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Refat ABDEL-BASSET¹, Abid H. ALI²

Regulation of the nitrite transport system in *Chlorella fusca* Shih. et Krauss.

Acta Hydrobiol., 37, 183-189.

Abstract - Uptake of nitrite by *C. fusca* cells was considerable only in the light. Pre-starvation in the dark or permanent darkness was accompanied by very low rates of nitrite uptake. 2,4 dinitrophenol, an energy metabolism inhibitor, also inhibited nitrite uptake. Nevertheless, it is difficult to assume that nitrite uptake is an active process. Metabolic inhibitors having various targets in plant cell metabolism such as arsenate, cyanide, cyclohexamide and 6.methylpurine also inhibited nitrite uptake. A feedback inhibition of nitrite uptake was observed in the presence of glutamate or glutamine. The addition of NO_3^- or NH_4^+ competitively inhibited NO_2^- uptake. Therefore, NO_2^- uptake in *C. fusca* is conditioned by several factors.

Key words: *Chlorella fusca*, nitrite uptake, inhibitors.

Authors' addresses:

¹ University of Assiut, Faculty of Science, Botany Department, Assiut, Egypt

² University of Salahiddin, College of Education, Biology Department, Erbil, Iraq

Peter I. AGI

Distribution of freshwater snail vectors of schistosome parasites in Jos metropolis (Nigeria).

Acta Hydrobiol., 37, 59-67.

Abstract - *Biomphalaria pfeifferi* (Krauss) and *Bulinus truncatus* (Audouin) were infected with schistosome parasites. Infected *B. pfeifferi* occurred in 5 (11.9%) while infected *B. truncatus* occurred in 2 (4.8%) of the 42 sites surveyed. Snail infection was highest (6.2%) from May to July and lowest (3.0%) from February to April. The number of infected snails increased with density. The snail population peaked in June while the smallest number were collected in March. The seasonality of the snail population was attributed to changes in the rainfall pattern.

Key words: freshwater snails, schistosomiasis, intermediate hosts, physico-chemical parameters.

Author's address: University of Port Harcourt, Department of Zoology, P.M.B. 5323, Port Harcourt, Rivers State, Nigeria.

Peter I. AGI

Survey of freshwater snails of medical and veterinary importance in Old Yenagwa Province (Niger Delta, Nigeria).

Acta Hydrobiol., 37, 191-196.

Abstract - Out of the 39 various waterbodies studied, 31 (79.5%) harboured different species of freshwater snails. The six snail species collected were *Pila ovata* (Olivier), *Bulinus forskali* (Ehrenberg), *B. globosus* (Morelet), *Lymnaea natalensis* Krauss, *Segmentorbis angustus* (Jickeli) and *Lanestes libycus* (Morelet). Two snail species, *L. natalensis* and *B. forskali*, shed furcocercous and gymnocephalous cercaria respectively. The overall snail infection rate was 7.6%.

Key words: Gastropoda, freshwater snails, trematode parasites, physico-chemical parameters, Yenagwa Province.

Author's address: University of Port Harcourt, Department of Zoology, P.M.B. 5323, Port Harcourt, Rivers State, Nigeria.

Peter I. AGI

Survey of freshwater snail vectors of schistosomiasis and study of physico-chemical parameters of the water bodies in Ogoni communities (Rivers State, Nigeria).

Acta Hydrobiol., 37, 69-75.

Abstract - No freshwater snails were collected from the study area. The observed range of many physico-chemical factors was within the tolerance levels of the freshwater snails. The differences in the seasonal means of the parameters were not statistically significant. The absence of freshwater snails, including the snail vectors of schistosomiasis, was therefore attributed to the combined effect of the acidic nature of the water bodies and the low topographical terrain of the study area.

Key words: freshwater snails, Ogoni communities, physico-chemical parameters, schistosomiasis, snail vectors.

Author's address: University of Port Harcourt, Department of Zoology, P.M.B. 5323, Port Harcourt, Nigeria.

Danuta AUGUSTYN

Effects of diversified pond carp culture. 2. Water temperature and transparency in ponds with different carp production.

Acta Hydrobiol., 37, suppl. 1, 139-143.

Abstract - The effect of diversified carp stocking and the course of atmospheric conditions on the temperature and transparency of the water in ponds was determined. Increased intensification of carp farming led to a reduction in water transparency and thus a rise in the vertical temperature gradient; in the ponds with the intensive culture the Secchi disc disappeared from almost the beginning of May at a depth of 30 cm and the temperature of the water layer near the bottom in sunny and windless weather was more than 1 °C lower than in the pond without fish.

Key words: ponds, carp culture intensification, water temperature, water transparency.

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie.

Wiesław BARABASZ, Edward RÓŻYCKI and Bolesław SMYK

The occurrence of carcinogenic nitrosamines in the aquatic environment (fishponds in wetland).

Acta Hydrobiol., 37, suppl. 1, 23-27.

Abstract - A microbiological and chemical investigation of the water in fishponds (production of common carp, *Cyprinus carpio* L.) belonging to the Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences at Gołysz (southern Poland) was done. The obtained results showed that in the investigated pond water environment there occurred various nitrosamines (N-nitrosodimethylamine and N-nitrosodiethylamine) in concentrations ranging from trace to 10 ppm. A concentration of the above-mentioned nitrosamines of more than 1 ppm poses a potential threat to the health of cyprinid fishes.

