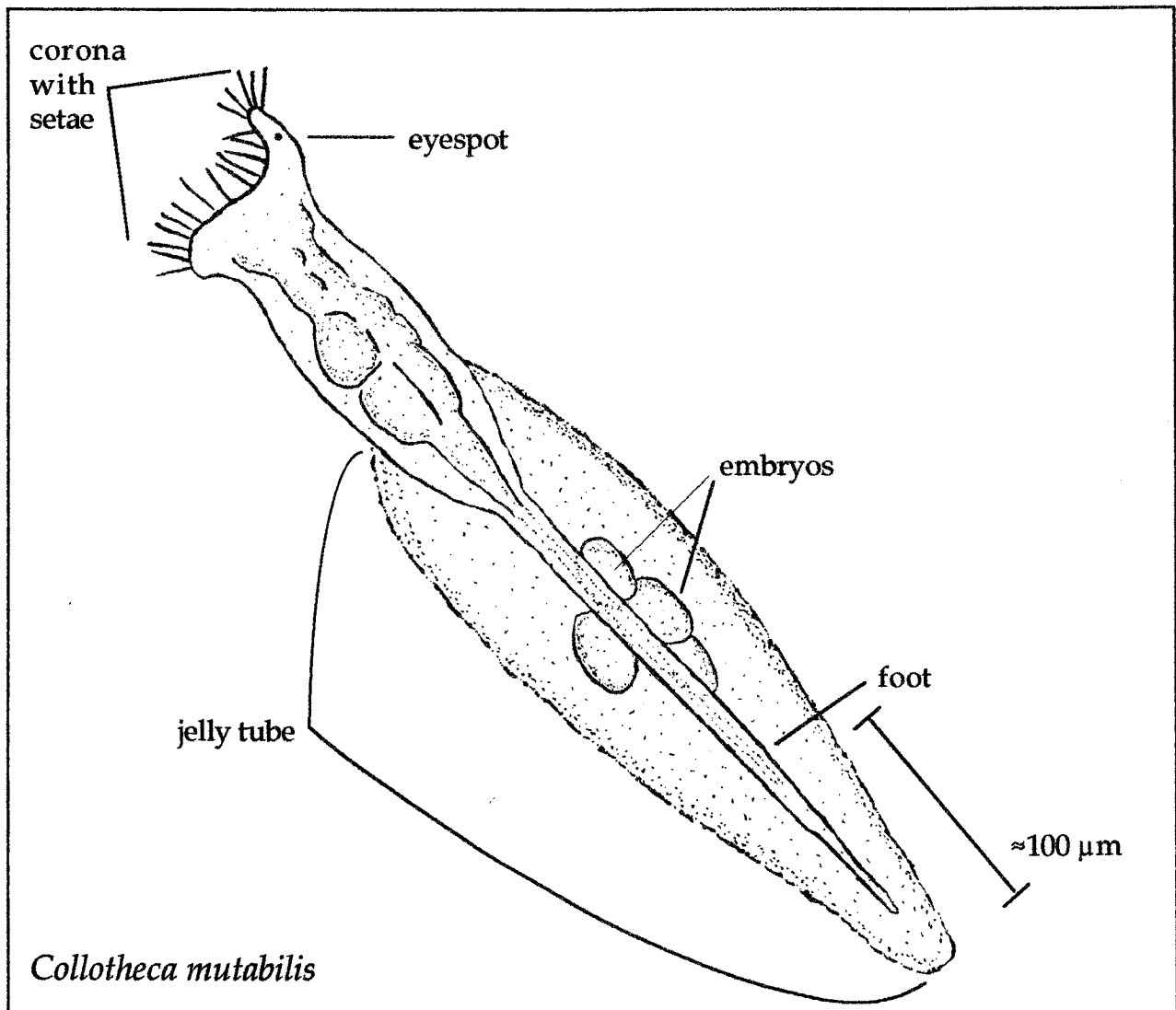


ROTIFER NEWS

a newsletter for rotiferologists throughout the world



Editors:

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Issue # 19

the last issue?

ROTIFER NEWS

Issue 19, Winter 1991 [Reformatted 2010.02.03]
Editors: Robert Lee Wallace & Paul N. Turner

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Rotifer News is not part of the normal scientific literature (e.g., journals such as ECOLOGY, HYDROBIOLOGIA, LIMNOLOGY & OCEANOGRAPHY, & VERH INTERNAT VEREIN LIMNOL); therefore, it should not be cited as such. ROTIFER NEWS is a newsletter that prints citations of recent literature, news, abstracts, & notes about work in progress or papers being submitted for publication in regular scientific journals as a service to professional & amateur investigators of the Rotifera. ROTIFER NEWS is printed once a year (as we can get it out) at Ripon College. Please send reprints &/or references, news, notes, requests to: Robert L. Wallace, Biology Department, Ripon College, 300 Seward Street, Ripon, WI USA 54971-0248. Internet = WALLACER@ACAD.RIPON.EDU

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

A letter quality copy of ROTIFER NEWS is produced at Ripon College from text files using a Macintosh Classic® as a text editor. The editors encourage authors to send us reprints so that papers may be properly cited. ROTIFER NEWS has a long standing policy of confirming all citations printed in ROTIFER NEWS.. To do this the editors review all works either in the original journal or from reprints sent by the author(s). To help in this review, RLW sends letters or reprint request cards to authors requesting a reprint of their work(s) (if we do not have access to the journal in which the work was printed). Works that could not be confirmed in this way are not cited in ROTIFER NEWS. The only exception to this comes when author(s) send written information on their work.

NEWS, NOTES, & REQUESTS

1. Most items received by either editor on or before (15 December 1990) have been included in this issue of Rotifer News (No. 19), other items will be printed in issue No. 20 -- *assuming that there is another issue -- see below!*

2. **Please do not request to receive ROTIFER NEWS beyond the year 1991: see below New Item Number 5.** Hold all new contributions to ROTIFER NEWS until a new editor(s) is found. Contributions may still be made; make checks payable to Rotifer News, Ripon College account # 352.01.

3. Hudson & Gosse + supplement - "noted as being in beautiful condition" \$US 500. For further information write Mr. Malcolm Kotter, Scientia, Books in Science & Medicine, P.O. Box 433, Arlington, MA 02174, USA. 617-643-5725.

4. **John J. Gallagher, PhD** - Over his career, Dr. Gallagher carefully gathered more than 1,000 publications on rotifers, including original monographs, offprints, & edited works. His collection contained most of the older references on the phylum, including good coverage of the Russian literature. In addition to this large collection Dr. Gallagher also carefully recorded all species citations from all systematic works known to him. This collection has been computerized & the result is a unique index of species citations from the world literature cross-referenced to the bibliography & the species index. The final result will be a remarkably complete catalog to the literature with more than 13,000 taxonomic citations. Information in the **JOHN J. GALLAGHER COLLECTION** is available to all interested scientists. Please direct inquiries to:

Curator in Charge
JOHN J. GALLAGHER COLLECTION
Section of Invertebrate Zoology
The Carnegie Museum of Natural History
4440 Forbes Ave., Pittsburgh, PN 15213, USA.

In an effort to keep the collection current & active, all persons publishing research on rotifers are asked to send reprints of their work to the **JOHN J. GALLAGHER COLLECTION**.

5. **Change of Editorship:** At the 5th International Rotifer Symposium held in Italy in the fall of 1988 & in issues 16-18 of ROTIFER NEWS, I (RLW) presented the idea of a change in editorship of ROTIFER NEWS. ROTIFER NEWS

came into being in the mid-70s in the laboratory of John Gilbert. Since that time most of the production has been done by John or his students: Jim Litton & Bob Wallace. (NB: Paul Turner has been helping locate papers for the past three years.) I believe that it is now time for a change, & I will turn over ROTIFER NEWS to a new editor at (or before) the next symposium. [Paul Turner (co-editor) has informed me that he is unable to take over the job as editor.]

Whether or not a new Production Editor (PE) is located, I will CEASE production of ROTIFER NEWS with THIS ISSUE (#19). All funds in the Ripon College account for ROTIFER NEWS will be transferred to a similar account in the home institution of the new PE if one is forthcoming.

Please note that I believe that ROTIFER NEWS is a valuable part of our discipline. However, I also believe that my involvement with ROTIFER NEWS in >15 issues is more than enough of the call-to-duty. Thus my decision to stop my involvement as of 1991, is final. The choice of 1991 comes 3 years after my public announcement at the 5th Rotifer Symposium, 3 issues from first printing the announcement in ROTIFER NEWS (16-17), & about the time of the 6th Rotifer symposium. If no new PE is located by the time I complete issue #19, I will begin to consider donating any funds remaining in the Ripon College account of ROTIFER NEWS to a non-profit educational institution. (NB: currently <\$300 US). However, I will not transfer those funds until after Rotifer Symposium 6. *I welcome any suggestions from the readership on these matters.*

6. Back issues of ROTIFER NEWS are still available! If you need a back issue of ROTIFER NEWS copies they are available from Bob Wallace for a suggested donation of \$3.00 per issue to cover mailing & reproduction. Your comments on any aspect of ROTIFER NEWS is requested by the editors!

7. Sixth International Rotifer Symposium. For more information contact María Rosa Miracle, Ecología, Facultad de Ciencias Bioólicas, Universidad de Valencia, 46100-BURJASSOT (Valencia) SPAIN.

8. Paul Turner (NHB-163, National Museum of Natural History, Smithsonian Institute, Washington, DC 20560, USA) is testing the

waters to determine whether there is interest in developing a data base of Rotifer Workers & their interest. Please send the the information listed below to Paul along with a donation of \$5.00 US (non-obligatory) to help to pay for secretarial help to construct & maintain the data base. Paul needs five (5) bits of information: **1. Name;** **2. General Research Areas/Fields;** **3. Specific Research Details;** **4. Correspond Address;** **5. Support for others - i.e., ability to offer advice or expertise to others.** Two examples follow.

Turner, Paul; taxonomy, systematics, global distribution; interstitial rotifers, all Rotifera; 12900 Barnwell Pl, Upper Marlboro, MD, 20748, USA; YES.

Wallace, Robert; taxonomy, sysmetatics, phylogenetics, sessile rotifers; ecology of sessile rotifers, teaching; use Ripon address; YES.

9. Newsletter 1988-1990. Limnology In Uppsala. Report from the Institute of Limnology, Uppsala University, Institute of Limnology, BOX 557, S-751 22 Uppsala, SWEDEN.

10. Ricci, C., Snell, T.W., & King, C.E. (editors) 1989. *Hydrobiologia* 186/187: 1-430. <Summary: 52 communications from the 5th International Rotifer Symposium held in Gargnano, Italy, September 12-17, 1988. Preface, List of participants, Author Index, & Subject index, plus photographs of the participants. The volume includes a tribute to Pater Dr. h.c. Josef Donner by A. Ruttner-Kolisko. Published as a double volume (186 & 187) of the journal *Hydrobiologia* & as DH 52 *Developments in Hydrobiology*, Kluwer Academic Publishers, Dordrecht, Boston, London. ISBN 0-7923-0413-6 (acid-free paper). (NB: The papers in this volume are NOT listed in this issue of ROTIFER NEWS.)

11. The Celebration of one's 60th birthday is in Japan, called "Kan-Reki", which means One Full Life Cycle. The Kan-Reki has been completed by our good friend and colleague Minoru Sudzuki. Paul Turner and I (RLW) wish you well Minoru!

WORK IN PROGRESS

1. The editors of Rotifer News wish to inform our readers of another newsletter that may be of interest to them: Larviculture & Artemia Newsletter. The editor of this newsletter is Partick Sorgeloos. His address is State University of Ghent, Faculty of Agriculture, Laboratory for Aquaculture & *Artemia* Reference Center, Rozier 44, B-9000, Ghent, BELGIUM. Phone + 32-91-257571 extension 4219, telex 12754 rugent b (attn ARC tel 7-4219); FAX + 32-91-236406; bitnet "artemia@bgerug51". I (RLW) have been receiving *Artemia* Newsletter since 1986 & find it to be an excellent source of information on brine shrimp biology & cultivation.

2. The *Guides to the Identification of the Microinvertebrates of the Continental Waters of the World*, mentioned some time ago in Rotifer News, is now off the ground & running at full speed. The coordinating editor is Henri Dumont & the rotifer part is edited by Tom Nogrady. The publisher is SPB Academic Publishing bv, The Hague, The Netherlands. The illustrious international group of authors for different families are: R. Chengalath, E. Hollowday, L. Kutikova, T. Nogrady, S. José de Paggi, R. Pourriot, S. Radwan, R. Shiel, T. Snell, & R. Wallace, some people reviewing more than one family. An editorial board is being assembled to assist Tom; Uncle Walter has agreed to be the Patron Saint. We expect the first volumes sometime in late 1991, if everyone cooperates; there will be many small (& easily updated) volumes instead of one or two mammoth volumes, and the Publisher intends to keep the price down to assure universal availability. The Proalidae & Dicranophoridae still await an author, or we will have to auction them off in Banyoles (i.e., 6th R.S.). Anyone courageous enough to review these families should contact Tom Nogrady (Department of Biology, Queen's University, Kingston, Ontario, CANADA, K7L 3N6). Other questions, ideas, & suggestions are also solicited. (NB: The *Guides* will also have sections on gastrotrichs, copepods, & cladocerans.)

RECENT LITERATURE

We apologize for any incorrect citations that may follow! An attempt always is made to cite works completely & properly. We would like to be informed of any important errors in these citations; corrections will be printed in the next available issue. The editors encourage authors to send us reprints so that they can be properly cited & abstracted.

