful predation by the copepod. The behavioral reponses of Bosmina and Asplanchna to an attacking copepod were passive and consisted of a simple retraction of the vulnerable swimming appendages which made the prey more difficult to grasp. Daphnia and Diaphanosoma exhibited very active swimming escape responses. Topocyclops usually avoided M. edax by fleeing before the larger predator could detect them. The hard carapaces of Daphnia, Bosmina, and Keratella were

effective at reducing ingestion following capture by M. edax. The results of these behavioral observations were supported by enclosure experiments in which the predator was offered a choice between two prey simultaneously. Cyclopoid copepods are capable of successfully attacking, capturing and ingesting prey organisms several times their own body length. Although size alone may influence the preference of cyclopoid copepods on large and small individuals of the same prey species, it is not a dependable determinant of the preference of cyclopoids on multispecific prey assemblages.>

*52 Williamson, C.E. 1983. Invertebrate predation on planktonic rotifers. Hydrobiologia 104:385-396. <Address: Department of Biology, Lehigh University, Bethlehem, PA 18015, USA> <Abstract: Representatives from many taxa including the Protozoa, Cnidaria, Rotifera, Cladocera, Cyclopoida, Calanoida, Harpacticoida, Chaoborida, and Mysidacea are reported to feed on rotifers. There are few good quantitative data on predation on rotifers by any of these taxa with two exceptions, Rotifera and Cyclopoida. The present review focuses on the dynamics of Cyclopoid copepod predation. Intense and selective cyclopoid copepod predation makes it an important factor to consider in studies of the population ecology and community structure of rotifer populations. Limited information available on other predatory invertebrate taxa suggest that rotifer production may contribute extensively to their diets.>

*25 Wurdak, E. 1983. Sensory receptors involved in the feeding behavior of the rotifer Asplanchna brightwelli. Hydrobiologia 104:230-212. <Address: Laboratoire d'Histologie et Biologie Tissularire, L.A. C.N.R.S. 244, Universite Lyon I, 69622 Villeurbanne, FRANCE> <Abstract: A study of the anterior sensory receptors of male and female Asplanchna brightwelli by scanning electron microscopy reveals some important differences in the region surrounding the mouth. In the male, the ventrolateral sensory bristles, the pseudotrochus, the inner and the outer buccal tufts and the mastax receptors are absent. The oral receptors are reduced. Transmission electron microscopy of these receptors shows that they consist of ciliated sensory cells surrounded by epithelial supporting cells. The distal ends of the cilia of the mastax receptors are modified; the cilia of the other receptors differ only in their length and rootlet structure from the locomotor cilia of the cingulum. A consideration of the feeding behavior of Asplanchna leads us to suppose that these sensory cilia function in mechanoreception and in chemoreception.>

X

Y

Yamasaki, S. and Hirata, H. 1982. An electrode respirometer for planktonic organisms. Mem. Fac. Fish. Kagoshima, Univ.

31(0):141-144. ‹BIOSIS Abstract Number: 77 42153: To determine the respiration rates of planktonic organisms, an electrode respirometer was devised. The animal used in this experiment was the mixohaline rotifer, Brachionus plicatilis. The dissolved 02 meter and penrecorder empolyed here were the YSI-57 and YEW-3046, respectively. A 200 ml glass bottle was used as a respiration chamber. The bottle was horizontally set on a shaker which was rotated with a semi-circular motion. The 02 electrode and flow-through pipes were fixed on the neck of the chamber with a rubber stopper. Filtered water was poured into the respiratory chamber by a peristaltic pump, at a rate of 10 ml/min for 30 min; and stagnant status was maintained for another 80 min. This procedure was repeated every 100 min. Apparent rate of 02 comsumption was observed by the difference of maximum and minimum amounts of 02 content during the stagnant status. Blank tests without the animals in the chamber, were also conducted. Actual rate of the 02 consumption by the animals was then recalculated by the balance of those 2 results. This apparatus could be applied for determination of respiration rate in planktonic organisms, fish eggs, larave, and BOD (biological 02 demand) in culture water.›