Key words: aquatic microorganisms, fishponds, wetland, nitrosamines.

Authors' address: Agricultural University, Department of Microbiology, Al. Mickiewicza 24/28, 30-059 Kraków, Poland.

Teresa BEDNARZ

Assessment of the trophic state of the water of the Dobczyce dam reservoir and its selected tributaries (southern Poland) by the method of the *Chlorella pyrenoidosa* Chick. biotest.

Acta Hydrobiol., 37, 77-85.

Abstract - An algal growth test was used to show the trophic state of the water of the Dobczyce Reservoir and its direct tributaries. The Dobczyce Reservoir showed a lower trophic level than its affluents. So far, the reservoir has been mesotrophic, but shows a tendency to increase from year to year. The trophic level of its water was less than that of the Goczałkowice Reservoir, which was eutrophic.

Key words: bioassay, trophic state, algae, river, dam reservoir.

Author's address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, ul. Sławkowska 17, 31-016 Kraków, Poland.

Henryk BIAŁOWAŚ

Comparison of effectiveness of thermal heat and cold shocks applied in the gynogenetic reproduction of common carp (*Cyprinus carpio* L.).

Acta Hydrobiol., 37, 87-92.

Abstract - The effects of heat (40 °C, 1.5 min) and cold (2-4 °C, 60 min) shocks applied within 2nd, 8th, 15th, and 30th minute after fertilization on the results of gynogenetic reproduction of common carp were compared. The sperm was inactivated using ultraviolet radiation. The temperature of fertilization and incubation of eggs was 22 °C. Greater numbers of larvae were obtained in the case of the heat shocks (0.3-3.4% of the incubated eggs) than of the cold ones (0-0.4%).

Key words: gynogenesis, sperm inactivation, cold shock, heat shock, common carp.

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Roland BILLARD

Some prospects of inland fishpond culture in Europe and its role in rural development.

Acta Hydrobiol., 37, suppl. 1, 89-109.

Abstract - It is commonly said that the demand for aquatic products is increasing in the world while capture fisheries tend to decline, opening good prospects for aquaculture. Hitherto aquaculture products were often produced in small amount for each species and at a relatively high price (as luxury products) especially by mariculture but nowadays the increasing demand is for cheap products at the lower price which is allowed by mass production. Fish culture in Europe, especially pond culture, may explore in the coming years the intensive culture of a few species yielding mass production at a low price and regular supply within a well-structured market organization. In addition there still is room for numerous species and products for small local markets. Stocking aquaculture dealing with capture or recreational fisheries also has good prospects.

Key words: aquaculture, pond, commodity chain, environment.

Author's address: Museum National d'Histoire Naturelle, Laboratoire d'Ichtyologie Générale et Appliquée, 43 rue Cuvier, F 75231 Paris Cedex 05, France.

Zygmunt BOCHENSKI

The effect of fishponds on the regional bird fauna.

Acta Hydrobiol., 37, suppl. 1, 75-82.

Abstract - In Central Europe fishponds are for many birds a substitute for their natural habitats which have almost total vanished as a result of human activity. The presence of fishponds is one of the most important reasons for the richness and diversity of birds - some of them being faunistic rarities. The number of breeding species rises with the area of the pond complex. Some methods of bird protection are proposed to compensate habitat destruction connected with the intensification of fish farming.

Key words: birds, fishponds, faunistics, protection.

Author's address: Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, ul. Sławkowska 17, 31-016 Kraków, Poland.

Monika BUKACIŃSKA, Dariusz BUKACIŃSKI, Jakub P. CYGAN, Kazimierz A. DOBROWOLSKI and Wojciech KACZMAREK

The importance of fishponds to waterfowl in Poland.

Acta Hydrobiol., 37, suppl. 1, 57-73.

Abstract - Fishponds provide a suitable habitat for many waterbird species. Species diversity both in the breeding season and during migration was higher the larger was the complex, or the fewer natural waterbodies there were in the surroundings. Among 127 areas of international importance to bird protection in Poland, 27 were the fishponds. Their foraging attractiveness often results in conflicts between fishermen and birds, which eat fish or use fish feed. However, waterbirds also play a positive role in such ecosystems (they prevent the excessive development of vegetation, feed on predatory invertebrates, and on weak or diseased fish). It is necessary to find a compromise between the economic profits from fishponds and the existence of waterfowl.

Key words: fishponds, waterbird communities, species diversity, bird-fishery conflicts.

Authors' address: Institute of Ecology, Polish Academy of Sciences, Department of General Ecology, Dziekanów Leśny, 05-092 Łomianki, Poland.

Elżbieta DUMNICKA, Joanna GALAS and Krzysztof WOJTAN

Aquatic chemistry in correlation with water level in the Kasprowa Niznia Cave (Tatra Mts).

Acta Hydrobiol., 37, 121-127.

Abstract - The values of conductivity, total hardness, alkalinity, total residue, total fixed residue, and calcium concentration measured at the times of low water level in the Kasprowa Niznia Cave were distinctly higher than those measured during high water level. Silicate values had the opposite pattern. Means of the above chemical factors were significantly different ($P < 0.05$ or $P < 0.005$). No dependence between the remaining parameters measured and water level in the studied cave was observed.