A

- 1 Alam, M.J., Habib, M.A.B., & Begum, M. 1989. Effect of water properties & dominant genera of phyto-plankton on the abundance of available genera of zooplankton. Pak. J. Sci. ind. res. 32(3): 194- 200.
- 2 Arndt, H. 1988. Dynamics & production of a natural population of *Brachinous plicatilis* (Rotatoria, Monogononta) in a eutrophic inner coastal water of the Baltic. Kieler Meeresforsch., Sonderh. 6: 147-153.
- 3 Arndt, H. 1989. Zooplankton production & its consumption by planktivores in a Baltic inlet. Proceedings of the 1st EMBS, Gdansk, 14-19 September 1986. Polish Academy of Sciences -- Institute of Oceanology 1989: 205-214.
- 4 Arndt, H., & R. Heerkloss. 1989. Diurnal variation in feeding & assimilation rates of planktonic rotifers & its possible ecological significance. Int. Revue ges. Hydrobiol. 74(3): 261-272.
- 5 Arndt, H., Kramer, H.-J., Heerkolß, R., & Schröder, C. 1985?. Zwei Methoden zur Bestimmung populations- dynamischer Parameter von Zooplanktern unter Laborbedingungen mit ersten Ergebnissen an *Eurytemora affinis* (Copepoda, Calanoida) und *Synchaeta cecilia* (Rotatoria, Monogononta). Wissenschaftliche Zeitschrift der Wihelm-Pieck-Universität Rostock 6: 17-21. <Keywords: *Synchaeta cecilia*, population dynamics, copopods>
- 6 Arndt, H., Jost, G., & Wasmund, N. 1990. Dynamics of pelagic ciliates in eutrophic estuarine waters: importance of functional groups among ciliates & responses to bacterial & phytoplankton production. Arch. Hydrobiol. Beih. 34: 239-245.

- 7 Arndt, H., Schröder, C., & Schnese, W. 1990. Rotifers of the genus *Synchaeta* -- an important component of the zooplankton in the coastal waters of the southern Baltic. *Limnologica* 21(1): 233-235.
 - 8 Arndt, H., Schiewer, U., Jost, G., Wasmund, N., Walter, T., Heerkloss, R., Arlt, G., & Arndt, E.A. 1989. The importance of pelagic & benthic microfauna in a shallow-water community of the Darss-Zingst estuary, southern Baltic, during mesocosm experiments. *Limnologica* 20(1): 101-106. The Estuary Symposium, Kuehlungsborn, East Germany, November 16-21, 1987. <Address: Akad. Wiss. DDR, Inst. fuer Geographie Geoökologie, Bereich Hydrologie, Hy 2, Mueggelseedamm 260, Berlin DDR-1162, GERMANY> <Keywords: benthos, microfauna, estuary, mesocosm.>
 - 9 Arndt, H., Waterstraat, H., Franek, D., & Lenschow, U. 1989. Kurze Mitteilung über die Nahrung der kleinen Maräne (*Coregonus albula* L.) während eines Frühjahrsaspektes im Breiten Luzin (Mecklenburg). *Fischerel-Forschung*, Rostock 27: 42-45.
 - 10 Auvinen, H. 1988. Distribution & food of vendace, (*Coregonus albula*, (L.)), larvae in Lake Pyhajarvi, Karelia, SE Finland. *Fish Res* 9: 107-116. International Symposium on Biology & Management of Coregonids, Joensuu, Finland, August 24-27, 1987. <Address: Center Fish Culture & Fisheries Research Stn. Eastern Finland, SF-58175 Enonkoski, Finland> <Keywords: rotifers as food for fish>
- *B*
- 11 Bailey-Watts, A.E., A. Kirika, L. May, D.H. Jones. 1990. Changes in phytoplankton over various time scales in a shallow, eutrophic <lake>: the Loch Leven experience with special reference to the influence of flushing rate. *Freshw. Biology* 23:85-111.
 - 12 Barbieri, R., Ibanez, M.S.R., Aranha, F.J., Correia, M.M.F., Reid, J.W., & Turner, P. 1989. Plankton, primary production & some physico-chemical factors of 2 lakes from Baixada Maranhense, Brazil. *Rev Bras Biol* 49(2): 399-408. <Address: Lab. de Hirdrobiol., Dep. de Biol. da Univ., Federal do Maranhao, Pca Goncalves Dias, 21-65.000 Sao Luis, BRAZIL> <Summary: Physico-chemical (temperature, water transparency, pH, electrical conductivity, alcalinity, dissolved oxygen, seston, primary production, chlorophyll a) & biological characteristics of two "varzea" lakes were investigated><Keywords: temperature, secchi depth, season, chemistry, physical limnology, oxygen,
 - 13 Barmuta, L.A. et al. 1990. Responses of zooplankton and zoobenthos to experimental acidification in a high-elevation lake (Sierra Nevada, CA, USA). *Freshwater Biology* 23: 571-586.
 - 14 Barron, G.L. 1990. A new & unusual species of *Haptoglossa*. *Can J Bot* 68(2): 435-438. <Address: Dept Environ Bio, Univ Guelph, Guelph, Ontario, CANADA N1G 2W1> Summary: *Haptoglossa elegans*, isolated from soil & organic debris in New Zealand forests, is described. It is a common & aggressive parasite of bdelloid rotifers but unlike all other species of *Haptoglossa*, it does not attack nematodes.> <Keywords: parasite, fungi, soil.>
 - 15 Barron, G.L., Morikawa, C., & Saikawa, M. 1990. New *Cephaliophora* spp. capturing rotifers & tardigrades. *Can J Bot* 68(3): 685-690. <Summary: *Cephaliophora muscicola* & *Cephaliophora longispora* are new species of Hyphomycetes capturing rotifers & tardigrades using specialized adhesive pegs. Elongate, hyaline, multiseptate, canoe-shaped conidia are produced synchronously in small clusters at the apex of conidiophores, which arise at right angles from the vegetative hyphae. In the presence of rotifers, conidia germinate to produce one or several adhesive pegs. Rotifers & tardigrades are captured by the pegs, & subsequent growth forms an extensive network of hyphae bearing pegs & clusters of conidia. *Cephaliophora muscicola* was recovered from moss & forest debris in New Zealand & from leaf mould in Japan. *Cephaliophora longispora* was removed from mossy soil collected in New Zealand & from moss in Canada. > <Keywords: soil rotifers, predator-prey, fungi>

- 16 Barron, G.L., & Szijarto, E. 1990. A new genus of the Hyphomycetes: endoparasitic in rotifers. *Mycologia* 82(1): 134-137. <Keywords: host, parasite, fungi as parasites of rotifers.>
- 17 Bazzanti, M., Ferrara, O., Margaritora, F., Mast-rantuono, L. , & Stella, E. 1989. Latium limnology: ten years of hydrobiological & ecological investigations of lentic waters. *Animal & Human Biology* 1: 145-158.
- 18 Bazzanti, M., Ferrara, O., & Mastrantuono, L. 1988. Composizione della fauna ad invertebrati del Lago di Monterosi (Italia Centrale) Negli anni, 1975-1977. *Riv Idrobiol* 27(1): 150-160. <Address: Dip. Biol. Animale dell'Uomo, Univ. La Sapienza di Roma< ITALY> <Summary: Composition of the invertebrate fauna of Lake Monterosi is reported. There was an increase in rotifers, particularly of *Keratella quadrata*, typical of eutrophic waters.> <Keywords: *Keratella quadrata*, water quality, trophic status, eutrophication, cultural eutrophication, Secchi depth, oxygen>
- 19 Behrendt, H., & Krockner, M. 1989. A method for the separation of zooplankton in highly eutrophic water bodies. The Estuary Symposium, Kuehlungsborn, East Germany, November 16-21, 1987. *Limnologica* 20(1): 79-82. 1 <Address: Akademie Wissenschaften DDR, Institut fuer Geographie Geoökologie, Bereich Hydrologie, Mueggelseedamm 260, Berlin DDR-1162, GERMANY> <Keywords: methods, eutrophic, trophic status.>
- 20 Bennett, W.N., & Boraas, M.E. 1989. Comparison of population dynamics between slow-growing & fast-growing strains of the rotifer *Brachionus calyciflorus* Pallas in continuous culture. *Oecologia (Berl)* 81(4): 494-500. <Address: University of WI, Center for Great Lake Studies, Milwaukee, WI, 53201, USA> <Summary: The population dynamics of a slow- & a fast-growing strain of the rotifer *Brachionus calyciflorus* are compared. Rotifers were grown in steady-states, at various specific growth rates (μ), in both 2-stage chemostat & turbidostat cultures on the green alga *Chlorella pyrenoidosa*. Differences between the 2 strains with regard to several variables may represent tradeoffs associated with the faster potential growth rate.> <Keywords: culture, chemostat, *Brachionus calyciflorus* , specific growth rates, turbidostat>
- 21 Bennett, W., & Boraas, M.E. 1989. A demographic profile of the fastest growing metazoan: a strain of *Brachionus calyciflorus*, Rotifera. *Oikos* 55(3): 365-369. <Summary: Evidence shows that trade-offs between growth, reproduction & maintenance tend to maximize the maximum specific growth rate, μ_{max} , of a population for a given environment. We tested this hypothesis with 2 populations of *Brachionus calyciflorus* which differed with respect to their μ_{max} . Through measurement of various demographic variables, we found that the population which had a higher μ_{max} also possessed the following characteristics: (1) higher fecundity in younger age classes, (2) decreased life span, (3) decrease in egg production times, (4) a loss of sexuality, (5) a 24% decrease in adult body size & (6) a 71% decrease in egg volume. The results support the hypothesis of a trade-off between reproduction & growth-maintenance, whereby, production of energy stores is negatively correlated with increased μ_{max} . The lower μ_{max} observed in field-collected populations may result from the need to produce energy stores for patchy & variable environmental conditions.> <Keywords: *Brachionus calyciflorus*, growth, population dynamics, culture>
- 22 Bennett, W.N., & Boraas, M.E. 1989. An experimental test of the egg-ratio method with instantaneous birth rate as an independent variable. *Limnology & Oceanography* 34: 1120-1125. <Summary: The accuracy of 3 mathematical models that have been used to calculate instantaneous birth rate (b) from the ratio of eggs to females (E) in a population was determined with steady state populations of the rotifer *Brachionus calyciflorus*. Typically, b is calculated from E with these models. We were able to choose b as an independent variable, with the physical characteristics of our culture device (a two-stage steady state chemostat), which also satisfied the major assumptions of the models. We then measured E & calculated b from E with the 3 models. The model of Paloheino gave the best fit to these steady state data when the calculated b & observed b were compared. <Keywords: population dynamics, chemostat,

Brachionus calyciflorus., math models, little r, birth rate,culture>

- 23 Boraas, M.E., Seale, D.B., & Horton, J.B. 1990. Resource competition between 2 rotifer species, (*Brachionus rubens* & *Brachionus calyciflorus*): an experimental test of a mechanistic model. J Plankton Res 12(1): 77-88. <Address: Department of Biology Sciences Center of Great Lakes Studies, University of Wisconsin, Milwaukee, POB 413, Milwaukee, WI. 53201, USA> <Summary: A mechanistic model of competition on a single resource was tested experimentally with 2 freshwater rotifers, (*Brachionus rubens* & *B. calyciflorus*). We measured the resource-saturated exponential growth rate, μ_{max} , & the relationship between specific growth rate, μ , at steady-state & the residual algal concentration over a range of system turnover rates, or dilution rates, D. The μ_{max} of *B. calyciflorus* was apprx. 60% higher than *B. rubens*.. These results were then used to construct a graphical model for predicting the victor in interspecific competition between the two rotifers. Because the 2 resource-dependent growth rates crossed, one species, *B. calyciflorus*, was predicted to be the victor at a high D while *B. rubens* was predicted as the victor at low D. Finally, the outcome of competition was determined for 2 turnover rates. As predicted by the graphical competition models, *B. calyciflorus* was the dominant species at rapid D (0.029/h) & *B. rubens*, was dominant at slow D (0.0044/h). These studies support recent conclusions that mechanistic competition models may be applied to predict dominant species from a priori information on growth potential & resource levels, which is not possible with traditional Lotka-Volterra models. <Keywords: culture, food, resource competition, *Brachionus rubens*, *Brachionus calyciflorus*, mechanistic model, model, interspecific competition.
- 24 Bowman, B.P., Snell, T.W., & Cochrane, B.J. 1990. Isolation & purification of glutathione S-transferases from *Brachionus plicatilis* & *Brachionus calyciflorus*, Rotifera. Comp Biochem Physiol B Comp Biochem 95(3): 619-624. <Address: Division Science & Math, University of Tampa, Tampa, FL, 33606, USA> <Summary: Glutathione S-transferase (GST), a critical element in xenobiotic metabolism, was isolated from *Brachionus plicatilis* & *B. calyciflorus*. In *B. plicatilis*, GST comprised 4.2% of cytosolic protein & was present as three separate isozymes with mw 30,000, 31,400, & 33,700. Specific activity of crude homogenates was 56 nmol/min/mg protein, while that of affinity chromatographypurified GST was 1850. In *B. calyciflorus*, GST was present as two isozymes with mw of 26,300 & 28,500, representing 1.0% of cytosolic protein. Crude GST specific activity was 1750 nmol/min/mg protein & purified was 72,400. Rotifer GSTs are unusual because they are monomers whereas all other animals thus far investigated possess dimeric.> <Keywords: *Brachionus plicatilis*, *Brachionus calyciflorus*, biochemistry, enzyme, metabolism, physiology, isozyme, chromatography.>
- 25 Bozek M A. 1989. Orientation of zooplankton to the oxycline in Big Soda Lake, Nevada USA. Great Basin Nat 49(4): 535-539. <Address: Dep. Zool. & Physiol., Univ. Wy., Laramie, WY 82071 USA> <Summary: Zooplankton in meromictic Big Soda Lake, Nevada, were sampled to determine species composition & vertical distribution relative to the oxycline. *Brachionus plicatilis* was most abundant below the oxycline. Concentrations of *Brachionus* & *Moina* near the oxycline corresponded with peaks in bacterial productivity found by previous investigators.> <Keywords: *Brachionus plicatilis*, bacteria, species composition, oxygen, Big Soda Lake, vertical migration, distribution, vertical distribution, lake chemistry>
- 26 Broady, P.A. 1989. Survey of algae & other terrestrial biota at Edward VII Peninsula, Maria Byrd Land Antarct Sci 1(3): 215-224. <Address: Dep. Plant Microbial Sci., Univ. Canterbury, Private Bag, Christchurch 1, New Zealand> <Summary: A survey of algal communities at all 23 nunataks in the Rockefeller & Alexandra mountains (77°00' to 78°, 30'S, 152°-154°W). Samples contained rotifers & other micrometazoa. <Keywords: Antarctic rotifers>
- 27 Burckhardt, R., & H. Arndt. 1987. Untersuchungen zur Konsumtion von Ciliaten durch Metazooplankter des Barther Boddens

(südliche Ostsee). Wissen. zeit. Wilhelm-Peck-
Univ Rostock. Naturwissenschaft-liche heft 2:
22-26.