Yufera, M. and Pascual, E. 1980. Estudio del rendimiento de cultivos del rotifero Brachionus plicatilis O.F. Muller alimentados con levadura de panificacion. Inv. Pesq. 44(2):361-368. ‹Address: Instituto de Investigaciones Pesqueras de Cadiz, Puerto Pesquero, S/N, Cadiz, SPAIN› ‹Language: SPANISH with ENGLISH summary› ‹Summary: [Yield studies on mass culture of the rotifer Brachionus plicatilis O.F. Muller fed with bread yeast.] -- This study shows the yield obtained in mass culture of the rotifer Brachionus plicatilis fed with caked bread yeast, either alone or with addition of the algae Nannochloris sp. strain B-3. The daily supplies of yeast tested ranged between 0.14 and 0.5 grams/liter. In the mixed cultures, the initial cellular concentration of algae was 6 X 10 E6 cells/ml. The results are compared with those obtained with Tetraselmis suecica or Nannochloris sp. as the only source of food. The instantaneous growth rates (K) found in mixed cultures are lower than those shown by cultures fed only with Tetraselmis, and higher than those fed with Nannochloris (Fig. 1A). However, the maximum densities, rasing up 540 rotifers/ml and 63,733 rotifers/liter/day. It is due to a prolongation of the exponential growth phase, since there is no food limitation. This technique provides a controled mass culture of this rotifer, which can be maintained for a very long time, with high yields both at cost lower than that carried out with algal feeding.›

Yufera, M., Lubian, L.M., and Pascual, E. 1983. Efecto de cuatro algas marinas sobre el crecimiento poblacional de dos cepas de Brachionus plicatilis (Rotifera: Brachionidae) en cultivo. Investigacion Pesquera 47(2):325-338. ‹Address: Inst Investigaciones Pesqueras Cadiz, Puerto Pesquero, S/N Cadiz, SPAIN› ‹Language: SPANISH› [Effect of four species of marine algae on popluation growth of two strain of Brachionus plicatilis in

culture.] <BIOSIS abstract number 77 92237: Changes in instantaneous growth rate (K), maximum density (Dm), and yield (R) of two different size strains of B. plicatilis fed ad lib different food-levels of four microalgae species were determined. Both strains grow at very similar rates. K values remained constant for any cell concentration tested, but in a different range for each algae. When feeding on Nannochloropsis gaditana no growth occured at concentrations exceeding 25 - 40 X 10 E cells/ml. There was probably no food limitation even at lower cell concentrations tested. Dm and R increased hyperbolically with increasing initial concentration of Nannochloris oculata and N. maculata. The best yields were obtained with these species. When feeding on Nannochloris gaditana, Dm decreased at concentrations above 15 X 10 E6 cells/ml. No relation was found between initial cell concentration and rotifer production in cultures fed with Nannochloropsis oculata. S-1 strain shows lower Dm and R than Bs strain, but considering the biomass produced (micrograms dry weight), S-1 yields are highest.>

Yufera, M. 1982. Morphometric characterization of a small-sized strain of Brachionus plicatilis in culture. Aquaculture. 27:55-61. <Address: Instituto de Investigaciones Pesqueras de Cadiz, Puerto pesquero s/n, Cadiz SPAIN.> <Abstract: The evolution of size frequency distribution in populations of three strains (Bs, S-1, and UK) of Brachionus plicatilis growing in cultures fed with Nannochloris oculata has been studied. Also the size frequency distribution of Bs has been determined in a natural population sample and in the exponential growth phase of two cultures of this strain fed with Tetraselmis suecica and Nanochloris maculata, respectively. For morphometric characterization of these rotifer strains the anterior medial spine length to body length relatioship was examined. The results show a clear difference between the Bs strain and the two other strains in frequency distribution and range of size. At the end of the exponential phase S-1 and UK strains when cultures with Nannochloris oculata, could supply only 1% or 2% of individuals smaller than 150 micrometers, while Bs strain could supply 80%. The Bs strain covers a range below 150 micrometers and may be appropriate as early food in the large-scale rearing of some marine species.>

Yte, W.A., Rey, J., and Pourriot, R. 1983. Zooplankton population of a reservoir on the Ivory Coast. Ann. Linmol. 19(1):3-8 <Address: Inst. d'Ecology Tropicale, 08 BP 109, Abidjan 08, IVORY COAST.> <Language: FRENCH> <BIOSIS Abstract number 77 92515: The zooplnakton population of lake Ayame consists of 45 species or subspecies: 26 rotifers, 15 cladocerans, 4 copepods. Of these, 18 species are new for the Ivory Coast, including the following rotifers: Epiphanes clavalata, Mytilina bisilcata, Mytilina trigona, Platyias leloupi, Gastropus stylifer, Synchaeta tremula, Filinia longiseta, Filinia opoliensis, Conochilus sp., and Conochiloides dossuarius.