Key words: chemistry, cave waters, Tatra Mts.

Authors' address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, ul.

Joanna GALAS

Alder, *Alnus incana* (L.) Mnch., leaf decomposition in a high mountain stream.

Acta Hydrobiol., 37, 197-203.

Abstract - Processing of *A. incana* leaves was investigated in the Sucha Woda stream (High Tatra Mts, Poland). The leaf litter (about 1 g dry weight) was placed in plastic boxes with netting of three mesh sizes: fine (0.3 mm), medium (1 mm), and coarse (5 mm). Three replicates were collected from the water after 27, 55, 82, 111, and 139 days. The rate of breakdown was much higher for leaves from the coarse mesh boxes (0.014) than for those from the medium (0.0034) and fine (0.0025) mesh boxes.

Key words: mountain stream, litter decomposition, *Alnus incana*, leaves

Author's address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, ul. Sławkowska 17, 31-016 Kraków, Poland.

Nora GÓMEZ

Changes in the phytoplankton of the reservoir Embalse Río Tercero (Prov. Córdoba, Argentina) as a result of the nuclear power plant operating there.

Acta Hydrobiol., 37, 129-139.

Abstract - The phytoplankton of the reservoir Embalse Río Tercero presented three to four annual pulses depending on the hydrological conditions and the water column stability during stratification. Since the start of operation of the nuclear plant many modifications have been observed, among them, worth mentioning being the decrease in phytoplankton density and less heterogenous space distribution, besides an increase in the volume of water held back by the dam and a decrease in water level fluctuation.

Key words: reservoirs, phytoplankton, nuclear power plant, dynamics, changes.

Author's address: Limnology Institute "Dr. Raúl A. Ringuelet", C.C. 712, 1900 La Plata, Buenos Aires, Argentina.

Andrzej GÓRNIAK and Elżbieta JEKATIERYN CZUK-RUDCZYK

Limnology of the Siemianówka dam reservoir (eastern Poland) 1. Environmental conditions.

Acta Hydrobiol., 37, 1-9.

Abstract - The catchment area, its hydrology, and the quality of waters feeding the newly constructed Siemianówka dam reservoir are described. In the typically lowland basin of the reservoir forest-marshy area predominate, no industrial plants or sources of point pollution of surface waters occurring here. This type of basin determines high concentrations of phosphorus, ammonium ions, and DOC in waters supplying the reservoir. The morphology of the impoundment is favourable for the constant resuspension of sediments and great concentrations of N and P compounds in the waters feeding the reservoir will result in the development of an eutrophic water body.

Key words: dam reservoirs, catchment, eutrophication, water quality.

Authors' address: Warsaw University, Białystok Branch, Institute of Biology, ul. Świerkowa 20 B, 15-950 Białystok, Poland.

Andrzej GÓRNIAK and Elżbieta JEKATIERYN CZUK-RUDCZYK

Limnology of the Siemianówka dam reservoir (eastern Poland) 2. Seasonal and horizontal differentiation of water chemistry.

Acta Hydrobiol., 37, 11-20.

Abstract - In the direction of the frontal dam of the reservoir mean concentrations of substances dissolved in water were reduced while those of oxygen, phosphorus, and ammonium ions increased, bringing about distinct differences between the three parts of the impoundment, conditioned by the seasonality of water inflow to the reservoir. In summer and autumn in the different parts of the reservoir a similar chemical composition of waters was observed, while in winter and during the spring rise it was distinctly differentiated.

Key words: dam reservoirs, water chemistry

Authors' address: Warsaw University, Białystok Branch, Institute of Biology, ul. Świerkowa 20 B, 15-950 Białystok, Poland.

Robert GWIAZDA

Numbers of the great crested grebe, *Podiceps cristatus* L., and the composition of its food in the Dobczyce Reservoir (the River Vistula basin, southern Poland).

Acta Hydrobiol., 37, 205-212.

Abstract - The highest density of the great crested grebe in the Dobczyce Reservoir was observed in autumn. In the littoral zone the grebes chiefly stayed during the breeding period. In the stomachs of these birds 6 fish species were found, the most frequent occurrence being perch, *Perca fluviatilis* L. The total length of the consumed fish ranged from 6 to 18 cm. Also insects and additionally bivalves and plant fragments were eaten. In the aspect of the biomanipulation concept, by consuming planktivorous fish this species reduces their pressure on the zooplankton, thereby contributing to the control of algal blooms.

Key words: grebes, consumption, freshwater fish, dam reservoirs, biomanipulation

Author's address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, ul. Sławkowska 17, 31-016 Kraków, Poland.

Robert GWIAZDA

The water bird community on fishponds at Gołysz in the breeding season and its differentiation.

Acta Hydrobiol., 37, suppl. 1, 83-88.

Abstract - Thirty-three species of water bird were observed on the fishponds at Gołysz in the breeding season of 1994. The total number of water birds amounted to 1328-1886 individuals. The numerically dominant species, were *Anas platyrhynchos* L., *Larus ridibundus* L., and *Aythya fuligula* (L.). *L. ridibundus*, *Podiceps cristatus* (L.), *Podiceps nigricollis* (Brehm), and *Aythya fuligula* were the most numerous breeding species. On the basis of the food taken the species were divided into ecological groups. The greatest percentage participation was recorded for polyphagous (over 30% of the water bird community), phytophagous, and benthophagous. In comparison with the study carried out in the fifties great changes in the bird community were recorded.