C

28 Campos, H., Steffen, W., Agüero, G., Parra, O., & Zúniga, L. 1990. Limnological study of Lake Todos: morphometry, physics, chemistry, plankton, & primary productivity. Arch Hydrobiol 117: 453-484. <Address: Inst. de Zool. Univ. Austral de Chile, Casilla 567, Valdivia, CHILE> <Summary: Lake Todos los Santos (41°08'S, 72°12'W), of an altitude of 189m above sea level with a surface area of 178.5 km², is of volcanic origin. A bathymetric survey showed a deep basin (337max) as well as great volume (34.4 km³). The drainage area is large (3.036 km²), 17X its surface area. Transparency is high (Secchi disk, ca. 100 m). The main nutrients are in low concentration, with a vertical distribution nearly homogeneous during winter circulation & with an orthograde tendency during thermal stratification. Nine species of rotifera dominated by *Synchaeta stylata* & *Conochilus unicornis*. are present.> <Keywords: Lake Todos, Chile, trophic status, *Synchaeta stylata*, *Conochilus unicornis*..>

29 Chang, P.S.S., & Malley, D.F. 1989. Partial recovery of the zooplankton community in a small Precambrian Shield lake as experimental acidification is reduced. pages 203-208 in Salanki, J. & S. Herodek (eds.). Symposia Biologica Hungarica, Vol. 38. Conservation & management of lakes. 3rd International Conference, Keszthely, Hungary, September 11-17, 1988. xi+645p. Akademiai Kiado: Budapest, Hungary. Illus. Maps. ISBN 963-05-5583-2. <Address: Dep. Fisheries Oceans, Central Arctic Region, Freshwater Institute, 501 University Crescent, Winnipeg, Manitoba, R3T 2N6, CANADA> <Keywords: acid, toxic agent, pollution, environmental toxicology>

D

30 Deb, D., & S. Banerjee. 1989. Unstable trophic position of the predatory rotifer *Asplanchna* in a helezoooplankton community. Proc. Indian natn. Sci. Acad. B55(1): 41-50.

31 Deb, D., Ghosh, M., & Banerjee, S. 1987. Synecology of a rotifer bloom in a freshwater

pisciculture pond in West Bengal. Proc. Indian natn. Sci. Ac. B53(1):61-68.

32 Divakaran, S., & Ostrowski, A.C. 1989. Fatty acid analysis of fish eggs without solvent extraction. Aquaculture 80(34): 371-376. <Address: Oceanic Institute, Makapuu Point, Waimanalo, Hawaii 96795, USA> <Summary: 2 methods for preparing samples of fish eggs for fatty acid analysis were compared. Direct methylation also can be used to prepare samples of rotifers (*Brachionus* sp.) for fatty acid analysis. <Key-words: rotifers as food for fish, culture, aquaculture, *Brachionus* sp., biochemistry, fatty acids>

33 van Donk, E., Gulati, R.D., & Grimm, M.P. 1989. Food web manipulation in Lake Zwemlust: Positive & negative effects during the first 2 years. Hydrobiol Bull 23(1): 19-34. Symposium on Biomanipulation in the Netherlands: Applications in Fresh-Water Ecosystems & Estuarine Waters, Amsterdam, Netherlands, October 7, 1988. <Address: Provincial Waterboard of Utrecht, P.O. Box 80300, 3508 TH Utrecht, NETHERLANDS> <Keywords: Lake Zwemlust, food web, Netherlands>

34 van Donk, E., Gulati, R.D., & Grimm, M.P. 1990. Restoration by biomanipulation in a small hyper-trophic lake: 1st-year results. Hydrobiologia 191(0): 285-296. International Symposium on Trophic Relationships in Inland Waters, Tihany, Hungary, Sept 1-4, 1987. <Keywords: eutrophic, hypereutrophic, trophic status, species composition, lake restoration>

35 Drenner, R.W., Threlkeld, S.T., Smith, J.D., Mummert, J.R., & Cantrell, P.A. 1989. Interdependence of phosphorus, fish, & site effects on phytoplankton biomass & zooplankton. Limnology & Oceanography 34(7): 1315-1321.

E

36 Emir, N. 1989. Samsun Bafra Gölü Rotatoria Türlerinin Mevsimsel Degisimi Üzerine ekolojik bir Calisma. <An ecological study on the seasonal variation of the rotifer species in Bafra, Samsun, lake Turkey.> Doga Turk Zool Derg 13(3): 220-227. <Address: Hacettepe Universitesi, Fen Fakult esi, Biyoloji Bolumu,

- Hidrobiyoloji Anabilim Dalı, Bey Tepe, Ankara, TURKEY> <Summary: Temperature, oxygen, & biological data were taken from a shallow lake: Bafra Lake. > <Keywords: species composition, population, temperature, oxygen, chemistry>
- 37 Emir N. 1990. Samsun bafra Gölü Rotatoria faunasinin taksonomik Yönden incelenmesi. <A taxonomical study on the Rotifera fauna of Bafra Lake in Samsun Turkey> Doga Turk Zool Derg 14(1): 89-106. <Address: Ha-cettepe Universitesi Fen Fakultesi Biyoloji Bolumu, Hidrobiyoloji Ana Bilim Dalı, Ankara, Turkey> <Summary: 14 genera & 25 species of rotifers were identified from Bafra Lake.> <Keywords: taxonomy, Turkey, Bafra Lake, distribution, biogeography.>
- 38 Emir, N. 1990. A note on 4 rotifer species new to Turkey. Biol. Jb. Dodonaea 57: 78-80. <Keywords: Turkey, biogeography.>
- 39 Enesco, H.E., & McTavish, A.J. 1989. The calcium theory of aging tested on rotifers. Age (Omaha) 12(4): 147. 19th Annual Meeting of the American Aging Association, Washington, D.C., USA, October 4-7, 1989. <Address: Department of Biology Concordia University, Montreal, Quebec, CANADA> <Keywords: *Asplanchna brightwelli*, calcium, age, aging, physiology, metabolism, culture>
- 40 Estók, B., & Milinki, E. 1989. Plankton vizsgálatok a Markazi Tározón. Acta Academiae Paedagogicae Agriensis, Nova Series 29:15-34. <Keywords: biogeography.>
- 41 Estók, B., & Milinki, E. 1989. Changes in the quality of water in Laskó stream & in the storage lake built on it at Egerszalok. Tiscia (Szeged) 24(0): 11-22. <Address: Serv. Public Health Epidemiol. County Heves, "Ho Si Minh" Teachers' Train. College, Eger., HUNGARY> <Summary: Rotifers were subdominants in this system.> <Keywords: season, species com-position, population dynamics>
- *F*
- 42 Ferrara, O. 1986. Popolamento zooplanctonico di un lago di sbarramento dell'Appennino abruzzese il Lago di Campotosto. Riv Idrobiol 25: 19-26.
- 43 Ferrara, O. 1986. Struttura e dinamic della comunità zooplanctonica in un'area del Lago di Bracciano (Lazio). Riv Idrobiol 23: 145-158.
- 44 Ferrara, O., & Mastrantuono, L. 1982. Composizione ed evoluzione stagionale dello zooplancton di due stagni artificiali da piscicoltura (Monterotondo, Lazio). Riv Idrobiol 21: 112-123.
- 45 Fulton, R., III. 1988. Grazing on filamentous algae by herbivorous zooplankton. Freshwater Biol 20(2): 263-272. <Address: Department of Biology, George Mason University, 4400 University Drive, Fairfax, VA, 22030, USA> <Summary: Filtering rates, including that of a rotifer, were examined. Results indicate that inhibitory effects of filamentous algae is due more to effects of chemicals than to a filamentous morphology.> <Keywords: feeding, bluegreen bacteria, behavior, filtering rate, food, toxin, natural toxins>
- *G*
- 46 Gilbert, J.J. 1988. Suppression of rotifer populations by *Daphnia*: A review of the evidence, the mechanisms, & the effects on zooplankton community structure. Limnology & Oceanography 33: 1286-1303. <Address: Department of Biological Science, Dartmouth College, Hanover, NH 03755, USA> <Summary: There is strong evidence that rotifers cannot become abundant members of freshwater zooplankton communities in the presence of large (>1.2 mm) *Daphnia*. Direct & indirect evidences for this are discussed. Rotifers seems to be much less inhibited by small (<1.2mm) cladocerans & often co-occur with them at high densities in natural communities in the absence of large *Daphnia*.> <Keywords: species composition, size, competition, interference competition, exploitative competition, predator-prey>
- 47 Gilbert. J.J. 1989. The effect of *Daphnia* interference on a natural rotifer & ciliate community: Short-term bottle experiments. Limnol Oceanogr 34(3): 606-617. <Summary: Bottle experiments were conducted using water from a small, eutrophic lake to assess the impact of *Daphnia* interference competition on the dynamics of rotifer &

- ciliate populations dominating the zooplankton community. Introduction of *Daphnia pulex* (16/L) to *Cryptomonas*-enriched (3-3.5 x. 10⁴ cells/ml) water for 2d significantly suppressed numbers of the ciliate *Campanella* sp. & rotifers.> <Keywords: *Kellicottia bostoniensis*, *Keratella cochlearis*, *Keratella crassa*, *Polyarthra vulgaris*, *Synchaeta pectinata*, *Asplanchna girodi*, *Polyarthra euryptera*, *Trichocerca similis*, population dynamics, competition, interference competition>
- 48 Gilbert, J.J. 1990. Differential effects of *Anabaena affinis* on cladocerans & rotifers: mechanisms & implications. *Ecology* 71(5): 1727-1740. <Keywords: bluegreen bacteria, cyanobacteria,
- 49 Gilbert, J.J., & Kirk, K.L. 1988. Escape response of the rotifer *Keratella*: description, stimulation, fluid dynamics, & ecological significance. *Limnology & Oceanography* 33: 1440-1450. <Summary: *Keratella* spp. sometimes exhibited escape responses when being contacted or closely approached by *Asplanchna brightwelli*, when encountering inhalant currents of *Daphnia*, & when encountering a simple, calibrated, siphonal flow field mimicking that entering *Daphnia*. Escape responses in *Keratella cochlearis* & *Keratella testudo* were brief (≈2s), orthokinetic increases in swimming speed. Escape responses in *K. cochlearis* & *testudo* to encounters with *Asplanchna* & *Daphnia* reduced probability of rotifers being captured, & hence eaten or damaged.> <Keywords: *Asplanchna brightwelli*, *Keratella cochlearis*, *Keratella testudo*, *Polyarthra* sp., behavior, swimming behavior, swimming, morphology>
- 50 Grainger, E.H., & Hsiao, S.I.C. 1990. Trophic relationships of the sea ice meiofauna in Frobisher Bay, Arctic Canada. *Polar Biol* 10: 283-292. <Address: Arctic Biological Station, Maurice-Lamontagne Inst., Department of Fisheries & Oceans, 555 St.-Pierre Blvd., Ste.-Anne-de-Bellevue, Quebec H9X 3R4, CANADA> <Summary: A distinct fauna consisting various small invertebrates including rotifers.> <Keywords: marine, trophic, ice, arctic>
- 51 Grover, J.J., Olla, B.L., O'Brien, M., & Wicklund, R.I. Food habits of Florida red tilapia fry in manured seawater pools in the Bahamas. *Prog Fish-Cult* 51(3): 152-156. <Address: College of Oceanography, Oregon State University, Hatfield Marine Science Center, Newport, OR, 97365, USA> <Summary: Red tilapia fry were grown in 2 seawater pools that were enriched with manure.> <Keywords: rotifers as food for fish>
- 52 Gulati, R.D. 1989. Structure & feeding activities of zooplankton community in Lake Zwemlust in the 2 years after biomanipulation. *Hydrobiol Bull* 23(1): 35-48. Symposium on Biomanipulation in the Netherlands: Applications in Fresh-Water Eco-systems & Estuarine Waters, Amsterdam, Netherlands, October 7, 1988. <Address: Vijverhof Lab., Limnol. Institute, Rijksstraatweg 6, 3631 AC Nieuwersluis, NETHERLANDS> <Summary: Biomanipulation in Lake Zwemlust.> <Keywords: Lake Zwemlust, species composition, community structure, feeding, Lake Management>
- 53 Gulati, R.D. 1990. Zooplankton structure in the Loosdrecht, Netherlands, lakes in relation to trophic status & recent restoration measures. *Hydrobiologia* 191: 173-188. International Symposium on Trophic Relationships in Inland Waters, Tihany, Hungary, September 1-4, 1987. <Address: Limnology Institute, Rijksstr. 6, 3631 AC Nieuwersluis, NETHERLANDS> <Summary: species composition, trophic status, lake restoration, eutrophication>

H

- 54 Hagiwara, A. 1989. Recent studies on the rotifer *Brachionus plicatilis* as a live food for the larval rearing of marine fish. The 5th French-Japanese Scientific Symposium & the 2nd French-Japanese Symposium of Oceanography, Tokyo & Shimizu, Japan, October 3-13, 1988. *Mer (Tokyo)* 27(3): 120-121. <Address: Graduate School of Marine Science & Engl., Nagasaki Univ. Bunkyo 1-14, Nagasaki 852, JAPAN> <Keywords: culture, *Brachionus plicatilis*, rotifers as food for fish.>