Z

Zankai, N.P. 1983. The predatory activity of Cyclops vicinus, copepoda, on the zooplankton of lake Balaton, Hungary. Allattani Kozl. 70(1-4):99-112. <Address: see below> <Language HUNGARIAN> <BIOSIS Abstract number 77 90307: from the abstract: The Ivlev selection index, with respect to Rotatoria [sorry Claudia, that's what the abstract says], had a negative average. Females with eggs showed a weakly positive selection toward Copepoda. For the most common zooplankton in the lake the selection for Keratella cochlearis was always negative.>

Zankai, N.P. 1984. Predation of Cyclops vicinus, (Copepoda: Cyclopoida) on small zooplankton animals in lake Balaton, Hungary. Arch. Hydrobiol. 99(3):360-378. <Address: Balaton Limnol. Res. Inst., Hungarian Acad. Sci., Tihany, HUNGARY> <BIOSIS Abstract Number: 78 25960: The impact of predation by adults of C. vicinus (females, ovigerous females, males) on small zooplanktors (rotifers, copepods) was investigated from autumn to summer. The predator ingested every kind of food, and the predation rate exhibited seasonal differences.>

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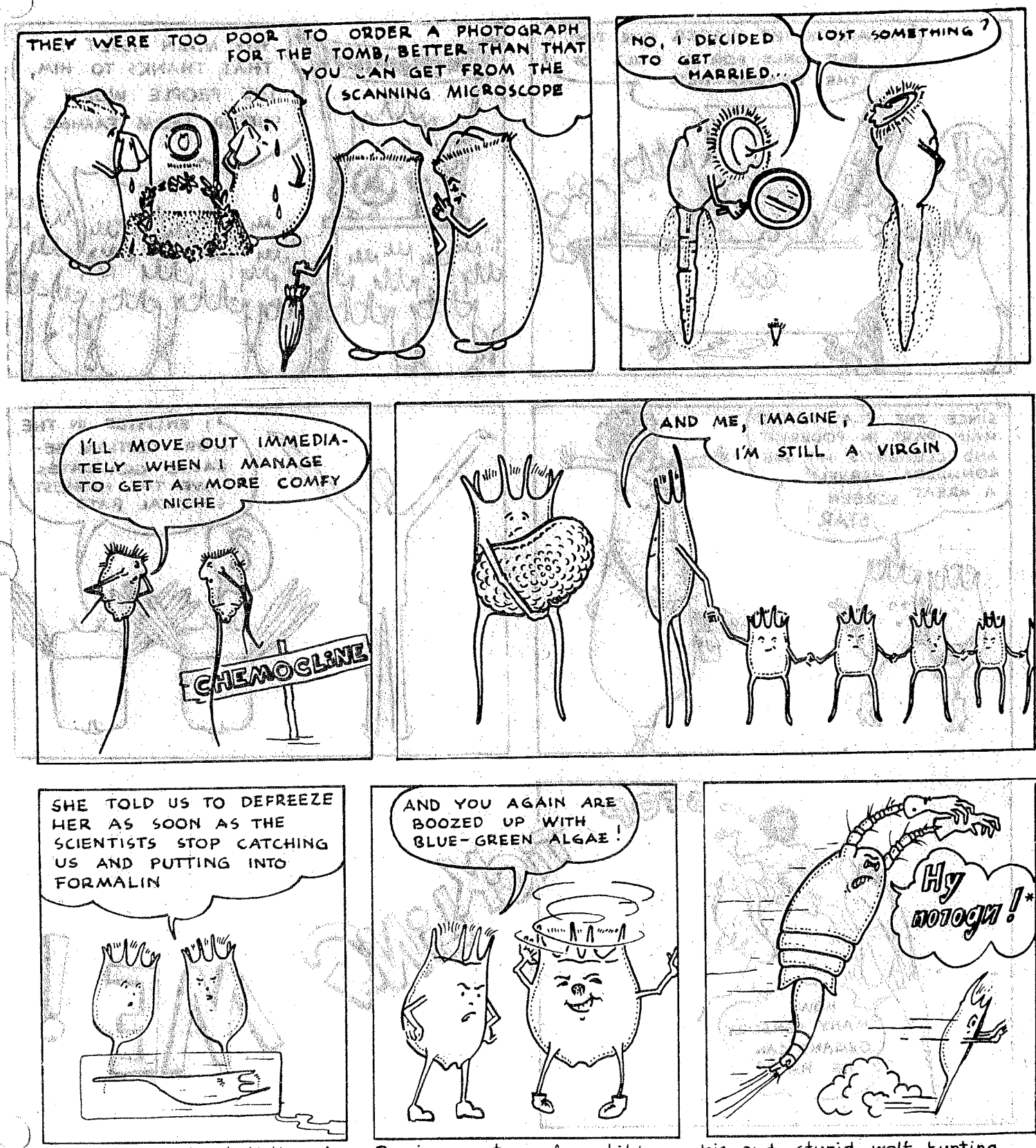
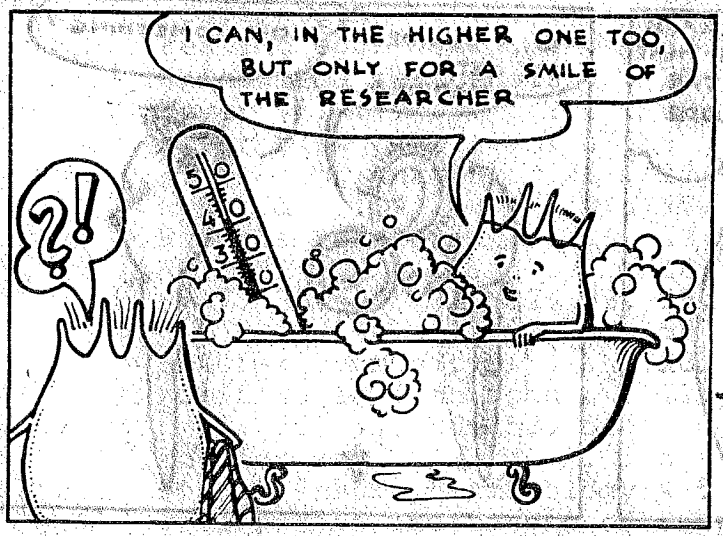
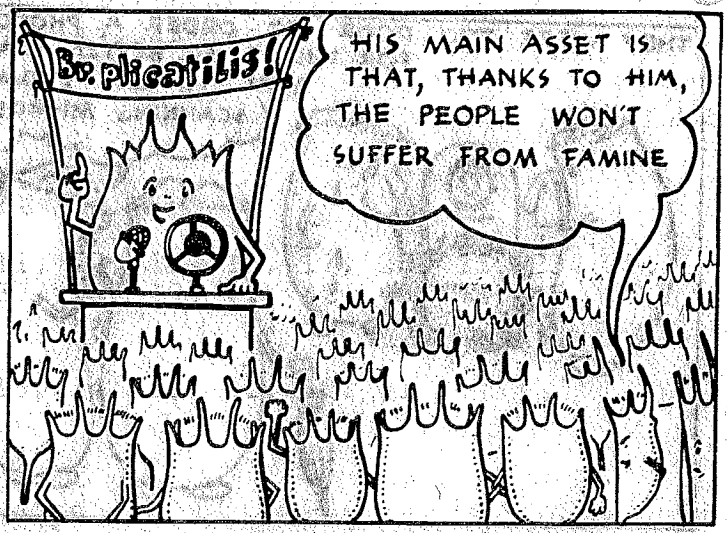
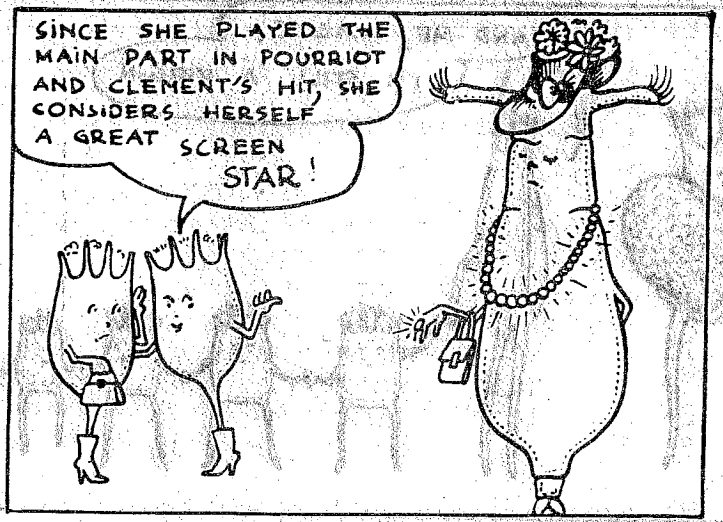
Unfortunately, the page numbers indicated here are only approximately correct. Usually the reference will appear within +/- one page of the page number given below.