Key words: waterfowl, fishponds, ecological groups, community

Author's address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, ul. Sławkowska 17, 31-016 Kraków, Poland.

Ilgiz IRNAZAROV and Henryk BIAŁOWĄS

Genetic characteristics of carp breeding lines at the Institute of Ichthyobiology and Aquaculture of the Polish Academy of Sciences at Gołysz. 2. Hungarian lines.

Acta Hydrobiol., 37, (1995), 3, 141-151.

Abstract - Allele frequency and genetic variability were investigated in four Hungarian breeding lines of common carp, *Cyprinus carpio* L., marked as W, 7, 8, and T. Thirteen loci were identified in separating 8 enzymes and proteins. The Tf*, EST-1*, LDH-B1*, MDH-1*, G6PDH*, and SOD-2* loci manifested polymorphism in all the lines examined. The CPI-2* locus was polymorphous only in line T. The great genetic differentiation observed between the lines was manifested by a wide range of allele frequency. Instability of the genetic balance of all the investigated lines was demonstrated.

Key words: common carp, genetic characteristics, biochemical markers

Authors' address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Ahmed A. ISSA and Mady A. ISMAIL

Effects of detergents on River Nile water microflora.

Acta Hydrobiol., 37, 93-102.

Abstract - Generally, the number of genera and species of microflora were found to have decreased in the River Nile water treated with different doses (0.1-10 g dm⁻³) of four detergents (Biocleana, Lang, Omo, and Tide). Algae are more sensitive to detergents than bacteria and fungi but some species were increased either slightly or markedly. No stimulatory effect was observed on bacteria by any of the detergents. The effect of detergents on fungi was different. The most tolerant fungal species was *Penicillium chrysogenum* Thom and may be regarded as a detergent- (pollution-) tolerant fungus.

Key words: detergents, algae, bacteria, fungi, Nile water

Authors' address: Assiut University, Faculty of Science, Botany Department, Assiut, Egypt.

Malgorzata JAKUBAS

Effects of diversified pond carp culture. 5. Comparison of development of zooplankton and bottom fauna in ponds with different carp production.

Acta Hydrobiol., 37, suppl. 1, 157-163.

Abstract - The aim of the investigation was to determine the effect of intensified carp culture on quantitative and qualitative changes in the food fauna, i.e. zooplankton and benthos. The most abundant development of the zooplankton (especially Rotatoria and Cladocera) and a greater diversity of their species composition were observed in ponds with the highest production intensity. During the production season an increase in the dominance of small zooplankton forms was recorded. In a comparative non-stocked pond the numbers of the zooplankton were small, the share of large forms (*Daphnia magna*, *D. pulex*, and *D. longispina*) being distinctly greater. Bottom fauna developed most abundantly in the non-stocked pond, being reduced to 1/3 in the remaining ones.

Key words: ponds, carp culture, intensification, zooplankton, benthos

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Sven E. JORGENSEN

Development of models for fishpond management.

Acta Hydrobiol., 37, suppl. 1, 3-11.

Abstract - There is a wide spectrum of models available for ponds, lakes and aquaculture which could be used as basis for models of semi-intensively run fishponds. It is here proposed to use a combination of a dynamic fish growth model with a steady state model of fishponds. The latter is used to give the total picture of the fishponds with a certain selected interval, for instance, spring, summer, autumn, and winter. The fish growth model is used to calculate the fish biomass to be applied in the steady state model.

Key words:

Author's address: Royal Danish School of Pharmacy, Department of Analytical and Pharmaceutical Chemistry, Section for Environmental Chemistry, Universitetsparken 2, DK-2100 Copenhagen, Denmark.

Thaer I. KASSIM¹ and Hussain A. AL-SAADI²

Seasonal variation of epiphytic algae in a marsh area (southern Iraq).

Acta Hydrobiol., 37, 153-161.

Abstract - *Potamogeton lucens* L. and *Ceratophyllum demersum* L. were collected monthly in two ecosystems in Al-Hammar marsh with clear and turbid water. The dominant species of epiphytic algae at both stations and plants were *Achnanthes minutissima* Kütz., *Cocconeis placentula* var. *euglypta* (Ehr.) Cl., and *Fragilaria* spp. The cell number showed seasonal variation both on plants and at stations, but in general there were no distinct differences in algal species and population density between the two macrophytes in each area. Marsh with turbid water offered better conditions for algal growth thanks to nutrient enrichment.

Key words: marshes, epiphytic algae, seasonal variation

Authors' addresses:

¹ Fish Research Centre, Department of Aquatic Ecology, Box 765, Baghdad, Iraq

² University of Baghdad, College of Education for Women, Department of Biology, Baghdad, Iraq.

Henryk KASZA and Edward KRZYŻANEK

Characteristics of the quantitative composition of bottom fauna of the Upper Vistula (southern Poland) against the background of the chemical composition of its water.

Acta Hydrobiol., 37, 33-40.