- 55 Hagiwara, A., Lee, C.-S., Eda, H., & Oozeki, Y. 1990. Effect of food & stocking densities on the growth & survival of striped mullet (*Mugil cephalus*) larvae. in The 2nd Asian Fisheries Forum, Hirano & Hanyu, eds. Asian Fisheries Society, Manila, Philippines. <Keywords: rotifers as food for fish.>
- 56 Hagiwara, A., Lee, C.-S., Miyamoto, G., & Hino, A. 1989. Resting egg formation & hatching of the S-type rotifer *Brachionus plicatilis* at varying salinities. Mar Biol (Berl) 103(3): 327-332. <Summary: Effect of salinity on resting egg (RE) formation & hatching in the marine rotifer *Brachionus plicatilis rotundiformis* (S-type, Hawaiian stock) was examined. Mean number of RE produced at 8, 16 & 32 ppt ranged from 22 to 615 per 10,000 rotifers, or 29 - 413 per 1.0×10^8 *Tetraselmis* cells. Results indicated that sexual reproduction of L- & S-type rotifers have opposing responses to salinity. After preservation for 2 mo at 5°C simultaneous hatching of resting eggs was observed at 6 salinity levels at 30°C. Development time was extended & hatching rate decreased when eggs formed at 8 ppt were incubated at extremely high (40 ppt) or low (1 ppt) salinities. Hatching rates varied from 69 - 93%, & were influenced by the salinity present at the time of egg formation & incubation. <Keywords: *Brachionus plicatilis rotundiformis*, sexual reproduction, culture, salinity, egg, egg hatching, resting eggs>
- 57 Hanazato, T. 1990. A comparison between predation effects on zooplankton communities by *Neomysis* & *Chaoborus*. Hydrobiologia 198: 33-40. <Address: Division of Environmental Biology, National Institute of Environmental Studies, Onogawa, Tsukuba, Ibaraki 305, JAPAN>
- 58 Hanazato, T., Iwakuma, T., Yasuno, M., & Sakamoto, M. 1989. Effects of temephos on zooplankton communities in enclosures in a shallow eutrophic lake. Environ Pollut 59(4): 305-314. <Summary: The organophosphorus insecticide, temephos, was applied to large-volume (10^5 m^3) enclosures set up in a shallow eutrophic lake, at a target concentration of $500 \mu\text{g/L}$. This treatment eliminated almost all zooplankters, including cladocerans & copepods. Rotifers rebounded 16-20 d after the treatment, but species composition of this community differed from that in the control enclosures.> <Keywords: Environmental toxicity, toxin agent, pollution, enclosures>
- 59 Hanazato, T., & Yasuno, M. 1989. Zooplankton community structure driven by vertebrate & invertebrate predators. Oecologia (Berl) 81(4): 450-458. <Summary: A zooplankton community was established in outdoor experimental ponds, into which a vertebrate predator (topmouth gudgeon: *Pseudorasbora parva*) and/or an invertebrate predator (phantom midge larva: *Chaoborus flavicans*) were introduced & their predation effects on the zooplankton community structure were evaluated. In the ponds which had *Chaoborus*, but not fish, small- & medium-sized cladocerans & calanoid copepods were eliminated, while rotifers became abundant.> <Keywords: *Chaoborus*, predator-prey>
- 60 Hanazato, T., & Yasuno, M. 1990. Influence of time of application of an insecticide on recovery patterns of a zooplankton community in experimental ponds. Arch Environ Contam Toxicol 19(1): 77-83. <Summary: A zooplankton community was established in outdoor concrete ponds to which an insecticide was applied at different times relative to the population trend. The chemical application markedly reduced the cladoceran & copepod populations, but not rotifer population. When carbaryl was applied during the increasing phase of the *Keratella valga* population, the population increased still further in density. When the population was exposed to the chemical during its decreasing phase, it did not recover even when competitors disappeared. Thus, applications of the insecticide at different times induced different recovery patterns of the zooplankton community in the ponds.> <Keywords: *Keratella valga*, population dynamics, pollution, environmental toxicology, toxic agent, season>
- 61 Hanazato, T. & Yasuno, M. 1990. Influence of *Chaoborus* density on the effects of an insecticide on zooplankton communities in ponds. Hydrobiologia 194(3): 183-198. <Summary: Zooplankton communities with

- high or low density of *Chaoborus* larvae were established in outdoor concrete ponds, to which a carbamate insecticide was applied.>
<Keywords: toxic agent, environmental toxicology, organic, pollution.>
- 62 Harrell, R.M., & Bukowski, J. 1990. The culture, zoo-plankton dynamics & predator-prey interaction of Chesapeake Bay striped bass, *Morone saxatilis*, Walbaum, in estuarine ponds. *Aquacult Fish Manage* 21(2): 195-212. <Address: University of Maryland Horn Point Environmental Laboratory, Box 775, Cambridge, MD 21613 USA> <Summary: Zoo-plankton in 4 experimental ponds was dominated by 4 major groups, including rotifers. Rotifer populations peaked 15-20 days after establishing the ponds. Food selectivity indices indicated the fish avoided both rotifers & copepod nauplii, & preferred adult & copepedite *Eurytemora* as a food item.>
<Keywords: experimental ponds, rotifers as food for fish, marine>
- 63 Havens, K.E. 1990. *Chaoborus* predation & zoo-plankton community structure in a rotifer-dominated lake. *Hydrobiologia* 198: 215-226.
- 64 Havens, K.E., & J. DeCosta. 1988. An experimental analysis of the acid sensitivity of the common planktonic rotifer *Keratella cochlearis*. *Int. Revue ges. Hydrobiol.* 73(4): 407-416.
- 65A Hillbricht-Ilkowska, A., Ejsmont-Karabin, J., & Weglenska, T. 1988. Long-term changes in the composition, productivity & trophic efficiency in the zooplankton community of heated lakes near Konin (Poland). *Ekologia Polska* 36(1-2): 115-144. <Summary: In 3 heated lakes rotifers were found to be an important component of the zooplankton.>
<Keywords: feeding, temperature>
- 65B. Hollowday, E. 1989. Rotifer delineator extra-ordinary -- a tribute to the work of Frederic Edward Cocks (1884-1941). *Microscopy* 36: 252-265. <Key-words: taxonomy, artwork, history, biography.>
- 66 Huang, B.-Q., & Hu, C.-S. 1989. Effects of light intensity & prey density on the feeding of larval silver bream, *Sparus sarba*. *J Fish Soc Taiwan* 16(3): 165-174. <Address: Dept. Fish., Natl. Taiwan Ocean Univ., Kee lung, Taiwan 20224> <Summary: Effects of different light intensities (100-3000 lux, 100-300 lux & under 1 lux) & prey densities (5, 10, 15 rotifers/ml & 0.01, 0.1, 1 brine shrimps/ml) on the feeding rate of silver bream larvae (*Sparus sarba*) were examined.> <Keywords: Rotifers as food for fish.>
- *J*
- 67 José de Paggi, S. 1983. Estudio sinoptico del zooplankton de los principales causas y tributarios del valle aluvial del Rio Parana: tramo goya diamante (1 Parte). *Revista de la Asociacion de Ciencias Naturales del Litoral* 14(2): 163-178.
- 68 José De Paggi, S. 1989. Rotíferos de algunas provincias del Noroeste Argentino. *Rev Hydrobiol Trop* 22(3): 223-238. <Address: Instituto Nacional de Limnologia (CONICET), Macia 1933-3016 Santo Tome, S. Fe, ARGENTIA> <Summary: 51 aquatic habitats of Santiago del Estero, Tucuman, Catamarca & La Rioja provinces in Argentina, were surveyed for the first time for Rotifers: 82 taxa are identified. New records for Argentina include *Colurella colurus*, *Lecane obtusa*, *L. punctata*, *L. thalera*, *L. crepida*, *Trichocerca elongata braziliensis*. The status of *L. thalera* is discussed & a new morphological variation is described for this & *Keratella procurva* (Thorpe). The status of *L. punctata* - *L. harringi* also is reviewed. <Keywords: Argentina, distribution, *Colurella colurus*, *Lecane obtusa*, *L. punctata*, *L. thalera*, *L. crepida*, *Trichocerca elongata braziliensis*, *L. harringi*>
- *K*
- 69 Kirk, K.L., & Gilbert, J.J. 1990. Suspended clay & the population dynamics of planktonic rotifers & cladocerans. *Ecology* 71(5): 1741-1755.
- 70 Khalil, M.T. 1990. Plankton & primary productivity of Lake Manzala, Egypt. *Hydrobiologia* 196(3): 201-207. <Address: POB 30484, Sur, Sultanate of Oman> <Summary: 1° production & distribution & abundance of phyto- & zooplankton of lake Manzala were investigated from June 1985-June 1986.> <Keywords: population dynamics, production.>

- 71 Kleinow, W., J. Klusemann, & H. Wratil. 1990. A gentle method for the preparation of hard parts (trophi) of the mastax of rotifers & scanning electron microscopy of the trophi of *Brachionus plicatilis* (Rotifera). Zoomorphology 109: 329-336. <Keywords: technique, SEM, trophi, *Brachionus plicatilis*>
- 72 Kleinow, W., & K. Wißling. 1989. Keratinlike proteins from the integument of the rotifer *Brachionus plicatilis*. Biol. Chem. 380: 918-919. <Keywords: *Brachionus plicatilis*, integument, biochemistry.>
- 73 Klusemann, J., W. Kleinow, & W. Peters. 1990. The hard parts (trophi) of the rotifer mastax do contain chitin: evidence from studies on *Brachionus plicatilis*. Histochemistry 94: 277-283. <Summary: trophi, mastax, chitin, *Brachionus plicatilis*, biochemistry>
- 74 Korpelainen, H. 1990. Sex ratios & conditions required for environmental sex determination in animals. Biol. Rev Camb Philos Soc 65: 147-184. <Address: Department of Genetics, University of Helsinki, Arkadiankatu 7, SF-00100 Helsinki, FINLAND> <Keywords: review, sex, ecology>
- 75 Koste, W. 1989. Über Rädertiere (Rotatoria) aus dem Lago do Macaco, einem Ufersee des mittleren Rio Trombetas, Amazonien. Osnabrücker naturwiss. Mitt. 15: 199-214.
- 76 Koste, W., & Shiel, R.J. 1989. Rotifera from Australian inland waters: III. Euchlanidae, Mytilinidae & Trichotriidae, Rotifera: Monogononta. Trans R Soc S Aust 113(12): 85-114. <Summary: Diagnostic keys are given to the Australian representatives of the Rotifera: Monogononta in the families Euchlanidae, Mytilinidae, & Trichotriidae. Distribution data & ecological information are given.> <Keywords: *Manfredium*, *Diplois*, *Dipleuchlanis*, *Tripleuchlanis*, *Euchlanis*, *Mytilina*, *Lophocharis*, *Wolga*, *Macrochaetus*, *Trichotria*, description, taxonomy, key>
- 77 Koste, W., & Shiel, R.J. 1989. Rotifera from Australian inland waters: IV. Colurellidae, Rotifera: Monogononta. Trans R Soc S Aust 113: 119-143. <Address: 5. Ludwig-Brill-Strasse, Quakenbrueck D-4570, Germany> <Summary: Diagnostic keys are given to genera & species of the rotifer family Colurellidae, including *Colurella*, *Squatinella*, *Lepadella*, *Heterolepadella*. Recorded from Australian inland waters, all species are figured & available distribution data & ecological information given. Some widely-distributed taxa not yet recorded from the continent are included. *Lepadella cornuta* (Koste, 1981) nom nov (*L. latusinus* f. *mucronata*) was described.> <Keywords: *Colurella*, *Squatinella*, *Lepadella*, *Heterolepadella*., Australia, Collurellidae>
- 78 Koste, W., & R.J. Shiel. 1990. Rotifera from Australian inland waters. VI. Proalidae, Lindiidae (Rotifera: Monogononta). Trans. R. Soc. S. Aust. 114(3): 129-143. <Keywords: taxonomy, key, Australia, Proalidae, Lindiidae>
- 79 Koste, W., Shiel, R.J., & Tan, L.W. 1988. New rotifers, Rotifera, from Tasmania. Trans R Soc S Aust 112(34): 119-132. <Summary: 100 Tasmanian habitats were surveyed for rotifers; 168 taxa were identified, 59 first records & 21 new to Australia. *Trichotria buchneri* new species, *Trichotria pseudocurta* new species, *Lecane herzigii* new species, & *Notommata tyleri* new species.><Keywords: *Trichotria buchneri* new species, *Trichotria pseudocurta* new species, *Lecane herzigii* new species, *Notommata tyleri* new species, taxonomy, biogeography, Tasmania.>
- 80 Kristiansen, S., & Paasche, E. 1989. An improved method for determining relative ¹⁵N abundance in ammonium regeneration studies by direct diffusion. Mar Ecol Prog Ser 54(12): 203-207. <Address: Dep. Biol., Marine Botany Section, Univ. Oslo, POB 1069, Blindern, N-0316 Oslo 3, NORWAY> <Summary: Results of trials with a mixed alga-rotifer culture & a marine plankton sample are described. <Keywords: chemistry, marine, nitrogen>
- 81 Kuehle, K., & Kleinow, W. 1990. Glycosidases in *Brachionus plicatilis*, rotifera. Comp Biochem Physiol B Comp Biochem 95(2): 393-402. <Address: Zool. Inst. der Univ. zu Köln, Lehrstuhl Tierphysiol., Weyertal 119, D-5000 Koeln 41, Germany> <Summary: Tests for glycosidases were performed in homogenates of *Brachionus plicatilis*.