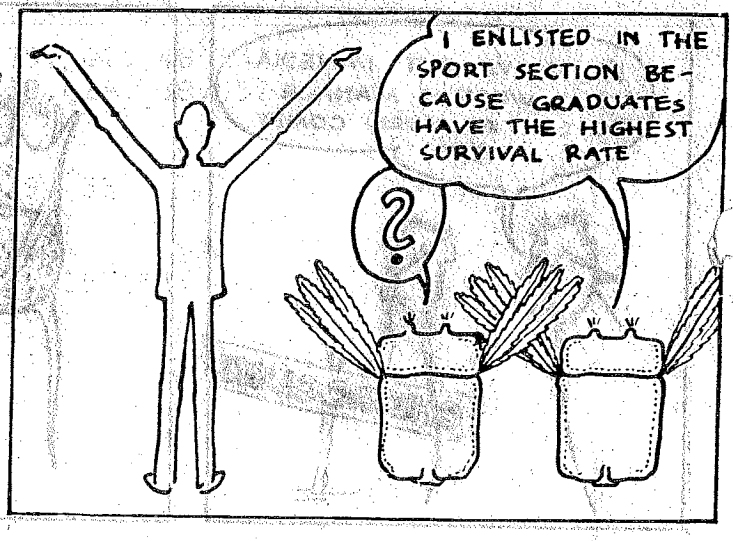


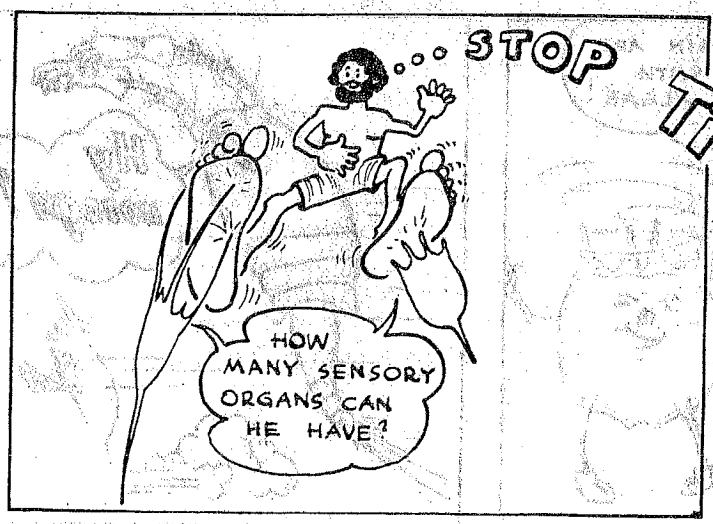
* WAIT AND SEE ! (title of a Russian cartoon for children - big and stupid wolf hunting a small but clever rabbit)


I CAN, IN THE HIGHER ONE TOO, BUT ONLY FOR A SMILE OF THE RESEARCHER
?!


Dr. plicatilis!
HIS MAIN ASSET IS THAT, THANKS TO HIM, THE PEOPLE WON'T SUFFER FROM FAMINE


SINCE SHE PLAYED THE MAIN PART IN POURRIOT AND CLEMENT'S HIT, SHE CONSIDERS HERSELF A GREAT SCREEN STAR!


I ENLISTED IN THE SPORT SECTION BECAUSE GRADUATES HAVE THE HIGHEST SURVIVAL RATE
?


STOP TICKLING ME!
HOW MANY SENSORY ORGANS CAN HE HAVE?

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