Abstract - The present work gives the characteristics of the bottom macrofauna against the background of the changing chemical composition and pollution of the water of the Vistula in a section of about 45 km of its upper course. A fairly rich and differentiated bottom macrofauna was found. The variability in bottom macrofauna throughout the area was the result of changes in the environmental conditions, while the increase in water fertility and pollution corresponded to the rising numbers of Chironomidae and the appearance and increasing numbers of Oligochaeta.

Key words: rivers, ionic composition, nutrients, Chironomidae, Oligochaeta, Trichoptera, Ephemeroptera, Plecoptera

Authors' address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, Hydrobiological Station, 43-230 Goczałkowice, Poland.

Barbara KOLASA-JAMIŃSKA

Effects of diversified pond carp culture. 3. Chemical composition of the water in ponds with different carp production.

Acta Hydrobiol., 37, suppl. 1, 145-149.

Abstract - The effect of diversified intensification of carp culture on oxygen saturation, basic nutrients, and indices of concentration of organic matter in pond water was determined against the background of conditions in ponds without fish. Intensive rearing caused a 30% decrease in oxygen saturation of the water, a double increase in the concentrations of organic matter, ammonium nitrogen and phosphates, and a fall in water reaction in comparison with a pond without fish.

Key words: intensive carp culture, pond, hydrochemical parameters of water

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Andrzej KOWNACKI

The use of chironomid pupal exuviae for ecological characterization of the Upper Vistula (southern Poland).

Acta Hydrobiol., 37, 41-50.

Abstract - Collections of chironomid pupal exuviae and male imagoes were made in the Vistula between the reservoirs Wisła Czarne and Goczałkowice and its source spring Biała Wisielka and Czarna Wisielka. 80 species were identified, 6 of which were found to be new to Poland. The presence/absence and relative numbers of the species found in the samples were used to define the chironomid assemblage, that could be applied to evaluate the pollutant effect of sewage effluent, acidification, and "regulated stream" effect in this reach of the river.

Key words: Chironomidae, pupal exuviae, rivers and streams, pollution, acidification, "regulated stream"

Author's address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, ul. Sławkowska 17, 31-016 Kraków, Poland.

Edward KRZYŻANEK and Henryk KASZA

Formation of bottom macrofauna in the Goczałkowice Reservoir (southern Poland) against the background of changing selected physico-chemical properties of the water.

Acta Hydrobiol., 37, 103-111.

Abstract - A tendency to an increase in electrolytes and nutrients (mineral nitrogen and total phosphorus) was found. The bottom macrofauna was not affected by human activity in the period from 1955 to 1982, when the degree of eutrophication was small. From 1983 the effect of human activity was revealed in both qualitative and quantitative changes in the composition of the macrofauna.

Key words: dam reservoirs, bottom macrofauna, ionic composition, nutrients

Authors' address: Karol Starmach Institute of Freshwater Biology, Polish Academy of Sciences, Hydrobiological Station, ul. Jeziorna 80, 43-230 Goczałkowice, Poland.

Krzysztof KUKUŁA

Life cycles of selected species of mayflies (Ephemeroptera) of the Wołosatka and Terebowiec streams

(The Bieszczady National Park, south-eastern Poland).

Acta Hydrobiol., 37, 213-224.

Abstract - The life cycles of nine species of mayflies were elaborated on basis of collected material. A winter cycle with one generation a year was found for all the investigated species of the genus *Rhithrogena* (*R. carpatoalpina*, *R. puytoraci*, *R. gorganica*, and *R. wolosatkae*). The remaining species analyzed had in this period summer cycles with one generation (*Ephemerella ignita*), winter cycles with one generation (*Baetis muticus*, *Habroleptoides confusa*) or a winter cycle with two generations a year (*Baetis rhodani*).

Key words: mayflies, life cycles, running waters

Author's address: Cracow Agricultural University, Rzeszów Branch, ul. Ćwiklińskiej 2, 35-959 Rzeszów, Poland.

Stanisław LEWKOWICZ

Effect of carp ponds on the nutrient composition of riverine water supplying the Goczałkowice Reservoir.

Acta Hydrobiol., 37, suppl. 1, 37-44.

Abstract - A large amount of the water feeding the Goczałkowice Reservoir on the River Vistula, storing drinking water for the Upper Silesia region flows through carp ponds. The water feeding the ponds contains mainly nitrate nitrogen and phosphates, and below the outflow of pond waters ammonia nitrogen and organic forms of phosphorus and nitrogen. Fishponds eliminate 30-60% of nitrogen and phosphorus from river water in the vegetation season.

Key words: ponds, dam reservoir, elimination of nutrients

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Daniel E. MEYER

Marine shrimp culture development in southern Honduras.

Acta Hydrobiol., 37, suppl. 1, 111-120.

Abstract - Marine shrimp culture has developed rapidly on the saltflats bordering the estuaries that flow into the Gulf of Fonseca. During the past 10 years more than 11,000 ha of ponds have been built on lands that previously had no commercial value. Several factors that could potentially limit the future growth of this industry, which has annual sales of 100 million USD, are discussed along with the present situation of marine shrimp culture in Honduras.

Key words: shrimp culture, Honduras, development, marine

Author's address: Basic Sciences Department, Panamerican Agriculture School, P.O. Box 93, Tegucigalpa, Honduras.