- Hydrolytic activity was detected with the following substrates: (a) with synthetic substrates (NP = 4-nitrophenyl): NP-a- & NP-b-D-glucopyranoside, NP-a- & NP-b-D-galactopyranoside. NP-N-acetyl-b-D-glucosaminide, NP-N-acetyl-b-D-galactosaminide, NP-a- & NP-b-D-mannopyranoside & NP-a-L-fucopyranoside; (b) with disaccharides: sucrose, maltose, trehalose, isomaltose, cellobiose, gentiobiose & lactose; (c) with polysaccharides laminarine, carboxymethyl-cellulose, avicel, *Micrococcus luteus* (for lysozyme) & 4-nitrophenyl- α -D-malto-heptaoside (for amylase). Proteins from *Brachionus* homogenate were separated by SDS-gel electro-phoresis & the positions of the following glycosidase activities were detected by assays performed on the gels (estimated molecular weights in parentheses): a-glucosidase (250,000); b-glucosidase (200,000); b-galactosidase (70,000); N-acetyl-b-glucosaminidase (60,000). <Keywords: biochemistry, *Brachionus plicatilis*., enzyme>
- 82 Kulshrestha, S.K., Tiwari, A., George, M.P., Saxena, R., Johri, M., & Shrivastava, M. 1989. Studies on the rotifers of Mansarovar reservoir of Bhopal with special reference to organic pollution. *J Hydrobiol* 5(1): 43-48. <Address: Department of Zoology, Govt. Motilal Vigyan Adarsh Mahavidyalaya, Bhopal-462 008, INDIA> <Summary: Qualitative & quantitative analysis of rotifers of Mansarovar reservoir (Bhopal) were examined monthly at 3 sampling stations. Rotifer population registered unimodal peak in the month of October; *Keratella tropica* was the dominant species. Population dynamic of certain rotifers was correlated with certain physicoal & chemical parameters using correlation matrix> <Keywords: *Keratella tropica* , population dynamics, reservoir, Bhopal>
- 83 Kutikova, L.A., & L.A. Folijan. 1989. Ecological-faunistic characterization of rotifers of lake Issyk-Kul. p61-83. In *The Investigations of the Water Ecosystem, USSR Academy of Sciences, Proceedings of the Zoological Institute, Leningrad, 1989, Vol 205.*
- 84 Lacroix, G., Boët, P., Garnier, J., Lescher-Moutoué, F., Pourriot, R., & Testard, P. 1989. Factors controlling the planktonic community in the shallow Lake of Créteil, France. *Int. Revue ges. Hydrobiol.* 74(4): 353-370.
- 85 Lair, N. & Ali, H.O. 1990. Grazing & assimilation rates of natural populations of planktonic rotifers *Keratella cochlearis*, *Keratella quadrata* & *Kellicottia longispina* in a eutrophic lake, Aydat, France. *Hydrobiologia* 194(2): 119-132. <Address: Equipe d'Hydrobiologie, Université Blaise Pascal de Clermont-Ferrand, 63,177 Aubiere, FRANCE> <Sum-mary: Filtering rates of ^{14}C labelled *Chlamydomonas* sp. by 3 dominant species of rotifers were studied in eutrophic Lake Aydat. Rates varied among species: *Keratella cochlearis*, 4 to 53 $\mu\text{l}/\text{ind}/\text{hr}$; *Keratella quadrata*, 2 to 56 $\mu\text{l}/\text{ind}/\text{hr}$; *Kellicottia longispina*, 3 to 52 $\mu\text{l}/\text{ind}/\text{hr}$. Max. assim. eff. = 32%. At these grazing rates, abient populations could clear the water in <2 d during July. Thus, in Lake Aydat, the rotifers community could play an important role in regulation of seasonal succession of phytoplankton & bacteria.> <Keywords: grazing rates, feeding rates, assimilation efficiency, clearance rates, food, feeding, community grazing.>
- 86 Lancaster, H.F., & Drenner, R.W. 1990. Experimental mesocosm study of the separate & interaction effects of phosphorus & mosquitofish, *Gambusia affinis*, on plankton community structure. *Can J Fish Aquat Sci* 47(3): 471-479. <Address: Department of Biology, Texas Christian University, Fort Worth, TX, 76129, USA> <Summary: We examined community impacts of phosphorus (P) & mosquitofish (*Gambusia affinis*) in an experimental mesocosm study of factorial design in which 2 levels of P addition were cross-classified with 2 levels of fish. Rotifers (etc.) were enhanced in the presence of mosquitofish.> <Keywords: mesocosm, chemistry, factorial design, chemical limnology>
- 87 Legendre, M., M. Pagano, & L. Saint-Jean. 1987. Peuplements et biomasse zooplanctonique dans des Etangs de pisciculture Lagunaire (Layo, Cote d'Ivoire) Etude de la Recolonisation après la Mise en eau. *Aquaculture* 67: 321-341. <Keywords:

L

saline, salt, brackish water, aquaculture, culture.>

- 88 Lovett, D., & D.L. Felder. 1988. Evaluation of the rotifer *Brachionus plicatilis* as a substitute for *Artemia* in feeding larvae of *Macrobrachium rosenbergii*. *Aquaculture* 71: 331-338. <Keywords: *Brachionus plicatilis*, culture, rotifers as food for shrimp.>

- 89 Lubzens, E. 1990. The Samuel Lunenfeld Rotifer Reference Center. <Address: Israel Oceanographic & Limnological Research Ltd. Tel Shikmona, POB 8030, Haifa, ISRAEL.> <Summary: This short document describes the activities of the reference center. Included with the document is a selected list of publications & a selected group of abstracts on *Brachionus plicatilis* by workers at the center.> <Keywords: *Brachionus plicatilis*, culture, bibliography, reference lists, rotifers as food for fish, aquaculture, physiology, mariculture, preservation of rotifers, cryopreservation.>

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- 90 MacIsaac, H.J., & Gilbert, J.J. 1989. Competition between rotifers & cladocerans of different body sizes. *Oecologia (Berl)* 81(3): 295-301. <Address: Department of Biological Sciences, Dartmouth College, Hanover, NH 03755, USA.> <Summary: Laboratory experiments were performed to test the hypothesis that rotifers could coexist with small (< 1.2 mm), but not large (> 1.2 mm) cladocerans. *Keratella cochlearis* was excluded in <8d by the large cladocerans (*Daphnia pulex* & *D. magna*), probably through both interference & exploitative competition. On the other hand, *K. cochlearis* persisted for 8 wk with 2 small cladocerans (*Bosmina longirostris* & *Ceriodaphnia dubia*) & excluded a 3rd small cladoceran (*D. ambigua*). Similarly, *Synchaeta oblonga* coexisted with *B. longirostris* for >7wk, & *K. testudo* coexisted with *D. ambigua* for >4wk. Coexistence of small cladocerans & rotifers was always accompanied by suppression of one or both populations, probably primarily if not exclusively by exploitative competition for limiting food resources. These results indicate that the competitive dominance of cladocerans over rotifers decreases markedly with cladoceran body size & that factors other than body size

may determine the competitive outcome between rotifers & small cladocerans. Our study provides a mechanistic explanation for a commonly observed pattern in natural zooplankton communities: planktonic rotifers often are abundant when only small cladocerans occur but typically are rare when large cladocerans are present. <Keywords: *Keratella cochlearis*, *Keratella testudo*, interference competition, exploitative competition, *Synchaeta oblonga*, food, cladoceran>

- 91 Madoni, P. 1989. Community structure of the microzoobenthos in Lake Suviana, Tusco-Emilian Apennines. *Bull Zool* 56(2): 159-166. <Address: Istituto di Ecologia, Universita di Parma, viale delle Scienze, I-43100 Parma, ITALY> <Summary: The composition & distribution of the microzoobenthos in Lake Suviana (Tusco-Emilian Apennines) was studied. Rotifers were abundant in some periods.> <Keywords: community structure, benthic, season>

- 92 Maeda, M. 1988. Microorganisms & protozoa as feed in mariculture. *Prog Oceanogr* 21(2): 201-206. 1st International Symposium on the Microbial Ecology of the Mediterranean Sea, Sorrento, Italy, June 1987. <Address: Department of Microbiology, Ocean Research Institute, University of Tokyo, Minamidai, Nakano, Tokyo 164, JAPAN> <Keywords: rotifers as food for fish, culture, aquaculture>

- 93 Malley, D.F., Chang, P.S.S., & Schindler, D.W. 1988. Decline of zooplankton populations following eutrophication of lake 227, Experimental Lakes Area, Ontario: 1969-1974. *Can Tech Rep Fish Aquat Sci* 0(1619): i-iv, 1-25. <Summary: Weekly additions of N & P to oligotrophic Lake 227 in the ELA, during the ice-free seasons of 1969-74 caused marked increases in standing algal biomass & 1° production. Despite this, planktonic crustaceans & rotifers declined in biomass & species diversity with fertilization.> <Keywords: pollution, environmental toxicology, eutrophication, species composition, season, chemistry, fertilization experimentation, production>

- 94 Margaritora, F.G., Stella, E., & Ferrara, O. 1988. Struttura e dinamica dello zooplancton

- di un lago vulcanico dell'Italia centrale (Lago Albano, Lazio). Riv Idrobiol 27(1): 131-148. <Address: Dip. Biol. Animale dell'Uomo, Univ. La Sapienza di Roma, ITALY> <Summary: 11 species of rotifers are discussed> <Keywords: season, species composition, dominance.>
- 95 Martinez, C.C., & De Paggi, S.J. 1988. Especies de *Lecane* Nitzsch (Rotifera, Monogononta) en ambientes acuáticos del Chaco Oriental y del valle aluvial del río Paraná (Argentina). <Species of *Lecane* Nitzsch, Rotifera, Monogononta, from waterbodies of the Eastern Chaco & the Parana floodplain, Argentina.> Rev Hydrobiol Trop 21(4): 279-296. <Summary: 25 species of *Lecane* were identified during the course of several studies on the ecology of the zooplankton from streams & tropical swamps of the Eastern Chaco. Spatial & temporal distribution of *Lecane* spp. & their relationships with biotic & abiotic factors are discussed. Intraspecific variations are described, & validity of infraspecific categories used by different authors is discussed.> <Keywords: biogeography, *Lecane stichaea* new record, *Lecane halichysta* new record, *Lecane grandis* new record, *Lecane elegans* new record, *Lecane rhytida* new record, *Lecane stichaeoides* new record, *Lecane tenuiseta* new record, *Lecane bulla*, *Lecane cornuta*, *Lecane leontina*, *Lecane curvicornis*, taxonomy>
- 96 May, L., & Jones, D.H. 1989. Does interference competition from *Daphnia* affect populations of *Keratella cochlearis* in Loch Leven, Scotland? J Plankton Res 11(3): 445-462. <Summary: A very marked inverse relationship between *Daphnia hyalina lacustris* & *Keratella cochlearis* population densities was observed in Loch Leven. Natural death rates of the rotifer population were far lower than would have been expected in response to interference competition from *Daphnia*. *Keratella* birth rates fell, along with chlorophyll-*a* concentrations, when *Daphnia* filtration rates were high. Results indicate that when *Daphnia* were abundant direct competition for food was the most likely factor suppressing *Keratella* population growth.> <Keywords: food, interference competition, filtering rate, competition, population dynamics, life table statistics, growth, reproduction>
- 97 Matveeva, L.K. 1989. <Community structure & density of planktonic rotifers determined using various methods of concentrating samples.> Zool Zh 68(2): 284-289. <Summary: This study compared techniques of concentrating zooplankton samples; certain techniques may give distorted views of the species composition of rotifer communities.> <Keywords: *Trichocerca similis*, *Keratella cochlearis*, *Ascomorpha saltans*, *Gastropus stylifer*, *Polyarthra*, *Filinia terminalis*, *Keratella hiemalis*, *Conochilus*, *Asplanchna priodonta*, *Kellicottia longispina*, sampling methods>
- 98 Medina, M.-L., & E. Vásquez. 1988. Estudio de los Rotíferos de una Laguna de inundación de Aguas Negras del Bajo Caroni, Venezuela. Memoria 48:105-119.
- 99A Mitchell, S.A. 1986. Experiences with outdoor semi-continuous mass culture of *Brachionus calyciflorus* Pallas (Rotifera) Aquaculture 51: 289-297. <Keywords: aquaculture, culture, mass culture, *Brachionus calyciflorus* >
- 99B Mitchell, S.A., & J.H.B. Joubert. 1986. The effect of elevated pH on the survival & reproduction of *Brachionus calyciflorus*. Aquaculture 55: 215-220. <Keywords: aquaculture, pH, acid, survivorship, reproduction, culture, *Brachionus calyciflorus* >
- 100 Mitchell, S.F. 1989. Responses of the zooplankton to nutrient enrichment of large enclosures in Lake Okaro, New Zealand. Arch. Hydrobiol Beih. 32: 189-194. <Address: Department of Zoology, University Otago, POB 56, Dunedin, NEW ZEALAND> <Summary: 3 macrozooplankters in Lake Okaro showed evidence of inhibition in response to increases in phytoplankton produced by nutrient enrichment of replicated 1m³ enclosures over 10d. At the highest phytoplankton level, numbers of *Asplanchna* & other micrometazoa were all significantly lower than in the controls.> <Keywords: *Asplanchna* sp. nutrients, chemical limnology, pollution, enclosures, Lake Okaro>