Pradipta K. MOHAPATRA¹, Rama C. MOHANTY², Mahashweta SINHA²

Effect of organic carbon sources on the toxicity of mercury to *Chlorococcum infusionum* (Schrang.) Menegh. and *Ankistrodesmus falcatus* (Corda) Ralfs.

Acta Hydrobiol., 37, 21-28.

Abstract - Mercury at all tested concentrations was found to be less toxic to *Chlorococcum infusionum* than to *Ankistrodesmus falcatus*. *Ankistrodesmus* growth was inhibited at all the tested doses of the metal while

Chlorococcum remained unaffected up to 0.005 μM of Hg^{2+} . A reduction of chlorophyll and protein content, decrease in Chl *a/b* ratio, and accumulation of glycolate was observed at inhibitory concentrations of Hg^{2+} whereas amino acid synthesis was not significantly affected. Both the used carbon sources caused a reduction of Hg^{2+} toxicity to the test algae, glucose being more effective than glutamate.

Key words: *Chlorococcum*, *Ankistrodesmus*, mercury, glucose, glutamate, growth, pigment, protein, glycolate

Authors' addresses:

¹ Rostock University, Institute of Experimental Ecology, Freiligrathstr. 7/8, D - 18051 Rostock, Germany,

² Utkal University, Department of Botany, Bhubaneswar - 751004, India.

Ryszard PADO¹, Iwona PAŚMIONKA¹, Lucyna PAWŁOWSKA-ĆWIEK¹ and Krystyna STARZYK²

The effect of oxygen on the length of the denitrification period.

Acta Hydrobiol., 37, 163-170.

Abstract - It is shown in the paper that the correct direction of denitrifying bacteria actually present in microbial suspension requires prolongation of the time of facultative anaerobic conditions to at least 15 h. Anaerobic conditions are necessary, particularly in the first stage of the nitrate respiration chain, catalysed by denitrifying nitrate reductase (DNaR) of these bacteria.

Key words: sewage treatment, microbial suspension, denitrifying bacteria, O_2 inhibition, time phases

Authors' addresses:

¹ Cracow Pedagogical University, Department of Microbiology, ul. Podbrzezie 3, 31-054 Kraków, Poland,

² Municipal Sewage Treatment Station, ul. Rybitwy 1, 30-722, Kraków, Poland.

Ewa PIECZYŃSKA

Habitat heterogeneity and biodiversity in the shore zone of water bodies.

Acta Hydrobiol., 37, suppl. 1, 29-35.

Abstract - Habitat heterogeneity and high biological complexity are fundamental characteristics of the shore zone of water bodies. Water level fluctuations, shore slope and sediment structure are physical attributes of major importance in this zone, and macrophytes are its most important biotic element. Studies and experiments were done in the field in order to assess the relationships between habitat complexity and biodiversity in the lake shore zone. Biotic structure at sites with fluctuating water levels, as well as colonization of experimental near-shore pools by plants and animals were studied.

Key words: shore zone, water level fluctuations, macrophytes, invertebrates, habitat heterogeneity

Author's address: Warsaw University, Institute of Zoology, Department of Hydrobiology, Banacha 2, 02-097 Warszawa, Poland.

Marzena RZECZYCKA, Magdalena PRZYTOCKA-JUSIAK and Agnieszka CIOSEK

Growth interactions between *Pseudanabaena catenata* Lauterborn, *Chlorella* sp., *Stichococcus bacillaris* Naegeli, and *Scenedesmus acutus* Meyen in mixed cultures.

Acta Hydrobiol., 37, 225-230.

Abstract - An investigation on the development of *P. catenata*, *Chlorella* sp., *S. bacillaris*, and *S. acutus* in

mixed cultures showed that in 7 out of 11 variants of these cultures the dominating species was that whose specific growth rate was higher in monoculture. This phenomenon was not observed in the bialgal culture of *Chlorella* sp. and *S. bacillaris* and in 3 mixed cultures which, apart from other algae, included *P. catenata* and *S. acutus*. In the latter *P. catenata* always dominated, its growth being much faster than in the monoculture.

Key words: algal interaction, Cyanophyta, Chlorophyta, mixed cultures

Authors' address: Warsaw University, Institute of Microbiology, Department of Environmental Microbiology, ul. Karowa 18, 00-324 Warszawa, Poland.

Kunchitham SAMPATH and Arumuga RAJ

Effects of feeding frequency and stock density on total production, final mean body weight, and food utilization in the freshwater catfish *Mystus keletius* (Valenciennes).

Acta Hydrobiol., 37, 171-176.

Abstract - An increase in feeding frequency and stock density generally enhanced total production. Maximum final mean body weight was recorded in fish fed once in 2 days at a density of 1 fish per 5 dm³. Fish fed once in 2 days exhibited the maximum conversion rate and efficiency and this may be considered as the optimum feeding for *M. keletius*. An increase in density beyond 1 fish per 5 dm³ significantly reduced all food utilization parameters except absorption efficiency. The adverse effects of high density could be compensated by increasing the feeding schedule.

Key words: *Mystus keletius*, feeding frequency, density, total production, aquaculture

Authors' address: V.O. Chidambaram College, Department of Zoology, Tuticorin - 628 008, Tamil Nadu, India.