- 101 Modenutti, B.E. 1987. Caracterización y variación espacial del zooplancton of del Arroyo Rodríguez (Provincia de Buenos Aires, Argentina). An Inst Cienc del Mar y Limnol Univ Autòn México 14(1): 21-28. <Address: Instituto de Limnologia "Dr. Raul A. Rinquelet", Facultad de Ciencias Naturales, Paseo del Bosque sn, 1900 La Plata, Prov. de Buenos Aires, ARGENTINA> <Summary: This investigation showed that sampling stations without urban contaminants have zooplankton dominated by monogonont rotifers & other common zooplankton, while in polluted sections the composition of the zooplankton changes to become dominated by ciliates. Monogonont rotifers drop in importance but bdelloids increase. Data were analysed with a combination of similarity coefficients & cluster analysis as used in numerical taxonomy. Two associations were found with a clearly low correlation between each other. One corresponds to the unpolluted section & other to the polluted one.> <Keywords: bdelloidea, species composition, pollution, trophic index, taxonomy, numerical taxonomy, similarity coefficients, cluster analysis>
 - 102 Modenutti, B.E., & Claps, M.C. 1988. Monogononta rotifers from plankton & periphyton of pampasic lotic environments, Argentina. Limnologica 19(2): 167-176. <Address: Centro Regional Univ. Bariloche, U.N. Comahue c. c. 1336, 8400 Bariloche, Argentina> <Summary: From 1985-1986, 14 rivers belonging to the Delta sub-basin (Rio de la Plata Estuary Basin, Argentina) were sampled, in order to study the rotifer fauna. 256 samples were collected in spring, summer, fall & winter, & a total of 76 species of Monogononta rotifers were found, 1 of these is a new record for the Neotropical Region (*Notholca squamula*) & 3 other (*Lophocaris salpina*, *Lecane hastata*, *Dicranophorus forcipatus*) are new for the argentine fauna. There were a large number of common species in the two communities making it difficult to establish clear limits between lotic plankton & periphyton. <Keywords: *Notholca squamula* new record, *Lophocaris salpina* new record, neotropics, tropics, *Lecane hastata* new record, *Dicranophorus forcipatus* new record, biogeography, distribution, river Rio de la Plata, estuary>
 - 103 Morling, G., & B. Pejler. 1990. Acidification & zoo-plankton development in some West-Swedish lakes 1966-1983. Limnologica (Berlin) 20(2): 307-318.
 - 104 Mourelatos, S., Pourriot, R., & Rougier, C. 1990. Filtration rate in the rotifer *Brachionus calyciflorus*: comparison of the measuring methods: influence of age. Vie Milieu 40(1): 39-43. 1 <Address: Lab. Ecologie, Ecole Normale Supérieure, 46 rue d'Ulm, F-75230 Paris, FRANCE> <Summary: Grazing rate measurements were performed in the laboratory on *Brachionus calyciflorus* by using 2 different techniques: cell counts on a hemacytometer (Thoma cell) & the radiotracer method (¹⁴C-labelled *Chlorella*). Results obtained by means of these two methods had no significant differences. After freezing the labelled animals, we found that the clearance rate of the young *Brachionus* was 3X less than that of adult females; yet younger animals filtered more actively than the adults in terms of dry weight. <Keywords: grazing rate, *Brachionus calyciflorus*, filtration rate, feeding, food, clearance rates, radioisotope, ¹⁴C-labelling>
- *N*
- 105 Nicolas, J.L., & M.N. Joubert. 1986. Bacteries associées aux productions de *Brachionus plicatilis*. GERBAM -- Deuxième Colloque International de Bactériologie marine - CRNS, Brest, 1-5 Octobre 1984 IFREMER, Actes de Colloques, 3, 1986, p. 451-457.
 - 106 Nicolas, J.L., Robic, E., & Ansquer, D. 1989. Bacterial flora associated with a trophic chain consisting of microalgae, rotifers & turbot larvae: influence of bacteria on larval survival. Aquaculture 83: 237-248. <Address: DRVA, Cent. Brest, IFREMER, B.P. 70, 29263 Plouzane, FRANCE> <Summary: An analysis of 2 similar trophic chains consisting of microalgae, rotifers (*Brachionus plicatilis*) & turbot larvae (*Scophthalmus maximus*) was done.> <Keywords: rotifers as food for fish, *Brachionus plicatilis*, aquaculture, culture, bacteria>
 - 107 Niewolak, S. 1988. Mikrobiologiczne badania jeziora sztucznie desstratyfikowanego. <Microbiological study of an artificially destratified lake.> Roczn. Nauk

Roln Ser H Rybactwo 101(1): 155-172.
<Summary: Rotifers were part of this microbiological study> <Keywords: microbiology - rotifers>

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108 Okamoto, S., M. Tanaka, H. Kurokura, & S. Kasahara. 1987. Cryopreservation of parthenogenic eggs of the rotifer *Brachionus plicatilis*. Nippon Suisan Gakkaishi 53(11): 2093.

109 Opuszynski, K., & Shireman, J.V. 1988. Pond environmental manipulation to stimulate rotifers for larval fish rearing. Roczniki Roln Ser H Rybactwo 101(4): 183-195. <Keywords: environmental toxicology, toxic agent, pollution, insecticide, water quality>

110 Ostrowski, A.C. 1989 Effect of rearing tank background color on early survival of dolphin larvae. Prog Fish-Cult 51(3): 161-163. <Address: Oceanic Institute, Makapuu Point, POB 25280, Honolulu, Hawaii 96825, USA> <Summary: Effects of experimental tank background color on early survival rates of *Coryphaena hippurus* was examined to determine the survival rates of 7d old fish fed varying concentrations of rotifer.> <Keywords: rotifers as food for fish>

P

111 Paggi, J.C., & S. José de Paggi. 1973. Sobre algunos rotíferos nuevos para la fauna Argentina. Rev. Asoc. Cein. Nat. Lit. 0(4): 49-60.

112 Pagani, M. 1989. Diffusione di *Schwiebia (Jacotietta) codognoensis* Fain & Pagani (Astigma Acaridae) nell'acqua potabile i una cittadina del Nord Italia. Boll Zool Agrar Bachic 21: 121-140. <Address: Istituto di Entomologia, Università Cattolica del Sacro Cuore, Via Emilia Parmense 84, I-29100 Piacenza, ITALY> <Summary: Rotifers found in a water supply for potable water.> <Keywords: distribution>

113 Palmer, M. 1990. Temporal & spatial dynamics of meiofauna within the hyporheic zone of Goose Creek, Virginia. Journal North Am. Benthol Soc 9: 17-25. <Address: Department of Zoology, University of Maryland, College Park, MD, 20742 USA>

<Summary: The composition & abundance of meiofauna in a 4th-order stream (Goose Creek) in northern Virginia is described. Total meiofaunal abundance in the streambed averaged $> 2000/10 \text{ cm}^2$ over the year, but reached nearly $6000/10 \text{ cm}^2$ during late June, primarily due to rotifers. 5 taxa constituted 85-99% of the community: rotifers, oligochaetes, early instar chironomids, nematodes & copepods. Pronounced seasonal variation occurred for each group. Rotifer, oligochaete, & copepod abundances were significantly related to discharge with abundances declining in surface layers after major floods.> <Keywords: oxygen, meiofauna, vertical distribution, freshwater>

114 Persoone, G., Van De Vel, A., Van Steertegem, M., & De Nayer, B. 1989. Predictive value of laboratory tests with aquatic invertebrates: Influence of experimental conditions. Aquat Toxicol 14: 149-168. <Summary: *Brachionus plicatilis*, among other microcrustaceans, were used for toxicity testing.> <Keywords: *Brachionus plicatilis*, environmental toxicity, pollution, toxic agents, temperature, salinity, marine, brackish water>

115 Planas, M., & Estevez, A. 1989. Effects of diet on population development of the rotifer *Brachionus plicatilis* in culture. Helgol Meeresunters 43(2): 171-182. <Address: Instituto de Investigaciones Marinas, CSIC Muelle de Bouzas 6, 36208 Vigo, SPAIN> <Summary: Experiments were conducted to observe effect of 5 diets on the population development of the rotifer *Brachionus plicatilis* Muller under laboratory conditions.> <Keywords: *Brachionus plicatilis*, diet, food, culture, aquaculture>

116 Pontin, D., & R. Müller. 1988. Distribution & food of larval & juvenile *Coregonus* sp. in Lake Sarnen, Switzerland. Finnish Fisheries Research 9: 117-125. <Address: Swiss Federal Institute for Water Resources & Water Pollution (EAWAG), Lake Res. Lab., CH-6047, Kastanienbaum, SWITZERLAND>

117 Pourriot, R. 1989. Morphologie de la vessie, critère taxonomique dans le genre Notommata (Rotifera, Monogononta). Bull Soc Zool Fr 114(2): 5-10. <Address: Ecole

Normale Supérieure, Laboratoire de Zoologie
46, rue d'Ulm, F-75230 Paris, FRANCE>
<Keywords: retrocerebral organ, anatomy,
morphology, *Notommata*, taxonomy>

- 118 Puchkov, P.V. 1988. On causes of so-called superadaptations & some "biological excesses". Zh Obshch Biol 49(6): 729-740. <Summary: This work considered the usefulness of studies that examine resistance of organisms to extraordinary experimental conditions (superhigh & superlow temperatures, anabiosis) that are very different from natural ones. Among other taxa rotifers are considered. <Key-words: evolution, natural selection, temperature>

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- 119 Rao, T.R., & Sarma, S.S.S. 1988. Effect of food & temperature on the cost of reproduction in *Brachionus patulus*, Rotifera. Proc Indian Natl Sci Acad Part B Biol Sci 54(6): 435-438. <Summary: Survivorship & fecundity of *Brachionus patulus* cultured at various food & temperature levels were used to determine correlations between reproduction, survival, & reproduction. Cost of reproduction was negatively correlated under stressful conditions. The reverse was the case under optimal conditions.> <Keywords: life table statistics, fecundity, reproduction, *Brachionus patulus*, survivorship, temperature, culture>
- 120 Reid, J.W., & Turner, P.N. 1988. Planktonic Rotifera, Copepoda & Cladocera from Lago Acu & Viana, State of Maranhao, Brazil. Rev Bras Biol 48(3): 485-496. <Summary: 33 species of rotifers were recorded from Lago Acu in November 1984 & June 1985; the ecology, biogeography & morphology of some species are discussed.> <Keywords: species composition, biogeography, Brazil>
- 121 Ricci, C., Snell, T.W., & King, C.E. (editors) 1989. *Hydrobiologia* 186/187: 1-430. <Summary: 52 communications from the 5th International Rotifer Symposium held in Gargnano, Italy, September 12-17, 1988. Preface, List of participants, Author Index, & Subject index, plus photographs of the participants. The volume includes a tribute to Pater Dr. h.c. Josef Donner by A. Ruttner-Kolisko. Published as a double volume (186 &

187) of the journal *Hydrobiologia* & as DH 52 *Developments in Hydrobiology*, Kluwer Academic Publishers, Dordrecht, Boston, London. ISBN 0-7923-0413-6 (acid-free paper).

- 122 DeRidder, M. 1989. De huidige stand van het raderdieronderzoek in België. Verhandelungen van het Symposium "Invertebrate van België, p. 31-41. Ricci, C., & G. Abbruzzese. 1989. Il costo dell' anidrobiosi in nematodi e rotiferi bdelloidei. S.I.T.E. atti 7: 297-302. <Keywords: anhydrobiosis, *Macrotrachela quadricornifera*.>
- 123 Rothhaupt, K.O. 1990. Resource competition of herbivorous zooplankton: a review of approaches & perspectives. Arch. Hydrobiol. 118(1): 1-29. <Keywords: competition, resource.>
- 124 Rothhaupt, K.O. 1990. Differences in particle size-dependent feeding efficiencies of closely related rotifer species. Limnology & Oceanography 35: 16-23. <Address: Institute of Lake Research & Fisheries, Untere Seestrasse 81, D-7994 Langenargen, Germany> <Summary: Size-selective feeding of 4 *Brachionus* strains was studied with 3 experimental setups: (1) selection between polystyrene spheres of different size in short-term (10 min) feeding experiments, (2) selection between pairs of dual-labeled algal taxa in short-term feeding experiments, & (3) selection among 3 algal taxa in long-term (24 hr) feeding experiments. Food size preferences were related to body sizes between strains but not within 1 strain (*Brachionus calyciflorus*). *Brachionus angularis* preferred food items <5µ equivalent spherical diameter (ESD), *Brachionus rubens* strain F, fed most efficiently on particles approx. 5 µm ESD, & *B. calyciflorus* on particles of ≈10 µm ESD. *Brachionus rubens* strain B ingested particles from 3.5- to 12 µm ESD equally well. Apart from particles size effects, feeding was unselective. Polystyrene spheres of the appropriate sizes were ingested readily. <Keywords: latex microspheres, polystyrene spheres, *Brachionus calyciflorus*, *Brachionus angularis*, size-dependent feeding, *Brachionus rubens*, food, diet, feeding experiments, radiotracer, radioisotope.>

- 125 Rothhaupt, K.O. 1990. Changes of the functional responses of the rotifers *Brachionus rubens* & *Brachionus calyciflorus* with particle sizes. *Limnology & Oceanography* 35: 24-32. <Summary: Effects of size & concentration of food particles on clearance (CR) & ingestion rates (IR) were studied for the rotifer species *Brachionus rubens* & *Brachionus calyciflorus*. Algae of varying sizes were offered in short-term radiotracer experiments. For small particles, below the optimal size, feeding was best described by the rectilinear model with constant maximal clearance rates ($\mu\text{l}/\text{ind}/\text{hr}$) below & constant maximal ingestion rates ($\text{ng C}/\text{ind}/\text{hr}$) above a critical concentration. In this size range, maximal CR increased & the critical concentration decreased with particle size. For particles larger than the optimal size, feeding could best be described by a curvilinear model. In this size range, CR decreased continuously with food concentration, maximal IR were lower than those for small particles, & IR could even decrease in high concentrations of big particles. These findings suggest different mechanisms in feeding on small & large particles & help to reconcile some seemingly contradictory results of previous studies.> <Keywords: fiid, diet, radiotracer, radioisotope, models, *Brachionus rubens*, *Brachionus calyciflorus*., particle size, clearance rates, ingestion rates>
 - 126 Rothhaupt, K.O. 1990. Population growth rates of two closely related rotifer species: effects of food quantity, particle size, & nutritional quality. *Freshwater Biology* 23: 561-570.
 - 127 Rublee, P.A., & Gallegos, C.L. 1989. Use of fluorescently labelled algae, FLA, to estimate microzooplankton grazing. *Mar Ecol Prog Ser* 51(3): 221-228. <Summary: A fluorescent dye (DTAF) was used to label a small alga (*Nannochloris* sp.), following the protocol of Sherr et al. (1987). *Brachionus* sp. & a small ciliate ingested the fluorescently labelled algae, demonstrating saturation kinetics. Fluorescent labelling of algae is apromising technique that may be used for estimating grazing rates in a manner analogous to that described by Sherr et al. (1987) using fluorescently labelled bacteria (FLB).> <Keywords: *Brachionus*, food, feeding, technique>
 - 128 Ruttner-Kolisko, A. 1966. Sitzung der mathematisch-naturwissenschaftlichen Klasse vom 24. Juni 1966. *Österreichische Akademie der Wissenschaften* 9: 1-4.
 - 129 Ruttner-Kolisko, A., & G. Malicky. 1988. Succession & abundance of rotifers in Lunzer Untersee as determined by biological interactions & abiotic events. *Verh. Internat. Verein. Limnol.* 23: 510-515.
 - 130 De Ruyter Van Steveninck, E.D., Admiraal, W., & Van Zanten, B. 1990. Changes in plankton communities in regulated reaches of the lower River Rhine. *Regul Rivers Res Manage* 5(1): 67-76. <Address: National Institute of Public Health & Environmental Protection, P.O.B. 1, NL-3720 BA Bilthoven, THE NETHERLANDS> <Summary: During this investigation rotifers increased (biomass) along with crustaceans, & molluscan larvae, while amoeba & ciliates decreased in numbers.> <Keywords: trophic level, estuary, river, saline, species composition, >
 - 131 De Ruyter van Steveninck, E.D., B. van Zanten, & W. Admiraal. 1990. Phases in the development of riverine plankton: examples from the rivers Rhine & Meuse. *Hydrbiol. Bull.* 24(1): 47-55.
- *S*
- 132 Saint-Jean, L., & Pagano, M. 1990. Variation nycthémerale de la répartition verticale et de l'efficacité de collecte du zooplancton en lagune Ebrié (Cote d'Ivoire). *Hydrobiologia* 194: 247-265. <Address: Centre ORSTOM, BP 5045, F-34032 Montpellier Cedex, FRANCE> <Summary: Vertical distribution & night & day collecting efficiencies of both nets & a Schindler trap, were studied in two shallow (4m) unstratified bays of the Ebrie Lagoon. Rotifers did not migrate.> <Keywords: vertical migration, behavior>
 - 133 Salt, G.W. 1989. Comparisons of the diets & reproductive performances of two sympatric rotifers, *Asplanchna girodi* & *Asplanchna priodonta*. *Freshwater Biology* 22(3): 417-430. <Address: Department of Zoology, University of California, Davis, Calif. 95616, USA>

<Summary: Diet composition & the production of embryos were measured in *Asplanchna girodi* & *Asplanchna priodonta* collected through 3 years in the San Joaquin-Sacramento delta of California. These species are sympatric in low to moderate densities for 5mo of the year. Despite marked differences in the structure of the trophi, both species consumed the same array of prey species. Percentage compositions of the diet varied both intra- & interspecifically. Food niches of the 2 species appear to differ little from one another. Individuals of *Asplanchna girodi* had a larger mean number of prey in the gut per individual than did those of *A. priodonta*, due to their larger size. Per unit volume, each species prey gathering performance was the same. *Asplanchna priodonta* produced more embryos per calculated unit volume of prey ingested than did *A. girodi*. During spring, when both species were present in the plankton, *A. priodonta* did not capture Size Class 2 & 5 animals (volumes $0.09-1.0 \mu^3 \times 10^6$ & $3.0-3.5 \mu^3 \times 10^6$, respectively) nor large *Synchaeta*. Both these prey classes were in the diet during the summer & autumn months.>
<Keywords: diets, reproduction, sympatric, *Asplanchna girodi*, *Asplanchna priodonta*, *Synchaeta*, predator-prey, food, feeding, niche>

134 Samocha, T.M., Uziel, N., & Browdy, C.L. 1989. The effect of feeding 2 prey organisms, nauplii of *Artemia* & rotifers, *Brachionus plicatilis*, Muller), upon survival & growth of larval marine shrimp, *Penaeus semisulcatus*, de Haan. *Aquaculture* 77(1): 11-20. <Summary: The shrimp *Penaeus semisulcatus* were fed *Artemia* nauplii or rotifers, *Brachionus plicatilis*.>
<Keywords: culture, *Brachionus plicatilis*, rotifers as food for shrimp>

135 Sanders, R.W., Porter, K.G., Bennett, S.J., & Debiase, A.E. 1989. Seasonal patterns of bacterivory by flagellates, ciliates, rotifers, & cladocerans in a freshwater planktonic community. *Limnol Oceanogr* 34(4): 673-687. <Summary: Bacterivory in eutrophic Lake Oglethorpe, Georgia, was determined direct observation of tracer particle uptake by all members of the planktonic community. Heterotrophic flagellates dominated grazing at all times, accounting for 49-81% of grazing on an areal basis & up to 98% of grazing at

some depths. In late spring - early summer, rotifers & ciliates were responsible for as much as 25 & 30% of bacterivory at some depths, but averaged 3 & 11% over the year, respectively. Grazing impact of cladoceran crustaceans was generally <1% of the total. Bacterivory by copepods was not detected. Total bacterial mortality due to grazing ranged from 11 to 162% of bacterial cell production estimated from the incorporation of [3 H]thymidine. Use of $0.57 \mu\text{m}$ microspheres as tracers gave similar estimates of ingestion to fluorescently labeled bacteria in this system.> <Keywords: food, feeding rates, grazing rates, latex microspheres, bacteria>

136 Sarbu, S. 1990. The unusual fauna of a cave with thermomineral waters containing H_2S from outhern Dobrogea, Rominia. *Mémoires de Biospéologie* 17: 191-195.

137 Sarma, S.S.S. 1889. Effect of *Chlorella* density & temperature on somatic growth & age at maturity of the rotifer *Brachionus patulus*, Muller, (Rotifera. *Current Science* 58(14): 788-791. <Address: Department of Zoology, University of Delhi, Delhi 110 007, INDIA>
<Summary: Effects of 3 levels (1, 2, & 4 times. 10^6 cells/ml of *Chlorella*) & 3 temperatures (15, 25 & 35°C) on somatic growth & age at maturity of *Brachionus patulus* were investigated. Both growth rate & maximum body size reached were significantly higher at higher foods levels. Effects of temperature alone on adult body size did not show a clear trend. Higher food & temperature levels significantly reduced age at maturity.>
<Keywords: growth, food, development, temperature, *Brachionus patulus* >

138 Sarma, S.S.S., & G.P.S. Ghimire. 1990. Rotifers (Rotifera) of Kathmandu Valley, Nepal. *Environment & Ecology* 8(3): 1016-1021.

139 Sarma, S.S.S., & T. R. Rao. 1990. Population dynamics of *Brachionus patulus* Muller (Rotifera) in relation to food & temperature. *Proc. Indian Acad. Sci (Animal Sci)* 99(4): 335-343.

140 Sarvala, J., Rajasilta, M., Hangelin, C., Hirovonen, A., Kiiskila, M., & Saarikari, V.

1988. Spring abundance, growth & food of *Oplus vendace*, *Coregonus al-bula* L., & whitefish, *Coregonus lavaretus* L. *sensu lato*, in Lake Pyhajarvi, SW Finland. Finn Fish Res 9: 221-234. International Symposium on Biology & Management of Coregonids, Joensuu, Finland, August 24-27, 1987. <Address: Dep. Biol., Univ. Turku, SF-20500 Turku, Finland> <Keywords: rotifers as food for fish>
- 141 Saunders, J.F., III, & Lewis, W.M. Jr. 1988. Zooplankton abundance & transport in a tropical white-water river. Hydrobiologia 162: 147-155.
- 142 Saunders, J.F., III, & Lewis, W.M., Jr. 1989. Zooplankton abundance in the lower Orinoco River, Venezuela. Limnology & Oceanography 34: 397-409. <Summary: Zooplankton were sampled; the dominant taxa were euplanktonic, suggesting an origin from standing waters. Densities for rotifers (7.6 ind/L) were > than cladocerans (0.9 ind/L) or copepods (1.2 ind/L), but cladocerans accounted for more than half of total biomass (0.5 ugC/L). <Keywords: reproduction, species composition, biomass, river, lotic system>
- 143 Schoenberg, S.A. 1990. Short-term productivity responses of algae & bacteria to zooplankton grazing in 2 freshwater lakes. Freshwater Biology 23: 395-410.
- 144 Shamsi, M.J.K., & Jafri, A.K. 1989. Environmental characteristics & seasonal distribution of planktonic biomass of a perennial & sewage-fed water body from northern region of India. Z Angew Zool 76: 441-456. <Address: Department of Zoology, College Science, POB 2455, King Saud University, Riyadh-11451, SAUDI ARABIA> <Summary: Physical, chemical, & biological characteristics of a sewage-fed fish pond were studied. 37.3% of the zooplankton were rotifers.> <Keywords: season, physical limnology, chemical limnology, chemistry, temperature, oxygen, population dynamics, species, composition, sewage, eutrophic, trophic status.>
- 145 Siegfried, C.A. 1988. Planktonic indicators of lake acidification in the Adirondack Mountain region of New York State. Lake Reservoir Manage 4: 115-122. <Address: Biol. Survey, New York State Museum, Albany, NY 12230, USA> <Keywords: *Keratella taurocephala*, acid rain, toxic agent, pollution, environmental toxicology, indicator species>
- 146 DeSmet, W.H. 1988. Contributions to the rotifer fauna of the lower Zaire: 1. The rotifers from some small ponds & a river. Biol Jaarb 56(0): 115-131. <Summary: 80 taxa were found; 78 are new for the region; 28 are new for Zaire. <Keywords: taxonomy, biogeography, ponds, river>
- 147 DeSmet, W.H. 1990. Contributions to the rotifer fauna of the Bas-Zaire: 2. Species composition & seasonal abundance of rotifers in a shallow pond. Biol Jaarb 57: 62-77.
- 148 DeSmet, W.H. 1987. Rotifera uit de Galapago-seilanden. Natuurwet Tijdschr 69(4-6): 110-131. <Keywords: taxonomy, Galapagos Islands>
- 149 DeSmet, W.H, Van Rompu, E.A., & Beyens, L. 1987. Rotifera, Gastrotricha & Tardigrada from Shetland, the Faroes & Spitsbergen. Natuurwet Tijdschr 69(3): 81-102. <Address: Laboratorium voor Plant- en Dierkundige Algemene Biologie, University Antwerpen, RUCA Campus, Groenenborgerlaan 171, 2020-Antwerpen, BELGIUM> <Summary: 34 taxa of Rotifera, were reported from the samples.> <Keywords: marine rotifers>
- 150 DeSmet, W.H. 1988. Rotifers from Bjornoya, Svalbard, with the descriptions of *Cephalodella evabroedi*, new species & *Synchaeta lakowitziana arctica*, new subspecies. Fauna Norv Ser A 9(0): 1-18. <Summary: 50 taxa of rotifers were collected from Bjornoya; 48 had not been previously noted. A new species of *Cephalodella* & subspecies of *Synchaeta* are described.> <Keywords: taxonomy, biogeography, *Cephalodella evabroedi* new species, *Synchaeta lakowitziana*>
- 151 DeSmet, W.H., Van Rompu, E.A., & Beyens, L. 1988. Contribution to the rotifers & aquatic Tardigrada of Edgeoya, Svalbard. Fauna Norv Ser A 9: 19-30. <Summary: An account of the Rotifers of Edgeoya, Norway, is presented. 22 taxa of Rotifera are reported. <Keywords: Norway biogeography>

- 152 Snell, T.W., & Boyer, E.M. 1988. Thresholds for mictic female production in the rotifer *Brachionus plicatilis*, Muller. Journal of Experimental Marine Biology & Ecology 124(2): 73-86. <Address: Division of Science & Math, University of Tampa, Tampa, FL 33606, USA> <Summary: Food concentration, free NH₄, & population density thresholds for mictic female production were characterized for *Brachionus plicatilis*. <Keywords: sex, sexuality, chemistry, culture, mictic, female, production, *Brachionus plicatilis*, food, population dynamics, population density>
- 153 Sorgeloos, P. Editor. Larviculture & Artemia Newsletter. State University of Ghent - Faculty of Agricultural Sciences, Laboratory of Aquaculture & Artemia Reference Center, Rozier 44, B-9000 Ghent, Belgium. Fax +32-91-236406, BITNET electronic mail "ARTEMIA@BGERUG51"
- 154 Stemberger, R.S. 1990. An inventory of rotifer species diversity of northern Michigan inland lakes. Arch Hydrobiol 118(3): 283-302. <Address: Department of Biological Sciences Dartmouth College, Hanover, N.H. 03755, USA> <Summary: >160 taxa representing 41 genera were identified from this extensive 1st time inventory of rotifers from inland lakes of northern lower Michigan. About 30 species of planktonic rotifers (36 species of rotifers) were found per lake based on 8 collections (1 per season) for a 2 year period (summer 1973 - winter 1975). This unusually large number of species may reflect the advantage of the year around sampling routine. <Keywords: species lists, *Notholca*, *Keratella*, season, endemism, biogeography, distribution.>
- 155 Stemberger, R.S. 1990. Food limitation, spination, & reproduction in *Brachionus calyciflorus*. Limnology & Oceanography 35(1): 33-44. <Address: Department of Biological Sciences, Dartmouth College, Hanover, NH, 03755, USA> <Summary: BIOSIS BA 90-13396. Polymorphism in *Brachionus calyciflorus* involves both a chemical secreted by the predatory rotifer *Asplanchna* & food concentration. Food concentration accounted for 30-37% of the explained variance in spine length in treatments containing *Asplanchna* factor. The longest spines developed only in low-food conditions containing the *Asplanchna* chemical, indicating that the factors were additive. Newborns exposed only to low concentrations of food during the first 3d after hatching developed relatively long spines & smaller body sizes than their high-food-adapted mothers. The population growth rate of the *Asplanchna*-induced phenotype was significantly higher than that of the short-spined controls over a wide range of food concentrations (0.4-15.0 µg/ml dry mass of algae). Elongated spines were associated with a reduced threshold food concentration for reproduction, suggesting that they return an energetic benefit exceeding their developmental & maintenance costs. <Keywords: food, diet, spination, reproduction, *Brachionus calyciflorus*., *Asplanchna* , spine formation, population growth, developmental polymorphism, threshold food concentration.>
- 156 Stubbs, C.S. 1989. Patterns of distribution & abundance of corticolous lichens & their invertebrate associates on *Quercus rubra* in Maine USA . Bryologist 92(4): 453-460. <Address: Department of Botany Plant Pathology, University of Maine, Orono, ME 04469 USA> <Summary: Distribution of corticolous lichens & their invertebrate associates was examined. Lichen assemblages contained terrestrial (Arthropoda) & aquatic (Rotifera, Nematoda, & Tardigrada) faunas. <Keywords: Bdelloida, plant-rotifer relationships, distribution, habitat>
- 157 Sudzuki, M. 1989?. Rotifera from the Oriental region & their characteristics. Contributed paper to celebrate the Centennial Anniversary of the Foundation of "Nihon Daigaku" University.
- 158 Sudzuki, M. 1990. A Cycle Over. From 1930 to 1990. Biology Laboratory, Nihon Daigaku, Omiya. <Summary: The Celebration of one's 60th birthday is in Japan, called "Kan-Reki", which means One Full Life Cycle. The Kan-Reki has been completed by our good friend and colleague Minoru Sudzuki. Paul and I wish you well!
- 159 Sudzuki, M., & Fukuta, K. 1989. Rotifera from Koyama-ike, in Tottori: The largest coastal pond of Japan. Sixtieth Annual Meeting of the Zoological Society of Japan,