Lokman SHAMSUDIN

Lipid and fatty acid profile of wild caught and cultured larvae of sea bass (*Lates calcarifer* (Bloch)).

Acta Hydrobiol., 37, 51-57.

Abstract - Analysis of the fatty acid composition as percentage of total fatty acids of wild juveniles of sea bass caught off the western coast of the Malaysian Peninsula showed that more than 38% of total fatty acids consisted of the two essential ones, 20:5w3 (eicosapentaenoic acid) and 22:6w3 (docosahexaenoic acid). Laboratory-reared larvae had lower contents of 20:5w3 and 22:6w3. In both wild and cultured juveniles, the 16:0 and 18:1 were high while the latter had higher 18:3w3 (linolenic acid) and 18:2w6 (linoleic acid). Juveniles suffering from whirling disease had very low concentrations of 20:5w3 (2.9%) and 22:6w3 (0.02%). Their proportion of 18:3w3 at 9.4% and 18:2w6 at 18.4% were high.

Key words: lipid, fatty acid, wild, cultured, fish larvae, sea bass, chromatography

Author's address: Faculty of Fisheries and Marine Science, University Pertanian Malaysia, 21030 Mengabang Telipot, Kuala Terengganu, Terengganu, Malaysia.

Nina P. SMIRNOVA¹ and Andrei L. SMIRNOV²

Heat content as a basis for lake classification.

Acta Hydrobiol., 37, suppl. 1, 47-54.

Abstract - The heat budget, which is an integral factor characterizing the thermal state of a lake is proposed

as a basis for lake classification in the paper. Calculation of the heat budget according to the morphometric characteristics of more than 4000 lakes allowed lake classification to be made. The relationship between water temperature and total radiation was chosen as a secondary classification factor.

Key words: heat budget, lake morphometry, lake classification, water temperature

Authors' addresses:

¹ Institute of Limnology, 9 Sevast'yanova St., 196199, St. Petersburg, Russia

² St. Petersburg State University, 7/9 Universitetskaya Nab., 199034, St. Petersburg, Russia.

Lia C. SOLARI

Structure and dynamics of phytoplankton of the River Samborombón (Buenos Aires, Argentina).

Acta Hydrobiol., 37, 231-241.

Abstract - 191 species were recorded, the majority of them being typically euplanktonic components. The diatoms found are alkaliphilous and typical of high conductivity waters. The algal peaks occurred during autumn and spring in the headwaters and in the mid-course of the river, and at the end of summer and the beginning of winter in its mouth. The specific diversity fluctuated between 0.65 and 4.30, the highest values being recorded during summer and the lowest in winter.

Key words: phytoplankton, river, Argentina, spatio-temporal fluctuations, correlation

Author's address: National University of La Plata, Institute of Limnology "Dr. Raúl A. Ringuelet", Avenida Calchaquí, km 23.5, 1888 Florencio Varela, Argentina.

Olivier SPARAGANO¹ and Andre REVOL²

Isolation of the freshwater *Naegleria fowleri* (Carter, 1970) from a river using a monoclonal antibody and the polymerase chain reaction.

Acta Hydrobiol., 37, 29-32.

Abstract - ELISA and Southern blots techniques were employed to detect the pathogenic amoeba *Naegleria fowleri* in river water used for cooling by a French power plant. Water samples from 100 ml to 1 ml, collected at two sites, were filtered. After incubation of the filters at 44 °C for 48 h, 21 *Naegleria* strains were removed. Four of those strains were identified as *N. fowleri* by both ELISA and DNA probe, showing the good correlation between these techniques applied to environmental samples

Key words: amoeba, freshwater, monoclonal antibody, DNA probe

Authors' addresses:

¹ The University of Edinburgh, CTVM, Easter Bush, Roslin Midlothian, Edinburgh EH25 9RG, Scotland,

² Faculté de Pharmacie, Laboratoire de Biochimie Endocrinienne et Moléculaire, Lyon, France.

Arun K. SRIVASTAVA, Ranjana SINHA, Nervdeshwer SINGH, Dayalanand ROY and Shivaji SRIVASTAVA

Malachite green-induced changes in carbohydrate metabolism and blood chloride levels in the freshwater catfish *Heteropneustes fossilis* (Bloch).

Acta Hydrobiol., 37, 113-119.

Abstract - Exposure of the freshwater catfish *H. fossilis* to an acute concentration of 0.20 mg dm⁻³ (1/5th of

4 days LC₅₀) of malachite green for 4 days evoked hepatic and muscle glycogenolysis with concomitant hyperglycaemia and chloraemia. Exposure of fish to sub-acute 0.10 mg dm⁻³ (1/10th of 4 days LC₅₀) and sub-lethal 0.05 mg dm⁻³ (1/20th of 4 days LC₅₀) concentrations of the dye also evoked a significant increase in blood glucose and chloride levels at short (10-20 days) and long (30-60 days) term as well as liver and muscle glycogenolysis at short term. However, there were no marked changes in the liver glycogen content at the sub-lethal dose or muscle glycogen content at either sub-acute or sub-lethal concentrations for long term exposure.

Key words: *Heteropneustes fossilis*, malachite green, liver, muscle, glycogen, blood, glucose, chloride

Authors' address: Shri Murli Manohar Town Post Graduate College, Department of Zoology, Ballia 277001, India.

Anil Kishore SRIVASTAVA¹, Anil Kumar SRIVASTAVA²

Renal changes in selenium-exposed freshwater Indian catfish, *Heteropneustes fossilis* (Bloch).

Acta Hydrobiol., 37, 177-181.

Abstract - Acute (6.25 mg dm⁻³, exposure 36 h) and subacute (2.08 and 1.04 mg dm⁻³, exposure 1-8 weeks) levels of selenium caused periglomerular fibrosis accompanied with intrafiltration of blood cells in the capsular space. Proliferative glomerulonephritis as well as fragmentation and necrosis of cells of the renal tubule were also observed. However, no remarkable change was noted in fish exposed to a sublethal (0.625 mg dm⁻³) concentration of Se for 1-8 weeks.

Key words: *Heteropneustes fossilis*, selenium, fish, toxicity, histopathology

Authors' addresses:

¹ Sri Murli Manohar Town Postgraduate College, Department of Zoology, Ballia 277001, Uttar Pradesh, India,

² University of Gorakhpur, Department of Zoology, Gorakhpur 27309, Uttar Pradesh, India.

Jan SZUMIEC

Effects of diversified pond carp culture. 1. Impact of different feeding and stock density on fish production.

Acta Hydrobiol., 37, suppl. 1, 131-138.

Abstract - In experiments carried out in numerous replications on the effectiveness of different admixtures to stabilized balanced feed in intensive pond farming of 2-year-old common carp (*Cyprinus carpio* L.) the best results were obtained by adding fish fat or Alma vitamin premix. Good results obtained in using food without vitamin admixture show that with the applied stock density the share of natural food was sufficient in the food ration of the fish. Environmental changes induced by the intensification were compared with the formation of environmental conditions in the pond with a ten times smaller stock and in one without fish.

Key words: ponds, carp farming, intensification, feeding of fish, environmental conditions

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Maria A. SZUMIEC, Danuta AUGUSTYN, Małgorzata JAKUBAS, Barbara KOLASA-JAMIŃSKA and Wanda URBANIEC-BRÓZDA

Diel, seasonal, and spatial variability in the carp pond ecosystem.

Acta Hydrobiol., 37, suppl. 1, 165-172.

Abstract - Testing of the diel, seasonal (May-September) and space variability in a pond, where the intensive polyculture of common carp (*Cyprinus carpio* L.) with grass carp (*Ctenopharyngodon idella* (Val.)) and silver carp (*Hypophthalmichthys molitrix* (Val.)) was introduced, indicated at high and comparable limits of the diel, seasonal, as well as vertical differentiations of some physical, chemical, and biological ecosystem parameters. This implies the necessity of considering all these differentiations in the calibration of the carp pond ecosystem model.

Key words: common carp, pond, ecosystem, variability

Authors' address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Maria A. SZUMIEC

The role of carp pond ecosystem management in wetland conservation.

Acta Hydrobiol., 37, suppl. 1, 13-20.

Abstract - A review of ecological and economic problems concerning fishpond utilization is presented. Ecological benefits from the existence of carp ponds rely on the reduction of biogenic salts in riverine waters, improvement of hydrological conditions, and maintenance of biological diversity. Their negative effect can be seen in the increase in organic matter in the water running off from the ponds. To improve the economic and ecological effects of pond carp culture interrelations between the most common European technologies utilized in the current common carp, *Cyprinus carpio* L., culture and their effects on the environment are discussed and an outline of the problems to be resolved is given.

Key words: carp culture, ponds, wetland conservation

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Wanda URBANIEC-BRÓZDA

Effect of diversified pond carp culture. 4. Number and composition of phytoplankton in ponds with different carp production.

Acta Hydrobiol., 37, suppl. 1, 151-156.

Abstract - Analysis of species composition, numbers, and development dynamics of phytoplankton in ponds with different carp culture and in ponds without fish showed that in conditions of intensive fish culture algae were most numerous, being characterized by the greatest variation of species, the most rapid succession of dominants, and the greatest amplitude of changes in numbers during the season. The small size of algae corresponded with the food requirements of zooplankton. Chlorophyta were most abundantly represented in all the ponds.

Key words: carp pond culture, intensification, phytoplankton, number, succession

Author's address: Institute of Ichthyobiology and Aquaculture, Polish Academy of Sciences, Gołysz, 43-520 Chybie, Poland.

Małgorzata WITESKA

Changes of plankton communities of ponds stocked with fish and supplied with nutrients.

Acta Hydrobiol., 37, suppl. 1, 121-129.

Abstract - Fish stocking caused a considerable increase in phytoplankton density and cyclopoid biomass, as well as a decrease in the biomass of large cladocerans. Nutrient supply resulted in an increase of biomass of both small and large cladocerans. Concentrations of phosphorus, nitrogen, chlorophyll *a*, and phaeopigments were considerably higher in the stocked ponds than in those without fish. Fish stocking resulted in the development of stronger signs of eutrophication than nutrient supply but the two factors acting together caused the most pronounced changes in plankton communities and water quality.

Key words: ponds, water quality, eutrophication, fertilization, fish, phytoplankton, zooplankton

Author's address: Siedlce University, Department of Animal Physiology, ul. Prusa 12, 08-110 Siedlce, Poland.



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