- Kyoto, Japan, October 4-6, 1989. Zool. Sci. 6(6): 1219. <Biol. Lab., Nihon Daigaku Univ., Omiya., JAPAN> <Keywords: species composition, pond, communitiy>
- 160 Suren A. 1990. Microfauna associated with algal mats in melt ponds of the Ross Ice Shelf. Polar Biol 10: 329-336. <Address: Dept Zoo, University of Canterbury, Christchurch, NEW ZEALAND.> <Summary: Microfauna of benthic algal mats in 8 ponds on the Ross Ice Shelf was examined. Tardigrades, nematodes & rotifers were successfully extracted from algal material by a modified Baermann funnel technique. 7 species of rotifer (of which 6 were bdelloids) were found. *Philodina* sp. occurred in all ponds. Rotifers were the most abundant invertebrates with mean densities = 4.26×10^5 individuals/m². <Keywords: Bdelloidae, *Philodina*, temperature, ice, algal mats, melt water, Ross Ice Shelf, Antarctica.>
- 161 Szyper, J.P. 1989. Nutritional depletion of the aquaculture feed organisms *Euterpina acutifrons*, *Artemia* sp. & *Brachionus plicatilis* during starvation. J World Aquacult Soc 20(3): 162-169. <Address: Univ. Hawaii, Institute Marine Biol., P.O. Box 1346, Kaneohe, Hawaii 96744, USA> <Summary: The nutritional quality of several food organisms including *Brachionus plicatilis*, in fed & starved conditions was evaluated> <Keywords: rotifers as food for fish, culture, aquaculture, *Brachionus plicatilis*,>
- *T*
- 162 Terek. J. 1988. Faunistic notes: Rotatoria, Ploimida, Euchlanidae. Biologia (Bratisl) 43(10): 950. <Keywords: *Euchlanis incisa* new record, *Brachionus forficula forficula* new record, *Lecane bifurca* new record, *Tetramastix opoliensis opoliensis* new record, *Filinia brachiata*, *Filinia passa*, biogeography>
- 163 Terek, J. 1990. An annual cycle of zooplankton of dead branch Latorica near Leles. DFS: 7598. Biologia (Bratisl) 45(2): 81-94. <Address: Branch Ecology Agric. Landscape, Cent. Biology Ecol. Science, Kukorelliho 10, 040 00 Kosice, CZECHO-SLOVAKIA> <Summary: An increased supply of agricultural nutrients in the study lake was reflected in an increase in species abundance in zooplankters. 108 taxa including 63 rotifers were found.> <Keywords: erosion, pollution, eutrophication.>
- 164 Terek, J. 1990. New & rare species of rotifer (Rotatoria) in Czechoslovakia. Biológia (Bratislava) 45(2): 149-152. <Address: Branch for Ecology of Agric. Landscape, Centre Biology Ecol. Science, Kukorelliho 10, 040 00 Kosice, CZECHOSLOVAKIA> <Summary: several species of rotifers are discussed: *Harringia eucopa* (Gosse, 1887), *Lecane ohioensis ohioensis* (Herich, 1885), (*Brachionus plicatilis asplanchnoides* (Charin, 1947), *Epiphanes brachionus spinosus* Rousset, 1901, *Volga spinifera* (Western, 1894). Specimens were obtained from territory of East Slovak Lowland & adjacent territories.> <Keywords: *Harringia eucopa*, *Lecane ohioensis ohioensis*, *Brachionus plicatilis asplanchnoides*, *Epiphanes brachionus spinosus*, *Volga spinifera* .>
- 165 Threlkeld, S.T. 1988. Planktivory & planktivore biomass effects on zooplankton, phytoplankton, & the trophic cascade. Limnology & Oceanography 33(6 Part 1): 1362-1375. <Address: Biological Station, Department of Zoology University of OK, Kingston, OK, 73439, USA> <Summary: 5 outdoor tank experiments were conducted to evaluate how season, fish biomass, & accidental mortality of introduced fish contributed to enhancement of phytoplankton growth by the zooplanktivorous atherinid fish, *Menidia beryllina*.> <Keywords: rotifers as food for fish, culture, bluegreen bacteria, population density, population dynamics, season, physical limnology, food, feeding>
- 166 Tilseth S., 1990. New marine fish species for cold-water farming. Aquaculture 85(1-4): 235-246. 3rd International Symposium on Genetics in Aquaculture, Trondheim, Norway, June 20-24, 1988. <Address: Institute Marine Research, Division Aquaculture, POB 1870, N-5001 Bergen, NORWAY> <Keywords: culture, aquaculture, rotifers as food for fish.>
- 167 Turner, P.N. 1988. Some rotifers encountered in Colorado, USA. Microscopy 36: 174-180.
- 168 Turner, P. 1990. The rotifer genus *Platyias* Harring (1913), in the neotropics. Acta Limnol 3:741-756

U

- 169 Ustaoglu, M.R. 1986. Zooplankton (metozoa) of the Karagöl (Yamanlar, Izmir-Turkey). *Biologia Gallo-hellenica* 12: 273-281.

V

- 170 Vasconcelos V. 1990. Seasonal fluctuation in the zooplankton community of Azibo reservoir, Portugal. *Hydrobiologia* 196(3): 183-192. <Address: Inst. Zool. 'Dr. Augusto Nobre', Fac. Ciencias, 4000 Porto, PORTUGAL> <Summary: Seasonal fluctuation in the zooplankton community of Azibo reservoir (Portugal), was studied.> <Keywords: community, species diversity, reservoir, Portugal.>
- 171 Vásquez, E., & J. Rey. 1989. A longitudinal study of zooplankton along the lower Orinoco River & its Delta (Venezuela). *Annls. Limnol.* 25(2): 107-120. <Address: Fundacion La Salle de Ciencias Naturales, Estacion Hydrobiologica de Guayana, Apdo. 51, San Félix, Edo. Bolivar, VENEZUELA.>
- 172 Vasquez, E., & Koste, W. 1988. Form variation of the rotifer *Brachionus variabilis*, Hempel, 1896, from the Orinoco River, Venezuela. *Ann Limnol* 24(2): 127-130. <Address: Fundacion La Salle Ciencias Naturales, Estacion Hidrobiologica Guayana, Apdo. 51. San Felex, Edo. Bolivar, VENEZUELA> <Summary: A new form of *Brachionus variabilis* is made. <Keywords: biogeography, *Brachionus variabilis*.>
- 173 Villegas, C.T. 1990. The effects on growth & survival of feeding water fleas, *Moina macrocopa* Straus, & rotifers, *Brachionus plicatilis*, to milkfish, *Chanos chanos* Forsskal, fry. *Isr J Aquacult Bamidgeh* 42(1): 10-17. <Address: Aquacult. Dept., Southeast Asian Fish. Dev. Cent., Tigbauan, Iloilo, PHILIPPINES> <Summary: The effects of feeding water fleas, *Moina macrocopa* Straus, & rotifers, *Brachionus plicatilis*, to milkfish, *Chanos chanos* Forsskal, fry a different feeding rates & frequencies were investigated.> <Keywords: Rotifers as food for fish>
- 174 Virro T. 1989. The comparison of sampling methods of planktonic rotifers (Rotatoria) on the example of Lake Peipus. <i.e., using Lake Peipus as an example>. *Eesti Nsv Tead Akad*

Toim Biol 38(2): 119-122. <Address: Institute Zool. Bot., Acad. Sci. Est. SSR, Tallin, USSR.> <Summary: This study compares plankton net & sedimentation methods for the quantitative collection of rotifers. The net method gives a distorted view of the structure of a rotifer community & its parameters; therefore, it is unreliable. Total number of rotifers in net samples was at an average 8.8X lower than the real value. Preliminary values of correction factors (K) for several dominating species are reported: *Kellicottia longispina* K = 2.0, *Keratella cochlearis* K = 9.0, *K. irregularis* K = 6.0, *Polyarthra luminosa* K = 18.8, *P. major* K = 14.6, *Synchaeta oblonga* K = 22.6. The sedimentation method appears to be the only reliable and, at the same time, reasonably labour-consuming for the adequate estimation of rotifer abundances & their community structure. > <Keywords: *Kellicottia longispina*, *Keratella cochlearis*, *Keratella irregularis*, *Polyarthra luminosa*, *Polyarthra major*, *Synchaeta oblonga*>

- 175 Virro, T. Life cycles of rotifers in Lake Peipsi. In: State of Lake Peipsi. Compiled by T. Timm. Abst. of the conference held in Tartu, Oct. 30-31, 1990. Tartu, 1990, pp. 111-114. (in Estonian, with English summary).

- 176 Vlaardingerbroek, B. 1989. Water level & temperature & zooplankton population abundances in Lake Surinumu, Papua New Guinea. *Int J Biometeorol* 33(3): 180-183. <Address: University of Papua New Guinea, Goroka Teachers College, P.O. B. 1078, Goroka EHP, Papua New Guinea> <Summary: The zooplankton community of Lake Surinumu, an oligotrophic hydroelectric impoundment, was studied in 1982. Water level, chemistry, & surface temperature data were collected. *Trochosphaera equatorialis* became dominant toward the end of the sampling period.> <Keywords: *Trochosphaera equatorialis*, species diversity, nitrogen.>

W

- 177 Weisse, T. 1990. Trophic interactions among heterotrophic microplankton, nannoplankton, & bacteria in Lake Constance, West Germany. *Hydrobiologia* 191: 111-122. International Symposium on Trophic Relationships in Inland Waters, Tihany, Hungary, September 1-4, 1987. <Address: Limnology Institute, University of Konstanz, POB 5560, D-7750

Konstanz, GERMANY> <Keywords: species composition, Lake Constance>

178 Whiteley W N., 1989. On the occurrence of the rotifer *Pleurotrocha petromyzon* Ehrenberg 1830 as a commensal on a cyclopoid copepod. *Microscopy (Lond)* 36(4): 318-320. <Address: Midway, Chapel Hill, Truro, Cornwall TR1 3BP, UK> <Keywords: *Pleurotrocha petromyzon*, commensal, cyclopoid copepods.>

179 Wiktor, K. 1989. Biomass & abundance of the zooplankton from the Gulf of Gdansk.. The Estuary Symposium, Kuehlungsborn, East Germany, November 16-21, 1987. *Limnologica* 20(1): 75-78. <Address: Inst. Oceanogr, Gdansk Univ., Czołgostow 46, Gdynia, POLAND> <Keywords: biomass, marine rotifers, Baltic Sea, population dynamics>

Y

180 Yamasaki, S., Tanabe, K., & Hirata, H. 1989. Efficiency of chilled & frozen *Nannochloropsis* sp. (marine *Chlorella*) for culture of rotifer. *Mem Fac Fish Kagoshima Univ* 38(1): 77-82. <Address: Laboratory of Fish Cultivation Physiology, Faculty of Fisheries, Kagoshima University, 50-20 Shimoarata 4, Kagoshima 890, JAPAN> <Summary: Chilled & frozen *Nannochloropsis* were fed to masscultures of *Brachionus plicatilis*. No significant difference was observed on the population growth of rotifers fed on both fresh & preserved algae.> <Keywords: culture, mass culture, rotifers as food for fish, aquaculture, *Brachionus plicatilis*.>

Z

181 Zale, A.V., & Gregory, R.W. 1990. Food selective by early life stages of blue tilapia, *Oreochromis aureus*, in Lake George, Florida USA : Overlap with sympatric shad larvae. *Fla Sci* 53(2): 123-129. <Address: Oklahoma Cooperative Fish & Wildlife Res. Unit, Oklahoma State University, Stillwater, OK, 74078, USA> <Summary: Foods of young blue tilapia, *Oreochromis aureus*, & larvae of sympatric fishes in Lake Georgia, Florida, were examined. Rotifers served as food for these fish.> <Keywords: Rotifers as food for fish>

182 Zarfdjian, M.-H. 1989. Seasonal Variations & spatial distribution of planktic invertebrates in Lake Volvi (Macedonia, Greece). Aristotelian University of Thessaloniki, School of Biology, Appendix No. 18, Ph.D. Thesis. <Keywords: season, distribution.>

183 Zarfdjian, M.-H., & Economidis, P.S. 1989. Listes provisoires der Rotifères, Cladocères et Copépodes des eaux continentales Grecques. *Biol Gallo-Hell* 15(0): 129-146. 4th International Congress on the Zoogeography & Ecology of Greece & Neighboring Regions, Kamena Vourla, Greece, April 1987. <Address: Department de Zoology, Section de Biology, P.O.B. University 134, University de Thessalonique, 540106 Thessalonique, GREECE> <Keywords: biogeography, species list, check list, Greece.>

184 Zarubov, A.I. 1989. Species of Rotifers (Rotatoria) in the biocenoses of the reserve "Teichi" -- new & rare rotifer species for the fauna of the USSR. *Latv Psr Zinat Akad Vestis* 0(5): 96-100. <Address: Institute Biol., Acad. Sci. Latv. SSR, Riga, USSR> <Keywords: *Lecane* sp., *Lepadella* sp., *Trichocerca* sp., *Keratella* sp., *Cephalodella* sp., biogeography, distribution>

185 Zarubov, A.I. 1990. <Supplements to the study of the rotifer *Dissotrocha aculeata* (Ehrenberg). *Latvijas Zinatnu Akademijas Vestis* 1990 No. 6 (515) C.112-114.

186 Zarubov, A.I. 1990. <Formation of zooplankton communities in the river Gauja & its tributaries. *Latvijas Zinatnu Akademijas Vestis* 1990 No. 6 (515) C.115-119.

187 Zarubov, A.I. , E. Parele, & R. Liepa. 1989. Effect of hydrochemical differentiation on the composition & structure of zooplankton & benthos in the Lake Liepaja. *Latv Psr Zinat Akad Vestis* 0(5): 79-86.
